

**Establishing a Framework for Inner-Ring Suburb  
Sustainability in Winnipeg**

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# Abstract

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Sustainable development is an objective that attempts to address global growth and change in an environmental, economic and social manner. Rapidly increasing global populations and growing concerns over resource scarcity and climate change are challenges to these goals. This practicum explores the relationship between sustainable development objectives and an inner-ring suburban neighbourhood in Winnipeg. The intent is to gain insights into how inner-ring suburbs can facilitate a more sustainable future. The research revealed eight themes associated with sustainable urban development, including: community development, land use diversification, better buildings, open space, transportation, water management, waste management, and economic development. A total of 45 associated action opportunities were proposed for an implementation plan for the study area. Challenges and barriers to the implementation of these actions include: political support, financial constraints, physical growth limitations, behavioural change, existing policies and by-laws, action opportunity dependency and education for sustainable development.

*Keywords: sustainable development, inner-ring suburbs, eight key themes, 45 actions*

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# Chapter One – Introduction

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The Earth's capacity to support human life is reaching critical limits as the present rate of resource consumption is near surpassing the rate at which natural processes can regenerate (Hawken, Lovins & Lovins, 2010). Oil-based economic systems are having negative impacts on the atmosphere and biosphere, in turn affecting the quality of human health and well-being. With a rapidly growing global population paired with high-level, oil-based consumption practices, the future welfare of the world depends on the actions people make today.

With over half of the world's population now living in urban areas (UNFPA, 2007), the design and operation of cities in a resource conscious and energy efficient manner can have significant impacts on goals relating to a more sustainable planet. However, in most North American cities, the predominant model of growth is suburban development, which is often energy-intensive and automobile-oriented (Stone & Gibbons, 2002; Anacker, 2006). The continual outward sprawl of the low-density suburban model is believed to contradict all characteristics of sustainable city design as it increases costs associated with infrastructure, encroaches on greenfield and agricultural lands, and leads to increases in energy consumption and pollution (Torrens & Alberti, 2000). Sprawling suburban development is also linked to inner-city decline (Leo & Anderson, 2005), and more recently, identified with the decline of inner-ring suburbs (Lee & Leigh, 2005).

The re-design of inner-ring suburbs should be emphasized as part Winnipeg's sustainable urban development strategy for the purposes of slowing sprawl, reducing potential for decline, and utilizing existing infrastructure. Inner-ring suburbs, like most urban places, should begin to transform into more energy and resource conservative communities for the purposes of achieving urban, regional and global sustainability objectives. An additional benefit of targeting inner-ring suburbs is based on proximity to city centres; offering a strategic

geographic advantage over newer suburbs for re-investment that support objectives of a more sustainable and compact urban form.

This study targets inner-ring suburbs under a lens of *sustainable development* for the purposes of connecting on-the-ground solutions with high-level concerns that have global scale impacts, such as pollution and high levels of resource consumption. The most common definition of sustainable development is from the Brundtland Commission, described as, “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 8). According to the International Institute of Sustainable Development (IISD) (2012), defining sustainable development requires thinking about the Earth as a system that relates in space and time. For example, understanding the Earth as a system over space means recognizing that pollution in North America can affect air quality in Asia; understanding the Earth as a system over time means recognizing that decisions made today can have impacts on future generations, and ultimately, these decisions over space and time have an impact on quality of life, from a health, environmental and economic perspective (IISD, 2012).

Rethinking the role and design of inner-ring suburbs fits with this systems approach, relating to community, municipal, regional and global scale objectives of sustainable development. In this study, eight key themes and 45 action opportunities are identified that can be applied to the inner-ring study area in Winnipeg. These eight key themes include: community development, land use diversification, better buildings, open space, transportation, water management, waste management and economic development. These themes, as well as the actions associated with each of these themes, are more thoroughly discussed later on in this study. This study also identified a number of challenges and barriers toward implementation of these actions, including: political support, financial constraints, physical growth limitations,

behavioural change, existing policies and by-laws, action opportunity dependency and education for sustainable development. These challenges and barriers are summarized in Chapter Five of this report as part of the conclusions, recommendations and summary of the research.

## 1.1 Brief Overview of Inner-Ring Suburbs

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Consensus on a clear definition of inner-ring suburbs has yet to be reached by those who have done research on the topic. However, several common characteristics provide criteria that helped identify inner-ring suburbs in Winnipeg for the purposes of this study. According to Sugie Lee and Nancey Leigh (2007) typical traits of inner-ring suburbs include being constructed in the post World-War II era between 1950 and 1969 and located in close proximity to Central Business Districts (CBDs). Lee and Leigh (2007) explain that these neighbourhoods are typically automobile-oriented (though not nearly as much as newer suburbs) and consist of a lower quality, homogenous housing stock.

Today, inner-ring suburbs are vulnerable and at risk of falling into a downward spiral of social and physical decline as infrastructure and housing stock age, and populations decrease (Wagner 2002). If populations decrease and more residents choose to move to newer suburban communities, businesses are likely to follow (Mieszkowski & Mills, 1993). With a weak commercial sector, the revenue from residential property taxes become the primary financial support for a quality education system, infrastructure and other municipal amenities (Sjoberg, 2005; Anacker, 2006), making it difficult for inner-ring suburbs to remain attractive living environments. With diminished populations and commercial disinvestment, the property tax base can erode and schools tend to lose funding (Anacker, 2006). If education quality is in

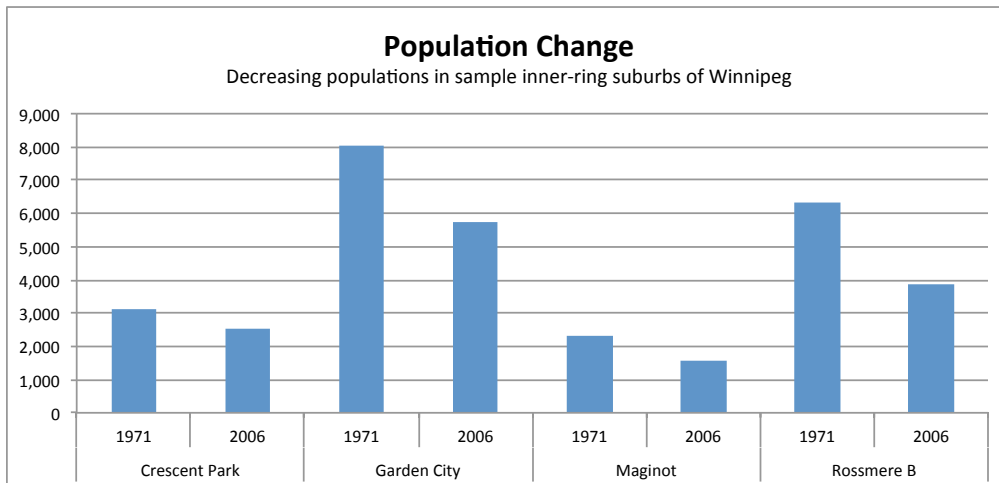


decline and/or the close proximity to schools is not provided, families' decisions to leave the neighbourhood are further reinforced (Mieszkowski & Mills, 1993; Anacker, 2006).

Lee and Leigh (2007) suggest that while not all inner-ring suburbs are showing significant symptoms of decline, efforts relating to compact built form and sustainable urban development should be explored in order to protect the future vitality of this type of neighbourhood.

### 1.1.1 Inner-Ring Suburbs in Winnipeg

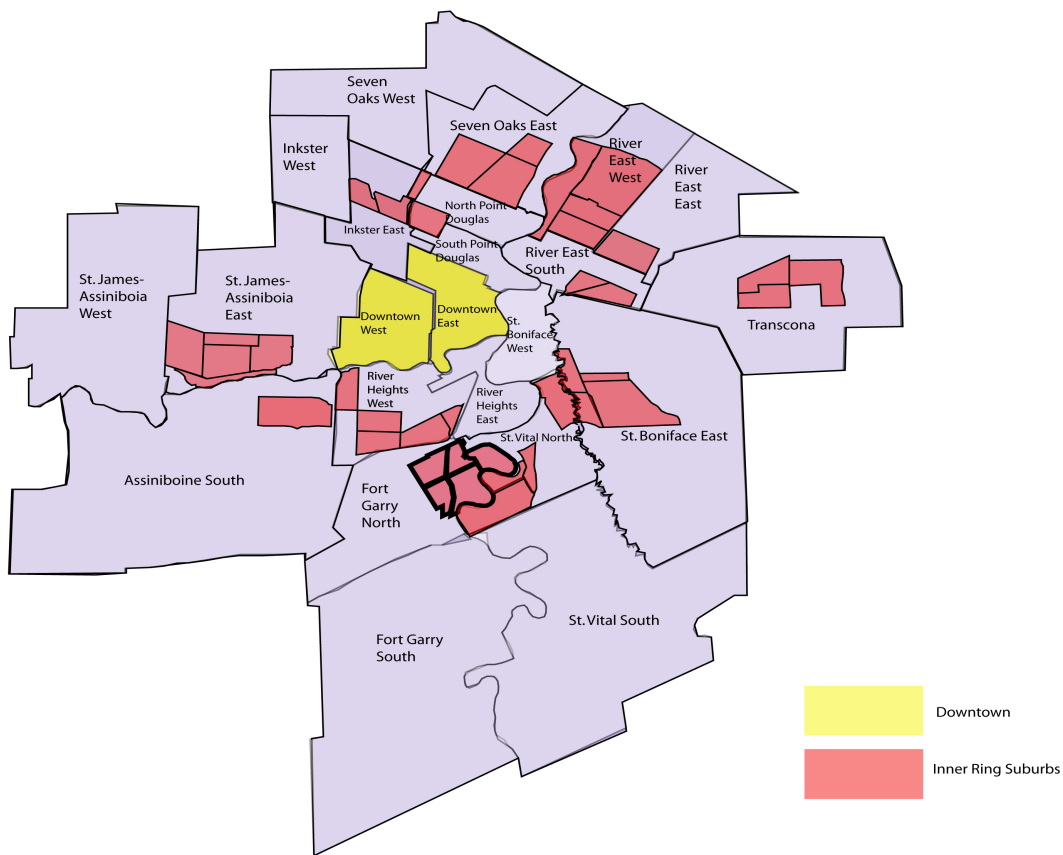
Inner-ring suburbs in Winnipeg were identified primarily by their proximity to the CBD, the period during which the majority of housing construction took place, and evidence of population decline. Figure 1-1 shows a sample of Winnipeg census areas that decreased in population between 1971 and 2006.



**Figure 1-1: Population decrease in Winnipeg's inner-ring suburbs (Chart created by D. Clark) (Source: City of Winnipeg Census, 2006)**

Identifying neighbourhood profile areas in which the majority of housing was constructed between 1946 and 1970 was the most significant characteristic for categorizing inner-ring suburbs in this study (neighbourhood profile areas where less than 50% of the

housing was constructed between 1946 and 1970 were not included). From 2006 City of Winnipeg census data, 41 of the 158 populated neighbourhood profiles in Winnipeg (approximately 26%) have a majority of housing stock constructed between 1946 and 1970. In total, these areas have a population of 145,040 and represent 22.8% of Winnipeg's population. Some neighbourhood profiles exhibiting characteristics of inner-ring suburbs are located near the periphery of the city (e.g. Transcona); this may be attributed to the timing of development in municipalities that surrounded the city, before the amalgamation with Winnipeg in 1972 (see Figure 1-2).



**Figure 1-2: Winnipeg neighbourhood profile areas with characteristics of inner-ring suburbs (Adapted by D. Clark) (Source: City of Winnipeg Census, 2006)**

## 1.1.2 Study Area (A Collection of Five Neighbourhood Profiles)

The neighbourhood profiles (the official term identified by the City of Winnipeg) of Wildwood, Crescent Park, Point Road, Maybank and Beaumont (see Figure 1-3) were selected as the study area because several characteristics of inner-ring suburbs were observed, including:

- declining populations;
- age of housing (the majority of housing was built between 1946 and 1970);
- automobile orientation;
- aging infrastructure; and,
- declining commercial sectors.

A number of neighbourhood profiles in the city exhibited these types of characteristics, however, because the researcher had grown up in Wildwood, this area was selected for the study given personal experience and understanding of the neighbourhoods. By looking at all five neighbourhood profiles, this study set out to explore strategies to apply meaningful change to a neighbourhood with varying features (as noted by Berke, 2002; Dunham-Jones and Williamson, 2009) (e.g. open space opportunities in Wildwood and transportation issues along Pembina Highway in the Beaumont area)



Figure 1-3: Study area profile neighbourhoods (Highlighted and labelled by D. Clark) (Source: Base map from Google Earth™, © 2012)

## Density

Population density is a significant consideration in this study because compact urban form is believed to promote lifestyles and opportunities that lead to more sustainable cities (Owen, 2009). New York, for example, is considered to be one of the most ecological cities because of its high population density, which lowers energy and water consumption and makes both public transit and walking viable modes of transportation (Owen, 2009). With increased densities other opportunities that promote sustainable neighbourhoods and lifestyles might also become viable.

Table 1-1 shows Winnipeg census data from 2006 indicating population, area, and population density for each neighbourhood profile in the study area:

Area	Population	Area (km <sup>2</sup> )	Population Density
Crescent Park	2,520	1.8	1,399 per km <sup>2</sup>
Point Road	1,945	0.8	2,437.6 per km <sup>2</sup>
Wildwood	1,095	1.3	857.9 per km <sup>2</sup>
Maybank	2,355	0.9	2,628 per km <sup>2</sup>
Beaumont	2,360	1.2	1,957.5 per km <sup>2</sup>
<b>Total</b>	<b>10,275</b>	<b>6</b>	<b>1,712.5 per km<sup>2</sup></b>

**Table 1-1: Population, area, and population density of neighbourhood profiles in study area (Chart create by D. Clark) (Source: City of Winnipeg Census, 2006)**

In comparison, census data from 2006 shows an inner-city neighbourhood in Winnipeg such as River-Osborne has 4,880 people living in 0.9 km<sup>2</sup>, and a population density of 5,588.9 people per km<sup>2</sup>. A newer suburban development in Winnipeg such as Whyte Ridge has 7,565 people living in 2.8 km<sup>2</sup>, and a population density of 2,663.5 people per km<sup>2</sup>. These population densities might be attributed to a compact built form (as seen in River-Osborne) or larger household sizes (as seen in Whyte Ridge). The study area also has a significant amount of park and open space,

which may contribute to lower population densities, as seen in the Crescent Park and Wildwood census areas.

## Land Use

Figure 1-4 identifies land uses in the neighbourhood. The east side of the neighbourhood is bound by the Red River and a hydro line corridor runs along the west side. The major transportation corridor, Pembina Highway (highlighted in red), brings a significant amount of traffic through this area, connecting the south end of the city to downtown. Pembina Highway is also the primary location for retail and commercial businesses.



Figure 1-4: Study area land use (Adapted by D. Clark) (Source: City of Winnipeg zoning map, 2008)

The majority of housing in the neighbourhood consists of detached single-family dwellings, and there are a few examples of multiple-family housing, typically located along Pembina Highway and other major arterial/collector roads. There are eight schools in the study area: one private school, three elementary schools (one that is French immersion), two junior highs (one that is French immersion), one high school and one technical college. There are four

community centres, six religious institutions and two golf courses. One golf course is located in Crescent Drive Park, which is part of a large regional park, and the other is the Wildewood Golf Course.

## 1.2 Research

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In order to better understand inner-ring suburbs in Winnipeg, this project posed the following questions:

- 1) What is the history and present role of inner-ring suburbs in Winnipeg?
- 2) Can the future of inner-ring suburbs in Winnipeg be more sustainable? If so, what would a more sustainable, inner-ring suburb look like?
- 3) What are the planning challenges associated with transforming inner-ring suburbs in Winnipeg toward sustainability?

A number of research methods were used to answer these questions, including:

- a) a review of current and relevant literature;
- b) an analysis of the study area;
- c) two focus groups; and,
- d) interviews with City of Winnipeg planners.

The research approach was intended to establish an understanding of the present community issues, identify opportunities, challenges and limitations for sustainable change in the study area. The review of current and relevant literature identified issues relating to inner-ring suburbs, sustainable development, specific characteristics of what a sustainable suburb might look like, and the planning challenges of transforming existing suburban neighbourhoods.

Through the literature review eight key themes were identified and were used to provide direction for discussion in focus groups and interviews.

Two focus groups were held in this study. Results from the two focus groups and discussion with City of Winnipeg planners were then analyzed to help identify implementation timelines for each of the associated actions. The methods for research are discussed further in Chapter Three and the analysis of results are found in Chapter Four.

### 1.2.1 Significance of the Research

There are three specific contributions this study adds to scholarly planning knowledge and professional practice:

- 1) This study identifies inner-ring suburbs in Winnipeg and adds to the body of research that looks at the challenges and opportunities facing these types of neighbourhoods. Presently, there is limited research relating to inner-ring suburbs in Canada.
- 2) This study discusses the numerous and complex issues associated with sustainable development and relates high-level considerations, such as pollution and resource consumption to on-the-ground actions that can be applied to inner-ring suburbs in Winnipeg.
- 3) This study addresses the challenges and limitations associated with incorporating sustainable development into plans for re-envisioning existing inner-ring suburban neighbourhoods in Winnipeg.

## 1.3 The Study

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This practicum is composed of five chapters. Chapter One outlines a summary of the research, identifying the research problems and framework set out to address these problems. Chapter Two is a literature review that addresses the three research questions and is presented in three parts:

- Part one looks at the history and causes of suburbanization and the present state of inner-ring suburbs in Winnipeg;
- Part two defines sustainable development in more detail and discusses how it relates to global and local growth; and,
- Part three explores the opportunities and challenges associated with implementing strategies that address sustainability.

Chapter Three is a discussion of the research methods used in this study and an explanation of how they were applied. Chapter Four is an analysis of the research, which reviews findings from each of the research method activities. And finally, Chapter Five presents summary of the research, draws conclusions, and makes recommendations.



## Chapter Two – Inner-Ring Suburbs and Sustainability

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This chapter is a three-part review of current and relevant literature on the topics of inner-ring suburbs and sustainability. Part one provides a brief background on the history and causes of suburbanization and reviews inner-ring suburbs in more detail. Part two explores sustainability on both global and local scales and looks at the roles city planning could play in connecting sustainable development with the transformation of inner-ring suburbs. Part three identifies literature, research, and real-world opportunities that relate to sustainable urban development. Eight key themes are identified as well as opportunities and challenges associated with implementation.

### 2.1 History and Present State of Suburbs

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During the late 18<sup>th</sup> and early 19<sup>th</sup> century, Britain and North America societies rapidly urbanized. Rural to urban migration was due in large part to the industrial revolution, which created a great demand for workers in close proximity to one another (Davis, 1965; Hirschman & Mogford, 2009). The high concentrations of labour and intellect were beneficial because they allowed for efficient industrial production; however, over time growing concentrations of people led to several urban problems. Cities became overcrowded, resulting in high levels of crime, disease and pollution (Davis, 1965). Eventually, those who could afford to do so, moved away from city centres.

Urban theorists and planners during the late 19<sup>th</sup> and early 20<sup>th</sup> century sought ways to resolve these urban social problems and supported the idea of decentralization; moving people away from concentrated urban centres into lower density and more natural environments.

According to Robert Fishman (1982), Ebenezer Howard's Garden City, Frank Lloyd Wright's Broadacre City and Le Corbusier's Radiant City all proposed visions for the urban region, which dispersed, rather than concentrated city populations. The goals were to create healthier living environments; connecting people with nature and reducing the problems associated with urban living conditions.

Decentralization was considered to be a successful strategy at the time of inception, as it moved people away from the problems of cities' core neighbourhoods and into safe, healthy suburban neighbourhoods. Fishman quotes Frederick Olmstead, saying of the early 20<sup>th</sup> century suburb, that they represented "the most attractive, the most refined, and the most soundly wholesome forms of domestic life, and the best application of the arts of civilization to which mankind has yet attained" (Olmstead, quoted in Fishman, 1987, p. 75). More recently, Fishman contends that decentralization has been a social, economic and cultural disaster for the vitality of cities. He refers to what is left in many North American settlements as "pseudocities" (p. 75) and explains that most urban settlements are too spread out to be efficient and too superficial to create a true culture.

While suburbanization continues to prevail as the dominant form of development in North America (Stone & Gibbons 2002; Anacker, 2006) it is becoming apparent that the idea of decentralization cannot be the only solution to resolving urban social problems. With growing concerns related to global sustainability, such as climate change and economic instability, urban planners of the 21<sup>st</sup> century must consider new ways balance the design of cities in an environmental, economic and social manner (Berke, 2002). The following section further explores reasons suburban proliferation continues today, and examines some of the issues that are arising because of it.

### 2.1.1 Theories of Suburbanization and Discussion on Sprawl

Two theories from the Chicago School are noted by Peter Mieszkowski and Edwin Mills (1993) for their attempts to explain the causes of suburbanization through the *natural evolution* theory and the *flight-from-blight* theory. First, the *natural evolution theory* suggests that housing typically developed near the central business district (CBD) and as land in the central city filled in, development moved outward, away from the centre. As new housing developed on the periphery, those with higher incomes who could afford it moved there, opening up older, smaller homes to those with lower incomes. Innovations in transportation, the construction of freeways and the affordability of automobiles also provided opportunities for many to live outside city centres. Furthermore, as residential settlements decentralized, employment decentralization followed, further contributing to the deterioration of CBDs.

In contrast, Mieszkowski and Mills (1993) note that the *flight-from-blight* theory explains suburbanization by highlighting the fiscal and social problems of city centres that essentially forced the more affluent citizens to move to the suburbs. This theory suggests that people moving to the suburbs were seeking to live in homogenous communities with people of similar income levels, education, race and ethnicity. The quality of education available in neighbourhoods also tended to influence decisions about where families chose to move. Once well-financed and high-achieving school districts were formed, they became a focal reason for moving to the suburbs for those who valued education (Mieszkowski & Mills 1993).

Whether people chose to leave city centres, or were “forced” to leave, both theories conclude that high levels of suburban development have resulted in the decline of inner cities. Over time, this continual outward settlement has resulted in what is known as urban or suburban *sprawl*, which is a phenomenon many researchers (see Torrens & Alberti, 2000; Brueckner, 2000) believe is eroding the sustainability of cities.

Paul Torrens and Marina Alberti (2000) explain that *sprawl* is a term used to describe the excessive development of land away from the central business district in a low density, cost inefficient manner. They say sprawl arguably goes against all premises for which a sustainable city could be judged, as it leads to higher costs for infrastructure, encroaches on agricultural land and increases energy consumption and pollution while contributing to central city decline.

According to Jan Brueckner (2000), urban sprawl is the result of three primary forces: a growing population, rising incomes, and falling commuting costs. In addition, three market failures play secondary roles, which further explain or “distort” the primary forces. First, there is a failure to account for the value of open space. Brueckner finds that once the value of land as residential becomes greater than the cost of land as open space or agricultural use, it is often converted to urban uses. He suggests that by assigning a dollar value to open space on top of the cost of land, municipalities can account for the intangible value of agriculture, nature and recreational space in the built environment and perhaps deter developers from buying cheap land on the periphery of cities.

Second, Bruckner argues that there is a failure to account for the social costs of freeway congestion: the private costs of commuting such as gas and vehicle maintenance, and time costs associated with traffic and congestion. He believes that because municipalities tolerate congestion costs, the commuter has no incentive to take them into account. Third, he notes the failure to account for the infrastructure costs of new development. Brueckner believes that given the current financing arrangements, the tax increase related to infrastructure for the owners of new housing are typically less than the actual infrastructure cost generated. This is because rather than charging those requiring the new infrastructure directly, the cost is shared among all city residents.

## 2.1.2 The Current State of Growth and Sprawl in Winnipeg

Chris Leo and Wilson Brown (2003) argue that slow growth cities, such as Winnipeg, are not at risk of economic and social decline because of slow growth; rather, they are at risk when planning and development is managed poorly, allowing sprawl to occur, developing as if they were rapid growth cities. Leo and Brown explain that in rapid growth cities, demand and investment exist in the core of the city, keeping downtown and inner-city neighbourhoods valuable and attractive to investment. When slow growth cities plan and develop as though they are rapid growth cities, less investment goes toward the inner city and poor city planning contributes to the occurrence of sprawl.

Winnipeg's inner-city is experiencing symptoms of urban decay, such as deteriorating housing stock, high crime rates and poverty (Sjoberg, 2005; MacKinnon & Silver, 2005). Though several efforts and programs have attempted to improve Winnipeg's inner-city (e.g. the Core Area Initiative and Winnipeg Development Agreement), the significant amount of development occurring on the periphery of the city is undermining the effectiveness of these urban renewal efforts, while contributing to a less sustainable city (Leo & Anderson, 2005). Chris Leo and Katie Anderson (2005) explain that once new suburbs are in place residents require services and amenities, such as: community centres; libraries; fire protection; police and paramedic services; street cleaning; grass cutting; insect control; and snow removal. The costs of these services add up, and when dispersed among low-density neighbourhoods higher taxation rates are required to cover these costs. Leo and Anderson argue that Winnipeg is creating an unstable economic climate for both people in the inner city and those buying new housing on the city's fringe:

In the past several years, residential real estate values in the inner city have declined drastically. The inevitable result is that more of the tax burden is shifted to taxpayers whose property values are not declining. In the end, it is not just the inner city, but the whole city, and indirectly the province that will pick up the tab

if an irreplaceable stock of affordable housing downtown is allowed to deteriorate beyond repair (p. 22).

Kate Sjoberg (2005) argues that with an infrastructure deficit in Winnipeg of \$298 million in 2003 (now \$3.5 Billion, City of Winnipeg 2011c), developing new suburban neighbourhoods will require the construction and maintenance of new roads, bridges, community centres, parks and public works utilities which will ultimately take away from investment and maintenance of existing infrastructure.

### 2.1.3 Inner-Ring Suburbs

In addition to the defining characteristics of inner-ring suburbs discussed in Chapter One, this section looks at the research behind inner-ring suburbs in more depth to identify gaps and strengths in the current body of literature.

According to Robert Puentes and David Warren (2006), in the year 2000 roughly one-fifth of the U.S. population (over 52 million people, 18.6 %) lived in first-ring suburbs. This number is greater than those living in central cities (12.9 %) and those in new suburbs (14.3 %). While these numbers show that inner-ring suburbs are home to a higher proportion of the urban population in America, research indicates that this type of neighbourhoods is at risk of decline and should be targeted for renewal as part of sustainable urban growth strategies.

#### **Characteristics of Inner-Ring Suburbs**

Increasingly, inner-ring suburbs have been identified with levels of socioeconomic decline. Daniel Wagner (2002) says that inner-ring suburbs are vulnerable and at risk of social and physical decline as infrastructure and housing stock are aging and populations decreasing. As people move away from inner-ring suburbs the density of these areas decreases and the risk of decline becomes even more probable. Katrin Anacker (2006) explains that, "At the local level,

municipalities depend on tax revenues, the most important of which are income tax, sales tax, and property tax” (p. 2). When mature suburbs are in decline, property values are usually affected which in turn affects tax revenues and services such as schools, parks and roads. Those who can afford to move further out to newer suburbs will likely do so, and as they do, property values are at risk of further decline.

According to Lee and Leigh (2005) the revitalization of inner-ring suburbs should be emphasized in the goals of metropolitan sustainability plans in order to offset the impacts of suburban sprawl. They state that inner-ring suburbs are “economically vulnerable” (p. 330) because they do not have the attraction of centrality like the inner city, nor do they contain new housing stock in an attractive environment such as the developments occurring at the periphery of cities. By re-investing in these neighbourhoods to ensure they remain attractive, Lee and Leigh (2005) believe objectives of sustainable city planning can be achieved, by making use of existing resources and infrastructure and managing population growth in a more compact urban form.

Myron Orfield (1997), Puentes and Warren (2006) and Lee and Leigh (2007) all argue that inner-ring suburbs are also at risk of taking on characteristics similar to inner-city neighbourhoods as impoverished people become displaced by gentrification of inner-cities. Puentes and Warren (2006) note that, “while concentrated poverty is on the decline nationally, it is increasing in first suburbs” (p. 5), and while overall household incomes rose during the 1990s, they did not in most inner-ring suburbs. Lee and Leigh (2005) posed the question, “should the decline of inner-ring suburbs be elevated to the level of concern long held for declining central cities?” (p. 331) and note that a survey conducted by Robert Fishman (2000) suggests that it should, based on:

- 1) Increasing intrametropolitan disparity between declining central cities, inner ring suburbs, and the rest of the region;

- 2) Continued separation between central cities and suburbs, hence, the need for regional coalition building;
- 3) Change in household characteristics of metropolitan areas such as the aging of the baby boomer generation and shrinking household size; and
- 4) The continued poverty problem in central cities and adjacent inner ring suburbs (p. 331).

Lee and Leigh (2005) note that Fishman's survey found consensus among urban scholars on the importance of central cities and inner-ring suburbs in strengthening metropolitan regions. They also note that Fishman's survey results show that the "strategic location of inner-ring suburbs, between the metropolitan center and urban fringe, can provide a new model of development that enhances the objectives of the smart growth movement" (p. 331). Lee and Leigh found that this new model should redirect public investment into already urbanized areas, stemming urban sprawl at the edge of metropolitan areas, and thus contributing to the creation of more sustainable cities and suburban communities.

### **Limitations and Challenges with Defining Inner-Ring Suburbs**

The study of inner-ring suburbs is still relatively new and Lee and Leigh (2007) identify limitations in the literature on how inner-ring suburbs are defined. Primarily, they note that a common term is not used to define these types of neighbourhoods, which may lead to confusion between uses and definitions. The list of terms includes: 'middle suburbs,' referring to suburban development in Chicago between 1950 - 1970 (Persky & Kurban, 2001), 'inner suburbs' (Bollens, 1988; Jackson, 1985; Orfield, 1997), 'inner ring suburbs' (Downs, 1997; Drier 1996), 'first suburbs' (Puentes & Orfield, 2002), 'first ring suburbs' (Fishman, 2000), and 'first tier suburbs' (Hudnut, 2003). Lee and Leigh argue that one should not assume these terms are referring to the same metropolitan subareas because their definitions vary. Similarly, Puentes and Warren (2006) seek a consolidated definition in order to move forward with policy and



planning for these types of neighbourhoods. They say that the lack of empirical data on the current conditions of these suburbs as well as the lack of a clear definition reinforces “the notion that these places are caught in a community blind spot” (p. 1).

Another challenge associated with defining inner-ring suburbs is that no standard method has been agreed upon to identify boundaries. Puentes and Warren (2006) recognize first suburbs as typically the first suburban developments outward from the central city, occurring before the rapid suburban expansion, while Lee and Leigh (2007) define them as post-streetcar suburbs typically built out between 1950 and 1969. In addition, Lee and Leigh (2007) explain “most central cities have expanded their territories through annexation, muddying the distinction between the central city and the suburbs” (p. 146). This study, for example, focuses on Winnipeg, which was once comprised of twelve separate municipalities and only became a unified city in 1972. Because of this, some neighbourhoods that have characteristics of inner-ring suburbs may be located near the periphery of the new municipal boundaries and, therefore, not qualify by definition as inner-ring suburbs.

Finally, while research on sprawl has looked at both Canada and the United States, research on inner-ring suburbs has primarily focused on metropolitan regions located in the Midwest or Northeast United States (Lee & Leigh, 2007). Consequently, for the purposes of this study, understanding the state of inner-ring suburbs from published research data in Canada is limited.

## 2.2 Defining Sustainable Development and Planning Sustainable Cities

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The most commonly used definition of *sustainable development* is from the World Commission on the Environment and Development (otherwise known as the Brundtland Commission): “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 8). The WCED (1987) report states “human needs are basic and essential; that economic growth—but also equity to share resources with the poor—is required to sustain them; and that equity is encouraged by effective citizen participation” (p. 8). For the environment,

the concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities (p. 8).

In 2002 the Johannesburg Declaration added sustainable development should take into account local, national, regional and global scales. This idea connects with the systems approach, discussed previously in Chapter One by the IISD (2012).

Today, the goals of sustainable development are often conveyed through simple models that represent a mutually important balance between three ‘pillars’, or ‘legs of a stool.’ These represent the economy, environment and society and indicate that it is necessary each pillar, or leg is equal in length (therefore importance); otherwise the structure or stool will not support the objectives of sustainable development.

Critics argue that while models can be useful to convey meaningful messages, it is essential that they convey accurate messages (Dawe & Ryan, 2003; Cato, 2009). Neil Dawe and Kenneth Ryan (2003) argue that using models such as the three-legged stool will not help

resolve the goals of sustainable development because the legs do not accurately convey the relationship between society and the economy with the environment. They say:

Humanity can have neither an economy nor social well-being without the environment. Thus, the environment is not and cannot be a leg of the sustainable development stool. It is the floor upon which the stool, or any sustainable development model, must stand. It is the foundation of any economy and social well-being that humanity is fortunate enough to achieve (p. 1459).

Dawe and Ryan (2003) conclude that the environment must be held to a level of greater importance than the economy or social well-being because it is the source upon which all things depend. They pose the question: “where would we or our economy be without healthy agricultural soils; sustainable forests; pollinating insects; clean, abundant fresh water; biologically productive oceans; or reasonably stable climates?” (p. 1459).

Molly Scott Cato (2009) believes that the conventional model, which depicts the three pillars, or legs of sustainability, show that the issues interact, but are not interdependent. Rather, she believes a more accurate depiction of how each system interacts would have the economy embedded within society, and both the economy and society are embedded within the environment. She explains that in order to take sustainability seriously there is a need to consider how these issues are truly reflected in human actions. She says: “in reality the economy carries much more sway in decision making, with society bearing the cost and the environment paying the highest price of all” (p. 36).

The global economy is rooted in high-level consumption practices and oil-based development. Moving away from oil dependency and reducing waste is deemed necessary in order to preserve and protect environmental resources. Paul Hawken, Amory Lovins, and L. Hunter Lovins (2010) explain, in *Natural Capitalism*, that four economic opportunities exist which can restore the balance of the economy within the environment. The first opportunity is

*radical resource recovery*, which means reducing the extraction of raw materials at the front end, reducing pollution at the other end, and providing a basis for meaningful jobs worldwide. *Biomimicry*, the second opportunity, involves transforming the industrial process to be more in line with natural processes, which means closing the loops of extraction and manufacturing and turning waste into something of value. Third, *service and flow economy* involves a change in perception between consumer and producer behaviours, which means transitioning from a value of acquiring goods to a value of service and flows that meet consumer needs and protect environmental and personal well-being. Fourth, investing in *natural capital* involves not only restoring and sustaining the stocks of natural capital upon which the economy depends, but also expanding natural capital to protect the well-being of the biosphere well into the future. Hawken et al. (2010) explain all four opportunities are interrelated and are meant to “reduce environmental harm, create economic growth, and increase meaningful employment” (p. 11).

For the purposes of this study, discussions of sustainable development recognize the need for emphasis on the environment and that an interdependent balance must be restored within and between the economic and social systems that reside within the realm of the environment. This means moving away from primary dependence on oil-based economies, finding ways to maximize use of resources and value from so-called waste, and investing in the future of the biosphere upon which all species depend. Further discussion on why sustainable development is necessary and what sustainable development means on an urban scale are explored in the next two sections.

## 2.2.1 Why Sustainable Development?

According to the U.S. Census Bureau (2009) the world population grew from three billion people in 1959 to six billion people in 1999, doubling the global population over forty years. By 2043, the global population is expected to reach nine billion people, an increase of 50% over forty-four years. This means there will be increasing pressures for more people to make due with a finite amount of global resources.

While population growth is a consideration of sustainable development, so too are the levels of consumption by people in developed countries. Mark Roseland (2012) states that the “population problem in the South is a less significant problem than over-consumption and wasted resources in the North” (p. 4), identifying that resource consumption is disproportionately greater in developed countries over developing countries. Philip Berke (2002) believes, “global equity will be advanced if people in developed countries such as Canada alter their consumption and waste habits so that each person’s footprint approaches the global average” (p. 32).

The *ecological footprint* concept; originally developed by Bill Rees and Mathis Wackernagel in 1996 has been built upon by an organization called Redefining Progress. Jason Venetoulis and John Talberth (2005) of Redefining Progress state that the ecological footprint is a measure of a population’s demands on nature by comparing humanity’s use of crop lands, forest lands, pasture lands, fisheries, built space, and energy with the Earth’s biological capacity. They note that “at present rates of consumption, we would need 1.39 Earths to insure that future generations are at least as well off as we are now” (p. 2). They calculate that the global average footprint per capita is 21.91 global hectares per year where the average global bio-capacity per capita is 15.71 global hectares per year. In Africa, the average footprint is 7.48 global hectares per capita with a bio-capacity of 27.51 global hectares per year. In comparison,

North Americans average footprint per capita is 95.99 global hectares per year with a bio-capacity of 53.16 global hectares per year (see Figure 2-4).

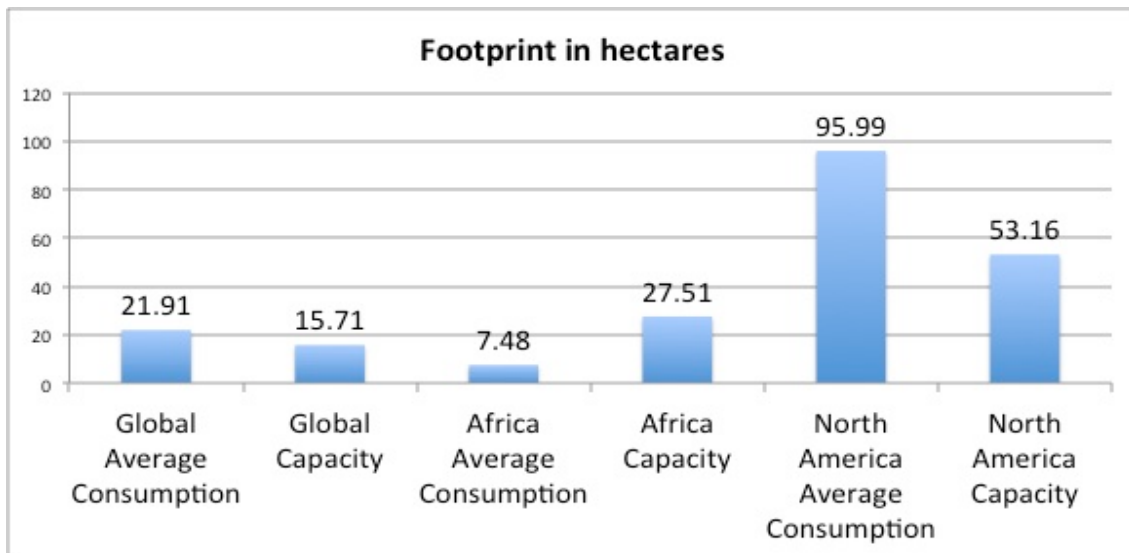


Figure 2-1: Biological capacities comparison (Chart created by D. Clark) (Source: Ventoulis & Talberth, 2005)

## 2.2.2 Connecting Sustainable Development with City Planning

With increasing trends toward urban settlement (UNFPA, 2007) the design and operation of cities will play a key role in achieving global sustainability objectives. Berke (2002) explains that “most current long-term threats to sustainability are more visible and tractable at the regional level of decision making” (p. 32) and therefore, “regions, especially metropolitan areas, are particularly promising because of their manageable scale for action and exchange” (p. 32).

Rod Burgess (2000) argues that sustainable urban development should seek to create more compact cities that will ensure resource conservation (particularly fossil fuels) and minimize waste (particularly carbon emissions into the global atmospheric sink). A more compact urban form, he explains, means increasing built area and population densities; intensifying urban economic, social and cultural activities; and manipulating urban size, form

and structure settlement systems in order to achieve environmental, social and global sustainability benefits.

Simon Guy and Simon Martin (2000) argue that while a compact built form may be one of the key ingredients to sustainable urban planning with many environmental spin-offs, there should not be just one model for achieving a sustainable urban form, but rather, multiple models that consider different types of settlement patterns, human behaviours, and local policies. They contend that an urban sustainability plan should take into consideration the inputs and outputs of the urban area, including the region from which many of the resources are derived. This includes the natural resources it takes in to build the urban environment and the waste it extracts including physical waste, pollution in the air, and water flow runoff into watersheds.

A number of additional considerations for creating more sustainable urban environments are identified and further discussed in Section 2.3 of this chapter.

### 2.2.3 Incorporating Sustainable Development into Action Plans

Robert Kates, Thomas Parris and Anthony Leiserowitz (2005) believe it is essential to understand expectations and limitations people in the community desire for change, and that identifying *goals, measurements, values, and practice* can go a long way to successfully implement sustainable development plans.

First, *goals* can be categorized as short-term, generational and long-term. Kates et al. (2005) note that many of the efforts to define sustainable development indicators fail to provide a time period within which they hope to achieve their goals, and most often only focus on present day or short-term goals. Timelines are important to ensure that goals can be tracked, reached and maintained throughout a long-term vision.

Second, *measurements* allow for tracking changes as they relate to the identified timelines in order to achieve desired goals. Kates et al. (2005) explain that measurements are often done so in the form of indicators and can reflect global, national and local levels. For example, on a global level, the *ecological footprint* (Wackernagal & Rees, 1996; Ventoulis & Talberth, 2005) defines how much of the earth and its resources are consumed and disposed of depending on particular lifestyles. On a local level, sustainability indicators reflect important trends in the environment, social systems, economy, human well-being, and quality of life: “In short, they measure what counts to people” (Jozsa & Brown, 2005, p. 7). Alex Jozsa and David Brown (2005) add that environmental indicators may include measuring concentrations of pollutants in the air, the amount of resources consumed locally such as water or electricity, and quantity of waste produced. Social indicators may track levels of community participation in volunteer activities, or the availability of affordable housing.

The attractiveness of indicators is that they can capture key aspects of local conditions and assess the congruence between ongoing development processes and community goals and make this information accessible to decision makers and residents (Jozsa & Brown, 2005, p. 7).

Third, *values* may vary between communities and identifying what is important to one community should not necessarily be applied to the next community. Kates et al. (2005) suggest that values are expressions of belief in the worth of objects, qualities, or behaviours. These can be articulated by identifying what people view as good or desirable, or bad and need to be avoided. Berke (2002) explains that when values fail to be represented, sustainability cannot be promoted by a plan, and he emphasizes the importance of community engagement in the planning process to identify values.

And fourth, *practice* includes defining concepts, establishing goals, creating indicators, and asserting values. *Practice* also consists of developing social movements; organizing



institutions; crafting sustainability science and technology; and negotiating among those who are principally concerned with nature and environment; those who value economic development; and those who are dedicated to improving the human condition (Kates et al. 2005).

For Berke (2002), a sustainable community cannot be achieved on a strictly internal level and he believes a 'community's' efforts to achieve sustainability in isolation will be futile. He explains that sustainable development needs to seek goals that extend beyond the community interests and into a future vision for the earth and that these efforts entail "feedback, learning, and adaptive change through trial and error in which communities generate knowledge and discover practical applications toward sustainability" (p. 31).

### **Understanding Existing Community Assets**

Understanding existing assets in the community can also encourage a more successful planning process by identifying unique features in the community that people hold value to. Roseland (2012) defines six forms of capital that connect with strengths, values and identity of a community. These forms of capital include: *natural, physical, economic, human, social, and cultural*.

The first, *natural capital* "refers to any stock of natural assets that yields a flow of valuable goods and services into the future" (Roseland, 2012, p. 13). The second form is *physical capital*, which are "stocks of material resources such as equipment, buildings, machinery and other infrastructure that can be used to produce a flow of future income" (p. 14). This includes existing community assets such as schools, hospitals and quality housing. Third, *economic capital* looks at ways to make more with less, while maintaining strong commerce. This means being able to attract and sustain business within the community. Fourth, *human capital* refers to the knowledge, skills and ability individuals have to create and ensure personal

economic and social well-being. Increasing human capital focuses on health, nutrition, education, family and community structure. Fifth, *social capital* consists of the relationships and norms that lead to cooperative action. Roseland says “social capital constitutes the ‘glue’ that holds our communities together” (p. 15). Lastly, *cultural capital* is the result of sharing experiences that create social norms, values identity and history within the community. Roseland notes that cultural capital is of particular importance to aboriginal communities and those with long lines of history and is often undervalued, especially in North America.

### **Engaging the Community**

In addition to identifying *goals, measurements, values, practice* and existing *capital* in a community, a number of approaches and tools can be applied by planners when engaging in discussion with community members.

Roseland (2012) discusses a number of community planning tools that can be used to move toward long-term sustainability. He says these tools can be used in both the pre-planning stages and evolutionary stages of the planning process, including: brainstorming, community meetings, field trips, media campaigns, open houses, public-hearings, role-playing, vision-building and workshops.

An Integrated Community Sustainability Plan (ICSP) is one approach to community development that incorporates existing official plans into the planning process (Infrastructure Canada 2007). An ICSP is described as, “a long-term plan, developed in consultation with community members, that provides direction for the community to realize sustainability objectives it has for the environmental, cultural, social and economic dimensions of its identity” (Infrastructure Canada, 2007). An ICSP can fit in as an over-riding component that considers all other official plans currently in place such as transportation master plans, economic development plans, and regional plans. The integrated planning process brings all issues into

consideration from the onset, which can allow for a smoother application of a sustainability plan (Infrastructure Canada 2007).

Visual tools in the planning process, such as, maps, photos, and renderings, are valuable resources that can inspire change and build consensus among community members. Berke (2002) says that visual tools “motivate participation and commitment to planning that enhance prospects for adoption and implementation of balanced plans” (p. 31) and that unlike policy statements, plans with visual images “connect people to place” (p. 31) and “inspire participation as they allow people to see and react to alternative urban designs” (p. 31).

Engaging with community members and stakeholders (e.g. business owners) to identify assets as well as goals, measurements, values, and plan for practice, can help address the unique concerns associated with each community (as identified by Berke, 2002; Jozsa & Brown, 2005; Kates et al., 2005; Infrastructure Canada, 2007; Roseland, 2012). This section identifies that adequate and proper consultation with community stakeholders is a crucial component in moving toward more sustainable neighbourhood development. The following section identifies eight key themes and specific opportunities and challenges associated with the development of more sustainable neighbourhoods.

## 2.3 Implementing Sustainable Development Plans: Opportunities and Challenges

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This section identifies several opportunities that can help neighbourhoods evolve and mature to become more sustainable places. These opportunities have been categorized into eight key themes with discussions about specific actions, technologies, tools, and challenges associated with implementation.

### 2.3.1 Community

Many researchers and practitioners (see Oldenburg, 1996; Putnam, 2000; Berke, 2002;; Lukez, 2007; Doppelt, 2008; and Roseland, 2012) emphasize the role of individuals and community members when deciding to move toward more sustainable neighbourhoods. This movement includes looking at how to motivate and educate people to change behaviours, the value of social capital and local establishments, and the built form or heritage features that represent community identity.

#### **Motivation for Change**

According to Roseland (2012), creating more sustainable neighbourhoods should begin with a focus on community members in order to direct where and how initiatives will be most effective. He believes that failing to address community interests in the beginning discussions toward change will prove to be met with resistance.

In order to encourage development toward sustainable change, Bob Doppelt (2008) believes it is necessary to look at the way individuals and the community think as a collective.

He says:

If people do not have confidence in their ability to successfully make the changes needed to resolve the tension, they are likely to ignore, deny or downplay problems such as climate change, rather than take steps to resolve them (p. 71).

Doppelt suggests, “making people feel guilty, shameful or vilifying them” (p. 71) rarely succeeds, but rather, in order to motivate fundamental change sufficient tension must exist between deeply held unmet values and present conditions. Individuals must perceive that the benefits of new thinking will add value and that “for every downside of change people need to see at least two benefits” (p. 79).

## **Education for Change**

Educating people about the implications of their actions can help them begin to alter their behaviour. Peter Calthorpe and William Fulton (2001) explain that citizens should be educated to understand the options for growth other than sprawl, and that communicating a clear picture to citizens about what this means can help alleviate apprehension related to development:

Local concerns must be tempered with regional needs for an equitable distribution of affordable housing and jobs, for the preservation of open space and agriculture lands, and for transit. This calls for a regional process that can both educate and guide the complex interaction of economics, ecology, tectonics, jurisdiction, and social equity. Without public education and clarity on the real alternatives, suburban infill options may be stranded between regional interests and local fears for some time to come (p. 198).

Day-to-day actions can add up to create substantial change toward efforts of living a more sustainable lifestyle. The Climate Change Connection (CCC) (2008) believes that by providing people with on-the-ground solutions and statistics, people will have a better understanding about how they can reduce their global impact. For example, CCC explains that buying fewer animal products is one thing people can try because meat and dairy products are the most resource intensive foods. By cutting out meat from one meal each week, an average family can save 1.5 tonnes of GHG per year (CCC, 2008).

## **Social Capital and Local Establishments**

As discussed previously, Roseland (2012) defines social capital as the 'glue' that holds community together and contributes to social networks and development programs. In North American cities, Robert Putnam (2000) believes social capital is in decline and attributes this to decreasing membership in Parent Teacher Associations, Kiwanis Clubs, bowling leagues, churches, and political organizations. He feels that this is due in large part to suburban

segregation of land uses, the substitution of volunteer time by commute time, and the loss of identification of service retail to specific neighbourhoods.

In order to maintain and build social capital, Ray Oldenberg (1996) believes there is a need to encourage what he refers to as “third places.” He believes that unlike home and work, third places (for example: pubs, diners, coffee shops, barbershops, and hardware stores) are essential to the growth of social capital and he explains, “Third places help unify neighborhoods. Where third places are absent we find that people often live in the same vicinity for years without ever getting to know one another” (p. 7). Encouraging an array of third places that respond to community needs can enhance social capital in neighbourhoods.

Community gardens may be one opportunity that responds to community needs (among other sustainable community objectives). Joan Twiss et al. (2003) believe community gardens bring people together to recreate, get some physical activity and interact with people of all ages. In addition they can help people save money on groceries, encourage healthy eating habits and reduce costs and energy consumption associated with transport of foods. However, they also identify a number of challenges with implementing community gardens which include: educating decision makers on the benefits; competing interests for land use with housing and other open space; and a shortage in data on the benefits of community gardens. They believe that long-term investments, policymaking, staffing and acquiring resources are all necessary to support the viability of community gardens.

### **Built Form and Heritage**

The built form and heritage features found in a neighbourhood can reflect the values people hold and according to Paul Lukez (2007), should be a consideration in the goals of transforming existing suburbs. Lukez (2007) identifies that “Contemporary development practices, especially

in suburbs, typically favour demolition” (p. 26), and unfortunately, “this results in erasing the records of past natural and human traces, leaving many suburbs with shallow identities” (p. 26). He believes, the challenge faced with redeveloping the suburbs is discovering ways to “highlight, amplify, and build upon” (p.26) the unique characteristics and heritage features that reflect the values of the neighbourhood, rather than simply replace them.

### 2.3.2 Land Use Diversification

Low-density settlement patterns can create many issues, including, as Mark Roseland (2012)

notes:

- High per capita auto emissions;
- Higher per capita water use (e.g. for lawn irrigation);
- Loss of agricultural lands;
- High land requirements, both in block size and road systems;
- High levels of storm water runoff;
- High domestic heating energy due to the lack of a shared insulating effect when buildings are grouped; and
- High physical infrastructure costs

A number of policy changes and design strategies have been identified that may help reconcile inefficient suburban land development patterns by introducing a diversity of land uses and improving the built urban form (as identified by Calthorpe & Fulton, 2001; Lukez, 2007; Lee & Leigh, 2007; Dunham-Jones & Williamson, 2009; Hawken et al., 2010;).

#### **Design Principles and New Urbanism**

While some researchers support New Urbanism and smart growth principles as a framework to create more sustainable neighbourhoods (Burgess, 2000; Calthorpe & Fulton, 2001; Lee & Leigh 2005), others believe in the principles, but feel it does not contribute to the overall goals of sustainable development in planning (Berke, 2002; Lukez, 2007).

The Charter of the Congress for the New Urbanism (CNU) (2001) identifies twenty-seven principles of design for neighbourhoods. Some of these principles include compact form, pedestrian-friendly orientation and diversity of land uses and housing options (CNU 2001). Berke (2002) believes that while *New Urbanism* promotes compact built form and design in planning, it does nothing to curb sprawl, saying most developments are built in green spaces on the suburban fringe. Paul Lukez (2007) incorporates many *New Urbanism* ideas into his vision for the ideal suburb, but feels New Urbanist strategies have become “predictable and less likely to incorporate local idiosyncrasies and individual expression,” (p. 15) and he believes that “New Urbanism alone cannot repair our suburbs and edge cities” (p. 15). He acknowledges that transforming existing suburbs will not occur easily and explains that change cannot strictly be conceived of and applied at a design level, but rather, must also occur on a social, economic and policy level.

Looking beyond New Urbanism design principles, Peter Calthorpe and William Fulton (2001) believe that first and foremost communities need to develop a comprehensive plan and make changes to obsolete zoning by-laws in order to encourage mixed-use development and a wider range of housing. They say communities need to be thought of as places and not simply zones. Zoning standards that have isolated people from polluting industries (known as Euclidean zoning) may have made sense at one point in time; today however, the application of the same zoning standards hinders development of neighbourhoods that include the diversity of land uses that create walkable environments (Dunham-Jones & Williamson, 2009; Hawken et al., 2010).

An alternative to Euclidean zoning is *form-based coding*, which requires development to follow physical form guidelines rather than use-based guidelines, helping promote compact



form and walkable neighbourhoods (Dunham-Jones & Williamson, 2009; FBCI, 2011,). The Form Based Coding Institute (FBCI) (2011) says:

Form-based codes foster predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. These codes are adopted into city or county law as regulations, not mere guidelines. Form-based codes are an alternative to conventional zoning.

### **Infill/Greyfield Development**

Calthorpe and Fulton (2001), Avi Freedman (2007) and Ellen Dunham-Jones and June Williamson (2009) believe that key infill and redevelopment sites, also know as greyfields, must be identified and supported through infrastructure investment and policy. *Greyfield* is a term used to describe properties that have been developed, and have infrastructure in place, but are no longer viable and may be vacant. Chilton (2004) explains that these spaces are often derelict strip malls in suburbs, but the term can be applied to any land that is no longer being used, which in turn can lower property values, discourage new investment, and fail to generate property tax and provide jobs. Dunham-Jones and Williamson (2009) suggest that new development in built out neighbourhoods, such as inner-ring suburbs, may have to come from redevelopment “especially of underutilized school and retail parcels or from the legalization and encouragement of accessory apartments” (p. 57).

Targeting underutilized, vacant, and greyfield sites are believed to be the keys to changing the form of existing suburbs; however, several challenges are presented in doing so. As Calthorpe and Fulton (2001) observe: “Local politics are often oriented to the status quo, and once an area’s character has been established, it is hard to change without a powerful consensus” (p. 198). Other challenges include attempts to preserve the character neighbourhoods (Lukez, 2007) addressing zoning restrictions (Calthorpe & Fulton, 2001), and “NIMBY’s” (Not In My Back Yard) who are people that oppose development in their

neighbourhoods (Freedman, 2007). William Fischel (2001) believes that NIMBYism can be beneficial when done for the right reasons (for example, attempts to introduce polluting industry adjacent to existing housing). However, when done for self-serving reasons, Fischel says NIMBYism can harm the greater good of the community.

Further limitations associated with developing greyfields include: the size, shape, and location of the site, which can constrain what type of development can occur. There may also be concerns of soil contamination, which can be an issue when gas stations and other industrial land uses occupied the land (Freedman, 2007). This type of land is often referred to as *brownfield*, which pose challenges for redevelopment due to contaminants and pollution and require remediation (US Environmental Protection Agency (US EPA), 2012a). The US EPA explains while remediation costs can be significant, when possible, cleaning up these sites can reduce blight and take development pressures off greenspace.

### **Housing Diversity**

In order to achieve sustainable neighbourhoods, many believe there is a need to incorporate a variety of housing options, including type and tenure with varying levels of affordability (Calthorpe and Fulton, 2001; the Affordable Housing Initiative (AHI), 2002; Statistics Canada, 2007; and Dunham-Jones and Williamson, 2009). In 2007, Statistics Canada noted that the fastest growing segment of the residential rental market has been citizens in the bottom 20% of the income distribution. The AHI (2002) highlights the need to address this income group, stating that:

If housing all Canadians adequately is a prerequisite for a sustainable social fabric, then the toughest problem faced is figuring out how to house people with moderate and low incomes when market mechanisms are the main provider and allocator of housing.

According to Statistics Canada (2007), in 2000 the average household spent approximately 21% of its total income on housing, where homeowners spent 18% and tenants spent 28%. Given that renters tend to fall into the bottom 20% of the income distribution, these stats indicate that the poorer segment of society are paying a higher percentage of their income towards housing.

In addition to addressing affordable housing options as part of sustainable neighbourhoods, there is an increasing demand to address changing housing needs. Dunham-Jones and Williamson (2009) explain that today's suburbs typically consist of single-family detached housing and believe the proportion of nonfamily households; defined as singles and seniors without children, is expected to increase. Dunham-Jones and Williamson (2009) note that with a rising median age of suburban communities, housing options must be provided for long-time residents who are choosing to "age in place" (p. 57) and suggest alternative housing options as a way to allow a wider demographic to settle in these areas. This includes "support for adapting their homes, enabling granny flats, and building new senior apartments and assisted-living facilities in socially supported central locations with access to mass transit" (p. 57).

Granny flats, also known as secondary suites or laneway housing are additional ways to incorporate a variety of affordable housing alternatives, and have been described as contributing to 'invisible density' (City of Vancouver, 2012) as they are modest ways to introduce new housing within existing single-family dwelling properties. Laneway housing is typically built above a garage, which is oriented toward the back lane, while secondary suites can be built as additions and in basements of single-family dwellings (City of Vancouver, 2012).

## **Mixed-Use**

Mixed-use development is another feature that can enhance the sustainability of suburbs, creating an efficient use of land by sharing building space between two land uses, for example, housing and commercial. While beneficial in supporting compact, walkable neighbourhoods, several challenges are identified by Jill Grant and Katherine Perrott (2011) in regard to introducing mixed-use development into Canadian suburban neighbourhoods. They believe that even with policies allowing for mixed-use development, market factors, such as consumer behaviour and corporate specialization, as well as cultural, economical and political factors, can affect viability. They say the development industry is new to mixed-use development and there is still a need for financiers, developers, and builders to better understand how it works. Grant and Perrott believe that mixed-use in the suburbs is more likely to succeed when there is more automobile traffic available to access the commercial development because pedestrian traffic alone in suburban communities is typically not enough to support retail opportunities. They also explain that the timing in which retail development is put in is critical to the success of mixed-use development and that if it goes in too soon, businesses can go bankrupt.

## **Transit Oriented Development (TOD)**

TOD is a design strategy that incorporates many of the previously discussed land-use diversification opportunities. TOD is meant to increase densities and provide a diversity of land use in close proximity to mass transit in order to make public transportation more desirable and easy to use. The City of Winnipeg TOD Draft Handbook (2010) identifies transit-oriented development as a key component to the development of sustainable communities, saying:

By enabling density, mixed use, accessible urban design and sustainable transportation options, it: contributes to the overall sustainability of the city, provides a valued complement to existing land use patterns, and offers a lifestyle option that appeals to many people (p. 2).

### 2.3.3 Better Buildings

Natural Resources Canada (NRCan) (2009a) has found that housing as well as the commercial and institutional building sector accounts for approximately 34% of secondary energy used in Canada. CMHC (2007) further explains that this energy is associated with land, water and raw materials, in relation to the production, maintenance, operation, and eventual demolition or conversion of these buildings:

As such, the sector occupies a central place in any sustainable development strategy. Therefore, a major driver influencing the evolution of Canadian housing will be pressure for this sector to reduce its environmental impacts, energy utilization, and water utilization. All of these objectives will benefit the environment and ultimately make housing more affordable to Canadians (p. 7).

#### **Green Building Design Features**

Jason McLennan (2004) says sustainable design is a “philosophy that seeks to maximize the quality of the built environment, while minimizing or eliminating negative impact to the natural environment” (p. 4). He adds that sustainable design is often used as an umbrella term to describe a set of strategies, components and technologies that lower environmental impact while in many cases improving comfort and overall quality. These strategies include but are not limited to:

- Daylighting;
- Indoor air quality;
- Passive solar heating;
- Natural ventilation;
- Energy efficiency;
- Embodied energy;
- Construction waste minimization;
- Water conservation;
- Commissioning;
- Solid waste management;
- Renewable energy;
- Xeriscaping/natural landscaping; and,
- Site preservation (p. 8)

## **Green Building Certification**

The United States Green Building Council (USGBC) and The Canada Green Building Council (CaGBC) are two organizations that have developed comprehensive point rating systems used to assess environmental and social impact of buildings. This system is known as Leadership in Energy and Environmental Design; more commonly referred to as LEED. LEED systems in Canada have been tailored from the United States to address variations in climate, construction practices, and policy that impact the design and operation of buildings. LEED addresses five key areas that contribute to sustainable and energy efficient building design, including: sustainable site development, water efficiency, energy efficiency, materials selection, and indoor environmental quality. In Canada, there are currently six LEED systems that address: New Construction, Core and Shell, Commercial Interiors, Existing Buildings, Homes, and Neighbourhoods (CaGBC, 2009).

For existing neighbourhoods, retrofitting buildings is believed to be less energy intensive than new construction while at the same time preserving the character of the neighbourhood (Lukez, 2007). LEED for Existing Buildings (LEED EB) for example, measures the current operations of the structure and looks at how improvements in maintenance can be applied and measured on a consistent scale: “LEED for Existing Buildings addresses whole-building cleaning and maintenance issues (including chemical use), recycling programs, exterior maintenance programs, and systems upgrades” (USGBC, 2009).

As McLennan (2004) says, green building is a design philosophy that incorporates a number of strategies, tools and technologies to create better buildings, and it is not limited to LEED point rating systems. However, it is believed that since LEED was introduced, the green building market has become more mainstream and cost effective (Nalewaik & Venters, 2009). One of the challenges often identified with green buildings are the costs associated with them,

real or perceived. Alexia Nalewaik and Valerie Venters (2009) suggest that when the concept of green building first started to get attention, the perception of higher costs associated with building green were often correct because technologies were new and not as widely available. Contractors were also less familiar with the construction and project management process in green building and may have increased costs because of perceived difficulties and time consumption. However, since the inception of LEED within the last decade, the cost of energy efficient materials are now lower, innovation in building technologies has advanced, and product reliability is improving, which Nalewaik and Venters believe is making green building a more desirable option.

### **Small Changes Add Up**

Addressing the day-to-day operations within buildings is also identified by the USGBC (2009) as an effective way to manage energy and water consumption. This includes incorporating energy efficient materials and technologies into the building, such as: windows, insulation, or low-flow toilets. While individuals may perceive these technologies or materials to be costly, incentives may be available to encourage people to more readily implement these types of technologies into their homes and lifestyle. In Manitoba, for example, incentives offered by Manitoba Hydro and its Power Smart program provide opportunities for homeowners to receive refunds on investments they make toward reducing use of energy and resources. These opportunities include: Energy Star – qualified front-loading washing machines, the appliance rebate program, furnace/boiler replacement program, and home insulation program (NRCan, 2010).

Opportunities identified by the CCC (2008) include: switching to a low-flow showerhead and toilet, which can reduce water consumption by 60% and save up to 0.4 tonnes of Green House Gases (GHGs) per year, and insulating your home, which can reduce your energy bill by as much as 30%.

### 2.3.4 Open Space

Open space, or “green space” are valuable components of sustainable neighbourhoods that contribute to biodiversity, natural processes and human well-being. Michael Hough (2004) explains that parks and open spaces were initially developed to provide places for urban citizens to connect with nature. The overcrowding of cities and lack of connection to the countryside led planners to designate large open areas within the city for people to relax and recreate. Hough believes open space for recreation is vital to the health and well-being of urban citizens; however, he contends that today, open space has typically been reduced to a few trees and manicured fields of grass.

The following discussions look at specific opportunities for diversifying the use of open space in ways that contribute to more sustainable communities (as identified by Hough, 2004; The Design Centre for Sustainability, 2006; City of Winnipeg Naturalist Services, 2010; Roseland, 2012).

#### **Natural Processes**

Hough (2004) discusses the challenge with balancing the look of aesthetically pleasing cities, with the role of natural processes and biodiversity. He explains, “the formal landscape and the natural, the pedigreed and the vernacular, symbolize an inherent conflict of environmental values” (p. 6). On one hand we desire the aesthetic of controlled landscapes, which symbolize civic pride, and a sense of care. On the other hand, natural processes left to their own devices within urban setting represents the vitality of “functioning natural and social processes at work in the city” (p. 6).

Like Hough, Roseland (2012) believes parks are often thought of and maintained as places to look at but not use and that city departments often fail to appreciate the diversity of needs and wants of community members. Roseland envisions naturalized parks that are multi-



functional and offer a variety of opportunities for recreation and education while promoting naturalist activities, wildlife habitat, community gardens, and indigenous species plantings. One of the benefits, Roseland explains, is that this diversity of use contributes to the sustainable management of urban green space; providing an opportunity for profit by reducing the reliance on water and maintenance costs. Hough (2004) identifies this concept as an economy of means, which involves getting the greatest gain from the least amount of effort and energy.

### **Benefits of Naturalization**

The City of Winnipeg Naturalist Services (2010) explains that naturalization protects natural heritage, such as forests, prairie grasses, wildflowers and wetlands. It improves stream health and riverbank stability by restoring natural vegetation along riverbanks, in turn filtering pollutants from flowing into water bodies, reducing erosion and creating healthier environments for fish and other aquatic species. Naturalization also increases biodiversity by providing natural areas for a variety of plant species to in turn attract and sustain a diversity of birds and insects (City of Winnipeg Naturalist Services, 2010).

Hough (2004) explains that diversity is the foundation for environmental and social health and believes there is a need for public education in order to promote a better understanding of urban ecological issues. He believes that by making natural processes more visible within the urban landscape, awareness will increase toward the need for environmental preservation.

### **Integrating Green Space into Corridors, Edges and Nodes**

The Design Centre for Sustainability (2006) identifies that green spaces are meant to provide recreational opportunities and connect people to natural systems. It recognizes *corridors*, *edges* and *nodes* as strategic places to improve green space. For *corridors*, defined as “linear routes of

mobility, connection, access, and community” (p. 8), green spaces should be integrated along riparian areas, green street networks should be developed that include trees and planted boulevards, and upgrades to existing green space should occur in order to make them more attractive and usable for the public.

For *edges*, defined as “the spaces adjoining two different land uses” (p. 24), it recommends developing multi-modal greenways to support habitats and storm water management and to create a buffer between agricultural lands to help prevent encroachment of further outward development.

*Nodes* are defined as “points of dense land use connected to each other and to surrounding residential neighbourhoods by important community corridors” (p. 40). The Design Centre for Sustainability (2006) suggests that natural areas and parks should be visible and accessible and fit into the community along linear parks and green streets, development should fit in around large areas of preserved open space or natural areas, and that small parks should be interspersed throughout high-density nodes.

### 2.3.5 Transportation

The impact from transportation systems that support use of the private automobile is argued to be one of the most significant problems facing sustainable city building. NRCan (2009b) explains that Canada’s transportation sector accounts for approximately 30% of total energy use and 25% of green house gas emissions, and Roseland (2012) believes that to understand the true cost of private motor vehicle use, one should take into account costs associated with road construction, traffic accidents, land use impacts, congestion, wasted time and money, as well as water and air pollution.

Jane Jacobs (1961) said, “Automobiles are often conveniently tagged as the villains responsible for the ills of cities and the disappointments and futilities of city planning. But the destructive effects of automobiles are much less a cause than a symptom of our incompetence at city building” (p. 7). Many researchers believe the true culprit for such high levels of automobile use are the low-density, suburban settlement patterns commonly found in most North American cities (Holtz Kay, 1997; Stone & Gibbons, 2002; Miron, 2003; Hawken et al., 2010; Roseland, 2012). The broad separation of land uses between residential, commercial and recreational places tends to support auto-dependent lifestyles. Jane Holtz Kay (1997) believes that it is not even the daily commute to work that is the most significant contributor to vehicle miles travelled, but rather the daily chores that add up, emphasizing the importance of closely-knit, walkable neighbourhoods. She states, “one-third of the miles we travel go to consumption and family chores. A bottle of milk, a tube of toothpaste,...the ministuff of life clogs the nation’s roads” (p. 20).

### **Active Transportation**

Planners and researchers are looking at ways to reduce the effects of auto-dependency in suburban development by providing alternative transportation options. The City of Winnipeg (2011a) identifies Active Transportation as one way to diversify travel in cities and create better opportunities to incorporate various modes of transport into daily lifestyles. They define active transportation as any mode of transportation that is human powered, such as cycling, walking, skiing or skateboarding with benefits that include: healthy lifestyles, reduced traffic congestion, better air quality, and reduced costs associated with driving, such as fuel, parking and maintenance. John Miron (2003) believes that in order to encourage people to use alternative modes of transportation, (e.g. walking or cycling) improvements must be made to create safer and more accessible routes.

## **Bike Shares**

In conjunction with developing safe, accessible and user-friendly active transportation infrastructure, Paul DeMaio (2003) believes that bike share programs can support efforts to encourage people to use alternative travel modes. The City of New York Planning Department (2009) explain that bike shares are networks of public use bicycles distributed across the city with the purpose of being accessible and affordable alternative modes of transportation. It says that bicycles can be picked up at one station and returned to any other bike station in the city for ease of convenience and to promote usability. Sebastian Buhrmann (2008) indicates that several successful bike-sharing systems already operate in Europe and North America and signifies that the Velib bike share program based out of Paris is largely successful, averaging 75,000 trips per day, with a fleet of 20,600 bicycles and 1,451 stations.

## **Car Shares**

The Transportation Research Board (TRB) (2005) says “Car sharing is sometimes called the ‘missing link’ in the package of alternatives to the private automobile. Members can use transit, cycling and walking for most of their daily trips, but have access to a car when required” (p. 2). The CarSharing Association (2011) identifies that car shares are intended to support local users in a community with the goals of reducing personal car ownership, vehicle distance travelled, and green house gas emissions, while improving urban land use and development, providing affordable access to vehicles, and encouraging use of alternative modes of transportation such as walking, cycling and use of public transit. The TRB (2005) explain that car sharing is meant to compliment a wider range of transportation options and identify that it is most successful in high density, good pedestrian environments that have a mix of uses and where parking pressures exist.

## **Public Transit**

John Miron (2003) believes that improving the operation and connectivity of public transportation can also encourage people to rely less on their cars. The benefits of moving people from auto-dependency toward using public transit include: reducing dependence on oil; reducing air pollution and carbon emissions; relieving traffic congestion; providing access for people of all ages; and increasing real estate values and development (The American Public Transportation Association (APTA), 2009). Rapid Transit, which are public transportation systems that operate primarily on dedicated right-of-ways or transit lanes are said to be more efficient, reliable, comfortable, convenient, and viable mode of travel, that present a desirable alternative to driving (Region of Waterloo, 2011).

From an economic standpoint, there are challenges with incorporating public and rapid transit into low-density neighbourhoods. According to Stone and Gibbons (2002) if there are not enough people to support transit routes, municipalities may be forced to subsidize a route that serves fewer riders or provide less frequent service, creating an unsustainable model for operation. In order to encourage and ensure higher levels of transit support, Hawken et al. (2010) believe that by increasing densities in neighbourhoods, these expensive, mass transportation infrastructure projects become more feasible. This concept of encouraging densities around public transit is commonly known as TOD (identified previously in the land-use diversification section of this chapter) and The City of Winnipeg (2010) explain that TOD can support the effectiveness of public transit when residential and commercial densities are built up around stations, making access to transit convenient and reliable.

### 2.3.6 Water Management

Opportunities for improving water management practices in urban areas emphasize water retention and managing pollutants found in runoff for the purposes of preserving ecological health and diversity (as identified by Hager, 2003; Hough, 2004; Girling, Raftis & Webster, 2009; CaGBC, 2009). Cynthia Girling, Lindsay Raftis and Sheryl Webster (2009) report that in urban landscapes, the abundance of roads, parking lots, and rooftops, which are impermeable surfaces, contribute to high volumes of runoff. These impermeable surfaces, combined with degraded urban soils provide little opportunity for water to be stored and thus lead to less healthy natural and human habitats (Hough, 2004). Girling et al. (2009) explain that water runoff in urban areas often carry pollutants such as oils and fuels, sediment, road salt, and litter and that these pollutants are eventually washed off into local water systems, which adversely impact local aquatic health. In response to the issues associated with excess water runoff, Hough (2004) explains,

Vegetated soils and woodlands provide storage by trapping and percolating water through the ground with minimum run-off and maximum benefit to groundwater recharge. Water quality is enhanced by vegetation and storage which in turn will contribute to the diversity of natural and human habitat (p. 71).

#### **Water Management Design Solutions**

Hough (2004) explains that in the context of the urban environment, “the city’s open spaces become a fundamental factor in re-establishing hydrological balance” (p. 78) specifically residential parks, open spaces and wastelands, parking lots, playgrounds and roofs. He says these spaces should be adapted when appropriate to improve the hydrological function by creating temporary or permanent storage areas for water.

Mary Catherine Hager (2003) discusses what she calls Low Intensity Development (LID), which treats rainwater on site by creating conditions that allow water to infiltrate back into the ground instead of runoff into water bodies or storm sewers. According to Hager, LID management practices include but are not limited to: *conservation and minimization; conveyance; storage; infiltration; and landscaping.*

For *conservation and minimization*, Hager (2003) suggests creating narrower residential streets, reducing impervious sidewalk area, adding porous pavement or replacing existing paving with pervious structures, creating concaved medians and landscaped traffic calming features. *Conveyance* can occur through the creation of grassed channels and bio-retention channels, and by redirecting runoff to vegetated areas. *Storage* is meant to reduce peak discharge of rainwater and Hager says this can be achieved by building pedestal sidewalks, rainwater capture (such as rain barrels) and green roofs, as well as yard, curb or subsurface storage. Trenches, basins and exfiltration devices can address *infiltration* and *landscaping* measures, and might include bioretention cells, rain gardens, slope reduction, planter boxes, native ground cover, and green alleys (Hager, 2003).

Hough (2004), Luderitz (2004) and the CaGBC (2009) identify additional opportunities for water management. Hough (2004) believes constructed wetlands, retention ponds and marshes are good alternatives to regulate water run-off because they are able to manage peak loads by releasing water slowly into streams to lessen the danger of downstream flooding. He explains that vegetation surrounding these retention ponds and marshes are also highly productive systems that clean pollutants from wastewater and promote the uptake of nitrates and phosphates by aquatic plant life. According to Volker Luderitz (2004), constructed wetlands have been shown to reduce phosphorus levels by 43 % and nitrogen levels by 25 % in a ten-year

period. He believes ecological engineering requires minimal energy and will eventually become more economically sustainable than end-of-pipe technologies powered by fossil fuels.

The CaGBC (2009) identifies green roofs, green parking and bio-swales as design solutions for water management. It explains green roofs have the potential to increase permeability on what are normally sites of heavy water run-off and can provide additional insulation to the building, which can reduce building energy consumption. Parking lots and driveways can be designed to reduce water runoff by introducing permeable surfaces, or by directing water runoff into nearby permeable surfaces away from storm water sewers such as bio-swales. Bio-swales act as temporary storage for water and act as a naturalized alternative to storm-water sewer runoff and can be implemented along non-permeable surfaces such as roads and parking lots.

### **Implementation Challenges**

Climate and a lack of precedents may limit opportunities for implementing water management strategies. The City of Winnipeg (2011b) indicates that clay soil conditions inhibit natural infiltration into the soil, and because of the flat topography found in Winnipeg, large areas may be affected if technologies or design features fail.

Cost is also a factor when considering the implementation of LID design strategies. Hager (2003) believes that managers and engineers are often wary of high installation and maintenance costs associated with LID practices; however, she argues that results from existing LID projects show higher initial landscaping costs may be offset by reductions in the infrastructure and site preparation work that come with conventional development approaches. Estimates from pilot projects show that LID projects can be completed at a cost of 25-30% lower



than conventional projects in terms of site development, stormwater fees and residential site maintenance (Hager, 2003).

### 2.3.7 Waste Management

Managing the way humans consume resources is regarded by many as a significant concern for the well-being of present and future generations on Earth (as identified by WCED, 1987; Wackernagel & Rees, 1996; Venetoulis & Talberth, 2005; Hawken et al., 2010; Roseland, 2012). Similar to Hawken et al.'s. (2010) discussion of *Natural Capitalism*, Ravindra Dhir, Moray Newlands and Thomas Dyer (2003) state that waste management policies should recognize the economic, environmental and social value in the re-use of materials rather than continual extraction of raw materials from the earth. Defining new economic systems that encourage the re-use of resources (Hawken et al., 2010), and reducing consumption through behaviours in the home and community (CCC, 2008; Doppelt, 2008) were identified in previous sections of this chapter. This section looks at and waste diversion practices such as composting, recycling and behavioural changes as ways to reduce the amount of resources that end up in landfills (Regional District of Nanaimo (RDN), 2004; The Compost Council of Canada, 2010; City of Winnipeg, 2011b; City of Winnipeg and Stantec, 2011; and the US EPA, 2012).

#### **Current State of Waste Management in Winnipeg**

The City of Winnipeg (2011b) finds that Winnipeggers are currently diverting only 17% of all residential waste from landfills, which is among the lowest rates for cities in Canada. A key goal for the City is to provide options for residents that will increase the diversion to at least 50%. One of the first initiatives identified is to rename the Brady Landfill to The Brady Road Resource

Management Facility in order to reflect the commitment to managing more than just garbage, but also recycling and other diversion opportunities (City of Winnipeg 2011b).

In comparison to the current efforts in Winnipeg, the Regional District of Nanaimo (RDN) (2004) established a zero waste target in 2002, meaning that the goals of the region are to divert 100% of waste from landfills. Programs the RDN have initiated to reduce waste include:

- Residential Garbage and Recycling;
- Commercial Organics Diversion;
- Zero Waste Promotion and Education;
- Illegal Dumping;
- Yard Waste Composting;
- Compost Education;
- School Education; and,
- Recycling at RDN Disposal Facilities

### **Benefits of Composting**

The Compost Council of Canada (2010) says organics represent over one-third of waste that ends up in landfills and contributes to roughly 38% of methane gas production in Canada. By composting, waste can be diverted from landfills, thus reducing methane emission levels.

Composting can also produce a valuable product; compost, which can be applied to help restore vital nutrients into soil, reduce soil erosion, and need for water, due to better retention.

### **Benefits of Recycling**

The US EPA (2012b), explain that recycling supports manufacturing and industry that utilize existing materials in order to create new materials, increasing: manufacturing jobs; reducing pressures on landfills; preventing pollution caused by manufacturing raw materials; saving energy; reducing greenhouse gas emissions; conserving natural resources such as timber, water and minerals; and sustaining the environment for future generations.

## **Proposed New Direction and Strategies**

The City of Winnipeg and Stantec (2011) have developed a new waste management plan that identifies zero waste principals and a hierarchy which includes: reduce, reuse, recycle, recover, and residuals, as a means to address waste in the city. Reduction and reuse initiatives include, for example: education programs; encouraging backyard and community composting; and support/promotion of waste minimization legislation/programs. The City of Winnipeg and Stantec (2011) say resource recovery will create more opportunities to recycle, and support the creation of facilities to manage diversion at the main city landfill. They also state that recycling programs will be improved and capacity increased to handle more recycled material; that organics will be diverted from landfills through the creation of a designated composting facility; that curb side compost pickup and leaf and yard waste collection will be improved; and garbage collection will become more efficient with the introduction of a standard bin size. The City will then charge more for excess and bulky amounts in hopes of discouraging garbage heading to landfills (City of Winnipeg and Stantec, 2011). Connected with each of these strategies is a timeline for implementation and estimated costs. They identify that implementing a more comprehensive waste management strategy will come up against funding challenges, as well as behavioural and political will obstacles. The report estimates that the net costs for waste management services will be \$18 million and be covered by a levy on property taxes which will average out to be \$59 per household and may continue to increase in the near future (City of Winnipeg and Stantec 2011).

### **2.3.8 Economy**

Identified as one of the three realms of sustainability, the economy is inextricably connected to and embedded within each of the issues identified in this research (as identified by Brueckner,

2000; Wagner, 2002; Leo & Brown, 2003; Leo & Anderson, 2005; Lee & Leigh, 2005; Anacker, 2006; and Hawken et al., 2010).

Each of the eight key themes identified in this chapter have economic implications. This section looks at connections between the economy and more sustainable suburbs, and discusses some opportunities that may not have been explicitly explored in other sections of this chapter. This section identifies that economic sustainability on an urban scale requires local investment, investing in renewable energy systems, and reducing the costs associated with sprawl, such as the costs to build new roads, water services, and community and social services.

### **Local Investment**

A socially sustainable community should be able to attract and retain a strong and stable economy (Dunham-Jones & Williamson, 2009). Richard Florida's (2002) idea of the *Creative Class* speaks to the notion that by attracting people who are creative you are better able to protect and build economic prosperity. He says:

The key to economic growth lies not just in the ability to attract the creative class, but to translate that underlying advantage into creative economic outcomes in the form of new ideas, new high-tech businesses and regional growth (p. 2).

Dunham-Jones and Williamson (2009) propose that there is a need to recruit the creative class as a catalyst toward retrofitting suburban workplaces in order to ensure long-term economic vitality and social vibrancy. Along a similar idea, Roseland (2012) proposes that communities should shift their focus toward local self-reliance. He explains that the current economic system, which places a focus on growth, trade and currency rather than people and ecosystems, is unsustainable because economic growth is being prioritized ahead of social and environmental objectives of sustainable development. Shifting toward local self-reliance means that community strives to strengthen their connections between local producers, such as

farmers, local manufacturers and other locally owned and operated businesses; the goal being to emphasize community economic development (CED). Roseland (2012) says “community economic development is not just about business creation; it’s about creating self-sustaining communities. Communities that protect their natural resource base and preserve the health of their environments contribute to more sustainable economies” (p. 210).

### **Energy Production**

Lessening oil-related energy use will protect neighbourhoods, cities, and the Earth from impacts associated with climate change. On a local scale, Roseland (2012) discusses the role of renewable energy as part of the shift toward building more sustainable communities that have less impact on the environment. Renewable energy options include: solar (photovoltaic), wind power through turbines, micro-hydro, biomass, and geothermal. The costs associated with transitioning to these new technologies can be difficult, but Roseland believes a number of tools can offset and manage these costs such as demonstration projects, energy cooperatives, and government financing.

### **Infrastructure Costs Associated With Sprawl**

As discussed in section one of this chapter, an unsustainable city is sparsely developed with high volumes of infrastructure required to service and support it. In response to the unsustainable city, Enid Slack (2002) discusses how municipal finance services can be implemented to encourage more compact development and reduce the occurrence of sprawl by emphasizing the importance of charging true costs on development. She explains that municipalities can and do use planning tools which regulate what develops where, but highlights the importance of revenue raising tools as a means to discourage sprawl. Slack states that property tax is the Canadian governments’ main source of revenue raising and that the way it is currently being

applied may be promoting low-density development. She says a regime that does not match property taxes with services may reduce the potential for property improvements, density of development, and will likely affect decisions about business location (p. i).

User fees and development charges are discussed by Slack as tools that may encourage efficient use of land and infrastructure. By reflecting the full costs and benefits of development, Slack believes that developers are only likely to consider their own costs and benefits and not the impact of the cities costs on providing services. Ensuring that developments are charged their true cost would be ideal; though Slack explains where higher municipal charges are imposed (usually for development on the urban fringe) they often end up subsidized by those that incur lower costs (often developments in existing, high density neighbourhoods).

## 2.4 Chapter Summary

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This literature review has identified numerous themes related to sustainable development, ranging from high-level global objectives to municipal and neighbourhood level objectives. Primarily, the findings recognize suburbanization and sprawl as an unsustainable model for urban growth, and identify inner-ring suburbs as neighbourhoods that should be targeted to help restore a more sustainable urban form. Inner-ring suburbs present a two-fold benefit for remediating the impacts of sprawling development. The first benefit is the opportunity to apply numerous sustainable design solutions and community development opportunities (as identified in part three of the literature review). Most of these design solutions and community development opportunities have broad applicability to all urban areas. Therefore, the second benefit is what sets inner-ring suburbs apart from more recent suburban developments; that

being the location in close proximity to city centres, which is advantageous in supporting goals of compact and sustainable urban form.

Part two of the literature review revealed that emphasis should be placed on community consultation in defining a neighbourhood sustainability plan. Without community support, a plan for change will likely be met with resistance. Part three of the literature review revealed a number of potential design solutions and strategies to consider when creating more sustainable urban neighbourhoods. These findings were classified into eight key themes and ultimately directed the focus of further research methods in this study. In particular, these themes provided the framework for discussion with focus group participants and City of Winnipeg planners for the purposes of identifying relevant and viable opportunities that could be applied to a study inner-ring suburb in Winnipeg.

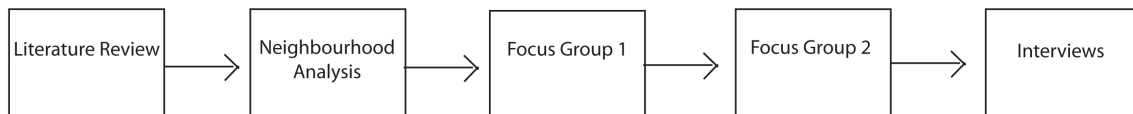
The following chapter (Chapter Three) reviews the research methods and approaches used to identify how inner-ring suburbs in Winnipeg can change to become more sustainable. Then, in Chapter Four, the research is analyzed to identify priorities and implementation timelines for the study area.

## Chapter Three – Methods

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The research methods used in the study include the following:

- 1) Literature review;
- 2) Analysis of the study area (including Wildwood, Crescent Park, Point Road, Maybank, and Beaumont);
- 3) Two focus groups; and
- 4) Interviews with City of Winnipeg planners.



**Figure 3-1: Order that research methods were conducted**

Each method is further explained in the following sections.

### 3.1 Literature Review

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The literature review included an examination of journals, articles and books that relate to the topics of inner-ring suburbs and sustainable development on both global and urban scales. The purpose was to ground the study in a body of current and relevant research relating to these topics in order to identify gaps that would help inform the direction of research.

For this study, the literature review helped form the questions for research and provide context for the issues that were important to consider when looking at inner-ring suburbs and sustainability practices. This information also provided the foundation from which to begin discussions in both focus groups, primarily identifying eight key themes and several potential opportunities to be considered in moving toward sustainable transformation.



## 3.2 Study Area Analysis

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The study area was selected based on the defining characteristics of inner-ring suburbs (as discussed in Chapter One) and was meant to help provide context for the research. After reviewing 2006 census data on the city of Winnipeg and identifying neighbourhoods that fit the defining criteria for inner-ring suburbs, the study area was chosen. Once selected, additional features were reviewed, such as land use, density and personal observations of the neighbourhood.

Photo documentation and analysis was undertaken to ensure a clear understanding of how the neighbourhood looked and was used in everyday life; an example of these photographs can be seen in Figures 3-2, 3-3, 3-4 and 3-5 (see Appendix A posters for more examples). This exercise aligned with Berke's (2002) belief that visuals can promote and encourage discussion, and it was the intent to incorporate these visuals into discussions with focus group participants.



**Figure 3-2: View from parking lot on Pembina Highway**



**Figure 3-3: Wildwood golf course**



Figure 3-4: Single family dwelling



Figure 3-5: Mixed-use on Pembina Highway

### 3.3 Focus Groups

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In order to gain a more detailed insight into how some local residents viewed their neighbourhood, two focus groups were conducted. Richard Krueger and Mary Ann Casey (2009) say, “Focus groups collect qualitative data from homogenous people in a group situation through a focused discussion” (p. 15). Krueger and Casey (2009) explain that focus groups are characterized by participant homogeneity, such as, similar occupations, social class, education level, age, or family characteristics, but warn that while focus groups should be homogenous, they do need to be created with enough diversity to allow for varying opinions. Therefore careful consideration must go into selecting participants that will provide a well balanced diversity of opinion, yet still have shared similar experiences. Participants were selected based on a variety of experiences in the neighbourhood; some had lived there for many years, some had recently moved to the neighbourhood, while some were old, and some young. The common thread that connected these participants was that they had all lived in the neighbourhood.

According to W.L. Neuman (1997), when conducted properly, focus groups can reveal, “meanings, values, interpretive schemes, and rules of living, used by people in their daily lives” (p. 71). Unlike surveys or questionnaires, which can reach several people and provide statistical

data for analysis, focus groups typically reach few people but allow researchers to gain deep insight from qualitative responses to open-ended questions (Neuman, 2000).

As Berke (2002) explains, visual tools are valuable resources that can inspire and encourage discussion. With this in mind, a primary consideration to enhance engagement in both focus groups was to incorporate a strong visual component. In the first focus group, a slide presentation with images was presented to focus group participants to connect visuals with discussion points. Maps were also used for participants to engage and interact with as part of a like/dislike and visioning exercise (explained further in the following section). In the second focus group, posters with a number of visuals were used as the primary tool for engagement (discussed further in Section 3.2.2 and posters can be seen in Appendix A – note images from websites have been removed for permission reasons).

After each of the focus groups was conducted the findings were analyzed through a process known as “open, axial and selective coding.” According to Neuman (2000), “open coding brings themes to the surface from deep inside the data” (p. 422). Open coding involves an initial pass through the data, where themes are identified and an initial code or label is applied in order to condense the data into categories (Neuman, 2000). Next, axial coding, the second review of data, examines initial codes and moves toward organizing ideas or themes, identifying the axis of the key analysis concepts, and either dividing categories into sub-categories or combining several closely related concepts. The final pass through the data is known as selective coding, which involves looking for major themes or concepts, reorganizing these themes, and looking for cases that illustrate these major themes.

The themes in this study were preliminarily identified through the literature review (the eight themes discussed previously in Chapter Two), however, the open, axial and selective coding processes were used to organize and refine the gathered data to reveal favourable

support for some opportunities and a lack of support for other opportunities. The coding process and findings are discussed in the following section and in Chapter Four - Analysis.

### 3.3.1 Focus Group One

The first focus group took place on July 28<sup>th</sup>, 2010 with six participants. People with varying experiences and time lived in the community were contacted in order to ensure variety in the discussion, as Krueger and Casey (2009) suggest. Participants were contacted via email or phone, and asked if they would be willing to participate in the study. Ten people were contacted; at least one from each neighbourhood profile area to ensure balanced representation. When the time came to conduct the focus group, six participants were able to attend. Three participants were from the Wildwood profile area, two from the Point Road area and one from the Beaumont area. No one was available to represent the Crescent Park or Maybank areas. When participants arrived for the focus group they were asked to read and sign consent forms that identified the nature of the research and explained how their input would be used (a sample of the consent form can be found in Appendix B). The focus group took approximately an hour and a half to conduct. When completed, participants were thanked for their help and told they would be contacted again for a follow up focus group meeting.

The goal of this focus group was to partially educate and partially identify how participants understood and related with issues of sustainability and their neighbourhood. Prior to the focus group meeting, participants were asked to look at two tools online: 1) a carbon footprint calculator; and 2) a Walk Score® in order to facilitate discussion about behaviours relating to sustainability. The carbon footprint calculator was meant to provide participants with a better understanding of how daily activities and behaviours add up in terms of carbon emissions, and the walkscore calculator was used to assess how close or accessible amenities

were from participants home when choosing to walk. After discussing these two points, participants were asked to take part in an exercise that addressed their likes and dislikes, as well as future opportunities and challenges associated with sustainable development in their neighbourhood. This exercise is often identified as a S.W.O.T. analysis (Halla 2007), which looks at the Strengths, Weaknesses, Opportunities and Threats (or challenges) associated with a particular issue. The S.W.O.T. was meant to help identify individual or group values, hopes and concerns for the future of the neighbourhood.

As part of the S.W.O.T. exercise, participants were asked to place sticker dots on a large map of their neighbourhood. Green dots were used to identify their likes (strengths) of the neighbourhood and red dots were used to identify dislikes (weaknesses) (see Figures 3-6 and 3-7 and Table 4-1 in Chapter Four for a full list of likes and dislikes). Participants were then asked to place stickers where they felt opportunities might best occur in the neighbourhood for sustainable change, with different colours corresponding to different themes (for example yellow dots were associated with transportation and blue with land use). Discussion of these results can be found in Chapter Four. Challenges (threats) that did not have a physical manifestation and could not be represented on a map, such as community development or financial obstacles were captured in notes.



Figure 3-6: Likes/Dislikes exercise



Figure 3-7: Final map showing likes and dislikes



Next, a series of questions were used to guide discussion relating to sustainability in order to identify how the concepts fit in with participants' lifestyles.

These guiding questions were as follows:

- 1) What do you enjoy most about living in this neighbourhood?
- 2) What do you enjoy least, or feel could be improved upon?
- 3) Do you have a position on sustainability and living an ecologically friendly lifestyle? How is this shown in your daily life?
- 4) Thinking about behaviours in your daily life, how do you think living an ecologically friendly lifestyle could be improved upon, or made easier to do in your neighbourhood?
- 5) How do you envision the future of this neighbourhood, and what sorts of changes do you believe would make it a more sustainable place to live? What sorts of processes do you feel would be helpful to make change happen?
- 6) What sorts of obstacles do you foresee in preventing neighbourhood change from happening?

A few of the guiding questions were multi-pronged. This was to ensure that discussions stayed focused on the research intent, while at the same time allowing participants to freely explain their thoughts on the issues.

After going through these questions and exercises, a substantial amount of information was gathered. A designated note taker typed this information, and detailed notes with quotes and explanations were captured to ensure the results were true to what the participants discussed. The focus group was also audio recorded in order to verify any details that may not have been captured by the typed notes.

This information was then synthesized through the open, axial and selective coding process in order to identify initial themes (open coding); connecting similar themes and ideas or dividing them into new themes (axial coding) and then identifying support for these themes through comments and cases that exemplify the identified themes. Discussion points can be found in Section 4.1 of Chapter Four – Analysis.

### 3.3.2 Focus Group Two

The second focus group took place on February 7<sup>th</sup>, 2011 with four participants. Two of the previous participants were unable to attend and the other four participants were the same people who took part in the first focus group: two from the Wildwood area and two from the Point Road area. With participants missing, only two of the five neighbourhood profile areas were represented, further limiting discussion pertaining to the entire neighbourhood. Focus group participants were again asked to sign written consent forms indicating they were okay with the provisions (sample consent form for focus group 2 shown in Appendix C). Once signed, focus group discussions began.

The main goal of this focus group was to gain feedback on a refined set of opportunities based on the identified eight key themes. Presented in the form of posters with visuals and a brief discussion, 58 potential action opportunities were brought forward for participants to discuss (see Figure 3-8 for a sample poster and Appendix A for entire display of these posters). Focus group participants were asked to discuss the feasibility of each opportunity and asked to place sticker dots on a matrix to identify the perceived ease or difficulty and timeframe for implementation (see Figure 3-9 as an example and Chapter Four for a full list corresponding with each of the eight themes).

### Age Friendly Recreation and Leisure

Recreation opportunities should be available to people of all ages in the community. In the realm of open space, this could include spaces such as soccer and baseball fields, golf courses, cross country ski trails as well as community gardens and opportunities for bird watching, walking, etc. Images 1, 2 and 3 show open space that already exists in the neighbourhood. Image 4 shows a community garden that could be an addition to the neighbourhood. This community garden could provide (while small in scale) a degree of food security, the opportunity to learn about food, economic development as well as exercise and well being.



Figure 3-8: Sample focus group poster

### OPEN SPACE

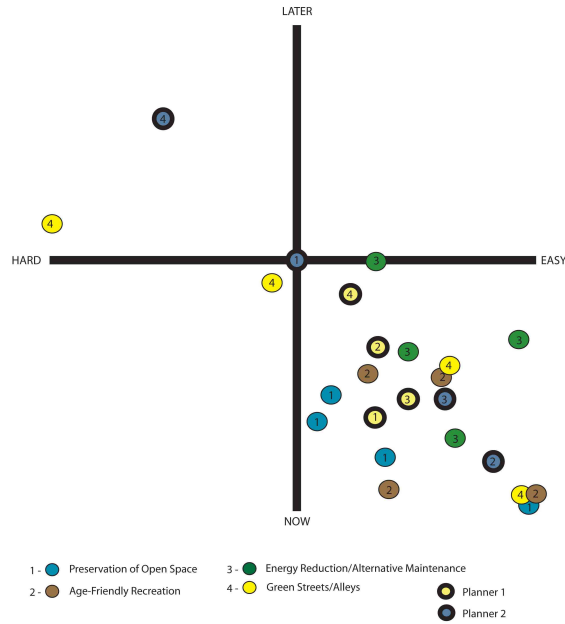


Figure 3-9: Sample of consolidated matrix

The primary information collected in the second focus group was from the matrix work sheets. Once completed, results from each participant’s worksheets were consolidated into one unified copy, which helped identify disparity or similarity between perceived difficulty and timelines for implementation. This information was again run through the open, axial and selective coding process in order to identify and highlight key themes and cases to support these themes. When compared with findings from the interviews, the coding process ultimately refined the 58 discussed action opportunities down to 45. The results from the second focus group and ‘coding’ process are presented in Section 4.2 of Chapter Four – Analysis.

## 3.4 Interviews

As Infrastructure Canada (2007) identifies, an ICSP can be developed as an over-riding component that connects with other official plans. While the intent of this research was not to



create an ICSP, it was the belief that understanding rules, policies and political vision that regulates planning in Winnipeg could eventually lead to the creation of an ICSP. To more clearly understand these obstacles, interviews were conducted with two City of Winnipeg planners to clarify limitations and constraints that may arise with attempting to retrofit inner-ring suburbs in Winnipeg.

When conducting a focused interview, John Ziesel (2006) explains that there should be a guide that lays out what you intend to gain from the discussion, and cautions that without set objectives you may lose focus as your respondent can often get off topic. With this in mind, the planners were asked follow the same matrix exercise that was conducted with focus group participants and to respond to each of the major themes and presented action opportunities. This allowed for responses to be compared to the findings from the second focus group. In addition, a more detailed discussion was recorded during the interviews in order to capture the reasoning behind why the planners felt an action opportunity fit into the matrix where it did.

The results from the interviews were analyzed much like the results of the focus groups using open, axial and selective coding (Neuman, 2000). These findings were integrated into the discussions (found in Section 4.2 of Chapter Four) and were used to reinforce or challenge where focus group participants felt action opportunities fit within the proposed timeline.

## Chapter Four – Analysis

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This chapter presents the analysis of research gathered in this study. Section 4.1 is a discussion of findings from the first focus group, which identifies participants’ perceptions of their neighbourhood. This information is used to understand the present state of the study inner-ring suburb. Section 4.2 presents analysis of the findings from both focus groups and interviews with City of Winnipeg planners. Here discussion takes place on each of the eight themes and implementation timelines are identified for each of the 45 action opportunities.

### 4.1 Resident Perceptions of the Study Area

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The first focus group was the primary source of information about residents’ perceptions of the current state of their neighbourhood; thoughts about sustainability; and opportunities they felt should or could be incorporated into the neighbourhood to support sustainable change. In sections 4.1.1 and 4.1.2, two exercises are discussed which were meant to initiate discussions on sustainability themes. Then, section 4.1.3 looks at the findings from the “like-dislike” exercise and a visioning exercise.

#### 4.1.1 Walkscore

The literature supports compact built form that increases walkability and reduces reliance on automobiles (Jacobs, 1961; Holtz-Kay, 1997; Calthrope & Fulton, 2001; Miron, 2003). Before participants attended the first focus group they were directed to the website [walkscore.com](http://walkscore.com), which calculates the walkability of neighbourhoods from individuals homes to surrounding

amenities. Having participants calculate their walkscore was a means to generate discussion about the present state of their neighbourhood.

The findings revealed that the study area is presently not very walkable. Participants who lived closer to Pembina Highway had higher walkscores than those who lived further away, yet overall participant walkscores were not very good, ranging between 23 – 57. Walkscore.com indicates that an average walkscore is 49 and a high walkscore is 92. While participants had some criticisms of the tool (e.g. not taking into account access to transit) discussions revealed that most participants did not walk to Pembina Highway to reach the closest available amenities. Participant Three felt that a ten-minute walk to amenities was acceptable, but said, “I don’t walk for most things because a lot of what I need isn’t in the neighbourhood.” The group agreed that many of the amenities they used on a daily basis fell outside the study area, resulting in high levels of automobile use.

#### 4.1.2 Carbon Footprint and Views on Sustainability

Prior to the first focus group meeting, participants were also asked to calculate their carbon footprint in order to create a starting point for discussion about behaviours relating to sustainability. The carbon footprint calculator measures the amount of greenhouse gas emissions (primarily carbon) that individuals produce, based on their daily choices and lifestyles. The carbon footprint calculator used in this study, Carbon Footprint™ takes into account the participant’s country of residence, a timeframe for measurement of activities, how much energy is consumed in the household and while travelling, and takes into account personal lifestyle choices. Unfortunately, there was little gained from the carbon footprint exercise in the first focus group as most participants were unable to figure out their carbon footprint; either due to

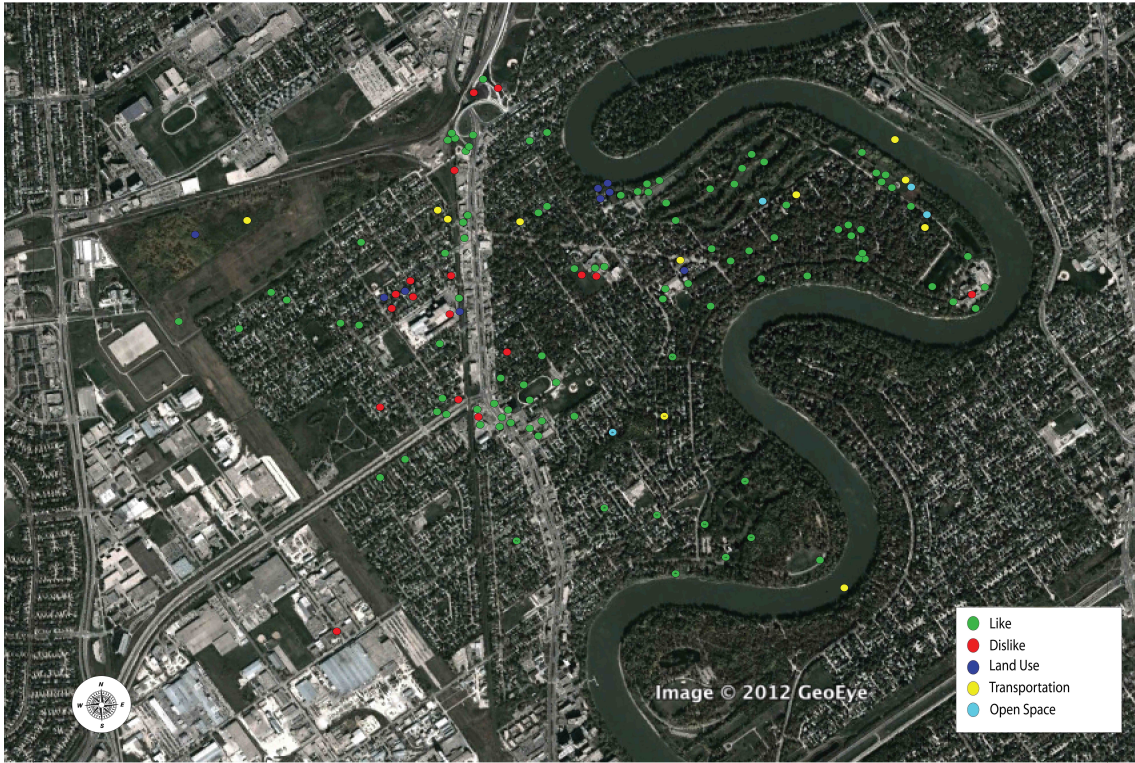
lack of time or that they did not have accurate information on hand for some of the responses (e.g. electricity bills for the year).

While the carbon footprint calculator may not have been effective for this focus group, it could still be a good tool that can provide a simple baseline measurement for individuals and their carbon emissions. As Kates et al. (2005) explain, measurements are a key to moving toward more sustainable lifestyles and neighbourhoods as they allow for progress to be tracked.

In the first focus group participants were also asked to discuss what the word *sustainability* meant to them. Overall it was apparent that the participants shared a similar understanding of the word that aligned with definitions and discussions in the literature (see for example, WCED, 1987; Wackernagel & Rees, 1996; Dawe & Ryan, 2003; Kates et al., 2005; Cato, 2009). Participant Three took a personal approach and said that it meant, “not taking out more than I’m putting into the world,” and Participant Two explained that sustainability is about achieving our needs and desires within the balance of the planet. The present state of the study area as represented by the focus group participants, would indicate that there is awareness to the concepts of sustainability and that emphasis on the environment was described in their explanations.

### 4.1.3 Like/Dislike and Visioning Exercise

A like/dislike exercise and a visioning exercise were conducted to help understand how focus group participants viewed the present state of the neighbourhood as well as future opportunities for sustainable change.



**Figure 4-1: Likes, dislikes and opportunities mapping exercise (Adapted by D. Clark) (Source: Base map from Google Earth™, © 2012)**

Likes		Dislikes
Wildwood Golf Course (x5)	Fort Garry C.C.	Pauwells Industrial Site (x5)
Their Home (x5)	Daly Burger	Pembina Hwy. (x3)
Wildwood Community Club (x4)	The Cambridge	Jubilee St and Overpass (x2).
Vincent Massey Collegiate (x4)	Baseball Diamond by Wildwood C.C.	Viscount Alexander School Field
South Drive (x4)	Open Space on South Drive	New Condos on Riverwood
Library (x3)	Bike Path along River to UofM	Oakenwald Ave.
Winnipeg Lawn Tennis Club (x3)	Perths Dry-Cleaning	Saint John's Ravenscourt School
Paths through Wildwood park (x3)	Starbucks	Industrial Lands Behind Maybank area
Oakenwald School (x2)	Playgrounds in Wildwood Park	Low Income housing off McGillivray
The Pemby (x2)	Cottage Bakery	
Trails through Crescent Drive Park (x2)	Tony Romas	
Vicks Fruit Market (x2)	Crescent Drive Golf Course	
New Bike Path along McGillivray (x2)	Track by Vincent Massey	
General Byng School (x2)	Apartments on Pembina Hwy.	
Lyons Pool (x2)	Police Station	
Safeway (x2)	Shoppers Drug Mart	
New Condos on Riverwood (x2)	Crane School	
Witchy Woods (x2)	Wading Pool	
Path around Crescent Drive Park (x2)	New Skate Park	
Field at Saint John's Ravenscourt School	Saint John's Ravenscourt School	
Toilers Park	Tony's Pizza	
Victoria C.C	New Basketball courts next to Toilers Park	
Dog Walk Park in Parker Lands	Baseball diamonds at F.G.C.C.	
Viscount Alexander School		

**Table 4-1: List of likes and dislikes identified by focus group participants**

The like/dislike exercise (results shown in Figure 4-1 and Table 4-1) was an opportunity to better understand the values in the community, which is deemed to be a necessary part of any sustainability plan (as identified by Berke, 2002; Kates et al., 2005; Roseland, 2012). This exercise showed that focus group participants took great pride in the amount of green space and natural features in their neighbourhood. Specifics included trails through Crescent Drive Park, the two golf courses, pathways along the river, the “witchy woods,” and the many other parks and open space throughout the neighbourhood. Participants identified several businesses that they also liked, all of which were located on Pembina Highway. This list included specific restaurants, such as Tony Roma’s, a bakery, grocery stores, a coffee shop and dry cleaning business. Education establishments, community centres, pools and recreation fields were also identified in the ‘likes’ category and consistently supported by a majority of the focus group participants (as seen in Table 4-1 where, for example, x5 indicates five participants liked a certain feature).

Most of the dislikes in the community had to do with roads that had high frequency or unsafe traffic such as Pembina Highway and Oakenwald Avenue; specific land uses such as industrial sites (Pauwels, an electrical transformer manufacturer; and the industrial park located west of study area); a low-income housing development (located near McGillivray Boulevard); and one participant did not like the new condos built by Viscount Alexander School.

After identifying likes and dislikes, a visioning exercise was conducted to understand how participants felt sustainable change might occur in the neighbourhood. One of the common themes identified by participants was maintaining and improving the natural features in order to preserve, as indicated by Participant Two, the “urban forest we live in”. This included establishing a tree maintenance program and improving access to the river, by establishing a better trail system, or creating places to launch boats and utilize the recreational

opportunities from the river. The natural spaces in the neighbourhood were among the most important features identified by focus group participants and they believed that maintaining and improving these natural features would preserve the key identity of the community. These ideas reinforce the notion that community identity plays a significant role in planning for change (as identified by Lukez, 2007) and reveal the importance of maintaining natural features and biodiversity (discussed by Hough, 2004).

Improving transportation networks emerged as another common theme as participants identified issues relating to walking and cycling paths and better public transit. Participant Two felt that Pembina Highway should incorporate a high-speed transit system, with either (Bus Rapid Transit (BRT) or Light Rail Transit (LRT) believing it would help encourage development so that Pembina Highway becomes a desirable place to live, work and shop. Discussions revealed that safety, connectivity and enjoyable routes were necessary for improving transportation in the community, issues that Miron (2003) speaks of for increasing the desirability of alternative transportation modes.

*Land use* was another common theme that emerged from the discussions. Participants seemed to agree that industrial uses did not quite fit with the neighbourhood context and they would like to see these existing uses converted into residential and commercial spaces. Other common discussion points included diversifying the housing in the neighbourhood to allow for more seniors to remain in the community. However, participant Three indicated, contrary to most, that they would not like to see condos by the tennis courts at the Wildewood Club as they did not believe it would fit with the context of the neighbourhood. Comments like this connect with the notion of NIMBYism (Not In My Back Yard) and as Fischel (2001) explains, NIMBYism can be beneficial when it serves the broader community interests, but can be harmful when it represents a few self-serving interests. In this case, benefits of having a condo for seniors,

includes: contributing to a diversity of housing, utilizing existing infrastructure, and replacing an underperforming establishment in the neighbourhood. When asked to elaborate why they did not want to see condos on this site, their response was that they just did not think it would work with the existing community. The literature on infill identifies challenges with introducing projects into existing communities because the character is established (as discussed by Calthrope & Fulton, 2001; Freedman, 2007; Lukez, 2007,) and once it is established people tend to want to preserve what they know.

Several discussion points were associated with preserving a sense of community as participants spoke of the schools, community clubs and other community activities in their neighbourhood. Participant One felt that it was necessary to attract people to the neighbourhood to maintain the schools as they identified a decline in enrolment in recent years. This participant also felt that community clubs help build communities and need to be maintained, saying, “Dad down the road will coach your kid, and mom will be managing.” Participant One’s concerns about preserving community services relate to a common issue associated with inner-ring suburbs identified by Wagner (2002), Anacker (2006) and Mieszkowski and Mills (1993) who explain that declining populations can lead to further economic and social decline. Dunham-Jones and Williamson (2009) also identify that with decreased populations there are challenges with having enough people and/or students to support existing community facilities.

#### 4.1.4 Summary

At present, the study area remains a desirable place to live, with its unique layout, plentiful open space and natural features, and importance placed on community connectedness and



upkeep. The literature review on inner-ring suburbs paints a challenging portrayal of these neighbourhoods, and while the study area shows signs of inner-ring suburb characteristics such as auto-oriented development (Lee & Leigh, 2005), declining populations (Wagner, 2002), and aging housing stock (Lee & Leigh, 2005), there is an apparent desire by community members to uphold the values of the community and ensure it remains a desirable place to live well into the future.

The walkscore exercise revealed that there is room for improvement to create better access to amenities. This could be accomplished by introducing commercial uses into the neighbourhood that do not currently exist and/or by decreasing the proximity to these commercial spaces by integrating commercial uses in other areas of the neighbourhood closer to residential use. The visioning exercise for future change in the neighbourhood revealed a number of opportunities that connected with more sustainable neighbourhoods, including: land use diversification, housing choices, community connectivity and transportation.

The next sections discuss findings from the second focus group and interviews with City of Winnipeg planners. Here, an analysis of each of the eight key themes and 45 action opportunities occurs and timelines for implementation are identified.

## 4.2 Analysis of Research and Discussion of Timelines for Implementation

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Information gathered from the literature review and first focus group identified eight key themes and, initially, 58 action opportunities for creating a more sustainable inner-ring suburb. These 58 action opportunities were brought forward to the second focus group meeting and to interviews with planners with the intent of identifying a timeframe for implementation. As part

of the open, selective and axial coding process, discussed in Chapter Three, findings from the focus groups were compared with planner discussions in order to identify challenges, issues, and opportunities associated with each action opportunity. This exercise ultimately led to identifying a refined timeline; reducing the initial 58 action opportunities down to 45.

The actions and timeframes that arose from this study reflect what Kates et al. (2005) identify as a framework for defining and achieving sustainability plans based on *goals, measurements, values* and *practice*. Kates et al. explain that timelines are necessary to track how goals are achieved throughout long-term visions. For this reason, the primary exercise conducted with participants in the second focus group and planner interviews was to understand where they believed each opportunity fit in a timeframe. The exercise asked participants to identify actions on a matrix work sheet, where one axis represented time (between now and later), and the other, difficulty of implementation (from easy to hard). The results were later categorized into three timeframes: within the next five-years (short-term), six to fifteen years (medium-term), and sixteen to twenty-five years (long-term). Kates et al. (2005) recommend a longer outlook for a timeline; however, participants found it difficult to identify any big ideas they could imagine fifty years into the future.

### 4.2.1 Community

Discussions from the first focus group revealed that *community* was important to all participants, yet there was concern that strong community ties may be lacking or diminishing. A number of “third places” (Oldenberg, 1996) were identified, where people enjoyed meeting, such as restaurants and bars; however, there were concerns that places such as community clubs and private clubs (the Wildewood Club) were becoming more of a challenge to maintain

and certain schools, specifically Oakenwald School, were facing challenges with lower enrolment levels.

The second focus group addressed these concerns and looked at how programming and the redevelopment of community clubs, schools and churches might work in the neighbourhood to enhance the sense of community. Discussions also addressed heritage preservation, built form to reflect the community's needs, and principles associated with CPTED (Crime Prevention Through Environmental Design).

### **Community Club, School and Church Repurposing**

The idea of repurposing existing institutions such as schools, churches and community clubs is identified by Dunham-Jones and Williamson (2009) as a way to reinvigorate under-performing community spaces and intensify land use in built-out neighbourhoods. They say schools and other civic institutions provide opportunities for regeneration in neighbourhoods where population decline and decreased enrolment are occurring. The study area appears to be consistent with these findings as the majority of the neighbourhood is built out and the population has been in decline since the 1970s. This includes school enrolment decline according to one of the focus group participants.

In response to repurposing community amenities, both planners believed that the physical redevelopment of churches and schools may be premature at this time and that efforts should first be focused on bringing the population back up to levels that can support these places. Planner Two felt that schools “are a sacred place for kids to learn and nothing else,” and should not be the focus of transformation in the neighbourhood at this time.

As for community centres, Planner Two believed that they are not necessarily responding to the needs of all members in the community and should look at incorporating

other recreational opportunities in order to draw a broader interest and support from people in the neighbourhood. Community gardening was identified in the literature (Twiss et al., 2003) as well as focus group discussions, and may be one opportunity to broaden the social programming of community centres.

Planner One explained that challenges for community centres are often associated with funding and dependence on volunteers. He believes that in order to make them sustainable in the future, political will and a stable operations model are both necessary. As Robert Putnam (2000) explains, the challenge of securing volunteers could be attributed to the decline of social capital, which is diminishing because people are spending more time working and commuting than ever before. While the commuting part may not necessarily apply in Winnipeg to the same extent as other major cities, people still appear to have several other commitments to attend to in a day. A lack of volunteers at the community clubs was identified in the first focus group and so perhaps if community clubs are to remain viable neighbourhood amenities, volunteering should increase and/or an alternative operations model should be explored.

In terms of repurposing churches, Planner Two believed that this transformation is already taking place. Focus group participants concurred with this response, identifying that the two churches along Point Road (Fort Garry United Church, and St. Paul's Anglican Church) offered a variety of programming such as the South Winnipeg Family Information Centre, martial arts classes and bake sales.

In summary, discussions with planners and focus group participants suggested that the repurposing of community clubs (physically and through programming) might be the most probable opportunity to address in the near future and has been identified in the short-term timeframe for implementation. Programming changes for churches have also been identified as something that is already occurring and could continue in the same period (short-term). The

physical transformation of churches and schools, as well as programming of schools was viewed by focus group participants and planners as something that should not be targeted right away. Both planners believed that the first priority should be to increase the population density of the neighbourhood to support the amenities before adapting them to fit a smaller population, contrary to what Dunham Jones and Williamson (2010) suggest. Focus group participants identified this as happening within the medium-term; however, given the discussions on increasing population density, it is felt best to put these initiatives off until efforts to increase population densities can be assessed. Taking the planners suggestion into consideration, the action opportunities of physically repurposing churches and schools, and introducing additional programming into schools has been placed in the long-term timeframe for implementation.

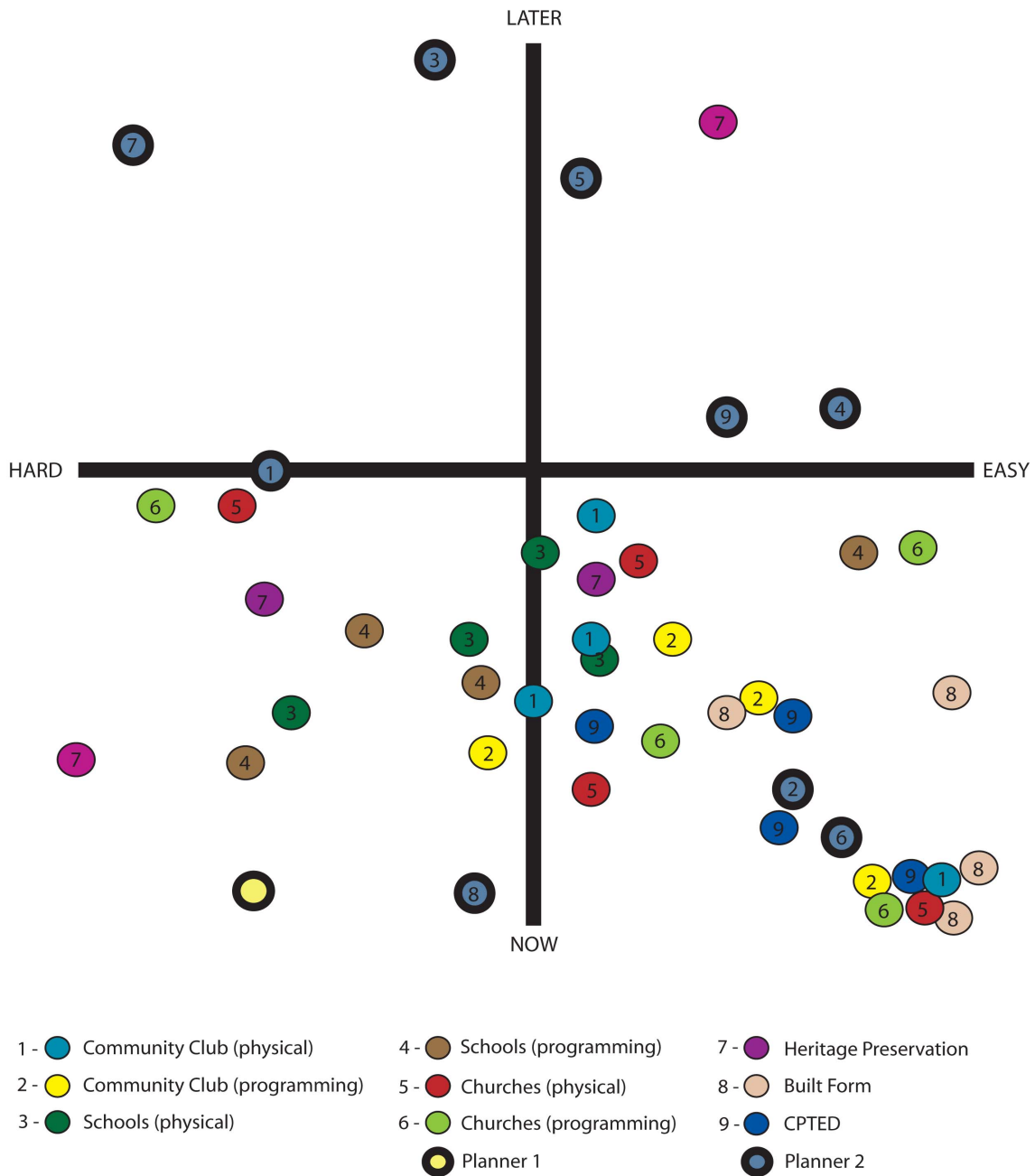
### **Heritage Preservation**

Focus group participants expressed a desire to see heritage preservation that would protect the natural features in their neighbourhood, such as trees and open spaces, particularly in Wildwood Park. Participants did not identify any buildings in the neighbourhood that they believed to have heritage importance, but future consultation might take a closer look at existing buildings worth preserving. Both planners believed that there are challenges with preserving buildings from a cost standpoint and ownership rights on private land. Focus group participants felt that establishing a heritage preservation plan might take some time and that it would be an action that fit into the medium-term timeframe. Discussion with City of Winnipeg planners is consistent with this outlook.

### **CPTED**

Focus group participants identified concerns with safety in their neighbourhood and the concept of Crime Prevention through Environmental Design (CPTED) was brought forward for discussion

as a means to address these concerns. All participants felt that CPTED was something they would like to see happen soon and that it would be somewhat easy to implement. Most agreed that they liked seeing places like skate parks and basketball courts being built in the community and understood that by creating places for activity in otherwise underutilized places, crime prevention and safety might be improved. While he believes in the goals of CPTED, Planner Two explained that he is not sure people understand the amount of change required to implement CPTED, noting that infrastructure renewal does not occur overnight. In contrast, Planner One believed that while there are several factors to consider that influence CPTED, public education can go a long way to help people begin to address safety issues in their community. While finances may not be available right away to implement CPTED principles in the study area, the concepts are fairly simple. To begin, further analysis of problem spots for crime in the neighbourhood could occur, followed by investigating CPTED principles that may be useful to deter criminal activity in those spaces. Provided funding is made available to invest in CPTED infrastructure renewal and opportunities, this action has been identified as occurring in the short-term timeframe.



**Figure 4-2: Matrix results for 'Community' actions**

Note - Discussions about built form in the 'Community' section was not focused enough to identify specific opportunities for the neighbourhood and was ultimately dropped from being included as one of the action opportunities in this section. Rather, the discussions that took place in the Land Use Diversification section spoke more to what participants would be comfortable with in their neighbourhood.

## 4.2.2 Land Use Diversification

Land Use Diversification is consistently identified in the literature as a key role in creating more sustainable suburbs (Calthrope & Fulton, 2001; Lee & Leigh, 2007; Dunham Jones & Williams, 2009; Hawken et al., 2010). The literature review, focus group discussions and interviews helped identify five strategies that can be implemented to increase land use diversity in the study area. The following is a discussion of each of these strategies.

### **Transit Oriented Development - TOD**

Regarding TOD, Participant Two reflected the general discussion of the focus group saying, “I think it’s a good concept that would benefit the community and support the development of rapid transit, it will just be difficult to make it happen.” Both planners spoke of the challenges and considerations with implementing TOD in the community, some of which included political agendas, and changing the character of the community. Planner Two explained the political agenda will dictate when and where rapid transit will be built and this, in turn, will influence the existing character of the surrounding neighbourhood. Planner Two noted that, “Stability of character is what attracts people to the neighbourhood, and TOD presents a change in that character.” As discussed by Calthorpe and Fulton (2001) in the literature review, changing the existing character of a neighbourhood will require strong political will, and consultation to ensure community support.

Planner One explained that there are plenty of commercial sites along Pembina Highway nearing the end of their lifespan and good opportunities for redevelopment. However, he went on to explain that the parcel size and depths along Pembina are quite small in some areas and this could challenge the success of TOD in this neighbourhood. As well, most zoning along Pembina Highway is lower density commercial (C2) or residential (R2) and he noted that zoning changes would be necessary to accommodate higher densities near transit stations. These



findings align with the literature, which observes that often, cities zoning by-laws are out of date and should be addressed to realign with objectives of creating more compact built environments and a mix of uses (as identified by Calthorpe & Fulton, 2001; Dunham-Jones & Williamson, 2009; Hawken et al., 2010; and FBCI, 2011).

For successful implementation of TOD in the study area, several considerations should be addressed. These include: political direction that will help identify how and where rapid transit and TOD will occur; zoning changes, particularly around rapid transit stations; and public consultation to gain community consensus and support. According to Planner Two, these events should include discussions on safety, sound, cost, character of the neighbourhood, and design.

Focus group participants typically favoured TOD, but felt that it would be a challenge to implement. While TOD is a high priority opportunity that coincides with rapid transit and should occur as soon as possible, for all reasons considered, the implementation of TOD has been identified in the medium-term timeframe.

### **Diversity of Housing**

In the first focus group, one participant addressed the need for more condos or seniors' housing in the area for when they decided they did not want to live in their detached single-family home anymore. Most participants agreed there should be more housing alternatives in the neighbourhood and identified the recent condo development on Riverwood Avenue as an example of what they would like to see more of in the area. Participants primarily targeted sites along or near Pembina Highway as probable places to introduce a diversity of housing opportunities in the neighbourhood. Planner One agreed that there would likely be more opportunities to create housing diversity along Pembina Highway than there are within the quieter parts of the community.

Considering findings from the literature as well as focus group participants and planners discussions, the recommended approach for creating housing diversity in the study area is to concentrate the majority of developments along the Pembina Highway corridor. This way, concentrations of higher density housing can support TOD, while preserving the character of the existing neighbourhood. Development of multi-family housing or mixed-use may occur within the community where appropriate, but Pembina Highway should be the primary target in the near future. This action has been identified in the medium-term timeframe.

### **Mixed-Use**

Participants did not identify mixed-use as an opportunity for land-use diversification in the first focus group. However, the concept was identified in the literature and it was brought forward to participants in the second focus group for discussion. Mixed-use was discussed as a way to intensify land use that typically combines spaces for retail and employment with residential use and contributes to a more compact built-form that encourages walkability. Participants primarily agreed with incorporating mixed-use into the neighbourhood, provided that it was context sensitive, meaning that it be primarily oriented along Pembina Highway.

Both planners identified challenges with implementing mixed-use development in suburbs and in general within Winnipeg. Issues associated with zoning history, bringing buildings up to code, and construction/operation costs were discussed. Planner One believed it is necessary to not force mixed-use where the market is not ready for it, and identified the concept of flex-space, saying, you can “build for commercial on the ground floor, but use as rental housing for the time being, and convert when the market dictates.” Both planners thoughts on mixed-use reflect findings by Jill Grant and Katherine Perrott (2009) who explain mixed-use development is a relatively new concept for many developers and that market factors

such as consumer behaviour and corporate specialization will affect the outcome of its success. They also state that mixed-use in suburbs is more likely to succeed when there is more automobile traffic available to access the commercial development.

Planner One believed there is potential for mixed-use development along Pembina Highway and the rapid transit corridor when it is developed, and explained mixed-use is encouraged at these types of nodes (stations) where concentrated activity can occur. Mixed-use development was identified in the medium-term timeframe for implementation.

### **Greyfield Development**

Planner One believed that greyfield development along Pembina highway will happen over time, noting, “The commercial life for some places will be ending relatively soon.” He added that major retailer developments on Taylor Avenue and Kenaston Boulevard have been taking away from development opportunities for Pembina Highway and have essentially “hollowed out the corridor,” a point Wagner (2002) and Mieszkowski and Mills (1993) speak of in regard to economic decline of inner-ring suburbs.

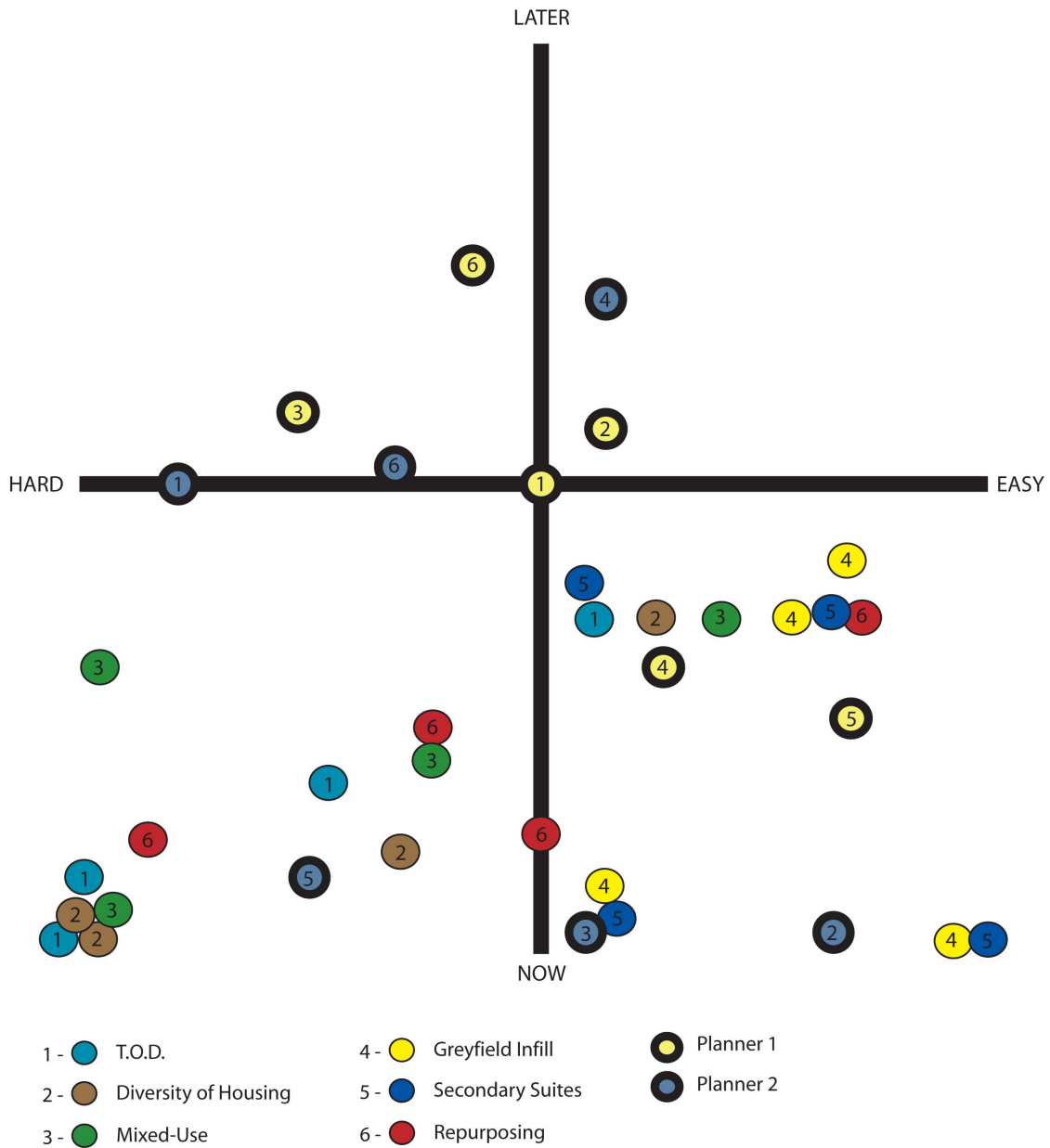
Challenges with greyfields, as identified by Freedman (2007) may include issues related to soil contamination (aka brownfields), and property size, shape, and location. The planners identified parcel size as a particular challenge that related to successful incorporation of density and mixed-use development (TODs) in order to support rapid transit and a more pedestrian-friendly environment along the Pembina Highway corridor. In the literature and planner discussions, rezoning and form based coding were identified as tools that could help encourage this type of development.

Greyfield development has and will continue to occur in the study area. The key to future successful greyfield development is that it incorporates smart land-use diversification strategies, such as TOD, and mixed-use developments. Building low-density freestanding fast

food restaurants with drive-throughs, for example, would be poor greyfield redevelopment in terms of sustainability objectives. Because of the higher expectation for greyfield development to incorporate mixed-use and higher density developments, the timeline for implementation has been identified in the medium-term.

### **Secondary Suites**

The idea of secondary suites was well received by focus group participants who believed they should be incorporated into the neighbourhood as soon as possible. Participant Two noted that they are presently allowed in the zoning by-law and that it was just a matter of people choosing to build them. Both planners explained there are some challenges associated with incorporating secondary suites into existing neighbourhoods. Planner One believed secondary suites would become easier to do if the City of Winnipeg Zoning By-law changed them from a *conditional use* to a *permitted use*, providing use-specific standards that ensure proper design and consider context sensitive issues. Presently, secondary suites require a public hearing and Planner One explained that this is where 'NIMBY' battles occur that prevent secondary suites from being built. Planner Two believed "It (secondary suites) would result in a significant change to the whole single-family housing neighbourhood status quo, and with that, you might run into some difficulties." Again, changing the character of the neighbourhood from its existing state was identified as a challenge for sustainable transformation in existing neighbourhoods. Considering all discussion points, the introduction of secondary suites in the study area was identified as something that could begin within the next five years.



**Figure 4-3: Matrix results for 'Land Use' actions**

Note - Upon review of findings, repurposing was consolidated with the greyfield infill action.

### 4.2.3 Better Buildings

Improving the design and energy efficiency of buildings is identified in the literature as a significant consideration for a neighbourhood sustainability plan because of the high levels of energy consumption and materials associated with the construction and operation of buildings (as identified by McLennan, 2004; CMHC, 2007; NRCan, 2009a; Nalewaik & Venters, 2009). To get a better understanding about how buildings could be improved in the study area, focus group participants as well as the planners were asked to discuss a number of possible opportunities. The list of ideas brought forward for discussion included: green building certification, energy efficient windows, energy saving lights and dimmers, energy efficient appliances, insulation, alternative energy sources, xeriscaping, green roofs, greywater recycling, and rainwater collection. The majority of proposed actions included retrofitting opportunities because the study area is built out and these opportunities seemed more applicable to the focus group participants. The opportunities also focused on simpler tasks rather than complex components of green building design in order to help participants connect with the implementation strategies. Some objectives associated with green building and sustainable development opportunities can be quite technical and there may be challenges with conveying this information in an easy to understand way that does not overwhelm or discourage people from implementing certain strategies.

#### **Green Building Certification**

Green building certification programs are one way to provide a standardized approach to new construction (e.g. LEED NC, LEED for homes) and some retrofits (e.g. LEED EB). While the CaGBC (2009) state that “the net cost of owning a LEED home is comparable to that of owning a conventional home,” Planner One said “the principle challenges, particularly with LEED, are that it is costly at the front end, and you see the savings in the long end, sometimes not for 20

years.” This point is consistent with findings in the literature (Nalewaik & Venters 2009). Planner One believed that green building certification for individual homes would be difficult and that it is more probable for multi-family, commercial institutes and public amenities. Planner One also said “from the onset, green building certification can be done, [however] retroactively, it’s a nightmare.” Planner Two noted that there are costs associated with LEED certification and that the process can be timely. Participants in the focus group primarily agreed that green building certification made more sense for larger scale projects. At this time the benefits of green building certification programs may still be a challenge and with these considerations in mind has been identified as fitting into the medium-term timeframe.

### **Efficient Windows**

Both planners believed it is a doable action, but that it really depends on where your priorities are and if you are willing to pay for window upgrades. Planner Two said, “There are other comforts that could be considered first,” and noted that the payback period on windows could be longer than other building retrofits. Participants believed that window upgrades should be something that happens soon, but that it would be difficult, primarily due to cost. For these considerations, installing energy efficient windows falls within the medium-term timeframe for implementation.

### **Energy Saving Lights/Dimming Switches**

Replacing existing light bulbs with energy efficient bulbs and installing dimming switches were identified as two very simple changes that could be made in buildings to reduce use of energy. Participants and planners both agreed that this should be something that happens right away and this action has been placed in the short-term timeframe for implementation.

## **Energy Efficient Appliances**

Planner Two says labelling has done wonders for the appliance sector, but people don't replace appliances for no reason; it's a matter of time and when it's necessary. Participants made similar remarks such as "why replace it if it is still working?" and "they are expensive." Because it will take time for current appliances to require replacement, this action falls within the medium-term timeframe. Planner Two explained that the market is going in the energy efficient direction and when the time comes to replace them the improved technology will be available.

## **Insulation**

Planner Two believed that the return on investment is very good relative to other projects to improve energy efficiency and that this should be a priority for most to improve the energy efficiency of their home or business. Both planners and participants agreed that it is something that could happen now and is quite easy. Because the return on investment can literally be seen on your next heating bill, home insulation is easy for people to justify. The timeframe for implementation is identified for within the next five years.

## **Geo-Thermal/Solar**

Planner One thought that decisions about investing in geothermal or solar energy depended on cost recovery and how long someone intended to own a house. District energy is hard to introduce in a developed area and Planner One was not sure how it could be accomplished.

Planner Two believed it would take a while to implement, and that it could be quite easy but it would need to be supported by Manitoba Hydro (the local energy provider). Given the exceptionally low cost of hydro electricity in Manitoba, justifying alternative energy technologies becomes difficult from an economic standpoint. Participants felt that this was not



something that would happen until later and that it would be hard to implement. Therefore, alternative energy sources falls within the long-range timeframe.

### **Xeriscaping**

Planner One believed xeriscaping is very easy and could happen now, but said, “It’s a matter of whether or not the public buys into the concept of naturalized yards over traditional turf grass yards.” Planner Two thought that it would be a matter of personal choice and right now the mentality of most people is that they like their non-native plants. As Hough (2004) explains, one of the challenges with getting away from turf grass is the conflict between the aesthetic control of landscapes and the benefits of natural processes. Over time, education and good demonstration projects may help change public opinion. As well, Planner Two believed that eventually economics should support xeriscaping as the cost of water and energy increases to maintain non-native lawns. All participants agreed that this is an easy task and that it should happen now and the timeframe for implementation falls in the short-term.

### **Green Roofs**

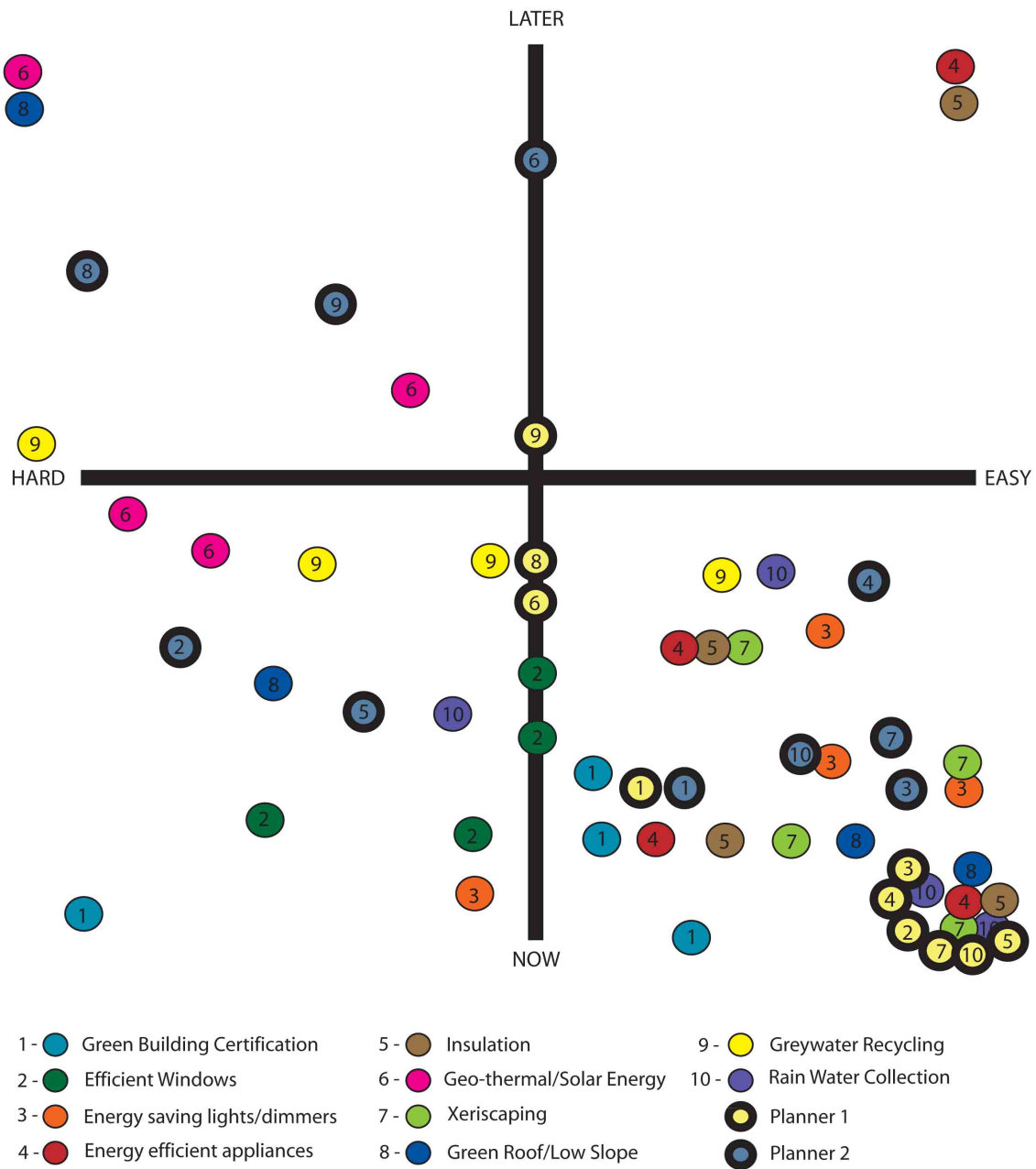
The Canada Green Building Council (CaGBC) (2009) promotes green roofs as a way to increase permeability on what are normally sites of heavy water run-off. It reports that green roofs also insulate buildings, which helps reduce energy consumption. Planner One believed that for the additional cost of a green roof, there is little return as far as cooling savings in our climate.

Planner Two echoed this thought stating that green roofs are expensive and from a land drainage approach there are other ways to achieve the same thing at less cost. This includes, water barrels, improved landscaping, and improving the general water retention features around the property.

Overall, participants felt that this would be a moderately difficult task to achieve, primarily for cost purposes and identified it within the medium-range timeframe. Green roofs do not appear to be the most cost effective and necessary tool in regard to water retention for the community at this time and when considering planners discussions, have been identified in the long-term timeframe.

### **Greywater Systems**

Planner One noted that trying to retrofit greywater systems into an existing building can be very difficult and believed that incorporating it into newly constructed buildings would be much easier. He also said that the sophistication of the system chosen depends on the intended use of the greywater (for example, a system that was meant to recycle used bath water for new bath water, or if old bath water was meant for watering outdoor plants). Planner Two believed that greywater systems can be costly and that the building code has not yet caught up to include them. Participants felt that greywater should happen now but that it would be quite hard to incorporate into their homes. The potential for introducing greywater systems is more likely for renovations and possible additions that can address the required demands of having a greywater system in place. For these reasons, the timeline for implementing greywater was identified in the medium-term.



**Figure 4-4: Matrix results for 'Better Building' actions**

Note – Rainwater collection was also identified in the 'Water Management' section and a more detailed discussion takes place there.

#### 4.2.4 Open Space

When participants were asked to identify likes and dislikes in the neighbourhood, many spoke positively about the open space and natural features in the community. Overall, participants wanted to see the existing open space in the community remain and they were receptive to ideas on how to diversify the use of space. The literature suggests a number of ways open space can be improved, such as: preserving biodiversity, incorporating a diversity of uses, naturalization, and maintenance alternatives (as discussed by Twiss et al., 2003; Hough, 2004; City of Winnipeg, 2007; Lewington, 2010; Roseland, 2012).

##### **Preservation of Biodiversity**

Jane Lewington (2010) explains that the benefits of biodiversity include: controlling flooding and erosion, cleaning water sources, managing drought, pollinating crops, recharging water sources, providing valuable green space, and storing carbon emissions. The concept of preserving biodiversity was perhaps a little broad and focus group participants were hesitant about where to begin discussions. Participants explained that they enjoyed open space and natural features in the neighbourhood, but discussions tended to focus on aesthetics and the usability of space rather than the additional benefits it can provide, such as the ones discussed by Lewington (2010).

River bank access and maintenance was identified by focus group participants as an opportunity in the neighbourhood, but again the focus of discussion related primarily to recreational activities associated with the river, such as boat launches and walking paths. While participants agreed that the concept of biodiversity was worth exploring, perhaps the technical specifics about storing carbon emissions and recharging water sources were not as readily understood. These discussions illustrated that there is a need to educate and explain in easy to understand terms why certain sustainability action should be explored and how they can be

achieved. As Hough (2004) identifies, there is a need to educate people about the importance of natural processes in urban environments, and so perhaps educational tools, such as interpretive signs, might be another opportunity explored for the neighbourhood to increase awareness and understanding of certain issues.

Both planners believed that preservation of biodiversity is an achievable action granted it fits with what community members want and that there are funds available to support projects. Participants agreed that this is something that should happen now and should be relatively easy to do, provided funds are made available. Therefore, this action has been identified for implementation within the next five years.

### **Energy Reduction and Alternative Maintenance**

Opportunities to reduce maintenance of open space and encourage naturalization are additional components of enhancing biodiversity in the neighbourhood. According to Roseland (2012), reducing maintenance can save money from city operational budgets, while at the same time allowing natural processes to occur, which can enhance biodiversity.

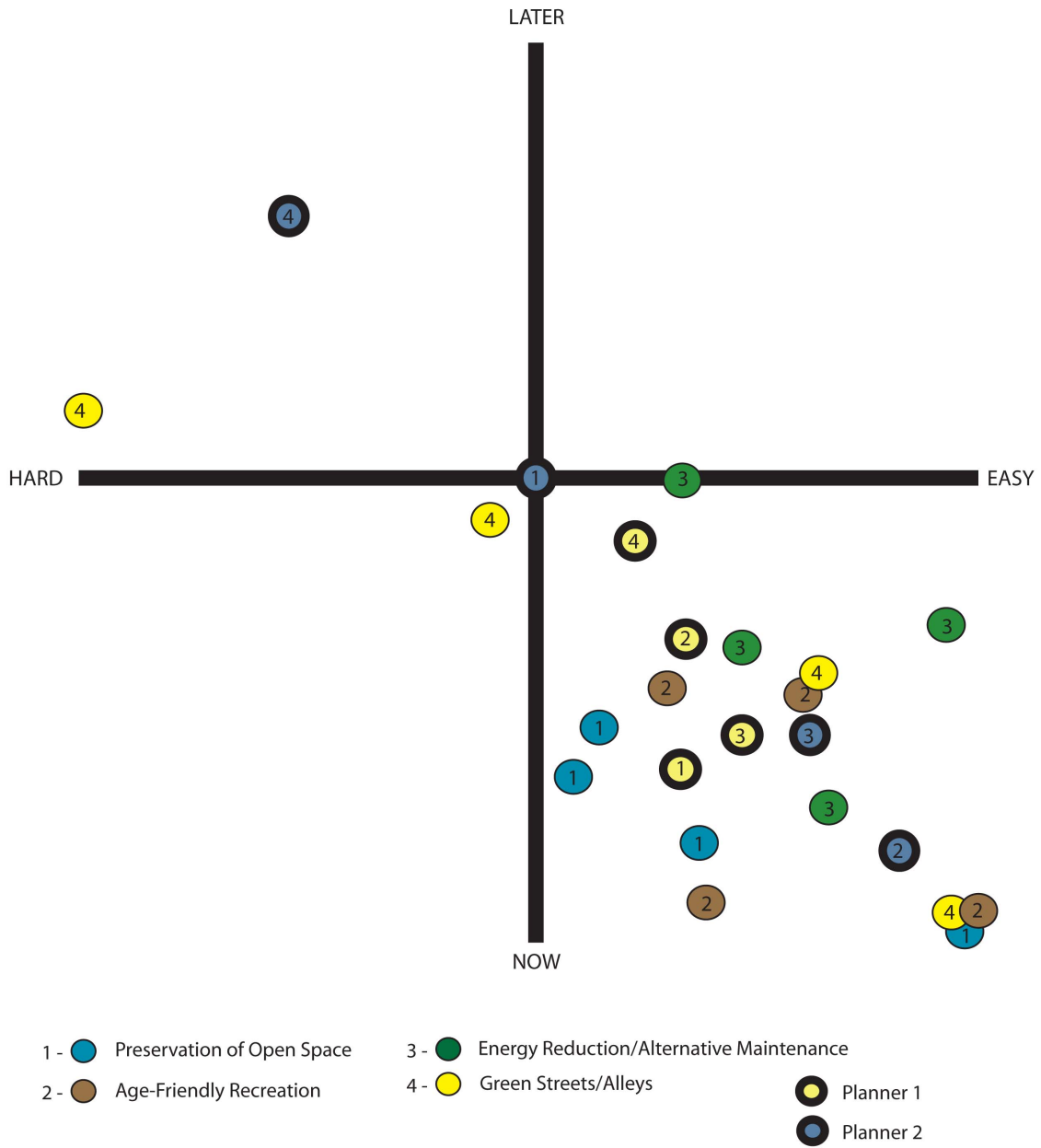
Planner One believed the biggest barrier to its success right now is public perception while Planner Two explained that it is already happening in the area and believes energy economics dictate that it will only get easier to promote and encourage. In the second focus group, participants agreed that this was an action that could happen now and should be relatively easy to implement and is identified for implementation within the short-term timeframe.

## **Age Friendly Recreation**

Discussions in the second focus group were favourable of age-friendly recreation opportunities in the community. Some examples identified included: walking, bike trails, school playgrounds, lawn bowling, river access for boating, and community gardens.

As mentioned briefly in the Community section of this chapter, community gardens are supported in the literature (Twiss et al., 2003) as places that promote healthy living, community development and local food production, which reducing energy consumption associated with transportation. Twiss et al. (2003) explain that the primary challenges with making community gardens work is the need for long-term investments, policymaking, staffing and acquiring resources. Planner One identified that the City has very little money for projects right now and explained that, “it’s doable, it’s just a function of money and political will.”

This action is identified to begin in the next five years, however may take longer based on financial resources, political will and community member will. Having more seniors in the neighbourhood could also support a diversity of recreational activities and timeline for implementation may be influenced by other action opportunities, such as the addition of senior housing into the neighbourhood.



**Figure 4-5: Matrix results for 'Open Space' actions**

Note - Green Streets and Alleys fell under two categories and discussion can be found in the Water Management section.

## 4.2.5 Transportation

Stone and Gibbons (2002) state that low-density suburbs often separate commercial and residential uses, forcing people to rely on cars to reach amenities. This statement is similar with findings in the first focus group, which showed most participants drove to amenities in and beyond their neighbourhood.

In response to improving transportation options within their neighbourhood, participants identified and discussed seven opportunities that might be implemented. The following is a discussion of these opportunities.

### **Pedestrian Bridges (Connectivity)**

In the first focus group, participants discussed the idea of introducing pedestrian bridges in the community as a way to increase active transportation connectivity and decrease the need for driving to certain places. They agreed that they would like to see the construction of two pedestrian bridges, one linking the Wildwood Community Club site with the Canoe Club site in St. Vital and the other connecting Crescent Drive Park with St. Vital Park. When brought up in discussion of the second focus group the participants agreed that they would like to see this happen in the next six to fifteen years, but understood that it would be a difficult task to achieve.

The appeal of the pedestrian bridges is that it would open up the neighbourhood to more walking paths and active transportation networks, and connect people to neighbourhoods in the city that are otherwise quite far away by car. Active transportation is supported in the literature as a means to improve sustainability of communities (see Miron, 2003; and City of Winnipeg, 2011a); however, researchers caution that developing new transportation opportunities can be very costly and if not carefully planned out can end up requiring subsidies, making them economically un-viable.



Both planners discussed the practicality of pedestrian bridges further, and explained that pedestrian bridges at these locations might be more costly than they are worth. Planner One believed, “It’s a nice idea but costs a lot of money,” and explained there is a need to look at the cost of the bridge and look to what end it is achieving. Planner Two explained that walking does not make much sense between these points because there are not many destinations on both sides to draw the high levels of pedestrian traffic. Planner Two added, “Transforming our transportation system is one of the most important issues to tackle. But for value, this is not the most appropriate means to achieve that.”

Because of the many issues associated with developing pedestrian bridges in the neighbourhood, the timeframe for implementation falls into the long-term. In time, if capital budgets can support these types of projects and there is adequate density around the bridges to make it viable, they may become a consideration for the neighbourhood.

### **Bike/Walking Paths**

Focus group participants reported that they enjoyed walking and cycling in the neighbourhood and felt safe on most streets. However, South Drive, a street most participants identified as a ‘like’ in the first focus group, was also commonly identified as a street in the neighbourhood that would benefit from a bike/walking path. Participants targeted South Drive because there are presently no sidewalks on this route and many people find it dangerous for walking and cycling. John Miron (2003) believes providing safe alternatives for travel other than by automobile can encourage people to choose active transportation options. While South Drive was specifically identified in this study, it highlights the importance of providing safe, pedestrian and cyclist friendly space in all neighbourhoods.

Opportunities for improvements were discussed and depending on how participants envisioned change, they felt that this would either be a very easy task to achieve or somewhat

difficult. Three of the four participants in the second focus group felt that this was an easy to accomplish task, and Participant One said, “Get the truck that makes the lines and put one down South Drive.” However, Participant Two saw this as a more difficult task because they wanted to see construction of a designated path. Planner One believed that a path is relatively easy to do, but it is a question of feasibility and right now the City does not really have money for anything. Planner Two wondered if it is necessary to create a separate path along South Drive. He suggests instead the possibility of lowering the speed limit and implementing traffic calming measures.

There are a few approaches to making walking and cycling safer along this route and perhaps through further consultation the best approach could be identified. For now, bike/walking paths are being identified as an action that could occur within the next five-years.

### **Transit Technology and Improving Ridership**

The idea of improving transit technology and ridership in the community was identified in the first focus group. Participant Six said “you need to make it easy for people to take the bus,” and that in Winnipeg, “there is a stigma that people who take the bus are either poor, students, or old people. In Toronto everyone takes public transit; lawyers, doctors, everyone.” The rest of the focus group members concurred in this statement.

In the second focus group, participants felt that upgrades to transit stops and transit technology would improve the image of transit and would be relatively easy to implement. Planner One identified that changes to transit stops and technology are already happening, and that it will continue to happen over time as funds are allocated to do so. With this in mind, improvements to transit stops and technology have been identified for implementation in the short-term timeframe.

## **Rapid Transit**

Discussions about rapid transit and Transit Oriented Development (TOD) (in the land use diversification section) were quite similar. Participants understood that effective transportation systems required adequate populations to support them and that TOD could help do that.

Focus group participants and planners all thought that rapid transit could promote a number of additional benefits to the neighbourhood, such as TOD, bike parking and effectiveness of feeder buses. Challenges associated with implementation are significant in terms of cost and political will, however Planner Two said, “while costs are phenomenal this is a very important and critical component to creating more sustainable cities,” and rapid transit should be one of the top priorities for this neighbourhood and the city as a whole. Given the financial and political constraints the timeframe for rapid transit implementation is identified in the medium-term.

## **Bicycle Parking at Major Transit Nodes**

Participants in the first focus group identified bike parking at Pembina Highway as a good opportunity to enhance transportation options in the community. Participant Five said, “Wildwood is a perfect community to start up the bike thing. For example, you bike to Pembina, park your bike and catch a bus.” Participant Two thought that it should be fairly simple to implement, explaining, “What you need to do is identify a design based on what has worked and find city owned land to construct it. Or, alternatively go somewhere that would want your business and see if they would be willing to have it there.” Planner One believed finding places for bike parking will be “a function of the market, but it’s easy if we change the regulations, for example, if Safeway redevelops you can put in that they require bike parking.” Overall, planners and participants agreed that implementing bike parking along Pembina Highway at major nodes should be an easy opportunity to introduce into the community within the next five years.

## **Car Shares**

Car shares were identified in the literature as an opportunity to provide residents with an alternative option to owning a vehicle (TRB, 2005; CarSharing Association, 2011). When brought forward to the second focus group, Participant 1 said “I like the idea of it, but it just doesn’t seem necessary or feasible at this time.” The rest of the group and planners also felt that it was something that wasn’t necessary now, but something to consider in the future. As the literature review identifies, car sharing works best in higher density areas that are more walkable and where parking pressures exist (TRB 2005). For car sharing to be viable in the study area, first there would need to be increases in density and a focus on land use diversification. The timeframe for introducing car shares in the neighbourhood is identified for the long-term.

## **Bicycle Shares**

Bike sharing was brought forward to the second focus group because it is a sustainability opportunity that many cities are beginning to explore, as identified in the literature (Paul DeMaio, 2003; City of New York, 2009). Like car shares, consensus among planners and focus group participants was that bike shares did not fit with the immediate needs of the neighbourhood residents. Planner Two explained, “At this time there is not a huge amount of applicability in this neighbourhood,” and that it won’t happen in this neighbourhood for a while without changes in land uses. Planner One agreed that “Bixi bikes” (bike shares) would not really work in this area, adding “Bike parking at transit stops would have the same function and be more appropriate at this time.” The timeframe for implementing bike shares in the community is identified for the long-term.

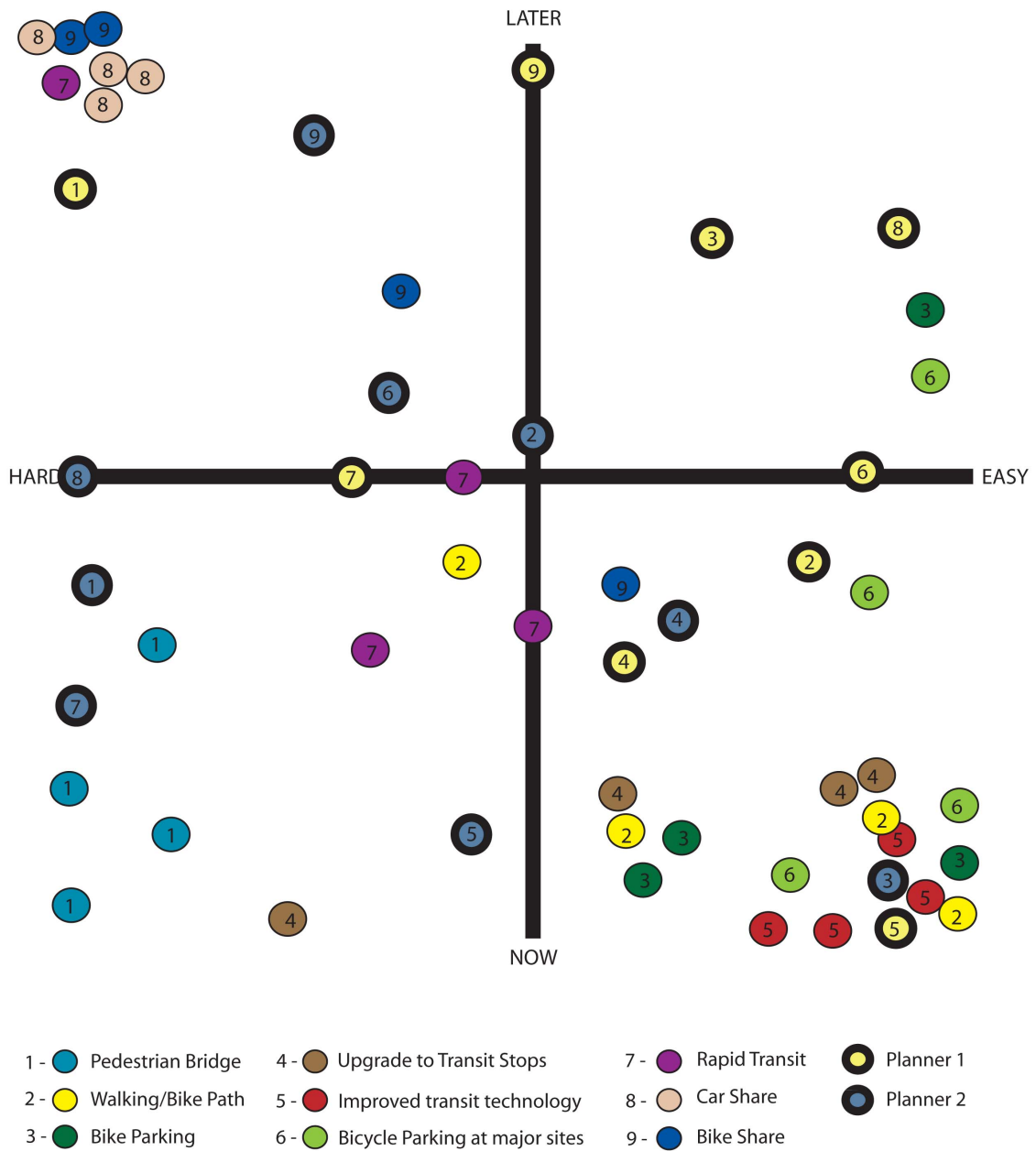


Figure 4-6: Matrix results for 'Transportation' actions

## 4.2.6 Water Management

In the first focus group participants did not have much to say about water management. It appeared as though they did not have a clear idea about what actions and opportunities would be involved in a water management plan. However, after showing some examples of community scale water management opportunities, participants appeared to support the goals of improving water management in the neighbourhood and provided a few suggestions of their own such as rain capture opportunities. Eleven individual opportunities were identified and discussed with planners and focus group participants, but through analysis and the coding process, have been refined down to five main opportunities. The following is a discussion of these five opportunities associated with a sustainable neighbourhood water management plan

### **Green Transportation Infrastructure**

Green transportation infrastructure includes green streets and alleys, bio-swales and green parking. The literature supports green alleys and streets as a means to enhance water retention and enhance public space aesthetics (Hagar, 2002; The Design Centre for Sustainability, 2006). In Winnipeg, Planner One believed that green streets and alleys are doable as there are already examples of technology in place along some streets; for example, *silva cells*, which are often used with street trees to promote growth, allowing water to slowly release into the soil around the base of the tree and root system. However, both planners believed there are a number of challenges associated with the implementation in regard to climate, maintenance, and rate of infrastructure renewal, which costs money. Participants in the second focus group agreed that green streets and alleys were a good concept and should be incorporated into their neighbourhood, but believed it would take time, in terms of waiting for necessary infrastructure renewal and funds available to support it.

As a component of green streets, bio-swales are identified in the green transportation infrastructure section because they can be implemented along non-permeable surfaces such as roads and parking lots according to the CaGBC (2009). Planner Two felt that bio-swales could be attractive assets that naturalize the look of open space and provide improved water retention, but believed that there may be problems with retrofitting into existing streets. For this to work, Planner Two suggested that professional designers would need to be hired, which might add to the cost of implementation.

As for green parking lots, Planner Two explained that the difficulties with fighting for green parking would likely be in conflict with the simultaneous desire to get rid of surface parking altogether. He explains that in terms of sustainability there is a desire to move away from auto-dependency, and it seems like a counter-intuitive investment at this time. Planner One adds that you cannot mandate it at this time and it will be a matter of developers wanting to do it, otherwise it is relatively easy to do. Participants felt that green parking lots should be relatively easy to achieve and that it should be implemented now. The literature review, as well as discussions with planners and focus group participants helped identify each of these issues as something that should be targeted for the medium-term timeframe.

### **Naturalization of Open Space**

Discussions about the naturalization of open space are similar to those about alternative open space management, discussed previously in the 'Open Space' section. However, the goals under this section focus on water runoff, erosion, and improving retention rather than biodiversity, though the two tend to go hand-in-hand. The literature (for example, Hagar, 2003; Hough, 2004; and Girling et al., 2009; Roseland, 2012) supports the naturalization of open space to reduce runoff and erosion and all participants agreed that this would be a positive improvement for the community. Participant One noted, "It is already happening in certain parts of the

neighbourhood such as Crescent Drive Park and around the Wildwood Community Club.” Next steps might be to identify other spaces in the neighbourhood where it could work. The timeframe for beginning to naturalize open space is identified for the short-term, to begin within the next five years.

### **Dual Flush/Low Flush Toilets**

Planner One believed implementing dual flush toilets is easy to do and should happen now, adding that it should be mandatory for new construction. Planner Two explained that it should not be as hard as it is, but there seems to be an unwillingness by the general public to buy in to the dual flush, or low flush toilet concept. Planner Two added, “If it were that easy to deliver toilets and install them, then people would surely do it,” explaining that getting people to change their behaviour, unfamiliarity with plumbing, and difficulty with bringing home a toilet are barriers that may be deterring more people from getting low flush toilets. Participants agreed unanimously that dual flush, or low flush toilets are something that should happen within the next five years.

### **Rain Barrel**

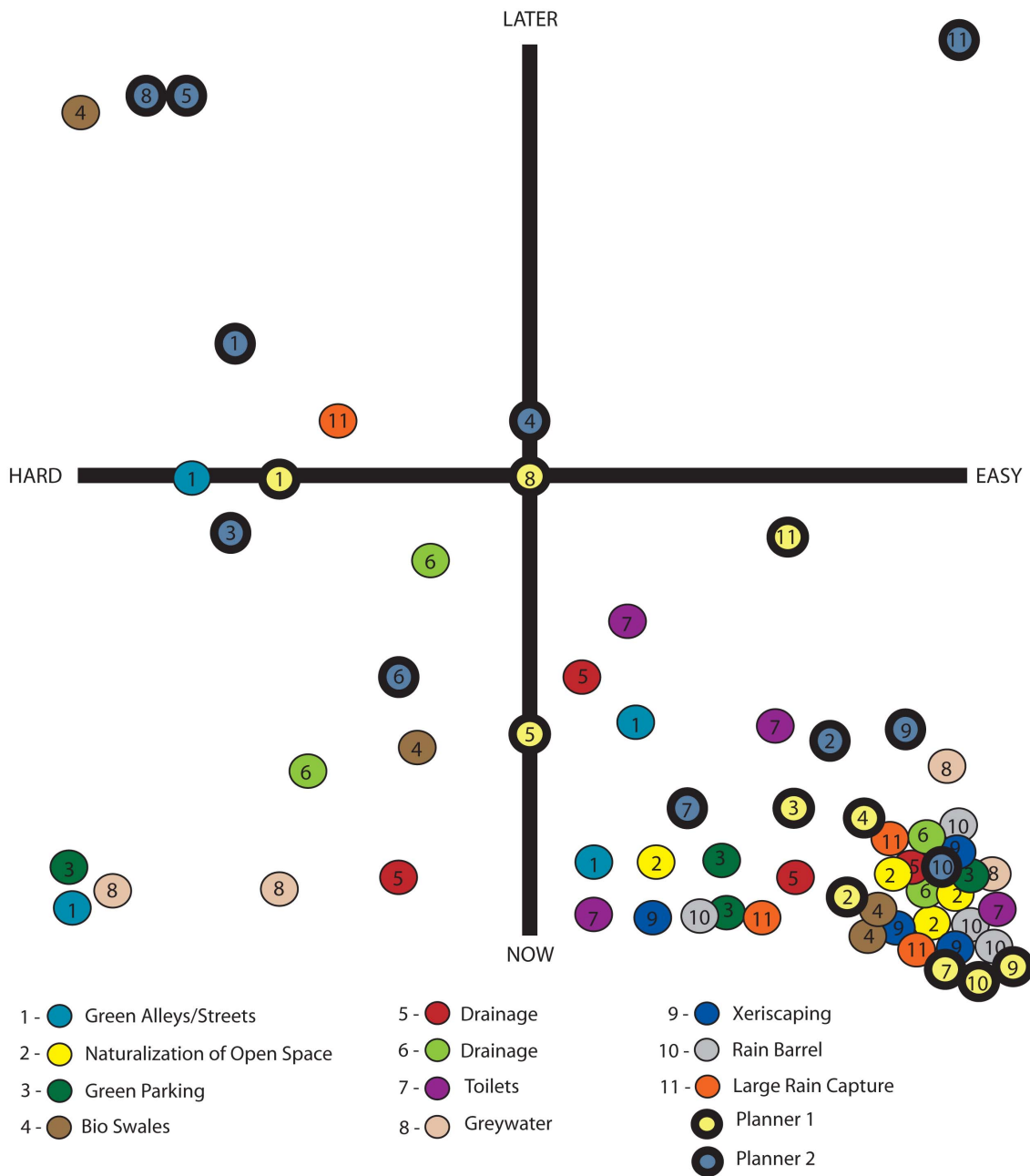
Planner Two said that rain barrels are a very simple action to implement, as they are, “one of those low hanging fruits,” however, while many people really have an objection to rain barrels, some people just cannot be bothered. He added that the personal gain can be quite minimal; however it is still one of the pieces of the puzzle. Participants agreed unanimously that this was something that could happen now and would be easy to implement. The timeframe for the implementation of rain barrels should occur within the next five years.



## **Large-Scale Rainwater Capture**

Planner One explained the difficulty with large-scale rain capture is that it can take up a fair bit of room and wonders if the climate in Winnipeg is appropriate for implementing, given that in the winter, water capture is not occurring. Planner One believed it would be a matter of individual will and that it could occur in the medium-term timeframe. Planner Two believed it would not be that difficult, however, roofs would need to be retrofitted, which comes with a cost. They added, right now it is not necessary and there is not much benefit to doing this given the cost of water and availability. Perhaps in the future with rising water costs it could be a good thing. On the other hand, participants felt that this was something that could occur now and would be somewhat easy to implement. They identified community institutions, such as schools and community clubs where it could work.

Given the discussion, large-scale rain capture does not appear to be an immediate necessity to improving the sustainability of the study area. In time, it may become a feasible opportunity and community institutions may make sense, however right now large-scale rainwater capture is being identified for the long-term timeframe.



**Figure 4-7: Matrix results for 'Water Management' actions**

Note – The discussion on green roofs, greywater, and xeriscaping that took place under the better buildings section were consistent with discussions relating to water management and therefore not discussed in the 'Water Management' section.

## 4.2.7 Waste Management

In the first focus group, participants discussed their thoughts on how to improve waste management in their community. Some of the ideas identified were implementing a user pay system and behavioural changes such as reducing the use of plastic water bottles in favour of reusable bottles. For the second focus group, four categories were identified based on previous discussions and literature review, including: garbage, compost, recycling, and behavioural changes.

### **Garbage Management**

The City of Winnipeg and Stantec (2011) identify challenges with generating adequate revenue in order to realistically support alternative waste management services. On top of financial constraints, behavioural challenges were also identified in research discussions. Participant Three felt that because people's mentality is such that they keep buying new things and throwing out the old, the waste management action would take a while to successfully implement. Emphasis on changing people's mentality was apparent in the discussions and possible actions could incorporate educational opportunities such as: compost education; school education; and zero waste promotion and education (as identified by the RDN, 2004).

Implementing a new waste management strategy may begin right away, but implementing educational tools and raising adequate funds to support all components of a waste management strategy may take some time. For these reasons this action has been identified as beginning in the medium-term timeframe.

### **Private Compost**

Planner Two believed private composting is similar to the rain barrel concept in that people will likely not go out and do it on their own; rather there needs to be an incentive. Otherwise both

planners think that it's an easy to achieve opportunity. Focus group participants agreed that it was an easy to accomplish opportunity, but that there is a need to change personal habits in order to make composting doable. Education on composting practices would be a positive start and private composting is an action that should begin within the next five years.

### **Public Compost**

Both planners felt that a community compost system is doable, but that it would require a bit of funding and policy support as well as community resources and volunteer support. Participants thoughts aligned with the planners comments and public composting has been identified as an opportunity that could happen in the medium-term timeframe.

### **Recycling**

Planner Two thought recycling is an easy concept for people to wrap their minds around, but explained the biggest limitations to its success are economics and market limitations for commodities of recycled goods. Participants believed that recycling was already happening and would be easy to continue to do, however one issue identified in the first focus group by Participant Four was the question of whether a recycling plant even existed in the city. This participant believed the general public is not aware a recycling plant exists in Winnipeg and that there is uncertainty about what happens to the materials that go there. This is clearly an education gap that the public could easily become familiar with and is a consideration identified in the new City of Winnipeg waste management strategy (City of Winnipeg & Stantec, 2011). Improving recycling in the study area and Winnipeg as a whole is identified for implementation within the next five years.

## **Lifestyle Choice**

In focus group and interview discussions, personal choice and behaviour were identified as significant barriers in moving toward waste reduction lifestyles. As identified by the RDN (2004), public education plays a large role in helping achieve their waste management goals. Planners and participants agreed that greater public education needed to occur in order to encourage people to participate in a better waste management system and educating for changes in behaviours and lifestyle choice has been identified as occurring within the next five years.

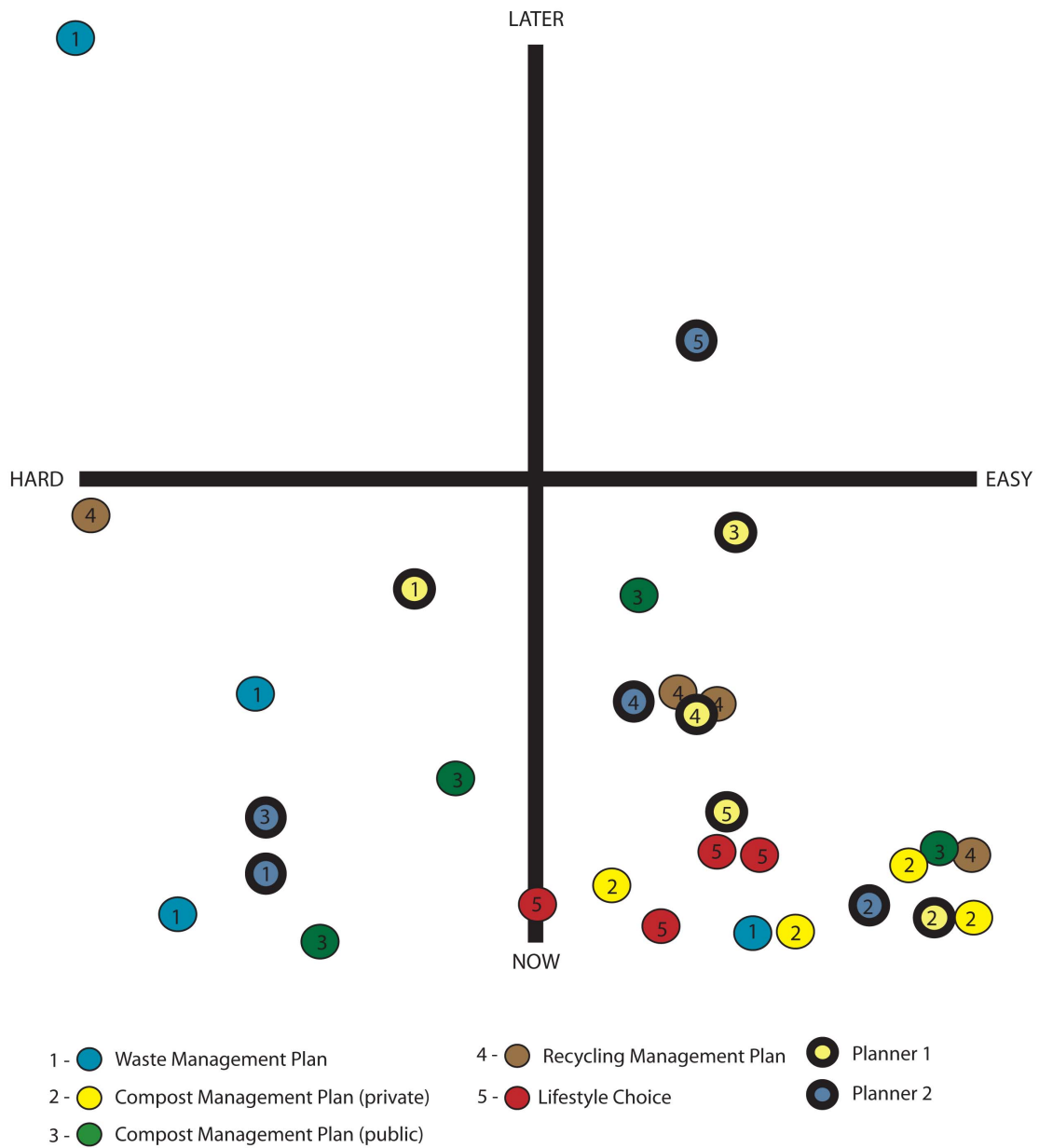


Figure 4-8: Matrix results for 'Waste Management' actions

## 4.2.8 Economy

According to the City of Winnipeg (2010b), the current infrastructure deficit is \$3.5 billion and over the next ten years that number is expected to rise to \$7.4 billion. Optimizing existing infrastructure and planning for a compact urban form could help reduce outward expansion of the city and thus the need for new infrastructure to support new development. Action opportunities associated with economy in this study are related to sustainable infrastructure and support for local economy. The issues of sprawl are closely related to the economy as the cost of infrastructure to support low-density development is proving to be unsustainable, as identified in the literature (Torrens & Alberti, 2000; Brueckner, 2000; Slack, 2002; Leo & Anderson, 2005). Discussions about how to maximize transportation, water, and energy infrastructure look beyond the study area, but ultimately affect the potential for improving the study area because of the shared, citywide deficit. Discussions about supporting local economy and embracing the 'creative class' address the need for communities to become more self-reliant and diverse in order to ensure greater economic stability.

### **Sustainable Infrastructure – Energy**

Energy is identified as a key theme in much of the literature and essentially underpins many of the objectives associated with each of the themes identified in this research. Often, the costs can be a challenge with implementing energy alternatives and for this reason energy was placed under the economy theme.

In the first focus group participants identified some opportunities for improving the community through better energy practices saying they would like to see solar streetlights and improvements to energy efficiency in buildings. When participants were asked in the second focus group about when and how sustainable infrastructure for energy should be incorporated into the community, they discussed opportunities for creating more locally scaled energy

technologies such as geo-thermal, solar, and wind. They determined that while it would be good for the environment, introducing some of the small-scale energy technologies would be moderately difficult or hard and that cost/benefit was one of the most challenging hurdles for implementation. Both planners echoed these thoughts explaining that it's difficult to justify developing new energy infrastructure when Manitoba has some of the cheapest hydro rates in North America. Planner Two believed that at least there is a growing awareness to the alternatives and that "people know what a wind turbine is." If and when the cost of energy rises to a certain level in Manitoba, alternative forms of energy may be much more readily developed and supported by local policy. At this time however, improvements to energy technologies is identified in the long-term timeframe for implementation.

### **Sustainable Infrastructure – Water**

Planner One explained that older areas in the city have piping capacity issues due to old and deteriorating infrastructure and that in new communities water infrastructure is often built to accommodate specific development needs and therefore has little flex room to accommodate intensification. However, in Winnipeg, areas built post WWII, between 1950 and 1970 (inner-ring suburbs) are more flexible to accommodate new development because these pipes have often been built to accommodate higher capacities than are currently being used.

Participants were admittedly not so clear on the issue being discussed during the focus group, but eventually understood the importance of finding opportunities to maximize the use of existing infrastructure by encouraging intensification of development in their community and discouraging development further out at the edge of the city. Planner One explains that the ever-increasing infrastructure deficit makes any project in the City of Winnipeg difficult and that the timeline for implementation is dependent on funding allocation and in the study area, a desire to develop more dense projects along Pembina Highway. The implementation for



sustainable water infrastructure might be difficult to track, but could be measured by infill development and intensification of land use in the study area that ultimately taps into the existing water pipe infrastructure. Implementation of 'green street' features, as discussed in the open space and water section could also be monitored, addressing the notion that with less water running through sewers, the greater the water servicing capacity becomes. With these considerations, the timeline has been identified for the medium-term timeframe.

### **Sustainable Infrastructure - Transportation**

When taxes are spent on extending road networks or widening existing streets, it only perpetuates the challenges associated with infrastructure deficit (as discussed by Brueckner, 2000; Stone and Gibbons, 2002). It was explained to focus group participants that new developments on the outer edge of the city, requiring new infrastructure, would end up costing them as well. Participants understood and agreed that spending less money on extending and widening roads was a good thing and that investing tax dollars in smart infrastructure now would have benefits in the future; however they felt it would be a difficult task to achieve, noting political reasons and city planning challenges.

Planner One believed that for sustainable transformation opportunities to occur in Winnipeg, political will and financial support will be necessary. For example, when looking at developing active transportation infrastructure, Planner Two identified that a lot is happening in Winnipeg right now, and financial support has been good, though there is still a long way to go. He says that as the population ages and energy prices go up, sustainable transportation options should become more desirable. Addressing sustainable infrastructure for transportation will require time, political support, and financial support and therefore falls within the medium-term timeframe.

## **Support for Local Economy**

Supporting local business and attracting the “creative class” to the neighbourhood are identified as opportunities that can contribute to a stable and strong local economy (see Florida, 2002; Dunham-Jones & Williamson 2009; Roseland, 2012;). What makes it difficult to support these opportunities in inner-ring suburbs is that business trends are being drawn toward the big-box model. Planner One explained that land and development size of commercial properties in inner-ring suburbs is typically smaller than new suburban developments, meaning that inner-ring suburbs can only accommodate smaller businesses due to the constraints of lot size and that new suburbs with big box suburbs challenge the viability of these smaller commercial ventures.

Results from the matrix exercise revealed that participants’ felt supporting local economy was something that could happen now and would be somewhat easy to achieve if the effort was made. Participant Four said, “Most of us would do it if it was easy and available,” and participant One thought, “St. Norbert Market is good, but it’s not very close and I have to drive all the way to the outskirts of town.” Planner Two believed that we are still cursed with cheap imports, which makes it difficult to compete from a local, organic perspective. He says, sustainably produced local stuff costs more, but there is a niche market for people wanting to buy locally and eat healthy. There are opportunities to implement some initiatives soon, such as a farmers market, and this action could begin within the next five years.

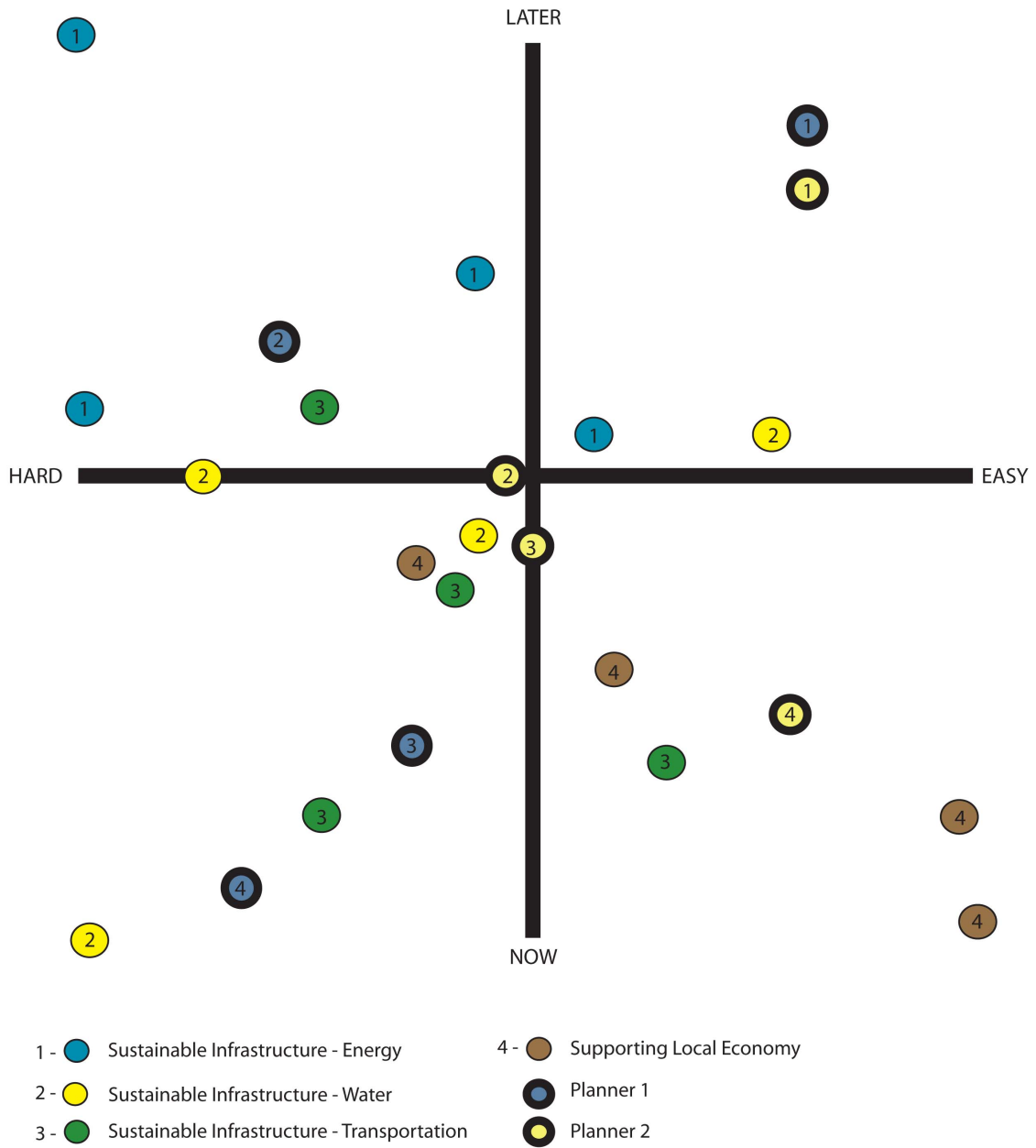


Figure 4-9: Matrix results for 'Economy' actions

## 4.3 Summary of Analysis

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In total, eight themes and 45 action opportunities for creating more sustainable suburbs were identified through this study. Along with each of the opportunities a timeframe was identified to help prioritize implementation. Of the 45 actions, 20 were identified to occur within the short-term, 'now to five' year timeframe, 15 actions within the medium-term, 'six to fifteen' year timeframe, and 10 within the long-term, 'sixteen to twenty five' year timeframe. Chapter Five is the final chapter of this study. Here, conclusions and final recommendations are made for the study area as well as directions for future research.

# Chapter Five – Conclusions, Recommendations and Summary

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This research began by posing three questions:

- 1) What is the history and present role of inner-ring suburbs in Winnipeg?
- 2) Can the future of inner-ring suburbs in Winnipeg be more sustainable? If so, what would a more sustainable, inner-ring suburb look like?
- 3) What are the planning challenges associated with transforming inner-ring suburbs in Winnipeg?

These three questions guided the research and were investigated through a number of research methods, including a review of current and relevant literature, two focus groups and interviews with City of Winnipeg Planners. A study area, consisting of five neighbourhoods was used to help understand how findings from the research could be applied to an inner-ring suburb in Winnipeg.

This chapter provides a summary of the results that address the three research questions followed by a brief discussion on directions for future research, and concluding remarks.

## 5.1. History and Present Role of Inner-Ring Suburbs in Winnipeg

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To gain a preliminary understanding of inner-ring suburbs in Winnipeg, census data was reviewed and compared to characteristics identified in the current literature. These characteristics primarily indicate close proximity to the Central Business District (CBD), and major construction period between 1946 and 1970. Findings revealed that 41 of the 158 populated neighbourhood profiles in Winnipeg reflected these defining characteristics.

Of the 41 identified neighbourhood profiles, a group of five, representing a neighbourhood south of downtown Winnipeg, were selected and used for further analysis as a study area. Once selected, further comparisons were made between the study area and literature to reveal additional defining characteristics, such as automobile-oriented development and homogenous housing stock.

Results from the research conclude that while the study area reflects a number of characteristics identified with inner-ring suburbs, signs of decline were not significant, such as, school closures, decreased property values, and poverty. Focus group discussions revealed that community members felt great pride and connection with their neighbourhood; that high importance was placed on community cohesiveness, and that natural features and open space were highly desirable.

There were however, concerns identified by focus group participants regarding the future role of these neighbourhoods as questions of further population decline, business relocation, and school enrolment levels were raised. Focus group discussions confirmed that in the study area automobile dependency is high and walkability is low; that there is minimal housing diversity and that there are challenges associated with supporting local business and community amenities. Each of these indicators point more clearly to defining characteristics of inner-ring suburbs and highlights the need to explore opportunities for improvements relating to sustainability objectives.

According to the literature, one of the most consistently identified challenges associated with inner-ring suburbs is population decline. When neighbourhood populations decline it becomes increasingly difficult to support local amenities and community resources such as businesses, schools and community centres. If and when this happens, people tend to move where the schools are and eventually businesses follow. For the study inner-ring suburb,

population decline does not appear to be occurring because desirability of the neighbourhood is dwindling; rather, it's likely due to the notion that couples, singles and seniors are staying in their single family homes for longer, and not freeing up housing for larger families.

As an example, census data from 2006 shows that the Crescent Park neighbourhood profile includes 430 two-person households (40% of neighbourhood population) and 190 four and five person households (18%). In comparison, a new suburban community, such as Whyte Ridge, had a total of 560 two-person households (25%) and 1040 four and five person households (45%). These figures, while not definitive, reflect the notion that families with children are moving to newer suburban communities, while couples, singles, and seniors remain in older neighbourhoods, such as inner-ring suburbs.

The comparison noted between Crescent Park and Whyte Ridge supports ideas in the literature (see Dunham-Jones & Williamson, 2009) that suburban neighbourhoods are faced with challenges to adapt to new housing demands as average household sizes have declined. In order to increase population levels and accommodate varying lifestyles, a variety of housing choices should be considered and built where possible. The literature shows that existing suburban neighbourhoods tend to be built out to the limits of available land, predominantly with single-family dwellings, thus making it difficult to introduce alternative forms of housing (see Dunham-Jones & Williamson, 2009). The study area is consistent with these findings and consequently, those who require or would like to find other housing choices are left with few opportunities. Participants in both focus groups discussed their desire to remain in the neighbourhood once they no longer wished to live in their detached single-family home; however, they were aware that there are very few options for them to do so.

By introducing a diversity of housing options into the neighbourhood, residents will have more choice to live where their needs are met. New families can move into single-family

homes, and couples, singles and seniors can move to multi-family dwellings if they so desire. By broadening the spectrum of housing in the study area it will be possible to increase population densities while providing people with housing that better suites their needs.

The spin-off benefits of having higher densities and more people in the neighbourhood include: increased support for local businesses, schools and community amenities. By increasing densities, neighbourhoods can reach a critical mass where it becomes more viable to support projects that connect with sustainability goals.

In summary, the study area remains a desirable place to live, though efforts should be made to ensure that future decline does not compromise its desirability. To address overall efforts of sustainable city building as well as efforts to preserve desirability of the study area, this research recommends that population growth be targeted toward existing neighbourhoods (inner-ring suburbs) in order to: a) support existing amenities as well as future sustainable development strategies (e.g. the 45 action opportunities identified in this research); and b) reduce demands for development at the edge of the city and promote development toward the city centre, supporting a more compact built form.

## 5.2 More Sustainable Inner-Ring Suburbs in Winnipeg

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Key over-arching goals of sustainable urban development relate to minimizing energy and resource consumption. The continual outward expansion of cities in a low density, suburban model is hindering these goals of sustainability. Considering the realm of the environment as a priority, this research identifies that economic and social systems must begin to shift away from behaviours that are entrenched in fossil fuel dependency and resource consumption. With this



in mind, effective strategies to reduce global impacts as they relate to inner-ring suburbs were explored in this study.

An extensive review of literature indicates that inner-ring suburbs have the capacity to become more sustainable. This study identifies eight key themes and 45 action opportunities that can contribute to the creation of more sustainable suburbs; though recommendations made in this report apply specifically to the study area. These 45 action opportunities are by no means an exhaustive list; however, they do provide a well-rounded framework from which to begin looking at how sustainable features can be introduced into inner-ring suburban neighbourhoods. In Figure 5-1, each of the action opportunities are presented in an implementation timeline. Twenty actions are identified in the short-term (now-five year) timeframe, 15 actions in the medium-term (six – fifteen year) timeframe, and 10 actions in the long-term (sixteen – twenty-five year) timeframe.

Implementation Timeline for Action Opportunities	Short-term (now-5 years)		Medium-term (6-15 years)		Long-term (16-25 years)
Action		Action		Action	
CPTED		Heritage Preservation		Schools (physical)	
Community Club (physical transform)		Greyfield Infill		Churches (physical)	
Churches (programming)		Mixed Used		Schools (programming)	
Community Club (programming)		TOD		Alternative Energy	
Secondary Suites		Housing Diversity		Green Roof	
Insulation		Green Building Certification		Car Share	
Energy Saving Lights/Dimming Switches		Energy Efficient Appliances		Bike Share	
Transit Technology and Improving Ridership		Greywater Recycling		Pedestrian Bridges	
Walking/Bike Path Along South Drive		Efficient Windows		Large Scale Rain Capture	
Bike Parking along Pembina		Rapid Transit		Sustainable Infrastructure for Energy	
Preservation of Biodiversity		Green Transportation Infrastructure			
Age Friendly Recreation		Compost Management (public)			
Energy Reduction/Alt. Maintenance		Garbage Management			
Naturalization of Open Space		Sustainable Infrastructure for Water			
Dual Flush Toilets		Sustainable Infrastructure for Transportation			
Rain Barrels					
Lifestyle Choice					
Compost Management (private)					
Recycling Management					
Support Local Economy					
	<b>20 actions</b>		<b>15 actions</b>		<b>10 actions</b>

**Figure 5-1: Summary table of action opportunities and timeline for implementation**

In the following sections each of the eight key themes and 45 action opportunities are discussed and recommendations are made for specific sites within the study area when possible.

For the sake of limiting redundancy, further community consultation is a priority recommended step that applies to each of the action opportunities. The limited scope of feedback from focus group participants, while valuable, may not reflect the beliefs of all community members in the study area. As the literature consistently identifies, a neighbourhood sustainability plan cannot be effectively implemented if it does not have support from its community members.

### 5.2.1 – Community Action Opportunities

Research analysis discussed in Chapter Four helped refine community related opportunities into eight actions with varying implementation timelines (identified in Figure 5-2). A map is included in this section that highlights existing features within the study area where some of these actions might be implemented, including: open spaces, community clubs, churches and schools (see Figure 5-3).

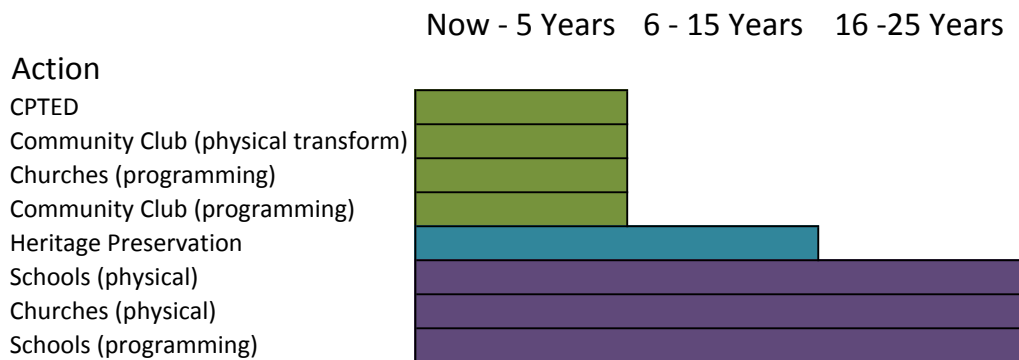


Figure 5-2: Timeline for implementing 'Community' actions

## **Crime Prevention Through Environmental Design - CPTED**

Focus group participants identified that there are problem areas in the neighbourhood and this study recommends that within the next five years, safety issues in the neighbourhood should begin to be addressed by developing a CPTED plan.

Specific locations for introducing CPTED have not been mapped. To advance a CPTED plan it is recommended that first, residents identify problem areas in their neighbourhood and analyze existing built form issues. Next, a plan should be developed to prevent or correct the problem areas. This might mean introducing lighting into unsafe areas or introducing active uses into underutilized spaces, such as skate parks. The CPTED plan should then be carried out and monitored to evaluate effectiveness.

## **Repurposing**

Figure 5-3 identifies four community clubs (purple) and five churches (light blue) in the neighbourhood. Finding ways to repurpose churches and community clubs through programming alternatives and physical transformation of community clubs was identified in the analysis as something that should occur within the next five years. An example of what this might look like includes the introduction of community gardens or boat launches to viable sites near community centres. For example, the Wildwood Community Club has open space around it that could be used for a community garden and is also located near the Red River, where a boat launch may be introduced. These two initiatives could increase the diversity of programming for the Wildwood Community Club as a means to address varying community member needs and enhance viability as a community resource.

Discussions from Chapter Four revealed that while community places were found to be important to focus group participants, getting commitment from volunteers might be difficult. Further discussion with neighbourhood residents could lead to programming alternatives for all

community clubs and churches in the neighbourhood; however, as a recommended first step, this study identified that a viable economic and operations model should be conducted to ensure feasibility of additional programming and physical developments.



**Figure 5-3: Community opportunities in the study area (Map adapted by D. Clark) (Source: Winnipeg Zoning By-law map, 2006)**

The rest of the repurposing opportunities discussed in Chapter Four include the physical transformation of schools and churches, and programming at schools. The analysis of research reveals that no action should be taken until the long-term timeframe in order to monitor other changes in the community, such as population increases. The reason being that population increases could restore the neighbourhood to levels that can support these existing community services and amenities in their present state, and thus make repurposing unnecessary.

The literature talks about “third places” as a vital part of community development. Community clubs, churches and schools are just a few of these third places where community members can get together and build relationships. Restaurants, pubs, libraries, and local shops are also examples; however, discussions about these places did not take place to great extent

with focus group participants. A number of specific places were identified in the study area where people enjoyed going to meet up with friends and family, yet participants also identified that a lot of what they needed was located outside of the neighbourhood. A recommendation going forward might be to identify some additional shops and services that residents might like to have in their neighbourhood in order to support the community needs and third places for people to connect.

### **Heritage**

Discussions relating to heritage preservation in the neighbourhood focused primarily on the natural features and open space, indicated by the colour green in Figure 5-3. While there may be buildings in the neighbourhood that community members would like to see preserved, none were identified in this study. Recommendations moving forward are to identify features in the neighbourhood worthy of heritage preservation and begin to develop a plan for managing and protecting the identified heritage features. In particular, a tree maintenance program, as identified in the focus group discussions, should be explored for the purposes of protecting the natural features residents are clearly passionate about.

### **5.2.2 – Land Use Diversification Action Opportunities**

One of the most significant underlying objectives identified in the research for creating sustainable neighbourhoods was looking at ways to increase population density (the other was community consultation). Increasing population densities is found to be the major factor that will make a number of other sustainability initiatives more viable in the study area, such as rapid transit and support for community amenities. The analysis of research identified a refined list of

five actions that can be applied to the study area to diversify land use and increase population densities (see Figure 5-4).

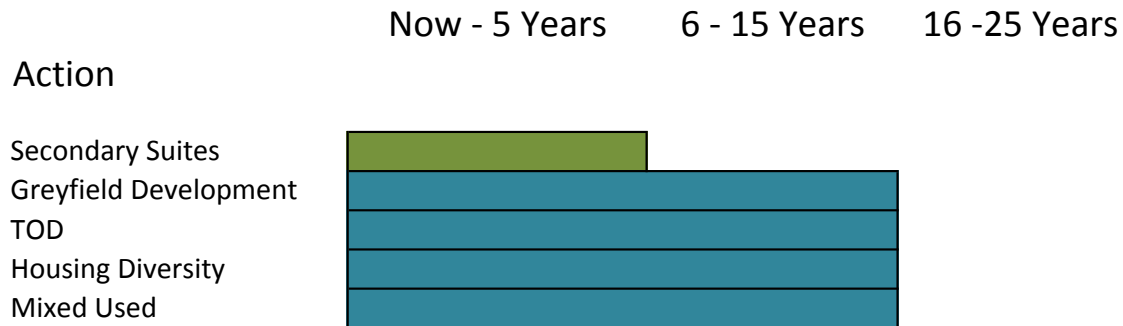


Figure 5-4: Timeline for implementing 'Land Use' actions

### Discussion of Land Use Diversification Strategies

Land use diversification strategies that introduce a diversity of housing options (rental and condo), mixed-use development, secondary suites, and TOD should be incorporated into the neighbourhood to support increases to population density. For the study area this means primarily focusing on building multi-family housing on sites along Pembina Highway (highlighted in orange in Figure 5-5). This could occur through greyfield development, mixed-use development and TOD. Other opportunities for increasing housing density within the quieter parts of the neighbourhood may be attempted as well. These sites include: the Wildewood Club, the Parker Lands, and the Pauwells industrial site located just west of Pembina Highway. Secondary suites contribute to minor density increases and could be introduced on most single-family dwelling properties throughout the neighbourhood, in the form of laneway housing or incorporated into new or existing housing as basement suites or additions (highlighted in light yellow in Figure 5-5).



Figure 5-5: Land use opportunities in the study area (Map adapted by D. Clark) (Source: Winnipeg Zoning By-law map, 2006)

Timelines for implementation indicate that secondary suites could be introduced within the next five years. The development of higher density housing, with a mix of tenure opportunities (rental and condo), as well as mixed-use and TOD is understood to be slightly more challenging and will take some time. The literature and the planners interviewed in this study identified that existing zoning, smaller parcel sizes, and properties adjacent to single-family dwellings could be potential obstacles that challenge implementation in the study area (challenges are discussed further in this chapter under Section 5.3). Greyfield development was originally targeted for implementation within the short-term timeframe, however, as identified in Chapter Four, in order for effective greyfield development to occur, mixed-use and higher density developments should be included on these sites. Re-developing a greyfield site for a drive-through restaurant for example would not be an improvement for the neighbourhood in terms of meeting sustainability objectives. Therefore, mixed-use, housing diversity, TOD and greyfield development are recommended for implementation in the medium-term timeframe.

### 5.2.3 – Better Building Action Opportunities

Improving the design, function and operation of all buildings in the neighbourhood is recommended. Because of the high levels of energy and material consumption associated with construction and the operation of buildings, steps should be taken to introduce energy saving features that can cut down on green house gas emissions, the use of natural resources and extraction of raw materials. The better buildings category identifies eight action opportunities that may be applicable to the study area (shown in Figure 5-6).

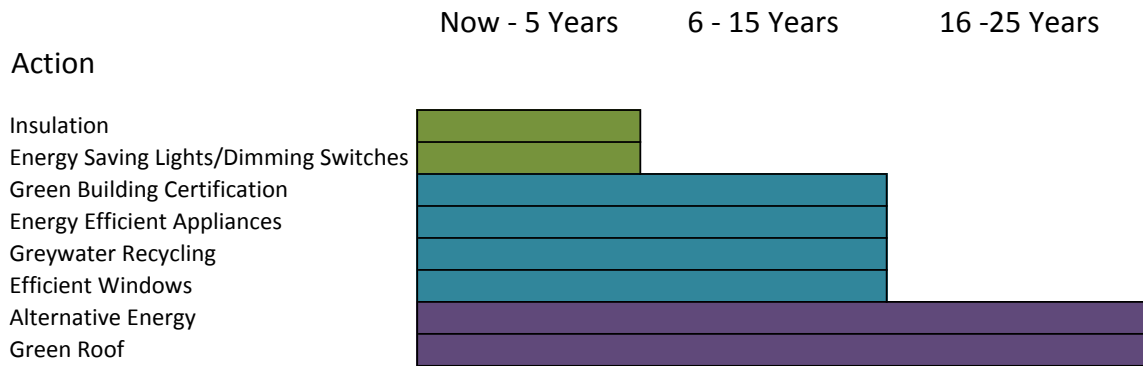


Figure 5-6: Timeline for implementing 'Better Building' actions

#### Better Building Actions

Interviews with planners and focus group participants revealed that costs and ease of implementation were significant deciding factors for determining when each action should occur. Replacing existing light bulbs with energy efficient bulbs, for example, is an inexpensive, easy action, and therefore is identified to occur in the short-term. Discussions regarding return on investment and subsidy programs for insulation were also a deciding factor for it being placed in the short-term timeframe.



Green roofs, on the other hand, were identified as being difficult to incorporate into existing buildings, especially single-family homes, as the benefits did not outweigh the challenges and costs associated with implementation. One of the planners identified that if the goals are for insulation and to manage water runoff, there are easier and cheaper methods that can achieve the same effect. Regardless, green roofs remain in the timeline and could be monitored for feasibility in the long-term timeframe. The reasons being that rooftop gardens, or rooftop patio/gardens can be enjoyable additions to larger scaled buildings. If these buildings are located along Pembina Highway, these naturalized spaces can serve as a buffer from the high levels of traffic and activity going on at street level.

Energy efficient appliances, greywater systems, efficient windows, alternative energy sources and green building certification programs ranged from mid-term to long –term timeline goals. Each of these opportunities all believed to have benefits that contribute toward a more energy efficient building, but costs were the deciding factor for putting off implementation in the immediate future. Focus group participants indicated that it is a waste to replace perfectly good appliances and windows, so they both fall into the mid-term timeframe.

Greywater systems are difficult to incorporate into existing buildings and have not been adopted into recent building code changes for Manitoba, according to one of the planners. Cost was also a factor in determining where it fit into the timeline for implementation; however, if technologies improve, costs come down, and there are better regulations in place in the future to support greywater systems, they are believed to be an effective way to reduce water consumption in buildings, and therefore should be explored by community residents in future building upgrades.

Green building certification processes, such as LEED, ensure a high-quality, standardized method for measuring energy efficiency and sustainable design of buildings. While initial costs

for implementation may be higher than traditional building practices, green buildings have long-term cost saving benefits. The research revealed that given the higher initial costs, and long-term savings, green building certification programs might be better suited for institutional spaces and larger scaled projects in the neighbourhood, such as schools, or any potential new higher density developments along Pembina Highway.

### 5.2.4 – Open Space Action Opportunities

Focus group participants identified open space in the study area as a highly valuable feature that they enjoyed for aesthetic reasons and recreational purposes. These actions identified for improving open space in the study area are shown in Figure 5-7 and all fall into the now-five year timeframe for implementation.



**Figure 5-7: Timeline for implementing 'Open Space' actions**



**Figure 5-8: Open space opportunities in the study area (Map adapted by D. Clark) (Source: Winnipeg Zoning By-law map, 2006)**

### **Preservation of Biodiversity**

Biodiversity is encouraged for creating areas with a variety of plant species that in turn may attract and sustain a diversity of birds and insects, deemed necessary for maintaining healthy ecosystems and a balance in nature. In the study area, there are a number of examples where naturalization and biodiversity have been introduced, including the Wildwood Community Club and within Crescent Drive Park. Recommended next steps include identifying other areas in the neighbourhood where biodiversity opportunities could be introduced. Because natural features and recreation were the primary reasons focus group participants said they enjoyed open space in the neighbourhood, the implementation plan should consider a balance between these two uses.

### **Age Friendly Recreation**

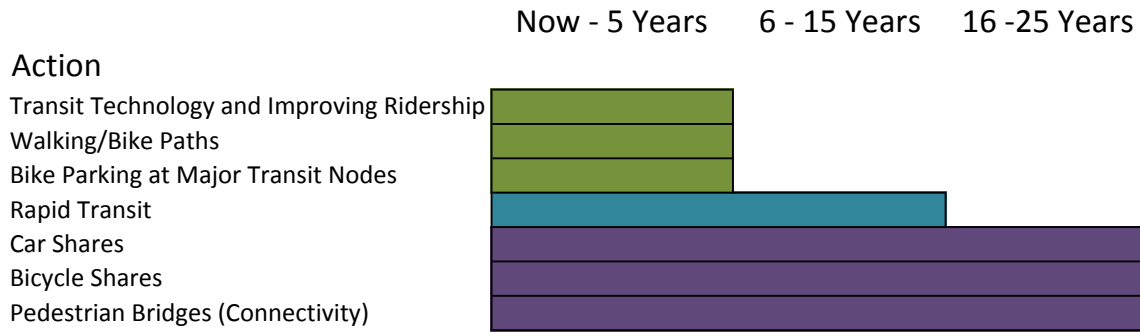
Recreation opportunities that address the needs for all people in the neighbourhood were identified in the research. Activities identified that could diversify use included lawn bowling, community gardens, river walking paths, and boating opportunities such as canoeing and kayaking. Lawn bowling and community gardens could be introduced at community clubs in the neighbourhood (shown as purple in Figure 5-3) in order to utilize existing facilities and enhance programming opportunities. In future discussions, community members should explore other programs and recreation opportunities they would like to see in their neighbourhood. If and when housing diversity opportunities are introduced, higher levels of seniors may be able to remain in the neighbourhood for longer, thus promoting the need for additional senior recreational opportunities.

### **Energy Reduction and Alternative Maintenance Practices**

The goal of this action is to cut back the need to manicure turf grass in the study area, reducing maintenance costs and energy consumption. The literature identifies parks and open spaces as well as corridors, edges and nodes as places that can be naturalized for the purposes of improving green space and reducing maintenance needs. For the study area this means identifying where street trees, native plant species and water management features can be applied along boulevards, within major open spaces and incorporated into higher density places if and when this occurs.

## **5.2.5 – Transportation Action Opportunities**

Seven actions relating to transportation improvements in the study area were identified in the research with varying timelines (see Figure 5-9).



**Figure 5-9: Timeline for implementing 'Transportation' actions**

### **Transit Technology and Improving Ridership**

In order for people to reduce automobile use, the benefits and ease of taking public transit must outweigh using an automobile. Like Doppelt (2008) identifies, people need to see two added benefits for every negative in order to adopt new behaviours. Making transit more reliable, efficient and easier to use over automobiles may encourage more ridership. Personal behavioural changes are also necessary and community education or commuter challenge programs might be discussed as a means to increase awareness. Steps toward improving transit effectiveness should begin between within the next five years.

### **Walking/Bike Paths**

Walking and bike paths are meant to improve safety and desirability for using alternative forms of transportation. Discussions in the research identified South Drive (shown in Figure 5-10) as a primary road where better active transportation paths could be incorporated into the study area, primarily for safety reasons. Interviews with planners revealed that designated bike paths, which cost a lot of money, should be focused adjacent to major arterial roads, such as Pembina Highway. For South Drive, traffic calming features may be a more feasible approach than a designated path and a painted line could be introduced on South Drive to increase safety. For

these reasons, bike and walking paths have been identified for implementation within the next five years.

### **Bike Parking at Major Transit Nodes**

Focus group participants noted that Pembina Highway is a long distance for some people to walk, and that feeder buses are infrequent. The research revealed that one opportunity to improve access to higher frequency transit on Pembina Highway would be to build safe and secure bike-parking stalls. While, focus group participants liked the idea of riding their bikes to Pembina Highway, they did not feel comfortable with leaving their bicycle out in the open for an entire day. Therefore, it is recommended that more secure bike parking be placed at four locations along Pembina Highway, to coincide with the proposed rapid transit stations (see Figure 5-10) to create transportation nodes. Based on this intent, bike parking at transit stops should be provided on Pembina at Windermere Avenue, McGillivray Boulevard, Clarence Avenue and Chevrier Boulevard.

### **Rapid Transit**

Proposed rapid transit stations within the study area are identified in Figure 5-10 (coinciding with bike parking). If rapid transit is built through the study area, aside from encouraging more efficient and reliable public transit access for local residents, it will support a number of other initiatives such as bicycle parking, better feeder bus service, and TOD within the study area. Introducing rapid transit is a significant action opportunity that can positively alter the study area into a more sustainable inner-ring suburb. Introducing rapid transit falls within the medium term timeframe for implementation for reasons associated with cost, political support and citywide implications. However, if there were no barriers for implementation rapid transit would be recommended as an action that should occur as soon as possible. If and/or when

rapid transit is identified for development in the study area, it is highly recommended that community members take part in discussions about how change will occur. This discussion should recognize that goals for successful rapid transit require TOD/higher density developments to support viability. These discussions should also look at how change in the neighbourhood can occur, respecting the existing character while adapting for changing needs.

### **Car Shares/Bike Shares**

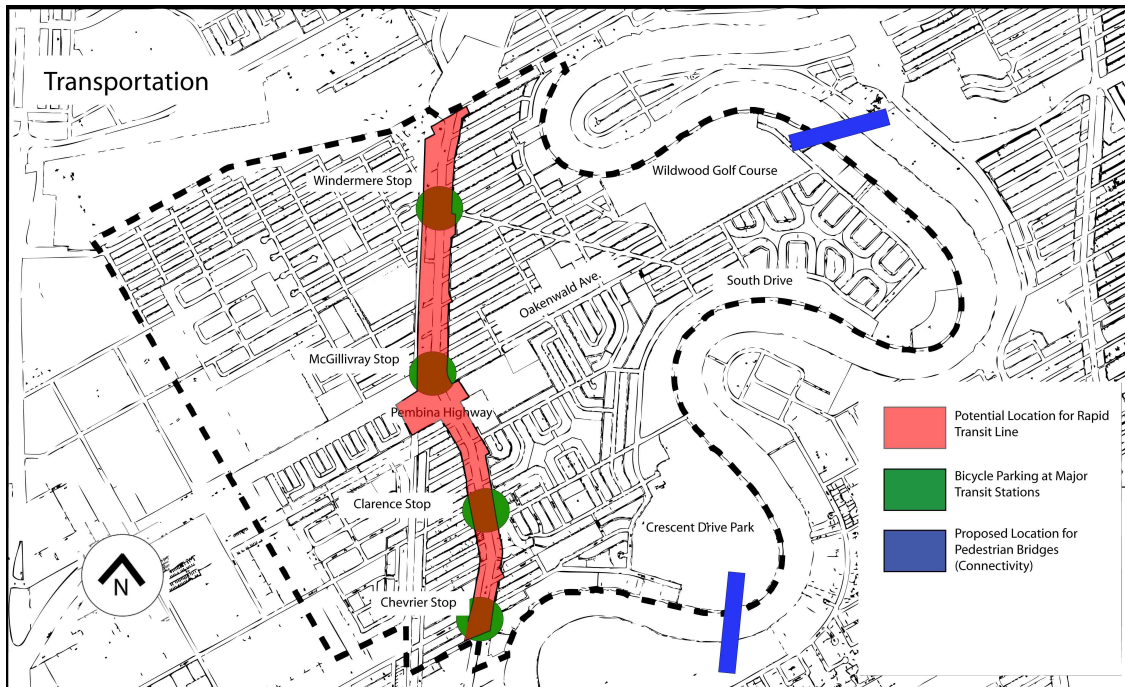
The literature indicates that car shares and bike shares are better suited to places with higher densities. Discussions with focus group participants and planners revealed that these actions were not realistic for the study area at this time. However, if population densities increase over the next 25 years, these actions may then become viable in the neighbourhood and should be re-evaluated for implementation. If car shares/bike shares become viable, it is recommended that car shares be located amongst higher density developments (as identified by the TRB, 2005) and the bike shares stations be built in strategic locations as part of a citywide network (as identified by Buhrmann, 2008; and City of New York Planning Department, 2009).

### **Pedestrian Bridges (Connectivity)**

Focus group participants identified pedestrian bridges at two sites within the neighbourhood (see Figure 5-10) as ways to improve active transportation and pedestrian connectivity to surrounding neighbourhoods. These bridges are proposed to connect between the Wildwood Community Club and old Canoe Club site, and between Crescent Drive Park and St. Vital Park. Because the study area is bound by the Red River, connectivity is restricted.

Research findings revealed that pedestrian bridges, while a nice idea, are very costly and the research identified that there are several other initiatives that should take precedence over introducing these bridges into the study area. If densities increase around the proposed bridges

in the next 25 years, they may become a viable option for discussion relating to connectivity between neighbourhoods. As for now they remain part of the long-term vision and should be re-evaluated for feasibility in 16 years.

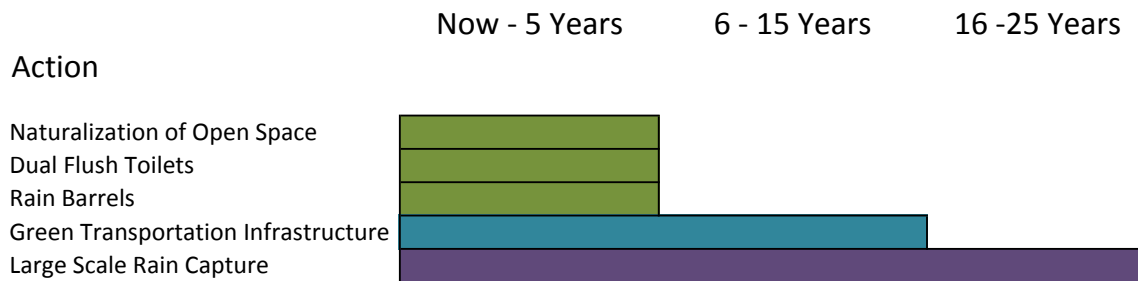


**Figure 5-10: Transportation opportunities in the study area (Map adapted by D. Clark) (Source: Winnipeg Zoning By-law map, 2006)**

## 5.2.6 – Water Management Action Opportunities

Water management is identified in the research for the purposes of reducing pollution runoff into local water bodies, reducing consumption of potable water and reducing pressures on sewer and water infrastructure. Five actions to improve water management in the study area were identified in the research with varying timelines for implementation (shown in Figure 5-11).





**Figure 5-11: Timeline for implementing 'Water Management' actions**

### **Naturalization of Open Space**

Naturalization of open space for the purposes of managing water runoff should be applied to many of the same natural and open spaces identified in the 'Open Space' theme and seen previously in Figure 5-8. The literature notes that naturalization of open space can improve retention of water, and filter pollutants from runoff into nearby water systems. As identified in the open space section, boulevards, spaces between land uses, major open spaces and opportunities within higher density places should all be explored for ways to introduce naturalization and reduce water runoff.

### **Green Transportation Infrastructure**

As identified in Chapter Two, green transportation infrastructure includes green streets and alleys, bio-swales and green parking. Each of these actions is meant to reduce water runoff into local water systems and reduce demands on wastewater infrastructure. Challenges associated with introducing green infrastructure include infrastructure renewal time periods and initial costs associated with construction. Challenges also remain with a lack of case studies and tests to see if it can work in Winnipeg.

For the study area, it is being recommended that green transportation be targeted for implementation between the medium-term timeframe. In this time there may be opportunities

to identify specific streets or sites within the study area where pilot projects can be carried out to ensure that these actions are viable. Initial steps should include consultation with community members, as well as engineers familiar with green streets and infrastructure. Discussions with the local Public Works department and politicians should occur as well to identify feasibility, funding and support for these opportunities.

### **Dual Flush Toilets**

Dual flush toilets are among a category of initiatives that are described as “low hanging fruit” as they can be introduced into any building within the study area. The recommended timeline for implementation is within the next five years. The benefits will be found through lower levels of water consumption and lower water bills.

### **Rain Barrels**

Rain barrels are another “low hanging fruit” that should be easy to implement. Rain barrels are relatively inexpensive and can be placed around any building within the neighbourhood. The benefits include reducing excess water runoff, and collecting water for use around the home for watering gardens as an example. Through education opportunities and community discussions, residents should be encouraged to add rain barrels around their homes.

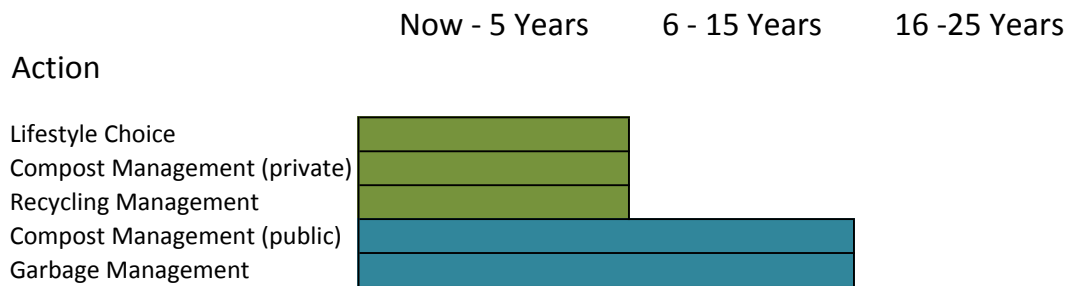
### **Large-Scale Rainwater Capture**

Large-scale rainwater capture was identified as a less necessary action for the neighbourhood at this time. The belief is that there are other smaller opportunities that are more affordable and do not require major retrofitting to implement. Water availability and costs associated with infrastructure upgrades did not seem reasonable to planners and focus group members at this time, but if in the future large scale rain capture makes sense, it was identified that they should

be applied to places such as schools (identified as orange) and community clubs (identified as purple) in Figure 5-2 shown above.

### 5.2.7 – Waste Management Action Opportunities

Five actions, identified in Figure 5-12, connect with the goals of a waste management plan in the study area. The new waste management plan proposed by the City of Winnipeg is meant to improve garbage, recycling and compost opportunities. The primary recommendation of this study relating to waste management is to connect residents with education opportunities that help them reduce, reuse, recycle and compost. Workshops, such as composting classes should be provided to inform people of the benefits and proper methods of composting, for the purpose of increasing awareness and altering behaviours.



**Figure 5-12: Timeline for implementing 'Waste Management' actions**

The City of Winnipeg identifies objectives of diverting 50% of waste from landfills in the future. In order for residents of the study area to monitor how effective they are at diverting waste, a baseline should be established to identify current levels of waste coming out of the neighbourhood (see Kates et al., 2005 for discussion on measurements). These current levels should then be compared to levels five years into the future and so on to track levels of waste diversion.

As identified in the literature (see RDN, 2004; The Compost Council of Canada, 2010) education goes a long way to help promote waste management plans and a successful waste management plan for the study area connects with getting people to alter their behaviours. The City of Winnipeg has a responsibility to deliver an effective system to reduce waste, but individual behaviours and choices will ultimately affect the success of implementation.

### 5.2.8 –Economy Action Opportunities

Four actions (shown in Figure 5-13) were identified in the research that could contribute to improving local economic development and long-term financial sustainability in Winnipeg. With a current infrastructure deficit in Winnipeg of \$3.5 billion and that number expected to rise to \$7.4 billion (City of Winnipeg, 2011c), optimizing existing infrastructure, and planning for compact urban design could help reduce outward expansion of the city and thus the need for new infrastructure to support new development.

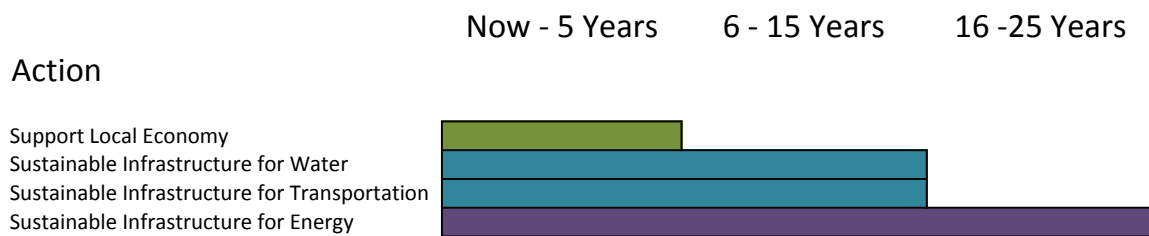


Figure 5-13: Timeline for implementing 'Economy' actions

#### Support for Local Economy

Through interviews, planners explained that supporting local economy can be a challenge as cheap imports and big box stores are becoming more prominent. The literature identifies local self-reliance (see Roseland, 2012), and supporting the “creative class” (see Florida, 2002; Dunham-Jones & Williamson, 2009) as two strategies to improve local economies. Local self-

reliance involves strengthening connections between local producers, such as farmers, local manufacturers and other locally owned and operated businesses. One start toward local self-reliance may be to encourage a farmers market in the neighbourhood. Discussions in the focus groups identified that participants liked the idea of the St. Norbert Farmers Market; they just did not like that they had to drive to get to it. Further actions might involve creating a network that identifies locally owned and operated businesses in order support the idea of Community Economic Development (CED). Increasing opportunities to attract the *creative class* through land use diversification could also create greater demand for eclectic and unique shops and better insulate the neighbourhood from corporate markets.

### **Sustainable Infrastructure – Energy, Transportation, Water**

The current growth model for Winnipeg is creating a challenging and uncertain financial future and an ever-increasing infrastructure deficit affects the viability of all development in the city. A consistent theme identified in this study relates to focusing redevelopment toward existing neighbourhoods and infrastructure in order to reduce the need for new infrastructure in new neighbourhoods.

A number of action opportunities have been identified in this research that can be applied to the study area to help reduce outward growth and demand for new infrastructure. For example, higher density housing may reduce the need to build more housing outward, which reduces the need to build roads, water pipes, sewers, street lights, police services and schools. Introducing bio-swales can reduce pressures on piped water and sewage services and investing in rapid transit infrastructure, although initially costly, may reduce need to fix roads, or build new roads in the future. Ultimately, these actions can have positive effects on not just the financial viability of development, but also, environmental impacts associated with low-density suburban growth.

This research does not propose the answers to moving away from these financial constraints; that is an area for future research. However, each of the forty-five action opportunities identified in this study may be considered and applied to the study area and ultimately help reduce the financial strains associated with Winnipeg's rising infrastructure deficit.

### 5.2.9 Summary - Recommended Next Steps

A great deal of information is presented in this section regarding action opportunities and implementation in the study area. By dividing these actions into timelines, it is the hope that the information and tasks do not become overwhelming, but rather serves as a guide for discussions moving forward toward implementation.

Following the recommendations of Kates et al. (2005), next steps should involve a broader scaled consultation with community members that identifies *goals, measurements, values* and *practice*, in order to ensure consensus for the community vision. While some *goals* have been identified by this research they may need to be refined or even removed to reflect the *values* of the broader community. Other goals may still be missing, and should be added. The key is that goals are reflected in timelines so that objectives can be managed and measured. *Measurements* are necessary for moving forward with a sustainability plan. Some form of monitoring is recommended in order to track how and when an action (*practice*) is implemented, further enhancing the sustainability of the neighbourhood. For example, if a new higher density housing development is introduced into the neighbourhood, this should be tracked; identifying challenges associated with implementation, and outcomes, such as number of housing units it adds to the neighbourhood.

## 5.3 Planning Challenges Associated with Transforming Inner-ring Suburbs in Winnipeg

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This research identifies a number of planning challenges associated with transforming inner-ring suburbs toward sustainability, including:

- Political Support;
- Financial Constraints;
- Physical Growth Limitations and Established Character;
- Behavioural Change: Closing the Loops;
- Existing Policies and By-laws or Lack Thereof;
- Action Opportunities Dependent on Others for Success; and
- Educating for Sustainable Development

The following is a discussion of each of these challenges as they relate to the city of Winnipeg and the study area.

### **Political Support**

During interviews with planners, political support was identified as a key consideration affecting implementation for many of the 45 action opportunities. Specifically, discussions relating to some of the larger scaled projects such as rapid transit had strong political dependency. The City of Winnipeg has recently finalized and opened the first phase of Bus Rapid Transit (BRT) along a railroad corridor south of downtown Winnipeg, with the intent of extending this route to the University of Manitoba. However, political decision making has stalled the future expansion of the transit line for reasons associated with securing adequate financing, determining if bus rapid transit is the appropriate mode (as opposed to light-rail) and identifying if the second phase will continue to run parallel with Pembina Highway or if it will divert west of

the study area. If the second phase is diverted to the west, the study area will not gain nearly as many benefits from rapid transit than if it were built along Pembina Highway.

As one planner explained in discussions, where political will is strong enough, financial support for projects will come. The challenge for many action opportunities, including rapid transit, will be raising awareness and getting them on the political radar in order to direct support and funding for these projects.

### **Financial Constraints**

Financial limitations were commonly identified as a barrier for implementation of the 45 action opportunities. Some of these financial limitations are associated with personal choice and decisions, such as buying a rain barrel for ones home, while others are tied to political spending toward major projects. For example, decisions to spend money on further roadway expansions as opposed to infill development projects will continue to place pressures on the rising infrastructure deficit.

This study identifies a number of opportunities to target existing infrastructure and reduce demands to expand and build new infrastructure. As some of the literature suggests, by charging new developments the “true” costs associated with construction, opportunities to develop on greenfield and agricultural lands may become less appealing. This might include:

- Assigning a monetary value to open space surrounding the city that developers must pay for in addition to the market value price of the land; and
- Charging new developments the true costs associated with building and maintaining the new infrastructure, rather than dispersing it among the rest of the city.



## **Physical Growth Limitations and Established Character**

In the study area there are few vacant sites available for development. As a result, the primary approach for growth will be through redeveloping existing sites. Unlike greenfield development where there are few limitations to what can be built, development in existing neighbourhoods can be limited, due to parcel sizes, street networks, established character and adjacent land uses. For example, the research identified that there may be challenges associated with introducing higher density, TOD into the neighbourhood. The reasons being parcel size around proposed station areas may be small and limit densities that are necessary to support rapid transit.

Another limitation includes building in a context sensitive manner. For the study area, the predominant character is single family dwellings, with small scale commercial located along Pembina Highway. One potential problem with this might be that people living adjacent to developments may resist attempts to introduce higher-density along Pembina Highway or secondary suites in the quieter parts of the neighbourhood. Even if people believe in the concept of infill, they may respond negatively when the development affects their property directly. This reaction is commonly identified as NIMBYism (Not In My Back Yard).

To successfully move forward with introducing new and more intensive land uses in the study area, significant community consultation should occur. This consultation should address fears, concerns, and hopes for what new developments will look like and how residents believe development can be introduced into the neighbourhood to achieve goals of higher density while maintaining the existing character of the neighbourhood.

## **Behavioural Change: Closing the Loops**

Individuals' decisions and behaviours can have a significant impact on implementing some of the action opportunities identified in this research. Presently, a number of behaviours, habits and routines may be "unsustainable" for example, driving instead of cycling, or 'throwing out' instead of composting. Altering these behaviours can be challenging, however behavioural change can be encouraged through education and increasing the ease by which one can take action. As an example, educating people on the benefits of composting can help people understand why they should consider it in their daily lifestyle. If and when the City of Winnipeg introduces a curb-side composting system, people may then be more readily able to take part in the composting opportunity. This idea can be referred to as 'closing the loop,' which means that by educating people on issues, then providing them with resources to participate in resolving these issues, behavioural change is more likely to occur.

## **Existing Policies and By-laws or Lack Thereof**

Existing policies and by-laws can limit the ability for implementation of some identified action opportunities. For example:

- Secondary suites are currently allowed as a conditional use in the zoning by-law, which means a public hearing process is required for their approval. By permitting them outright and providing a set of design standards the opportunity for people to build secondary suites will become easier; by-passing timely, and sometimes difficult public hearing procedures.
- The current zoning of some parcels along Pembina Highway may also make introducing higher density and mixed-use developments into the neighbourhood more of a challenge.

Form based coding should be considered along Pembina Highway for purposes of supporting a walkable form and discouraging auto-oriented development. Presently there are no form based codes or detailed design guidelines for neighbourhoods outside of downtown in Winnipeg. Further review on other existing policies and by-laws that create barriers to sustainable development should be explored for the study area.

### **Action Opportunities Dependent on Others for Implementation**

The research identified a number of opportunities that depended on others for success. For example:

- Rapid transit is a high priority initiative that could create substantial change for the study area and the city as a whole. With the introduction of rapid transit, TOD becomes more likely, as well as mixed-use development, and may encourage more frequent shuttle bus service and secure bike parking. Because rapid transit is an action that is dependent on citywide objectives and budgeting, implementation timelines are affected. Likewise, effective bike share programs require a network of stations to make them viable and user-friendly. The implementation of a bike-share program in the study area in isolation of any other station would not be of much benefit.
- Age-friendly recreation is dependent on more seniors and young families with children living in the neighbourhood and with added housing diversity, these opportunities may be more readily introduced.

### **Educating for Sustainable Development**

This study revealed an extensive amount of research and literature on the topics of sustainable development, ranging from high-level concepts, such as equitable resource consumption to grass root actions, such as community economic development. In this study, it was identified

that there can be challenges connecting these concepts for implementation purposes on a suburban scale. While many focus group participants identified that they felt sustainable development meant living within the balance of the environment, some of the action opportunities that supported this notion were not easily understood. For example, naturalization has widespread applicability to the study area, for both open space and water management benefits. The wide scale benefits of incorporating naturalization can be complex and may not be as easy to grasp as other opportunities, such as driving less to reduce pollution.

The findings from this research are not suggesting that people are unable to understand these concepts; rather it is suggested that education opportunities need to become more readily available so people can understand and connect with a wider variety of action opportunities in their daily lifestyles.

A number of tools and resources have been identified in this study that can promote awareness and educate community members about actions for more sustainable lifestyles, such as calculating walkscores and carbon footprints. These types of tools and resources will be necessary to continue to educate and build awareness to the on-going goals of transitioning toward more sustainable communities. Tools that can help citizens measure their success are necessary, and further work will be needed to set benchmarks and goals for individuals and community members as a collective in the study area.

## 5.4 Directions/Areas for Future Research

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The results of this study conclude that inner-ring suburbs should be targeted as part of sustainability plans, at the municipal and neighbourhood level. However, there is an apparent lack of published research on the topic of inner-ring suburbs in the Canadian context. Future

research could involve looking at other inner-ring suburbs in Winnipeg as well as other Canadian cities in order to identify trends or similarities in relation to the existing body of literature.

This research also identifies eight themes and 45 action opportunities for moving toward sustainable inner-ring suburbs. A more detailed analysis could be given to each theme as part of an implementation plan, identifying and documenting specific challenges and successes moving forward. In addition, benchmarks and indicator tools could be identified and implemented to give study area residents a baseline from which to monitor and measure change.

## 5.5 Concluding Remarks

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With a rising global population and increasing concerns over resource consumption, climate change and human well-being, the balance of equity for all is being challenged. Sustainable development is a vision and philosophy that is meant to manage future growth in order to ensure that the world's resources are available for everyone, now, and for generations well into the future.

With over half the world's population now living in urban areas, and this trend expected to continue to grow, the design and operation of cities is becoming increasingly important in addressing global sustainability issues. In most North American cities, suburban development prevails as the typical model for growth, contributing to the design of unsustainable cities and ultimately an unsustainable Planet.

This practicum explored how inner-ring suburbs connect with high-level concepts of sustainable development, on an environmental, economic and social level, and identified action opportunities that could help these neighbourhoods evolve and mature into a more sustainable

future. Eight key themes and 45 action opportunities were identified through a literature review, two-focus groups and interviews with City of Winnipeg planners. These eight themes included: community, land-use diversification, better buildings, open space, transportation, water management, waste management and economy. The identification of these themes, as well as the 45 associated action opportunities have established a framework from which the study area members can begin to address sustainable transformation in their neighbourhood, and can serve as an example for further exploration of sustainable neighbourhoods throughout Winnipeg. This study also identified a number of challenges and barriers toward implementation, including: political support, financial constraints, physical growth limitations, behavioural change, existing policies and by-laws, action opportunity dependency and education for sustainable development. These challenges and barriers indicate that it will not be easy to move toward a sustainable future; however, education tools, establishing benchmarks and goals, and using measurement tools to monitor success will help.

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# Appendix A: Posters For Second Focus Group

Note – images not created by author have been removed for permission reasons. Url links to website where image was obtained have been provided in place.

## Community

### Main issue and why the need for change?

Community is made up of several components that create a sense of well-being, belonging, and pride. There are physical components, such as community clubs, schools, churches and "third places," and there are social components, which are the programs and activities that bring people together, such as hockey teams, or a place to take swimming lessons. The important issues relating to community are the creation/preservation of infrastructure to house the social opportunities, and continuing to provide opportunities for strong social networks to be made. Stronger community relations create safe communities that people are proud of and want to preserve and protect.

In the study neighbourhood many of these facilities/amenities already exist. Some are currently underutilized and may be struggling with finances. A sustainable community plan should address ways to ensure that community places and programming for social events are maintained and enhanced. Repurposing the use of many of these places could add to the lasting sustainability of community facilities: financially, socially, and environmentally, depending on what types of initiatives are undertaken. Preservation of heritage is also an important component to community. For example, the area of Wildwood Park is a unique design (1 of 3 in the world) that if properly preserved can enhance the identity of the community and pride of those who live there. "Third places" contribute to the sense of community. Ray Oldenberg explains that there is home, there is work and there are third places. These other places can be bakeries, cafes, pubs, etc. They are places where people can go to enjoy themselves and connect with others from the community. Third places primarily exist along Pembina Highway and arguably lack representation of the community identity (based on a common negative perception of Pembina Highway in first focus group). These third places could be transformed to create unique places that area residents identify with.

### How is this achieved?

- Repurpose use/physical development/programming of sites (community clubs, schools, churches)
- Establish third places that represent the range of community identity
- Crime Prevention Through Environmental Design (CPTED)

## Community Clubs

Four community clubs exist in the study area. As the population has declined in the study area it has become more difficult to justify expenses on maintaining these facilities. These are valuable assets to the community and require adequate support to maintain. By repurposing these sites, whether it be through physical development or social programming, community clubs can continue to remain valuable and sustainable assets in the neighbourhood.





## Schools

Since the 1970's the population of the study area has declined and the demographics have shifted away from households that have one or more children. There are several schools in the study area, however the low numbers of children in the neighbourhood have resulted in low enrollment levels for the last few years. Repurposing uses, creating after school programming open to the public, and potentially redeveloping the space could add diversity and enhance the use of these places as community assets beyond school hours. Images 1,2 3 and 4 are just a few examples of the many schools in the area. Images 5 and 6 are examples of programming and repurposing of space to support after school activities.



Basketball - <http://www.azclubbasketball.com/> - Arizona club basketball Website

Greenhouse - <http://greenhouse2.blog.fc2.com/blog-entry-40.html> -

Greenhouse blog Website



## Churches

Several churches also exist in the study area. These spaces have potential for providing additional programming for community activities. The Anglican Church, for example, already opens up the space to martial arts classes, plant sales, clothing swaps, etc. outside of church service hours. Diversifying uses in the space, and/or redeveloping the site to accommodate various community activities could be considered toward sustainable community objectives.



Step Aerobics - <http://stepaerobics.org.uk/step-aerobics/> - Step Aerobics

Karate Class - <http://www.dionneskarate.com/> - Dionne's karate School Website

## Third Places and Other Community Amenities

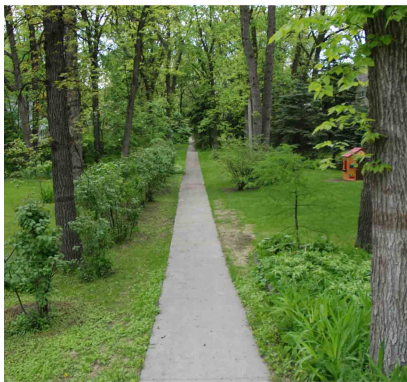
There is a need to preserve, create and enhance third places in the community. Third places create an identity that community members can feel proud of, share experiences, and establish community relations.

Preserving third places, such as buildings and parks enhances the historical integrity and image of the community that people share. For example:

- The Shoppers Drug Mart has replaced a bowling alley/hair salon/arcade that had a unique, street oriented facade with a wall along Pembina Highway and entrance through the parking lot on the side.
- Wildwood Park requires a plan to protect development from encroaching upon the shared green space.

The creation of new third places should occur in a manner that is more accessible to local community members rather than the thorough-fare of people in cars along Pembina Highway. The Fort Garry Public Library is oriented toward the street and serves as a place where local residents can go relax and access books, music and videos.

Enhancing third places should be done to create more pedestrian friendly access that orients toward community members rather than primarily people in cars driving down Pembina Highway. The images at the bottom are examples of pedestrian oriented design.



Café Noir - <http://www.thecafenoir.co.uk/> - café noir website

Carlos Bake Shop - <http://ingridcamacho.wordpress.com/2009/08/19/carlos-bake-shop/> - Ingridcamacho's Weblog

# Land Use Diversification

## Main issue and why the need for change?

The availability of land for development in Winnipeg is limited. The City estimates that there is a thirteen year window of land-supply if development continues in a low-density manner. Land-use diversification can extend the window of land availability by targeting sites that are possible for intensification. There are several benefits beyond extending the availability of Winnipeg's land supply. Land-Use diversification can also:

- increase the usage of sites that are underdeveloped or underutilized.
- provide different types of dwelling for people with a variety of needs.
- support transportation opportunities - See Transit Oriented Development.
- provide various types of housing and commercial opportunities that are within close proximity of each other, making it more desirable to access amenities on a local scale.

## How can this be achieved?

- Transit Oriented Development
- Residential infill
- Mixed-use commercial/residential development
- Redevelopment of underutilized sites or old buildings
- Secondary suites
- Repurposing underutilized community facilities

## Transit Oriented Development

Transit Oriented Development or TOD is the focus of compact growth located within easy walking distance from transit stations. TOD supports land-use diversification as well as transportation alternatives by promoting livable spaces that make it easy to depend on public transportation for getting around. TOD is development that is located within an easy five to ten minute walk (400m to 800m) from a transit stop. The aerial photo below highlights this walkshed in the study neighbourhood.

TOD is often high quality urban development that provides a mix of residential, employment and shopping opportunities. The City of Winnipeg TOD Handbook says that "people living and working in TODs walk more, use transit more and own fewer cars than the rest of the larger community. TOD households are twice as likely to not own a car, and own roughly half as many cars as the "average" household. At an individual transit station, TOD can increase ridership by 20 to 40 percent, and up to five percent overall at the regional level. People who live in a TOD are five times more likely to commute by transit than other residents" (p.6). TOD is considered by many forward thinking urban planners as a well rounded approach to support the creation of more sustainable communities.

Aerial map of study area with 400 metre walking distances



## TOD Continued.....

The goals of TOD are to develop higher densities along corridors in order to support rapid transit. Three stops for the rapid transit corridor have been preliminarily identified in the study area along the existing rail line adjacent to Pembina Highway. These station areas include: Windermere, McGillvary and Clarence. Below are photos of the McGillvary Area where TOD may potentially occur. Image 1 is the Safeway and Curling Club site. The vast parking lot and low-intensity development have the potential to be built up to support the objectives of TOD. Image 2 is an example of the higher density development that exists around the McGillvary Station Area that should be encouraged. Intensifying development within the 800 m (10 minute) walkshed makes it more desirable to use transit while increasing the diversity and functionality of many underperforming sites along the transit corridor. Images 3 and 4 are examples of TOD in other cities



image 1



image 2

TOD - <http://www.raise-the-hammer.org/article/458/?view=flat> - Raise the hammer Website

image 3

TOD - <http://www.metrocouncil.org/directions/development/dev2007/tod.htm> - Metropolitan Council Website

image 4

Also see Transportation



## Diversity of Housing Options

A diversity of housing options provides choice for people with different lifestyle needs. Condominiums (ownership) (image 1), apartments (rental) (image 2), and care homes (image 3) exist in the neighbourhood, though each of these housing types are still not widely available. One of the concerns voiced in the focus group was the desire to stay in the neighbourhood once the need for living in a single family home no longer fit with their lifestyle. Opportunities to increase the diversity of housing were explored in the first focus group. One site that was identified in the focus group was the Wildewood Club (image 4). Examples of housing options that could be explored on the Wildewood Club site are seen in images 5 and 6. Low to moderate densities for housing options should be encouraged in the interior of the study area. Higher density housing options should be encouraged along the Pembina Highway corridor. Both rental and ownership opportunities should also be explored to be inclusive of different peoples needs.



Multi family housing –  
[http://www.planning.ubc.ca/vancouver\\_home/news\\_and\\_events/whats\\_new/articles320.php](http://www.planning.ubc.ca/vancouver_home/news_and_events/whats_new/articles320.php)  
UBC Campus and Community Planning Website

image 5

Multi family housing –  
[http://www.planning.ubc.ca/vancouver\\_home/news\\_and\\_events/whats\\_new/articles320.php](http://www.planning.ubc.ca/vancouver_home/news_and_events/whats_new/articles320.php)  
UBC Campus and Community Planning Website

image 6



## Mixed-Use

Mixed-use developments allow for both commercial and residential uses in the same building. Pembina Highway has been identified as a corridor with high opportunity to encourage mixed-use developments. Only few examples exist in the study neighbourhood (see image 1) and they are not the most exceptional examples. Several opportunities exist to encourage higher density mixed-use developments in the study neighbourhood, as there are presently several buildings along the Pembina corridor that are low-density, commercial use. Often these developments have a small building footprint on the development site and provide an abundance of parking. See image 2 below as an example of an opportunity where mixed-use development could be encouraged. Image 3 is an example of what mixed-use development could look like.



Mixed Use - [http://info.aia.org/aiaarchitect/thisweek08/0418/0418d\\_portwalk.cfm](http://info.aia.org/aiaarchitect/thisweek08/0418/0418d_portwalk.cfm) - AIA Website

image 3

## Redevelopment or infill development of underutilized sites (aka greyfields)

Greyfields are developments that are underutilized, deteriorating, or are inefficiently using the land upon which they exist. Redevelopment of greyfields should occur as a means to optimize efficiency of land use and reinvigorate activity of the site. For example, the legion building on the corner of Pembina and Windermere could be considered a greyfield as the building is quite old and the land is used for one purpose. Mixed-use development that incorporates the legion into the main floor should likely be considered. This site is an example where some higher density housing could occur. The plot of land is adjacent to a proposed future rapid transit stop, it is not directly adjacent to single family housing, and there is plenty of underutilized parking space. Image 1 below is Windermere site, an example of an underutilized greyfield. Image 2 below is an example of mixed-use infill development along a high frequency transportation corridor.



Greyfield - <http://www.batesmart.com.au/projects/mixed-use/broadway-mixed-use-development-sydney> - Bates Smart Website

image 2

## Better Buildings

### Main issue and why the need for change?

The buildings we live and work in require a significant amount of energy and resources to construct and operate. According to the Canadian Mortgage and Housing Corporation (CMHC), housing is a major consumer of energy (approximately 17 percent of Canada's secondary energy use). Because of this high level of energy consumption in buildings the CMHC recommends that improvements in the design and operation of buildings be a key component of any sustainable development strategy. The creation of better buildings will protect the environment and ultimately benefit affordability issues relating to the operation of buildings. By encouraging new methods of design and the use of better technologies, buildings can be improved to reduce energy, water and resource consumption.

### How is this achieved?

- Green building certification
- Energy saving design and technology
- Water conservation design and technology

### Green Building Certification

Green Building certification programs such as LEED (Leadership in Energy and Environmental Design) or BOMA (Building Owners and Managers Association) set criteria and standards for optimizing the performance of buildings, throughout the design, construction, and operational phases. These programs could be considered in the development of new and conversion of existing buildings in the study area.

Winnipeg Humane Society - [http://www.numberten.com/news\\_c.html](http://www.numberten.com/news_c.html) - Number 10 Architects Website

### Energy Saving Design and Technologies

Energy savings can be incorporated into existing buildings or established at the onset of design. If the intent is to reduce energy consumption and create a more sustainable building, it is best to establish this intent from the beginning of the design process. This way all features of the site and building can be considered to optimize buildings operations, and minimizing costs. In the study neighbourhood, most property has been developed and it does not make economic or environmental sense to rebuild when existing buildings are already in place. Therefore many home and business owners should consider how energy saving technologies could be incorporated into the existing building. These technologies may include energy efficient windows, insulation, and alternative energy sources such as solar or geo-thermal. Operational features could include dim control lighting with I.e.d. lights, energy efficient appliances and heat-ventilation recapture. The landscape of the property can also be designed in a manner to reduce the energy required for maintenance (typically lawn mowing). Energy saving technologies can cost more upfront, but will save you more in the long run. Incentives are often available to encourage the use of these technologies

Green Buildings – House - <http://www.thedailygreen.com/green-homes/latest/modular-homes-green-building-gorgeous> - The Daily Green Website



## Energy Saving Design and Technologies continued.....

Houseplant Homes - <http://www.houseplanthomes.com/how-is-houseplant-green/> -  
Houseplant Homes Website

## Water Conservation Design and Technologies

Water conservation looks at reducing the amount of water that is used from City sources. Water conservation can be achieved by installing features such as low flow toilets and showerheads, grey-water systems, water capture devices such as rain barrels, and installation of water meters. The landscaping can also be designed in a water-efficient manner (also known as xeriscaping) to conserve water consumption. Xeriscaping incorporates native plants that typically survive from natural rainfall, and can tolerate periods of drought. Water efficient landscaping also introduces more permeability to the site, which means less water runoff.

Houseplant Homes - <http://www.houseplanthomes.com/how-is-houseplant-green/> -  
Houseplant Homes Website

# Open Space

## Main issue and why the need for change?

Open space for recreation is vital to the health and well being of people in communities. However open space has typically been reduced to a few species of trees and manicured fields of grass. Diversifying the use of open space from an ecological standpoint is one component of sustainable communities.

Michael Hough (2004) discusses the relation between the city and natural processes that occur within urban areas. He explains that the formal landscape and the natural "symbolize an inherent conflict of environmental values" (6). On one hand we desire the aesthetic of controlled landscapes which symbolize civic pride and a sense of care. While on the other hand, natural processes left to their own devices within urban setting represents the vitality of "functioning natural and social processes at work in the city" (6). Unfortunately these spaces are often perceived as derelict, disorderly and in need of renewal.

The main issues with open space are that:

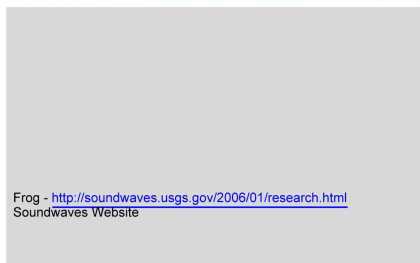
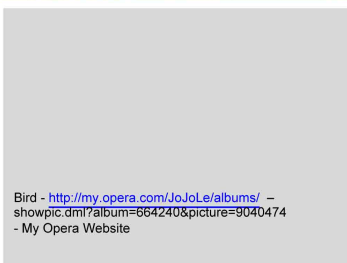
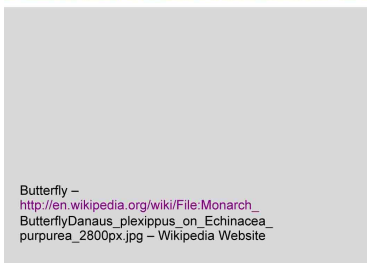
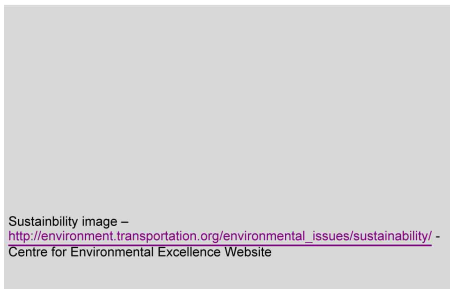
- High levels of energy are required for maintenance
- Few types of plant species, typically turf grass, provide little by way of biodiversity
- Recreation opportunities should be available to people of all ages.

## How can this be achieved?

- Preservation and promotion of biodiversity
- Recreation and leisure - for all ages
- Energy reduction via maintenance of boulevards and large open spaces.
- Green streets and alleys

## Biodiversity

Biodiversity is a complex issue that rests at the heart of all sustainability issues. Without understanding and recognizing the importance of biodiversity in a sustainability plan, there is a failure to recognize the fundamental reasons for creating a plan in the first place. Our economy and our social well-being are dependent on the natural environment. This is quite evident in how environmental catastrophes and crop failures can affect our livelihoods. The communities role in promoting biodiversity will begin with identifying species present, species at risk, species that may be reintroduced, and any other opportunities that will create a diverse and healthy ecosystem. A healthy, diverse, natural environment will sustain our social and personal well-being and secure economic viability for future generations.



## Age Friendly Recreation and Leisure

Recreation opportunities should be available to people of all ages in the community. In the realm of open space, this could include spaces such as soccer and baseball fields, golf courses, cross country ski trails as well as community gardens and opportunities for bird watching, walking, etc. Images 1,2 and 3 show open space that already exists in the neighbourhood. Image 4 shows a community garden that could be an addition to the neighbourhood. This community garden could provide (while small in scale) a degree of food security, the opportunity to learn about food, economic development as well as exercise and well being.





## Energy Reduction/Alternative Maintenance

Rather than growing turf grass in all open spaces, alternative forms of landscaping and plant species should be considered. Turf grass requires energy intensive means to maintain which costs money and creates air pollution. Planting native species that are well adapted to the local climate can reduce the need for high levels of energy towards maintenance and promote biodiversity. It should be clarified that naturalization of open space should not take precedent over space that is used for recreation. The purpose is to identify and consider different options when it is best suited, (for example, boulevards or underutilized open spaces). Better plant coverage increases permeability of the land as well, reducing flooding and water runoff (See water management)



## Green Streets/Alleys

Green streets are designed with the intention to capture and infiltrate or filter storm water runoff through a natural system. Boulevards directly adjacent to roads and sidewalks are an ideal location for water capture runoff. Landscaping along these boulevards also create a buffer between vehicles and pedestrians, creating a much more enjoyable walking environment and opportunities to enhance the biodiversity of the neighbourhood. Green Streets also provide adequate space for street trees to mature and develop significant canopy coverage, creating more beautiful neighbourhoods, diverse with plant species that improve air quality. Instead of direct drainage to storm sewers (as seen in image 1 - an image taken from the study neighbourhood) stormwater can be directed toward plant beds at the edge of streets and lanes in order to support plant growth and biodiversity in these spaces (see images 2 and 3). \*See Water Management



image 1

Green Street - <http://hpigreen.com/tag/green-streets/> - Green Infrastructure Digest Website

image 2

Green Alley – <http://infrascapedesign.wordpress.com/2010/02/17/the-beauty-of-sustainability/> - Infrascap Design Website

image 3

# Transportation

## Main issue and why the need for change?

Traffic congestion is a problem in many North American cities. Often, this is because development over the last 70 years has occurred in a manner that primarily supports automobile transportation. For example, wide highways and large parking lots make it very easy to use the automobile as a primary mode of transport. The separation of commercial and residential land uses further exacerbates car dependency. Car dependency is a problem because it creates high levels of pollution, issues of safety (car accidents), and it can disconnect people from community. Creating and improving alternative modes and networks of transportation (such as bike paths, walking paths, public transit) can help ease the overuse of cars and improve the efficiency of moving people around in the city.

## How can this be achieved?

- Active Transportation infrastructure
- Public transit
- Rapid transit
- Car shares/bike shares
- Land Use Diversification \* See Land Use Diversification

## Active Transportation Networks

Active Transportation (A.T.) infrastructure contributes to the physical and social sustainability of communities by encouraging healthy and active lifestyles. A.T. infrastructure promotes the use of alternative forms of transportation by creating safe and easy ways to get around. A.T. opportunities discussed in the first focus group targeted a safe place to walk/bike along South Drive, two pedestrian bridges connecting to St.Vital, and better bike lock facilities along Pembina Highway. Many of these features already exist in the neighbourhood in some capacity; the objective will be to emphasize these features to make Active Transportation a more appealing alternative.



Bike Box  
<http://www.aecinfo.com/1/company/25/97/01/bike-parking-lockers/product.html> -  
AEC info Website

Roller Blading -  
[http://sp.life123.com/bm.pix/bigstockphoto\\_rollerblades\\_2572933.s600x600.jpg](http://sp.life123.com/bm.pix/bigstockphoto_rollerblades_2572933.s600x600.jpg)  
Life 123 Website

Bike Path –  
<http://www.planetizen.com/node/33877> -  
Planetizen Website



## Public Transit

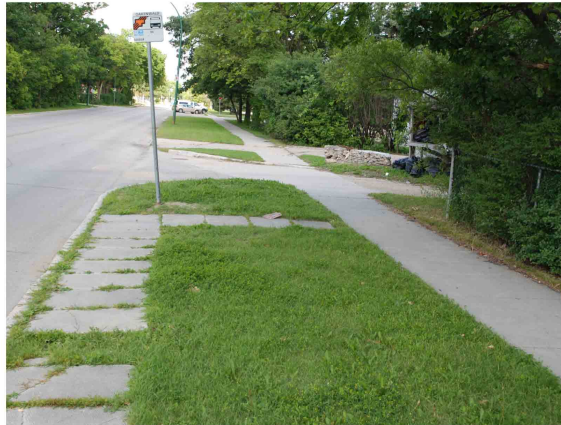
Public transit is widely available in Winnipeg, however there are issues with encouraging ridership and making it a viable alternative to driving. The two key issues identified in the first focus group were that there is a poor perception of riding the bus and that riding the bus needed to be more convenient. The goals with public transit should be focused on improving perception and improving the ease of ridership.

Urban design and upgrades to the public realm are some ways that the study neighbourhood might be able to encourage more ridership. When the public see that there is some level of priority and more of an emphasis on public transit, more people may choose to ride.

Some ways to encourage the perception and ease of ridership may be:

- Upgrades to stops. Such as some form of landscaping, shelter, or unique mark to identify the site. Could incorporate Water Sensitive Urban Design
- Improved technology, GPS, live schedules
- More bicycle parking at major sites

Winnipeg Transit Bus –  
<http://winnipegtransit.com/en/inside-transit/interestingtransitfacts> -  
City of Winnipeg Website



Green Roof Bus Stop –  
<http://walyou.com/cool-bus-stops-world/> -  
Walyou Website

Bus with Bike Holder –  
<http://bicyclemechanic.blogspot.ca/2010/05/bicycle-racks-on-ttc.html> -  
Bicycle Mechanic Blog

Winter Bus Stop –  
[http://cassandrapages.blogspot.ca/archives/2005\\_01\\_23\\_cassandrapages\\_archive.html](http://cassandrapages.blogspot.ca/archives/2005_01_23_cassandrapages_archive.html) -  
Cassandra pages blog Website

Covered Bike Parking –  
<http://www.vtpe.org/tm/tm85.htm> -  
Victoria Transit Policy Website



## Rapid Transit

Rapid transit provides dedicated lanes of travel for high capacity, high frequency vehicles. In Winnipeg, the first phase of rapid transit is under construction. It begins at the Queen Elizabeth bridge and ends at the jubilee overpass. Until the second phase is settled upon, the buses from the dedicated rapid transit line will run along Pembina Highway. The second phase has been identified to run along the railway corridor adjacent to Pembina Highway. Images 1 and 2 show where the proposed second phase of rapid transit might run; either adjacent to the existing railway corridor or along Pembina Highway. Image 3 is an example of Bus Rapid Transit (BRT) and image 4 is an example of Light Rail Transit (LRT)



Bus Rapid Transit –  
<http://www.cat-bus.com/category/bus-rapid-transit/> -  
Cat Bus Website Blog

image 3

LRT Rapid Transit –  
[http://farm1.static.flickr.com/118/289611528\\_b22ba6f736.jpg](http://farm1.static.flickr.com/118/289611528_b22ba6f736.jpg) -  
Flickr Website

image 4

## Car Shares/Bike Shares

Car shares and bike shares are becoming common in many major cities around the world. Image 1 below shows a car share in Oslo which now has over 1000 members utilizing the service. Car share programs allow you to have access to a vehicle for only specific times when you need it. Car sharing could be explored in the community sustainability plan. Images 2 and 3 show bike share programs that allow you to rent bicycles for however long you need them and drop them off at any of the bike share depots when finished. Bike share programs could also be explored in the community sustainability plan.

Car Share - <http://inhabitat.com/oslos-all-electric-car-share-program-just-reached-1000-members/> - Inhabitat Website

image 1

Bike Share –  
<http://inhabitat.com/6-awesome-bike-sharing-schemes-from-around-the-world/> -  
Inhabitat Website

image 2

Bike Share –  
<http://www.treehugger.com/cars/saddle-up-bike-sharing-program-arrives-in-tucson.html> -  
Tree Hugger Website

image 3



# Water Management

## Main issue and why the need for change?

On average, roughly half of the rainfall that occurs within an urban setting will runoff into storm sewers or nearby water bodies (City of Winnipeg, 2010). The ability to sustainably manage water treatment, water quality, flood protection, and water conservation depends on addressing how water is currently being managed and then identifying opportunities for how and where it can be improved.

Sustainable water management has several complex matters embedded within it. The main concerns involve:

- Environmental preservation and restoration through watershed protection (surrounding water bodies)
- Flood protection
- Water conservation

Watershed protection involves reducing the amount of pollutants that make their way into surrounding water bodies. This could involve post sewage wastewater treatment discharge, or runoff which could bring with it several pesticides or other chemicals applied to the groundcover.

Flood protection involves reducing the amount of water that flows into surrounding water bodies. Slowing runoff into stormwater sewers and runoff directly into surrounding water bodies will reduce risk of flooding.

Water conservation involves reducing the amount of water that is discharged into the sewer system via the buildings we occupy or water we use in maintenance. Reduced water consumption puts less stress on the sewer systems and water treatment plants.

## How is this achieved?

- Water Sensitive Urban Design - Retention and Drainage (bio-swales, stormwater retention ponds, greenroofs, etc.)
- Better technologies/practices that reduce water consumption

## Water Sensitive Urban Design - Retention

Retention is one key component to water sensitive urban design. Increasing the permeability of the built environment allows water to soak into surfaces rather than runoff into storm sewers. The most common impermeable surfaces are concrete, asphalt, and standard pitch roofs. Some examples of more permeable surfaces are shown in the following images. These include: green alleys, green streets, naturalization of open space, green parking lots, green roofs and bio-swales.

Green Street <http://www.myballard.com/2009/05/14/green-streets-project-proposed-for-ballard/>  
My Ballard Website



Green Parking  
[http://www.hoofgrid.com/nonequine other uses of stabilgrid homegrid versigrid.htm](http://www.hoofgrid.com/nonequine_other_uses_of_stabilgrid_homegrid_versigrid.htm)  
Hoofgrid Website

Bioswale - <http://www.ia.nrcs.usda.gov/news/brochures/bioswale.html> - NRCS Website

## Water Sensitive Urban Design - Drainage

Drainage is linked to retention. Typically, water runs into storm sewers, which eventually makes its way into the river system. New design strategies of drainage divert water to areas of retention, which support the landscaping foliage and reduce storm water runoff. The images immediately below show current examples of typical storm sewer drainage in the study area. Below those are examples of how to improve drainage by increasing permeability of the site, diverting water toward these more permeable surfaces, and optimizing efficiency of drainage sewers by creating separate storm sewers.



Conveyance  
<http://lisastown.com/inspirationwall/2010/07/16/urban-water-conveyance-freiburg-bachle/>  
Inspiration Wall Website

## Better Technologies/Practices

Better technologies, such as dual flush toilets, low flow showerheads, greywater systems and rain barrels can be incorporated into homes and other buildings to reduce water consumption. Landscaping practices such as xeriscaping reduce the levels of water consumption by incorporating native plant species that are tolerant to periods of drought and require little to no extra water to survive.

Low Flush toilet

<http://myhomezine.com/2009/07/17/finding-a-low-flush-toilet-that-works/>  
My Home Zine Blog Website

Greywater system

<http://ozzikleen.com.au/domestic-sewerage-treatment-systems/gts10-greywater-treatment-system>  
OzziKleen Website

Xeriscaping

[http://www.daviddarling.info/encyclopedia/X/AE\\_xeriscaping.html](http://www.daviddarling.info/encyclopedia/X/AE_xeriscaping.html) -  
Encyclopedia of Alternative Energy and Sustainable Living Website

Rain Barrel –

<http://www.4seasongreenhouse.com/rain-barrels-watering-c-306.html> -  
4season Greenhouse Website

Rainwater harvesting - <http://www.rwhdigest.com/> - Rainwater digest Website

# Waste Management

## Main Issue and why the need for change?

The carrying capacity of the Earth to support human life is reaching its limit. The present rate of resource consumption is near surpassing the rate at which natural processes can regenerate, and with a rapidly growing global population and current consumption practices, it is clear that this trend cannot be sustained. On a community level there is a need to reconsider how resources are consumed and disposed of in order to respond to resource conservation issues. Waste management is an important consideration in a sustainable community plan because it can help assess the current waste management practices and identify targets that should be achieved. Resources need to be more properly managed throughout their lifecycle and it is not sustainable to simply dispose of many of the products we use today in large heaps at landfills. There is value in the end product of many waste systems. Failure to address this value compromises the environmental, social and economic sustainability of our modern lives.

## How is this achieved?

- Garbage management plan
- Compost management plan
- Recycling management plan

## Garbage management plan

According to the City of Winnipeg the present rate of material going to landfills is 77% of total annual residential waste. This number can drastically be reduced through a more comprehensive waste management plan. This would include better recycling and compost participation which would reduce the load on landfills. Reducing the amount of waste that goes to landfills will extend the life of the landfill, while reducing environmental impacts and saving tax dollars needed to provide landfill services. A community sustainability plan should start by identifying how much garbage is annually being taken to landfills then establish targets and plans for reducing this number. Likely these plans would involve community discussion and would require buy-in from the majority of community members.



Garbage in Streets –  
[http://www.greenteam.mersd.org/?page\\_id=453#http://www.greenteam.mersd.org/wp-content/uploads/2011/06/Compost.jpg](http://www.greenteam.mersd.org/?page_id=453#http://www.greenteam.mersd.org/wp-content/uploads/2011/06/Compost.jpg) -  
Achieving the City Web site



## Compost management plan

Composting is a simple way to divert waste from landfills. By putting organic materials, such as vegetables and fruit into a compost bin you can reduce the amount of waste going to landfills. Presently 50% of residential waste going to landfills is compostable, organic material that could otherwise be cultivated into nutrient rich soil additives. Composting can extend the life of landfills while producing a value added resource. Individuals can compost at home, or at community compost depots where the product could go toward planters or gardens in the neighbourhood. Community compost depots create an opportunity for neighbourhood residents to cooperate, meet each other and do something positive for the community. The three images at the bottom are of a community compost depot at the University of Alberta that is also a part of a community garden.



Cycle of Composting:  
[http://www.greenteam.mersd.org/?page\\_id=453#http://www.greenteam.mersd.org/wp-content/uploads/2011/06/Compost.jpg](http://www.greenteam.mersd.org/?page_id=453#http://www.greenteam.mersd.org/wp-content/uploads/2011/06/Compost.jpg)  
MERSD Web site

Community Compost - <http://myzerowaste.com/2009/05/compost-awareness-week-community-composting/> -  
My Zero Waste Website

## Recycling management plan

According to the City of Winnipeg, 45,000 tonnes of material waste are diverted from landfills through the recycling system each year. This amount accounts for 17% of the waste stream. This rate of diversion is believed to fall well short of the zero waste targets which are set at 60+% diversion of solid wastes from landfills. The cost to run the recycling program in Winnipeg is dependent on markets that purchase the recyclable resources and level of funding from the Province. Presently, the amount of material being sold covers the cost to run the Materials Recovery Facility (located at 1029 Henry Street). One of the issues identified in the first focus group was the belief that recycling in Winnipeg doesn't exist and that it all ends up in the landfill anyway. Debunking this myth is a good starting point. The next steps will be to identify how to increase levels of recycling in the community. The images below show personal recycling bins, community depots, the Material Recovery Facility in Winnipeg and the end product that can be sold for profit.



Recycling - <http://beta.recyclepedia.com/> -  
Recyclepedia Website

Recycling Conveyor –  
<http://www.siteselection.com/ssinsider/pwatch/Roll-Steel-Roll.htm> -  
Site Selection Website

Block of aluminum cans - <http://www.theinnovationdiaries.com/1180/metal-recycling/>  
The Innovation Diaries Web site

## Lifestyle choice

Lifestyle choice can go a long way in reducing waste. Choosing reusable water bottles instead of plastic bottles, and exchanging old things at swap meets or garage sales are just some ideas where individuals and community can start to reduce their output of waste to landfills.

Plastic Water Bottles  
<http://www.plasticstoday.com/article/goodbye-water-bottle-hello-pouch-0309201201>  
Plastics Today Web site

Reusable Water Bottle - <http://www.kidlantis.com/mealtime/lifefactory-water-bottle/>  
Lifefactory water bottle on Kidlantis Web site

Swap Meet  
<http://bargainista.blogspot.ca/2009/08/swapsity-swap-meet-garage-sale.html>  
Bargainista Web site

Yard Sale  
<http://durhamgarageinteriors.com/2012/05/organizing-solutions-garage-sales/>  
Durham Garage Interiors Web site

# Economy

## Main issue and why the need for change?

Economic sustainability determines much of what can be achieved in terms of a community sustainability plan. Funds support initiatives, finance services and make it possible to achieve the goals set out to be implemented. The City of Winnipeg is facing a growing infrastructure deficit that will continue to slow, or divert the use of funding toward necessary resources. If the infrastructure deficit continues to grow, many of the community resources and services could remain economically insecure. Economic initiatives will need to be undertaken to extend the life-cycle and value of existing community infrastructure and support the development of new, more sustainable infrastructure.

## How can this be achieved?

There is a need to optimize existing infrastructure. This includes reducing the development of new areas that require new roads, services, and costs which the entire city must pay for through taxes. One of the fundamental issues facing inner-ring suburbs is the decline of population and aging infrastructure. As new communities build out further from the city centre and invest in new infrastructure, the existing state of the inner-ring suburbs becomes further at risk of decline.

The goal of a sustainability plan is to identify ways to invest in and optimize the use of existing infrastructure and create new, sustainable infrastructure.

- Investments should occur in infrastructure that is sustainable and renewable, such as renewable energy sources (solar, wind, geo-thermal), transportation infrastructure (rapid transit, public transit, active transportation), and water and waste infrastructure (through water sensitive urban design (WSUD))
- Intensifying or infilling land that is underutilized which in turn increases the level of tax revenue the City receives from the property. (See Land Use Diversification)
- Supporting local initiatives and businesses - improving local economic security, food security issues, and employment opportunities

## Sustainable Infrastructure - Energy


From an environmental standpoint, alternative sources of energy should be considered in a sustainable community plan. Presently, hydro electricity is Manitoba's primary energy source. While it is low emitting in terms of air pollution, vastly available and therefore highly affordable, the environmental impact of hydro-electric dams (flooding, mercury poisoning) have made it clear that it is still not the most sustainable energy source. Localized energy generation such as wind turbines (small and large scale), district geothermal or smaller scale geothermal systems, and solar panels have less effect on the environment and are good alternatives from an environmental perspective. At this time, the cost of such energy resources may be too high to make implementation feasible, however they should be considered in the long term vision of a sustainable community plan.



Dam Flooding –  
<http://fireflyforest.net/firefly/2006/08/01/july-2006-flooding-in-tucson/> -  
Firefly Forest Web site



Dam - [http://farm4.static.flickr.com/3153/2987745144\\_aa86ff20ca.jpg](http://farm4.static.flickr.com/3153/2987745144_aa86ff20ca.jpg) -  
Flickr Web site



Small Scale Windmills - <http://www.actnow.com.au/files/110/windmills.jpg>  
Act now Web site



Solar Panels  
- <http://www.983flyfm.com/theflyfm/50-new-jobs-to-be-created-at-solar-panel-manufacturer/>  
98.3 Fly FM Web site



## Sustainable Infrastructure - Water and Transportation

When the city expands and requires new infrastructure to service new developments: roads, water mains, and electricity must be provided. When these services are expanded to low density areas the cost to provide them does not typically equal the tax revenue that is generated from these new developments. Thus, sprawl is economically unsustainable. The cost of maintaining the many roads in cities is much higher than it is to maintain dedicated transit lines. The same goes for water mains and electricity. If we are to reduce the infrastructure deficit in Winnipeg, intensifying existing lands or developing new areas to maximize the use of infrastructure is necessary. We must also invest in new technologies such as rapid transit, and design techniques such as Water Sensitive Urban Design. Rapid transit can reduce the dependency on automobiles, and thus the need to maintain existing roads and construct new roads. Aging sewer systems in older neighbourhoods can also be reconstructed to be separate rather than combined, which increases capacity and diverts waste and water through two separate systems. Water Sensitive Urban Design can reduce the demands on existing sewer systems. Applying better technologies, design and use of resources will help ensure economic sustainability into the future.

Road Work –  
[http://www.rafcga.co.uk/modules/com\\_jumi/road-work-858.html](http://www.rafcga.co.uk/modules/com_jumi/road-work-858.html) -  
%blog-title% website

Highway Construction – <http://minnesota.publicradio.org/display/web/2011/04/06/mndot-2011-construction-projects/> -  
MPR News Web site

Cars vs. Bus –  
<http://chinagreenbuildings.blogspot.ca/2008/12/cars-in-china.html>  
- China Green Buildings Blog Web site

Bus Rapid Transit –  
<http://nexus.umn.edu/Courses/Cases/CE5212/F2008/CS3/CS3.html>  
- Nexus Web site

## Local Economy

Local economy is important in order to ensure localized employment opportunities, reduce environmental impacts from global trade, and protect local communities from dependency on outside corporate volatility. The benefits of local economy go beyond making money. Small scale organizations or businesses create a sense of unique identity and personal touch to the community. Community gardens and farmers markets also contribute to the sense of strong community while increasing food security. Food security means that there is an availability of food for all on a local scale. This reduces cost of travel and impact on the environment. It also means that in any extreme circumstance, such as a natural disaster, that the supply chains of food distribution are still intact. Strong local economic investment protects citizens against outside factors that may disrupt costs of goods, availability of employment, and impacts on the environment.

Walmart Storefront – <http://phandroid.com/2012/04/30/u-prepaid-coming-soon-to-a-walmart-near-you-from-alltel-and-us-cellular/> - Phandroid Web site

Community Garden – <http://tfc.howstuffworks.com/home/community-garden.htm> - TLC Web site

Vesuvio Bakery <http://threeloavesbakehouse.blogspot.ca/> - Three Loaves Bakehouse Web site



## Appendix B – Letter of Consent: Focus Group One

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*This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.*

Title of Project: Transforming Inner-Ring Suburbs In Winnipeg Toward Sustainability

Specific Activities to be Completed by Project Participant: Participants will be involved in a participatory planning process that looks at the transformation of the case study inner-ring suburb in Winnipeg. Participants will take part in two focus groups. Each focus group is expected to last between 1-1 ½ hour(s).

This research is being conducted by Devin Clark, a graduate student in the Department of City Planning at the University of Manitoba. The project is entitled Transforming Inner-ring Suburbs in Winnipeg Toward Sustainability.

This research investigates how existing, inner-ring suburban communities can transform to become more sustainable, both physically and socially. This study focuses on an inner ring-suburb in the south end of Winnipeg which is comprised of five census tracts: Maybank, Beaumont, Point, Wildwood and Crescent Park. The goal is to identify specific opportunities in the neighbourhood that will improve and promote sustainable lifestyles.

The first meeting will focus on existing characteristics of the study area, personal lifestyle choices (as they relate to the community and sustainability), and a visioning session for the future of the suburban neighbourhood. The second meeting will present design and social change proposals based on the information from the first focus group and interviews conducted with local city planners. The goal of the second focus group is to review, critique and refine the proposed changes for a sustainable inner-ring suburb.

With your permission the focus group will be audio-recorded so that responses can be confirmed and clarified upon later analysis. If there are any questions or concerns during the session, feel free to ask immediately. You are not obligated to answer any questions you do not feel comfortable answering and if you decide to leave the focus group at any time, you are welcome to do so without prejudice or consequence.

Personal information will be kept confidential. Your name, position and/or any other information that would give confidential information away will not be included in any publicly disseminated materials arising from the study. Where information occurs within a session transcript that will be included in the final report, names and other personal information will be omitted, unless permission to do so has been explicitly granted.

Information from this focus group may form part of future articles, books or other publicly disseminated media by the researcher. The results from the focus group will not be made publicly available and upon completing the research, all research materials will be destroyed.

*Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the study and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.*

CONTACT INFORMATION:

Dr. Richard Milgrom, Associate Professor, Department of City Planning, Faculty of Architecture, University of Manitoba, 201 Russell Bldg., Winnipeg, MB, R3T 2N2 Telephone: \_\_\_\_\_; Fax: \_\_\_\_\_; Email: \_\_\_\_\_

This project has been approved by the Joint Faculty Research Ethics Board (JFREB) of the University of Manitoba. If you have any concerns or complaints about this project you may contact the above-named persons or the Human Ethics Secretariat at 474-7122, or e-mail [margaret\\_bowman@umanitoba.ca](mailto:margaret_bowman@umanitoba.ca). A copy of this consent form has been given to you to keep for your records and reference.

Thank you for participating in this project. Your cooperation and insights are very valuable, and are greatly appreciated.

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Signature of Participant

Date

---

Name of Advisor or Student

---

Signature of Advisor or Student

Date

## Appendix C – Letter of Consent: Focus Group Two

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*This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.*

Title of Project: Transforming Inner-Ring Suburbs In Winnipeg Toward Sustainability

Specific Activities to be Completed by Project Participant: Participants will be involved in a participatory planning process that looks at the transformation of the study area inner-ring suburb in Winnipeg. Participants will take part in two focus groups. Each focus group is expected to last between 1-1 ½ hour(s).

This research is being conducted by Devin Clark, a graduate student in the Department of City Planning at the University of Manitoba. The project is entitled Transforming Inner-ring Suburbs in Winnipeg Toward Sustainability.

This research investigates how existing, inner-ring suburban communities can transform to become more sustainable, both physically and socially. This study focuses on an inner ring-suburb in the south end of Winnipeg which is comprised of five census tracts: Maybank, Beaumont, Point, Wildwood and Crescent Park. The goal is to identify specific opportunities in the neighbourhood that will improve and promote sustainable lifestyles.

This focus group will be guided by a series of questions that builds on the previous focus group session and interviews with local city planners. The purpose is to analyze and discuss the input from the first focus group and interviews and critically review the proposed design and social strategies that have I have developed as they have been informed from earlier research.

With your permission the focus group will be audio-recorded so that responses can be confirmed and clarified upon later analysis. If there are any questions or concerns during the session, feel free to ask immediately. You are not obligated to answer any questions you do not feel comfortable answering and if you decide to leave the focus group at any time, you are welcome to do so without prejudice or consequence.

Personal information will be kept confidential. Your name, position and/or any other information that would give confidential information away will not be included in any publicly disseminated materials arising from the study. Where information occurs within a session transcript that will be included in the final report, names and other personal information will be omitted, unless permission to do so has been explicitly granted.

Information from this focus group may form part of future articles, books or other publicly disseminated media by the researcher. The results from the focus group will not be made publicly available and upon completing the research, all research materials will be destroyed.

To receive a copy of the findings of the research you can contact me at \_\_\_\_\_ If you have any concerns or complaints about the project, feel free to contact me at \_\_\_\_\_.

*Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the study and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.*

CONTACT INFORMATION:

Dr. Richard Milgrom, Associate Professor, Department of City Planning, Faculty of Architecture, University of Manitoba, 201 Russell Bldg., Winnipeg, MB, R3T 2N2 Telephone: \_\_\_\_\_; Fax: \_\_\_\_\_; Email: \_\_\_\_\_

This project has been approved by the Joint Faculty Research Ethics Board (JFREB) of the University of Manitoba. If you have any concerns or complaints about this project you may contact the above-named persons or the Human Ethics Secretariat at 474-7122, or e-mail [margaret\\_bowman@umanitoba.ca](mailto:margaret_bowman@umanitoba.ca). A copy of this consent form has been given to you to keep for your records and reference.

Thank you for participating in this project. Your cooperation and insights are very valuable, and are greatly appreciated.

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Signature of Participant

Date

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Name of Advisor or Student

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Signature of Advisor or Student

Date

## Appendix D – Letter of Consent: Interviews

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*This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.*

This research is being conducted by Devin Clark, a graduate student in the Department of City Planning at the University of Manitoba. The project is entitled Transforming Inner-ring Suburbs in Winnipeg Toward Sustainability.

Title of Project: Transforming Inner-Ring Suburbs In Winnipeg Toward Sustainability

Specific Activities to be Completed by Project Participant: Participants will be interviewed and asked to provide input and feedback on the findings from two previously conducted focus groups relating to the transformation of the study area inner-ring suburb in Winnipeg. Participants will be taken through the findings and asked to provide input on the feasibility of implementing each of the actions identified in the focus groups. The interview is scheduled to take between 1-1 ½ hour(s).

Project Description: This research investigates how existing, inner-ring suburban communities can transform to become more sustainable, both physically and socially. This study focuses on an inner ring-suburb in the south end of Winnipeg which is comprised of five census tracts: Maybank, Beaumont, Point, Wildwood and Crescent Park. The goal is to identify specific opportunities in the neighbourhood that will improve and promote sustainable lifestyles.

A summary of the focus groups provides the interviewee with the steps taken so far in order to help understand where the research is at to date. The first focus group meeting looked at existing characteristics of the study area, personal lifestyle choices (as they relate to the community and sustainability), and a visioning session for the future of the suburban neighbourhood. The second meeting presented design and social change proposals based on the information from the first focus group. Participants were asked to provide input on when and how actions should be taken in the future toward creating a more sustainable suburb. This interview will review those findings and focus on providing practical input and analysis of the results from the two focus groups.

With your permission the interview will be audio-recorded so that responses can be confirmed and clarified upon later analysis. If there are any questions or concerns during the session, feel free to ask immediately. You are not obligated to answer any questions you do not feel comfortable answering and if you decide to leave the focus group at any time, you are welcome to do so without prejudice or consequence.

Personal information will be kept confidential. Your name, position and/or any other information that would give confidential information away will not be included in any publicly disseminated materials arising from the study. Where information occurs within a session transcript that will

be included in the final report, names and other personal information will be omitted, unless permission to do so has been explicitly granted.

Information from this focus group may form part of future articles, books or other publicly disseminated media by the researcher. The results from the focus group will not be made publicly available and upon completing the research, all research materials will be destroyed.

To receive a copy of the findings of the research you can contact me at \_\_\_\_\_. If you have any concerns or complaints about the project, feel free to contact me at \_\_\_\_\_.

*Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the study and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.*

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Signature of Participant Date

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Name of Advisor or Student

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Signature of Advisor or Student Date