LANEWAY REDEVELOPMENT PROGRAMS:

A CASE STUDY REVIEW

by

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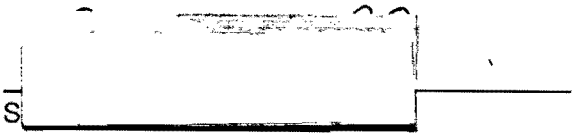

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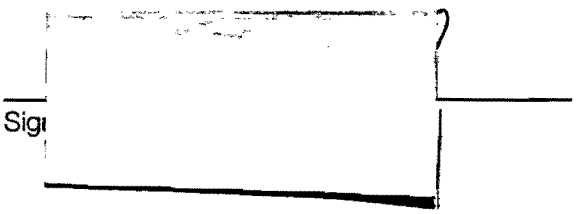

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Abstract

The revitalization of formerly dark, dirty, and often uninviting urban spaces is occurring across many cities throughout North America. This is because the hundreds of kilometres of laneways located behind buildings are beginning to be viewed as significant semi-public spaces and are being redeveloped into active spaces that can play a role in improving the state of the natural environment. The City of Toronto has a vast laneway system that is not being utilized to its full potential. This report attempts to demonstrate this point and suggests that there is an opportunity for recreating these laneways into vibrant spaces that support the natural environment while maintaining their primary functions as light vehicular thoroughfares and access points for homes and businesses. Through the examination of nine laneway redevelopment programs and projects this report highlights the successful techniques being implemented within these laneways and emphasizes the significant lessons that can be learned. Finally, each lesson learned is reviewed, and recommendations are given on how the City of Toronto can potentially address each point if attempting to implement its own laneway redevelopment program. Among a host of recommendations, this includes the need to promote laneway redevelopment through a change to the City's existing land use planning policies; the development of laneway design guidelines; and, the implementation of a dynamic funding system.

Key words: Laneway, Redevelopment, Natural Environment, City of Toronto

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Chapter I: Laneway Redevelopment Programs - A Case Study Review

Conventional laneway systems in major cities often present many environmental and community problems. From an environmental point of view the vast amount of space that laneways take up considerably intensifies stormwater runoff, enhances watershed pollution, decreases potential areas for natural habitat, and increases the urban heat island effect. From a community point of view, many of these laneways systems are dirty, and potentially dangerous places that are viewed as undesirable by residents. While this paints an overall dim picture of laneways, there recently have been some changes to how these systems are viewed. In fact, in many parts of the world, laneways are being recognized as a valuable resource that can be utilized to contribute to the vitality of the cities in which they are found. This has led to numerous laneway redevelopment programs being initiated to transform these areas into spaces that serve the community while helping to improve the state of the natural environment.

In the City of Toronto there are over 2400 public laneways that are primarily used by the general public for parking, ingress and egress, and to access homes and businesses (Welsh, 2006). This space is primarily dominated by automobile use and while some of them are active and social spaces, others are commonly used as dumping grounds for trash and debris and are generally in poor condition (Welsh 2006; Welsh, 2008). The current state of many of these laneways is due to the fact that they have not been a high planning priority and as a result have received little funding from the City for maintenance over the years. As there are minor variations in the definition of laneways, for this report they will be defined as 'narrow streets running adjacent to and behind buildings, also commonly referred to as alleyways. Traditionally laneways are used as pedestrian and light vehicular thoroughfares and to access homes and businesses' (adopted from SFS Planning, 2009).

Many of the City's laneways are "an untapped resource of city property" which have the

potential to be redesigned in a variety of ways that can contribute to the revitalization of this space (Stinson & Van Elslander, 2003, p. 5). For the purpose of this research I will categorize laneways as 'semi-public' space, as they are civic spaces between privately owned lands. Well-designed semi-public space has the potential to improve the space itself and also the neighbouring buildings, including residential buildings. According to the Project for Public Spaces, well-designed semi-public spaces often contain planting beds, gardens, murals and other art works, and small seating areas (n.d.). These spaces attract and welcome community members while maintaining all relevant safety standards. Based on this evaluation the laneway system within the City of Toronto is not currently an example of a successful semi-public space.

While currently this appears to be true, Toronto's laneway system does not have to remain in this state. As noted, in many parts of the world, laneways are being redesigned to act as spaces that benefit the natural environment and the local community rather than simply functioning as thoroughfares and storage areas for the automobile. Recent redevelopment ideas include redesigning them to function as open spaces, parkland, community hubs, and natural habitats that are able to, filter and absorb stormwater runoff; promote physical activity and improve community socialization among residents; and lead to a reduction in neighbourhood crime and blight.

The City of Toronto is not open to utilizing these laneways through intensive redevelopment (e.g. laneway housing) due to servicing and engineering implications (i.e. perceived complications with water/sewage connections and garbage/recycling collection[1]), so it is important to look at what other uses are appropriate for the redevelopment of these laneways. As the City of Toronto has an abundance of laneways and they are not currently an example of great semi-public spaces, I propose that these laneways be revitalized into vibrant spaces that can contribute to improving the life of the City's residents while simultaneously improving the state of the natural environment. I maintain that these laneways can continue to operate as thoroughfares and access points for

homes and businesses while supporting these additional objectives.

Research Objectives

I will attempt to show that there is an opportunity for redeveloping the City of Toronto's laneway system into a vibrant space that also benefits the natural environment. This will be done by outlining the City of Toronto's laneway system, including how it was developed; historically used; and, how the system is used today. This is significant to review because it will show that the City has a vast laneway system that currently is underfunded and not being used to its full potential. I will also review the Provincial Policy Statement and the City of Toronto's Official Plan to outline some of the policies within these documents that support the implementation of a potential laneway redevelopment program by highlighting how this program could help the City achieve some of its land use planning objectives.

Following this, a number of case studies of laneway redevelopment programs and projects from other North American cities will be reviewed. This will showcase some of the successful laneway redevelopment techniques being implemented and highlight the lessons to be learned from these case studies. Finally, I will review each lesson learned, and outline how the City of Toronto could potentially address each point in able to successfully introduce and implement a potential laneway redevelopment program for the City of Toronto. This will include, the need to change some of the City's planning policies; the development of laneway design guidelines; and the implementation of a dynamic funding system (among other things).

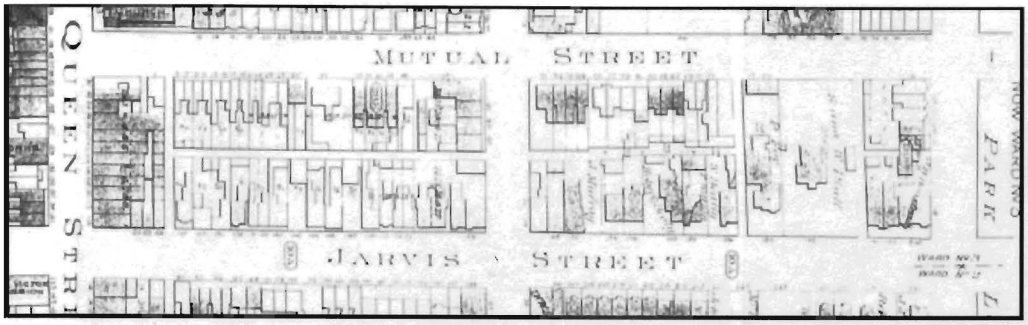
Chapter II: Toronto Context

Development and Use of the Laneway System

Toronto's unique and vast laneway system dates back to the early 19th century and is indicative of the planning and uneven patterns of land development that characterized the City during this time (Stinson & Van Elslander, 2003). Toronto originally was developed in the ten-square grid pattern but as growth persisted in the late 18th century a 'park lot' system was developed and formed along the waterfront from the Don River to the harbour area, and began north from Lot Street (i.e. Queen Street) to Bloor Street (Shim & Chong, 2004; Stinson & Van Elslander, 2003). Larger lots were formed from Lot Street to Bloor Street and were given to privileged members of society, known as the 'Family Compact' (Stinson & Van Elslander, 2003).

Beginning in the 19th century, the Family Compact began developing their large lots in response to Toronto's increasing growth pressures. Households within the Family Compact responded in various ways to this growth pressure with some reluctant to develop their land while others were eager to sell off their land and promote commercial development (Stinson & Van Elslander, 2003). After these large estates were divided into rectangular parcels for lot divisions, they were broken down further (see Figure 1); additional streets were laid down; and, commercial and residential uses such as worker's housing, horse stables, and shops were set up along the sides and backs of these lots (Shim & Chong, 2004; Stinson & Van Elslander, 2003). The laneway system constructed from these developments were narrow – usually 5 to 6 metres and in some areas as wide as only 3 metres (Welsh, 2006) and their primary uses were to service the new commercial and residential developments as a pedestrian and horse and carriage thoroughfare, and as an access point for the delivery of services and goods (Stinson & Van Elslander, 2003).

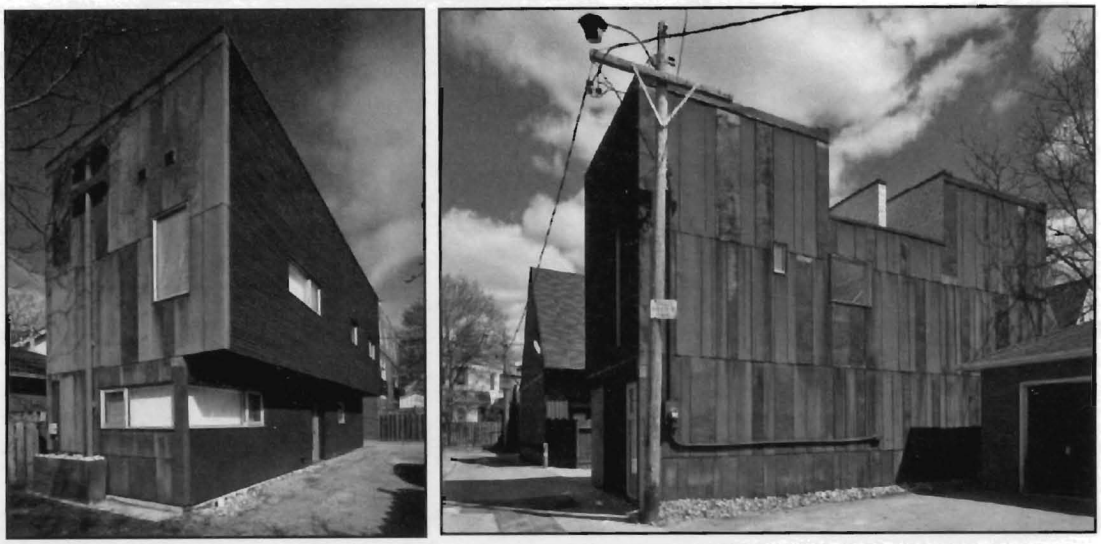
Figure 1. Estate Lots - Divided into Smaller Square Lots and Divided Again into Narrow Rectangular Lots.



Note. From *A Study of Laneway Housing in Toronto*, by J. Stinson and T. Van Elslander, 2003.

Into the 19th century, zoning regulations and the replacement of horse-powered transportation with automobiles transformed the structure of the City as formerly mixed-land uses become separated and neighbourhoods became economically segregated (Stinson & Van Elslander, 2003). This lead to the replacement of former homes and commercial developments that resided in the laneways being replaced by garages and sheds, as the primary use of the laneways became for vehicular storage and thoroughfare. However, today there continues to be some commercial and residential developments in the City's laneways including bakeries, auto repair shops, artist's studios, and 'laneway homes'. For examples, the 40_R Laneway House located at 40R Shaftesbury Avenue in the Summerhill neighbourhood. In the 1880's the building functioned as a blacksmith's shop and serviced the North Toronto Railway Station (Fain, 2010). For over 130 years the use of this building evolved from blacksmith shop, to a horse shed, a storage depot, a sculptor's live-work studio and now recently it was redeveloped by architects Superkül into a unique 850 square foot residence (see Figure 2 and 3) (Fain, 2010).

Figure 2 and 3. 40R_Laneway House, Toronto, Ontario.



Note. From *Life in the Back Lane* by G. Fain, 2010, Canadian Architect.

Laneway System Today

The City of Toronto currently has over 2433 public laneways for a total length of 311.5 km (see Table 1) (see Appendix A) . Unfortunately data on privately-owned laneways is not currently available, therefore this paper will only provide information on public laneways. Public laneways are under the jurisdiction of the City's Transportation Services division. According to this division, the primary function of Toronto's laneways are to provide vehicular access to both commercial and residential properties, and they are usually situated at the rear of lots (Welsh, 2006). Laneways are found across the City although the majority are located in Toronto & East York (78.4% of the total laneways in Toronto) (see Table 1) (see Appendix B). Often the laneways are narrow with limited passage space, have little to no setback, and have dead ends and tight corners (Welsh, 2006).

Table 1. Number and Length of Public Laneways by Community Council Area, 2006.

Community Council Area	Number of Laneways	Total Length (km)
Toronto & East York	1907	226.7
Etobicoke York	359	56.6
North York	109	19.0
Scarborough	58	9.3
Total	2433	311.5

Note. From *Inventory of City Laneways and Levels of Service Provided – All wards* by G.H. Welsh, 2006, City of Toronto. Transportation Services.

Servicing in the laneways is very limited. Weekly litter pick-up is provided by Solid Waste Management Services during the spring, summer, and fall seasons, and salting is completed by Transportation Services during the winter season to allow for safe and passable conditions after a snowfall (Welsh, 2006). It is intended that de-icing is done using 100% rock salt and completed within 24 hours of snowfall (Welsh, 2008). Due to the physical characteristics of most laneways it is not possible to plough due to the lack of City vehicles to accommodate the limited widths of the laneways; the lack of storage space for windrows (i.e. a linear pile of snow that is created by ploughing when the snow comes off the end of the blade); the lack of operating space for the necessary equipment; and, the potential to damage private property (Welsh, 2008).

There are however, a few laneways which have residential frontage and in this case the City removes the snow from these lanes to ensure access for emergency vehicles (Welsh, 2008). Recently, there have been newly constructed residential developments in the laneways, and this has presented a servicing challenge from both a snow storage and removal perspective (Welsh, 2008). These laneways are afforded the same level of service as traditional laneways (i.e. no ploughing) and this has led to numerous inquiries from residents and City Councillors (Welsh, 2008). Any additional services and/or repairs to the laneways are by request and on an as needed basis only. For example, Transportation Services will perform limited sweeping on busy commercial laneways as

requested by Solid Waste Management Services (Welsh, 2006).

There are however a few residential developments within public laneways that receive door-to-door municipal garbage and recycling collection services. When these residential developments are only able to be serviced through the public laneways there are strict conditions that must be met before door to door collection is possible. This includes that, the residence must have an address on the laneway; the collection vehicle must be able to enter and exit in a forward motion; the laneway must be a minimum of 3.5 metres wide in an existing laneway and a minimum of 6 metres in a new laneway; turning radii onto the laneway must be a minimum of 9.5 metres inside and 14 metres outside; and, overhead clearance throughout the laneway must be a minimum of 4.4 metres (City of Toronto, 2006b).

In terms of surface conditions and on-going repair to laneways, the City is not obliged by provincial regulation to maintain them to any standard of repair since 'Minimum Maintenance Standards' do not exist for laneways (MMAH, 2006). The City's laneways often only get physically reviewed in the spring to note any noticeable signs of damage and/or disrepair, and to ensure that surface repairs are maintained to a safe condition (Welsh, 2006). Also, capital works rehabilitation projects in laneways are planned when residents complain and technical assessment validates that the rehabilitation work is necessary. However, this program is severely underfunded with only $1,476,000 recommended for laneways in the 2011 State of Good Repair (SOGR) budget, totaling a mere 1.20% of the City's Transportation Services SOGR budget for the year (City of Toronto, 2011). The SOGR budget for laneways is recommended to increase in 2012 to $2,799,000 and fluctuates between that amount and $2,000,000 annually until 2020 (see Table 2). The total SOGR budget for laneways is $22,461,000 from 2011 to 2020 (City of Toronto, 2011).

Table 2. Ten Year Recommended State of Good Repair (SGR) Laneway Project Budget Summary (In $000s).

SGR Budget	2011 Rec. Budget	2012 Plan	2013 Plan	2014 Plan	2015 Plan	2016 Plan	2017 Plan	2018 Plan	2019 Plan	2020 Plan	2011-2020 Total
Laneways	1476	2799	2208	2263	2320	2420	2437	2498	2060	2000	22461

Note. From *City Budget 2011. Transportation Services Capital Budget Analyst Notes, 2011*, City of Toronto. Transportation Services.

The persistent underfunding of the City's laneways has led to an outstanding backlog of laneway projects that need maintenance and is responsible for the overall diminished state of the laneways (Welsh, 2006). However, it is not just laneway projects that have a backlog of SOGR projects, as Transportation Services currently has a total of $279 million worth of work for on-going SOGR maintenance projects, including work on bridges, sidewalks, and traffic signals (City of Toronto, 2011). This backlog is not expected to be addressed any time soon and in fact is expected to grow to $640 million by 2020 (City of Toronto, 2011). Therefore, unless a lot of additional funding is directed at the City's SOGR budget, specifically the laneway projects, then there will continue to be a major backlog in the maintenance of the City's laneways.

I do not see much money being directed to laneway maintenance in the future as the City main focus is on maintenance projects involving major and local roads, bridge infrastructure, and expressways, so these maintenance projects will take precedence over laneway maintenance (City of Toronto, 2011). While the lack of City money being directed toward the City's laneway system may seem like a major hurdle to overcome, it is important to note that through the implementation of a laneway redevelopment program there would be the opportunity for a variety of additional funding sources (e.g. community groups) to contribute financially to the maintenance of the City's laneways.

Planning Policies – The Provincial Policy Statement and the City's Official Plan

The Province of Ontario and the City of Toronto are interested in supporting the natural environment and improving public spaces within urban areas. Looking at the Provincial Policy Statement (PPS) (2005) and the City of Toronto's Official Plan (OP) (2006), there are many policies that support the potential implementation of a laneway redevelopment program, as it will assist the City in achieving many of its land use planning objectives. The PPS "provides direction on matters of provincial interest related to land use planning and development, and promotes the provincial 'policy-led' planning system" (MMAH, 2010). As outlined by the PPS "the long-term prosperity and social well-being of Ontarians depend on maintaining strong communities, a clean and healthy environment and a strong economy" (p. 2). Within the PPS there are some directives that support the initiative of a potential laneway redevelopment program in the City of Toronto by supporting the program's main objectives as desirable land use planning objectives. Under Part V, Section 1 Building Strong Communities, Policy 1.1.1 outlines that healthy, livable, and safe communities are sustained by accommodating an appropriate range and mix of residential, employment, recreational, and open space uses to meet long-term needs (1.1.1 b). A redeveloped laneway would act as open space that can contribute to this appropriate range and mix of lane uses within the City of Toronto.

This is further supported as Section 1.1.3.2, outlines that land use patterns within settlement areas shall be based on a variety of characteristics, including densities and a mix of land uses that efficiently use land and resources (1.1.3.2 a 1). As laneways that have been redeveloped would continue to support their original intended use as storage areas and thoroughfares but would also support additional objectives, this should be interpreted as a more efficient use of the laneway land and resources.

Section 1.5, Public Spaces, Parks, and Open Space, outlines promoting healthy, active communities by "planning public streets, spaces, and facilities to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement" (1.5.1 a) and "providing for a

full range and equitable distribution of publicly-accessible built and natural settings for recreation, including facilities, parklands, open space areas, trails and, where practical, water-based resources" (1.5.1 b). Redeveloped laneways have the opportunity to assist communities in becoming healthy and active as they can be used to achieve both of these objectives.

Redeveloped laneways also help to achieve the PPS's Sewage and Water policies (1.6.4) as they promote a more efficient use of the existing municipal sewage and water services (1.6.4.1 a 1) and help to ensure that these systems are provided in a manner that protects human health and the natural environment (1.6.4.1 b) 3). This is done through the many stormwater management techniques that would potentially be implemented in the redeveloped laneways. Additionally, Section 2.2, Water, outlines that planning authorities shall "protect, improve or restore the quality and quantity of water by: g) ensuring stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces (2.2.1 g).

Finally, Section 1.8, Energy and Air Quality, outlines that planning authorities shall support energy efficiency and improved air quality through land use and development patterns which: e) promote design and orientation which maximize the use of alternative or renewable energy, such as solar and wind energy, and the mitigating effects of vegetation (1.8.1 e). While redeveloped laneways have limited opportunity to implement techniques that use alternative and renewable energy (except maybe in solar lighting), the mitigating effects of vegetation are clearly outlined as a main benefit of these redevelopments.

The City's OP is a long-term policy document that outlines Toronto's future land use growth and development goals (and the policies to support these goals), while attempting to achieving the greatest social, environmental, and economic benefits for the City and its residents (City of Toronto, 2006). There are many broad OP policy statements that support the initiative of a potential laneway redevelopment program in the City of Toronto by supporting the program's main objectives as

desirable land use planning objectives. For example, in the City's OP a healthy natural environment is listed as a key ingredient for building a successful city. In the OP, one of the City's natural environment policies is to protect, restore, and enhance the health and integrity of the natural ecosystem, support biodiversity in the City, and target ecological improvements (3-25). Under Section 2.3.1 Healthy Neighbourhoods, Policy 5 supports environmental sustainability (in Neighbourhoods and Apartment Neighbourhoods) by investing in naturalization and landscaping improvements, tree planting and preservation, sustainable technologies for stormwater management and energy efficiency programs for reducing waste and conserving water and energy (2-23).

In complement to the OP, the City's Environment Plan contains a comprehensive and wide-ranging set of actions to improve the health of the natural environment (3-23). All of these objectives and policies specifically outline the City's commitment to supporting, improving (and potentially expanding) the state of the natural environment within the urban boundary. While laneways are not outlined as specific areas in which this can be supported they do have the potential to act as sites that can be redesigned to contribute to the overall health of the natural environment.

Improving the public realm and supporting healthy neighbourhoods to build a successful city are two objectives listed in the City of Toronto's OP (Section 2.3.1. and 3.1.1). These objectives are in line with the main objectives of laneway redevelopment. Under Section 3.1.1, The Public Realm, Policy 5 outlines that city streets are a significant public open space that "serve pedestrians and vehicles, provide space for public utilities and services, trees and landscaping, building access, amenities such as view corridors, sky view and sunlight, and are public gathering places. Streets will be designed to perform their diverse roles, balancing the spatial needs of existing and future users within the right-of-way. This includes pedestrians, people with mobility aids, transit, bicycles, automobiles, utilities and landscaping" (3-3). The redevelopment of the City's laneways could help achieve these objectives by becoming vibrant spaces with benefits for a diverse array of individuals.

Chapter III: Case Studies - Programs in Other Cities

Cities throughout North America are beginning to view the hundreds of kilometres of laneways behind residential, commercial, and industrial buildings in a new way. Whereas before these areas were seen as dank, dark, and at times dangerous spaces that were predominately used for storage, inter-building access and transport space, they are now beginning to be seen as significant semi-public spaces with the potential to be redeveloped in ways that can improve urban life and the natural environment. These spaces are being recreated in an effort to attract residents to these formally ignored spaces.

This section reviews some of the creative new approaches for redeveloping laneway spaces that are taking place in cities across North America. The objectives and methodologies of these programs vary, but the underlying reasons for implementation are the same – the belief that laneways are currently underutilized spaces with the potential to be used in much more significant ways. From these case studies I will outline the issues, the program's specific details, and the general outcome of the programs. This analysis will help to highlight some of the common opportunities and limitations that arise when attempting to implement a laneway redevelopment program. Additionally, it will highlight some of the laneway redevelopment techniques used in these studies that may be appropriate for the City of Toronto's laneway redevelopment program.

Chicago - Green Alley Program

Issue. In Chicago, there are over 3060 km of laneways – deemed to be the largest laneway system in the world. Partially because of the vast size of the laneway system, Chicago suffers from stormwater management issues, watershed pollution, and urban heat island effects (Hoyer, 2009). During heavy storms, water runoff overburdens the City's sewer system and floods basements and streets. Often the runoff load will exceed the carrying capacity of the City's sewage

and treatment facilities, and flush polluted water into Lake Michigan.

Program. As part of an effort to improve this situation the Green Alley program began as a pilot in 2006. This program developed out of Mayor Richard Daley's environmental and beautification campaign and is a part of the City of Chicago's Department of Transportation's (CDOT) "green infrastructure" (City of Chicago, 2010). The maintenance of the program is conducted by the Department of Transportation.

The main focus on the program is to manage stormwater through infrastructural changes to the laneway system. Additional objectives are to improve drainage conditions; incorporate recyclable materials into the project; reduce Chicago's urban heat island effect, and reduce light pollution within the laneway system. In order to achieve these objectives these laneways incorporate a variety of characteristics including, permeable pavements that filter and drain stormwater into the ground; open bottom catch basins to capture water and channel it into the ground; high-albedo pavement to reflect sunlight to help reduce the urban heat island effect; the use of recycled materials, such as recycled tire rubber, slag, and concrete aggregate; proper grading and pitch to facilitate drainage; and, light fixtures made out of recycled materials that limit light pollution, reduce glare, and conserve energy while supplying uniform illumination (City of Chicago, 2010). Together these characteristics absorb almost 80% of stormwater into the ground and filter out many harmful pollutants (Hoyer, 2009). This cleaner water then recharges the underground water basin rather than ending up as polluted runoff in streams, rivers, and ultimately Lake Michigan.

According to the City, the cost of constructing these laneways is offset by what would be paid for maintenance and sewer improvements on conventional laneways (Hoyer, 2010). While the new laneways need maintenance, so their pores do not clog, they are price competitive with conventionally designed laneways. The city pays about $45 (USD) a cubic yard for permeable concrete plus the cost of a stone filtration layer beneath the concrete, compared to ordinary concrete which costs $50 or more a cubic yard (Saulny, 2007, November 26).

Some of the limitations that this program faced on implementation included the general disbelief that these green techniques would work; getting support and buy-in; acquiring manufacturers of new materials as there were no local or regional manufacturers; and, the high labour and materials cost of the first initial projects (Cassidy, Newell, & Wolch, 2008). An additional issue found was that the permeability of these laneways decreased over time due to clogging by dirt, dust, and other fine sediment, however, once cleaned there were significant improvements in the permeability of the laneways once again (City of Chicago, n.d.). The City has initiated twice yearly cleaning, in the spring and fall to maintain adequate permeability.

Outcome. After conventional laneways are greened the primary function of the laneways does not change much. They still provide storage, transport space, and inter-building access, however they become more aesthetically pleasing and inviting spaces that help to achieve the program's objectives, including stormwater management (see Figure 4 and 5). This program has been a great success. Between 2006 and 2009, the City has installed more than 100 green laneways (City of Chicago, 2010). In 2007, the program received the Chicago Innovation Award and has gained the attention and support of many of Chicago's residents (Cassidy, Newell, & Wolch, 2008). This has led to this program as a leading initiative within the City's greening campaign.

Figure 4 and 5. Chicago Green Alley – Before and After Redevelopment.

Note. From *The Chicago Green Alley Handbook. An Action Guide to Create a Greener, Environmentally Sustainable Chicago*, by the City of Chicago, Department of Transportation, 2010.

Seattle - Clear Alleys Program (CAP)

Issue. Overridden with illegal activities, Seattle's central downtown laneways were being used as hiding places for a lot of inappropriate "adult behaviour" (Mulady, 2009, March 10). These laneways were littered with trash bins and other discarded items and were places that most individuals avoided.

Program. In an effort to keep laneways cleaner; create more pleasant business districts; increase pedestrian use of laneways; reduce illegal activities; and allow better access to businesses, the City of Seattle created the Clear Alleys Program (CAP) (City of Seattle, n.d.a). The fundamental goal of the program is to 'animate the space' by making downtown more livable through clearing up the laneways to encourage more people to use this space.

This program was launched in March 2009, and limits permanently stored dumpsters, recycling bins, and compost containers from the public right-of-way including streets, sidewalks, planting strips, and laneways within Seattle's 5 km^2 commercial core (City of Seattle, n.d.a). Business owners pre-purchase bags – different colours for recycling, and garbage and set them out in squares painted in the laneways for no more than three hours before a scheduled pick-up. Food waste is stored in plastic carts to prevent animal interference. Cardboard is collected for free, individuals just have to flatten and bundle it or put it inside an unflattened box. Used cooking oil is also collected for free when put back in the original container with a tight fitting lid. Large or odd-sized items require a "special pick up" tag and must be less than 60 lbs. The city provides pick-up every day, 24/7 and collects bags at least three times a day. As customers end up paying for pickup by the bag, the city expects that this initiative will cut down on garbage production and promote composting and recycling initiatives (Heffter, 2009, March 10).

The cost of the Clear Alleys per-paid bag system replaces the monthly service cost for a commercial non-compacted garbage account with one pickup per week (City of Seattle, n.d.a). To begin, businesses and residents order a starter kit, which range in price from $125 to $2,762.50

(USDs), depending on the size of the kit needed (CleanScapes, 2008). These kits come with garbage bags, recycling bags, and tags. After that, bags and tags can be ordered individually. Recycling bags come in 15- and 30-gallon bags; 15-gallon bags come in rolls of 10 and cost $20 (USD) and 30-gallon bags come in rolls of 25 and cost $87.50 (USD). Garbage bags also come in 15- and 30-gallon bags; 15-gallon bags come in rolls of 10 and cost $37.00 (USD) and 30-gallon bags come in rolls of 25 and cost $132.50 (USD) (CleanScapes, 2008). Bag prices include the bag, online ordering, UPS delivery, bag collection, cardboard and cooking oil collection, and litter pick up within 1 metre of the collection area. Business can offset these garbage rates by increasing composting and recycling services and by reducing the amount of waste they generate.

After the initial inception of the project there were problems with illegal dumping so the CAP "Alley Czar" position was created to provide customers with outreach, education, and to document any illegal dumping. This position along with the inception of the CAP Advisory group - consisting of city staff, and community, and business leaders, led to a reduction in the average number of illegal bags from 750/day at the start of the program to the current 50/day (CleanScapes, 2011). A dedicated "StreetScape" service also provides 7 day a week litter control and pressure washing crews to maintain the laneways. Funding for these positions are included in the operational cost of the program.

Outcome. Seattle Public Utilities conducted a one-year evaluation of the CAP program and found that, two-thirds of the individuals involved felt that CAP laneways are "somewhat better" or "much better" in terms of improved safety, cleanliness, access, and reduced odours (see Figure 6 and 7); the Seattle Police Department reported reduced criminal activity and improved lines of sight; and, residential and business customers believed that CAP benefits significantly outweigh the costs (CleanScapes, 2011). Businesses still however have operational concerns about the program, specifically the continued occurrence of illegal dumping and the cost (CleanScapes, 2011).

Figure 6 and 7. Seattle Clear Alley – Before and After Redevelopment.

Note. From *Clear Alleys Program*, by CleanScapes, 2008.

Seattle – Natural Drainage Systems (NDS) Program

Issue. Seattle's urbanization patterns have altered the hydrology and geomorphology of the region's water bodies leading to a decrease in water quality, negative impacts on wildlife habitat, and disruptions in aquatic food chains (City of Seattle, n.d.b). Of specific concern is the damage being done to creek beds that are sites of salmon spawning areas and creek-side vegetation (City of Seattle, n.d.b). This is primarily the result of nearly a third of the city being built without storm drains which had led to severe flooding and stormwater runoff problems. This runoff contains traces of harmful contaminants such as heavy metal, oil, paint, pesticide, and fertilizer that come from roads, rooftops, lawns, and sidewalks and ends up in creeks, small lakes, and eventually Puget Sound or Lake Washington (City of Seattle, n.d.b).

As environmental awareness has grown around this issue, residents have pressured the city to act to better its stormwater management. Traditional drainage systems would be able to solve the problem of flooding but would still carry heavily polluted stormwater runoff directly into the local water bodies and the speed and volume of water leaving these pipes would continue to erode

stream channels.

Program. Seattle Public Unities (SPU), which is responsible for sewage, piping infrastructure, and water supply in the city - has decided to address its stormwater management issues through the implementation of a Natural Drainage System (NDS) program. While not technically a laneway redevelopment program, the techniques used in this program are outlined, as they can be easily adapted to a laneway situation. The NDS program is an innovative alternative to traditional stormwater management systems in that it limits the negative impacts of stormwater runoff by redesigning residential streets to take advantage of plants, trees, and soils to clean runoff and manage stormwater flows (City of Seattle, n.d.b).

The main focus of the NDS program is to restore drainage patterns to the natural pre-development conditions of the region in the attempt to relieve some of the negative impacts of the City's current stormwater management system. Additional objectives are to, manage stormwater and prevent flooding; recharge groundwater; clean pollutants from the water system; maintain wildlife habitat in streams and creeks; and, improve the neighbourhood through an increase in community interaction (City of Seattle, n.d.b). The maintenance of these projects is shared between the SPU and the adjacent property owners. SPU has an informal agreement with the property owners that they will assist in the maintenance of the vegetation while the SPU will maintain drainage, sewage, and other related infrastructure (Cassidy, Newlee, & Wolch, 2008).

In order to achieve these objectives the NDS program incorporates a variety of characteristics including, narrower roadways which provide drainage control due to the reduction in impervious surfaces and the increase in space for vegetated street-side swales to absorb stormwater; swales designed with plants and soils to improve water quality through "biofiltration"- where they capture and break down pollutants from the parking areas and roadways; street-side landscaping to beautify and add value to the community; and limited pavement surfaces created through an increase in street-side vegetation and gradually curving roadways which provides traffic

calming while still allowing for emergency vehicle access (City of Seattle, n.d.b).

Under the City's NDS program there have been five projects of varying scale successfully completed. Some projects involve installing management equipment and techniques on a single street (or a few blocks) while other projects involve creating 'green grids' which cover much larger areas (Cassidy, Newlee, & Wolch, 2008). The pilot project was the Street Edge Alternatives (SEA Streets) project completed in 2001 (See Figure 8 and 9); followed by the 110th Cascade project completed in 2002; then the Broadview Green Grid completed in 2005; followed by the Pinehurst Green Grid completed in 2007; and finally the High Point Natural Drainage System which was completed in 2009 (City of Seattle, n.d.b). There is also a sixth project, currently on hold, titled the Swale on Yale.

Figure 8 and 9. Seattle Natural Drainage System – Street Edge Alternatives Project Before and After Redevelopment.

Note. From *Seattle's Natural Drainage Systems* by City of Seattle, n.d.

These projects have been monitored and have shown to be successful in meeting their objectives. For example, after two years of monitoring, the SEA Streets project has shown to have reduced the total volume of stormwater leaving the street by 99% (City of Seattle, n.d.b). Also, the landscape architecture has proven to be both aesthetically pleasing to residents and has restored evaporation and transpiration levels to pre-development levels. The additional tree cover has also helped to reduce summer heat while absorbing pollutants and rainfall (City of Seattle, n.d.b).

Despite higher annual maintenance costs, overall the NDS approach cost less than conventional drainage and street improvements and designs (City of Seattle, n.d.c). According to the SPU, the cost per block (approximately 100 linear metres) of a traditionally designed local street is $425,000 (USD), and the cost per block of a traditionally designed collector street is $520,400 (USD). The cost of NDS designed streets is relatively cheaper with the cost per block of a SEA local street is $325,000 (USD), and the cost per block of a 'green grid' 15 block area is $280,000 (City of Seattle, n.d.c).

Outcome. In terms of reducing stormwater flows, these projects have been enormously successful. However there has been some public resistance to the projects due to the loss of street parking, and the inconvenience associated with the construction of the sites. Overall maintenance has been a significant challenge for the NDS program as some property owners have not maintained the vegetation on the sites as verbally agreed upon (Cassidy, Newlee, & Wolch, 2008). In an attempt to encourage owners to maintain the sites, the SPU has established the "Backyard Steward" and "Site Steward" programs and the "Maintain Your Ditch Day" but unfortunately the response from the property owners has still been lax (Cassidy, Newlee, & Wolch, 2008). Funding is also a major challenge for the program as the SPU currently has future projects on hold because of a lack of funding available to support future projects.

Vancouver - Country Lane Program

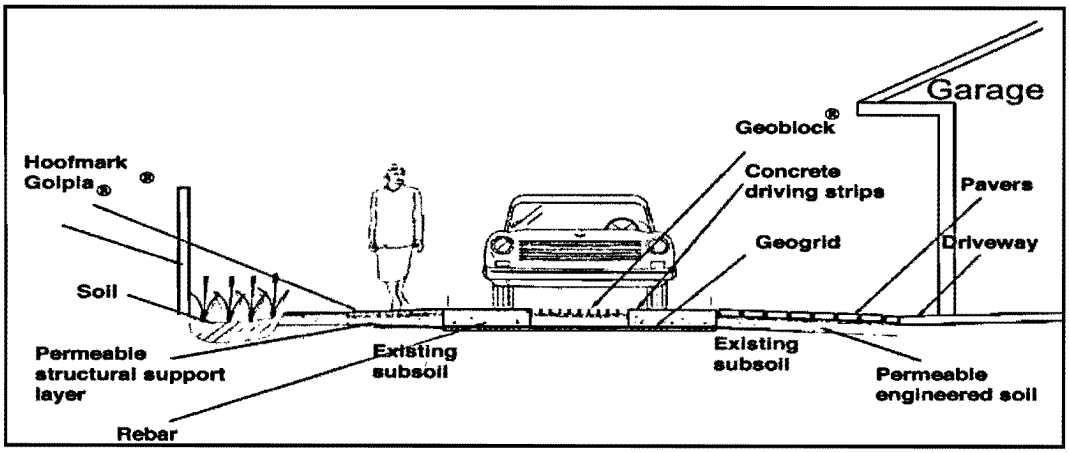
Issue. The City of Vancouver's older residential neighbourhoods were built in the grid street system and included rear laneways that over the years have become run down unappealing areas. These laneways are used for a variety of reasons including parking; municipal garbage and recycling collection; and, utility servicing including electricity, telephone, gas, and cable. While these laneways are being used, members of the local community expressed a desire to have a more

environmentally friendly, less sterile, and a more visually attractive laneways system (Transport Canada, 2010).

Program. Out of local resident's desire to improve the laneway system, and the new policy directive from the City's corporate management team that encouraged staff to incorporate sustainability into all City operations, the "Country Lanes" program was developed. Developed in August 2003 by the City of Vancouver's Streets Design Branch this program is committed to providing laneways that minimize negative environmental impacts and are sustainable. The objectives of this program are to, design an environmentally positive laneway system that incorporates natural stormwater drainage and filtration; reduce discharge into the sewer system, replenish groundwater and reduce peak flows into local streams and rivers; improve local air quality by increasing local green space; provide a more aesthetically pleasing laneway system that would encourage residents to take more ownership of the laneway and help to create a more liveable community; and, educate residents about stormwater management and the effects their actions have on the local ecosystem (Transport Canada, 2010).

This program began with the construction of three pilot laneways. Though there were variations in each laneway, the basic design features two driving strips down the centre of the laneway to carry the vehicle weight surrounded by some form of structural grass (i.e. grass grown in a structural grid system) (see Figure 10). This structural grass is necessary to provide some additional support in locations where vehicles turn on/off the driving strips. Two structural grass products that have been used are Golpha and Geoblock (City of Vancouver, 2002). Found under this grid system is a mixture of gravel and soil that allows for drainage while providing nutrients and the water necessary for the grass to survive. The maintenance of the laneways will be shared between residents and the City. Residents are expected to keep up with the daily maintenance of the laneways including watering and weeding, while the City will maintain the 'hard' infrastructure such as the concrete and the grids within the structural grass.

Figure 10. Vancouver's County Lane – Various Components.



Note. From *Country Lanes*, by City of Vancouver. Engineering Services, 2002.

The Country Lanes Demonstration Project cost approximately twice as much as conventionally paving the full width of the laneway (Transport Canada, 2010). It is estimated that Country Lanes will always cost more than conventional asphalt lanes because they have more construction steps and are more detailed than conventional asphalt laneways. It is estimated that as more Country Lanes are installed and work crews become more familiarized with the construction methods and designs, these laneways will cost between 25-100% more than conventional asphalt laneways as the learning curve will lead to efficiencies (Transport Canada, 2010).

Country Lane's are available for installing in suitable residential laneways as a local improvement paid as a lump sum or over a 15 year period (City of Vancouver, 2009). The City will financially contribute the equivalent of a standard laneway improvement, however, the cost for a resident to have a Country Lane installed is approximately $2800 for a typical 10 m lot. These costs are the primary challenge for this program as there is no annual budget for these projects so local residents continue to have to contribute financially.

Outcome. Overall the Country Lane program has been successful. In 2003 the Demonstration Project won the Technical Innovation Award from the American Public Works

Association, and received an honourable mention for the 2003 Environmental Award from the Canadian Association of Municipal Administrators (Transport Canada, 2010). The majority of residents that have installed Country Lanes are pleased with the program and happy with their new laneways. In a follow-up questionnaire, 52% of respondents said that they would be willing to pay up to an extra 50% to have a Country Lane installed rather than a conventional asphalt laneway, while 3% were undecided (Transport Canada, 2010). Additionally, preliminary results have shown that the laneways are highly permeable and are contributing to a general reduction in stormwater runoff on these redeveloped sites (Transport Canada, 2010).

Baltimore – Alley Gating and Greening Program

Issue. Baltimore has approximately 966 km of laneways, some private but most public (City of Baltimore, 2010). These public laneways are predominantly intended to be used for recycling and garbage collection; utility connections and servicing; and, pedestrian and vehicular traffic but residents have complained that these areas have become noisy, dangerous places with illegal dumping, loitering and illegal activities taking place.

Program. Because of this misuse of the laneways behind their homes, residents were interested in reinventing this space. With the support of the non-profit group, Ashoka Community Greens (ACG), residents went to the City government and asked them for the legal tools to create a quiet and/or green space in their laneways (City of Baltimore, 2010). In 2007 Mayor Sheila Dixon passed the Gating and Greening Alleys Ordinance which allowed residents to lease the laneway space around their house from the City and gate it and/or green it. The ordinance permits the Department of General Services (DGS) to receive, review, and process any resident's requests for alley gating and/or greening (City of Baltimore, 2010). The maintenance of these laneways is the sole responsibility of the homeowners.

The motivation behind this ordinance was to replace dangerous, and dirty laneways with lively, secure, and functional community spaces that empower communities and encourage community development while uniting neighbours and supporting social ties (Cassidy, Newlee, & Wolch, 2008). Through the greening of these laneways they, support the safety of residents; increase the property value of the abutting properties; strengthen social bonds between residents; act as a vehicle for civic engagement; provide sanitation benefits; and, provide health and environmental benefits (Nathanson & Emmet, n.d.).

For an laneway to be approved for gating and greening, the adjacent buildings must be primarily residential; the laneways must be deemed no longer necessary for through pedestrian or vehicular traffic; and, the gating and greening must be deemed to promote welfare, health, or the safety of residents (City of Baltimore, 2010). Greening projects also require engineering drawings and the necessary permits from the DGS Development Centre (City of Baltimore, 2010).

Additionally, 80% to 100% of the residents in the blocks adjacent to the laneway must agree to it before permission is granted (Ashoka, n.d.). Once all the residents in the adjacent properties agree and sign a consent form, the community must get approval from fire, police, and utilities, and then the community can lease the land from the City. This includes agreeing to set up three boxes outside the gates to which fire, police, and utilities have their own access keys so these laneways remain accessible in the event of an emergency (Ashoka, n.d.). Finally, there are public notices sent out, a public hearing, and then approval by the Baltimore City Board of Estimates (City of Baltimore, 2010).

The cost of the project varies depending on the laneway design. The entire cost of the project is borne by the residents. There is also a $250 (USD) application processing fee paid to the City's DGS. Some funding for the laneway projects are available from a variety of local and national foundations including the Baltimore Community Foundation grant, the Healthy Neighbourhoods grant, and the Banner Neighbourhoods grant, etc. (Nathanson & Emmet, n.d.).

Financing has become a major issue for some residents interesting in alley gating and greening. As residents currently have to bear the entire cost of the project or apply to foundations for funding there are limited sources of financial support. The City of Baltimore supports the program but does not offer any financial assistance for implementation. This could prevent lower-income residents from participating in the program which means that they do not have to the opportunity to clean up and green the laneways within their neighbourhoods.

Outcome. The first post-ordinance laneway project was completed in June 2008 (see Figure 11 and 12). Since then two additional laneways have been gated and greened and three footpaths have been created. Currently there are over 72 applications being reviewed in a variety of neighbourhoods (Ashoka, n.d.). The ACG have assisted the residents interested in alley gating and greening by providing 'Neighbourhood Leadership Training'. With this training residents learn how to become effective community organizers by learning how to improve their interpersonal skills and garner support and a strong team of residents for the project. The ACG also put together an 'Alley Gating and Greening Toolkit' which helps residents familiarize themselves with the ordinance and guides them through the application process.

Figure 11 and 12. Baltimore's Alley Gating and Greening – Before and After Redevelopment.

Note. From *Alley Gating and Greening. The Baltimore Story*, by Ashoka, n.d.

In order to get a better understanding of the impact that the gating and greening initiative is

having on residents, the ACG, along with the University of Maryland, and other organizations, have completed sociological surveys of residents involved in the laneway gating and greening projects. They are currently still processing the data collected but preliminary findings indicate that:

- Residents feel that their laneway and neighbourhood had become 'better' after the gating and greening;
- The words clean, safe, and attractive were the three most commonly used words to describe the gated laneways;
- New residents mentioned the presence of the gated laneway as an incentive to move into the neighbourhood;
- A substantial amount of people are using their gated laneways for parties, play space for their children, and areas to walk their pets; and,
- Other than minor theft due to not locking the gate, there have been no reported cases of major crimes in the gated laneways (Ashoka, n.d.b.).

Montreal - Ruelle Verte 'Green Lanes' Program

Issue. In 1995, the City of Montreal created the Eco-quartier program, a program created to financially support community organizations and residents and help them improve their neighbourhoods through environmental initiatives (Eco-quartier Sainte-Marie, n.d.). Out of the desire to improve the laneway system, the Green Lane program was created from the Eco-quartier program. The Green Lane program was created to support community development and mobilization, and improve the quality and number of green spaces in residential neighbourhoods. The idea behind the Green Lane program is that laneways can be greened and re-appropriated by the residents, which can contribute to a feeling of social inclusion for local community members and can lead to a healthier neighbourhood and City (Schiebel, 2010).

Program. There is no one model for greening laneways in the City of Montreal. While some green laneways involve removing asphalt from the laneways and planting native shrubs and trees, other laneway designs simply involve installing flower boxes planted with perennials, on top of the existing asphalt. Other common attractions include creating murals, nesting boxes, and composters etc. If residents simply want to add flower boxes or other simple design techniques that don't impede traffic, no authorization from the city is needed. However, when residents are interested in more in depth redevelopment they must retain permission from the City (Pilon, 2008). These residents must apply to transform their neighbourhood laneway from their Eco-quartier, and form a committee of at least 5 or 6 committed residents, merchants, and other interested individuals. This committee will be responsible for mobilizing and organizing residents and must at least have 20 residents willing to show their commitment to the project by signing a letter of support.

These laneway redevelopments are primarily funded by EcoAction, Environment Canada, a program that provides financial support to community-based non-profit organizations for projects directed at improving the natural environment (Environment Canada, 2011), along with funding through the City's Eco-quartier program and resident and/or the local community's contributions. For example the Eco-quartier Sainte-Marie, received $49,767.00 from EcoAction to redevelop two laneways and one green-spot in the parking lot of a community organization in an attempt to offset the effects of the urban heat island effect. They planted approximately 30 trees, 250 shrubs, 250 perennials, and 115 climbing plants, and installed six rain barrels and three composters (Environment Canada, 2011). As the implementation and maintenance of these laneways are the sole responsibility of the local residents, the success of the program relies on the commitment of these individuals.

Outcome. The number of green laneways continues to grow as this program expands across the City. While green laneways were initially only being developed in the Plateau Mont-Royal, they are now found in a number of neighbourhoods, including Verdun, Ville-Marie, and Outremont.

The success of each individual laneway's varies as this success is dependent on the dedication of the local residents and their commitment to the project. However, overall this program is gaining momentum and the City's laneways are rapidly being transformed into dynamic places (see Figure 13 and 14).

Figure 13 and 14. Montreal's Green Lanes.

Note. From *Eco-quartier Sainte-Marie* by, Julie Leblanc, n.d.

Chapter IV: Case Studies - Additional Programs and Smaller-scale Projects

In addition to these six laneway programs there are also additional laneway redevelopment programs in the early stages of development and many smaller scaled projects being carried out across North America. In this next section I will review three of these examples and will outline the issues, the program or projects specific details, and the general outcome of the program or project. This will further the understanding of major opportunities and limitations that arise when attempting to implement a laneway redevelopment program and project and will highlight some innovative techniques that may be appropriate for the City of Toronto's laneway redevelopment program.

Los Angeles - Green Alley Program

Issue. In 2006, the University of Southern California (USC) Center for Sustainable Cities (CSC) began research on the City's laneway system including reviewing what initiatives other cities around the world were doing within their laneway systems. As the City of Los Angeles has over 1450 km of laneways, in the form of over 12000 laneway segments, researchers were interested in the possibility of transforming this underutilized spaces (see Figure 15 and 16) into spaces that could benefit the local community (Cassidy, Newell, & Wolch, 2008). Researchers undertook a major research project that reviewed the laneways in the City which involved, conducting physical audits of 300 laneways across the City; studying behavioural activity patterns within the laneways; analyzing social pollution levels in the laneways, and holding focus groups with local residents to gain an understanding of how they viewed and felt about the laneways (Wolch, Newell, Seymour, Huang, Reynolds, & Mapes, 2010).

Figure 15 and 16. Examples of typical Laneways in Los Angeles.

Note. From *Transforming Alleys into Green Infrastructure for Los Angeles*, by A. Cassidy, J. Newell, and J. Wolch, 2008.

Their findings implied that Los Angeles' laneways have the potential to contribute to a more sustainable urbanism by supporting watershed health, community interaction, and physical activity through the implementation of green infrastructure into the laneway system (Wolch et al., 2010). From these findings they decided to look at innovative techniques being implemented in other cities and took the best elements from each initiative to build a unique laneway redevelopment program that could potentially address a variety of issues in Los Angeles including community building, open space and recreation, and stormwater management (Cassidy, Newell, & Wolch, 2008).

Program. In 2007, the Los Angeles Department of Public Works formed a Green Alleys subcommittee under the newly formed Green Streets Committee to investigate funding opportunities and examples of laneways in Los Angeles that have the potential to become pilot projects for green redevelopment (City of Los Angeles, 2009b). In 2008, City Councillor Tom LaBonge, introduced a Council Motion that requested various City departments to investigate the feasibility of implementing a Green Alley Program in the City of Los Angeles (Cassidy, Newell, & Wolch, 2008).

Outcome. Currently there is a demonstration project underway designed to act as a model for possible future laneway redevelopments within the City of Los Angeles. Construction on this demonstration project began in January 2011 and is expected go until the summer. The work

involves redeveloping four laneway segments in a North Hollywood neighbourhood and will include approximately 327 metres of laneway improvements (including permeable pavers) and the installation of catch basins (City of Los Angeles, 2011). The objective of this demonstration project is to aesthetically enhance the neighbourhood; to improve the water quality in the Los Angeles River; alleviate local flooding; and, recharge the San Fernando Groundwater Basin (City of Los Angeles, 2011).

This project was developed between the Los Angeles Department of Water and Power (LADWP), the Bureau of Sanitation (BOS), and Bureau of Street Services (BSS) (City of Los Angeles, 2009). The cost of the project is estimated at $720,000 (USD) which $600,000 (USD) will come from a grant from the California Environmental Protection Agency's Clean Water State Revolving Fund Program, and $120,000 (USD) will come from BOS (City of Los Angeles, 2009). Once completed these laneways will be included in the BSS's Laneway Alley Maintenance Program, and no additional or special maintenance of these laneways will be provided by BSS (City of Los Angeles, 2009). Beyond implementing this demonstration project, many City Departments are continuing to work with researchers from the USC to develop policy, design, funding and program ideas for the Los Angeles' Green Alley program.

Detroit – Green Alley Project

Issue. Over the years, the City of Detroit's approximately 1600 kilometres of laneways have become laden with garbage and debris as the City has slashed its budget and as a result has had to reduce garbage pickup and introduce a charge on homeowners for garbage collection. John Linardos, the co-owner of Motor City Brewing Works (MCBW), a local microbrewery and eatery in the City of Detroit, was sick of the garbage in the laneway behind his business so he contacted a fellow neighbour, Tom Brennan from the Green Garage, a non-profit organization committed to

developing and supporting green businesses. Together Linardos and Brennan, began to seek out individuals that could help them transform the laneway behind their businesses into a vibrant space, including a city planner from Detroit who exposed them to what was happening in Chicago with the Green Alleys program (Woods, 2010). From this Linardos and Brennan decided that they would aim to transform the laneway into an area that is walkable, aesthetically pleasing, and environmentally friendlier. They would strive to create Detroit's first green laneway.

Project. These business owners partnered with the University Cultural Center Association (UCCA), a non-profit group of over 60 organizations committed to "guiding development, enhancing public awareness, encouraging reinvestment, and celebrating the cultural aspects of Midtown Detroit" (UCCA, 2011b). Together these groups discovered that building Detroit's first green laneway would be neither quick or cheap.

Since the City of Detroit had no mechanism in its bylaws to create a green laneway it took over three years and $110,000 (USD) to get this laneway redeveloped (Aguilar, 2010). The City's Water and Sewerage Department contributed $40,000 - $45,000 (USD) to upgrade the storm sewers in the laneway; while the business owners each invested no less than $10,000 (USD) each; and, the UCCA raised $52,500 in grants to cover the remainder of the cost (Aguilar, 2010). Also DTE Energy donated energy-saving lights for the laneways. Each business owner estimates that they spent approximately 250 hrs in 2010 alone on the project, which included working with City employees to design the new laneway, and navigating through the bureaucracy at the City in trying to get approval for the redevelopment (Woods, 2010).

Outcome. Now in its final stages of redevelopment the laneway consists of high-efficiency LED street lighting; native flowers, grasses, and shrubs; recycled brick pavers; permeable pavement; and, a sustainable stormwater system (see Figure 17 and 18) (Aguilar, 2010). Collapsible bollards are also at the entrances of the laneway to ensure that the laneway remains a safe pedestrian and bicycling zone while remaining open for service and emergency vehicles (UCCA, 2009).

Figure 17 and 18. Detroit's Green Alley Project – During and After Construction.

Note. From *The Green Garage*, by P. Bennan, 2010.

This project is the first of its kind in the City of Detroit and its creators hope that it can serve as a model for any residents or developers that are interested in doing something similar in their neighbourhood. There currently is one other similar project in the works, as the UCCA is planning on developing a green laneway as a part of its Sugar Hill Arts District Project, a project that will include mixed-income housing, and commercial and arts-related uses (UCCA, 2011). The UCCA is trying to produce a safe, walkable, high density site and they believe that all laneways should be (re)developed using these methods (Aguilar, 2010).

From this experience the advice that the creators of the Detroit's first green laneway offer is to build a strong group of individuals, businesses, government employees, and community groups to work together to raise funds toward the project (Woods, 2010). Currently, the City of Detroit has a $300 million (USD) deficit, so while they are supportive of these redevelopments they certainly do not have the financing to contribute to these laneway redevelopments (Aguliar, 2010).

Fort Collins – Downtown Alley Enhancement Project

Issue. In 2004, the City of Fort Collins' Downtown Strategic Plan outlined the laneways in the downtown area as potential areas for enhanced pedestrian connections (Aspen, n.d.). In response to this, in 2006, the Downtown Development Authority (DDA), an organization that uses tax increment financing to stimulate redevelopment in the business district, initiated a pilot project that redeveloped a formerly glum pedestrian only area into an aesthetically pleasing place (see Figure 19 and 20) (Aspen, n.d.). With this redevelopment, businesses in the area noticed that there sales increased, they had experienced a heightened sense of community, and they began to really enjoy this formerly underappreciated space (Aspen, n.d.).

Figure 19 and 20. Fort Collins Pilot Project, Tremble Court Alley – Before and After Redevelopment.

Note. From *Downtown Alley Enhancement Project*, by A. Aspen, n.d., Downtown Development Authority.

Project. In 2008, the DDA, asked local design firm, Russell + Mills studios, to create a master plan of the laneways in the downtown area, specifically between Colorado State University (CSU), downtown, and the River District. This master plan looked at transforming these laneways into dynamic spaces for pedestrians and cyclists while still providing spaces for parking, servicing, and waste management (Russell + Mills studios, 2011). This master planning process involved workshops, open houses, and several opportunities for community input. When this was completed Russell + Mills studios presented potential plans for laneway development for each laneway to

interested community members, business leaders, and City officials (Russell + Mills studios, 2011). With the feedback that they received from this, the DDA prioritized what design ideas should be implemented and what laneways should be redeveloped first.

Outcome. The City of Fort Collins has currently implemented the first phase of this redevelopment process. The Old Firehouse Alley is the first laneway that has undergone redevelopment. The features that have been introduced into this laneway include pavers; pedestrian-scale lighting; street furniture; planters; improved drainage facilities; and, public art incorporated into the redesign (Aspen, n.d.). Work has now commenced on the remainder of the laneways as directed under the master plan.

Chapter V: Laneway Redevelopment Techniques Appropriate for the City of Toronto

By reviewing these case studies it is clear that there are many successful laneway redevelopment techniques that can help to recreate laneways into vibrant spaces. Many of these techniques would be appropriate to apply to the City of Toronto's laneway system in one fashion or another (See Table 3). In this case applicability was determined by looking at the appropriateness of the laneway technique within the City of Toronto's natural environmental conditions and the relative ease of implementing each technique into the City's existing laneway structure. As the table highlights, not all of these techniques are appropriate for all laneways in the City of Toronto. A variety of techniques may require too much space (e.g. bioswales) or may not be the most effective technique for all laneway spaces. However, even techniques that may have limited applicability are worth looking at as they may be the appropriate for use in other circumstances.

Table 3. Summary of Programs – Motivations, Techniques Implemented and their applicability to the City of Toronto.

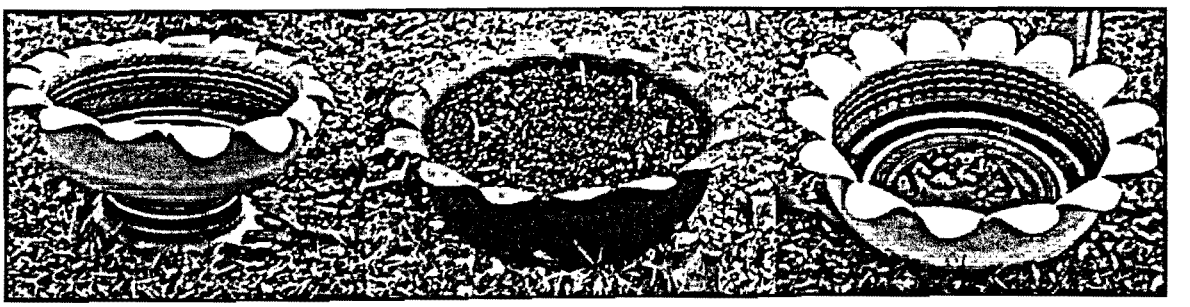
Program	Motivation	Techniques Implemented	Applicable to the City of Toronto
Chicago – Green Alley Program	- Stormwater management - Reduce heat island effect - Reduce light pollution	Permeable Pavements	Yes
		Catch Basins	Currently implemented
		High-albedo pavements	Yes
		Recycled Construction Materials	Yes
		Graded and Pitched Surfaces	Yes
		Efficient Light Fixtures	Yes
Seattle – Clear Alleys Program	- Reduce illegal activities within laneways - Create pleasant business district - Increase pedestrian use of laneways	Removal of dumpsters and recycling bins	Limited
		Laneway Monitor and Advisory Groups	Yes
		Garbage/Recycling bags set in designated areas for pick-up 3 times daily	No
		Daily pressure washing and litter pick-up	Yes
Seattle – Natural Drainage Systems Program	- Restore natural drainage patterns - Stormwater management - Improve and beautify neighbourhoods	Reduce impervious surfaces and increase vegetated space	Yes
		Landscape with native plants	Yes
		Install bioswales	Limited
		Curving roadways to calm traffic	No
Vancouver – Country Lane Program	- Stormwater management - Improve natural environment - Urban sustainability	Driving strips to support vehicle weight	Yes
		Permeable Structural Grass	Yes
Baltimore - Alley Gating and Greening Program	- Empower communities - Create safe and vibrant community space	Laneway Gating	No
		Installing planters, benches, tables	Limited
		Landscape with vegetation	Yes
Montreal - Ruelle Verte 'Green Lanes' Program	- Healthier more inclusive neighbourhoods - Improve and expand the number of green spaces in neighbourhoods	Various models, ranging from installing a few planters to removing asphalt and planting native shrubs, trees and flowers	Yes
		Murals	Yes
		Nesting boxes and composters	Limited
Los Angeles – Green Alley Program	- Aesthetically enhance neighbourhoods - Stormwater management - Support community interaction and physical activity	Permeable Pavers	Yes
		Catch Basins	Currently Implemented
		Landscape with Vegetation	Yes
Detroit – Green Alley Project	- Enhance pedestrian and bicycle space - Create aesthetically pleasing space and environmentally friendlier space	LED Street Lighting	Yes
		Native flowers, grasses, and shrubs	Yes
		Recycled construction materials	Yes
		Permeable Pavement	Yes
Fort Collins-Downtown Alley Enhancement Project	- Enhance pedestrian and bicycle space - Create aesthetically pleasing space to improve local businesses	Pedestrian-scale lighting	Yes
		Street Furniture	Limited
		Permeable Pavers	Yes
		Public Art	Yes

While the table above highlights the various program's motivations, techniques implemented, and their applicability to the City of Toronto, below I will review some of these laneway redevelopment techniques in greater detail and outline the variety of benefits that they potentially provide. These include:

1. Recyclable materials.

There are many ways to incorporate recycled materials into the redevelopment of laneways. For surface paving, this can be done by incorporating materials such as recycled concrete aggregate, ground tire rubber, and slag (i.e. a by-product of steel production) into the concrete or asphalt mix, as suggested by Chicago's Green Alley Handbook (2010b). Recycled materials can also be used for things such as benches, tables, and planters (see Figure 21). Baltimore's Gating and Greening Program outlines the various types of planters that can be made from recycled materials including wooden, recycled tire, and cinder block planters (Nathanson & Emmet, n.d.). There are many benefits to integrating recycled materials into laneway redevelopment projects as they, prevent valuable materials from ending up in the landfill; can save the project money; and are able to produce attractive and creative outcomes.

Figure 21. Recycled Tire Planters.



Note. From *How to Recycle Old Tires into Garden Planters* by K. Manasco, 2010, Wuv'n Acres Gardens.

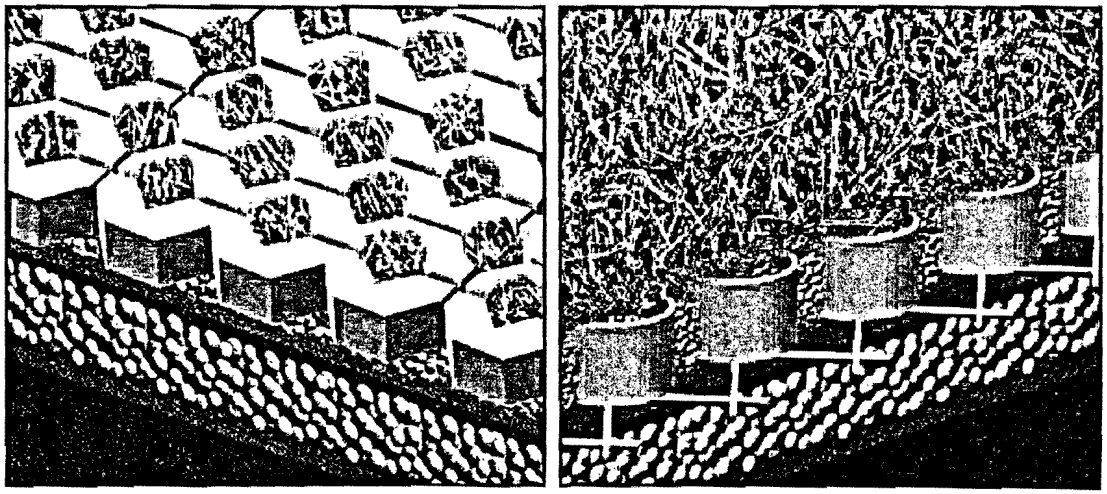
2. Permeable pavements, including unit pavers, grass pavers, gravel pavers, permeable

concrete, and permeable asphalt.

Permeable pavements are a type of hard surfacing that allow rainwater to pass through the surface and percolate through to an underlying reservoir base where the water then either infiltrates to the existing subsoil or is removed by a subsurface drainage system. There are a variety of permeable pavement options including:

- Porous pavement, which look like conventional pavement but have openings in the surface to allow water to percolate through;
- Grass pavers, which consist of a grid system with large open spaces filled with a growing medium planted consisting of grass, or another low-growing plant (see Figure 22 and 23); and,
- Pervious joint pavers, which involve pavers made of concrete, stone, or brick, set on a sand base with the joints between the pavers filled with stone dust or sand to allow water to percolate through.

Figure 22 and 23. Grass Pavers.



Note. From *Interactive: Detroit's green alley project* by L. Aguilar, 2009, The Detroit News.

Permeable pavements were used in a variety of the case studies examined. Recycled

bricks, as used in Detroit's Green Alley project, can be used as an alternative for surface paving as they are appropriate for sites with both vehicular and pedestrian traffic. Approximately 1,000 of these historic brick pavers were used in the laneway redevelopment. This helped to reduce the cost and add to the character of the laneway (Aguilar, 2009). In addition, the option of 'structural grass' as used in the City of Vancouver's Country Lanes program is a creative and effective permeable pavement option. As the name suggests structural grass is basically grass grown in a structural grid. Two products that have been used are Golpha and Geoblock (City of Vancouver, 2002). This structural grass is used to provide additional support in the laneway for areas where vehicles turn on/off the driving strips while preventing soil and grass root compaction and allowing for stormwater to permeate into the ground. These permeable pavements provide a variety of benefits including, reducing the amount and speed of stormwater runoff; filtering and removal of contaminants from stormwater; supporting groundwater recharge; and reducing the heat flux from the pavement surface to the atmosphere (i.e. reducing the urban heat island effect).

3. High albedo surface materials.

Albedo is the measure of a surface's ability to reflect solar radiation. High albedo surface materials are light in colour and absorb less heat, reflect more light, and therefore, produce less heat than conventional surface materials (see Figure 24 and 25). A variety of high albedo surface materials have been implemented in Chicago's Green Alley program. Some of the products used include, High Albedo Pervious Portland Cement Concrete (PCC); High Albedo Concrete Block Pavers; and, High Albedo Pervious PCC Strip with High Albedo Traditional PCC Edges (City of Chicago, n.d.). The benefits of high albedo surface materials are that they, reduce the urban heat island effect; conserve energy costs while produce adequate lighting and cooling on site (as sites with high albedo pavement have been demonstrated to have a positive impact on localized ambient temperatures and can reduce energy needs to cool buildings); and, they are very versatile as they

are able to be implemented in almost any laneway redevelopment site.

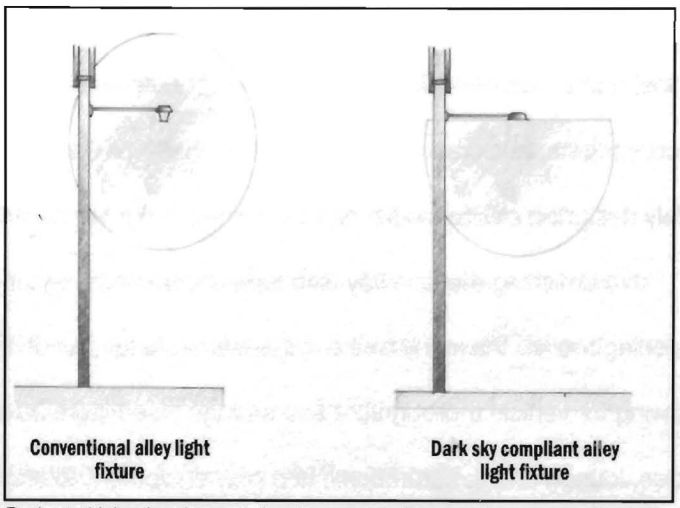
Figure 24 and 25. Albedo - Light coloured concrete vs. darker coloured asphalt road. Infrared image demonstrates that the light coloured concrete remains cooler than the darker coloured asphalt road.

Note. From *The Albedo Effect*, by Ecocem Ireland Ltd., n.d.

4. Energy efficient, dark-sky compliant lighting systems.

An energy efficient, dark-sky compliant lighting system would consist of light fixtures that are energy efficient and shine toward the ground to avoid contributing to night-time light pollution while still providing the appropriate light necessary to ensure the safety and security of laneway users. The light fixtures installed would be shielded, with no up-lighting; and use modern day energy efficient technologies such as LED lighting and solar lighting (see Figure 26 and 27). There are many different styles of lighting that are appropriate including, tall street lights; smaller lights installed along the ground to line a pedestrian path; or, lights that can be mounted within the vegetated landscaping.

Figure 26 and 27. Components of an energy efficient, dark-sky compliant lighting system – Solar Lighting and Light Fixtures with no up-lighting.



Notes. Figure 26 from *North Common Alleyways Project. Using low impact development to improve Lawrence alleyways*, by Groundwork Lawrence, 2008. Figure 27 from *The Chicago Green Alley Handbook. An Action Guide to Create a Greener, Environmentally Sustainable Chicago*, by the City of Chicago, Department of Transportation, 2010.

High efficiency lighting was installed in Detroit's Green Alley project. This lighting used induction technology, which uses 30% of the energy required for standard street lights while lasting one hundred times longer than incandescent bulbs (Aguilar, 2009). Another efficient lighting option is Tivoli LED lights as used in the Fort Collins Downtown Alley Enhancement project. These lights use less energy than a traditional light bulb and have an extra long life expectancy (Tivoli, 2011).

Benefits of this lighting system would include reducing light pollution; reducing the amount of energy used to light the site, therefore also reducing energy costs; improving safety and security at night, resulting in less opportunities for crime and more opportunities for laneway usage; and, providing an aesthetically pleasing uniformed lighting system. Overall laneways with uniformed lighting systems are more inviting and are conducive to a variety of positive laneway usages such as utility, play, and congregation.

5. Laneway furniture.

Furnishing the laneway depends on the size, structure, and use of the laneway. It is

important to highlight that this strategy may not be appropriate for all laneways due to the narrowness of some laneways. However in wider laneways, furnishing a laneway with benches, tables, and chairs can benefit the community by creating an inviting space for community members to congregate, relax, and get to know one another. Recycled materials can also be used, as some nicely designed cinder blocks can be formed into a temporary sitting area.

Furnishing the laneway with furniture was heavily supported in Baltimore's Alley Gating and Greening toolkit. As many of these laneways are fenced off they do not have to be concerned with allowing for vehicle thoroughfare and storage (see Figure 28 and 29). Recommended are benches, tables, lounge chars, hammocks, and play equipment to encourage residents to use the laneway to interact, relax, and play (Nathanson & Emmet, n.d.). Additionally, the Fort Collins Downtown Alley Enhancement project is implementing customized benches, and 'café' seating areas for visitors of the laneways.

Figure 28 and 29. Laneway Furniture.

Note. From *Alley Gating and Greening Toolkit Baltimore*, by B. Nathanson, and D. Emmet, n.d. Ashoka: Innovators for the Public

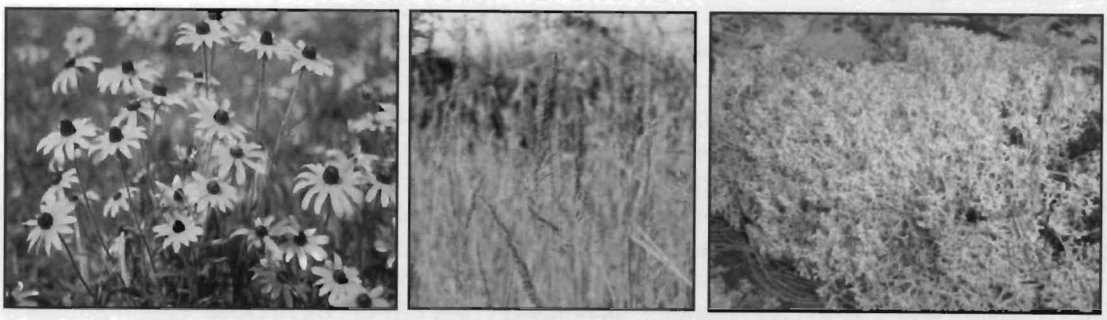
6. Variety of vegetation types and landscaping techniques.

Vegetation Types. By and large native and drought resistant vegetation is promoted for use in the laneways, as it reduces the need for watering, and the maintenance that is required. A

variety of vegetation is appropriate for laneway redevelopment including wildflowers, grasses/sedges, ferns, groundcover, shrubs, vines, and trees.

Wildflowers, grasses/sedges, ferns, and groundcover would do well in planters, and along the sides of the laneways. Some native options for the City of Toronto include Blackeyed susans (Rudbeckia hirta)[2]; Indian grass (Sorghastrum nutans); Ebony spleenwort (Asplenium platyneuron); and, Reindeer moss (Cladina rangiferina) (see Figure 30, 31, and 32). Additionally, a non-native option that is not considered invasive (i.e. it is slow spreading, and does not spread far) and is salt and drought tolerant is, Desert wheatgrass (Agropyron desertorum).

Figure 30 and 31 and 32. Vegetation Types – Blackeyed susans, Indian grass, and Reindeer moss.



Note. From *Native Plant Database*, by Evergreen, 2011.

Additionally, grasses and groundcovers may be used in the surface of the laneway (e.g. in grass pavers) and for this the grass needs to be drought resistant, salt resistant, and compaction resistant. In areas that are regularly trafficked, Grasscrete, a company that designs and installs a grass and paver combination, suggests a mix of 45% creeping red fescue; 5% of Browntop Bent; and 50% of Perennial Ryegrass for regularly trafficked areas (Grasscrete, n.d.).

Shrubs are also suitable for planters and along the sides of the laneways. Serviceberrys, including the Saskatoon serviceberry (Amelanchier alnifolia); Staghorn sumac (Rhus typhina); and a variety of roses (e.g. Common wild rose (Rosa woodsii var. woodsii)) are all native to this region. Vines are also suitable in planters and/or directly next to a fence or wall. Three native options are

the Trumpet creeper (Campsis radicans) and American bittersweet (Celastrus scandens) and Virginia creeper (Parthenocissus quinquefolia).

Finally, trees, while not appropriate in most laneways, can be incorporated into some as long as the select tress remain small. Native species such as Hackberrys (Celtis occidentalis); Redbuds (Cercis Canadensis); and, Dogwoods (e.g. Roundleaf dogwood (Cornus rugosa)) will remain small and are suitable species for the conditions found in laneways.

Landscaping Techniques. There are many creative landscaping techniques that can be incorporated into laneway redevelopments including planters; ground plantings; 'green walls'; and, bio-swales and vegetated swales. Basic planters are a common landscaping technique used in Montreal's Green Lanes program. These planters are a very simple way to add vegetation to the laneway without having to remove any of the paving surface as they can simply be placed on top of the existing surface. Planters can be bought or made out of a variety of things including recycled tires, cinder blocks, and wood. There are also more complex planters that can be installed including infiltration planters and flow-through planters, as outlined in the City of Los Angeles' Green Streets & Green Alleys Design Guidelines Standards (see Figure 33 and 34) (City of Los Angeles, 2009b). Vegetation can also be directly planted into the ground. To ensure survival of these plantings they should be drought, salt, and compaction resistant.

'Green Walls' are good for laneway redevelopment because of the narrow character and limited availability of planting areas in the laneways (see Figure 35). These can be achieved by planting climbing vines close to existing walls, and fences and guiding them toward the desired wall. Officially there are no 'green walls' planted in the case studies that I reviewed, however, I did come across an example of a 'green wall' planted within a laneway in Lawrence, Massachusetts (Groundwork Lawrence, 2008). In this, a modified green wall concept was developed with evergreen climbing vines (e.g. Virginia Creeper) planted along building walls and fences and allowed to grow up the structures (Groundwork Lawrence, 2008). This allowed for an increase in vegetation

within a narrow laneway.

Figure 33 and 34 and 35. Laneway Landscaping Techniques – Infiltration Planter, Flow-through Planter, and 'Green Wall'.

Notes. Figure 33 and 34 from *Green Streets & Green Alleys Design Guidelines Standards. 1st Edition*, by the City of Los Angeles. Sanitation Department of Public Works, 2009. Figure 35 from *North Common Alleyways Project. Using low impact development to improve Lawrence alleyways*, by Groundwork Lawrence, 2008.

Bio-swales and vegetated swales are shallow trenches planted with dense, preferably native, vegetation. Their primary function is to treat stormwater by filtering contaminants and by reducing the speed of the stormwater runoff. The role that these swales would play in laneway redevelopment is limited, as many of the laneways in the City of Toronto would be too narrow for such a landscaping technique. These swales play a large role in the City of Seattle's Natural Drainage System program. They are designed to filter stormwater runoff through biofiltration and reduce the speed of the runoff flow. This has led to an improvement in the quality of the stormwater runoff, and a substantially decrease in the velocity of the runoff from redeveloped sites.

There are a variety of benefits attributable to vegetation and landscaping within laneways including, reducing the urban heat island effect; providing habitat for birds, insects, and wildlife; creating shade; making the laneways more attractive and serene; and, stormwater management including pollution, silt, and debris reduction; reducing the rate and quantity of stormwater entering the sewer system, and recharging groundwater.

Chapter VI: Lessons Learned from Case Studies

In addition to outlining laneway redevelopment techniques, these case studies highlight that regardless of the program's specific objectives, there are common limitations and opportunities that seem to arise when implementing laneway redevelopment programs. Looking at these limitations and opportunities, there are general lessons that can be learned from these case studies that can offer insight into how the City of Toronto could successfully develop its own laneway redevelopment program. Below I will outline the specific lessons learned from reviewing these case studies and highlight some specific examples from within the case studies. The lessons learned are:

1. Cynicism is a major hurdle to be expected.

Overcoming doubt that the program will be successful is a major challenge experienced by many of the laneway redevelopment programs. In implementing Chicago's Green Alleys program, both residents and city employees were doubtful that the green techniques being proposed would actually deliver the potential benefits being promised (e.g. stormwater management). There can also be general cynicism toward the idea that laneways can become beautiful, interesting places, as many residents do not immediately see the potential in these spaces. This was particularly evident in Baltimore's Alley Gating and Greening program as many residents couldn't see past the rat infested and garbage laden laneways that they had behind their homes (Shen, 2006).

2. A well established, multi-dimensional funding plan is vital.

Programs can meet their objectives, but if there is no reliable long-term funding plan in place then the stability of the program is always in jeopardy. This is probably the most important factor in implementing a laneway redevelopment program. This is especially a problem for the Seattle Natural Drainage Systems program because even though it is meeting its primary objective (i.e. reducing stormwater flows), the program's planned future projects are on hold due to the lack of funding

available to support future projects.

Lack of funding can also lead to the cost of many of these programs being the sole responsibility of local residents. In Baltimore's Alley Gating and Greening program, residents currently have to bear the entire cost of the program and/or apply to foundations for funding as there is no financial assistance offered from the City. This lack of funding potentially prevents neighbourhoods dominated by lower-income residents from participating in the program.

Establishing funding sources are very important. Funding can come from a variety of sources including the public (government) sector, private sector, or from the non-profit sector. Many of the case studies acquired funding from a variety of sources. Montreal's Green Lanes program, uses a variety of funding sources, including funding from EcoAction, Environment Canada (public sector); the City's Eco-quartier program (public sector); and resident and/or the local community's contributions (private and/or non-profit sector). There is also an opportunity to obtain a variety of funding sources within one sector. For example, in creating Los Angeles' Green Alleys program's first demonstration project, funds were acquired from a variety of departments within the Government (public sector) as the bulk of the funding came from the California Environmental Protection Agency's Clean Water State Revolving Fund Program while the remainder of the funding came from the local government's Bureau of Sanitation.

3. A well established long-term maintenance plan is essential.

After the initial inception of many of the laneway redevelopment programs, there were often complications in maintaining the redeveloped sites. This was a major problem for the Seattle Natural Drainage Systems program as the City had an informal agreement with the property owners that they would assist in the maintenance of the vegetation on site while the City would maintain drainage, sewage, and other related infrastructure. While some residents continued to up-hold their end of the agreement, many did not.

Another important lesson is that the level of stakeholder commitment needs to be clearly defined. What is expected from each group of stakeholders needs to be outlined and agreed upon to ensure that everyone is on the same page and all maintenance duties are accounted for. To ensure this, the maintenance of Vancouver's Country Lanes program requires shared maintenance responsibilities from laneway residents and the City. Residents are expected to keep up with the daily maintenance of the laneways including watering and weeding, while the City will maintain the 'hard' infrastructure such as the concrete and the grids within the structural grass.

Additionally, often many unexpected issues can arise post redevelopment that require a need for additional maintenance in the laneways. This was a major challenge for the Seattle Clear Alley's program as after the initial inception of the program there were major problems with illegal dumping so the company in charge of the laneway maintenance needed to hire additional employees to monitor these sites.

4. The support of the Municipal (local) Government is invaluable.

Local bureaucracy often slows down the implementation of laneway development programs but many of the programs also attribute a large part of their success to the support and enthusiasm of the local government. Montreal's Green Lanes program was created out of the Eco-quartier program initiative by the City of Montreal to financially support community organizations and residents to aid them in improving their communities through environmental initiatives. With the support of the City, residents have been able to redevelop numerous laneways within their neighbourhoods into dynamic community spaces.

While not all of the laneway redevelopment programs were initiated by the local government, they have been supported by the local government through policy changes. In Baltimore's Alley Gating and Greening program, the success of the program has been strongly attributed to Mayor Sheila Dixon's passing of the Gating and Greening Alleys Ordinance, which allowed for residents to

lease the laneway space around their homes from the City and gate and/or green it. Members of the community and the non-profit group behind the project, the Ashoka Community Greens, recognize that this program would not have been able to prevail without this support by the local government. This outlines the importance of policy directives to support laneway redevelopment programs.

5. Advocate and stakeholder buy-in is crucial.

The involvement of a variety of individuals and organizations is essential to successfully carry out the implementation of a laneway redevelopment program. This can include residents, community organizations, businesses, government employees, local institutions, and non-profit organizations. The business leaders involved in implementing the City of Detroit's first green laneway expressed the invaluable role that building a strong group of supportive community members had in successfully redeveloping their laneway. With the variety of skills that a diversity of individuals and organizations bring to the table, achieving the goal of implementing a laneway redevelopment program is more attainable as diverse individuals and organizations have different expertise to contribute. This can include, but is not limited to, a knowledge of creative funding opportunities, including public funds; expertise in local polices; and, an awareness on how to initiate community mobilization.

Fort Collins' Downtown Alley Enhancement project is supported by a variety of stakeholders. The idea of laneway redevelopment was supported by the City through its Downtown Strategic Plan, (an additional example of municipal support through policy directives) from this the Downtown Development Authority, an organization involved in building public-private investment partnerships to foster social, cultural, and economic growth in the central business district, hired a local design firm to create a master plan for the laneways in the downtown area. The design firm contacted local businesses, City officials, and community members for their feedback on this

project. While these organizations and individuals may not all play a role in the final implementation of the project, this example shows that the involvement of a variety of individuals and organizations throughout some part of the process is beneficial in creating a successful laneway redevelopment program.

6. Measuring the success of the laneway redevelopment program is key.

The importance of measuring the success of the laneway redevelopment project provides an opportunity to garner more support for the program, and outlines any necessary changes that may improve the program. Measuring success of the program can be done in a variety of ways from follow-up questionnaires and surveys of residents, to monitoring programs. Seattle's Natural Drainage System (NDS) program used a monitoring program to show the success of the pilot project. This two year monitoring program showed that the NDS pilot project was successful in meeting its primary objective (i.e. reducing stormwater flows), as it was able to reduce stormwater flows by 99%. This proven success led to the implementation of additional NDS projects.

In Vancouver's Country Lane program response to a follow-up questionnaire expressed that the majority of residents that had installed Country Lanes were happy with their new laneways and pleased with the Country Lane program. Additionally, this questionnaire informed the program leaders as to how much respondents would be willing to pay for this redevelopment compared to conventional asphalt lanes. This information is valuable for garnering more support for the program.

7. The materials used must be affordable and context appropriate.

Although there are many great ideas for laneway redevelopment designs, it is essential that the designs and materials used in the laneway redevelopment programs are within the financial boundaries of the program and are appropriate for the natural environment conditions of the respective city. In implementing Chicago's Green Alley program, the greatest challenge was finding

the necessary materials for the pilot project. At the beginning of the project, there were not any local manufacturers of high albedo and permeable pavements so the City had to hire a company to develop these materials which resulted in a very high fee for the testing of these materials and techniques and labour costs. However, as the program progressed, local suppliers began to produce these materials based on the City's specific needs which drastically reduced the cost of the projects.

All of the laneway redevelopment programs recognize that the materials used in the programs must be suitable to the natural environment of the region. This is predominantly supported by the use of native and/or low maintenance, drought resistance vegetation being implemented in the redevelopments. In the City of Detroit's first green laneway redevelopment, the laneway was planted with over 25 varieties of Michigan native plants, including Serviceberry, Flowering Dogwood, and Black-eyed Susans. These plants require little or no maintenance and will significantly add to the attractiveness of the laneway, while filtering stormwater, and providing habitat for birds and insects.

Chapter VII: City of Toronto's Laneway Redevelopment Program

The lessons learned from the case studies offer insight into how the City of Toronto can develop its own laneway redevelopment program. Reviewing each specific lesson learned, I will outline how the City of Toronto can address each point in an attempt to ensure a smoother introduction and implementation of a potential laneway redevelopment program. Again these points are:

1. Cynicism is a major hurdle to be expected.

In order to reduce the 'push-back' that will inevitably arise from introducing the idea of implementing a laneway redevelopment program, it is first and foremost important to build a portfolio that highlights the 'how-to' and successes of laneway redevelopment programs that are currently underway in many cities across North America. By creating such a portfolio that can be shown to stakeholders, decision makers, and interested individuals, this potential program can be legitimized by outlining exactly what is meant by the concept of 'laneway redevelopment'; highlighting the multiple benefits that result from these programs; and, also garnering feedback and suggestions.

This portfolio can involve a variety of things including presentation materials, a guidebook, and an educational booklet. Depending on the audience it is important to change up the format, as City officials would potentially be more interested in the finer details of the project (e.g. how much it will cost) while community organizations might be more interested in the social benefits that this program could potentially provide to their neighbourhood.

2. A well established, multi-dimensional funding plan is vital.

In order to ensure a successful funding plan for the City of Toronto's laneway redevelopment program it is important to identify all the possible financial resources that may be available. As the City of Toronto's potential laneway redevelopment program focuses on the

multiple benefits of the possible redevelopment strategies of these laneways (i.e. environmental, social, and cultural benefits) there are potentially a variety of funding sources that would be interested in contributing to this program, as it would help to meet a variety of objectives. This funding can come from a variety of sources including, all three levels of government; residents and community groups; local businesses; and non-governmental organizations.

Potential Funding Sources.

- Establish funding within the City of Toronto's budget for the laneway redevelopment program. While other initiatives can all greatly contribute to the development and implementation of a laneway redevelopment program, in order to ensure that the program has long-term funding it is imperative that the City directs some funding from its budget into the program. Investing in the laneway system upfront is a smart investment, as the City will have reduced ongoing maintenance costs down the road.
- Funding Programs and Grants. These programs and grants are very influential in the success of the program and can come from a variety of sources, including businesses, community organizations, and government. A possible grant option includes the Federation of Canadian Municipality's Green Municipal Fund. This program "supports municipal initiatives across Canada that benefit the environment, local economies and quality of life" (FCM, 2010). This program offers both grants and below-market loans to municipal initiatives, as well as, education and training resources (FCM, 2010).
- Establish a local improvement program through the establishment of a Local Improvement Bylaw. The City collects extra tax dollars specifically from residents on a block-by-block basis, but allows these residents to determine how the money is spent. The amount collected depends on the cost of the local improvement project, and the percentage of funding that comes from the assessed property owners and the City will be predetermined

and outlined in the Local Improvement Bylaw. This initiative could help to ensure the potential availability of a laneway redevelopment to all neighbourhoods, regardless of resident's socio-economic status. This is currently being used in the City of Vancouver where residents agree on the local improvement (e.g. Country Lanes), and pass around a petition among landowners that are adjacent to the proposed project. This petition must be signed by at least two-thirds of the owners and they must agree to contribute their share of the extra tax dollars collected to the project. When the majority of the landowners supporting the project, City Council will generally approve funding the project (City of Vancouver, 2010c). Under the City of Vancouver's Charter, the Local Improvement Procedures Bylaw No. 3614 was created and outlines what projects can be constructed and how the costs are divided between the affected owners and the City (City of Vancouver, 2010c). For any project involving a laneway in a residential district, assessed property owners must contribute 70% of the cost while the City must contribute the remaining 30% (City of Vancouver, 2006, section 3.6). For any project involving a laneway in a higher zoned district (i.e. collectively any business and industrial district and any multiple dwelling and local commercial district), assessed property owners must contribute 90% of the cost while the City must contribute the remaining 10% (City of Vancouver, 2006, Section 3.8).

- Partnership Organizations. There are many local organizations (e.g. environmental organizations, residents associations, and local BIA's) that potentially may be interested in laneway redevelopment projects and would be able to contribute funding. Local Community groups would also be able to apply for a variety of funding supporting including the Federal Government's EcoAction Community Funding program. This program is initiated through Environment Canada, and provides financial support to community-based non-profit organizations for projects directed at improving the natural environment (Environment Canada, 2011). Montreal's Green Lanes program is strongly supported by

funding from this program.

- Residents Contributions. Voluntary contributions can be used to accommodate specific request to the redevelopment.
- Resident's Fundraising. Fundraising is a great way to raise awareness of the projects, and can garner support from other members of the community. Fundraising options include silent auctions, raffles, and block-wide garage sales.

3. A well established long-term maintenance plan is essential.

In order to be successful a laneway redevelopment program will have to have a long-term maintenance plan. The case studies show that this maintenance program must involve both employees from the municipal government and community members to be successful. The laneways need to be formally managed by the municipal government to ensure that they are well-maintained, and safe. This can be done by establishing a position within the municipality that personally interacts with the community and helps to ensure that these projects are carried out in the intended way. This individual's responsibilities would include explaining the program to interested individuals and outlining the process as to how to become a part of the laneway redevelopment program. They would also work alongside employees from other related City Divisions, such as Parks, Forestry and Recreation; Transportation Services; and Toronto Water. Beyond that, employees from these divisions would also be responsible for assisting in the implementation of the program and supporting any necessary maintenance that is required and beyond the ability of the community members.

A formal agreement between the City and community members is essential to ensure that the laneways remain safe, well-maintained, and aesthetically pleasing. Behind the success of this program is the community's commitment to maintain the laneways as the City may not have the

means to do so. Therefore, when redesigning the laneway it is important that the redevelopment ideas are primarily within the community's ability to maintain the laneway with assistance from the City. As in many of the case studies, the daily maintenance of the laneways (i.e. watering, weeding, and cleaning) will probably have to be done by community members through volunteer work. However, it is imperative that the City maintain the 'hard' infrastructure including the concrete, drainage, sewage, and other related infrastructure as this is beyond the expertise and financial resources of community members.

The commitment from the City to maintain the 'hard' infrastructure is essential in order to ensure that the laneway development project is equitable as some neighbourhoods do not have individuals with excess wealth and therefore can not afford the funding necessary to sustain the laneway sites on their own. However, daily maintenance work is relatively inexpensive and can be supported by a variety of individuals regardless of their financial means. Ensuring that the community does not feel overwhelmed with their responsibilities for the project will make sure they continue to maintain and value the project.

4. The support of the Municipal (local) Government is invaluable.

The support of the municipal government is essential to the success of the implementation of a laneway redevelopment program within the City of Toronto. The strongest support that the municipality can give to this program is support through its local policies. It is imperative that the City would insert the support of the laneway redevelopment program into the City's planning regime in order to show that the City believes that this is a legitimate program that is valuable due to the many benefits to residents and the natural environment that it can provide.

The first step is to establish broad policy goals into the City's Official Plan that recognize that laneways are currently an underutilized resource that have the potential to be redeveloped to yield multiple cultural, social, and environmental benefits. Currently the word 'laneway' is only mentioned

four times in the City's OP (City of Toronto, 2006). The few times that they are mentioned they are in reference to making better use of off-street parking (Section 2-27, Policy 5b), and the rest of the time they are refereed to simply because they are a thoroughfare (City of Toronto, 2006). This needs to be changed to support the idea of laneways as semi-public spaces with the potential to be redeveloped into vibrant, community spaces that also support the natural environment.

Support of a potential laneway redevelopment program in the City of Toronto can be greatly supported through policy directives within the OP, as outlined in some of the case studies reviewed (e.g. Baltimore's Alley Gating and Greening program and the Fort Collins Downtown Alley Enhancement project). For example these directives can support the use of the laneways for potential areas of enhanced pedestrian and active forms of transportation connections; increased vegetation and urban biodiversity; and improved community spaces.

The second way that the municipal government can show support of the laneway redevelopment program is to provide funding; an employee(s); and by incorporating the laneway redevelopment program into existing City departments and programs. This can include the integration into the City's Parks, Forestry and Recreation budget, the Transportation Services street maintenance and upgrade budgets; and Toronto Waters sewer repair budget. While there is limited funding available and finding budget funding in the City of Toronto at the moment would be extremely difficult, the benefits that this laneway redevelopment program would contribute to these divisions would be worth a small percentage of their operating budgets. This would ensure that the planning, design, and maintenance efforts of these redevelopment projects is ingrained in a variety of the City's divisions, thus preventing the potential for the loss of funding for the program.

The City also needs to provide specific laneway redevelopment design guidelines to ensure that only acceptable methods and techniques are being implemented in the redevelopment projects and to simplify the process for all interested individuals and organizations. Finally, the City must show that it is open to working with all members of the community in developing these laneway

redevelopment projects. The City, along with other major stakeholders, should hold charrettes, information sessions, and training opportunities to ensure that community members and organizations fully understand the laneway redevelopment program and are aware of the vital role that they can potentially play in its success (among other things).

5. Advocate and stakeholder buy-in is crucial.

The involvement of a variety of individuals and organizations is essential to successfully carry out the implementation of a laneway redevelopment program. In order to ensure success, the program needs the support of community members, and municipal staff. However, beyond that advocates and stakeholders consisting of community organizations, businesses, local institutions, and non-profits is essential to support the continued success of the redevelopment project.

When a wide variety of individuals and organizations are involved there are many resources and talents that are available to ensure the success of the laneway projects. This can include the support of environmental organizations (e.g. Evergreen) that have expertise in garnering support and funding, while also having the knowledge of what vegetation is best suited for the laneways. It can also include local institutions (e.g. Ryerson University) where students can be involved with things like sociological surveys which can help garner a clearer understanding of how residents would like to see their laneways redeveloped. Additionally, city-wide organizations and umbrella groups (e.g. the Toronto Community Foundation) are also beneficial as they have many connections and are often very familiar with City policy.

The importance of community involvement in the potential laneway redevelopment program within the City of Toronto can not be stressed enough. Community members are essential throughout the entire process from funding, designing, and maintenance. Without community buy-in and active participation the laneway redevelopment program is not likely to succeed. In relation to this, the role of the municipal government is also equally important as the two stakeholders must

work with one another to ensure success. The role that the municipal government must play is defined by the support that they give the laneway redevelopment program through its local policies within the City's planning regime. Beyond supporting the initiative through these policy directives (and possibly bylaws), the City must support the objectives of the initiative through reports, and design guidelines, while also providing funding, education, and training opportunities to interested individuals and organizations. Together the City and the community members must operate as a team to ensure successful implementation of the program.

6. Measuring the success of the laneway redevelopment program is key.

In order to ensure the long-term success of the program it is very important that the benefits that are being promoted as a result of the implementation of the program can be measured. In each case study that I reviewed the importance of evaluating the benefits of the projects was crucial to maintaining and expanding the program. There are a variety of ways that the success of the program can be measured including, scientific tests such as measuring the velocity and amount of stormwater runoff before and after redevelopment. City employees or environmental community organizations that have experience in monitoring environmental systems can perform these tests. Additional before and after scientific tests that can be measured include the albedo of the site (i.e. the heat being produced on site); and the number of and species of wildlife, including birds, and insects found on site.

Additional ways of measuring the success of the laneway redevelopment project is to survey and/or interview residents that are adjacent to the laneways to get a sense of their views on the project and also to see if the way they use the laneway has changed. This should also be done before and after the redevelopment to ensure that the changes in the laneway actually have something to do with the potential behaviour change. Questions should revolve around the resident's perception of the laneway; the uses of the laneway; and, whether or not residents feel like

the redevelopment project has the potential/is successful in meeting their expectations.

7. The materials used must be affordable and context appropriate.

In order to ensure that the laneways are redeveloped in an appropriate way, urban design guidelines need to be created by the City. The creation of these guidelines would help to ensure that only acceptable methods and techniques are being used and will help to simplify the process for all interested individuals and organizations. These design guidelines would, highlight the appropriate paving and surface materials; recommend suitable vegetation techniques and types; provide information on the latest lighting technologies; and overall provide best practices for the redesign of the laneways. These design guidelines would also create a typology that outlines the differences between certain laneways and the resulting suitability of certain redevelopment techniques for redevelopment (e.g. narrow laneways are greatly limited in applying planters and ground plantings but may be appropriate for 'green walls').

Additionally, a list of local and regional suppliers of materials should be developed to ensure that the City of Toronto and community members have access to affordable and quality projects. For example, quality native plants; non-native plants that support environment benefits; and, eco-friendly tools are available from the Evergreen Gardens (Evergreen, 2011).

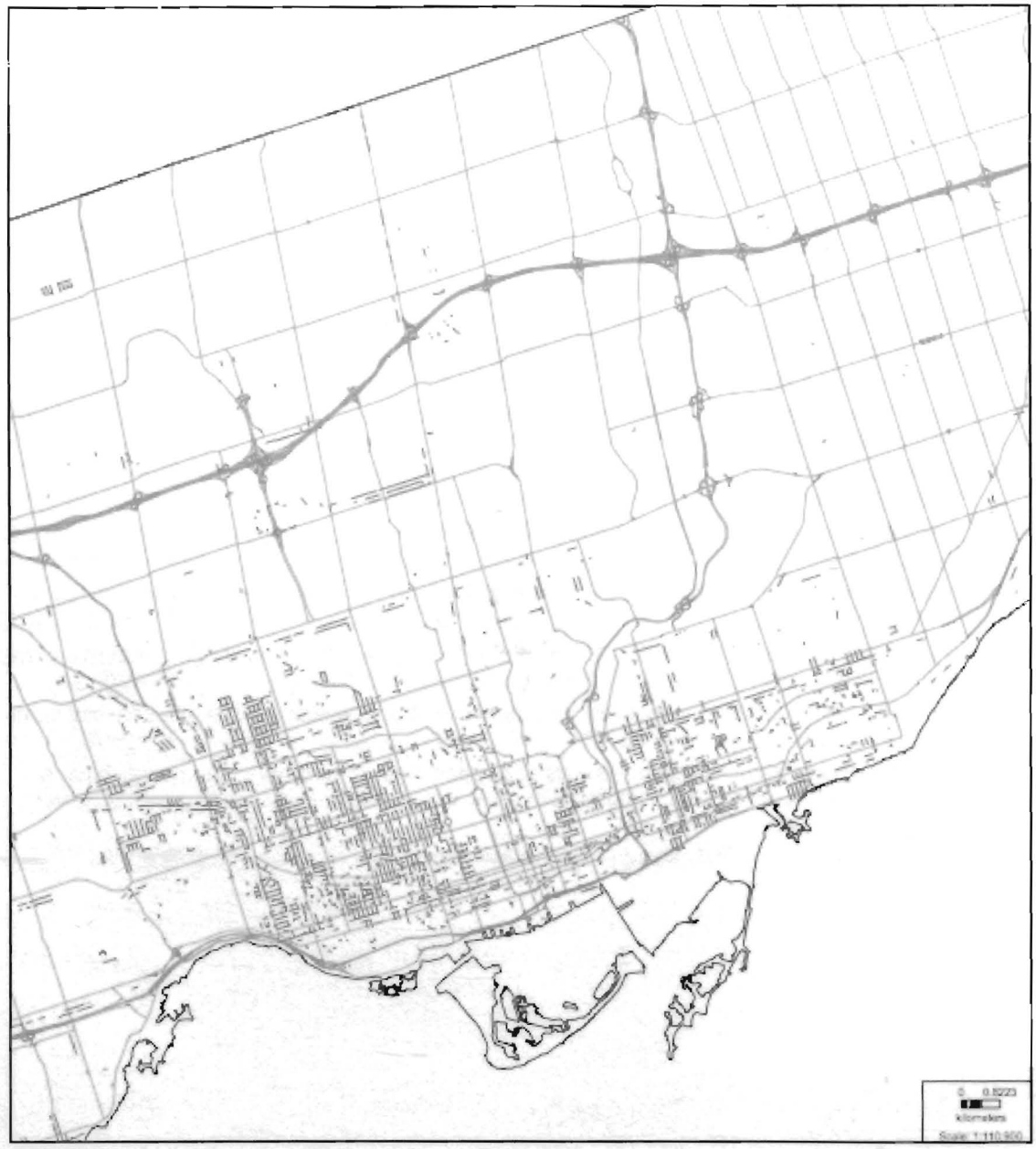
Chapter VIII: Conclusion

In offering suggestions on possible laneway redevelopment techniques and advice on how to address some of the complicated issues that may arise in proposing a potential laneway redevelopment program in the City of Toronto, I am not attempting to prescribe a formula as to how I think the City's laneways should be redeveloped. Rather, I am simply attempting to highlight some of the successful laneway redevelopment techniques that may be appropriate for use within the City's laneway system while offering advice that may allow for a smother implementation experience of a potential laneway redevelopment program within the City of Toronto.

Looking at the case studies of North American examples of laneway redevelopment programs and projects it is possible to see that there are many creative ways to transform this often-drab space into vibrant spaces that can benefit the natural environment and the local community. In this report it was my intention to highlight these many creative laneway redevelopments in order to outline the potential value behind the City of Toronto's laneway system. I am hoping that this current misused resource will begin to be viewed for its potential to be redeveloped into a successful semi-public space that people enjoy being in, view as accessible and comfortable, and overall have a positive image of.

Appendix A

City of Toronto Public Laneway System



City of Toronto Municipal Boundary

Major Roads and Highways

Laneways

Appendix B

City of Toronto Public Laneway System

– Toronto and East York Community Council Areas

City of Toronto Municipal Boundary

Major Roads and Highways

Laneways

Endnotes

[1] For access to the City of Toronto's Staff Report on the perceived complications with implementing laneway housing within the City see:

http://www.toronto.ca/legdocs/2006/agendas/committees/wks/wks060705/it007b.pdf

[2] Unless otherwise stated the vegetation ideas suggested for the City of Toronto were acquired using the Native Plant Database from Evergreen which provides information on native vegetation for all regions of Canada. The database is available from: http://nativeplants.evergreen.ca/

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