Green Space Development: A Literature Review of Research on the Benefits of Urban Green Space, and What Green Space Can Become

Executive Summary

This document has been compiled to supplement the West Broadway Green Space Plan, a plan for the West Broadway neighbourhood in Winnipeg, Manitoba. It is an introduction to green space research that begins to answer the questions “Why Urban Green Space?” and “What Green Space Can Become” to pique your interest. There is a list of resources to explore further and to support your projects and community initiatives included at the end. The amount of research available on the benefits of green space is considerable. This document is intended to be used not only as a rationale for West Broadway Green Space Plan, but also as a reference and resource guide to provide supporting evidence for the need for urban green spaces when applying for funding and seeking community support. It also provides an argument regarding why it is beneficial for different community groups to get involved with and to support green space initiatives in their work.

The overall trend in the literature reviewed is towards increasing support of the creation, improvement and existence of urban green space. This document explores social, economic, health and environmental benefits of green space development. Some of the highlights from each of these include:

- **Extensive studies indicate that a lack of urban green space can have negative mental health effects that include increased stress, mental fatigue and cognitive impairment – which in turn can have significant physical health implications. Urban green space – especially where neighbours participate in greening activities – can also contribute to building strong, safe communities.**

- **The renewal of urban areas by greening them increases the overall quality of life and helps to reduce social exclusion, which may have the largest effect on the most vulnerable members of society, such as the poor and the least mobile. Urban green space can help to constitute a framework where urban society and culture can develop, and to increase identity and a sense of community. It can be used to provide a ground for education and awareness raising in relation to the way ecosystems function and how urban functions can be integrated into the natural system.**

- **Much of the current research focuses on the relationship between urban green space and health, at both a personal and community level.** (de Vries et al., 2003) Kuo (2001) suggests that one of the major problems facing many inner city neighbourhoods is a
lack of green space, preventing people from having a place they can relax mentally, which, in turn, leads to mental fatigue and ultimately poor coping behaviours and outcomes.iii

The quality of the urban environment is increasingly recognized to be a key ingredient of the economic regeneration of European cities. High environmental quality has been a factor in attracting investment and building competitive advantage. Urban congestion and poor quality of life, on the other hand, defers investment in cities.iv

Green space, even in urban areas where space may be more limited, can become many things! This document explores some of the options, including stories and examples of how different communities – including Winnipeg – have creatively used space to include green space. Some of the creations and activities include:

- Natural Playspace
- Community Orchards
- Recreational Fields
- Community and Collective Gardening
- Urban Agriculture
- Rooftop Gardens
- Reclaiming City Boulevards
- Street Reclaiming and Traffic Calming
- Community Gathering Spaces

There is a list of further resources at the end of this document.
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Green Space Development: A Literature Review of Research on the Benefits of Urban Green Space, and What Green Space Can Become

Introduction

This document has been compiled to supplement the West Broadway Green Space Plan, a plan for the West Broadway neighbourhood in Winnipeg, Manitoba. It is an introduction to green space research that begins to answer the questions “Why Urban Green Space?” and “What Green Space Can Become” to pique your interest. There is a list of resources to explore further and to support your projects and community initiatives included at the end. This document is intended to be used not only as a rationale for the West Broadway Green Space Plan, but also as a reference and resource guide to provide supporting evidence for the need for urban green spaces when applying for funding and seeking community support. It also provides an argument regarding why it is beneficial for different community groups to get involved with and to support green space initiatives in their work.

What is a green space? And what is a green space plan? A green space can include recreational fields, urban agriculture, natural playspace for children, community, rooftop and balcony gardens, community compost sites, community orchards, and cycling routes. The West Broadway Green Space Plan will identify and work to improve access to green space in the neighbourhood, through partnerships with West Broadway residents, organizations and businesses.

West Broadway is situated in the inner-city of Winnipeg, Manitoba, west of downtown. The boundaries are Portage Avenue (North), Colony Street (East), the Assiniboine River and Cornish Street (South), and Maryland Avenue (West). In an urban neighbourhood as densely populated as West Broadway, with 5,325 people living in a space of 173 acres according to the 2006 Census, accessible community green areas are critical. This works out to an average of 30.8 people per acre compared with 5.4 people per acre for the City of Winnipeg as a whole. An additional challenge to green space access is the fact that over 85% of West Broadway residents live in apartment buildings and have little access to either private or public green space. According to the most recent neighbourhood-level Census available, the 2006 neighbourhood profile, West Broadway has a high number of young residents – 32% are between the ages of 15-29, as compared to 21% for the City overall. The same Census reports that West Broadway has a higher proportion of citizens living in poverty, as well as a high proportion of lone parent families – 45% of all families in the neighbourhood – who are vulnerable to poverty. There is great diversity of culture within the community as well, with 23.9% of the population identifying as Aboriginal and another 16.2% identifying as immigrants or refugees. This diversity of age, culture and income within the community contributes greatly to the strengths and assets of the neighbourhood.
With such a high density of population, accessible public green space for people to use for health, relaxation, meeting others, food production, fresh air and more, is crucial, particularly considering the benefits brought forward by some of the following research. The West Broadway neighbourhood has a wide range of cultures, incomes, levels of health, mobility, and education. Its proximity to downtown Winnipeg offers multiple options for alternative modes of transportation to get to work, school and entertainment. Providing public green space will ideally increase the standard of living of people in the community overall.

**Overall Trends**

The overall trend in the literature reviewed is towards increasing support for the creation, improvement and existence of urban green space. This document explores social, economic, health and environmental benefits of green space development. Though the report has been divided into sub-sections there are overlaps between areas of focus.

The document also explores what green space can look like in different communities and offers further resources to continue to investigate the subject.

**Why a Literature Review?**

In order to support both the creation of a community green space plan and the search for necessary funding to accomplish the plan, a literature of existing support for urban and community green space was deemed appropriate. This document is intended to be used not only as reason for the West Broadway Green Space Plan to exist, but also as a reference and resource guide to provide supporting evidence for the need for urban green spaces when applying for funding and seeking community support. It also provides an argument as to why it is beneficial for different community groups to get involved with and to support green space initiatives in their work.
Part 1
Chapter 1: Why Urban Green Space? Social, Economic, Environmental and Health Benefits of Green Space Development

What is a green space? A green space can include recreational fields, urban agriculture, natural playspace for children, community, rooftop and balcony gardens, community compost sites, community orchards, and cycling routes.

Social Benefits of Urban Green Space
There is a significant amount of research proclaiming the positive social benefits of green space, particularly in urban areas. In lower income areas, having access to public green space is considered by some as an issue of environmental and social justice. In a high density neighbourhood, with a majority of the population living in apartment buildings or rooming houses with little access to green space, the balance becomes even more critical. There is a trend in the literature toward greater appreciation for the intrinsically important role green space plays in urban neighbourhoods.

The need for parks and greenspaces, like community gardens, particularly in lower-economic neighbourhoods is now being framed as an environmental justice issue as research indicates that green space has both direct and indirect impacts on personal and community health.¹

Extensive studies indicate that a lack of urban green space can have negative mental health effects that include increased stress, mental fatigue and cognitive impairment – which in turn can have significant physical health implications. Urban green space – especially where neighbours participate in greening activities – can also contribute to building strong, safe communities.⁵

I am not proposing that we go back to some nostalgic idea of rural life and self-sufficiency; we can never go back, and most people would not want to if we could. The question then becomes, how do we feed ourselves in socially and ecological sustainable ways? I would argue that one way to pursue this goal is by reconnecting with the people and places we rely on for our everyday needs. If we reclaim interdependence and connection, we may come to experience the exploitation of others as also damaging to ourselves. The creation of connections in urban agriculture is an act of resistance against the economic and industrial systems that divide us from the consequences of our actions. It is one way of taking responsibility for our actions and control of the processes that sustain us.⁶

We find that the opening of a community garden has a statistically significant positive impact on

¹ By “sustainable” I mean the ability to live on individual, community, and ecosystem levels without inhibiting the ability of other people and places, in both the present and the future, to meet their physical, psychological, and ecological needs for a healthy life. [Context offered by original author stated in endnotes.]
residential properties within 1000 feet of the garden, and that the impact increases over time. We find that gardens have the greatest impact in the most disadvantaged neighborhoods. Higher quality gardens have the greatest positive impact. Finally, we find that the opening of a garden is associated with other changes in the neighborhood, such as increasing rates of homeownership, and thus may be serving as catalysts for economic redevelopment of the community.\textsuperscript{viii}

A 2001 study reveals that contact with nature – even a few trees and some grass outside a 16-story building – results in greater ability to concentrate on tasks, and enhanced capacity to cope with life issues associated with poverty. This “nature effect” on coping ability is comparable to the impact of other major factors such as health and age. Researchers suggest that regular access to nature and natural areas may be as important to psychological health as good nutrition is to physical health.\textsuperscript{ix}

Involvement in and creation of urban green space can be an entry point to community engagement and social change, on many levels, connecting neighbours around a common goal, in a space they may not have shared otherwise.

The simple process of cleaning up an abandoned piece of property by planting flowers and vegetables affects the physical environment and represents a form of grassroots activism whereby neighbours take control and address some of the issues facing their communities, and in turn, identify and mobilize around other issues confronting their communities.\textsuperscript{x}

By using their gendered roles as mothers to frame the gardens as green spaces necessary for the neighbourhood children and community building, many of the women were prepared to mobilize around their gardens. The outcomes of this research show that these women and their gardens play a vital role in the lives of many in their communities, and that they represent an important locus for further social change in these lower-income, inner city neighbourhoods.\textsuperscript{xi}

As a result of ongoing affiliation with Community Greenspace, residents report heightened membership in civic and voluntary organizations, rejuvenated feelings of neighbourhood ownership, and lasting visible improvements in their daily environment. As one participating resident says, “the project brought neighbours into contact with each other who don’t normally interact. It brought about a cohesiveness that did not previously exist.”\textsuperscript{xii}

From senior citizens in municipal community gardens, to soil-less gardening on rooftops and guerrilla sunflowers in sidewalk cracks, urban agriculture is becoming increasingly recognized as a significant force of food production and activism throughout the world. The set of practices known as “urban agriculture” constitutes a social movement that is actively reclaiming control over food...
production and consumption by creating connections between people and the environment, people and people, and people within themselves.iii

As guerrilla gardeners in Toronto said, urban agriculture transforms “both the landscape and the idea of what belongs in a city.iv

Through these [communal food growing] connections, food becomes more than a commodity grown in anonymous places by anonymous people. The act of growing food empowers, and the sharing of food, labour, and knowledge brings people together across age, linguistic, cultural, ethnic, economic, and institutional divides.v

The renewal of urban areas by greening them increases the overall quality of life and helps to reduce social exclusion, which may have the largest effect on the most vulnerable members of society, such as the poor and the least mobile. Urban green space can help to constitute a framework where urban society and culture can develop, and to increase identity and a sense of community. It can be used to provide a ground for education and awareness raising in relation to the way ecosystems function and how urban functions can be integrated into the natural system.vi

There is an important connection between quality of life and the availability of public green space.

Several interesting conclusions emerged from this [study], including that closeness to green effectively improves people’s quality of life. Perhaps more surprising is the result that people do not have to make use of public green space to value it, as green areas are important mental spaces and valuable by their sole availability, even when unused. It was also found that people only participate in planning issues when they feel threatened in “their” green areas.vii

Finally, studies have been carried out with a social component, showing that closeness to urban green increases quality of life, even for those who do not make use of it, and that natural (forest-like) parks are preferred rather than too orderly ones.viii

One issue facing urban neighborhoods is the growing number of abandoned, derelict open spaces. These abandoned lands pose a current and future threat to the quality of life in our cities. They are patches of urban land—each less than one acre but totalling hundreds of acres together—that create great gaps in the landscape, or sinkholes where environmental, economic, and community potential is wasted. The issues concerning the assessment, restoration, and maintenance of these lands are priority concerns.ix

Safety cannot be left out when discussing the benefits of green space. This issue overlaps with community empowerment and engagement, as well as health, but the following quotes speak directly to the positive impact of green space on crime.
In a comparison of crime rates for 98 inner-city apartment buildings in Chicago, researchers found that the level of vegetation around a building can account for a 7 to 8 percent decrease in reported crimes.  

The presence of green space also appears to reduce crime levels (McPherson, 1995) including domestic violence (Kuo & Sullivan, 1995) and increases neighbourhood ties (Kuo, Sullivan, Coley & Brunson, 1998).  

Economic Benefits of Urban Green Space

Economic reasons are often used to explain why housing or commercial developments take precedence over green space, whether because the new structure will provide financial gain, or because of maintenance issues. Yet there are statistics and examples related to economics that contradict these assumptions and statements, and green spaces become yet more valuable when considered in neighbourhoods with limited green space.

A Windsor, Ontario study showed that homes 30 feet from a green space are worth about $6,995 more than those at a mean distance of 1,035 feet.  

Real estate surveys indicate that natural open space with walking and biking paths is among the top four most desirable features in a residential neighbourhood.  

In Bellingham, Washington, views of natural open space and urban green space increased property values by an average of 26 percent.  

The cost of maintaining a conventional horticultural landscape is estimated to be up to $4/m² per year, compared with a mere 20 cents/m² for natural landscapes.  

Urban green space in close proximity to housing can reduce residential heating and cooling costs by 12 percent, on average.  

Again there is powerful indication that healthy green space has positive economic benefits, particularly for adjacent residential properties. As green spaces are built into neighbourhoods, they will also have an impact on what residents pay to live there; awareness around maintaining the diversity of income of the neighbourhood then becomes critical if gentrification is to be prevented.

We find that the opening of a community garden has a statistically significant positive impact on residential properties within 1000 feet of the garden, and that the impact increases over time. We find that gardens have the greatest impact in the most disadvantaged neighbourhoods. Higher quality gardens have the greatest positive impact. Finally, we find that the opening of a garden is associated with other changes in the neighborhood, such as increasing rates of homeownership, and thus may be serving as catalysts for economic redevelopment of the community.  

Tourism also benefits from healthy green spaces.
When visiting a city, 85 percent of visitors surveyed indicated that they sometimes or often frequent green space and parklands. This rate exceeded all other attractions including theatre/concert productions (51 percent) and art galleries (57 percent).xxviii

Businesses and investment can be attracted when there is green space available.

A 1997 study found that owners of small companies ranked recreation/parks/open space as the highest priority in choosing a new location for their business.xxx

The quality of the urban environment is increasingly recognized to be a key ingredient of the economic regeneration of European cities. High environmental quality has been a factor in attracting investment and building competitive advantage. Urban congestion and poor quality of life, on the other hand, defers investment in cities.xxx

**Environmental Benefits of Urban Green Space**

Green space comes in many shapes and sizes, including community gardens, urban agriculture, natural playspace, rooftop gardens, and community orchards. This variety of size and style is important as each will play a different role in providing space for biodiversity, different homes needed for different creatures, and each in their own way will contribute environmental benefits.

Community gardens have the ability to counter many of the environmental problems associated with the built, urban environment by: increasing biodiversity, decreasing water runoff and pressure on the storm sewer system, providing habitat for animals and plants, filtering the air, decreasing soil erosion and regulating the temperature.xxxi

Design and urban planning play a key role in creating green space that not only brings pleasure to residents, but also address urban challenges like air quality, noise pollution, urban heat island effectxxxii, and urban congestion, to name a few. Though design of adequate and appropriate urban green space is often left out of planning, the research below indicates the positive environmental effect it can have. (Planning is also addressed in "Chapter 2: Planning Green Space; How and Why to Get Innovative"). Through an interdisciplinary research project entitled, Benefits of Urban Green Space, or BUGS, a team of European scientists developed an “integrated methodology for evaluating the role of green space and urban form in alleviating the adverse effects of urbanisation, focusing on the environment but also accounting for socio-economic aspects.”xxxiii This research developed a strong, multi-faceted argument in favour of urban green space.

Urban Sprawl, traffic nuisance, bad air quality and noise were cited as key challenges [to healthy city development]. Among the research priorities that were formulated was to “promote adequate design of public space to minimise the occurrence of bad air quality episodes.” Planning and modelling was proposed as one of the three predominant approaches to promote sustainable practices.xxxiv
In the past, abatement strategies in the fields of traffic-related air pollution and noise were based on technological progress, including the improvement of fuels, the development of catalytic converters, and the development of silent road pavements. Although these elements have induced significant improvements of environmental quality, increasing car numbers has offset their benefits. We believe that new progress in the reduction of environmental degradation, in parallel with further technological developments, must now be approached from the perspective of land use planning. Indeed, the enhancement of green areas has the potential to mitigate the adverse effects of urbanization, making cities more attractive to live in, reversing urban sprawl and reducing transport demand. There is a broad social demand for more green in and around cities.xxxv

As far as microclimate is concerned, it was found that the presence of trees in the urban environment reduces daily peak temperatures during summer, thus having a positive effect on human thermal comfort by reducing heat stress. Note that, although this effect is found to be rather significant, it is also found to be very localized. For example, the daytime cooling effect of a medium-sized urban park does not generally extend much beyond its edges, and the effect of tree cover inside a street is even more localized.xxxvi

Noise levels are significantly attenuated when a porous ground cover (e.g. grass) is used instead of concrete near busy roads.xxxvii

Despite the known socio-economic benefits resulting from it, considerations regarding sustainable land use planning often occupy a secondary role when designing city quarters. Indeed there exist many pressures – essentially market-related and driven by short-term thinking – for unsustainable development. On the other hand, there is an increasing societal demand for more green in and around cities. Even though the BUGS project has concentrated on environmental rather than societal issues, we believe that our approach – by providing sound scientific support to sustainable design – will contribute to improved living conditions in European cities, hence will ultimately contribute to better social conditions. Our project intends to contribute to promoting increased utilization of green space in urban areas, through the development of planning tools involving green space, and through awareness raising regarding the role of green space in mitigating the adverse effects of urbanization.xxxviii

In several studies carried out during the project it has become apparent that, at the local scale, green space and building configurations may have a considerable effect on noise propagation.xxxix
In this respect we have found that urban vegetation does make a difference. Indeed in a regional simulation study, upgrading a city’s vegetation from approximately 20 to 40% resulted in a 4% decrease in ozone concentrations, mainly owing to the vegetation’s cooling effect. Likewise, a reduction from 20 to 5% of urban green space yielded an increase of 4%. Stated otherwise, the amount of vegetation in a city, no matter whether it is in the form of parks or roof gardens, has the potential to affect ozone concentrations at the 8% level. Granted, this effect was almost entirely restricted to areas where the amount of vegetation was modified, i.e. the city itself. Nevertheless, given the high population concentrations in cities, these results must be considered relevant in the context of EU policy with respect to ozone.

Public transportation is included in the planning of healthy communities, complementing green space development.

Among other things it was established that the compact city form, even though favoured from many points of view, also has adverse effects when it comes to human exposure to air pollution, owing to the fact that in compact cities people, on average, live closer to pollution sources than outside the city. At first one might feel uncomfortable with such a result. However it suggests measures to counter the adverse effects of compact cities, in particular making a strong case for the establishment of efficient public transportation schemes.

Health Benefits of Urban Green Space

The research about the health benefits of green space covers not only physical health, but also mental and emotional health.

Health is no longer regarded as a state; rather it has been defined as the "capacity of people to adapt to, respond to, or control life’s challenges and changes." Extensive studies indicate that a lack of urban green space can have negative mental health effects that include increased stress, mental fatigue and cognitive impairment – which in turn can have significant physical health implications. Urban green space – especially where neighbours participate in greening activities – can also contribute to building strong, safe communities.

Much of the current research focuses on the relationship between urban green space and health, at both a personal and community level. (de Vries et al., 2003) Kuo (2001) suggests that one of the major problems facing many inner city neighbourhoods is a lack of green space, preventing people from having a place they can relax mentally, which, in turn, leads to mental fatigue and ultimately poor coping behaviours and outcomes.
Urban green spaces, including city trees, can help remove many common pollutants from the air. For example, Chicago’s tree canopy covers 11% of the city and removes more than 591 tons of pollutants from the air each year, including nitrogen dioxide, sulphur dioxide, carbon monoxide, ozone and particulate matter.\textsuperscript{aby}

Epidemiological evidence links ozone exposure, smog and particulate matter to the development of asthma and other respiratory conditions such as chronic bronchitis and emphysema.\textsuperscript{xlv}

Physical activity is one of the primary determinants of health. Research indicates that limited access to urban green space, in combination with other factors such as urban sprawl and changing diets, has led to a general decrease in physical activity, and a corresponding increase in obesity and related health impacts, including coronary heart disease, diabetes, hypertension and colon cancer.\textsuperscript{xlvii}

The availability and accessibility of urban green space for active and passive outdoor recreation plays a role in determining the type and amount of physical activity people engage in.\textsuperscript{xlviii}

Children with nature near their homes are more resistant to stress; have lower instances of behavioural disorders, anxiety, and depression; and have a higher measure of self-worth. The greater amount of nature exposure, the greater the benefits.\textsuperscript{xlix}

Other studies looking at inner city children indicate that green space, particularly diverse green space which includes various plants, trees, their associated invertebrates and vertebrates, and other landscape features (as opposed to an open area of grass), supports children’s healthy development through creative play, thereby for example helping children with ADD [Attention Deficit Disorder] function better and decreasing the severity of their symptoms.\textsuperscript{l}

A study of nature’s effect on children’s ability to concentrate suggests that natural elements in or around the home environment can profoundly increase children’s capacity to direct their attention. In a study of children with Attention Deficit Disorder published in 2001, it was found that children function better than usual after playing in a natural setting such as a park, farm or green backyard, and that the “greener” a child’s play setting, the less severe his or her ADD symptoms became.\textsuperscript{li}

There is a lot of research that focuses specifically on the health benefits of green space for children. Below is just the tip of the iceberg.
Social and community health are also benefits of green space; the therapeutic impact of green space should not be discounted.

The urban women’s therapeutic experiences were more affected by the neighbourhood changes associated with their community garden, such as increased socialization, sense of safety, and neighbourhood pride.

This is only the beginning of research proclaiming the positive social, environmental, economic and health benefits of green space, particularly in urban areas. In lower-income/high density neighbourhoods, having available public green space is considered an issue of environmental and social justice.

Relevance to West Broadway, Winnipeg, Manitoba
How are the social, economic, environmental and health benefits relevant to the West Broadway neighbourhood of Winnipeg, Manitoba? For a more in-depth discussion, including statistics from the most recently available neighbourhood census (2006), please refer to the West Broadway Green Space Plan, at www.westbroadway.mb.ca.

Social: The West Broadway neighbourhood is a high density neighbourhood, with the majority of residents living in apartment buildings and rooming houses, with little to no access to private green space. Compared with Winnipeg as a whole, there is an above-average level of poverty and unemployment. The research above shows how significant an impact available green space can have on personal and community health, particularly in lower-income/high density neighbourhoods. In West Broadway one of the uses of public green space has been to create community gardens. These gardens have brought people together to work, play and learn, and have helped strengthen community engagement and pride. Witnessing the diversity of people in the gardens, from age to gender to culture, the sharing of food, labour and knowledge appear to cross many socially created boundaries.

Economic: The community of West Broadway has changed and continues to change dramatically, with rents and house prices rising, leading to a loss of diversity of population, with lower-income people forced out of the neighbourhood. Literature shows that, in some neighbourhoods, public green space contributes to prices rising, both in real estate as neighbourhoods engage and take ownership over their community, but also as new businesses invest in the area. However the solution is not to cancel green space planning, suggesting that only high income areas deserve accessible public green space and the suggested higher quality of life. Instead, neighbourhood organizations and residents need to work together to challenge municipal guidelines, policy and urban planning regulation to protect rent control and take special measures to fight the displacement of low income residents.

Environmental: West Broadway, with its close proximity to the downtown of Winnipeg, is in an excellent position to be a model of environmentally sustainable transportation. A higher than average number of residents already walk, cycle and bus as their main means of transportation around the city. Residents are also exploring other sustainable living opportunities like a neighbourhood community composting.
strategy, enabling locals with no space for a backyard compost bin to still contribute to an alternative style of waste management. The compost is then returned to the community through the community gardens. Active transportation, trails and paths created through neighbourhood green spaces may also encourage alternative means of transportation.

**Health:** Literature shows that some populations are proven to respond positively to increased access to green space. At the same time, these populations are often in an income bracket that may not allow them to have their own private green area. There is a higher than average number of young people and children living in West Broadway, two populations who benefit directly from increased exposure to green space. People living with mental health issues, people living with addictions, and seniors, all populations that are well-represented in West Broadway, also benefit from an improved ability to positively manage stress when their access to public green space improves.
Chapter 2: Planning Green Space; How and Why to Get Innovative

“Instead of treating these [urban] areas as sacrifice zones and doing all our conservation work in national parks and elsewhere there is a growing appreciation for the need to incorporate conservation into urban planning.”

In the research quotes below, the goal of creating smaller green spaces in addition to larger green spaces is emphasized. This is imperative when working in densely developed and populated urban areas. Not only does it allow for active involvement outdoors through activities like gardening, but it creates opportunity for more informal interactions with green space, on the way to work or school, when looking for a moment of quiet, etc, all shown to be indicators of quality of life.

There is also an argument below for ensuring that existing green space is taken care of and well maintained, creating the cycle of increased enjoyment and therefore increased use and support for it to exist, enhancing health and social benefits.

As part of such planning, it is vital that the new Urban Green Spaces Task Force [developed in the UK in 2001 to recommend improvements to the government regarding urban parks and green spaces] concentrates on small-scale projects as well as larger areas. There is a danger that ‘urban green spaces’ become defined as the great parks in city centres and suburban sports grounds – both of which are designed for leisure and usually require a special visit. Yet, for many people life is so hectic that a glimpse of beauty on the walk to the office or a tranquil spot for a hasty lunch break may be as important to quality of life as the creation of larger, specialist havens. Planning smaller green spaces in conjunction with walking routes could alleviate the unrelenting concrete that characterises many people’s daily experience, and help to change the perception of what living in cities is all about.

Speakers at the recent TCPA [Town and Country Planning Association] conference on ‘Greening the City’ emphasised that it is not just the quantity of green space provision that is important, but its quality and purpose. One of the most endemic activities in cities is walking around, and increasing the number of people who walk could help to make green space, and cities themselves, more secure and attractive places. It is vital that the links between walking and urban green space are more clearly addressed, as part of attempts to ensure that the urban renaissance truly becomes a reality.
Indeed, there is increasing recognition of the importance of ‘connectedness’ throughout urban planning. Notably, the Urban Task Force’s “Towards an Urban Renaissance” specifically highlights the need to consider ‘the vital ‘glue’ between buildings’, arguing that ‘the continuous presence of passers-by [helps] to create the blend of urban vitality and safety that is characteristic of many successful urban areas”.

[iv]
Chapter 3: What can Green Space Become?

Green space can become so many things! All over the world community people have gotten creative and designed amazing uses for green space, from tiny plots to large vacant lots, to apartment balconies to rooftops, to quiet places and places of activity and action. It’s remarkable. Some of the creations include natural playspace for children, community gardens, urban agriculture, rooftop gardens, community orchards, recreational fields, cycle paths and walking trails, green street calming, and reclamation of city boulevards.

The following sections go into more detail about green space ideas mentioned previously and more generally in this document. The sources consider how and why these green space areas contribute to health and engagement of community members, in addition to why including them in urban settings is important. Hopefully it will give you enough information to be inspired and want to investigate further.

**Natural Play spaces**

Natural play spaces are growing rapidly in popularity as they become recognized for their significant positive impacts on the health, wellbeing and growth of children.

> Natural play spaces use a blend of natural areas, water and local plants to interest children in learning about the wonders and secrets of the natural world.\textsuperscript{iii}

Children with nature near their homes are more resistant to stress; have lower instances of behavioural disorders, anxiety, and depression; and have a higher measure of self-worth. The greater amount of nature exposure, the greater the benefits.\textsuperscript{iv}

Children who play regularly in natural environments show more advanced motor fitness, including coordination, balance and agility, and they are sick less often.\textsuperscript{v}

Play in natural elements is found to reduce bullying, and offers more space to play in different ways. There’s also opportunity for children and adults to play together, sharing learning and experience.

Play in a diverse natural environment reduces or eliminates bullying.\textsuperscript{vi}

While many are set in rural areas or large parks, there is growing evidence and experimentation around design for smaller, more urban environments and the benefits they can have especially for urban youth.

The impact of natural environments on children’s health and wellbeing is dramatic, and one of the leaders in the field is Rusty Keeler, with his book, “Natural playscapes: Creating outdoor play environments for the soul.”
When children play in natural environments, their play is more diverse. There is a higher prevalence of imaginative and creative play that fosters language and collaborative skills.\textsuperscript{101}

Some examples of how to bring the wilderness and outside learning into an urban landscape that have come from a variety of sources and discussions, both in Winnipeg and elsewhere in Canada, are listed below. Many of these options could be incorporated into a space alongside a garden, or next to a community center; you wouldn’t necessarily need a large area.

- Make sunflower houses with an opening for a door, stumps inside, or make a maze.
- Sound in playscapes is key – create giant xylophones and wind chimes, have hollow logs for loud drumming, put bells in the bushes or flowers.
- Use driftwood for balancing and seating areas, create small hills, possibly adding a plastic slide right into it, create walkways from many different materials, a grape arbour, herbs in the grass so it smells inviting, plant corn (use like the sunflowers).
- Local materials can be used, even a rock pile, an old canoe or rowboat put into the ground, some old tires placed like a tunnel, with spaces in between them. The Discovery Children’s Center in Winnipeg has done an excellent job in this area.

http://discoverycentre.homestead.com/dcc.html
- Playscapes: A Blog About Playground Design has endless ideas and images of mainly natural playgrounds that have been designed around the world, from the very simple to the very complex, definitely worth looking into for inspiration as to what could work with your specific space: http://playgrounddesigns.blogspot.com/
- Create a community mosaic in the pavement, on a wall, along a fence line...
- Willow domes – quick to grow, good to help cleanse the soil, and fun to work with, willows offer endless options to create domes, castles, fences, mazes, sculptures...

Please see Chapter 5: List of Further Resources for more information.

Community Gardens

There is a significant amount of research now available on the benefits of community gardens, on social, economic and environmental scales. Spirit Park, one of the West Broadway neighbourhood’s very own successful community gardens has been the subject of at least two graduate level studies,
one of them being, “It’s not just for food”: Women’s Perceptions of Community Gardens as Places of Health, Wellbeing and Community Organizing by Karen Lind. As the Green Space Community Consultations progressed in West Broadway throughout 2008 and people spoke of what they would like to see, there was ongoing support to continue to see gardens continue to exist and prosper, and further contribute to the community. Below is just the beginning of available research about the benefits of community gardening and its contribution to society.

While an all-embracing definition of a community garden would likely be difficult to develop, the American Community Garden Association takes a broad view:

* A community garden is “any piece of land gardened by a group of people.”

The contribution of community gardening to society is as impressive. It has been addressed in the previous chapter in the discussion of Social Benefits of Urban Green Space, however is dramatic enough to include in this section as well. There is also another style of community gardening called Collective Gardening that has taken off in Montreal, Quebec in particular. For more information on Collective Gardening please connect with Action Communiterre, Montreal’s oldest and largest network of collective gardens: http://www.actioncommuniterre.qc.ca/about_en.asp

* At its core, the community garden movement of the early twenty-first century is about rebuilding a spirit of local community tied to a place and restoring nature and food growing in the inner city.*

... the community gardens are exactly that -- communities of people building relationships across age, ethnic, cultural, and linguistic lines through working together and the common interest of gardening. The gardens provide an avenue for people to connect to each other, to form communities of growers and eaters, and to combat the anomie, or social isolation that can come with urban life. This is especially important for people migrating to cities from rural areas with smaller, more integrated social networks. However, it is equally vital to those urban dwellers that never knew their neighbours, let alone how brussel sprouts grow.

In becoming aware of this power, the gardeners return to their role as citizens, they become actors in the city again. What is this power? That of sharing, that of making decisions that will have an impact on the group, the power to get involved in community groups in the neighbourhood, the power to intervene in the urban landscape, to leave one’s mark there, that of consuming differently, the power to help and that of seeking help.

In the process of making spaces for the birds and the bees, the gardens created social spaces for the block and the barrio. “We call them outdoor community centers,” says Rebecca Ferguson, associate director of the Green Guerrillas, “places where neighbors know each other, where maybe there are no other opportunities for neighbors to walk out the front door and socialize. I also think they
Urban Agriculture has a slightly different focus than community gardens, and an important impact of its own as a social movement around community and food security. Both complement each other and there is often overlap, but urban agriculture focuses on food production while community gardens may have different focuses depending on the gardeners’ needs and interests (for example, therapeutic gardening or aesthetic gardens). Urban agriculture can be more of a challenge in urban areas as the amount of available space is sometimes an issue, but citizens are amazingly creative. The impact of urban agriculture has been examined in a fair amount of detail in the chapter of “Why Urban Green Space? Social, Economic, Environmental and Health Benefits of Green Space Development,” so there is not as much in this section, however it could not be left out of “What Can Green Space Become?” because of its uniqueness and considerable identity.

There is a significant environmental impact and inspiration behind urban agriculture movements.

Beyond pure food production, the ability to decrease transportation costs, provide employment and increase green space in cities are proving to be other strong motivators for action.\textsuperscript{lxviii}

Urban agriculture is considered beneficial to both the ecological and food security movements.

By the same token it is also proposed that Western cities can be made more ecological – greened – if they become centers of food production, especially if the under-used and brown areas are employed for growing food.\textsuperscript{lxix}

The Landless Farmers Collective in Winnipeg, Manitoba is an excellent resource on urban agriculture and has lead and is leading several successful urban agriculture pilot projects.

Community Orchards
Community orchards are a newer concept, particularly for urban areas, but are growing in popularity. An orchard is a grouping of fruit trees.

A community orchard “should be open and accessible at all times... As well as enjoying the place, local people can share the harvest or profit from its sale, taking responsibility for any work in the orchard.”\textsuperscript{lxx}

In urban areas where food security is an issue community orchards act as both an excellent source of food, and an awareness builder of food security in the community. They are also very conducive to complementing other green space initiatives.

We desperately need more places to relax and play in, and we also need shared activities to enable people of different age groups and backgrounds to come together.

In city, town or village the community orchard is becoming the equivalent of the commons in the countryside a century and more ago - a communal asset for the whole parish. But more than that, it can be the focal point for the whole village - the moat, the
open-air village hall. We could have school orchards, city, museum, hospital and factory orchards open to all.

*Community Orchards help to revive an interest in fruit growing, provide a way of sharing knowledge and horticultural skills and stimulate us into growing food for ourselves again.*

When designing a community orchard, innovative design is needed, as are realistic expectations of how that space will be used and the fruit gathered. Some orchards are closed off to community members except for specific hours of the day. Others are more inclusive, recognizing that fruit will be harvested at unusual times, but wanting to create space for various levels of need. Some groups have added signage to encourage people not to take the fruit early but to wait and share with the entire community at harvest, with varying levels of success. All of these options provide opportunity for discussion, learning and community engagement.

Design can be unique and inviting, and conducive to sharing space with multiple activities.

*Unlike commercial orchards, our [Berkley Community Orchard] planting plan clusters trees together along the curving central walkway in mixed variety combinations. Rather than a separate section for each type of fruit, we imagine different fruit species planted in ways that recognize their diverse habits, with combinations of shapes, scents, harvest periods. This way the orchard will maximize on the beauty of seasonal changes of leafing, flowering, and fruiting. We will include vining fruits (especially grapes and kiwi) in our plan, as well as evergreen fruiting olives, so that even in winter, there is shape and texture to the orchard landscape.*

The vision is important to help decide how to determine access levels. The focus will be different with different communities. As one example, the Berkley Orchard is exploring various means of access to their orchard space.

*We are continuing to develop a scheme for public and community access to the Community Orchard. Door-to-door canvassing of neighborhood residents has revealed that the majority of neighbors living close to or adjoining the SFRoW do not want the Community Orchard to be open at all times. This attitude is due primarily to property security and safety considerations. Neighbors do not want to attract children without supervision, after-hours use of the site, or illegal activity in general (such as dumping and drug traffic). The orchard group has discussed these issues at length. While we feel that, ultimately, the orchard could be an open public space in future years, right now neighborhood culture is not conducive.*

Our vision for community access has 2-levels. The first level is comprised of the “drop-in” passerby who simply wants to visit the orchard and look at the trees, but isn’t committed to working on a regular basis. Our aim is to have...
Environmental sustainability is a concern, below are a couple of different ways community members have considered sustainable water usage.

Marcy Greenhut, a master gardener and member of the Berkeley Community Gardening Collaborative, is currently researching the use of alternative models for water consumption. She is looking at the possibility of using very little water from metered sources, but instead rely on rain catchment systems and natural groundwater sources. We look forward to hearing more about her findings as other elements of the plan develop. Her research is a special project for Merritt College Permaculture class.\textsuperscript{lxxiv}

During a site visit to the Portland Community Orchard in April 2003, we learned that they actually stopped watering their orchard entirely after first two years. While Portland is generally much wetter than Berkeley, the hot months are quite similar and it has been suggested that a very minimal watering scheme is likely to succeed on our proposed Berkeley site.\textsuperscript{lxxv}

**Rooftop Gardens**

Rooftop gardens can be an excellent source of green in urban areas, as long as the building structure can handle the weight. There is a distinction to be made between green roofs and rooftop gardens:

> “Green roofs are innovative architectural and engineering projects that usually consist of a layer of grasses and low growing plants integrated into the roof of a building or built onto existing roofs"\textsuperscript{lxxvi} while “rooftop gardens consist of movable growers strategically placed on existing rooftops that do not always require structural reinforcement."\textsuperscript{lxxvii}

In Montreal several organizations have gotten particularly innovative in their building and support of rooftop gardens. They have even worked with projects in Cuba that explore “soil-less gardening”, eliminating a lot of the weight that hinders some rooftops from supporting a “traditional” soil garden.

*Alternatives and the Santropol Roulant are two non-governmental organizations who have jointly creating a rooftop garden on the Université de Québec à Montréal (UQAM). Alternatives maintains and administers the garden, experimenting with new techniques of soil-less hydroponic growing that they exchange with partner rooftop gardens in Senegal, Morocco, Mexico, and Cuba.\textsuperscript{lxxviii}

There are ecological benefits to rooftop gardens that can have a direct impact in urban areas.

*Rooftop gardens have many ecological benefits, such as cleaner air quality*
through plant respiration and absorption of gases, the filtering of pollutants in rainwater, wildlife habitat, decreased temperatures in the summer through absorption and respiration, and the insulation of the building in the winter.\textsuperscript{lxx}

In Montreal, produce from some rooftop gardens is then contributed to food security programs in the city, becoming part of a social movement.

The organic produce grown by volunteers in the garden (Alternatives Rooftop Garden Project) is prepared and distributed through the Santropol Roulant’s meals-on-wheels program to Montreal residents living with loss of autonomy. This program provides up to 90 meals every day, 6 days a week, 52 weeks a year (the garden produce must be supplemented to meet that demand).\textsuperscript{lxxi}

Traffic Calming & Shared Community Gathering Spaces

While not necessarily creating green space, traffic calming and street reclaiming initiatives often incorporate green/environmental considerations, so they’ve been included in this chapter.

Street Reclaiming is a process for increasing the social, cultural, recreational and economic activity in neighborhood streets. It is intended to change way that people think about and use public streets to encourage interaction and increase residents’ involvement in their community. It involves reducing vehicle traffic volumes and speeds, Reallocating road space, and creating more attractive street environments.\textsuperscript{lxxii}

Street reclaiming also contributes to the “Bigger Vision” of a downtown urban neighbourhood if that neighbourhood is interested in becoming greener overall, rather than approaching it piecemeal.

Very relevant to a neighbourhood that has multiple streets that are used as thoroughfares to get from one part of town to another, one of the stated purposes behind street and traffic calming is:

“to increase interaction among neighbours (through participatory creation process), create a strong sense of place and identity, make street safer by slowing down traffic, and make the public realm more attractive.” (Portland, Oregon Resident)\textsuperscript{lxxiii}

Street reclaiming relies on using intrigue and uncertainty to seduce drivers into slowing down rather than using engineering devices that force them to slow down. While traffic calming focused on slowing traffic, street reclaiming focuses on reclaiming the street for neighbourhood-building activities such as play, socializing, commerce, culture, and sharing of street wisdom. Ironically, reinstalling the community-building functions automatically causes traffic to slow down.\textsuperscript{lxxiv}

For residents, some of these [intrigue and uncertainty] techniques can be employed immediately, without any need for support from the city. For the city, these techniques are generally much cheaper than traditional traffic calming; they do not aggravate
motorists and they do not impede emergency vehicles. lxxxv

Examples of Green Street Reclaiming and Green Traffic Calming include:

- Gardens in front yards, to bring the often private realm into the public one, making it more interesting to passersby.
- Garden boxes/planters placed in parking spaces and at the edge of sidewalks
- Gardens and green community art placed in the center of traffic circles
- Gardening or community gathering spaces created on city boulevards – reclaiming those boulevards as public green space

William H. Whyte was a city planner who, in the late 1960s, became interested in "how newly planned city spaces were actually working out." Whyte spent sixteen years studying the street life in New York and other American cities. His seminal book, *The social life of small urban spaces*, is widely cited by designers, planners, and human behavior experts. Perhaps one of Whyte’s most notable conclusions was that public space should be only fuzzily separated from surrounding pavements and through-routes, since sectioned-off, secluded pleasure areas tended to be less popular. Specifically, the research highlighted how people tended to be drawn into spaces that were only a few steps off their normal routes, and how a link with the ebb and flow of passing people helped to give the plazas a sense of vitality. It noted that, contrary to the idea that people would seek out remote spots ‘to get away from it all’, they actually chose to be near others, both for security and for all the human-interest, people-watching possibilities offered by popular spots. lxxxvi
Chapter 4: Community Stories of Green

The following are some examples of communities implementing greening and becoming more environmentally sustainable.

The Eco-Tipping Points Storyline

Eco-Tipping Point narratives approach ecological situations with the same basic storyline. In Act One, the eco-social system is working sustainably. In Act Two, a “negative tip” pushes it into decline. In Act Three is the positive tip. A catalytic action reverses the decline, and the system picks up momentum on a course of restoration and sustainability.

On New York’s Lower East Side, a series of negative tips began around 1800, when water sources were polluted and housing swallowed up farmland. The last straw came with the fiscal crisis of the 1970s, when the area was sucked into a citywide spiral of decline. Starving the poorest precincts of city services set off a vicious cycle, in which empty buildings and vacant lots bred crime. Residents moved away – if they could afford to – leaving behind more empty buildings, more vacant lots and more crime.

The Green Guerillas interrupted the cycle. They took one part of the eco-social system – a vacant lot – and changed it from an eyesore to an oasis. A virtuous cycle began. By cleaning out the lot, the gardeners removed a habitat for criminals. As their streets became safer, residents spent more time on them, reducing crime further.

As gardening strengthened the social bonds among neighbors, the neighborhood became safer still. Instead of moving out, people started moving in. Empty buildings became occupied. As the virtuous cycle gained momentum, the quality of life went up, and the former slum attracted more and more residents.

The rise of one neighborhood set off geographic feedback loops in others. Guerilla gardens sprang up like dandelions, as the rebirth of The Bowery was replayed in locales around the city. In concert with larger social and economic forces, those neighborhoods began to tip the city towards a more livable condition. At a time when metro areas were consuming ever more farmland and fossil fuels to feed themselves, inner-city New Yorkers were becoming cleaner, greener, and more self-sufficient.

The positive tip eventually created new problems, which threatened to tip the gardening movement the other way. But the process had generated enough momentum to push back. Most of the gardens survived, and their influence is flowering still, propagating into more and more aspects of city life.

Montreal, Quebec

The City of Montreal has one of the most well-established systems of community gardens in the world. These community gardens are primarily allotment gardens in which residents can pay $5.00 per year for a plot of land. The city sends advertisements for garden membership in monthly hydro bills, and the waiting list is long enough to fill 12 new gardens.

Roughly 1.5% of Montreal’s population (27,000 people) is involved with a community garden. A majority of the gardeners are 55
and over, and many gardeners are from a variety of cultural and linguistic backgrounds, with a majority of neither Anglophone nor Francophone members in eight gardens.\textsuperscript{xxxix}

Four innovative community organizations involved in community and rooftop gardening in Montreal are Santropol Roulant, MUCS, Equiterre and Alternatives.

**Santropol Roulant:**
http://www.santropolroulant.org/2006/E-home.htm

**Montreal Urban Community Sustainment (MUCS):** An organization with a plan to build mixed-use urban housing that combines food security with social economy and community resources. - www.mucs.ca

**Equiterre:** A network that links local organic farmers directly with consumers. - www.equiterre.org

**New Haven, Connecticut**
The Community Greenspace program provides both material and technical resources. Supplies and equipment that are available through the program include: plant material (trees, perennial flowering plants, and shrubs) and gardening supplies (compost, mulch, soil, lumber, tools, etc.). Technical assistance involves the services of a community forester assigned to support and facilitate the development and implementation of a group’s open space design. The community forester also helps neighbors conduct an inventory of existing trees; select and prepare sites for new plantings; select appropriate plants; and learn planting and maintenance techniques. In addition to the support of a community forester, training workshops are offered and landscape architects are available as needed. For more information, contact URI’s Greenspace Manager, Chris Ozyck: christopher.ozyck@yale.edu.

**Winnipeg, Manitoba**
The Spence Green Plan is a five year strategy built through community consultation. Spence is a neighbourhood to the north of West Broadway. The Green Plan takes the areas identified by the community and develops a strategy to secure lots and develop them into safe, well maintained green spaces for a variety of benefits. For more information and to see the full plan please go to www.spenceneighbourhood.org.
Chapter 5: List of Further Resources

Sara Ferguson, A Brief History of Grassroots Greening in New York City (Videos and stories from gardeners).

Community Gardens:
- Green Thumb (NYC parks department resources for community gardens): http://www.greenthumbnyc.org/
- Successful Community Garden Projects in Baltimore: http://mastergardener.umd.edu/Success%20Stories%20with%20Impacts/Community%20Gardens%20of%20Baltimore%20City.cfm
- Green Guerillas: http://www.greenguerillas.org/
- Liz Christy Bowery Houston Community Garden: http://www.lizchristygarden.org/
- Garden Based Learning: http://www.collectiveroots.org/garden_based_learning
- Garden Mosaics Program: Garden Mosaics is a youth and community education program that combines science learning with intergenerational mentoring, multicultural understanding, and community action. http://www.communitygarden.org/learn/youth/garden-mosaics.php

Community Orchards:
- Orchard Paths, Common Ground: Common Ground provides a leaflet containing advice and information on creating new community orchards, and conserving old ones. Spring 2008 sees the launch of the Community Orchards Handbook. (http://www.england-in-particular.info/orchards/o-corch.html)
- Facts, statistics and funding for urban green space:
- Evergreen Common Ground - www.evergreen.ca

Food Security:
- Action Communiterre – Collective Gardening - www.actioncommuniterre.qc.ca
• Montreal Urban Community Sustainment (MUCS) An organization with a plan to build mixed-use urban housing that combines food security with social economy and community resources. - www.mucs.ca
• Equiterre - a network that links local organic farmers directly with consumers - www.equiterre.org

_Info on health benefits and ideas for green space for children:_

• www.childrenandnature.org
• www.discoverycentre.homestead.com/dcc.html
• www.childrensenvironment.ca
• Green Communities Canada: A national association of non-profit organizations that deliver innovative, practical environmental solutions to Canadian households and communities.
• http://gca.ca/indexcms/index.php
Part 2
Due to limited time the researcher was not able to explore the options below any further, but encourages the literature review to be continued. The options below were suggested as potential opportunities for green space development and can be researched further.

- Greenhouse
- Children’s play structure
- Composting site
- Recreation site (green playing field)
- Relaxation area/community gathering place
- Market
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xxxi Hall, E. V. (2000).

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