Integrating Brownfields Funding and Collaborative Reuse Planning

Improving Ottawa's Brownfields Redevelopment Program

Supervised Research Project Report
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Submitted by: May Pham
Supervised by: Dr. David Brown
School of Urban Planning
McGill University
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ABSTRACT

Barriers to brownfields redevelopment are more than just liability risks and financial impediments; there are planning challenges as well. To leverage the opportunities of brownfields, municipalities must offer more than financial assistance to private developers. The purpose of this paper is to demonstrate how municipalities can improve their brownfields programs by integrating incentive programs with community-involved reuse planning. Specifically, Ottawa's Brownfields Redevelopment Program has the potential to help transform brownfields into community assets, but it must adapt to its unique planning context to be valuable to the private sector while also supporting the public interest.

From an overview of brownfields issues to a focused look at the local planning environment, the author analyses the complexity of redevelopment by reviewing general issues surrounding brownfields as well as brownfields legislation and policies. The purpose is to gain an understanding of the roles and concerns of brownfield stakeholders before analysing how the City of Ottawa has attempted to address these issues through its local program.

To make Ottawa's Brownfields Redevelopment Program more effective in planning matters, the author offers a framework for collaborative reuse planning. While collaborative practices must adapt to the issues of a particular project, the author presents common process and design considerations as well as topics that require consensus and stakeholder collaboration.

Aside from financial incentives, municipalities should consider offering their expertise on community facilitation to support brownfields projects. As concern over greenfield development rises, brownfield reuse planning will become increasingly important to local economies and the sustainable growth of cities.

RÉSUMÉ

Les obstacles au réaménagement des friches industrielles [1] engendrent plus que des enjeux financiers et des responsabilités légales; ils représentent de réels défis en matière de développement. Afin de profiter pleinement des opportunités rattachées aux friches industrielles, les municipalités doivent offrir plus que des incitatifs financiers aux promoteurs. L'objectif de cet écrit est de présenter certaines mesures qui peuvent prendre les municipalités afin d'améliorer leurs programmes de sites contaminées, incluant par l'intégration de programmes incitatifs et d'une approche communautaire en matière de redéveloppement planifié. Le Programme de réaménagement des friches industrielles de la ville d'Ottawa a le potentiel de transformer les sites contaminés en joyaux communautaires, mais il se doit d'être adapté au contexte unique du redéveloppement afin de pleinement profiter au secteur privé tout en supportant l'intérêt publique.

En offrant un sommaire des enjeux affectant les friches industrielles et une perspective approfondie de l'état du développement local, l'auteur se penche sur les obstacles du redéveloppement en discutant de sa complexité et en examinant les lois, règlements et politiques dans la matière. L'objectif de cette analyse est de comprendre les rôles, responsabilités et inquiétudes des parties concernées par les friches industrielles. Enfin, l'auteur examine la façon dont la ville d'Ottawa a choisi d'adresser ces enjeux par le biais de son programme local.

Afin d'améliorer le Programme de réaménagement des friches industrielles de la ville d'Ottawa en ce qui se rapporte au développement, l'auteur présente un cadre détaillé visant le redéveloppement collaboratif. Tout en reconnaissant que cette pratique doit être adaptée aux enjeux d'un projet particulier, l'auteur présente des processus et designs communs, ainsi que des questions qui requièrent consensus et collaboration parmi diverses parties-prenantes.

Au-delà d'incitatifs fiscaux, les municipalités se doivent de considérer d'offrir leur expertise en matière de facilitation communautaire afin de supporter les projets de réaménagement de friches industrielles. Avec une ambivalence croissante envers le développement des terres vierges, la réhabilitation des sites urbains contaminés deviendra de plus en plus importante pour la croissance durable des villes et pour les économies locales.

[1] Aussi connus sous le nom de Sites urbains contaminés réhabilitables

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TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

Within a few decades, brownfield redevelopment has grown from its roots in the environmental movement to an evolving market-driven industry that has caught the attention of private developers. While the remediation process has the greatest environmental impact, planning considerations like height, density, setback and end-use have the greatest impact on communities and the local economy. With this in mind, local governments must be prepared to anticipate challenges while providing support and guidance to private developers in the redevelopment process.

In Canada, governments largely play a regulatory role in the brownfield redevelopment process. The brownfield industry is led by the private sector while the public sector offers financial incentives to help minimize the costs and risks of redevelopment (De Sousa, 2008). Unfortunately, the redevelopment programs of many municipalities are disconnected from the planning process. Financial incentives, which are primarily funded by tax dollars, are distributed depending on the extent of the costs and the merit of the applicant regardless of how it is perceived by the community. Many brownfields programs are basically financial assistance to help remove the cost of clean-up without addressing the planning issues related to redevelopment and reuse.

Consequently, governments are forced to compromise between encouraging redevelopment activities that boost local economic growth and protecting the interests of communities. While private developers may need financial incentives to help make brownfield projects more feasible and attractive, cleaning-up the past should not be done at the cost of poorer future planning. It is the author's position that brownfields programs must be more strongly integrated with neighbourhood planning.

RESEARCH PURPOSE AND OBJECTIVES

The purpose of this paper is to improve the City of Ottawa's Brownfields Redevelopment Program by highlighting the opportunity to integrate financial incentive programs with community-involved reuse planning. Brownfield properties are more than just environmental problems that need clean-up: they are social and economic opportunities. By bridging the gap

between remediation support and reuse planning, municipalities like Ottawa can truly encourage sustainable environments which are built with societal, economic, environmental and cultural considerations in mind. From a broad overview to a specific understanding of local brownfields issues, the following research objectives have been established:

- to understand the general complexity of the brownfield redevelopment process from the perspective of different stakeholders;
- to outline the planning-related decisions of the redevelopment process and their importance;
- to review the brownfields policies and regulatory frameworks of federal, provincial and municipal governments–specifically as they apply to Ottawa; and
- to provide recommendations to help connect brownfield issues with neighbourhood planning.

It is anticipated that this paper will be of interest to future policy-makers and planners, public representatives, the private sector and not-for-profit organisations, as well as residents who are affected by brownfield properties. It is important to acknowledge that while the paper is written with a Canadian context in mind, specifically for the City of Ottawa, the research conducted can apply to many municipalities which are now experiencing a heightened interest in improving their brownfields programs.

The author believes that while brownfields programs have improved significantly to help support redevelopment projects, they must be integrated with the planning process to become more than just financial incentives. Considering the potential of brownfield properties to rejuvenate communities and stimulate economic interest, a comprehensive brownfield program should ensure that the reuse of brownfield properties are aligned with the vision and needs of the surrounding community.

To arrive at a means of integrating community stakeholders with the brownfields redevelopment process, the author believes it is necessary to begin by understanding the broad issues surrounding brownfield redevelopment and gradually focusing on the brownfields problem in the City of Ottawa. This includes defining brownfields for the purposes of this paper, outlining the principles and foundations of redevelopment, and introducing the motivations for redevelopment from the perspective of

different stakeholders–which are not mutually exclusive. The intention is to give the reader an overview of the foundations and principles that drive brownfield redevelopment.

Subsequently, the author presents two sides of the brownfields issue: the technical challenges of redevelopment and the reuse planning challenges. The former topic is meant to give readers an understanding of the complexity of brownfield redevelopment and help explain why private developers may require financial support for such projects. The latter topic focuses on the planning issues surrounding brownfield redevelopment–which are often overlooked by municipal brownfields programs. The intention is to demonstrate the importance of integrating these two aspects of brownfields redevelopment in order to improve local brownfields programs.

Once the broad challenges and issues of brownfields are presented, the author introduces the brownfields environment specifically in the City of Ottawa. This involves an understanding of the local planning context, the government legislation and policies in place to regulate brownfields redevelopment, and a critique of the brownfields situation in Ottawa. The intention is to understand how the city has approached the local brownfields problem, and identify strengths and weaknesses of the program.

Having identified the main limitation of Ottawa's Brownfields Redevelopment Program, the author emphasizes how consensus-based reuse planning can be integrated with the brownfield program. This final section demonstrates how complex problems in the redevelopment process can be mitigated through proactive collaborative practices. The intention is to provide a framework for collaboration that can be customised to local brownfields situations.

CHAPTER 2: METHODOLOGY

While the problems of brownfields and the benefits of their redevelopment are fairly widespread, brownfield programs must adapt to their local environments. The aim of this paper is to show that while the financial support of brownfields programs are necessary, they require better integration with neighbourhood plans in order to be effective and successful. To show where the

redevelopment process can improve, it is important to understand the redevelopment environment in a certain context.

In Canada, the responsibility of redevelopment has shifted into the hands of the private sector while federal, provincial and municipal governments outline clean-up standards and provide local financial support. Since brownfields are physical and financial burdens on cities because of their destitute condition, local governments play the greatest role in encouraging their redevelopment. With the intention of demonstrating how local governments can improve their redevelopment programs, the regulatory environment for brownfields in the City of Ottawa is the focus of this project.

Secondary Research

The first task is to gain a clear understanding of the brownfield redevelopment process. This involves learning the basic definition of brownfields, the evolution of the brownfields problem, and why redevelopment is necessary. The main sources of information for this research are books and reputable online sources related to brownfield redevelopment. Since the brownfield industry is more mature in the United States–where the pattern of de-industrialization is more apparent–the majority of available materials are based on an American perspective. Nonetheless, the issues and challenges are transferable to a Canadian context. While there are several more recent publications on brownfields, the use of more dated articles provides a sense of the evolution of brownfields problem.

To understand how brownfield properties are actually redeveloped from beginning to end, online sources are used. There are several websites that are either government funded or association-based which provide support for such projects through the sharing of toolkits and best practices. These online sources are particularly helpful for this topic since they are regularly updated. In addition, the support and useful information provided on these websites are revealing of where the private sector's interests and concerns are. The presence of private firms advertising and sponsoring particular websites is helpful in showing the extent of private stakeholders–from law firms to environmental engineering consultants–that are actively part of the brownfield redevelopment process.

In addition, to gain a better understanding of neighbourhood planning and how it can be incorporated into end-use decision-making, secondary sources are used to research consensus-based planning. This includes academic articles on collaborative planning in complex stakeholder environments as well as books on the topic. The purpose is to identify how such participative practices can help improve the outcome of brownfield redevelopment projects.

Review of Policies and Regulatory Frameworks

It is important to understand the impact and role of governments in regulating how private developers redevelop brownfield properties. This involves understanding how the roles of government correspond to one another to support redevelopment, the legislation related to brownfields and how incentive programs are actually administered at a local level. The majority of information on current government frameworks–including federal, provincial and municipal regulation–is retrieved from online government-related sources such as: the Ontario Ministry of Municipal Affairs, the Ontario Ministry of the Environment, the Ontario Centre for Environmental Technology Advancement, the Federal of Canadian Municipalities, and the City of Ottawa. In addition, secondary sources like books and online professional articles are used as commentary on the actual success and challenges of these policies and programs.

Gathering and summarising information through secondary or existing sources in literature and online websites serves as a means of gaining a comprehensive understanding of the brownfield redevelopment process. It is important to understand the broad issues facing brownfield redevelopment in order to justify the need to focus on end-use planning. Gaining a thorough understanding of the evolution of the redevelopment field enables the author to demonstrate how it has developed and anticipate how legislation, policies and programs can improve in the future.

Primary Research

To further help demonstrate the importance of linking brownfields to planning issues, the author has chosen to conduct one-on-one interviews with key stakeholders with expertise and professional experience that is relevant to the brownfield redevelopment process in the City of Ottawa. Two participants

were interviewed based on their experience and knowledge of Ottawa's Brownfields Redevelopment Community Improvement Plan (CIP) Program and the Federal government's Green Municipal Fund.

In a semi-structured interview lasting 45 minutes to an hour, participants were asked to share their knowledge, experience and professional opinions on the general brownfield redevelopment process, the current programs and funding available, as well as their experience with public participation in brownfield projects (see Appendix A for Interview Guide). The previous sources of secondary information help to inform the author of the situation and complications surrounding the brownfield redevelopment industry; this knowledge is essential in order to conduct effective interviews. Interviews with professionals help validate arguments and research while providing constructive feedback.

Ethical Considerations

Since human participants were involved in this research, a review conducted by McGill University's Research Ethics Board-I was mandatory (see Appendix B for Ethics Approval). Interviewees were recruited by email or telephone. Both in-person and telephone interviews received prior written consent.

During the course of the interviews, an electronic audio recording device was used with the participants' awareness and written permission. Handheld notes were taken throughout the interviews. Participants could choose to refuse to respond to any particular question and the level of confidentiality in their responses was at their discretion. Participants were reassured that any information gathered would only be used for this project and all information collected during the interviews would be stored by the author for up to two years. Individual names and titles do not appear in this project unless the participants permitted the researcher to do so. Interviewees were aware that their participation was voluntary and that there was no compensation. All participants were verbally thanked for their participation.

LIMITATIONS

Overall, three limitations affecting this research have been identified. Firstly, the research undertaken during the course of this project is restricted by the author's access to information and funding. Books and articles were limited to those available from

McGill University's libraries and only English written materials were used. Since the brownfields are more prominent problems in the United States, all books were actually published in the United States with only a few books referring specifically to Canadian cases. Nevertheless, due to the increasing convergence of issues and policies on brownfields, general information on brownfields and their influences is considered relevant to the Canadian context as well.

Secondly, the primary research involved conducting only two interviews. This is due to time and funding limitations. While almost a dozen potential interviewees were contacted, only two interviews were conducted–although they were very informative. Many people declined to be interviewed due to time constraints and their reluctance to discuss projects at the time. It was apparent that the private sector does not have significant experience or expertise in brownfields projects in the City of Ottawa, which was also confirmed by the interviews.

While the interviews were guided by questions that were already prepared, there was room for deviation. Participants were encouraged to expand on different areas depending on their experience and level of expertise. This enabled the interview process to be more organic and put participants at ease, but it also resulted in responses that could not be compared to those of other participants for their accuracy. For that reason, responses are indicated as the opinions of a particular participant rather than general conclusions. They nonetheless provide insight into the many issues surrounding brownfield redevelopment process from different perspectives.

Thirdly, the author has chosen the City of Ottawa as the basis for information on municipal brownfield programs and expert opinions. While the City of Ottawa has a brownfields program, it is not recognised in literature as a leading Canadian city on this issue–as explained by interviewees, it in fact has a unique brownfield environment. Other jurisdictions are more acknowledged, such as the City of Hamilton due to its large manufacturing industries and the City of Toronto for its efforts on waterfront rehabilitation. While brownfields legislation and programs have begun to converge, particularly with cities following provincial legislation and policies, there are differences in program implementation. Consequently, while this limits the amount of secondary information on brownfields in the city and

perhaps even the degree of expertise in the field, it also demonstrates a greater opportunity to improve the brownfields program in Ottawa.

The reason why the City of Ottawa was chosen for this project was due to the author's personal familiarity with the city and professional networks, thus facilitating the solicitation of participants. In addition, Ottawa's proximity to Montreal simplified scheduling and travelling for interviews. The selection of the City of Ottawa was also personally motivated as the author wanted to learn more about the brownfield situation in the city and how it could be improved.

CHAPTER 3: FOUNDATIONS AND REASONS FOR REDEVELOPMENT

To recognize the importance of improving the brownfield redevelopment process, and specifically the need for its integration with reuse planning, it is essential to understand the underlying principles that prompted the attention on brownfields and the reasons that now motivate redevelopment. Over the years, brownfield redevelopment has evolved from a largely environmental cause to an economic one as well; this has resulted in both positive and negative outcomes. In order to help brownfield proponents move forward and improve the process, it is important to recognize how these causes can be consolidated. The following section will provide an overview of:

- brownfields and their defined characteristics;
- the relation between environmental and sustainability principles and brownfield redevelopment; and
- the motivations for the reuse of brownfields.

DEFINING BROWNFIELDS

While brownfield properties have been around since the deindustrialization era, it is only within the last decade that a momentum–particularly supported by the environmental and sustainability movement–to encourage and assist redevelopment has made brownfields more recognised in Canada. While countries have defined brownfield properties in varying ways, the definition most attributed to these sites is from the National Round Table on the Environmental and the Economy (NRTEE):

> Brownfields are a legacy of a century of industrialization– they are abandoned, idle or underutilized commercial or industrial properties where past actions have caused known or suspected environmental contamination, but where there is an active potential for redevelopment (NRTEE, 2003, p.10).

Brownfields and other adaptive reuse properties are often referred to as "hidden assets" due to their often forgotten or derelict condition that hides their economic potential. The important aspect to keep in mind is that not all contaminated properties are brownfields. It has been suggested by some experts that up to 30 percent of brownfield sites are actually uncontaminated or have insignificant traces upon investigation (British Columbia MOE, 2007). Several properties are simply identified or perceived as brownfields because of their previous use. In reality however, they actually have few barriers to redevelopment and can offer significant social and economic returns. The reason for this is often due to their favourable location nearby the downtown area or along the waterfront (Ontario MMAH, 2007). In particular, larger brownfields in attractive locations are often economically viable for development despite contamination.

However, while all brownfields have potential in some way or another, some have fewer complications than others and thus greater opportunity. Consequently, although brownfields range in type, size and location, they are classified by the National Round Table on the Environmental and the Economy based on their likelihood of redevelopment. The top tier of brownfields (15 to 20 percent of sites) have potential market values which significantly exceed their remediation costs, their redevelopment is market-driven (i.e. adequate return on investment is expected), sites are not left idle for long, and remediation requires minimal financial support.

The middle tier of brownfields (60 to 70 percent of sites) generally involves more expensive remediation techniques but their potential for redevelopment is high. In these cases, the market value of the remediated land is similar to the combined cost of the contaminated land and clean-up expenses. In addition, these sites have access to essential infrastructure like transportation and municipal services, which make their

redevelopment particularly attractive for proponents. However, due to the up-front costs, these brownfield projects may require financial incentives in order to be more attractive. As such, this tier is considered the most attractive for redevelopment support and is often the focus of government financial incentives.

The bottom tier of brownfields (15 to 20 percent of sites) has clean-up costs which exceed their market value even after remediation. In such instances, market interest is low due to remediation costs and uncertainty. Moreover, since these brownfields are often in unattractive locations and are marginal in size, they have no reasonable redevelopment prospects, particularly by private developers.

The inventory of brownfield sites fluctuates considerably. This is due to the relatively new process of keeping a national list of these brownfields, the challenge of consolidating publicly and privately owned properties, as well as the fact that several brownfield property owners do not want to be identified. For landowners, surrounding property owners and politicians, having properties that are recognized as brownfields can result in a negative perception that can lower property values, divert funds and consume time while creating potentially unwarranted neighbourhood concerns. Furthermore, having a list of brownfield sites can make a city look worse-off than other cities that may have the same or a greater number of brownfields, but chooses not to publicize this information (Simons, 1998). Nonetheless, it is estimated that 2,900 to 30,000 potentially contaminated sites exist in Canada (De Sousa, 2008); however, the number of sites is not as important as what is being done to encourage their redevelopment for appropriate reuses.

Foundations of Redevelopment

To understand the holistic importance and potential of brownfield redevelopment, it is essential to appreciate its foundations and similarities to the environmental and sustainable development movements. As is the nature of social, political and scientific movements, the dates and membership of movements evolve over time. Nevertheless, many recognize the environmental movement was truly launched in the late 1950s and 1960s when the extent of environmental degradation caused by humans was made more publicly aware.

While the environmental movement is broad in scope and the term is used to support several causes, the common underlying motivation was to draw attention to the growing threats to humanity and the environment. This was largely from pressures on natural resources and the environment due to human activities. From causes like environmental conservation and environmental justice, the concept of remediation was introduced.

In North America, environmental pollution was first nationally addressed by the United States in 1970 with the establishment of the Council on Environmental Quality and the United States Environmental Protection Agency (EPA). The overall purpose was to ensure that all Federal agencies consider the effects of their actions on the quality of the environment. However, it became apparent that private actions from manufacturing and other heavy industries were also damaging the environment.

Many larger vacant sites are the result of de-industrialization. Over the years, traditional manufacturing moved to the periphery of cities where there were more affordable land and transportation infrastructure. Consequently, this decentralisation resulted in large abandoned and obsolete industrial sites nearby the urban core (McCarthy, 2002). The proximity of these contaminated sites to large populations was a significant concern, particularly for those that released hazardous substances.

The Love Canal Incident

A highly publicised human health and environmental emergency where hazardous waste from a private landfill leaked toxic chemicals into a surrounding neighbourhood in Niagara, New York. It is partially responsible for the creation of the Superfund, which helps finance the remediation of hazardous sites (US EPA, 2010).

Consequently, in 1980, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted in the United States Congress. The purpose of CERCLA, commonly known as the Superfund, was to clean-up abandoned or uncontrolled hazardous waste sites, such the Love Canal incident, through liability taxes on persons responsible for releasing the hazardous waste (US EPA, 2011a). While CERCLA

was well-intentioned, it was flawed in practice due to its punitive liability scheme. Since responsible parties were held jointly and severally liable for cleaning-up, they were often tied down with cost recovery litigation rather than redevelopment. Regardless, it is important to realize that from this initiative, the problems of privately-held contaminated properties were being noticed largely from an environmental and health perspective.

Brownfields are distinguished from Superfund sites because they do not impose severe risk to human health or the environment (US EPA, 2011b). It was only until the early 1990s, that the EPA's Brownfields Program began to address brownfield sites. While owners of hazardous Superfund sites are forced to remediate due to their immediate threats, owners of brownfield sites are encouraged to voluntarily clean-up to realise economic opportunities. Similarly, Canadian governments–while trailing behind the United States in brownfields legislation–are now also addressing brownfield sites and encouraging their redevelopment from an economic growth perspective.

Though sustainable development practices and brownfield reuse issues surfaced in the United States at around the same time (Beriatos and Brebbia, 2008), sustainable development gained more immediate public attention, arguably due to its larger scope and more positive outlook. Once again, while the term sustainable development takes on several meanings and causes, it is perhaps most well-known as it means, "meeting the needs of the present without compromising the ability of future generations to meet their own needs…" (United Nations, 1987). Relatedly, brownfield redevelopment projects–with its potential to recycle land and buildings, implement green technologies, create jobs, and provide community amenities among others–supports several key principles of sustainable development regarding the environment, economy and society.

As demonstrated, the idea of brownfield redevelopment was environmentally motivated. Concerns of environmental health and sustainability were the driving forces behind remediation efforts and redevelopment projects. However, that is no longer the case today. Over the past decade, experience in redevelopment projects, improvements in technology remediation methods, as well as standardisation and financial incentives, have made brownfield redevelopment projects

attractive as a real economic opportunities as well. This has resulted in greater interest from the private sector.

Practical Reasons for Redevelopment

The transition from expansion or new development to brownfield renewal as a main source of growth is imperative to the sustainability of neighbourhoods and cities. This process cannot be done alone. Brownfield redevelopment requires strong collaboration between cities, developers and communities in order to realise economic and social opportunities. Moreover, it is important to recognize that these are finite opportunities. The potential for redevelopment decreases as brownfields are left to deteriorate. Consequently, the following are practical reasons for timely brownfield redevelopment.

Surrounding Communities

Brownfields, while they may be forgotten, have significant social and economic influences on their surrounding communities. Left idle, brownfields make neighbourhoods look desolate and can discourage personal investment in residential properties (Mallach, 2006). Due to their forsaken appearance, residents experience a decreased sense of place which can affect their quality of life. In addition, since brownfield sites are often boarded up or fenced off, they can attract vices and illegal activities such as prostitution, drug dealing and trashing dumping (Greenstein and Sungu-Eryilmaz, 2004) which can severely demoralise neighbourhoods and also raise the risk of fire. However, whether brownfields are actually contaminated or whether they actually attract illegal activities is only part of the problem.

A significant problem is that brownfields stigmatize surrounding neighbourhoods, a perception that may be much more damaging than the sites themselves (De Sousa, 2008; Simons, 1998). In terms of brownfield properties, stigma is defined as, "the loss in property value resulting from a property's bad reputation from being or having once been defective, beyond the clean-up cost or beyond the value of health and environmental harm caused by the pollution." (Carroll and Eger III, 2006: 458). Moreover, not only are brownfields themselves stigmatized, but also surrounding properties due to their proximity to the site. So both property value and demand decrease. Consequently, the identification of properties as brownfields is often negatively viewed by property owners and local politicians because it can make the perception

of neighbourhoods worse-off than they really are. As such, the redevelopment of brownfields can help to increase the property values of both the brownfield site as well as residential and commercial properties nearby.

Brownfield redevelopment can have a significant impact on affected communities by reducing uncertainties and risk, thus allowing the attributes of communities to be recognized rather than the stigma. Relatedly, aesthetic improvements can go a long way in removing negative perceptions of a neighbourhood, and this in turn helps boost community pride and encourage investment (De Sousa, 2006). And brownfields that are located in accessible areas have the opportunity to be reused for the benefit of locals, such as a community centre. Finally, the reuse of buildings rather than new development can help minimize disruptions to surrounding communities by reducing noise, construction pollution as well as other nuisances (Laefer and Manke, 2008). While the benefits of brownfield redevelopment are often researched from the perspective of cities and private stakeholders, affected communities and residents can also benefit significantly from their restoration.

This is particularly true when issues of social equity and environmental justice are considered. While it is not always the case, it has been documented in the United States that brownfield sites are often in neighbourhoods of poorer populations and visible minorities (Heberle and Wernstedt, 2006). While it may not be intentional, the economic activities that have generated wealth in the past have resulted in significant inequities in health and quality of life for the urban poor.

City and Public Welfare

In the last decade, brownfield redevelopment has attracted considerable attention, both due to concern over public welfare and opportunity. In particular, larger brownfields located in the urban core pose a greater risk to humans due to their good location–often nearby the central district, waterfront or major retail–but this also makes them especially attractive for redevelopment (McCarthy, 2002). Many of the environmental, social and economic repercussions of brownfields on affected communities are shared by the municipality as well, but from a different perspective.

Save Ottawa's Greenbelt (Mueller, 2010)

From an environmental perspective, redevelopment can help support provincial and municipal policies. For example, reuse of brownfields can result in the reduction of urban sprawl and its pressures on undeveloped land. This is particularly significant in cities like Ottawa where there are increasing pressures to develop parts of its greenbelt (Keenan and Smokin, 2007). Furthermore, public benefits associated with brownfield redevelopment include increased health and safety, reduced risk of groundwater contamination, protection and recycling of soil resources, and the revitalisation of landscapes and natural areas with ecological value (De Sousa, 2008). While the general environmental reasons to redevelop will be discussed later, these public benefits represent the responsibilities that municipal governments have to protect their residents from environmental risks that can be addressed within their jurisdiction.

Once again, the potential social benefits of redevelopment to cities as a whole are similar to that of affected neighbourhoods. The restoration of brownfields helps to improve the quality of life for residents and can even provide opportunities for leisure and recreation. As brownfield problems are addressed, the fear of health impacts from exposure to hazards is reduced (De Sousa, 2008). Brownfield restoration also addresses the negative impacts on property values which in turn increases personal wealth or at least reduces uncertainty for property owners.

Perhaps the most significant impact of restoration for municipalities is on the local economy. The blight of brownfields and their potential to attract vice increases the need for municipalities to prevent urban crime and decay by picking up trash, lighting the streets, and providing police surveillance. And unfortunately, while abandoned properties cause a variety of costs on cities, they contribute few property taxes in comparison to their potential. Consequently, a significant economic opportunity for cities is to help redevelop these properties to restore local tax revenues (Bonham, 2002; Mallach, 2006).

Furthermore, with the reduction of brownfield stigma or at least support for their redevelopment, cities are more likely to attract domestic and foreign investment. This is particularly true in the case of brownfield remediation technology, which develops as standards and regulations become clearer. When municipalities have a greater idea of their remediation requirements, companies are more likely to invest in certain research and development methods. In addition, brownfield redevelopment provides substantial job opportunities as would any development project, but with increased need for specialised knowledge on brownfields (Swickard, 2008; De Sousa, 2008). Consequently, the restoration of brownfields not only reduces burdensome expenses but also increases economic opportunities for municipalities.

Private Sector

While restoration efforts began as a push from the public sector in order to safeguard human health and the environment from further distress, the potential returns from brownfield restoration has now attracted significant attention from the private sector. Not surprisingly, the main factors motivating private developers to participate in brownfield restoration are economically-related, even the environmental considerations (De Sousa, 2008).

For the private sector, profit maximization is the goal. In the case of brownfields, this is certainly possible by building attractive and marketable projects or by selling properties with a high return (De Sousa, 2008). Due to land constraints, there are fewer and fewer opportunities for new development; however, brownfields can offer developers access to prime areas nearby the urban core. This is particularly attractive as downtown locations grow in popularity. And since brownfields are generally burdens for owners, developers can take advantage of devalued properties to save significant costs. Consequently, prime locations as well as deeply discounted properties can help brownfield redevelopers yield a maximum return.

In fact, direct and indirect cost savings are at the core of economic incentives for brownfield projects by developers. Since redevelopment projects try to salvage existing buildings, direct cost savings include labour costs, material costs, and reduced expenses from the disposal of materials (Laefer and Manke, 2008). Furthermore, they save significant costs on infrastructure

development costs as brownfields are often located in already-serviced areas.

With regards to indirect cost savings, brownfield restoration can result in a shortened project length, but this is not always the case. As with all development projects, the issue of time is a significant factor in their success or failure, largely due to fixed costs that accumulate regardless of whether the project is advancing or not. Consequently, while some projects benefit from reusing existing buildings, others are caught up with planning complications and remediation efforts which can significantly hinder progress.

Relatedly, the conditions of brownfield sites are a major consideration in restoration projects due to their influence on project duration. Attractive site characteristics include the obvious, such as discounted properties and potential high rates of return. However, favourable conditions that are specific to brownfield projects may include the presence of certain types of pollutant that are easier to remediate as well as larger brownfields, such as former industrial buildings since they provide greater reuse opportunities which can help recoup costs. In addition, it has been noted that private developers are more likely to pursue brownfield projects that are privately owned rather than publicly owned (Heberle and Wernstedt, 2006; Ellerbusch, 2006). While redevelopment projects may have benefited from local government assistance in the past, some private developers have now gained remarkable experience in the field. Consequently, private developers tend to avoid situations where they must bid for projects and/or have less control over redevelopment plans, since this could complicate plans and stall the progress of projects.

As demonstrated, while the brownfield market matures–resulting in better remediation technologies and improved project management experience–brownfield restoration will increasingly become driven by private development. As such, the responsibility for local governments will be to guide redevelopment practices to go beyond profit maximization and consider other aspects like community benefits and environmental stewardship; this is where the benefits of a collaborative reuse planning process is apparent.

Natural Environment

The abovementioned motivations for brownfield redevelopment are mostly social or economic benefits from the perspective of the people who are affected by them or who play a role in their restoration. However, another beneficiary in brownfield restoration is the environment–which affects all stakeholders in a less tangible but equally important way. In fact, the significant benefits of brownfield redevelopment on the environment are how this type of restoration emerged.

Through such concepts as sustainable development, project managers are much more conscious of the impact that new construction has on the environment. Consequently, where possible, it is becoming increasingly popular to avoid demolition, removal and reconstruction of existing assets–for projects at brownfield as well as uncontaminated sites. Sustainable development practices include reusing existing buildings in order to reduce energy expenditure and waste generation (Laefer and Manke, 2008).

To take this a step further, the standardised method of life-cycle assessments is being encouraged in brownfield restoration projects (Boughton, 2008; Ontario MOE, 1998). Life-cycle assessments consider the holistic environmental footprint of not only the project, but also the impacts of the materials used and the energy consumed during the remediation process. The destination of the wastes produced is also a major concern. The goal is to identify which remediation option results in the smallest environmental consequence. Consequently, the application of this comprehensive assessment process for brownfield redevelopment demonstrates a significant effort and possibility for brownfield projects to further minimize their impacts on the environment.

Since the protection of land–particularly for agricultural use–is a significant environmental concern, the reuse of brownfield properties helps reduce growth pressures on undeveloped areas and prevents urban sprawl (Gute, 2006; Ontario MMAH, 2007). Brownfields are often situated in already developed areas, so new reuses can benefit from existing infrastructure like public transit, schools and community facilities, without having to expand on greenfield lands.

Finally, brownfield redevelopment contributes to the protection of both environmental and human health by preventing the

migration of contaminants. Since contamination has the potential to migrate over time, remediation can be pressing even for remote brownfield sites. The proliferation of contaminants to other urban lands and possibly into the groundwater makes the redevelopment of brownfields a substantial concern (US EPA, 2005). With this in mind, brownfield sites require long-term management and monitoring even after remediation in order to safeguard environmental and human health. Nevertheless, it is important to keep in mind that the level of remediation to remove contaminants depends on the proposed end-use. This will be further explained in the following chapter.

CHAPTER 4:
BROWNFIELDS REDEVELOPMENT PROCESS

The brownfield redevelopment industry is a complex field where several stakeholders– namely the public and private sectors, not-for-profit organisations, as well as the local community–must collaborate in order to build successful projects. To consider how restoration practices can be improved, it is important to understand the current redevelopment processes and the different challenges and risks that stakeholders face. The following section gives insight into the redevelopment environment from the perspective of different stakeholders by presenting:

- the brownfield redevelopment process; and
- challenges and general concerns of various stakeholders.

REDEVELOPMENT FROM BEGINNING TO END

From contamination and blight to remediated lands and new uses, the redevelopment process transforms brownfields into purposeful assets for cities and communities. However, while the transformation sounds promising, the process may be full of uncertainty and risks that make restoration especially daunting for private developers. For the purposes of this paper, the redevelopment process will include steps from the identification of a brownfield property to its restoration and reuse. The following will identify the general redevelopment decision-making process from the perspective of a private owner and/or developer. This is not an exhaustive description of the

redevelopment process since regulations change from one jurisdiction to another.

Identifying Brownfields

To begin, it important to note the difference between remediation of major contamination and the restoration of brownfield sites which brings existing buildings into functional use again. In Ontario, the Ministry of the Environment has the authorization to issue clean-up orders to parties that have had charge, management and control of sites that have adverse effects on the environment (Blakes, 2010). This is to enforce action for the removal of potential environmental harms, not to restore buildings and land into functional use. Consequently, unless a site poses a severe risk to human health or the environment, restoration of brownfields is generally done by responsible parties on a voluntary basis, which often occurs when the property is to be transferred or developed (De Sousa, 2008).

Owners of brownfield sites that do not cause immediate environmental harm have a choice to do nothing and let the property remain idle, sell the property, or pursue redevelopment. As mentioned before, there are several reasons to consider restoration due to resulting environmental and economic benefits for the community, city, and of course, the private developer. Nevertheless, realising those benefits is a different challenge altogether. The success of a redevelopment project is largely based on a thorough assessment of the site's conditions, market demand, property valuation, secure financing, as well as knowledge and experience–all of which require significant formal and informal partnerships with other stakeholders.

Conducting Site Assessments

To decide whether or not to pursue a redevelopment project, the proponent must conduct their due diligence to identify barriers to and benefits of redevelopment. Investigating the risks involved is essential to determining profit, and ultimately, project viability. Firstly, an environmental site assessment and site investigation are conducted to identify actual or potential contamination and the sources of contamination. Subsequently, a more invasive process involving sampling is conducted to confirm contamination and their migration pathways (ECO Canada, 2007). This step also includes the grading and demolition of existing buildings that are beyond restoration.

Environmental Site Assessment (Pacific Environmental, 2011)

The evaluation of the site's environmental condition is based on generic and site-specific criteria established by the province. The generic criteria are numeric indices that are based on a tolerable health risk for specific types of contamination. The second criteria, also known as risk-based correction action or site-specific risk assessments, are soil and groundwater standards that consider risk levels and how likely their exposure depending on specific land uses. In other words, these criteria incorporate the conditions and characteristics of a specific property when determining acceptable levels of risk (De Sousa, 2008). While generic criteria may be more robust and comprehensive, risk-based corrective action standards are equally as protective of public health and the natural environment since site-specific conditions are taken into account (Ontario MOE, 2007).

Exploring Market Demand and Community Acceptance

The nature of a restoration project generally means that it will take more time and money than a traditional project to redevelop, but costs can be recovered and significant profits realized when there is a strong local economy and demand. In cities with strong real estate markets, there are few properties that are left idle because the benefits of redevelopment far outweigh the costs and the prices of these properties are often discounted. However, the question of how much market demand exists for brownfields is more challenging because developers must not only analyse the demand for a particular reuse, but also how locals will respond to the reuse of a stigmatized brownfield site.

When analysing the strength of the market, the focus is on assessing the demand for potential or proposed end uses, including new houses, condominiums, retail, mixed use, etc. in urban areas (Ontario MMAH, 2007). The greater the interest or demand for the proposed end use, the more likely the redevelopment project is feasible–this is also true because lenders will have greater confidence in the project. To determine the demand for urban land, municipalities and proponents must

consider the city's share of regional population growth, which influences not only the demand for residential units, but also the indirect demand for retail, office and even industrial land (Simons and Iannone, 1997). Moreover, demand can also be in the form of community amenities like parks, grocery stores or community centres. Consequently, community involvement and active engagement is particularly important in the reuse assessment process. This can help developers understand local demands and needs while also creating support from the community–which can be a very powerful force to move projects forward.

Furthermore, another consideration for private developers is proposing reuses that have a better chance of producing a sufficient bottom-line profit. As mentioned, brownfield restoration is more expensive in comparison to greenfield development or projects on uncontaminated sites. Consequently, considerations must be made to attain a similar rate of return, such as by building high-density redevelopment projects or attaining large public subsidies particularly if a significant public good is being proposed (Simons and Iannone, 1997). Relatedly, there may be municipal financial incentives to develop a particular reuse that can help support population growth and local economic opportunities.

While interest in urban living and downtown urban locations has increased significantly, the degree to which the demand carries over to brownfield properties is also influenced by the supply of other uncontaminated infill properties as well as an issue of public trust in the remediation process. To have a comprehensive analysis of the market demand, the issue of local acceptance of brownfield properties must be addressed in order to achieve a clear understanding of local demands and needs. For example, while residents may want affordable housing, they may be hesitant to support the location of a project on former brownfield land. Human health can be a concern for future residents and users, thus potentially distorting actual demand. Consequently, it is essential for proponents to raise awareness of the stringent brownfield redevelopment standards and post-remediation monitoring practices to reassure locals of their safety once the remediation of a site is complete. This may involve a communications and marketing strategy to garner local awareness, interest and support.

Determining Property Values

To begin investigating opportunities for end-use, developers must understand the brownfield market by determining property values, conducting research on market demand and community needs, and knowing the official plan and zoning by-laws (OCETA, 2011a). Since factors like health and welfare must be considered in the property valuation of brownfields, determining the value of land and buildings in an urban environment is challenging. It is not just a matter of evaluating land and demand for an area. There are other factors to consider, like a perceived decrease in benefits or increase in the cost of maintenance. Brownfields generally possess lower property values than properties not associated with such problems (Carroll and Eger III, 2006). Nevertheless, when brownfield redevelopers are considering property values, they are not only assessing current value, but also potential value once the property is redeveloped.

The issue of property valuation during the redevelopment process is especially critical and unique because proponents must consider several uncertain factors in the equation. The adjusted market value of a brownfield property, or the value of the land and/or buildings adjusted for costs due to contamination, equals its clean market value (i.e. the property value post-remediation) less all costs associated to the brownfield plus municipal incentives that reduce these costs. In other words, the intrinsic value of the property is discounted by the cost of damages that result from contamination (Carroll and Eger III, 2006).

Damages include: direct costs to remediate the property; carrying costs such as taxes, insurance and liability; transaction costs; and capital costs like interest (Ontario MMAH, 2007). It also includes indirect costs like process delays when acquiring approvals and the increased risk of further economic loss due to contamination. The purpose of this step is to help ensure that redevelopment costs do not exceed the adjusted market value of the property. In Canada, the rule of thumb is to account 10 to 20 percent of redevelopment costs to actual clean-up efforts (De Sousa, 2008). This reasonable target helps ensure that the overall economic value of the project will meet a reasonable profit.

Committing to Redevelopment and Creating Proposals

The time at which developers commit to a brownfield redevelopment project can vary depending on each situation. As

demonstrated, a significant amount of research and analysis must be conducted beforehand. In general however, private owners of brownfield properties want to redevelop and market properties as soon as possible. After all, owning a brownfield involves accountability in terms of civil liabilities and municipal taxes. Consequently, while private developers are cautious in conducting their due diligence on brownfield properties, the transfer of ownership generally entails a commitment to redevelop the brownfield within a certain timeframe (Environmental Consultant, personal communication).

Upon considering the research and analysis conducted, developers are left with the decision to propose reuses in terms of character, scale and use. These decisions are obviously subject to the broad official plan, zoning requirements and neighbourhood design plans. It is during the rezoning stage that notice must be given to nearby property owners of any changes, which may trigger the need for public consultations. Like any other project, the standard planning process applies to all brownfield properties. While reuse planning is not often the main purpose of brownfields programs, reuse considerations have substantial impacts on the type and extent of remediation to be performed as well as the amount of financing required.

Addressing Financial Barriers and Risks

It is essential to have a clear understanding of the financial barriers and risks to redevelopment. This not only includes addressing possible Crown liens and municipal tax arrears on brownfield sites, but also having the financing necessary to redevelop the property. This step involves getting in contact with the municipality and inquiring about specific brownfields programs. Financial support can be provided in the form of tax incentives such as credits, abatements, and even forgiveness. In addition, there are direct financial incentives like loans and grants. The due diligence process described above with environmental site assessments and market analysis are a significant upfront cost–accounting for at least 50 percent of the total project costs on average, which may never be recovered if redevelopment is not economically feasible (Greenstein and Sungu-Eryilmaz, 2004). Consequently, upfront grants to conduct due diligence are particularly helpful as well offsetting financial costs through technical assistance.

Furthermore, there are options to gain lending capital from banks or investments from private equity funds. Successful brownfield projects combine self-financing along with equity and debt in order to reduce overall risk (Ontario MMAH, 2007).

Environmental Liability Insurance

1) Cost Cap Coverage: owner pays for remediation up to a certain amount and beyond that they are covered up to the insured amount.
2) Pollution Legal Liability: coverage for costs incurred due to contaminants discovered after remediation program; covers changes in regulations and third party liability
3) Secured Creditor Coverage: reimburses lessors for lost loan payments if a lessee defaults

(Simons, 1998; NRTEE, 2003)

Nevertheless, gaining external funds is often challenging due to the level of uncertainty and risk for lenders. If a private developer claims bankruptcy, then its lenders may be forced to foreclose on a defaulted loan. This could result in lenders taking possession of a property that is not only useless, but may also have regulatory liability and civil liability risk (NRTEE, 2003). Consequently, options exist for private developers to buy environmental liability insurance for brownfield properties that can range from partial to complete coverage for different kinds of liability. Insurance reduces risk and uncertainty to help create a more predictable investment scenario that can be acceptable to private lenders. With such liability protections available, public and private financing for brownfield redevelopment projects has increased notably since the mid-1990s (McCarthy, 2002).

Identifying Clean-up Standards and Remediation Methods

If the environmental site assessments have determined that the site is contaminated, an action plan is developed for the clean-up of the brownfield. In Canada, provinces have created their own remediation standards which identify what level of contamination is acceptable and for what circumstance (refer to page 45 for Ontario's Regulatory Standards). Criteria can either be very stringent with general standards of acceptable risks for all circumstances or flexible depending on the proposed end-use and potential exposure to contaminants.

There are several methods of remediation available to meet regulatory standards. The preferred option is to reduce risks to human health and environment while also keeping project costs down. Relatedly, projects are often designed with the cost of remediation in mind. Restoration activities like removing debris, demolishing unsalvageable properties and stabilizing properties can be started once the project receives approval. However, the actual process of cleaning-up contaminants in the soil is often dependant on land-use and site plans since clean-up standards change depending on end-uses.

Physical remediation techniques include excavation for off-site disposal or treatment of the contaminated material on site, encapsulating the contamination using geotextiles, and diluting contamination or moving it to parts of the site which limited risk to users (e.g. parking lot or hard surface public space). There are also biological in-situ remediation techniques such as microbial remediation and phytoremediation. These chemical or biological techniques degrade contaminants and/or help to extract toxic metals from the soil for removal from the site (Simons, 1998). As properties are being remediated, buildings that have been cleared of any harm can be simultaneously restored as required for their proposed end-use. In the City of Ottawa, dig and dump is by far the most commonly used remediation method since it is the fastest way to remove contamination (Environmental Consultant, personal communication).

The actual remediation process requires the involvement of several specialised professionals. Environmental-related labour required includes engineers, hydrogeologists and other scientists who perform project planning and management, logistical planning, sample collection, technical analyses, site surveys, etc. Non-environmental-related labour includes operators of excavation and other equipment, truck drivers and general labourers (ECO Canada, 2007). As demonstrated, the human resource requirements for brownfield remediation are quite specialised.

Challenges of Redevelopment

Such a complex redevelopment process as described above requires several partnerships and collaboration amongst the public, municipal government and private developers, but they are not always involved. Throughout the restoration process, each of these stakeholders experiences challenges and risks from

their own perspective. As it will be shown, redevelopment challenges are not only related to risks and uncertainties, but also issues of managing stakeholder involvement. An understanding of each stakeholder's respective obstacles can help the overall redevelopment process by highlighting common issues that can benefit from being addressed collectively amongst other stakeholders affected by the project–a significant consideration for the reuse planning process. The following section will outline challenges during the redevelopment process from the perspective of local residents, the municipal government, and private developers.

Public and Community Concerns

Depending on their size and proposed reuses, redevelopment projects can have significant effects on local residents and their community. Whether these changes are welcomed or not can depend considerably on the level of information, understanding and involvement local residents have with the project. As with any development project, the stakeholders who are most influenced are the local residents: the people who deal with the brownfield from the time it is boarded up to the time it is back in use. Consequently, locals have significant interest in the maximization of the brownfields potential benefits for the neighbourhood. Nevertheless, as brownfield projects become increasingly managed by private developers, the role of public participation and engagement becomes more ambiguous.

To begin, redevelopment projects can cause unnecessary concern for residents simply due to the lack of information provided to them. Brownfield redevelopment is a relatively new and complex field that is continuously changing, so knowledge and understanding of the process can be quite foreign to community members. When local residents understand the issues, procedures and rules that are involved in the redevelopment process, they can appreciate the long-term value of such projects. Unfortunately however, when information is not shared with the public, concerns over environmental quality and human safety arise along with frustration on the length of the project. This is where better public relations are required.

In addition, since the community is most greatly affected by the redevelopment project, residents want to ensure that the potential for reuse is maximised and the quality of restoration is rigorous.

However, when there is poor community participation and engagement efforts, locals fear that their needs and concerns will not be addressed. In particular, there is a real fear that well-intentioned brownfield redevelopment programs are being increasingly driven by politics and economic growth with profit being a main concern rather than environmental and human safety (Ellerbusch, 2006).

Finally, since brownfield projects are often financially supported through municipal funds, taxpayers want to ensure that their support is yielding public benefits, not just private profits for developers (De Sousa, 2008). This is a very legitimate concern since several brownfield projects would not be viable without public support. Consequently, locals are concerned that local amenities and community needs will be disregarded in favour of reuses that are more profitable.

Government and Regulatory Challenges

While the public sector may not have the responsibility of restoring all brownfields, governments now play the role of allocating limited funds to support brownfields redevelopment projects. However, with this responsibility come challenges of balancing the goals of government agencies and those of the community. While brownfield redevelopment programs are in place to reduce the barriers to private-sector redevelopment, governments also have the responsibility to ensure that broader community needs and goals are met, like providing low-income populations with recreational, cultural and community facilities (McCarthy, 2002). Consequently, while brownfield projects have the potential to generate significant economic advantages through job prospects and contribution to the tax base–thus making local governments supportive of private redevelopment–they must also serve the public good by monitoring how funds are being used and providing incentives to encourage public participation.

This dilemma can also apparent as governments attempt to balance individual versus communitarian benefits (Blaine, 2002). On one hand, brownfield properties can be viewed as potential revenue-generating commodities rather than community resources, and their transformation needs government support. This perspective is most prevalent when municipalities are undergoing tough financial times. On the other hand, the communitarian perspective views brownfield properties as having potential to promote public values and provide communities with

much needed amenities. Consequently, the challenge for governments today is to determine land management strategies and brownfield program that are able to encourage revitalization while also addressing community concerns.

In addition, the reality of any government program is that it has limited human and financial resources; brownfield redevelopment programs are no different. Thus, local governments are faced with the problem of allocating scarce public resources. A common strategy is for governments to provide financial support to brownfields with high redevelopment potential. The intention is to help develop success stories that will confirm the usefulness of the brownfield redevelopment program which can prompt additional funding. However, the problem is that this strategy can result in financial support for top-tier brownfields that are already economically viable even without government support. Thus, public funds are wasted and middle-tier brownfields that actually require funding to be economically worthwhile for private developers are neglected (McCarthy, 2002).

Consequently, local governments must determine a method of prioritizing redevelopment support (Simons, 1998). Nevertheless, this issue once again reveals the problem of incomplete brownfield lists or registries, which makes prioritisation funding difficult. While properties that require immediate attention due to public health are the priority, determining the fate of brownfields that vary in economic development potential is the real challenge. This realisation makes the importance of community involvement in brownfields redevelopment increasingly evident.

Private Sector Risks and Uncertainties

In order to improve the government's ability to develop policies, programs and incentives that encourage and support brownfield redevelopment efforts while also serving the public, it is important to comprehend the redevelopment environment from a profit-based perspective (De Sousa, 2008). An understanding of how certain costs and risks can undermine the viability of redevelopment projects can help governments focus their financial support.

The challenges for private developers are largely related to financial risks and uncertainties. In the late 1990s, a study conducted in Ontario asked the private sector to rank a list of obstacles or challenges associated with brownfield redevelopment

(De Sousa, 2008). Results showed that moderate to severe obstacles included: liability concerns that contribute to direct and indirect costs; high remediation costs; slow regulatory review processes; and complex municipal land use policies. These main challenges are mentioned in other brownfields literature as well. Moderate obstacles were mainly related to unclear remediation criteria policies, difficulties in obtaining financing, and addressing the negative perceptions of stakeholders.

It is interesting to note, however, that non-environmental factors are also significant challenges. In fact, market conditions, such as the location of the brownfield and its size and configuration, the characteristics of buildings, the cost of construction, and access to a skilled labour force, also play a significant role in the final decision-making criteria to pursue a redevelopment project or not (Heberle and Wernstedt, 2006). As demonstrated, private developers are up against several challenges that can weaken reasonable rates of return. Consequently, it is important for government programs to provide support to developers where they need it the most. For example, it has been shown that direct financial support is significantly more effective when it helps reduce environmental investigation costs rather than construction costs (Heberle and Wernstedt, 2006), but of course this may not be the case for sites that have already confirmed little contamination. Consequently, the ability for support programs to be flexible to the needs of different projects could help considerably in providing more effective public resources.

Finally, private sector developers have the challenge of balancing the benefits of community involvement and project timelines. There is no doubt that developers can benefit from community participation by potentially reassuring demand and thus cost recovery, gaining a better understanding of site conditions, and leveraging knowledge and expertise within the community (Ellerbusch, 2006). On the other hand, such stakeholder participation can also result in additional burdens and delays in the process. Working with communities also involves investing time and resources to identify community stakeholders, build consensus on complex issues and deal with conflicts. Nevertheless, lack of community engagement can result in missed opportunities and even greater problems, like adversarial public involvement in planning issues which can delay project timelines (Environmental Consultant, personal communication). Consequently, private developers are constantly faced with the

challenge of welcoming public engagement to hear and address community needs while also trying to stay on budget.

CHAPTER 5:
FOCUSING ON REUSE PLANNING

The brownfield redevelopment industry has made significant progress since its beginning barely a decade ago. From new brownfields legislation to local programs that support remediation efforts, all levels of government have increased their support for market-based redevelopment. Brownfields programs are largely focused on providing financial incentives. Consequently, while there is less risk in the redevelopment process now due to clearer standards and financial support, community concerns regarding the reuse of brownfield properties are often inadequately addressed during the standard planning process. However, as the previous chapter briefly mentioned, a clear understanding of the potential reuses of a brownfield site significantly influences the standard and method of remediation, the degree of local support, financing, and ultimately the viability of a project. Consequently, the following section focuses on the issue of reuse by:

- briefly examining the reuse decisions to be made in the redevelopment process; and
- describing potential end-uses for brownfield sites.

REUSE DECISION-MAKING

Determining the reuse of a brownfield property requires addressing three aspects: scale, character and use. The scale of the project depends on the land and buildings available. Redevelopment projects range from single buildings to several vacant lots that are assembled for larger projects. Moreover, some brownfields are too marginal or separated from existing built forms that occupied properties are purchased (or expropriated in the case of municipal development) to increase the redevelopment potential of sites (Mallach, 2006). The issue of scale also influences the economic viability of a project and its ability to revitalize neighbourhoods. Small-scale projects may be too costly with insufficient returns, while also being inadequate in size to meet needs such as large-scale housing. Consequently,

determining the scale of a redevelopment project is not just a matter of what buildings and land are currently available, but also what is needed by the community.

Reuse Considerations

1) Scale: height and size of the project is influenced by the number of storeys of existing brownfield buildings and land availability.
2) Character: local heritage and cultural values influence the architectural qualities and design of a project as well as its end-use.
3) End-use: existing municipal plans and zoning influence possible land-uses along with neighbourhood plans and stakeholder input.

The character of a reuse project is determined by the site planning and design, which greatly influence how the site is used and perceived. Several aspects must be taken into consideration in order to ensure cohesion amongst new buildings, open areas and existing buildings as well as their relationship to the surrounding environment. Since brownfields are often located in older neighbourhoods, it must be decided whether the project will blend into or contrast with its surroundings. In both instances, it is important to recognize the potential historical significance and local value of the brownfield, thereby making community participation particularly useful.

Surprisingly, use is the last consideration in reuse decision-making. With adaptive reuse projects gaining popularity, the most suitable uses of brownfield properties are more likely influenced by their location rather than their physical characteristics (Mallach, 2006). For example, a former fire station within a neighbourhood presents different opportunities than a large industrial building nearby the central core. To determine end-uses, broader considerations like the long-term vision of the area, policy goals, neighbourhood needs, and market demand must be evaluated. Such issues require both expert knowledge, and the input of social stakeholders and the business community.

Many municipalities, including the City of Ottawa, have community design plans which apply the principles and policies of the Official Plan to a neighbourhood scale. Through input from community members like landowners and local businesses,

these plans address issues like land use, urban design, streetscape conditions, and many other local concerns. To work with the community on reuse decisions, private developers must begin by looking at existing community design plans to align brownfield projects with the local vision.

Community Design Plans (CDP)

With the involvement of the community, CPDs apply land use and urban design guidelines to a neighbourhood scale. They are focused in nature, purpose and study area to create a vision that guides the physical development of public and private lands.

East Urban Community Design Plan (City of Ottawa, 2009)

Potential End-Uses

In Canada, 47 percent of redevelopment activities on brownfields are for residential end uses, 20 percent of projects are for retail and 16 percent for commercial or office uses. In addition, 2 percent of brownfields are reused for industrial redevelopment (De Sousa, 2008). As elaborated below, there are also other reuses that are not as popular in Canada, but should be strongly considered for their remarkable benefits and flexible uses. Moreover, several brownfield projects are mixed land-use.

Residential Housing

In comparison to the United States, residential redevelopment in Canada plays a much more significant role in brownfield projects (De Sousa, 2008); this is also reflected in the literature which focuses on redevelopment for housing. As sustainable development becomes increasingly essential, brownfield redevelopment is considered a way to redirect urban growth, revitalize core neighbourhoods, and lower municipal infrastructure costs–which are all influenced by where people chose to live. However, before looking at all the ensuing benefits of residential brownfield redevelopment, it is important to remember that housing is a matter of supply and demand.

In some cities like Ottawa where there is remarkable population growth due to favourable conditions like affordable housing, ease of transport and high employment levels (Kotkin, 2010), the housing demand is not only increasing, but the City's long-term development strategy is to intensify residential density and the mix of dwellings (City of Ottawa, 2011c). Consequently, the restoration of brownfields into residential uses supports this goal. Of the five brownfields projects that have been approved for municipal funding in Ottawa, three are residential and two are commercial projects (Environmental Consultant, personal communication). Since 2007, the City of Ottawa's Brownfields Redevelopment Program has supported the development of 393 residential units (Steele, 2010), such as Le Saint Denis project.

Nevertheless, as demand for housing in urban areas increases, it is essential that intensification be implemented strategically. Intensification should not just be about increasing densities in the urban core, it must be done in a way that increases density where it is due while protecting established urban neighbourhoods (Gray, 2011). With this in mind, brownfield redevelopment can help preserve downtown neighbourhoods while enhancing core areas that would benefit from revitalization.

Le Saint Denis

Located in the Vanier neighbourhood of Ottawa, this project received funding to remediate and convert a former secondary school into urban loft condominiums.

Le Saint Denis (Ottawa Condos Market, 2011)

While residential brownfields are most popular amongst redevelopment projects, they are not without significant barriers. Redevelopment challenges are similar to any restoration project, but due to the higher number of users and health sensitivities, there are greater civil liability risks (De Sousa, 2008). Demands are more complex as they are related to meeting basic needs and providing affordable housing. As such, residential redevelopment projects receive more support from the Federal government

through the Canada Mortgage and Housing Corporation and particular sites are developed by the Crown corporation, the Canada Lands Company (CMHC, 2011).

The general benefits of brownfield redevelopment apply to residential reuse, like all end-uses. However, specific advantages of residential redevelopment include the potential for new residents of brownfield sites to attract increased housing demand and encouragement of community rejuvenation (Ontario MMAH, 2007). This includes stimulating local economic investment. Overall, the restoration of brownfields for residential reuse can help reduce housing shortages, reduce pressures on greenfield development, and encourage investment in lower-income communities (De Sousa, 2008). This last benefit is related to the fact that brownfields, often located in blighted neighbourhoods, have a significant role in counteracting urban renewal practices. Rather than forcing people to uproot from their communities in search of better housing, transforming brownfields into residential reuses can help revitalize neighbourhoods while also providing better housing options.

Greening for Recreation and Agriculture

Brownfield restoration is not always about development, especially when sites are located within an already built-up area. As urban areas become increasingly dense, the idea of greening has become recognised as a possible end-use with great potential and need. Greening, in the context of brownfield reuse, is defined as the creation of urban open spaces within a city's built-up environment (De Sousa, 2008). Such transformations may include the development of natural areas, greenways, public parks and spaces, community gardens, and outdoor sports facilities. While the idea of greening has traditionally been fairly insignificant, the environmental and sustainability movements have given rise to greater attention and support for greening.

There are several types of greening within an urban context. First of all, brownfields can be redeveloped for the purpose of creating greenways which connect open space for recreational use, cultural and heritage uses, and helps to nurture natural habitats. Such projects benefit from being well-connected to the built environment (Mallach, 2006). Relatedly, marginal brownfield sites can be restored to make attractive city gateways. In particular,

brownfield land that is located along high-traffic highways presents an opportunity to mark the entrance into the city (Bonham, 2002). Since their reuse does not involve significant human-contact, remediation efforts for both of these options are more straightforward and less costly. While both of these end-uses present non-productive uses, there are several productive and even economic greening alternatives that exist as well.

In particular, brownfields have been used to create community gardens. This is a particular type of project that is very neighbourhood-based and requires a strong commitment to maintain and harvest the garden–especially considering the time and money invested in remediating the area. While this form of reuse is not likely appropriate for areas with significant contamination, it does present an attractive option for marginal lands that have low levels of contamination. Moreover, options exist to construct raised beds in order to ensure healthier gardens.

For larger lands, the option exists to create income-producing open space (Mallach, 2006). With concerns of food security and affordable produce, urban agriculture on brownfield lands is also possible, through such techniques as hydroponic agriculture. Other open spaces that produce income include recreational facilities, such as golf driving ranges.

Hydroponic Farming

This is a method of cultivating plants in water rather than soil. Greensgrow Farm in Philadelphia is an urban farm built on an industrial brownfield. They use hydroponic techniques to grow lettuce and other vegetables on raised beds of organic soil.

Hydroponic Farming on a Brownfield (Greensgrow, 2011)

Another aspect to consider with greening alternatives is its use as an interim process. Considering there may not even be an immediate need to develop the area, owners of brownfield sites may consider cleaning-up the area and putting it to non-productive uses as it awaits redevelopment (Bonham, 2002). Once the land is remediated, community gardens and recreational areas are appropriate temporary uses. By making use of the land, owners are preventing its misuse for illegal activities.

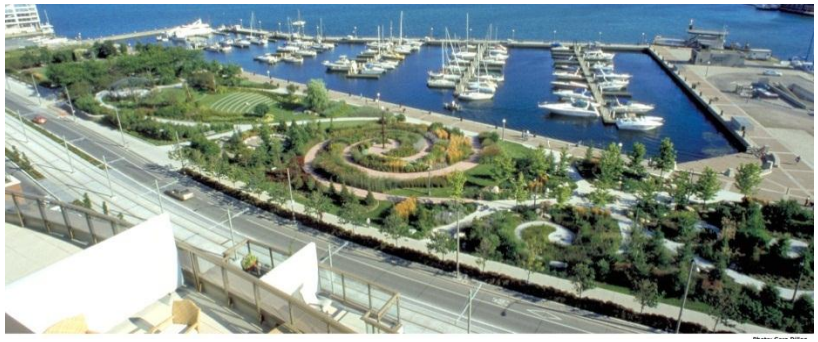
There are several benefits to greening, and they are rather unique to this type of reuse. It is important to acknowledge that while other uses may arouse public concern regarding exposure to contaminants, reusing brownfield land for green space has received relatively less public suspicion (De Sousa, 2006). There are several benefits of greening for both implementers as well as the community. Nevertheless, it is noted that green space is generally not developed by private developers unless it is part of a mixed-use plan or the result of a public-private partnership.

In any case, providing green space can contribute to public goodwill and become a significant asset to locals and the tourism industry. Depending on the type of greening, open space improves the aesthetics of a neighbourhood which can increase community pride and public space can enhance social cohesion. Moreover, outdoor recreational areas can provide opportunities to enjoy walking trails and even access to waterfront. These activities offer relief from dense urban environments, which can help reduce stress. Greening end uses can also support historical restoration and conservation of habitats, which brings brownfield restoration back to its environmental roots (De Sousa, 2008).

In addition, there are also economic benefits to greening. Not only do large-scale agricultural projects generate revenue, but even public parks increase property values. Depending on their size, public parks have been known to increase property values within 150 to even 610 metres (De Sousa, 2008). In addition, according to the International Economic Development Council, brownfield lands in the United States that were converted to green space projects had the effect of increasing adjacent property values more than four times that of citywide property values (IEDC, 2001), as well as personal wealth.

While there are many benefits from greening projects, a few barriers have caused such significant challenges that greening is

not a common brownfield end-use in Canada–particularly not in the private sector. Like all market-based development projects, private developers must consider the bottom line when determining end-uses. Since it is difficult to compare the immeasurable increase in goodwill and improvements in quality of life with concrete monetary benefits of productive end-uses (De Sousa, 2006), developers may require additional incentives and support for greening projects. As such, public-private-partnerships for brownfield redevelopment can be formed to help offset the fewer economic returns from such projects. The development of the Music Garden pocket park along the city's central waterfront is a result of a partnership between a renowned cellist, a local philanthropist and the City of Toronto.



Music Garden (Dillon, 2011)

Heritage Tourism and Natural Recreation

Beaty Lundin Visitor Centre (AldrichPears, 2010)

Brownfields have the ability to offer a glimpse into the past by highlighting the heritage of a community and restoring natural areas. Some have social value and the potential to become place-based heritage and cultural attractions that cannot be reproduced. This type of end-use can be particularly appropriate for locations that make use of former industrial sites (Alker and Stone, 2005). Restoration efforts can preserve structures to teach about early types of construction, cultural designs, or even an industry that was significant for a community. For example, the Beaty Lundin Visitor Centre was a cinder block workshop on a former copper mining brownfield site that has been transformed into part of the Britannia Mine Museum in Britannia Beach, British Columbia.

In addition, since many cities were built along waterways for transportation and the facilitation of industrial development, many brownfields are nearby prime coastal areas and rivers. Over time, industrial activities have not only polluted the land, but also contaminated the waters. Redevelopment of brownfield sites can include remediation of the water for local recreation. It is important to note that ecological restoration of waterways can coexist with recreational uses as long as precautions are in place to ensure natural areas are protected (Kemp, 2009).

By celebrating the past through the reuse of brownfield structures, there are several benefits for the community as well as the environment. From a practical perspective, reusing brownfields for recreation can contribute to the tourism industry. Subsequently, revenues can in turn be used to help pay for remediation costs and even be used to build more parks and protect natural areas (Levi and Kocher, 2006). And as natural areas are restored, particularly waterways, they become attractive open spaces and recreational amenities. This can stimulate interest in surrounding areas for jobs, real estate investments and help revitalize neighbourhoods. Finally, heritage restoration can not only provide learning opportunities, but also it helps create a sense of place for communities (Swickard, 2008). Consequently, the tourism and recreation industry have interests in brownfield redevelopment for both reuse of natural and built areas.

The interesting challenge with this end-use option is that tourism and recreational uses of brownfield sites are highly dependent on maintaining and preserving the conditions of the area–whether it is the built environment or natural areas. As brownfield sites are left idle, their reuse potential for tourism and leisure deteriorates (Alker and Stone, 2005). In particular, to maximize the opportunities for heritage tourism, efforts must be made to preserve heritage structures before they are demolished. Consequently, brownfields that have heritage value or recreational use must be acted upon quickly to protect their potential reuse options.

Economic Development

As cities continue to grow, land scarcity tends to impose greater and greater restrictions on economic development. Brownfield properties present opportunities for employment-oriented reuse. With their strategic location often nearby the downtown core of cities, brownfields can have access to other business clusters,

human resources, infrastructure and high population density (De Sousa, 2008). As such, they have the potential to become prime locations for employment nodes. In fact, some commercial property insiders and urban planners believe that waterfront lands can be essential to the survival of industrial and office activities. Such reuses of brownfields can encourage sustainable operations by offering shorter supply routes for light industrial companies and affordable office space for start-ups (Atchison, 2011). As such, brownfield redevelopment projects have often been touted as opportunities to provide jobs and increase the tax base.

Brownfield buildings, particularly former industrial properties, have typologies that are attractive as commercial and retail space. Industrial buildings are often large, can be easily converted into open spaces, have multiple levels, good lighting and are well located. All of these elements make brownfields attractive for such adaptive reuse projects. Warehouses can be reused as workshops, galleries, cafes and bars while factories can be reused for commercial centres and often attract firms that are involved in design work or new media. Moreover, these buildings can even serve multiple uses given their significant size.

The obvious benefit of this end-use option is that it directly contributes to the economic development of a city. New jobs are created not only from the commercial end-use, but also from the labour requirements for such large redevelopment projects. Non-residential land uses like commercial reuse are generally more profitable for developers and generate greater tax revenues for cities (De Sousa, 2008). In addition, in the case of brownfield properties being reused by artists as workshops and gallery space, these reuses also enhance the culture of a city and provide artists with locations that are affordable and suitable for their work. Finally, there are also social benefits to economic reuse projects since they increase the presence of legitimate business activity, people and thus safety.

Of the reuse options, productive end-uses tend to be most attractive for private developers in terms of economic return. However, while project viability may not be the greatest barrier, determining the reuse plans that are most desirable for all stakeholders can be a challenge–this is where planning issues like height and setback are concerns for the surrounding community. In addition, while commercial uses may be most attractive for the developer and even the city in terms of economic benefits, the

neighbourhood may be in greater need of non-productive local amenities like a community centre or park. Consequently, determining the end-use of a brownfield property with the engagement of all stakeholders is of utmost importance.

Mixed-Use

The Currents Project (Green Build Solutions, 2011)

Depending on the brownfield site and market demand, some properties have the potential to be redeveloped for mixed-uses. For larger brownfields which are well-located in the urban core, a diverse mix of uses can be very attractive especially when several stakeholders are involved. For example, The Currents is a successful mixed-use condominium project located on a former gas station and dry cleaner in Ottawa. At the heart of a growing arts community, it combines residential condominiums with a theatre which houses the Great Canadian Theatre Company. Moreover, for land uses which are not economically lucrative for private developers, such as certain green space projects, having greening as part of a mix of other productive end-uses can be an option. This can encourage public support while also developing a project that has reasonable economic returns. In commercial or retail areas, having a mixture of compatible activities can help entice visitors, particularly when seasonality is a consideration.

Chapter 6: Brownfields Redevelopment in Ottawa

Municipal brownfields programs have been created to help make the redevelopment of brownfields more competitive against clean properties and greenfield development. In April 2007, the City of Ottawa responded to the problems and opportunities related to these hidden assets by establishing the Brownfields Redevelopment Program. This program, along with financial support and guidance from other levels of government, form the regulatory environment for brownfields redevelopment in the

city. To assess the merits and weaknesses of the program, it is essential to understand the local environment by:

- examining Ottawa's planning context and local economy;
- outlining the brownfields regulatory environment; and
- providing critiques and comparisons of Ottawa's brownfields-related programs.

Ottawa's Planning Context and Local Economy

In order to improve brownfields-related policies and programs, it is essential to acknowledge how the unique planning context of the city influences its economy and the brownfields program. The City of Ottawa is unique because of its position as the nation's capital, which has influenced both its planning structure and local economy in two significant ways. Firstly, Ottawa has a strong federal presence in terms of land ownership and planning. By combining the ownership of federal organisations like Public Works and Government Services Canada, the National Capital Commission, National Defence, Parks Canada, and Canadian Heritage, the federal government is the city's largest landlord and tenant (May, 2007). This includes urban lands and buildings, the Greenbelt, parks, parkways, recreational trails, etc. Consequently, these federal properties are not subject to municipal planning controls and projects on federal properties are not eligible for the City's brownfields redevelopment funding (Environmental Consultant, personal communication).

Chaudière District in Ottawa (Pham, 2011)

Nevertheless, it is important acknowledge that many of Ottawa's largest urban brownfield properties are federally owned. This includes large brownfield lands and buildings in LeBreton Flats just west of downtown (including the Chaudière and Victoria Islands) and the former Canadian Forces Base in Rockcliffe just east of downtown Ottawa. Both of these large properties have significant redevelopment and reuse potential due to their

proximity to the downtown core, and are attractive to local developers. Nevertheless, their redevelopment is challenging due to such issues as high remediation costs, heritage preservation concerns, as well as land ownership disputes with the Algonquin nation. With so many invested stakeholders, the possibilities for these properties to be redeveloped by the federal government or even sold to private developers has been extremely challenging and discussions are ongoing.

Relatedly, the second main issue is the fact that the City of Ottawa is not perceived as a wasteland with discounted properties. In comparison to other cities like Toronto, Hamilton, Brantford and Montreal, Ottawa has a limited commercial and industrial legacy. The local economy centres on two major sectors, advanced technology and the federal government which offers a relatively stable economic environment. In terms of privately-owned properties which are eligible for the City's redevelopment funding, the brownfields available are generally smaller sites like gas stations, dry cleaners, parking lots and institutions with heating oil tanks that have leaked (Environmental Consultant, personal communication). Consequently, the program has received less interest from the private sector than other municipalities because financial incentives are not as necessary to attract developers.

Roles, Policies and Programs

Brownfields present a significant opportunity for revitalization and their redevelopment can act as catalysts for local economic growth. Nevertheless, as the main actors in the brownfield restoration industry, private developers are faced with significant challenges and risks in comparison to greenfield development. Consequently, it is the role of all levels of government to help ease these challenges by providing policies, guidelines and incentives to support successful redevelopment projects that are beneficial to all stakeholders.

Evolution of Brownfields Policy

To begin, it is important to appreciate how brownfield-related policies have evolved over the past two decades. While policies in the United States began well before those of Canada, they have experienced similar changes and are now converging (De Sousa, 2008). The first stage of brownfield-related policies was focused on addressing environmental risks through scientific

investigations. Since interest in brownfields was instigated as a response to environmental concerns, remediation of contaminated lands was the priority rather than reuse. A centralised approach was pursued whereby the Federal government was responsible for establishing a comprehensive list of brownfields in Canada; however, the purpose and use of this program could not receive consensus amongst the provinces.

As such, the second stage of policies was related to shifting regulatory responsibility between the three levels of government. And with costs and risks shuffled amongst the public and private sectors, governments began to recognize that their inaction and ambiguity were causing greater environmental and social risk and missed economic opportunities. The third stage of policies was then focused on improving the scientific criteria for remediation in order to reduce uncertainties and risk for both private developers and the local community. Best practices and lessons were learned from other jurisdictions like the United States and greater investment was made to encourage brownfield redevelopment.

Today, brownfield policy is focused on alleviating financial and management challenges by sharing risks amongst stakeholders. Governments are actively pursuing redevelopment challenges by clarifying roles and responsibilities while harmonizing criteria and approaches across all levels of government (De Sousa, 2008). As a result, public intervention at the federal, provincial and municipal levels have been initiated to provide direct financial support, reduce liabilities, clarify clean-up standards, and act as a resource in giving guidance on the redevelopment process (Heberle and Wernstedt, 2006). Since there are social and economic benefits that arise from redevelopment, the intent is for these benefits to exceed government costs and provide support to other policies like the reduction of urban sprawl (Gute, 2006). As it will be demonstrated, current interventions at different levels of government have varying influences on public and private parties that redevelop brownfields.

Federal Initiatives

Since the late 1980s, a greater understanding of the magnitude of the brownfields problem resulted in a shift to market-driven redevelopment projects. The approach is now based on formal

and informal public-private partnerships where the private sector is mainly responsible for redevelopment while the public sector provides programs, tools and incentives to support projects by minimizing risk and uncertainties (De Sousa, 2008). However, the federal government must also deal with its own brownfield properties.

Under the Federal Contaminated Action Plan, the government is responsible for reducing the human health and environmental risk of brownfield properties owned by the federal government on which federal actions or operations have resulted in some form of contamination (Government of Canada, 2008). To implement the plan, the Treasury Board of Canada Secretariat manages the Federal Contaminates Sites Inventory while also providing the policy framework for the management of these contaminated sites, which are owned by departments, agencies and consolidated Crown corporations. All of these sites have contamination or are under investigation to confirm risks. It is estimated that as of 2010, there are over 19,000 federally-owned contaminated sites in Canada (OCETA, 2011b). These sites range in size and potential redevelopment opportunities. Those that possess the highest environmental concern or greatest economic opportunity are often redeveloped through public-private partnerships.

In addition, in 2005, Industry Canada announced a long-term commitment to support brownfield redevelopment. This included contributions to the tune of $3.6 billion within ten years to help clean-up federally contaminated sites as well as $500 million to specific sites across Canada for which the department shares responsibility. Moreover, to support the research and development of technologies that clean soil and water during the remediation process, the department committed $550 million to the not-for-profit foundation, Sustainable Technology Development Canada. As it will be later discussed, $300 million was allocated to the Green Municipal Fund, of which $150 million was allotted specifically to brownfield redevelopment projects (De Sousa, 2008).

Provincial Legislation and Regulatory Standards

While the federal *Canadian Environmental Protection Act* is in place to prevent pollution and protect human health and the environment, the provincial and territorial governments are the primary legislative authority over the environment. To encourage

similar policies and standards across the country, the Canadian Council of Ministers for the Environment acts as the main coordinating body in policy-making. As such, regional governments have adopted the "polluter pays" principle and undertaken a regulatory role while the private sector is responsible for remediation and redevelopment (De Sousa, 2008). This has been an important step in framing the remediation legislation and policies for contaminated sites and clarifying the roles and responsibilities of the public and private sectors.

Provincial Policy Statement

"Planning authorities shall identify and promote opportunities for intensification and redevelopment where this can be accommodated taking into account existing building stock or areas, including brownfield sites…"(Ontario MMAH, 2005)

As indicated in the 2005 Ontario Provincial Policy Statement (PPS), redeveloping brownfields is a primary means of encouraging intensification. Moreover, considering nearly 40 percent of all potentially contaminated properties in the country are located in Ontario (MMAH, 2007), the province has significant reason to develop clear and comprehensive brownfields policy. Consequently, efforts to improve provincial legislation and regulations have improved significantly.

The *Ontario Environmental Protection Act* (EPA) is the main environmental regulation in controlling air, water and land pollution. However, brownfields received official recognition for their role in protecting the environment and human health under the *Brownfields Statute Law Amendment Act* in 2001 that was jointly developed by the Ministry of the Environment and the Ministry of Municipal Affairs and Housing. The purpose of the Act is to encourage the restoration of brownfields and reduce barriers to redevelopment, such as regulatory liability, planning and financial issues by providing municipalities with greater flexibility (OCETA, 2011b).

Following this legislative framework, the Ontario Regulation 153/04 made under the EPA in 2004, outlines requirements for filing a record of site condition whenever there is a change to a more sensitive property use, for example, from industrial to residential use. In 2007, amendments were made to this

regulation which further demonstrates the Ontario government's commitment to environmental and human health and safety. These changes are largely related to improving the integrity and standards of the record of site condition, and making the process for generic risk assessments more efficient and effective (Ontario MOE, 2011). The following description of the brownfield regulatory process involving environmental site assessments (ESA) and the record of site assessment (RSC) will take into account these new changes which took effect on July 1, 2011.

In the brownfield redevelopment process, the owner must undergo two phases of ESAs which are to be conducted by a qualified person. The purpose of conducting ESAs is to provide thorough information regarding the condition of a site and the scope of work necessary to reduce environmental, health and ecological risks. When evaluating the environmental condition of a brownfield property, the first step is to conduct a Phase I ESA. The purpose of this non-intrusive and systematic step is to determine if there is evidence of actual or potential contamination and to identify potential liabilities. Subsequently, the results of this phase help determine the need for further investigation as well as the type and extent of sampling and analysis necessary (Environment Canada, 2002).

If contamination is suspected, then the Phase II ESA is conducted in order to verify contamination in the soil or ground water. Unlike the Phase I ESA, this phase is considered intrusive as samples of the site are taken to confirm the presence of contamination and its exact location. Upon analysing the samples, there are three possible outcomes with varying actions depending on the criteria applied (see Appendix C). It is important to note that a popular approach is risk-based correction action (RBCA) or site-specific risk assessment. This approach can accelerate the redevelopment process by making the reuses of a specific property influence the level of remediation and method applied.

Risk-Based Correction Action

This approach helps clean-up contaminated properties according to the risks of exposure depending on proposed reuses–thus making reuse planning especially important to the redevelopment process.

Once a brownfield site is remediated according to acceptable standards, owners of the property can file a RSC–the cornerstone of new brownfields law. The RSC is a document that outlines the environmental condition of a property once it has been assessed by a qualified person, and states that it meets the necessary standards. While the filing of a RSC is usually voluntary, it is mandatory to file a RSC in the event of a property being changed to a more sensitive use (Ontario MOE, 2011).

The RSC is considered to be the main benefit of new brownfields-related law because it addresses concerns of regulatory liability. If an owner successfully completes a RSC, then the owner and related parties (e.g. creditors) will be protected from liability for several clean-up orders from the Ministry of the Environment. In other words, if a property is remediated according to standards at the time, then the Ministry is essentially providing a form of regulatory closure which applies even if standards become more severe. Consequently, the removal of this form of liability decreases risk for potential loans and helps to encourage redevelopment activities. However, this protection is cancelled if the RSC provides misleading information or if more contaminants are released after the RSC is filed (OCETA, 2011). Moreover, this form of liability protection does not provide protection from civil liability.

Considering the expenses of remediation, the Ontario government also has financial incentives to encourage the clean-up and restoration of brownfields. The Financial Tax Incentive Program enables the province to cancel all or a portion of its share of education property taxes for up to three years in order to help cover site remediation costs, as long as municipalities match the province's support with its municipal property tax (Ontario MMAH, 2008). While the provincial government provides some financial support, the municipal government has the greatest responsibility in facilitating redevelopments efforts by implementing incentive programs.

Green Municipal Fund

Although it is not the responsibility of the federal government to actually redevelop brownfields sites not owned by the state, the government can influence restoration efforts through funding programs. In 2000, the Green Municipal Fund program was created as the first federal-municipal partnership to address brownfields amongst other objectives and it was also the first

formal federal funding initiative (De Sousa, 2008). The Government of Canada endowed the Federation of Canadian Municipalities to establish the Green Municipal Fund, of which its monies are considered municipal funds. The purpose of the Green Municipal Fund is to "offer financial services and resources to Canadian municipal governments to improve environmental performance and reduce greenhouse gas emissions" (Federation of Canadian Municipalities, 2010). With such a broad purpose, funding in the form of grants or loans are provided for several sectors of municipal activity, amongst which is brownfield redevelopment.

Funding for eligible brownfield projects are for site remediation or risk management as well as the implementation of renewable energy production on brownfield sites. The grants offered for feasibility and field studies can cover up to 50 percent of eligible costs to a maximum of $350,000. Loans are also available to implement capital projects, with no specified loan limit in the brownfields sector (Federation of Canadian Municipalities, 2010).

It is important to note that the Green Municipal Fund is directed at municipalities with initiatives to redevelop their brownfield properties, not to the private sector. In general, municipal governments are the main applicants; however, partners of municipal governments are also eligible. Consequently, private developers that are in direct collaboration with the municipal government on brownfields projects may also obtain funding (Gregory, personal communication).

Ottawa's Brownfields Redevelopment Program

Considering reuse projects are generally redeveloped by private entities–such as developers, community development corporations and individuals–these stakeholders are the municipality's partners in the reuse and management of idle properties (Mallach, 2006). Fostering a supportive relationship with these parties is important in facilitating the redevelopment process and ensuring public needs and concerns are addressed. A way of guiding development is through the Community Improvement Plan (CIP), a tool which allows municipalities to direct public funds and implement policy changes for a defined area of the city. The purpose is to support programs that rehabilitate and clean-up the city, encourage public consultation for such programs, and provide planning and financial assistance

(Ontario MMAH, 2007). These financial incentive programs are mainly directed at the private sector in order to encourage redevelopment efforts.

In Ottawa, the Brownfields Redevelopment CIP encourages redevelopment through incentive programs. It is especially supportive of redevelopment in the central area, mixed-use areas, along main streets and nearby current or future rapid transit hubs (City of Ottawa, 2011a). It is important to note that these funds are paid out depending on actual invoice costs after the work has been completed.

The most significant incentive available is the Rehabilitation Grant Program which uses Tax Increment Financing (TIF) to provide assistance with brownfield redevelopment costs. Grants are funded through the increase in municipal tax revenues that result from the redevelopment of the property. They are given in the form of property tax rebates and can cover such costs as environmental site assessments, remediation, demolition, building rehabilitation, infrastructure upgrade costs, etc. These grants equal up to 50 percent of the city portion of the increase in property taxes and are payable annually for 5 to 10 years, depending on if the project is within a priority area.

Moreover, this program is integrated with the Development Charge Reduction Program which existed before the establishment of the brownfields program. Usually, properties must pay a development charge at the time that a building permit is issued. Through this program, costs such as environmental assessment, remediation, risk management and LEED program components are applied against payable development charges. The maximum reduction of 25 to 50 percent depends on the location of the project.

The last incentive is the Property Tax Assistance Program which provides tax relief by cancelling the City and education property tax increase that would arise on a brownfield property once it has been redeveloped. This reduction in property taxes can apply for up to three years and is intended to assist in paying for remediation costs.

In May 2010, amendments were made to the original Brownfields Redevelopment CIP due to budget cuts and the desire to refocus the program. The eligible costs of on-site infrastructure

upgrading were reduced from 100 percent to 50 percent and off-site costs are no longer eligible. In addition, the costs covered by the Project Feasibility Study Grant Program and the Environmental Site Assessment Grant Program are now paid as components of the Rehabilitation Grant Program rather than costs covered under their own programs.

Critiques, Lessons and Recommendations

The assistance and support for brownfields redevelopment has certainly improved over the last ten years in the City of Ottawa. The implementation of brownfields support is delivered to private developers in Ottawa through the Brownfields Redevelopment Program and the Green Municipal Fund–both of which offer considerable financial support for a range of costs incurred. To give recommendations to improve redevelopment process in Ottawa, a review of the overall strengths and weaknesses of the current brownfields support is necessary.

Strengths of Brownfields Policy Implementation

The financial programs available in Ottawa are similar to that of many Ontario municipalities. They support a wide range of costs while excluding offsite infrastructure costs because they are not directly part of the contaminated brownfield site (Hebert, 2010). Having this flexibility in eligible project costs is important since brownfield projects are complex with unexpected costs. Moreover, they apply creative methods like tax increment financing to raise funds for these projects. Another significant advantage of both programs is that they support the implementation of green technology and sustainable designs on brownfield sites. This is beneficial for not only the environment, but also the local economy as Ottawa continues to grow and support its emerging green technology industry.

In addition, these brownfields programs are integrated with municipal planning. The Green Municipal Fund supports public-private partnerships which give the city greater control over their own redevelopment initiatives while also allowing it to benefit from the expertise and resources of private organisations. Moreover, the Brownfields Redevelopment Program is aligned with the City's Official Plan adopted in 2003 and the Growth Management Strategy by promoting infill and intensification in priority areas. Brownfield projects located in the priority areas for intensification and densification receive more funding than in

other areas. As such, the brownfields programs encourage projects which fit within the long-term vision of the City.

In particular, a noteworthy strength of the Brownfields Redevelopment Program is the long-term value of its support, which is directed at the project and not necessarily the proponent. When grants are given to support feasibility studies and environmental assessments, the City is provided these expensive studies. Consequently, if the original project proponent decides not to proceed with the redevelopment, then these pre-project studies can be offered to a future proponent to consider.

Weaknesses of Brownfields Policy Implementation

While these two programs provide considerable support for private developers in Ottawa, there are always opportunities to improve the redevelopment process–which is the focus of this paper. The first issue is the lack of direct financial support for due diligence or pre-project assessments, including feasibility studies and environmental site assessments. While these costs are covered under both the Brownfields Redevelopment Program and the Green Municipal Fund, reimbursement is only provided after a project is complete. Having direct financial support is particularly important during these beginning stages since costs can put a project at risk of being abandoned, particularly by smaller developers. Consequently, reimbursement of due diligence activities directly after they are completed is an important factor to consider.

Secondly, while both programs support remediation efforts, they do not specify or encourage any certain method to be applied. The most common remediation method in Ottawa is digging and dumping the contaminated land. This is not necessarily the most cost-efficient method, but it is the quickest (Environmental Consultant, personal communication). This method is unsustainable since it does not always manage the brownfield waste but rather just moves it to another area where it may or may not be treated. The transportation process is also a concern due to the pollution from trucking and hauling as well as the additional traffic this causes. Other methods of remediation are more sustainable, such in-situ remediation where the contaminated land is injected with chemicals or bacteria. Consequently, offering additional support for such alternative methods should be considered.

Thirdly, the Brownfields Redevelopment Program lacks administrative and professional support. With only one brownfields coordinator spearheading the application process and providing pre-consultation meetings before the program application, there are missed opportunities to provide assistance beyond financial means, such as planning support. A large entity like the City of Ottawa has significant in-house expertise that could help offset costs. This is an opportunity for the City to reduce financial burdens for the project proponent while also providing technical and planning guidance.

Finally, the author believes that the most significant missed opportunity of Ottawa's brownfields programs is that it fails to directly support or facilitate community involvement during the reuse planning stage of redevelopment projects. This is an important consideration because brownfield properties can be redeveloped for several adaptive reuses that range in economic returns and social benefits. Since they can have such significant impacts on neighbourhood revitalization, it is important for reuses and end-uses to be aligned with community needs. Nonetheless, private brownfield projects in Ottawa do not require any specific community stakeholder involvement beyond the standard planning procedure. This is particularly disconcerting since projects receive public funding, but are not required to involve community stakeholders.

Before decisions are made to commit public resources to help plan, design and execute redevelopment projects, it should be necessary for proponents to have demonstrated a comprehensive assessment of the opportunities and benefits of the project (Mallach, 2006). To accomplish this, the role of the local government must evolve to provide specific incentives for private developers to use community and stakeholder engagement practices to help determine reuses. This is beneficial to both developers as well as affected community members.

Lessons from the United States

While brownfields and contaminated properties are not uncommon around the world, each nation's approach to redevelopment is influenced by the level of burden of such properties as well as by their financial and social resources, land availability, level of growth and other governmental priorities (IEDC, 2008). In terms of brownfield restoration efforts, countries which have comparable goals, policies and systems as

Canada include the United Kingdom, Germany, the Netherlands, and of course the United States. In particular, the United States is the most similar to Canada in brownfield redevelopment since the private sector plays the main redevelopment role while federal efforts are focused on addressing liability, risk and uncertainty issues (IEDC, 2008).

The U.S. EPA has established two related processes that maximize community involvement while determining land use assumptions for Superfund sites: the reuse assessment and planning processes. To begin, it is important to remind the reader that unlike brownfield redevelopment projects, the goal of Superfund sites is to remove environmental and human health concerns rather than to redevelop the site. Nevertheless, to determine appropriate remediation methods that also reduce unnecessary costs, the U.S. EPA encourages local stakeholders to communicate preferred land uses before the selection and implementation of remedies; this is particularly useful for sites that do not require critical removal action (U.S. EPA, 2001).

Reuse planning is a voluntary process which involves extensive community interaction in order to collect information on the site's characteristics, land uses, history, community goals and objectives, local market conditions, etc. This process is a community-based process in which a team facilitates discussions with local residents in order to identify concerns, objectives and develop a reuse plan for the area (Cook and Friedland, 2005). While this plan is not binding, it can help to raise awareness, educate the community, establish realistic community expectations for clean-up activities and share knowledge of the site. A similar process should be applied to Ottawa's brownfields program to make collaborative reuse decision-making a priority in the redevelopment process.

While including community engagement in the redevelopment process generally results in significant benefits for private developers, it can also be viewed as an obstacle if the engagement process causes public outcry and stalls the project. As such, public intervention may be necessary to encourage actions which are socially beneficial, but can potentially jeopardise or reduce the economic return of a project. For example, the U.S. EPA contributes significant funding to cities which include a greening component for their brownfield programs (De Sousa, 2006). In addition, all brownfield projects in the United States that receive

public funding are required to provide public notice and a community involvement component in their redevelopment plans (U.S. EPA, 2009). Consequently, Canada has several opportunities to learn from the United States to encourage collaborative approaches to reuse decision-making.

Recommendations for Ottawa

The author believes that the addition of a specific incentive for developers to encourage community involvement in the reuse planning process can support the greatest community involvement in private projects with the least financial strain on the municipality. This can be accomplished within the City of Ottawa's existing planning process while slightly modifying the current Brownfields Redevelopment Program.

In addition to the existing three incentives, it is recommended that the program introduce a Collaborative Planning Incentive. Depending on the complexity of the proposed project, the City's brownfields coordinator can recommend additional support from expert staff at the City of Ottawa and/or a third-party (e.g. Waterfront Regeneration Trust) to act as a facilitator, mediator or technical consultant.

If the project proponent agrees to the recommended additional support for a collaborative planning process, then up to 50 percent of costs incurred from due diligence activities will be immediately reimbursed rather than gradually after the project is complete through Tax Increment Financing. This is a considerable incentive because even before applying to the Brownfields Redevelopment Program, the project proponent must have completed a Phase II environmental site assessment which can cost $10,000 to $15,000. The intention is for these funds to go towards collaborative planning expenses. Costs from third-party collaborative planning services would also be eligible under the Rehabilitation Grant Program.

This incentive acts as a bridge between the planning approvals process and the brownfields redevelopment program. It is important that during the pre-consultation meetings between the program's brownfields coordinator and the project proponent, the benefits of the Collaborative Planning Incentive are well-stated. This incentive helps guarantee that projects include at least some form of participative community involvement and that the collaborative process is not completely privately managed or conducted in-house. Most importantly, it encourages early-on

community involvement which is beneficial in the long-term for all parties. While all projects have different logistical concerns, the following chapter introduces factors to consider when developing a collaborative process for community involvement in brownfield reuse planning.

CHAPTER 7: COLLABORATIVE REUSE PLANNING

In a municipality like the City of Ottawa where brownfield contamination is not severe, financial support for remediation may not be as necessary as support for reuse planning. To improve the redevelopment process for large or complex projects, municipalities should offer community facilitation expertise to encourage the involvement of local stakeholders in collaborative reuse planning. Reuse planning influences other parts of the redevelopment process, such as the likelihood of gaining financial assistance and the remediation method applied to the site. Thus, having a clear vision of the future scale, character and use of a site is especially important. The early involvement of different stakeholders not only helps avoid adversarial situations, but it can also build community-support which is essential to the success of a project. The following section focuses on collaborative planning and its applicability to reuse planning by:

- encouraging collaborative practices as a means of consensus-building in reuse planning;
- identifying criteria to help design and evaluate collaborative planning approaches for brownfield projects; and
- suggesting categories of interest to discuss in a collaborative reuse planning process.

WHEN COLLABORATION IS APPROPRIATE

Consensus building is basically a method of mediation to resolve issues that involve many parties with different interests at stake. In particular, it is often said that the consensus building process results in the approximation of the public interest (Innes, 1996)–a key consideration for planners. In the case of complex issues like the reuse potential of brownfields, the key approach to consensus building is collaborative planning. This is where active

stakeholders and the public can interact in interest-based negotiations to reach a solution that is mutually acceptable (Cullen et al., 2010). There are several types of collaboration with varying degrees of public participation, such as joint ventures, public-private partnerships, community gatherings and public meetings. How a collaborative planning approach is designed and evaluated depends on several factors.

To begin however, it is important to understand when collaborative planning can be an appropriate coordination technique for brownfield redevelopment projects. Not all projects benefit from consensus-based practices. Collaboration can be a complex and costly process in both time and money–the main reason why private developers often avoid such practices. So if the issues are well understood by the stakeholders and there is reasonable consensus on a plan, then collaboration is not necessary. On the other hand, owners and developers of brownfield properties located nearby residents should involve other stakeholders who are affected by the project. This is particularly true of brownfield properties in established and affluent neighbourhoods where community associations have significant influences. In such cases, pro-active public involvement is beneficial to the community as well as to project proponents.

Experience in public decision-making has resulted in the realisation that science and professional expertise have limitations in understanding complex problems like brownfields. Brownfield projects can involve incomplete information and contradictory requirements as it deals with: historical contamination; narrow stakeholder interests; and fragmented issues like neighbourhood needs, aboriginal rights, local economics, and conservation. As such, brownfields can be considered wicked problems that have no optimal solution–neither scientific methods nor expert knowledge can arrive at the best reuse decisions. Instead, the success of a brownfield redevelopment project is more dependent on how the planning process engages stakeholders and successfully addresses concerns rather than the final plan itself.

In order to have a comprehensive understanding of the challenges and opportunities of certain complex brownfield sites, other sources of information like lay and local knowledge are needed (Innes and Booher, 2010). While the remediation phase is a technical process that requires expert-based knowledge, the

successful reuse of a brownfield property is instead highly dependent on how public needs are met and the process used to share community concerns. Consequently, broadening the types and sources of knowledge is necessary in planning brownfield redevelopment projects. This can be done through a collaborative planning process where participants are informed of the issues and encouraged to express their interests and knowledge while engaging in productive dialogue other stakeholders.

Collaborative Planning Strategies

One of the greatest advantages of collaborative planning practices is its flexibility. In fact, since every project is different, collaborative planning strategies must be more or less unique. There are, however, ways of evaluating the planning process and design. And while professionals may create the approach, collaborative planning must be monitored and revised continuously with the feedback of participants. With the goal of determining appropriate reuses for a brownfield property, the following are criteria to consider when evaluating the process design, outcome, and structure of a collaborative planning process.

Process Design Criteria

Process design in collaborative planning refers to the participants involved in the process and how they should be encouraged to interact. Firstly, it is important to remember that in brownfield projects, there are three stakeholder groups: those who are directly influenced by the issue; those who could make change happen; and those who could block change (Innes and Booher, 2010). And in terms of the public perception and ultimate success of a redevelopment project, all three stakeholders are equally as important. In urban brownfield redevelopment projects, the diversity of stakeholders can include nearby residents, property owners, Aboriginal rights representatives, public officials, private developers, local entrepreneurs and many more.

Having this diversity of stakeholders is essential to determining end-uses that are in demand–a positive outcome for both project developers and the surrounding community. While it does add time to the project timeline, it is well worth it in the long-run. As a starting point, informing participants of the issues and getting them on the same page is essential to begin receiving constructive input. This requires getting both deal makers and deal breakers in

the same room; otherwise the legitimacy of a collaboratively produced plan can be contested.

Secondly, recognition from all stakeholders that they are in it together is a key requirement of a collaborative process. While getting different stakeholders to the table is one aspect, acknowledging each other's importance in the redevelopment project is another necessary challenge. According to negotiation theory, interdependence amongst stakeholders is necessary to avoid situations where one participant's gain is another's loss (Innes and Booher, 2010). To achieve mutual gain agreements, individual interests cannot be achieved without the participation of other stakeholders. This is particularly true in development projects where public backlash with media support or legal injunctions can significantly stall progress. Consequently, to move forward, parties must recognize each other's positions to come to a collaborative plan.

Moreover, once a redevelopment plan is created, stakeholders must be actively involved in the implementation and monitoring of progress. The plan requires final agreement amongst stakeholders with clear commitments to roles and responsibilities. It is the role of public oversight and neighbourhood residents to hold active stakeholders accountable to agreed-upon plans. This is particularly necessary in brownfield redevelopment projects where environmental concerns are a major issue. Since interdependence is so important to a successful collaborative planning process, developing professional relationships and trust is also necessary.

Thirdly, as stakeholders engage in collaborative planning, they must have authentic dialogue where participants are free to express their opinions while being heard and listened to by others. For such an exchange to occur, Jurgen Habermas' theory on the communicative process explains that participants must have face-to-face interaction, equal access to information and treatment, understanding of each other's perspective, and provide truthful and legitimate input (Innes and Booher, 2010). In particular, face-to-face dialogue is necessary to build trust and relationships amongst participants–which is essential to facilitate stakeholders' acceptance and appreciation for their interdependent situation. Since collaborative planning processes can involve so many stakeholders, authentic dialogue is often not

possible amongst all participants. The important thing is for all major points of view to be heard by all participants.

The way information is shared is also a unique aspect to consider in collaborative planning. Brownfield redevelopment has both specific considerations, such as environmental standards, as well as intangible or ambiguous considerations like historical value and Aboriginal rights. How information and ideas are shared from local and expert knowledge influences how they are received by the audience. While some information may be effectively communicated through an impersonal spokesperson, others can only be explained through personal storytelling. The chosen methods of communication should depend on how information can be most effectively communicated to the audience being both accurate and memorable. These are factors that collaborative planning strategists must consider in the process design phase.

Structure Design Criteria

While collaborative processes can differ from project to project, there are certain ways of structuring the process that are particularly suitable for brownfield reuse planning. Firstly, there are two types of expertise necessary in successful collaborative processes, neutral facilitation and topical expertise (Goldstein, 2010). Dedicated staff should be used to facilitate discussions, engage in shuttle diplomacy and draft documents–this is where city planners can offer their expertise. While the responsibilities will vary, the key is for the active stakeholders to consensually agree with the selection of all staff and consultants (Innes and Booher, 2010). Having neutral facilitation is particularly important to help participants focus on interest-based negotiation rather than positional bargaining. Since collaborative processes would typically address several brownfield-related topics, staff can keep participants informed of the issues while also helping them feel at ease to interact with other stakeholders.

Relatedly, the other type of necessary expertise is with regards to information and data. Multi-stakeholder collaboration encourages a wide-range of participation. In brownfield projects, experience and understanding of the redevelopment issues vary. In order for discussions to be useful, participants must first have common information and facts. Here, experts can be used to gather and share data; this is particularly appropriate for technical considerations like environmental remediation. Not only do experts share information with stakeholders, but stakeholders

themselves should be encouraged to challenge the data and understand its limitations (Innes and Booher, 2010). This gives the opportunity for lay and local knowledge to be integrated with expert knowledge. It is only once participants are operating on the same information and understand each other's needs and situations that they can begin to develop criteria and options to determine reuses.

Secondly, since there are several topics to address in a brownfield redevelopment project, it is recommended that negotiations be divided into a central committee and small groups that are based on categories of interest (which will later be discussed in detail). The central committee must include diverse interests and be composed of leaders in their field and those who represent a strong public opinion. This committee is used to set the direction of the collaborative planning process and make final decisions which will ultimately validate a proposal–one that is collectively created by small interest-based groups. Within these smaller groups is where the most productive discussions happen. They give minority or non-active stakeholders the opportunity to participate in the planning process based on particular interests or concerns. In addition, task groups can be formed in order to address certain technical or detailed issues. By working in smaller groups, participants are more likely to develop relationships with one another and be open to sharing personal experiences.

Thirdly, collaborative planning processes should be structured to create a single-text negotiating document. The document summarises the main interests of stakeholders and the agreements that have been collectively produced. It is meant to evolve throughout the collaborative process and be available for participants to share the progress with boards or groups they represent. In order to make agreements, the interest statements are used as the decision-making criteria to resolve issues (Innes and Booher, 2010). This helps make the evaluation of potential solutions more objective and allows participants to make connections between the wide-range of interests involved. In the end, each small interest-based group has the opportunity to review the document and offer criticisms of the draft. Once each small group has revised the draft and given their approval, the penultimate proposal is passed to the central committee for final review and implementation.

Outcome Criteria

While the ultimate goal of such a collaborative process is to determine appropriate reuses in terms of scale, character, and end-use for a brownfield property, there are other important outcomes to weigh. Participants of the collaborative planning process should feel that progress has indeed been made. Collaboration must be perceived as useful by improving the knowledge, understanding, and skills of participants in the process (Cullen et al., 2010). For an issue as complicated as brownfields, interests can be narrow with little intersubjective understanding. This makes it difficult for participants to understand other perspectives. Appropriately designed collaborative planning processes encourage participants to share their knowledge and experiences with one another.

A well-designed collaborative process should encourage participants to recognize their mutual interests. Brownfields require significant time and financial investment, but can offer great outcomes for communities, developers, and the city. Considering their complexity however, large-scale redevelopment projects cannot and should not be done alone. Collaborative planning should enable participants to discover the shared benefits of joint action and to begin exploring those opportunities during the planning process. Moreover, successful processes can help participants build relationships and social capital that survive beyond the collaborative process (Innes, 1996)–which can help mitigate disputes on future projects.

Collaborative planning is not a science. The way the process is organised can significantly influence the outcome and perceived success of the plan. As with any planning process involving multiple stakeholders, conducting interviews or exit surveys at the end of the collaborative planning process is essential. It is important to structure the questions to encourage constructive comments reflecting whether interests and concerns were satisfactorily addressed by the group. This form of feedback gives project organisers a way of gauging the success and failures of the process, which will help build needed competencies for future multi-stakeholder projects.

Shared Categories of Interest

Redevelopment projects must offer public officials, community members, developers, and other stakeholders a vision of realistic

reuses that reflect both market realities and community goals. By using collaborative planning as a coordination technique, the potential reuses of brownfields can be explored by discussing the following categories of interest.

Visioning and Community Integration

The reuse of a brownfield property can stimulate interest in neighbourhood revitalization. The larger the site, the greater the reuse opportunity can be. As such, it is important for brownfield redevelopment projects to be part of a long-term vision. In fact, in areas with widespread abandonment and/or large brownfield properties with high redevelopment potential, projects should be linked to a larger neighbourhood revitalisation plan. This plan must provide guidelines such as: basic siting principles (e.g. buffer zones from waterways); the identification of suitable areas for infill, redevelopment or preservation; and design guidelines that will apply to the brownfield property as well (Mallach, 2006).

In the City of Ottawa, this would involve the integration of the Brownfields Redevelopment Program with community design plans and any neighbourhood plans developed through the Neighbourhood Planning Initiative.

Neighbourhood Planning Initiative (NPI)

In Ottawa, there are currently two NPI pilot projects in Hintonburg-Mechanicsville and Vars, a rural neighbourhood. Through public consultation, these plans identify a broad community vision and priority actions for a larger geographic area. They are linked to existing initiatives such as community design plans which are more focused and detailed in nature.

Since brownfields can have years of devastating physical and social effects on surrounding neighbourhoods, it is appropriate for their redevelopment to involve the residents who have been most impacted by their presence. Creating a common vision for the area–and the identification of how the reuse of the brownfield can contribute to that vision–should be achieved through a collaborative planning process. For example, if a neighbourhood nearby a former industrial waterfront envisions a greater connection to the water, the redevelopment of the brownfield can allow for a mixture of complementary uses such as ground-level retail and open space greening.

In a collaborative planning process, developing a common vision requires addressing community concerns of preserving sightlines as the project grows, gentrification, maintaining the character of the neighbourhood, and other topics. While this process can be challenging to organise, community participation and visioning exercises are needed to ease concerns and create local support for the future use of brownfield properties. This proactive involvement can prevent protests and litigation. It also increases legitimacy to the neighbourhood plan by demonstrating the role that the community played in assisting the lead agency to develop the land-use proposal (Cook and Friedland, 2005). Developing a common vision and neighbourhood revitalisation plan allows the end-use of brownfield properties to be integrated with this vision. Overall, community input is the distinguishing factor of successful redevelopment projects.

Site Description, History and Design

Brownfield properties can often have significant histories which are indicative of their current condition and future potential. Having a thorough understanding of this history is essential to evaluating the extent of contamination of a brownfield as well as its heritage value–two considerations which have extensive impacts on reuse planning. The reality however is that not all brownfield properties have existing documentation of its previous history. This is particularly true of brownfields which are abandoned and where parties responsible for any pollution are no longer available for questioning. Consequently, when the description and history of brownfields are being evaluated, sources of information to consult are stakeholders who have been exposed to the brownfields–the long-time residents, former workers and local historians.

While qualified professionals can determine the existing conditions of a brownfield property, knowledge of how a site operated in the past can facilitate the process of evaluating physical characteristics and possible contamination. In other words, knowing what sort of hazardous substances like heavy metals or toxic chemicals were used on-site and where to look for toxic spills can speed-up the evaluation process. Accessing this knowledge requires project managers to reach out to the public and to involve them in the redevelopment process. By using a collaborative planning process, public participants benefit from additional knowledge of the issues and an opportunity to raise

concerns while receiving support from other stakeholders. The active stakeholders benefit from gaining additional knowledge of the site which is not initially apparent.

Having a thorough knowledge of the history of a location is also important to evaluate its potential reuses. Since reusing an existing building is not always economically possible, such considerations like heritage protection can encourage adaptive reuse by presenting potential economic and environmental savings (Laefer and Manke, 2008). For example, the City of Ottawa has a program which provides grants of up to $5,000 on a matching basis for the restoration of heritage buildings (City of Ottawa, 2011d). While not all brownfields have heritage value, some properties like those in former industrial districts can build a strong case for heritage designation. Brownfields with heritage value must consider this characteristic in its reuse planning as both a limitation and an opportunity. While there are limitations to how much the building can be altered, there are opportunities like heritage tourism to consider.

Factors like the character, architectural qualities and design of a redeveloped brownfield property should reflect the community's architectural heritage and culture. Understanding what qualities are historically and locally significant can help developers propose designs which are more likely supported by the community. And involving community stakeholders in the actual implementation of the plan can also increase local buy-in. For example, involving the local horticultural society can save money on greening projects and build local support.

A collaborative planning process can identify acceptable architectural and landscaping treatments as well as other considerations like density, massing, setbacks, the relationship between buildings and open spaces, the relationship between the character of the site and its surrounding neighbourhood, etc. (Mallach, 2006). It is important to recognise that respecting the past does not necessarily mean reproducing the same architectural designs. Rather, the objective is to ensure that the old and new designs complement one another.

Market Dynamics and Marketing Strategy

Brownfields by definition are generally abandoned or underutilised properties. The low demand for such buildings or vacant lots in a community reflects an opportunity to adapt the

brownfields for new uses. A successful reuse strategy is dependent on the ability of project leaders to create a demand for these new uses (Mallach, 2006). To build a reuse strategy for the brownfields, project proponents must understand the particular market dynamics of an area. This requires identifying missing needs and potential end-users whether they are residents or major tenants of a commercial building. A collaborative planning process can help determine how these abandoned buildings can best be reused to serve the community while also providing a reasonable return on investment for private stakeholders.

Analysing market dynamics requires careful consideration of what is currently offered, what is needed by the community, constraints, and whether the brownfield properties in question can or even should meet this need. Choosing one reuse can mean forgoing other options and outcomes. For example, low-income and affordable housing may be an unmet community need, but such reuses can encumber other efforts to attract a diverse population which could help build a more substantial economic base. Moreover, considering factors such as architectural quality, location, and land value, there may be other buildings or infill properties which are more suitable for such uses than brownfield sites. Consequently, economic, environmental and social stakeholders must be involved in building the neighbourhood revitalisation plan and setting priorities.

Another aspect of reuse planning is the marketing strategy. This is the promotion and generation of demand for the proposed end-use and the overall neighbourhood. This requires identifying the target population to market the development, focusing on the assets of the area to attract demand, and dealing with negative perceptions (Mallach, 2006). Depending on the end-use and target population, factors such as proximity to public transportation, public schools, outdoor recreation or commercial streets may be highlighted. On the other hand, negative features such as potential contamination must be addressed through informative messaging. Marketing can help to reduce stigmatization of contaminated brownfields by focusing on the benefits that have been achieved through remediation in comparison to other lands. For example, the redeveloped brownfield property can be marketed as more sustainable and even cleaner than other properties which have never been evaluated for potential undiscovered contamination (Simons, 1998).

Public participation and collaboration from the people who currently live and work in the area can help in developing the marketing strategy. In particular, local stakeholders such as universities, real estate firms, local media outlets, and business improvement areas can contribute information on market dynamics that is mutually beneficial to them as well. For example, such engagement can result in brownfield reuses that help meet demand for student housing, the sharing of insight on attractive real estate opportunities, and media coverage to attract participation in the collaborative planning process. Reaching out to the community can help gain practical marketing assistance while also developing relationships that are beneficial to the implementation of redevelopment and marketing strategies.

CHAPTER 8: CONCLUSIONS

Transforming brownfields from derelict properties into neighbourhood assets is a complex process–one that requires support from the local government and community. Redevelopment is an expensive process, but it is also a complex process that can benefit from stakeholder involvement. Municipal intervention in brownfield redevelopment requires more than just reducing costs for private developers; it is also a planning issue. Providing support for these projects involves not only financial assistance, but community facilitation expertise as well. Such a two-pronged brownfield redevelopment program can reduce risks for the private sector while also building local support that can help keep projects on time and on budget. The study of Ottawa's brownfields environment demonstrates a situation where stakeholders would benefit from such an improvement to the Brownfields Redevelopment Program.

While the City of Ottawa does not have a large brownfields problem, it does deal with concerns of urban sprawl and sustainability–particularly as it struggles to maintain its Greenbelt. And, although the municipality may not have significant brownfields acumen, local planners and City staff have experience with public consultations and collaborative practices. By offering this form of support, Ottawa can improve its brownfields program without having to invest more funding. As communities increasingly build stronger neighbourhood associations, the need for collaborative reuse planning practices will become more apparent.

When it comes to brownfield projects, the clean-up process of brownfield projects is likely to always be welcomed by locals. However, the reuse planning issues of scale, character and use are often at the heart of community concerns. Consequently, private developers must be upfront with community members and give them an opportunity to express concerns and give feedback that influences planning decisions–this is absolutely essential to successful brownfield projects.

Depending on the complexity of the brownfield site, the level of involvement can range from basic public consultations to collaborative reuse planning. Through this report, the author has conveyed the importance of integrating brownfield redevelopment projects with neighbourhood planning efforts. As guardians of the public good, municipalities have a responsibility to encourage and directly support consensus-based decision-making as they intervene in the brownfield redevelopment process.

APPENDIX A: GENERAL INTERVIEW GUIDE

1. Please describe your role with the organisation and specifically your experience with the brownfield redevelopment industry.

2. In Ottawa, is it the public or private sector that is most active in redevelopment projects?

3. What is your experience with the City of Ottawa's Brownfields Redevelopment Community Improvement Plan (CIP) Program?

4. The basic redevelopment process involves the following:
    a. Identifying brownfields
    b. Conducting site assessments
    c. Addressing financial barriers and risks
    d. Determining property values
    e. Exploring market demand and community acceptance
    f. Evaluating clean-up options

    - Would you add any other important step to this?
    - At what point does the private developer and/or landowner generally commit to redeveloping a property?
    - At what point are remediation activities begun? Before or after end-use is determined?

5. How are the end-uses or reuses of brownfields currently determined?
    a. Do private stakeholders determine end-uses and then apply for a zoning by-law amendment if necessary? Is it as this point that the only public meeting is actually necessary?
    b. How would you describe the level of stakeholder participation in determining end-uses?
    c. What are the most common end-uses in Ottawa?

6. Do you think the brownfield redevelopment is a complex issue that could benefit from a collaborative planning approach to address certain end-use considerations, such as:
    a. Site description and history
    b. Project and community integration
    c. Market dynamics

7. In your opinion, what are best practices that are necessary for a successful redevelopment project?

8. Are there any other people you feel can provide additional insight for my project?

APPENDIX B: ETHICS APPROVAL

McGill

Research Ethics Board Office
James Administration Bldg, room 429
845 Sherbrooke St West

Tel: (514) 398-6831
Fax: (514) 398-4644
Ethics website:www.mcgill.ca/research/researchers/compliance/human/ Montreal, QC H3A 2T5

Research Ethics Board I
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 433-0411

Project Title: Brownfield Redevelopment: Shifting Focus from Remediation to Collaborative Reuse Planning

Principal Investigator: May Pham

Department: School of Urban Planning

Student Status: Master's Student

Supervisor: Prof. D. Brown

This project was reviewed on 15 April 2011 by expedited review

Rex Brynen Ph.D. Chair, REB I

Approval Period: _02 May 2011_____**to** _____01 May 2012___

This project was reviewed and approved in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Subjects and with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

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* All research involving human participants requires review on an annual basis. A Request for Renewal form should be submitted 2-3 weeks before the above expiry date.
* When a project has been completed or terminated a Study Closure form must be submitted.
* Should any modification or other unanticipated development occur before the next required review, the REB must be informed and any modification can't be initiated until approval is received.

APPENDIX C: OUTCOMES OF THE PHASE II ENVIRONMENTAL SITE ASSESSMENT

The first outcome is when the results are measured against the generic criteria and no contamination is found or low levels that are acceptable to human and environmental health. These generic criteria are stated in the Tables of Site Condition Standards under Ontario's EPA, also known as Tier 1. These stringent standards are developed to provide receptors of contamination protection from contaminants via several possible pathways, including drinking water quality, ground water vapour, etc. regardless of the brownfield property's characteristics or future use (Ontario MMAH, 2010). In such a situation, the property is confirmed completely safe for redevelopment with no remediation necessary.

The second possible outcome is when contamination exceeds generic criteria and the option exists to undergo a modified generic risk assessment, also known as Tier 2 standards or risk-based correction action. In such a situation, the generic site condition standards are modified according to the physical properties that are specific to the site; this also includes considerations of risk depending on the future end-use of the property. The purpose of this method is to encourage flexibility. Even if a site does not meet Tier 1 standards, it has the possibility of meeting Tier 2 standards which provide the same level of protection, considering the possibility of risk due to the site's conditions. It is important to note that this new standard increases the importance of determining end-use possibilities and having a clear reuse plan.

The third and last possible outcome is the traditional risk assessment. If the Tier 2 approach is not possible or if the site condition does not meet standards specified in the regulation, then the proponent must either remediate the site according to the most stringent criteria or conduct a full scale risk assessment (Ontario MMAH, 2010). The traditional risk assessment process applies several models and various assumptions. In providing the widest range of options in how standards may be developed, the process also takes the longest time and is the least efficient.

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