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**Regional Planning**

# Brownfield Sites:
# An Options Paper for the
# Halifax Regional Municipality

# BROWNFIELD SITES:
# AN OPTIONS PAPER FOR THE
# HALIFAX REGIONAL MUNICIPALITY

**HALIFAX REGIONAL MUNICIPALITY**
**PLANNING AND DEVELOPMENT SERVICES**

**PREPARED BY ANDREW WHITTEMORE**
**WITH THE ASSISTANCE OF ANDREE LALONDE**
**MAPPING BY TIM BURNS**

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xecutive Summary

A brownfield site is a vacant or underutilised property passed over for redevelopment due to actual or perceived contamination or other obstacles. As cities across North America struggle with the issue of sprawl, and the problems associated with sprawl, brownfield redevelopment has become increasingly recognized as an important tool to manage new growth and for creating new opportunities to reduce the overall consumption of greenfield land in the rural and exurban areas of our cities.

Traditionally, the most common upgrading of industrial brownfield sites has been toward commercial or warehouse projects, although, as of late, significant evidence suggests that this pattern is changing. Specifically, redeveloping brownfield sites for purposes of low intensity uses, like residential uses, are on the rise. In fact, a recent survey of Canadian brownfield redevelopment projects found 38% of the projects involved conversions from industrial to residential uses, while 40% involved conversions to mixed commercial/residential projects, whereas only 13% of the projects involved conversion to new industrial uses. Moreover,

brownfields have increasingly undergone major redevelopment projects, such as new urbanism or transit oriented neighbourhoods.

Unlike most American cities where a wide range of innovative environmental and economic policies and programs are available to foster and encourage redevelopment of brownfield sites, HRM's response to brownfield redevelopment is lagging. Specifically, the role of local government has been very limited across Canada, with the exception of a few municipal government agencies like Hamilton, Ontario, who is actively involved in the implementation of a brownfield redevelopment program.

The absence of brownfield redevelopment programs in Canada, and in HRM specifically, is mainly attributed to a perception that brownfields are a minor problem, and one whose resolution would entail only marginal public benefits. A marked decline in government spending, and a general unwillingness to subsidize private development also contributes toward this overall malaise. Further, although the demand for real estate in large urban centres in Canada has increased considerably, and has improved the profit of redevelopment, private

sector stakeholders continue to perceive both residential and industrial redevelopment as being: less cost-effective, higher risk, and generally more difficult to develop than greenfield sites. As a result, greenfield site development remains the largest recipient of new construction in most cities, including HRM.

However, research has shown that underutilised brownfields are a major problem in Canadian cities, and that our cities would certainly benefit from redevelopment programs. Therefore, in recognition of this potential opportunity, the purpose of this paper is to determine what options and opportunities may exist for HRM. Specifically, this paper attempts to determine whether or not a brownfield redevelopment program would be an effective growth management tool for HRM.

The paper has been divided into four Parts. Part One is comprised of chapters one through three. The first Chapter focuses on the problems associated with urban growth, specifically the problems with urbanization of greenfield sites in the rural fringe areas. The next chapter provides an overview of the relationship between uncontrolled growth and the development of brownfield sites.

The final Chapter provides an overview of the Brownfield Real estate market conditions, highlighting HRM's development trends and brownfield redevelopment projects.

The focus of Part Two of the paper is the exploration of the potential options available to HRM. This section contemplates whether or not HRM should follow the path of the American cities by implementing a wide range of innovative policies and programs to foster and encourage redevelopment of its brownfield sites, or to essentially maintain the status quo, whereby the majority of new growth would be directed to greenfield areas. Assessing these two options includes an analysis of the cost and benefits of developing brownfield sites versus those of developing in greenfields. Specifically, Chapter 4 explores the area differentials required for brownfield redevelopment versus greenfield sites. Chapter 5 explores the economic, social and environmental costs and benefits associated with retaining the industrial use opposed to converting them to residential or commercial. Finally, Chapter 6 assess the actual economic, social and environmental costs and benefits to the public associated with developing brownfield sites instead of greenfields.

In consideration of future options for HRM, Part 3 of the document focuses on the potential barriers to redevelopment, and offers several recommendations for overcoming these. The barriers are generally categorized into regulation, financing, insurance and liability, science and technology, and land use planning.

Part Four of the report provides an overview of the approaches used by other cities that have successfully facilitated and fostered brownfield redevelopment. Chapter twelve includes an overview of several key case studies of local Brownfield Redevelopment Programs including Hamilton, Ontario, Louisville, Kentucky, Trenton, New Jersey, Chicago, Illinois, and Philadelphia, Pennsylvania.

Finally, assuming that HRM may wish to pursue brownfield redevelopment as a real option for managing future growth, Part Five of the report provides general recommendations for future, short, medium and long terms priority actions for HRM. In addition, a proposed "Redevelopment Strategy Framework" is provided for HRM.

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# Part One

Chapters one through three comprise Part One of this report. The first Chapter focuses on the problems associated with urban growth, specifically the problems with urbanization of greenfield sites in the rural fringe areas. The next chapter provides an overview of the relationship between uncontrolled growth and the development of brownfield sites. The final Chapter provides an overview of the Brownfield Real estate market conditions, highlighting HRM's development trends and brownfield redevelopment projects.

# Chapter One - The Problems Of Growth

"Municipalities throughout North America have experienced rapid growth in the suburbs and outlying areas over the last several decades. This phenomenon, commonly referred to as "urban sprawl, has required extensive expenditures in new community infrastructure - schools, roads, sewers and water distribution systems. Specifically, the problems of sprawling growth can be generally categorized by the following:

## 1.1 Outward Growth and Land Consumption

Metropolitan areas across North America are adding urbanized lands at a much faster rate than they are adding population. Between 1982 and 1997, the amount of Greenfield land converted to urbanized land in the U.S. increased by 47%, from 51 million acres to 76 million acres. Although similar information is unavailable for Canada, it is presumed that trends experienced in the southern United States would be comparable. For the maritime region, given similar demographic and economic conditions, it is suggested that comparisons could be drawn from the experience of Maine.

The Maine experience confirms that conventional thinking about land consumption and population growth is incorrect. Specifically, land consumption is not directly proportionate to population growth. Therefore, sprawl can be a genuine issue in communities experiencing only slight population growth. In Maine, despite a marginal population increase of 5.4%, the amount of urbanized land increased by 46.9%.

The comparison drawn between Bangor, Maine and HRM seem to have validity. As witnessed in Maine, HRM's growth pattern can be characterized best as "outward expansion". As the Region has grown, it has spread further from the urban core, and has become less dense. Most of HRM's growth has occurred in the suburban areas and within the rural commutershed. Similar to Maine, the actual number of households have outpaced the population growth, accounting for the consumption of significant greenfield lands, and increasing sprawl.

## 1.2 Growing Congestion and Dependency on the Automobile

Another significant problem confronting cities across North America is that driver's mobility has been severely degraded. The conventional suburban development form has created a population increasingly more reliant on transportation to conduct daily activities, whether it be work, shopping, or recreation, as these are typically not located where people are living. As a result, "the time commuters spend in traffic in small and medium-sized cities has more than quadrupled since 1982, growing at a far faster rate than it has in larger cities illustrating what is fast becoming one of life's basic truths-traffic congestion is not just a big city problem".[1]

**Table I.1.1: Average Hours Spent Sitting in Traffic**

| | | |
|---|---|---|
| ' | 1982 | 11 hours |
| ' | 1985 | 20 hours |
| ' | 1990 | 25 hours |
| ' | 1995 | 43 hours |
| ' | 1999 | 53 hours |

**Source: Texas Transportation Institute, Urban Mobility Study**

Mobility and accessibility problems arise from poorly integrated land use and transportation. Dispersed, low density forms foster greater reliance on personal

[1]Patrick Moan, Smart Growth New Approaches to Community design for the 21st century. HRM Planning Services. September 2001. Pg. 23.

vehicles to access different uses or activities, such as jobs and shopping, while reducing the viability of transportation options such as walking and transit. However, even in areas where development occurs at higher intensities, problems may arise with accessibility if land uses are segregated.

Newly expanded roadways will also influence the level of mobility and accessibility. Specifically, as roads are expanded or constructed, land development becomes increasingly more segregated, creating longer commutes and additional traffic volumes. Improved road links also attract more users from other parallel roads and transit routes. The resultant effects of these efforts are traffic volumes that exceed initial predictions, rendering new roads or road expansions obsolete soon after completion, and raising the demand for additional roadways. In fact, "according to a study at the University of California at Berkeley, a 1% increase in lane miles induces a 0.9% increase in vehicle miles travelled within as little as 5 years". [Hansen and Huang, 1997]

To demonstrate the impact of new highway construction in HRM, a good example is the construction of Highway 107 and its impact on Chezzetcook. Specifically, prior to the construction of Highway 107, only a limited amount of subdivision along roads and shorelines existed. However, when Highway 107 was opened from Dartmouth to Lake Echo in 1975/76, and later extended across Lake Echo to Porters Lake, two major subdivisions were developed. The first subdivision occurred north of the Lake Echo exit and the second near the Porters Lake exit. The subdivisions comprise primarily single unit dwellings and are unserviced by central water and sewer. This area continued to experience widespread subdivision, especially near the Lake Echo exit.

Although there was relatively little subdivision beyond Porters Lake, when Highway 107 crossed Porters Lake to link West Chezzetcook directly with the metro area, rapid subdivision activity began. In 1991, when Highway 107 reached its present terminus at Musquodoboit, and a link to Burnside was provided, subdivision boomed from Cole Harbour to West Chezzetcook. In fact, by the end of the decade, substantial backland subdivision had occurred between Dartmouth and Lake Echo, and also within a short drive of the Porters Lake exit.

## 1.3 Increasing Infrastructure Costs

Another significant concern among many cities is the growing operating and capital costs of hard infrastructure and the relationship between growth patterns. Infrastructure costs are highly influenced by settlement pattern. As a region grows, the efficient use of infrastructure investments becomes more difficult. Specifically, in rampant, low-density, neighbourhoods, the provision of water, sewer, road and other municipal services cost more as these services are extended over a much broader area to reach the same number of households. Moreover, when new neighbourhoods rapidly expand, spending is heavy on new school buildings, roads, and water and sewer services, therefore existing schools in the urban core often languish, while roads in the urban area forego improvements, likewise for libraries, recreation facilities, sidewalks and parks.
Furthermore, because the cost of sustaining hard services is equally applied as a regional tax, urban taxpayers actually subsidize the low-density development.

Recent research has shown that more compact development can cost significantly less to serve infrastructure. In a CMHC study completed in 1997, it was determined that the costs of hard infrastructure in a neo-traditional style development would be 7.5 % less than infrastructure costs in a conventional low density subdivision. Another study sponsored by the Urban Land Institute concluded that "compact development was 45% less expensive for roads, water

**Table I.1.2: The Cost of Compact Growth versus Sprawl Development**

| | Service | Potential Savings |
|---|---|---|
| ‘ | Roads | 17.6% |
| ‘ | Water/Sewer | 9.2% |
| ‘ | Housing Costs | 5.1% |
| ‘ | Cost-revenue | 4.6% |

**Source: The Cost of Sprawl-revisited. Washington D.C., National Academy Press, 1998**

and sewer than leap frog development"[2]. Finally, another recent study that examined the financial implications of sprawl concluded that, "on average, water, sewer and utility infrastructure costs were between 7 and 14% less in compact, mixed-use subdivisions."[3]

For instance, in HRM's much denser and compact urban core, an average of 4.5 metres of road per person is provided. However, the amount of road built and maintained in the less compact suburban areas are far greater, with an average of 6.8 metres of road per person for serviced suburban communities and 19.4 metres of road per person for unserviced rural fringe areas. Consequently, "the annual road maintenance cost per resident varies from under $12 in urban core areas to over $50 for unserviced fringe communities. These figures do not include snow and ice control, which add a substantial additional cost. Periodic street rehabilitation costs per resident also vary substantially according to the type of settlement. At approximately $54 per metre, the average road rehabilitation cost rises from $240 per person in the urban core, to over $1000 per person in the urban fringe."[4]

## 1.4 Degradation of the Environment

Another very obvious concern facing rapidly expanding cities is the link between suburban sprawl and the environment. As communities continue to expand and develop greenfield sites, natural areas, including unique and sensitive wetlands, are lost to low-density sprawl. In metropolitan areas across North America, tremendous amounts of undeveloped land have been lost to new subdivisions annually. Rapid suburbanisation has reduced valuable habitat for plants, fish and wildlife. It has also resulted in changes to entrenched drainage patterns and microclimates leading to flooding and damage from high winds.

Air pollution is another major outcome of suburban sprawl. As suburbs develop farther from city centres, personal automobile use is essential for most residents. Approximately 33% of the air pollution problem is attributable to private automobile use.

Sprawl has also impacted water quality and quantity. Although agricultural uses consume significant fresh water, the heavily developing suburban areas are depleting groundwater sources at an astronomical rate.

[2]Patrick Moan, Smart Growth New Approaches to Community design for the 21st century. HRM Planning Services. September 2001. Pg. 26.

[3]Patrick Moan, Smart Growth New Approaches to Community design for the 21st century. HRM Planning Services. September 2001. Pg. 26.

[4]Patrick Moan, Smart Growth New Approaches to Community design for the 21st century. HRM Planning Services. September 2001. Pg. 26.

# Chapter Two - The Origin of Brownfield Sites

## 2.1 What is a Brownfield?

The term "Brownfield" is relatively new, first emerging in the late 1990s. For this reason, a broadly accepted definition of "brownfield" has not yet been formally adopted by most practitioners. Moreover, from the brownfield movement has evolved even a newer term - greyfield site. By contrast, greyfields are characterized as declining retail properties that are economically and physically ripe for development, but require significant public and private intervention to offset decline. Greyfields include obsolete or underutilized shopping malls and institutional buildings. Greyfields are likely to be found within established suburban neighborhoods and shopping districts, on suburban arterial with bus service.

However, in most case study literature, these terms have been used interchangeably. Therefore, for the purpose of this paper, the accepted brownfield definition will include greyfield malls as well as former institutional sites. As shown by Table I.2.1, the range of definitions is extensive - generally reflecting a local context.

**Table I.2.1: Brownfield Site Definitions**

A brownfield is an abandoned or underutilized property where expansion or redevelopment is complicated by either real or perceived environmental contamination. Recycling America's Land

Brownfields are vacant or underutilized properties passed over for development due to actual or perceived contamination or other obstacles. Legislative Priority: Brownfields

Brownfields are the site of industrial facilities and are extremely valuable location's for both urban redevelopment and transportation projects. They often are near natural transportation hubs and facilities, such as port and rail-road right-of-ways. Brownfield Redevelopment and Transportation Policy

Brownfields are abandoned, contaminated, urban properties. Working with Brownfield in Small Municipalities and Rural Areas

Brownfields are abandoned, idled, or underutilized industrial or commercial facilities, where redevelopment or expansion is complicated by suspected or identified past pollution. Assessment of State Initiatives to Promote Redevelopment of Brownfields

Brownfields are abandoned or under-used properties where past actions have caused real or suspected environmental contamination. Although they are classified as a sub-set of contaminated sites, these sites exhibit good potential for other uses and usually provide economically viable business opportunities. They are mainly located in established urban areas, where existing municipal services are readily available, or along transportation corridors. They may include, but are not limited to: decommissioned refineries, railway yards, dilapidated warehouses, abandoned gas stations, former dry cleaners, and other commercial properties where toxic substances may have been stored or used. State of the Debate on the Environment and the Economy: Greening Canada's Brownfield Sites

Brownfields lie deteriorated and abandoned, or contaminated from past uses. The stigma of contamination and socio-economic barriers cause the sites to remain unproductive and blighting influences in communities

## 2.2 The Origin of Brownfield Sites

Over the last several decades, most of HRM's growth has occurred in the suburban areas and within the rural commutershed. In fact, the actual number of households developed in HRM have outpaced the population growth, accounting for the consumption of significant greenfield lands, and increasing sprawl.

**Table I.2.2: Facts About HRM's Growth Trends**

- in 1971, the suburban population was slightly lower than urban core
- by 1996, the suburban population doubled the urban core population
- much of the population growth is in new suburbs and the rural commutershed
- most of the subdivisions are outside the urban development boundaries
- the semi-rural population has doubled
- the urban core accounts for the largest percentage of employment, yet it has a relatively small proportion of total residents
- while employment is growing the fastest in the suburbs, it still continues to grow in the urban core.

As settlement patterns in HRM shifted from the inner core to the suburban and rural fringe, the shifting of traditional industry to the suburban and exurban industrial parks quickly followed. Moreover, as settlement patterns shifted, so to did Halifax's employment base from industrial to more finance, insurance and real estate based. Consequently, the need for industrial lands and sites began to decline, leaving many as blighted, hazardous eyesores.

Furthermore, as a result of "complex and interrelated market forces, technological advances, increased reliance on truck transportation, and less reliance on rail, traditional industrial use patterns have changed, affording a greater level of flexibility in the siting of such uses. In fact, experts contend that industrial uses are bettered positioned away from the urban cores, where commuter traffic, narrow streets, and outdated infrastructure, only complicate or prevent efficient access.

Similarly, as HRM's settlement pattern shifted toward the suburbs, the older retail portions of the city began to lose their retail locational value." Specifically, as more and more growth occurred in the suburban areas, new malls and retail shopping areas developed to support the burgeoning populations, creating greater competition for the existing stores. In addition, not only were the new retail sections in a better position to capture the growing suburban retail market, but many of the newly constructed malls or big box power centres were much larger than the older mall sites, further limiting the retail drawing power of existing retail centres, causing the market shifts to the new and abandoning the older malls. As markets shifted to the suburban areas, the older retail malls lost their anchor tenants, their rental rates began to decline causing them to lose income, leading to the overall economic decline."[5]

As a result of these gradual changes, several undeveloped and underutilised industrial sites and shopping malls exist throughout HRM. The abandoned or underutilised industrial properties are known as brownfields, whereas the shopping centres are best known as "greyfield malls". The brownfield sites are primarily concentrated in established urban areas, where municipal services are readily available, or along transportation corridors. Both the Halifax and Dartmouth waterfront areas, and some older neighbourhoods, such as the south and north ends that are close to the waterfront, support several brownfield sites. Greyfields are more often found within established suburban neighbourhoods and shopping districts, like Sackville, Cole Harbour and Herring Cove. Specifically, greyfields tend to be on suburban arterials with bus service, but, unlike the high performing malls (i.e. Mic Mac Mall) typically are less connected to the regional transportation system.

[5]Global Strategic Real Estate Research Group. Greyfield Regional Mall Study. Congress for New Urbanism. January 20001, pg 8

# Chapter Three - The Brownfield Real Estate Market

## 3.1 The Supply and Demand for Brownfield Sites

The number of brownfields sites across both United States and Canada is staggering. In fact, "most large markets probably contain many decades' worth of brownfields". A recent review of 210 cities across United States found a total of 21,178 brownfields sites existed which translated into approximately 81,568 acres of land[6]. Although, similar research does not exist for Canada, it has been estimated that approximately 20,000 to 30,000 [7] brownfield sites may exist. Moreover, because many communities tend to avoid land registration and locally generated brownfield lists given the attached stigma, these numbers could very well be even greater.

Although the demand for brownfields sites obviously varies from city to city, one of the most important trends noted is that the supply of brownfield sites usually far outweighs the demand for such properties. For instance, in Detroit, the supply of brownfields (acreage) outweighs its demand by a ratio of 32 to 1. In Milwaukee, the supply is roughly double the demand. While in Cleveland, approximately 10 acres of brownfield sites exist to every acre of land needed. Consequently, the central findings suggest that under the best case scenario, there is a minimum of a 30 to 70 year supply of brownfield sites relative to market demand. Moreover, 60% of the identified brownfield sites are one acre or less, and because the land market is usually strongest for sites of 3 acres or greater, a good portion of these is not competitive.

Several vacant and underutilised brownfield sites are currently located within the serviced areas of HRM. Appendix A contains a list of the brownfield sites in HRM. These brownfield sites are primarily concentrated in established urban areas, where municipal services are readily available, or along transportation corridors. Both the Halifax and Dartmouth waterfront areas, and some older neighbourhoods, such as the south and north ends that are close to the waterfront, support several brownfield sites. Whereas, the commercial related brownfields are more often found within established suburban neighbourhoods and shopping districts, like Sackville, Cole Harbour and Herring Cove. Specifically, these brownfield sites tend to be on suburban arterials with bus service, but, typically are less connected to the regional transportation system.

## 3.2 Characteristics of Brownfield Sites

Evidence suggests that brownfields tend to be unequally distributed throughout most cities. Specifically, "outlying suburban areas tend to have very few brownfields, yet have plenty of market demand[8]." Moreover, the number of brownfields under one acre in size is disproportionate to the number of large brownfield sites.

From the case study reviews, it was noted that the size of the redeveloped brownfield sites varied significantly from project to project, the smallest site being just under one acre in area, with the largest site being 158 acres. All the sites were located in well travelled areas, near major thoroughfares. The

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[6]The United States Conference of Mayors. A National Report in Brownfields Redevelopment - Volume 3. February 2000. Page 12.

[7]DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Page 1.

[8]Robert A Simons. Turning Brownfields into Greenbacks. Urban Land Institute. 1998. Pg.41

projects that were redeveloped for commercial purposes were all located near a major highway, and were easily accessible by the public and highly visible. The majority of the sites were located within 5 to 10 miles of the downtown area. In several of the cases, the projects took place in depressed neighbourhoods, where employment rates were declining, and where the number of people living under the poverty line and the crime rate were higher than the state average[9]. All the projects were adjacent to established communities, and serviced by municipal infrastructure. In a few cases, municipal infrastructure needed to be upgraded, and in one case, it was documented that infrastructure needed to be installed on the site. Public transit information was not available for all sites. One site that documented public transit stated that it "has good traffic flows [and] is on many bus routes"[10]. One housing project in New Jersey has a ferry going to Manhattan that docks on the property, which will provide the new residents of the project easy access to Manhattan. The type of projects that were developed were specific to each site. Commercial redevelopments were built in the easily accessible and highly visible sites. Residential projects were developed in areas that required more housing, and that were within or adjacent to existing communities.

## 3.3 Brownfield Redevelopment Market Conditions

As previously discussed, the supply of brownfield sites far outweighs the demand for them. Residential development is on the rise in Canada, and large cities, such as Toronto and Montreal, have redeveloped many of their large industrial sites for residential purposes[11]. Many industrial sites are located in the heart of major cities, where they were once easily accessible to workers by foot. However, their migration to industrial parks in the suburbs, have left many sites abandoned. These are the sites that could benefit from different land uses, as industrial designation is often outdated. Toronto has seen over 1153 acres of industrial land redesignated for other uses in the last decade[12]. The high costs of remediation are often not recoverable for industrial purposes. Medium to high density residential development is often the only solution for developers to recover any of the site preparation costs. Industrial development will continue to turn to greenfield sites where site prep costs are more likely to be recovered[13].

## 3.4 An Overview of Brownfield Redevelopment Projects

Brownfield redevelopment projects are typically initiated by three types of developers - private, public, and private/public partnerships. Traditionally, the most common upgrading of industrial brownfield sites has been toward commercial or warehouse projects, although, as of late, significant evidence suggests that this pattern is changing. Specifically, redeveloping obsolete industrial sites for purposes of low intensity uses, like residential uses, are on the rise. However, stand alone residential projects are much more uncommon than mixed residential-commercial projects.

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[9]Robert A Simons. Turning Brownfields into Greenbacks. Urban Land Institute. 1998. Pg.94.

[10]Robert A Simons. Turning Brownfields into Greenbacks. Urban Land Institute. 1998. Pg.108.

[11]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, p. 254.

[12]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, p. 254.

[13]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, p. 254.

For instance, in a survey of Canadian brownfield redevelopment projects, 38% of the projects involved conversions from industrial to residential uses, while 40% involved conversions to mixed commercial/residential projects. Only 13% of the projects involved conversion to new industrial uses. In Michigan, however, a review of 72 brownfield redevelopment projects showed almost 20% involved conversions from industrial to residential uses, while 38% of the projects involved conversions from industrial to commercial uses. In Pennsylvania, only 4% of the projects involved conversions to purely residential uses, while 46% of the projects produced residential and commercial mixed uses. A survey of redevelopment projects in Massachusetts demonstrated only 4% of all projects involved a conversion from industrial to residential uses, while 81% involved conversions from industrial to commercial retail redevelopment projects.

The latest approach to brownfields that they are increasingly undergoing major redevelopment projects, such as new urbanism or transit oriented neighbourhoods. Brownfields are considered especially well suited for these types of projects given their size and accessibility. Specifically, the relative large size enables the development costs to be balanced, justifying the increased costs and risks associated with infill development. Brownfields tend to be of adequate size for accommodating large scale development projects that fulfill a range of new urbanism principles and providing a reasonable return on investment. Brownfield sites tend to be large enough to accommodate a neighbourhood built from the ground up-providing an opportunity to develop quality mixed-income housing that benefits its surroundings. Lakewood Colorado is turning what once was the Villa Italia Shopping Centre into an urban centre, creating the “downtown” it never had. The 103 acres that was the mall will be converted into 19 city blocks of residential, commercial and public space. In terms of accessibility, because many of these sites tend to be located on transit lines, and some support existing bus hubs, they are considered good opportunities for TOD projects. Moreover, these sites enable a concentration of development activity centres at densities high enough to support transit services.

A review of the new urbanist projects constructed in the US reveals a total project count of 213 neighbourhood scale projects (15 acres and above), a 37% increase from the previous year[14]. Of the total number of new urbanism projects, 8% involve the conversion or redevelopment of mall sites[15]. Although greenfield development projects continue to make up the majority of the new urbanist projects, in the past year, an unprecedented balance between greenfield and infill projects has been witnessed. Specifically, more than half of the new urbanism projects begun this year are mall sites[16]. This trend is expected to continue into the future.

## 3.5 HRM Brownfield Redevelopment Case Studies

The brownfield redevelopment case studies chosen for this report were all located in serviced areas, mainly Halifax Peninsula and Dartmouth. All of the cases studied went through a planning process (Development Agreement, Rezoning or Plan Amendment): there was little information available on the brownfield sites that were redeveloped as-of-right. The case studies illustrate the trend for residential development in HRM, with 67% of the redevelopments being for residential purposes. As well, the sites redeveloped for residential purposes are all medium to high density (apartments and condominiums).

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[14]New Urban News. Annual Survey of new Urban Projects: New Urbanist Project Construction Starts Soar October/November Issues. Pg. 3.

[15]New Urban News. Annual Survey of new Urban Projects: New Urbanist Project Construction Starts Soar October/November Issues. Pg. 3.

[16]New Urban News. Annual Survey of new Urban Projects: New Urbanist Project Construction Starts Soar October/November Issues. Pg. 3.

Table I.3.1 describes some of the redeveloped brownfield sites in HRM.

**Table I.3.1: REDEVELOPED BROWNFIELD SITES IN HRM**

| | | Banook Shores | Staples | Petro Canada Lands | 6116 Almon Street |
|---|---|---|---|---|---|
| **Site Area (acres)** | | 2 | 1 | 8 | 1.2 |
| **Location** | | Dartmouth (Prince Albert Rd.) | Halifax Peninsula (Gottingen St.) | Halifax Peninsula (Between Kencrest and Barrington) | Halifax Peninsula (Almon Street) |
| **Previous Use** | | Former Jeep dealership and Irving Oil service station | Former Irving service station and vacant office building | Oil Storage | Gladstone Stores (warehousing) |
| **Current Use** | | Apartment/ condominium | Staples Outlet | Apartment and Condominium | Apartment |
| **Commercial Component** | | No | Yes | No | No |
| **Residential** | **High** | No | No | No | No |
| | **Med** | Yes | No | Yes | Yes |
| | **Low** | No | No | No | No |
| **Type of Developer** | | Private | Private | Private | Private |
| **Public Subsidies** | | None | None | None | None |
| **Redevelopment Approval Process** | | Rezoning and Development Agreement | Development Agreement | Plan Amendment and development agreement | Development Agreement |
| **Serviced prior to redevelopment** | | Yes | Yes | Yes | Yes |
| **Surrounding Buildings Registered Heritage Properties** | | No | No | No | No |
| **Site located under view plane** | | No | Yes | No | No |

| Table I.3.1 (continued): REDEVELOPED BROWNFIELD SITES IN HRM | | | | | |
|---|---|---|---|---|---|
| | | **Creighton Apartments** | **1599 Grafton St** | **Granville St. Parking Garage** | **1343 Hollis St.** |
| **Site Area (acres)** | | 0.2 | 0.3 | 0.8 | 0.5 |
| **Location** | | Halifax Peninsula (corner Creighton and Gerrish streets) | Downtown Halifax (Central Business District) | Downtown Halifax (Central Business District) | Downtown Halifax |
| **Previous Use** | | Vacant building (Club 55) | Lone Star Café and parking garage | Surface Parking Lot | Nova Scotia Liquor Commission Outlet |
| **Current Use** | | Apartment building | Empty (Future Condos) | Parking Garage | Mixed-use building |
| **Commercial Component** | | No | Yes | Yes | Yes |
| **Residential Component** | **High** | No | Yes | No | Yes |
| | **Med** | Yes | No | No | Yes |
| | **Low** | Yes | No | No | No |
| **Type of Developer** | | CGDA (public, private and non-profit partnership) | Private | Public | Private |
| **Public Subsidies** | | Yes | No | Yes | No |
| **Redevelopment Approval Process** | | Development agreement | Development Agreement | Development Agreement | Development Agreement |
| **Serviced prior to redevelopment** | | Yes | Yes | Yes | Yes |
| **Surrounding Buildings Registered Heritage Properties** | | No | No | No | Yes |
| **Site located under view plane** | | No | Yes | Yes | Yes |
| **Parking Provided** | | Yes (Surface) | Yes (Underground) | Yes | Yes (Underground) |

| Table I.3.1 (continued): REDEVELOPED BROWNFIELD SITES IN HRM | | | | | |
|---|---|---|---|---|---|
| | | **Chrysler Car Dealership** | **West End Mall** | **Bishop's Landing** | **Brunswick Street** |
| **Site Area (acres)** | | 4 | 24 | 4.75 | 0.3 |
| **Location** | | Dartmouth (Penhorn Drive) | Halifax Peninsula (Mumford Rd.) | Halifax Peninsula (Lower Water Street to Harbour) | Halifax Peninsula (CBD) |
| **Previous Use** | | Woodlawn and Penhorn Schools | Parking Lot and mall | Surface Parking Lot | Surface Parking Lot |
| **Current Use** | | Car dealership | Mall with 3 free standing buildings (retail and restaurant uses) in Parking Lot | Apartment buildings | Apartment Building |
| **Commercial Component** | | Yes | Yes | Yes | Yes |
| **Residential Component** | **High** | No | No | Yes | Yes |
| | **Med** | No | No | No | No |
| | **Low** | No | No | No | No |
| **Type of Developer** | | Private | Private | Private | Private |
| **Public Subsidies** | | None | None | None | None |
| **Redevelopment Approval Process** | | Development Agreement | Development Agreement | Development Agreement | Development Agreement |
| **Serviced prior to redevelopment** | | Yes | Yes | Yes | Yes |
| **Surrounding Buildings Registered Heritage Properties** | | No | No | Yes | Yes |
| **Site located under view plane** | | No | No | Yes | Yes |
| **Parking Provided** | | Yes | Yes (Surface) | Yes (Ground Level) | Yes (Underground) |
| **Parking Provided** | | Yes (Underground) | Yes (Surface and Under Store) | Yes (Underground and garages) | Yes (underground and Surface) |

# Part Two Evaluating the Options

Over the last ten years, the value of brownfield redevelopment has been increasingly recognized by local governments as it has been credited with reducing suburban sprawl and minimizing the amount of greenfield development occurring in the rural fringe. In fact, planners, private sector professionals, community groups, and other parties interested in preserving the urban landscape and its economic traditions recognize the opportunities associated with brownfield redevelopment. These groups argue that brownfield redevelopment is one of the most effective growth management tools available today for relieving pressures of urban sprawl, and for creating cost efficiencies in developing, providing and administering ongoing services, renewing the appearance of urban neighbourhoods, and improving the overall condition of the land and public health. In fact, "the failure to recycle brownfield sites is often sited as a contributor to suburban sprawl, as industrial zones are left vacant while pristine greenfields become new factories, office parks, and shopping malls". [17]

Unlike most American cities who have implemented a wide range of innovative environmental and economic policies and programs to foster and encourage redevelopment of its brownfield sites, at present, HRM offers very limited support or encouragement. Like most Canadian cities, HRM's response to brownfield redevelopment is lagging for a number of reasons, including the government's perception that brownfields are a minor problem, and one whose resolution would entail only marginal public benefits, a marked decline in government spending, and the government's general unwillingness to subsidize private development.

However, many studies confirm that brownfields are a major problem in most Canadian cities, and that our cities would certainly benefit from redevelopment programs, as witnessed in the US. Further, although the demand for real estate in large urban centres in Canada has increased considerably, improving the profit of redevelopment, private sector stakeholders continue to perceive both residential and industrial redevelopment as being: less cost-effective, higher risk, and generally more difficult to develop than

**Table II.0.1: The Benefits of Brownfield Redevelopment**

- increased tax assessment
- new employment opportunities
- more cost effective to utilize existing infrastructure resulting in a reduction of urban sprawl and its related costs (hard and soft services)
- contribution toward the revitalization of particular areas and neighborhoods
- environmental restoration which can remove threats to health of workers and residents
- the redevelopment of land within the urban centres can kick-start other urban renewal and development projects
- development will avoid the orphan site situation, and ensure that taxes are paid
- residential intensification will avoid the need to expand urban boundaries which sometimes consumes valued resources such as agricultural land or areas of environmental significance
- populating urban centres can bring vitality and safety to otherwise vacant
- and derelict areas

Source: Piccioni, Luciano. *Incentive Programs: Promoting the Redevelopment of Brownfield Properties*. Retrieved from the World Wide Web on Dec 6th, 2002, from: http://www.ecdevjournal.com/pubs/2001/art12_01.htm

[17] James Wright, Risks and Rewards of Brownfield Redevelopment, Lincoln Institute of Land Policy, 1997. Pg. 5.

greenfield sites. As a result, greenfield site development remains the largest recipient of new construction in most cities, including HRM.

Given our understanding of these trends, HRM must determine whether to following the path of the American cities by implementing a wide range of innovative policies and programs to foster and encourage redevelopment of its brownfield sites, or to disregard these redevelopment opportunities allowing obsolete industrial and commercial uses to remain, while directing the majority of new growth toward greenfield sites.

In order to evaluate these two options, this part of the report will compare the cost and benefits of developing brownfield sites versus those of developing in greenfields. Specifically, Chapter 4 will explore the area differentials required for brownfield redevelopment versus greenfield sites. Chapter 5 will explore the actual economic, social and environmental costs and benefits associated with retaining the industrial use opposed to converting them to residential or commercial. Chapter 6 will assess the actual economic, social and environmental costs and benefits to the public associated with developing brownfield sites instead of greenfields.

# Chapter Four A Comparison of the Land Required for Brownfield Redevelopment Projects versus Greenfield Development

Experts contend that brownfield redevelopment would have the effect of reducing development pressure on undeveloped land in the exurban and rural areas of a city. Recently, a study completed by ... attempts to demonstrate this contention by comparing the land consumed by identical projects on brownfield versus greenfield sites. The primary assumption of the Study is that the land use regulations that apply to undeveloped sites in the exurban and rural areas tend to require more land than those in the urban areas. Therefore, greenfield development will ultimately consume more land than brownfield redevelopment.

## 4.1 Overview of Study Methodology

In order to test this assumption, the Study undertook a review of several greenfield case studies to determine the key regulatory controls which are consistently applied to new developments, and which would ultimately influence the land required to accommodate the proposed development. The five most common factors include:

1. Set back Requirements
2. Parking Requirements
3. Density
4. Height
5. Landscaping and Buffer Zones

The next step of the Study involved the development of several development scenarios to determine the degree to which each of the 5 factors listed above would impact the amount of land consumed. For each scenario, it is assumed that a 30,000 square foot commercial building is being constructed on each greenfield area, whereas, the same sized commercial building would be constructed on a .68 acre brownfield site. The following provides an overview of the different development scenarios:

**Scenario One**

| | |
|---|---|
| Land Use Requirements: | A setback of 50 feet from the front line is required. In addition, two side yard setbacks of a minimum of 25 feet are required. A rear yard setback of 10 feet is also required. |
| Land Consumed: | Based on the required setbacks, in order to accommodate a 30,000 square foot commercial building, approximately 1.76 acres were utilized. |

**Scenario Two**

| | |
|---|---|
| Land Use Requirements: | A setback of 50 feet from the front line is required. In addition, two side yard setbacks of a minimum of 25 feet are required. A rear yard setback of 10 feet is also required. On surface parking required at 1 stall per 100 square feet. Further, the surface parking is prohibited within the setback areas. |
| Land Consumed: | Based on the required setbacks, in order to accommodate a 30,000 square foot commercial building, approximately 3.64 acres were utilized. |

**Scenario Three**

| | |
|---|---|
| Land Use Requirements: | No setbacks required, however, a maximum lot coverage of 40% is required. Lot coverage includes both building and parking areas. On surface parking required at 1 stall per 100 square feet. |
| Land Consumed: | Based on the required setbacks, in order to accommodate a 30,000 square foot commercial building, approximately 7.23 acres were utilized. |

**Scenario Four**

| | |
|---|---|
| Land Use Requirements: | A minimum lot size of 10,000 square feet. |
| Land Consumed: | Based on the required setbacks, in order to accommodate a 30,000 square foot commercial building, approximately 14.7 acres were utilized. |

## 4.2 Overview of Study Findings

The Study concluded that in order to construct a 30,000 square foot building on the brownfield site, .68 acres would be required, in comparison to a minimum of 1.74 acres or a maximum of 15 acres, in the greenfield areas. Clearly, based on current land use requirements, building in greenfield areas would ultimately consume more land than redeveloping brownfields in the urban area.

### 4.2.1 Brownfield and Greenfield Offset Ratios

The Study also attempts to convert the theoretical findings described above to determine actual brownfield and greenfield offset ratios. Specifically, in order to determine the ratios, the Study reviewed several real-life brownfield redevelopment projects to determine the actual amount of land required to redevelop different types of projects on site. The Study categorized the case studies into three main categories: (1) primarily industrial projects (2) primarily commercial projects and (3) primarily residential projects.

The Study concludes that the offset ratios between the actual brownfield redevelopment projects and the hypothetical greenfield development scenarios are quite significant. The Study found that for every one acre of brownfield land redeveloped, a minimum of 4.5 acres of undeveloped land in the greenfield areas would be required. Further, of the 142 brownfield projects reviewed, the Study found that approximately 76% of these would require significantly more land to develop in the greenfield areas. Specifically, the study states that only 143 acres of brownfield land was used to accommodate the projects, however, 646 acres of undeveloped land would have been required to accommodate the same projects in the greenfield areas.

The Study also explores the potential difference among land uses. For instance the same industrial project on one acre of brownfield land would require 6.2 acres of undeveloped land. In fact, of the brownfield case studies reviewed, it was found that 50 acres of brownfield land was converted to support new industrial uses, but to accommodate the same development in the greenfield areas, approximately 310 acres of undeveloped land would be utilized.

A new commercial project on undeveloped land in the greenfield area , would require, on average, 2.5 acre of land, versus one acre of land on redeveloped brownfield sites. In terms of residential uses, the brownfield case studies revealed that 5.6 acres of undeveloped land would be needed to accommodate the same development on only one acre of brownfield land.

### 4.2.2 HRM Brownfield and Greenfield Potential Offset Ratios

Given that the development scenarios described above are relatively similarly to those that apply to the exurban and rural areas of HRM, it seems appropriate to use these to determine HRM's potential offset ratios. Therefore, as in the Study, it is assumed that for everyone acre of brownfield land redeveloped in HRM, that a minimum of 4.5 acres of undeveloped land in the greenfield areas would be required. Consequently, of the 12 HRM brownfield redevelopment projects highlighted in Chapter 3, only 47.05 acres of brownfield land was used to accommodate the use, while based on the Study assumptions, approximately 212 acres of undeveloped land would have been required to accommodate the same projects in the exurban and rural areas.

Further, as provided in Appendix A, based on the list of potential brownfield sites throughout HRM, approximately 309 acres of former industrial land, 70 acres of a underused or obsolete commercial land, 13 acres of former residential land, and approximately 1565 acres of obsolete or underused institutional land (Shearwater comprises 1400 acres) for a total of 1955 acres of brownfield land is available. Assuming a rate of 1 acre of brownfield land to every 4.5 of greenfield land, the amount of undeveloped land required to accommodate the same development potential in the rural or exurban area would be 8798 acres. Moreover, assuming two thirds of this land would be redeveloped for residential uses, and one third for commercial or industrial uses, as was the case in the Study above, it is likely that 5806 acres of greenfield land would be required to accommodate the same residential redevelopment potential on brownfields sites, and 2991 acres to accommodate commercial or industrial uses. Clearly, as found in the Study, building in greenfield areas would ultimately consume significantly more land than redeveloping the brownfield sites in the urban and older suburban areas of HRM.

# Chapter Five A Comparison of the Private Costs and Benefits of Brownfield Redevelopment versus Greenfield Development

One of the most compelling arguments in support of brownfield redevelopment is that redevelopment can be more economically feasible than the development of greenfield sites. For instance, developers can usually acquire these sites at below-market price. Furthermore, although brownfield sites may prove more costly and time consuming to complete than new construction on a greenfield sites, there are several factors that compensate for this burden and encourage developers to invest. Specifically, "used urban properties benefit from established infrastructure that can greatly reduce site preparation costs: streets, lighting, and utility hook-ups already in place. Moreover, it is the off-site infrastructure that may make the most difference in the land costs associated with a project: the storm sewers and drainage available. Another factor to consider is the presence of buildings on site. If demolition is needed, it may represent a substantial cost. In many cases, rehabilitating buildings allow the completion of the facility for a small fraction of the costs of a new building".[18]

Typically, the equity required to undertake a redevelopment project depends on a number of factors including the type of redevelopment project, the project density, the location, and the extent and type of contamination. Although in many cases land acquisition costs are significantly less than that of greenfield sites, the overall equity required for brownfields tends to be almost always greater. The land values associated with Brownfields tend to vary quite significantly. Generally, however, absent successful revitalization efforts, the values of sites are reduced to land values less the cost of building demolition. In one case study, tax revenue had plummeted from 3.2 million dollars to only six hundred thousand over a seven year period[19].

The rates of return for several American brownfield projects has also been above the break-even point however, where public subsidy was unavailable several projects reported a negative rate of return. Typically, the not-for-profit projects earned a rate of return between 5 and 10%. While, For-profit, mixed use redevelopment projects (housing and retail space) generally reported a profit margin between 11 and 14%. An industrial project, which received almost 50% of the related costs in public subsidies, reported a profit of over 20%.

## 5.1 A Cost Comparison Study

Robert Simons, author of Turning Brownfields into Greenbacks, attempts to determine the relative costs of developing brownfields versus greenfields. Specifically, the analysis completed was intended to determine the potential costs of redeveloping a brownfield site as real estate deals versus developing on land in the exurban and rural areas. The analysis performed was from a developer's perspective, rather than from the public's perspective, of the potential costs and benefits.

### 5.1.1 The Approach

A scenario based approach is used to analyse the potential development costs for three different land use projects (residential, commercial and industrial) on a brownfield compared to a greenfield site. "The analysis assumes that all of the brownfield sites are well located, ten acres in size, with an identifiable,

[18] E.P. Systems Group Inc.. Financing Small Scale Urban Redevelopment Projects. July, 1997.

[19] *City Seeks New Identity in the Post-Mall Era*.f Denver Post Online: http://www.denverpost.com/Stories/0%2C1413%2C36%257E11%257E%2C00.html?

moderate and finite remediation problems, and that the correct zoning is in place. It is also assumed that at least half of each brownfield site is contaminated, and that all contaminated materials must be removed, transported to a landfill, and buried. It is further assumed that clean fill brought in and the mitigation of off-site impacts amounts to 5.00 dollars per surface square foot for the contaminated portion for the site, plus 100,000 dollars for an environmental consultant. The remediation period is expected to take 18 months. The cost of land acquisition does not include any site-assembly. No public subsidy is assumed." [20]

## Scenario One - Brownfield versus Greenfield Retail Project

The following table (II.5.1) provides an overview of the cost related to a retail project. Essentially, the table shows that the cost of acquiring the brownfield site is almost $900,000 cheaper than the costs of acquiring a greenfield site. However, when the costs associated with remediating the brownfield site are added, the greenfield site is almost $200,000 less than the brownfield. In addition, obtaining an environmental consultant, and paying higher insurance rates due to the on-site contamination, collectively contribute to an overall cost variance of approximately $600,000 between the brownfield and greenfield site.

Another important aspect of the analysis is the potential net operating income, and the equity required and returned on the investment. The Table demonstrates that the anticipated net operating income for the greenfield development will be almost double that of the brownfield. This is primarily the result of a lower market rent and higher vacancy for the brownfield site. Furthermore, when the costs of providing on going environmental monitoring and security are added, the net operating income for the brownfield project is significantly less.

In terms of financing, the Table demonstrates that the value of the brownfield project is appraised at a significantly lower value than the greenfield project. As a result, the loan to value ratio for the brownfield project is much less, requiring a significant amount of equity up front (almost 5 million in equity for the brownfield project versus almost 1 million for the greenfield project).

**Table II.5.1: A Comparison of Development Costs for a Retail Project**

| Factor | Brownfield | Greenfield |
|---|---|---|
| **(a) Land Use Information** | | |
| Lot Size<br>Floor Area/Ratio<br>Building Area<br>Number of Owners | 10 acres<br>.25<br>2.5 acres<br>10 | 10 acres<br>.25<br>2.5 acres<br>1 |
| **(b) Development Cost Information** | | |
| Land Acquisition | 871200 | 1742400 |
| Remediation | 1089000 | 0 |
| Site Prep | 871200 | 871200 |
| Building hard costs | 5445000 | 5445000 |
| Other(shrink) | 163400 | 54500 |

[20]Robert A. Simons. Turning Brownfields into Greenbacks, Developing, Financing Environmentally Contaminated Urban real Estate. Washington, DC. :ULI-the Urban Land Institute. 1998. Pg.13.

| | | |
|---|---|---|
| Legal | 100000 | 20000 |
| Other (Architect, planner) | 250000 | 250000 |
| Environmental Consultant | 100000 | 5000 |
| Construction loan/carrying costs | 400000 | 300000 |
| **Sub Total** | **9289800** | **8688100** |
| Developer's Fee | 464500 | 434400 |
| **Total Development Costs** | **9754300** | **9122500** |
| **Total Development Costs per Square Foot** | **89.57** | **83.77** |
| **(c) Operating Cash Flow/Dev. Sales** | | |
| Number of Tenants/lots sold | 20 | 20 |
| Market Rent/Lot Sale price | 108900 | 1306800 |
| Market Vacancy/Revenue from Sales | 12% | 6% |
| Security Costs | 108900 | 27225 |
| Environmental Monitoring | 50000 | 0 |
| **Net Operating Income/Net Income** | **799400** | **1201200** |
| **(d) Financing and Investment/Profit** | | |
| Value/Net Income from Lot Sales | 7994000 | 12012000 |
| Loan Amount/Dev Costs | 4796400 | 8408400 |
| Debt Service/Net Profit (loss) | 630600 | 1105500 |
| Debt Service Coverage Ratio | 1.27 | 1.09 |
| Before-Tax Cash Flow | 168800 | 95700 |
| **Equity Requirement** | **4957900** | **733200** |
| **Return on Equity** | **3.4%** | **13 %** |
| Site Preparation Time | 18 months | 6 months |
| Future Liability | unknown | none |
| Indemnification Letter from Seller | yes | no |

Source: Robert A. Simons. Turning Brownfields into Greenbacks, Developing, Financing Environmentally Contaminated Urban real Estate. Washington, DC. :ULI-the Urban Land Institute. 1998. Pg. 10.

## Scenario Two - Brownfield versus Greenfield Industrial Project

The following table (II.5.2) provides an overview of the cost related to an industrial project. The table shows that the cost of acquiring the brownfield site is almost $400,000 cheaper than the costs of

acquiring a greenfield site. However, the costs associated with remediating the brownfield, as well as obtaining an environmental consultant, and paying higher insurance rates due to the on-site contamination, increases its overall redevelopment cost to 1 million dollars more than that of the greenfield site.

The potential net operating income, for the greenfield development is shown to be only 200,000 dollars less than that of the brownfield. This is primarily the result of a lower market rent for the brownfield site.

**Table II.5.2: A Comparison of Development Costs for an Industrial Project**

| Factor | Brownfield | Greenfield |
|---|---|---|
| **(a) Land Use Information** | | |
| Lot Size<br>Floor Area/Ratio<br>Building Area<br>Number of Owners | 10 acres<br>.25<br>2.5 acres<br>4 | 10 acres<br>.25<br>2.5 acres<br>1 |
| **(b) Development Cost Information** | | |
| Land Acquisition | 217000 | 609800 |
| Remediation | 1089000 | 0 |
| Site Prep | 435600 | 435600 |
| Building hard costs | 4878700 | 4878700 |
| Other(shrink) | 146400 | 48800 |
| Legal | 50000 | 20000 |
| Other (Architect, planner) | 250000 | 250000 |
| Environmental Consultant | 100000 | 5000 |
| Construction loan/carrying costs | 400000 | 400000 |
| **Sub Total** | **7567500** | **6547900** |
| Developer's Fee | 378400 | 327400 |
| **Total Development Costs** | **7945900** | **6875300** |
| **Total Development Costs per Square Foot** | **52.12** | **45.1** |
| **(c) Operating Cash Flow/Dev. Sales** | | |
| Number of Users | 3 | 3 |
| Market Rent | 724200 | 838500 |
| Market Vacancy | 10% | 7% |
| Security Costs | 76200 | 38100 |
| Environmental Monitoring | 50000 | 0 |

| | | |
|---|---|---|
| **Net Operating Income/Net Income** | **525600** | **741700** |
| **(d) Financing and Investment/Profit** | | |
| Value/Net Income from Lot Sales | 5256000 | 7417000 |
| Loan Amount/Dev Costs | 3679200 | 5933600 |
| Debt Service/Net Profit (loss) | 403000 | 650000 |
| Debt Service Coverage Ratio | 1.3 | 1.15 |
| Before-Tax Cash Flow | 122600 | 91700 |
| **Equity Requirement** | **4266700** | **941700** |
| **Return on Equity** | **2.9%** | **13 %** |
| Site Preparation Time | 18 months | 6 months |
| Future Liability | unknown | none |
| Indemnification Letter from Seller | yes | no |

Source: Robert A. Simons. Turning Brownfields into Greenbacks, Developing, Financing Environmentally Contaminated Urban real Estate. Washington, DC.: ULI-the Urban Land Institute. 1998.

## Scenario Three - Brownfield versus Greenfield Residential Project

The next table (II.5.3) provides an overview of the cost related to residential projects. Basically, as in the case of the other projects, acquiring the land for a residential project was almost 3 times lower on brownfield sites in comparison to a greenfield site. However, as stated previously, as a result of the on-site contamination, and the extra cost associated with cleaning the site, the total development cost for the brownfield site double that of the greenfield.

The residential projects involved the creation of 35 lots. Table shows the potential net income from the sale of these lots for the greenfield development to be almost $400,000 more than those from the brownfield. This is primarily attributed to a lower market value for the brownfield site.

In terms of the return on the investment, the overall income from the sale of the brownfield lots was almost three times less than the cost to develop the site, with an overall net loss of profit of approximately 1.3 million dollars. Whereas, a profit of almost 200,000 was reported from the greenfield development.

| Table II.5.3: A Comparison of Development Costs for a Residential Project | | |
|---|---|---|
| **Factor** | **Brownfield** | **Greenfield** |
| **(a) Land Use Information** | | |
| Lot Size | 10 acres | 10 acres |
| Dwelling Units | 35 | 35 |
| Floor Area | .23 | .23 |
| Final Lot Size | 12,450 | 12,450 |
| Number of Owners | 20 | 1 |
| **(b) Development Cost Information** | | |
| Land Acquisition | 108900 | 435600 |
| Remediation | 1089000 | 0 |
| Site Prep | 435600 | 435600 |
| Building hard costs | 0 | 0 |
| Other(shrink) | 13100 | 4400 |
| Legal | 100000 | 20000 |
| Other (Architect, planner) | 20000 | 20000 |
| Environmental Consultant | 100000 | 5000 |
| Construction loan/carrying costs | 140000 | 25000 |
| **Sub Total** | **2006600** | **945600** |
| Developer's Fee | 100300 | 47300 |
| **Total Development Costs** | **2106900** | **992900** |
| **Total Development Costs per Square Foot** | **4.84** | **2.28** |
| **(c) Development Sales** | | |
| Number of Lots Sold | 35 | 35 |
| Lot Sale Price | 22500 | 33750 |
| Revenue from Sales | 787500 | 1181200 |
| Security Costs | 25000 | 0 |
| Environmental Monitoring | 50000 | 0 |
| **Net Operating Income/Net Income** | **712500** | **1181200** |
| **(d) Profit and Return on Investment** | | |
| Value/Net Income from Lot Sales | 5256000 | 7417000 |
| Loan Amount/Dev Costs | 3679200 | 5933600 |

| Table II.5.3 (contd.): A Comparison of Development Costs for a Residential Project | | |
|---|---|---|
| **Factor** | **Brownfield** | **Greenfield** |
| Debt Service/Net Profit (loss) | 403000 | 650000 |
| Debt Service Coverage Ratio | 1.3 | 1.15 |
| Before-Tax Cash Flow | 122600 | 91700 |
| **Equity Requirement** | **4266700** | **941700** |
| **Return on Equity** | **2.9%** | **13 %** |
| Site Preparation Time | 18 months | 6 months |
| Future Liability | unknown | none |
| Indemnification Letter from Seller | yes | no |

Source: Robert A. Simons. Turning Brownfields into Greenbacks, Developing, Financing Environmentally Contaminated Urban real Estate. Washington, DC.: ULI-the Urban Land Institute. 1998.

## 5.2 Conclusions from the Cost Comparisons

Based on the above analysis, the author concluded that the return on investment is generally too low for brownfield projects. Moreover, it is suggested that the equity required for brownfield projects is generally too high, and well beyond the point of reasonable expectations.

The author does not, however, suggest that assuming an equal land requirement for both brownfield and greenfield projects is unrealistic, as discovered in the previous chapter. Specifically, as shown in the preceding Chapter, the land consumed for brownfield projects has been shown to be, on average, 4.5 times less than greenfield sites. Therefore, assuming the proposed retail project would consume 10 acres of brownfield lands, 45 acres of undeveloped land in the greenfield area would be required, not only 10 acres as suggested in the analysis.

If the analysis outlined in Table II.5.1 was adjusted to reflect this fact, the land acquisition costs for the greenfield site would increase to 4.5 times more, from $1,742,400 to 7,840,800. Therefore, the total development costs would increase from 9 million to roughly 15 million. Moreover, by increasing the development costs, the overall equity required would increase from approximately $730,000 to 6.8 million for the greenfield site, which actually exceeds that of the brownfield site by roughly 2 million dollars.

With respect to the industrial project analysis outlined in Table II.5.2, by adjusting the land acquisition costs for the greenfield site, the total development cost would increase from 6.9 to more than $9 million. Therefore, by increasing the development costs, the overall equity required would increase from approximately $950,000 to 2 million for the greenfield site. Morever, although this change would bring the equity requirements closer to the brownfield site, overall, the equity required for the industrial project on the greenfield site would still be almost 2 million less.

Finally, in terms of the residential project, if the analysis outlined in Table II.5.3 was adjusted to accurately reflect the fact that lot sizes would be much greater in the greenfield site, and much smaller in the brownfield, site several components of the analysis would need to be readjusted. For instance, assuming the city lot is 6,000 square feet, double the number of lots could be generated on the brownfield site than

that reported in the table. Moreover, assuming on average, a one acre lot minimum size in the greenfield area, only one third of the reported number of lots would be permitted, or otherwise, the amount of greenfield land would need to more than triple in area to accommodate the lots.

Consequently, assuming double the number of lots would be permitted on the brownfield site, but only one third of the lots on the greenfield, the revenue from sales on the brownfield would increase substantially from 787,500 to almost 1.6 million, whereas the revenue on the greenfield site would decrease from $ 1,181,200 to $400,000. It should be noted that the smaller change in lot size for both the brownfield and greenfield sites does not influence the overall lot sale price, as the analysis assumes the lot price is a percentage of the house value, which would remain constant. As a result, the greenfield site would sustain an overall net profit loss of almost $500,000, whereas the brownfield sites would generate a net gain of approximately $200,000.

### 5.2.1 HRM Implications: The Cost Comparisons

The results of the above Study suggest that brownfield redevelopment is not overly attractive to private developers due to the low return on investments. Especially, given that much higher rates of return can be obtained from developing greenfield properties.

In HRM, several brownfields have been redeveloped, and it appears as if there is strong demand, contrary to the above findings. However, as demonstrated in the analysis, one of the key factors that ultimately influence the overall rate of return is the level of on-site contamination and the cost associated with remediating the site.

Although there is no evidence to suggest a low level of contamination for the HRM brownfield sites, based on the trends observed in several case studies, it is assumed that the brownfield sites being redeveloped in HRM, do not, for the most part, display significantly high levels of on-site contamination. Otherwise, it is assumed that many of the sites have been remediated prior to redevelopment, likely at the expense of the seller. Or, in some instance, the location of the brownfield makes the property highly marketable, whereby the potential rate of return on the invest is significant enough to offset the cost of remediation. In fact, these assumptions were found true through the brownfield site identification process used in this report, whereby several of the identified HRM brownfields which have remained abandoned and undeveloped for years, are those suspected of significant on-site contamination.

Consequently, unless the potential redevelopment profit for highly contaminated sites is very high, it is unlikely that private developers will pursue redevelopment opportunities without public assistance. However, the brownfield sites that display a lesser degree of on-site contamination, especially those located in highly marketable areas of HRM, like the Peninsula, are likely to be redeveloped. Unfortunately, the degree and level of expected contamination is unknown for most of HRM brownfield sites, therefore making it difficult to accurately forecast future demands.

# Chapter Six A Comparison of the Public Costs and Benefits Of Brownfield Redevelopment versus Greenfield Development

Christopher A. De Sousa has recently completed a paper entitled "Measuring the public costs and benefits of brownfield versus greenfield development in the Greater Toronto Area". Essentially, the paper summarizes the findings of a study that compared the environmental, social and economic costs and benefits derived from redeveloping brownfields versus greenfields. The paper focuses on both industrial and residential redevelopment projects.

This paper is important as it demonstrates that an effective brownfield policy and redevelopment strategy is valuable and appropriate for Toronto in that such tools would ultimately foster and encourage redevelopment, thereby affording many public benefits. The purpose of this Chapter is to provide a summary of the paper's key findings, and to determine in what manner, if at all, such findings may influence HRM's options for brownfield redevelopment.

## 6.1 The Study's Approach

Through a review of several case studies, the study constructs hypothetical development scenarios, and undertakes cost benefit analysis of these, in an attempt to quantify the public costs and benefits derived. Specifically, the study attempts to answer three specific questions:

(1) What are the actual economic, social and environmental costs and benefits to the public (society) associated with developing brownfields, instead of greenfields?

(2) What are the actual economic, social and environmental costs and benefits associated with retaining industrial uses on brownfields as opposed to converting them to residential uses?; and,

(3) How significant are the opportunities for urban revitalization resulting from the redevelopment of brownfield sites in the City of Toronto?

### 6.1.1 The Scenarios

In order to address the three questions, the study undertook a review of various real-life industrial and residential brownfield and greenfield projects, from which four prototypical development scenarios were created. Table II.6.1 demonstrates the industrial scenarios and Table II.6.2 shows the residential scenarios. For research purposes, the areas, and the number of residents and industrial employees of typical brownfield and greenfield development scenarios were held constant at 8.094 acres, 1481 residents, and 540 employees respectively.

| Table II.6.1: Characteristics of the Industrial Scenarios | | | | | |
|---|---|---|---|---|---|
| **Type of Development** | **Net Development Land Area (ha)** | **Gross Floor Area ($m^2$)** | **Employment ($m^{-2}$)** | **Employment Total** | **Assessment Estimate (Can $ $m^{-2}$)** |
| **Industrial Brownfield** | 8.094 | 40 470 | 75 | 540 | 534.21 |
| **Industrial Greenfield** | 10.118 | 40 470 | 75 | 540 | 702.88 |

**Source: Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.**

As shown by table II.6.1, there are obvious differences between industrial brownfield and greenfield projects. Primarily, as found in other studies, and highlighted in Chapter 5, the greenfield projects tend to require more raw land than the brownfield development, despite the similarity in the size of the building. Moreover, as also demonstrated previously, greenfield sites tend to be assessed at a higher value, likely a sa result of market perception.

As for residential projects, Table II.6.2 reconfirms earlier findings in that residential projects on brownfields tend to be much higher in intensity than those on greenfield sites. Specifically, 71% of the unit mix for the brownfield is medium to high density, while 62% of the greenfield mix is low density housing. Similar to the industrial projects, in order to accommodate the same number of units in the greenfield project as in the brownfield projects, almost twice the amount of raw land is required. Interestingly, the development scenarios show a higher market value for the redeveloped brownfield site, versus the greenfield property. This is attributed to the fact that the brownfields are located in downtown Toronto versus the more suburban greenfield areas where real estate is less valuable.

| Table II.6.2: Characteristics of the Residential Scenarios | | | | | | |
|---|---|---|---|---|---|---|
| **Type of Development** | **Typical Unit Mix (%)** | **Net Dev. Land Area (ha)** | **Number of Units** | **Market Value /Unit (Can $)** | **Persons/Unit** | **Population** |
| **Residential Brownfield** | | | | | | |
| **Single** | 9 | 0.727 | 25 | 392197 | 3.5 | 88 |
| **Semi** | 20 | 1.621 | 76 | 309492 | 3.4 | 257 |
| **Townhouses** | 33 | 2.639 | 157 | 238300 | 2.9 | 456 |
| **Apartments** | 38 | 3.105 | 358 | 214000 | 1.9 | 680 |
| **Total** | **100** | **8.094** | **616** | | | **1481** |

| Table II.6.2 (contd): Characteristics of the Residential Scenarios | | | | | | |
|---|---|---|---|---|---|---|
| **Type of Development** | **Typical Unit Mix (%)** | **Net Dev. Land Area (ha)** | **Number of Units** | **Market Value /Unit (Can $)** | **Persons/Unit** | **Population** |
| **Residential Greenfields** | | | | | | |
| **Single** | 62 | 8900 | 182 | 267209 | 3.5 | 636 |
| **Semi** | 12 | 1722 | 72 | 177849 | 3.4 | 244 |
| **Townhouses** | 26 | 3732 | 207 | 171910 | 3.9 | 601 |
| **Apartments** | 0 | 0 | | 186000 | 1.9 | |
| **Total** | **100** | **14362** | **461** | | | **1481** |

**Source: Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.**

## 6.2 Quantifying Public Costs and Benefits

Several assumptions can be drawn from the scenarios described above. Specifically, it can be argued that one of the primary public benefits of brownfield redevelopment is the opportunity it creates to "reduce development pressure on greenfield and agriculture sites"[21], and therefore, reduce the externalities from transportation (air pollution, congestion, etc.). In fact, this has been a long standing argument supported by proponents of brownfield redevelopment and smart growth. Moreover, the development scenarios also demonstrate a higher market value for the residential brownfield versus the greenfield project, which would ultimately result in the City collecting a greater amount of property tax from the brownfield redevelopment. Further, because the actual unit count for the brownfield project is almost 150 higher than the greenfield site, and in a smaller area, it is assumed that there will be an increased utilization and efficiency of existing hard (infrastructure) and soft services.

### 6.2.1 Public or Government Fiscal Benefits

In recognition of these presumed benefits, the next phase of the study involved developing a cost-benefit model to quantify these. The model was designed to ensure that alternative land uses in different jurisdictions could be compared. The following table provides an overview of the cost-benefit analysis. Specifically, in consideration of the public or government fiscal benefits the authors of the Study assume two key benefits will be derived from brownfield redevelopment: "Restoration or enhancement of the tax base" and "increased utilization and efficiency of existing hard (infrastructure) and soft services". Based on these two assumptions, the cost-benefit model was used to determine the potential revenues, expenditures, and the overall net benefits or costs of residential and industrial projects on a brownfield compared to that on a greenfield site. The following is an overview of the study findings.

| Table II.6.3: Public or Government Fiscal Cost-Benefit Analysis | | |
|---|---|---|
| | **Greenfields** | **Brownfields** |

[21] Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

| Perceived Benefits or Costs | | Industrial | Residential | Industrial | Residential |
|---|---|---|---|---|---|
| Restoration or Enhancement of the Tax Base | Revenue | 692137 | 1546424 | 138213 | 2236183 |
| | Expenditures | 398100 | 1321961 | 6994344 | 2139483 |
| | Annual Benefit (cost)/ scenario | 294037 | 224463 | 682700 | 96699 |
| | Annual Benefit/ha | 29062 | 15635 | 84346 | 11947 |
| | Net Benefit(cost) of Brown vs. Greenfield | | | 48019 | (-15,785) |
| **Perceived Benefits or Costs** | | **Industrial** | **Residential** | **Industrial** | **Residential** |
| Increased Utilization and Efficiency of Existing Hard (infrastructure) and Soft Services | Development Charge Revenue | 1544055 | 7595352 | 0 | 1668995 |
| | Capital Costs | 4896870 | 6561808 | 417249 | 417249 |
| | Dev. Charge Benefit/Scenario | (-3,352,815) | 1033545 | (-417,249) | 1251746 |
| | Benefit/Ha | (-331,388) | 71992 | (-51,550) | 154651 |
| | Annual Benefit/Ha | (-16,569) | 3600 | (-2,578) | 7733 |
| | Net Benefit (cost) of Brown vs Greenfield | | | 18134 | 1348 |

Source: Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

Based on the above cost-benefit analysis, the Study confirms that there are quantifiable benefits associated with brownfield redevelopment, although there are also costs. In terms of tax base, the analysis revealed that the greatest benefits would be derived from industrial brownfield projects, "which are significantly more profitable for a City than the residential ones. The high returns from industrial projects come largely from high industrial tax rates currently charged by the City of Toronto combine with lower expenditures in servicing the facility."[22]

However, from a servicing point of view, the analysis clearly demonstrates quantifiable benefits associated with brownfield redevelopment that far outweigh those of the greenfield sites. "A common perceived public benefit associated with brownfield redevelopment is the opportunity to reutilize existing infrastructure and services, rather than require the emplacement of new infrastructure and services as greenfield development does. The analysis demonstrates that the cost of serving new residential development in the greenfield areas is significantly more than brownfield projects, moreover, the overall annual benefits for residential brownfield projects is more than double the annual benefits derived from the greenfield project.

### 6.2.2 Environmental Benefits

Another firmly rooted position of the advocates of brownfield redevelopment is the claim that significant

[22]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

environmental benefits can be derived through redevelopment. Specifically, literature cites four key environmental benefits including: (1) a protection of public health and safety, (2) a reduction of development pressure on greenfield (agricultural) sites, (3) a reduction in externalities from transportation (air pollution, congestion) and industrial or residential activities, and (4) the protection of groundwater and oil resources.

In terms of quantifying the benefits or costs of protecting human health and safety, the cost of cleaning the brownfield site to remove the risk to humans was used to measure the cost and benefits. From the analysis, it was determined that the health benefits of the brownfield scenarios are $1,750,061 for residential projects, with an annual net benefit per hectare of $10,811, in comparison to greenfield residential projects.

Another long standing argument is that brownfield redevelopment enables "the preservation of agricultural lands and natural habitats in urban peripheries through the reuse of urban lands and reducing development pressures on greenfields."[23] To calculate the value of land lost to development , the amount of land typically consumed by greenfield development was calculated, and multiplied by the gross farm receipt value for the agricultural lands. The analysis suggests a clear benefit to redeveloping brownfields, with a potential annual net benefit of $5,395 and $3,756 per hectare of brownfield lands for residential and industrial projects, respectively.

Another study provides an overview of the cost-benefits analysis for another common claim - that brownfield redevelopment helps to reduce the externalities from transportation including air pollution and congestion. In order to determine the cost and benefits, several variables were considered. Specifically, trip modes (private auto, transit, rail or cycle), trip purpose (work, school) and length of trips were used to determine commuting patterns and the potential traffic generated by each residential and industrial development scenario. In addition, the external costs of travel, such as air pollution, accidents, and congestion, were identified. "Overall, the external costs for a residential redevelopment project were higher than an industrial brownfield project, because the external costs resulting from daily personal traffic exceed those by both employee and freight traffic associated with industrial areas. Moreover, the transportation-related external costs of the greenfield area are significantly higher than the corresponding brownfields because of a greater number of passenger-km travelled by those living and working in the periphery and because of a greater reliance on the automobile"[24].

In conclusion, the direct external transportation costs of industrial brownfield redevelopment would be lower than the residential development, the potential societal benefits derived would be much greater for residential. This is due primarily to the fact that residential brownfield redevelopment would eliminate the high transportation externalities that are fostered by those living and working in the periphery.

## 6.3 The Cost and Benefits of Brownfield Redevelopment in HRM

Although the analysis performed in the research paper for the Toronto Study provides quantifiable evidence of the benefits associated with brownfield redevelopment, the same could not be performed for HRM given the limited resources and time. However, the findings of the paper may be generally applied in an HRM context.

The Toronto study is one of two major research projects that have attempted to quantify and compare

[23]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

[24]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

specific public costs and benefits associated with redeveloping brownfields instead of greenfields in North America. This first of these studies was based on the Chicago experience, where it was found that the public benefits associated with brownfield redevelopment compared to greenfield sites were high, however, the private benefits were greater in greenfield development than brownfields. However, given the significant differences between American and Canadian municipalities (ie. Demographics, education, income distribution, and housing), the results of the Chicago study may not necessarily be applicable in the Canadian context. Consequently, the Toronto study is important in that it provides a better understanding of the Canadian experience.

The economic analysis carried out in the Toronto Study "corroborates in a quantitative way, what the brownfield literature has been suggesting for several years, namely that significant public benefits can be reaped from developing brownfields."[25] The variables considered to perform this analysis for Toronto would vary somewhat from those in Halifax Regional Municipality, however, there are still many commonalities. For instance, given the scale of HRM in comparison to Toronto, and absence of rail in Halifax, the greatest divergence from the Toronto analysis would be the issue of travel characteristics, such as the distance and modes, and the external costs associated with these. But, several variables such as high property values which affect tax revenues, development charges, or capital cost contribution charges in HRM, the cost of providing new hard and soft infrastructure, and the value of undeveloped land in the rural and exurban areas, are generally applicable.

The Study suggest that "brownfield redevelopment is an economically viable undertaking for society at large, bringing about significant benefits in the areas of public capital and operating costs transportation and travel costs, land and natural habitat preservation, quality of life (air pollution) and a variety of social issues. In fact, based on the Toronto Study, the potential annual public benefits of redeveloping all of Toronto's brownfields would range from 21 to 31 million for industrial projects, or 15 million to 23 million for residential projects."[26]

Consequently, based on these findings, the option of pursuing a brownfield redevelopment strategy for HRM appears to be warranted. Specifically, " there is strong evidence for promoting redevelopment through the implementation of appropriate cost-sharing or risk sharing policies and programs (ie. Streamlining approvals, offering regulatory and technical support to private sector stakeholders, providing financial incentives, and providing liability protection) and policy makers should consider supporting these."[27]

However, one of the main problems associated with implementing brownfield related redevelopment policies and programs is that the local governments in Canada do not have access to financial resources, nor do they have the authority to provide such incentives. The next Part of this report will focus on these very barriers, and identify potential solutions for overcoming these.

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[25]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

[26]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

[27]Christopher A De Sousa, Measuring the Public Costs and Benefits of Brownfield versus Greenfield Development in the Greater Toronto Area. Environment and Planning B: Planning and Design 2002, volume 29, pages 251-280.

# Part Three Brownfield Redevelopment: The Potential Barriers

As demonstrated by Chapters Four, Five and Six, there are many public benefits to brownfield redevelopment, but many disincentives remain for private developers. The next Part of the report focuses on the potential barriers to redevelopment, and offers several recommendations for overcoming these. In consideration of the barriers there appears to be 5 key categories. Specifically, Chapters Seven through Eleven explore the five key factors involved in brownfield redevelopment, the barriers these present, and a means for overcoming the barriers, namely:

- regulation,
- financing,
- insurance and liability,
- science and technology, and
- land use planning.

**Table III.0.1: A Ranking of the Perceived Impediments to Brownfield Redevelopment**

| Perceived Barriers | Ranking (%) |
|---|---|
| Lack of Clean Up Funds | 90% |
| Liability Issues | 71% |
| Environmental Assessment | 60% |
| Environmental Regulation | 45% |
| Market Conditions | 45% |
| High Cost of Demolition | 41% |
| High Land Assembly Costs | 39% |
| High Clean Up Standards | 38% |
| Community Concerns | 35% |
| Neighbourhood Conditions | 28% |
| Inadequate infrastructure | 27% |
| Insufficient time. | 23% |

Source: Recycling America's Land-A National Report in Brownfields Redevelopment - Volume 3

In fact, in a survey of approximately 250 cities, respondents were asked to identify the impediments they encountered in redeveloping brownfield sites. Approximately 90% of the respondents indicated lack of clean-up funds as one of the greatest barriers. The second and third most frequently identified impediments were liability issues and the need for environmental assessments of the properties. Table III.0.1 provides an overview of the major impediments cited by the survey respondents.[28]

[28]United States Conference of Mayors. Recycling America's Land-A National Report in Brownfields Redevelopment- Volume 3. February 2000. Pg. 11.

# Chapter Seven The Canadian Regulatory Process: The Opportunities and Constraints Related to Brownfield Redevelopment

This chapter focuses on the regulatory process that guides or oversees the redevelopment of contaminated brownfield sites in Nova Scotia, and the opportunities and barriers it presents for redeveloping brownfields.

## 7.1 The Canadian Environmental Protection Act - Contaminated Site Liability

The EPA clarifies that the act of polluting in Canada is an offence. To clarify, the Act prohibits the discharge of any contaminant into the natural environment in excess of acceptable concentrations or levels. It is also an offence to cause or permit the discharge of contaminant into the natural environment that causes or is likely to cause an adverse effect. In consideration of contaminated site liability, the following apply:

**(A) General Pollution or Contamination Prohibitions**
"Pollution prohibitions are "strict liability" and "fault based" offences. Fault based refers to the necessity to prove a causal connection between the defendant and the pollution event in order to successfully prosecute. Strict liability refers to a concept applied by the courts in regulatory offences where upon proof presented by the prosecution of all of the elements of the offence (i.e. that the defendant caused the pollution and is not just connected to it) indicate that the defendant is guilty of the offence unless it is proven that the defendant exercised all reasonable care".

**(B) Current Spill Provisions**
The Canadian EPA requires that property owners report any release of a toxic substance regulated under the Act to an inspector. Persons who own or have charge of a regulated substance before its release or persons who cause the release are obligated to remedy the situation or reduce or mitigate any danger to the environment. The current spill provisions are also "strict liability" and "fault based" offences.

## 7.2 Brownfield Redevelopment Program

In recognition of the growing amount of contaminated lands that lie unused and unproductive across Canada, and the deficiencies of the EPA to foster remediation of such lands, the federal government has recently announced its intention to develop a National Brownfield Redevelopment Strategy. The Strategy, which will be released in November 2002, and will ensure that Canada is a global leader in remediation.

The National Round Table on the Environment and the Economy (NRTEE) has been charged with leading the development of the Strategy. To date, the NRTEE has launched a brownfield redevelopment program to develop the national strategy. Specifically, the NRTEE has convened a Task Force which includes representatives from diverse sectors and regions of the country, including all three levels of government, to help devise the strategy. The broad cross-section of private sector representatives provides immediate knowledge and experience in the brownfields area.

The strategy will incorporate a series of measures designed to alleviate what are generally considered to be the key barriers to brownfields redevelopment, namely:

- Legal uncertainty surrounding environmental liability;
- Lack of financing and funding Perception problems; and,

- Lack of stakeholder awareness.

## 7.3 The NS Environment Act

At the present time, Part VIII of the *Environment Act* provides the only available option to manage contaminated sites in Nova Scotia. However, this legislation is only applicable to sites that have been designated by the Minister of the Environment. Because the Minister has not designated any contaminated sites in Nova Scotia since the Act was adopted in 1995, it has been relatively ineffective.

### 7.3.1 Guidelines for Management of Contaminated Sites

Notwithstanding the lack of designated sites, the Department of the Environment has adopted and applied a set of Guidelines to manage (i.e. to identify, assess, remediate or otherwise act) land that has potential for unacceptable impacts or risks associated with the presence of contaminants. Specifically, in 1997, the Guidelines for Management of Contaminated Sites in Nova Scotia were adopted. The Guidelines describe the process to be followed by owners and government in Nova Scotia in managing contaminated sites, which rely heavily on a voluntary process.

The overall purpose of the Guidelines is to allow site owners to assume responsibility to the maximum extent possible, for appropriate and cost-effective management of contaminated sites, while ensuring that a consistent approach is used for all sites and that the public interest is protected. The Guidelines define the stage at which formal notification must be made to NSDOE regarding a site, the actions required, the process by which NSDOE will maintain and update files of specified information on sites.

**(A) Notification**
Where an owner of a site is notified or knows a site is potentially contaminated, the owner must evaluate the potential impacts and risks to determine the action, if any, is required. Where impacts have been acknowledged, and the extent and degree of contamination identified, the likelihood of unacceptable impacts at the site under present or reasonably foreseeable future conditions must be determined.

**(B) Site Actions**
Where unacceptable impacts or risks have been identified, the owner of the site is responsible for taking immediate actions, including active remediation, ongoing site management, and identification of any changes in conditions or information that might require alternative actions. Table III.7.1 outlines a Tier II approach which is used to determine the likelihood of human or ecological receptors exposed to contaminants at a site may be adversely affected, or alternatively conditions which would be acceptable for the

**Table III.7.1: Minimum Guidelines for a Tier II Approach**

A Tier II approach will generally comprise four components:

• **Hazard Assessment** - determines whether each specific contaminant at a site can cause adverse effects, and the nature of these effects;

• **Close-response assessment** - determines the relationship between the dose of each contaminant received by any given receptor and the expected adverse effect on that receptor.

• **Exposure Assessment** - identifies the type and number of individual receptors who are likely to be exposed at or around a site, identifies the pathways by which contaminants may reach these receptors, and estimates the likely exposure dose for each receptor.

• **Risk Characterization** - uses results of the first three steps to calculate the overall probability of adverse effects occurring, or the conditions which would be "acceptable", for each "risk scenario" (combination of hazard, exposure pathway and individual receptor or receptor group). This will determine the resulting overall risks, or conditions which would be acceptable, for the site.

Source: *Nova Scotia's Environment Act. Legislative Review Process*. Nova Scotia Department of Environment, Committee Report: October 2000

site. It is at this stage where a Remedial Action Plan (RAP) is prepared and submitted to NSDOE. A Certificate of Compliance (COC) is then submitted to NSDOE once the objectives of the Remedial Action Plan have been satisfied.

#### 7.3.1.1 Role of the Regulator

Throughout the process, the primary role of the regulator is to first determine whether or not ongoing involvement is required and, if so, to evaluate suspected concerns identified and reported to the NSDOE. Once determined that remedial action is necessary, NSDOE essentially provides advice, audits and enforces the remedial process, and will provide information to the public where it is determined to be appropriate.

#### 7.3.1.2 Regulatory Barriers

Canada is the only country in G8 without a national brownfield/contaminated site strategy. Although, the Canadian Environmental Protection Act CEPA) was adopted in 1985, the Act is limiting in terms of power in that the Federal Government only has considerable authority to regulate contaminated sites on properties within its jurisdiction, such as Crown lands or federal buildings, whereas the provinces or territories generally have jurisdiction over most contaminated sites. The Canadian EPA does not contain guiding principles to direct the remediation of contaminated sites. The lack of specific guidance is recognized as a major deficiency of the Act.

Moreover, many barriers associated with brownfield redevelopment arise from the processes and approvals that accompany the policies and guidelines governing the development of contaminated sites. In fact, this point is best demonstrated in a recent report completed by DELCAN and associates, where a review of the current Canadian regulatory environment identified several key impediments to brownfield redevelopment, these are outlined below:[29]

1) Slow and/or overly conservative regulatory reviews delay project's progression, which ties up capital and thus increases site redevelopment costs. The long term commitment of capital reduces lender confidence in engaging in contaminated site redevelopment;

2) Remediation without consideration of applicable exposure pathways results in overspending. For conditions where groundwater impact is not considered an issue of concern, remediation to unrestricted depth offers little additional protection to receptors, and significantly increases remediation costs;

3) The application of generic and overly conservative criteria results in over spending on low risk or remote sites, because criteria have been established for the worst case scenario or highly sensitive receptors;

4) It is common for regulatory policies to have the option to trigger additional study or remediation at a site if conditions change. This is triggered by incorporation of a future clause into the remediation plan review, such as a provision for emergence of new information on the toxicity of a particular chemical. This clause raises uncertainty for future financial and liability issues for lenders and owners and could hinder site redevelopment;

5) Waste disposal issues that were identified as barriers include: lack of licensed hazardous waste disposal facilities, poorly defined criteria for classifying waste disposal sites that are more tolerant

[29]DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Pages 15-16.

of the established contamination. The lack of hazardous waste disposal sites raises the costs of disposing of heavily contaminated soil. These increases may be the result of either increased hauling distance or reduced competition between waste disposal sites. Permanent disposal of PCB impacted material is the best example of this undesirable situation;

6) Often contaminated soil on a site destined to be developed for residential purposes may meet industrial criteria. Thus, reuse of the soil at an industrial site could be an option;

7) When no sign-off to the remediation plan by the regulatory agency is provided, lenders and buyers may continue to be concerned with future liability associated with a formerly contaminated site. Sign-off improves confidence to prospective buyers and lenders. Due to the lack of will or simple bureaucratic delay and reluctance, sign-off is difficult to obtain. For example, the Ontario MOEE guidelines just revised in 1997 do not provide for sign-off;

8) Approvals processes can be inconsistent both within and between jurisdictions at the federal, provincial, and municipal levels. Regulations tend to be revised and changed with time. Internal and long term inconsistency raises uncertainty and financial concerns with lenders and buyers. For example, the Ontario MOEE recently lowered the maximum allowable generic criteria for lead. This has resulted in the potential for rejection of lands that had been previously considered acceptable for residential development;

9) Contamination beyond site boundaries with consequential involvement of adjacent landowners can halt development because of ongoing concerns of renewed contamination from off-site sources. Often contamination can result from distant sources. Policies to deal with this issue, such as wide area designations, are not in place in most jurisdictions;

10) There is never an unlimited amount of resources or time to study a site, and thus investigative priorities must be established which may not reveal all contamination at all sites; and,

11) It is important that assessment, characterization, remediation design and planning by qualified practitioners, thus expediting the approvals process, and ensuring that implementation of site development occurs appropriately.

## 7.4 Opportunities for Overcoming the Regulatory Barriers in Nova Scotia - The Contaminated Sites Strategy

In many ways Nova Scotia's Environment Act is an innovative and progressive piece of environmental legislation. It was one of the first statutes in North America to incorporate and define such important sustainable development principles as precaution, stewardship, pollution prevention, and ecological value. It provides the Minister of the Environment with wide-ranging authority to protect the environment and to use tools such as economic instruments to achieve environmental quality objectives. It advances opportunities for citizens to contribute to our province's shared environmental aspirations by requiring the government to inform the public and seek their input into key areas such as environmental assessment and regulatory change.

Despite the many virtues of the Act, and the existence of the guidelines as described in previous pages, a functional means of identifying or designating sites is still needed. Consequently, action and progress on contaminated site remediation and management has been sporadic.

**Table III.7.2: Recommendation One**

- Re-define "contaminated site" based on specific scientific criteria.
- Broaden Part VIII to include all sites that fall within the revised definition above.
- Compile and maintain a contaminated site inventory.
- Create a Priority Contaminated Site List, which identifies sites targeted for remedial action.
- Designate a site once it is targeted for remedial action.

Recognizing this difficulty, the Department of Environment has communicated its intention to develop a comprehensive strategy for the management of contaminated sites. An Advisory Committee to support the government's commitment to develop a Strategy has been established and provides 5 key recommendations[30]:

**(A) Recommendation One - Develop and implement a comprehensive Contaminated Sites Strategy**

The Advisory Committee believes a Strategy is necessary and valuable. The Strategy should ensure that the authority granted under the Environment Act be expanded and applied to all contaminated sites, not just those sites that the Minister designates. Furthermore, the term "contaminated site" should be more precisely defined, based on specific scientific criteria. Once a clear definition is developed, the committee recommends that the Department of the Environment compile and maintain a provincial inventory or registry of contaminated sites. A mechanism should be implemented to select sites listed within the inventory for remediation and to prioritize action and management plans.

**(B) Recommendation Two - Redefine Responsibility for Contaminated Sites.**

The Advisory Committee received input on the broad approach that the Environment Act currently uses to determine "person responsible" in the context of contaminated sites. From the outset, prior to 1995, some groups expressed objections to applying the phrase "person responsible" to such a wide range of people. Submissions have been received proposing a broad approach to identify "persons connected to a contaminated site," rather than persons responsible for a contaminated site, as a first step. The Minister would then be obliged to identify "persons responsible for a contaminated site" from this broader list, based on well-established. Following the designation of a contaminated site for the purpose of remediation or site management, the Minister shall determine which person or persons connected to a contaminated site are persons responsible for a contaminated site and shall be guided by the following considerations, if such information is

**Table III.7.3: Proposed Amendments "person connected to a contaminated site"**

(i) the owner or previous owner of the substance that is over, in, on or under the contaminated site,

(ii) a person who has or has had care, management or control, including care, management and control during the generation, manufacture, treatment, sale, handling, distribution, use, storage, disposal, transportation, display or method of application of a substance that is over, in, on or under a contaminated site,

(iii) any person whom the Minister considers to be responsible for causing or contributing to the release of a substance into the environment,

(iv) the owner or occupier of, or an operator on, the contaminated site,

(v) any previous owner, occupier or operator of the contaminated site who was the owner, occupier or operator at any time when the substance was released over, in, on or under the contaminated site,

(vi) a successor, assignee, executor, administrator, receiver, receiver manager or trustee of a person referred to in subclauses (i) to (v), or

(vii) a person who acts as the principal or agent of a person referred to in subclauses (i) to (vi).

[30] *Nova Scotia's Environment Act. Legislative Review Process*. Nova Scotia Department of Environment, Committee Report: October 2000

available or accessible to the Minister.

**Table III.7.4: Proposed Amendment Responsibility of receivers, receiver-managers, and trustees**

Notwithstanding anything contained in this Act or the regulations, receivers, receiver-managers, trustees, executors, or administrators of a person responsible for a contaminated site, and their agents and employees, are not responsible for the rehabilitation of contaminated site under any such provision beyond the value of the assets the persons are administering less the reasonable costs and fees of the administration, in relation to their position as receiver, receiver–manager, trustee, executor, or administrator of the assets of a person responsible for a contaminated site, in respect of any adverse effect that occurred (a) before the appointment of the receiver, receiver-manager, executor, administrator, or trustee; or(b) after appointment, except where the adverse effect occurred as a result of the failure of the receiver, receiver-manager, trustee, executor, or administrator to exercise due diligence.

to report a contaminated site" to the Department,"Duty to report release." This would facilitate the creation of the contaminated site inventory and provide needed information to establish priority clean-up initiatives.

**(E) Recommendation Five - Clarify the liability of lenders, trustees, administrators, and receivers involved in contaminated sites**

The issue of liability for a contaminated site was raised in a number of submissions, particularly in the context of lenders, trustees, administrators, and receivers. The key question in the case of assessing the level of liability allocated to anyone particular "responsible person" is "how much care, management, and control" did the person have over the site in question.

The Advisory Committee believes that by separating the terms "person responsible for a

**(C) Recommendation Three - Designation of a Contaminated Site**

The Advisory Committee recommends that the designation process be used to facilitate the clean-up of a contaminated site. The Committee recommends that the Department follow a series of logical steps when dealing with the designation of contaminated sites. Table III.7.4 outlines the proposed amendments to the Act to accomplish the recommendation.

**(D) Recommendation Four - Include "Duty to report a contaminated site".**

There are many known contaminated sites in the province, ranging from abandoned service stations to major industrial contaminated sites. New contaminated sites continue to be identified, as properties change hands or site assessments are conducted. At present, there is no requirement to inform the Department about the existence of a potentially contaminated site, regardless of size or potential impact. The Advisory Committee recommends that Part VIII includes a "Duty

**Table III.7.5: Proposed Amendment to the Act Concerning the identification, designation, and remediation of a contaminated site**

- Departmental staff identify a contaminated site based on specific scientific criteria
- Departmental staff identify persons connected to the contaminated site.
- Departmental staff begin a time-bound voluntary negotiation process to identify "persons responsible for the contaminated site" and the level of responsibility (30 to180 days).
- The Minister either accepts or rejects the proposal brought forward.
- If the proposal is rejected, the Minister steps in and determines the "person or persons responsible."
- The "person or persons responsible" are required to develop a remediation plan, outlining the apportionment of costs. These plans may, with approval, incorporate a risk-management approach.
- If the plan is not satisfactory, the Minister shall institute an order, proportioning responsibility
- Specific time lines for this process should be defined in the regulations.

release" and "person responsible for a contaminated site", and by providing specific definitions of each, this question can be addressed in a fair and equitable manner. The committee recommends modifying Subsection 165(1) to better clarify the limited liability of this group of potential "responsible persons".

# Chapter Eight The Canadian Financing Industry: The Opportunities and Constraints Related to Brownfield Redevelopment

Acquiring, redeveloping, and sometimes cleaning, older, abandoned, industrial sites or shopping malls can be very expensive. "By its very nature, environmental risk is directly and inextricably associated with commercial real estate, its development, and its financing. In many situations, private developers and financiers are not able, or willing, to act on their own to ensure that the full economic potential of site reuse will be achieved. Through the lending and investing activities, financial institutions have a direct and influential role in determining which real estate projects, including brownfield redevelopment projects, proceed".[31]

In terms of brownfields, the mere suspicion of contamination has increased loan transaction costs more than three-fold since 1980, according to local development experts. Financial packages for brownfield sites require more time and staff work, and prospective borrowers must pay for environmental assessments and more detailed appraisals. These expenses are not easily recovered as part of the normal course of doing business, placing brownfield sites at a competitive disadvantage with greenfield locations in undeveloped areas.

The following section explores the financial industry in Canada, as it relates to brownfield redevelopment, and the barriers it creates.

## 8.1 The Canadian Financial Service Sector

At present, the Canadian financial service sector is dominated by four major markets including banks, trust and loan companies (including credit unions), insurance companies, and security dealers (investment brokers and mutual funds). "Each of these markets acts as a "financial intermediary in their respective markets - they receive monies from, and then lend or invest monies in the economy on behalf of the providers of funds -their depositors, policy holders or investor clients".[32]

**(A) Banks**

Banks are by far the leader of the financial markets in Canada. In particular, "banks have accumulated considerable experience in, and lend exposure to, real estate development financing".[33] This experience can be partly attributed to a rapid expansion over the last decade, notably at the expense of failed trust and brokerage firms.

In Canada, all banks essentially fall into one of two categories -Schedule One or Schedule Two. The primary distinction between the two is that a Schedule One bank is publically owned whereas a Schedule Two bank is privately owned. Schedule One banks are known as the "big six" , including the Royal Bank, CIBC, Bank of Montreal, Scotia Bank, TD, and the National Bank of Canada.

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[31] Dillon Consulting, GlobalRisk Management, and TECSULT. The Financial Services Sector and Brownfield Redevelopment. National Roundtable on the Environment and Economy, 1997. Pg. 20.

[32] Dillon Consulting, GlobalRisk Management, and TECSULT. The Financial Services Sector and Brownfield Redevelopment. National Roundtable on the Environment and Economy, 1997. Pg. 18.

[33] Dillon Consulting, GlobalRisk Management, and TECSULT. The Financial Services Sector and Brownfield Redevelopment. National Roundtable on the Environment and Economy, 1997. Pg. 18.

**(B) Trust and Loan Companies**
Several trust and loan companies exist across Canada, the majority being relatively small institutions. "The trust industry has suffered a major decline and rationalization throughout the past decade, partly as a result of credit risk management problems arising from overly aggressive lending to real estate development industry in the 1980s, and also as a result of new legislation that allowed banks to acquire such companies. A credit union essentially performs the same role as a trust company, although its members are both owners and creditors, whereas a member of a trust is only a creditor.

**(C) Insurance Companies**
The life and health insurance industry in Canada has a more significant role in financing real estate development than the property insurance industry. This is a result of an obligation to its policy holders that require long-term investment. Further, the property insurance industry does not provide significant financing for real estate development as substantially more liquidity is required in their investments. That said, property insurers have played a significant role in real estate development, especially with respect to brownfield redevelopment. Specifically, property insurers provide a mechanism for transferring risk from other financial institutions, such as banks, trust companies and life and health insurance companies. The transference of risk thereby increases the overall capacity and willingness of these other intermediaries to accept risk and to invest in real estate development.

**(D) Security Dealers**
The security industry is only indirectly involved in real estate development. Rather than directly providing financing for real estate development ventures, it arranges equity and debt placements for real estate development firms.

## 8.2 Financing Opportunities

Table III.8.1[34] demonstrates the distribution of commercial real estate financing risk among the major financing sectors in Canada. The banks clearly dominate commercial real estate financing activities in Canada with over a third of all loans. The majority of the commercial real estate loans provided through banks are financed directly through commercial mortgages, with a small percentage financed either directly through real estate loans, or indirectly through collateral mortgages.

**Table III.8.1: Distribution of Commercial Real Estate Financing and Environmental Risk**

| **Banks** | **% of Market Share** |
|---|---|
| Commercial Mortgage Loans | 31.6% |
| Commercial real Estate Loans | 2.5% |
| Collateral Mortgages | 4.9% |
| | **39.0%** |
| **Trust and Loan Companies** | **23.5%** |
| **Insurance Companies** | |
| Life and Health | 19.4% |
| Property and Casualty | 0.4% |
| | **19.8%** |
| **Credit Unions** | **17.7%** |

**(A) Commercial Mortgage Loans**
A commercial mortgage loan is available from banks, trust and loans, and insurance companies, and is typically provided to real estate operators. Such loans are referred to as "stand alone" financing given that other income or assets of the borrower are not considered. Generally, commercial mortgages are directed toward long term financing of cash flow generating commercial properties. The major disadvantage with commercial mortgage loans is the sufficiency of rental cash flow generated by the property to provide adequate debt servicing, with secondary attention to equity in the property based on its appraised value.

[34] Dillon Consulting, GlobalRisk Management, and TECSULT. The Financial Services Sector and Brownfield Redevelopment. National Roundtable on the Environment and Economy, 1997. Pg. 22.

**(B) Commercial Real Estate Loans**
Commercial Real Estate loans are primarily available from banks as they tend to require a broader lending relationship that non-banks do not provide. These loans are known as "stand alone" equity based financing, and are typically marketed to developers, builders, construction companies and related real estate operators, over short to medium terms.

**(C) Collateral Mortgage Loans**
Collateral mortgage loans are primarily available from banks as part of general-purpose financing arrangements. These loans are marketed to commercial borrowers, secured by charges against all the borrowers' assesses including real property.

### 8.2.1 Financing Terms: A review of Case Studies

**Table III.8.2: Key Players in Financing Brownfield Redevelopment Projects**

- Real Estate Developers
- Equity Player
- Non-for Profit Corps
- Lenders
- Hybrid Consultants
- Appraisers
- Insurance Companies
- Local Governments
- Responsible Parties

Although financing redevelopment project's feasibility remains the most difficult aspect of a brownfield project to overcome, several means for acquiring permanent financing were utilized. Specifically, in most cases, lenders were amenable to participating in brownfield projects if risks were quantified. Construction lenders, where repayment of principles takes months or a few years, were mostly concerned about the borrower's collateral relative to contingencies in the construction budget for unknown site costs and whether or not the project has or could readily obtain takeout financing. Several of the case studies had some type of loan guarantee or indemnification against potential future environmental problems. Permanent lenders, whose capital was tied down for a decade or more, were much more concerned about the borrower's defaulting and potentially owning a stigmatized asset of questionable value. For the most part, conventional private lenders were reluctant to lend funds without loan guarantees or strong indemnification letters.

In a survey of 135 lenders' attitudes toward contaminated sites, many reported that they would consider financing or investing in potentially contaminated property. Sites with nuclear contamination were understandably the least popular among lenders. While about one quarter of lenders surveyed would consider sites with non-leaking underground storage tanks acceptable . Only 10 percent of lenders would extend financing for sites with contaminated groundwater.

A similar survey found one-quarter of the lenders have concerns about environmentally impaired real estate. While fully remediated properties were often financed, opinions varied regarding the reliability of different agencies inferences to clean. In the United States, the majority of banks expressed greater comfort with the EPA's standards for clean, although an increase in the number of banks that do not require residual contamination was reported.

## 8.3 Barriers of Financial Service Legislation

Despite the amount of financing available, Canada's commercial real estate market is not driven by supply. Rather, the financial service industry responds to the demand for new financing opportunities. The high demand for real estate financing has been directly attributed to the rising surge of interest in redeveloping brownfield sites. Specifically, because lenders are reactive in the marketplace, if there is a demand for brownfield redevelopment, they will respond. However, lending institutions will not finance redevelopment projects where there is little interest in the property. Consequently, the role of the lenders can be summarized by the following four actions:

- receive borrowers request for financing;
- objectively evaluate the financial merits of each proposal;
- determine if a proposed redevelopment is considered to be safe and sound repository of depositors' and shareholders' funds; and,
- prudently manage the on-going credit risk arising from the loan.

The activities of the financial institutions identified above are guided by current financial legislation and regulatory framework consisting of the Bank Act, Trust and Loan Companies Act, Co-operative Credit Associations Act, and Insurance Companies Act. However, in terms of applicable federal laws, the Bank Act, Trust and Loan Companies Act, and Insurance Companies Act, offer only a standard level of prudence, and are "noticeably silent with respect to environmental risk management in the financial service sector." [35]

Moreover, the Canada Deposit Insurance Corporation (CDIC), which provides the next level of statutory guidance for financial institutions, have not addressed environmental risk management. In fact, despite developing a comprehensive set of standards for promoting sound business and financial practices, the CDIC provides only "a generic statement applicable to managing environmental credit in the context of real estates, such as brownfield redevelopment".[36] Furthermore, the Office of the Superintendent of Financial Institutions (OSFI), which provides advice to all financial institutions, including the CDIC, on matters of sound business and financial practices, published guidelines without specific reference to environmental credit risk. The only reference to environmental credit in the context of real estate, such as brownfield redevelopment, is that "financial institutions should set limits on investments and loans according to their quality and limits should be established on exposures to industries and geographic regions.[37]"

Given this limited guidance respecting environmental credit, a relatively high threshold for "due diligence" has been established among financial institutions. This threshold has been further heightened by the CDIC, and its standards, which warns financial institutions of exposing themselves to significant or undue risks. Consequently, "by heightening this sensitivity to, but not providing mitigating mechanisms for, environmental credit risk, the negative bias of the legislation framework cause financial institutions to act from a position of risk aversion, rather than risk management"[38]. Ultimately, creating greater barriers for financing brownfield redevelopment projects.

### 8.3.1 Lender Liability Inconsistencies

Currently, the vagueness of Canadian law on environmental liability subjects lenders to environmental regulations in the everyday conduct of their lending business and, in the instances of contaminated sites, may prevent them from recovering value from loan and investment security. Specifically, the laws are unclear as to the circumstances under which a financial institution might be considered responsible for a contaminated borrowers' business, thereby reducing the lenders opportunities for exemption. Consequently, it is the inadequacy of today's legislation, specifically as it relates to lender liability, that

[35]National Round Table on the Environment and the Economy. The Financial Services Sector and Brownfield Redevelopment. 1997, Ottawa, Canada. Pg. 23.

[36]National Round Table on the Environment and the Economy. The Financial Services Sector and Brownfield Redevelopment. 1997, Ottawa, Canada. Pg. 24.

[37]National Round Table on the Environment and the Economy. The Financial Services Sector and Brownfield Redevelopment. 1997, Ottawa, Canada. Pg. 24.

[38]National Round Table on the Environment and the Economy. The Financial Services Sector and Brownfield Redevelopment. 1997, Ottawa, Canada. Pg. 24.

discourages financial institutions from financing highly contaminated or risky redevelopment projects.

### 8.3.2 Quantifying Environmental Credit Risk

"The financial services market remains focussed on the safety of capital and the profitability of the transaction, causing lending institutions to quantify any and all risk in monetary terms"[39]. However, because little guidance has been provided for quantifying environmental credit risk, most lending institutions have relied on the appraisal industry to identify, quantify, and integrate measures of environmental risk with the other factors considered in an appraisal evaluation. Unfortunately, the Appraisal Institute of Canada, has severe reservations with this role. Given that most appraisers do not posses the scientific knowledge and understanding of environmental contamination, it is difficult to provide an accurate assessments. Consequently, because on-site contamination can significantly impact the value of a property, lending institutions are wary of finance redevelopment projects on known contaminated sites, especially due to potential unknowns like a negative property value as a result of clean-up costs exceeding the property value after clean-up.

### 8.3.3 Historical Real Estate Financing

"The dismal experience of all financial institutions in financing real estate development over the last decade has detrimentally affected the willingness and capacity of every saving institution to provide financing to the real estate development industry. The crash of commercial real estate markets in both value and liquidity, which began in the 1990 concurrent with the economic recession, devastated the loan portfolio quality of all segments of the financial services sector, but was especially unkind to the banking, trust and life insurance industries"[40]. As a result of these occurrences, financing real estate development became viewed upon by most lending institutions as extremely high risk. Unfortunately, this perception still lingers and is well reflected in lending practices of today. Specifically, current lending practices and policies have been mostly revised since this time, and have been specifically designed to control more stringently real estate financing exposures. In terms of brownfield redevelopment, an even greater level of control has evolved given the perceived additional environmental risk.

### 8.3.4 Financial Institution Management

The management philosophy and practices of lending institutions will impact the willingness to finance brownfield redevelopment. Specifically, the managers of individual franchises are charged with ensuring the lending institution is in compliance with governing legislation. As indicated earlier, because legislation is rather vague with respect to contaminated properties, managers tend to be on the conservative side of lending. Consequently, most branch managers operating with conservative interpretations of legislation, tend to also operate from a position of risk aversion, rather than risk management.

Furthermore, because lending institutions must maintain a capital base that exceeds its liabilities, most focus on attracting low risk capital investments. Because of the economic and environmental factors often associated with brownfield sites, redevelopment is often considered more risky than conventional real estate development. Consequently, financial institutions tend not to engage in brownfield redevelopment.

Given that most financing institutions are the repository of depositors, shareholders and policy holders,

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[39]National Round Table on the Environment and the Economy. The Financial Services Sector and Brownfield Redevelopment. 1997, Ottawa, Canada. Pg. 27.

[40]National Round Table on the Environment and the Economy. The Financial Services Sector and Brownfield Redevelopment. 1997, Ottawa, Canada. Pg. 28.

there is a high fiduciary responsibility. Because financial institutions take this role very seriously, most attempt to minimize, rather than mange, risk. Consequently, given the environmental risk associated with brownfield redevelopment, most financial lending agencies are unwilling to take on the liability.

## 8.4 Potential Opportunities for Overcoming Financing Barriers

As discussed previously, the high costs of remediating a contaminated site can be a huge deterrent to brownfield redevelopment. The financing needs differ from project to project by type, by degree of contamination, by type of developer (i.e., non-profit versus private investor), and by the financial position of the developer. New and creative financing methods are being created to help encourage the redevelopment of brownfield sites[41]:

- Tax Incentives;
- Environmental remediation tax credits equal to a percentage of the clean-up costs;
- Site remediation activities could become eligible for some form of tax-exempt industrial development bond (IDB) financing;
- A business Industrial-site Remediation Account, a "brownfield IRA," would permit companies to set aside monies on a tax-exempt basis to establish a cleanup fund for future use;
- A tax incentive exempting brownfield project-generated loan interest would make lending on brownfield projects more attractive, while reducing the lender's interest costs;
- A brownfield development tax credit could be structured similar to the existing (and successful) low-income housing tax credit;
- Capital Attraction Incentives;
- Offer loans to make financial resources directly available to the borrower (revolving loan funds);
- Modify long-time federal economic development programs——such as Community Development Block Grants and various Small Business Administration programs——to give them a brownfields "spin";

Financing brownfield redevelopment does not necessarily mean that governments need to be “giving” money away. The uniqueness of many of these financing methods is that they do not deplete the budgetary monies of a government. In fact, many of the sites are in tax arrears, with local governments losing valuable revenue. Tax incentives often require the developer to pay all costs up front, and then tax credits are given to relieve the developer of the high costs of site preparation and clean up. Chapter Twelve describes some brownfield redevelopment programs that offer some form of financial incentive.

[41]Bartsch, Charles. *Financing Brownfield Cleanup and Redevelopment.* Retrieved from the World Wide Web, from: http://www.brownfieldsnet.org/bbartsch.htm

# Chapter Nine The Canadian Insurance Industry: Opportunities and Constraints Related to Brownfield Redevelopment

Insurance is intended to generally reduce the uncertainty about which party is absorbing the environmental risk associated with a brownfield redevelopment project. Insurance is not a loan guarantee that can assure a lender that debt service will be paid, but it does provide protection against a borrower's longer-term cash flow problems regarding unexpected expenses due to environmental contamination.

## 9.1 Environmental Insurance Products

Traditionally, property and auto insurance has covered environmental incidents, such as spills or contamination, although these types of insurance were not explicitly intended to do so. In fact, as more and more claims were made against these insurance policies, especially those that involved on-going polluting, the insurance industry reacted swiftly. Specifically, in order to remove all questions regarding responsibility, exclusionary clauses were introduced into all policies. The exclusionary clause made it explicitly clear that only sudden occurrences, not on-going polluting activities, would be covered by policy. Moreover, insurance policies would not cover the liability of contaminated sites where such contamination is caused by on-going pollutant release.

Consequently, the availability of insurance geared specifically to environmental contamination is limited and still in the early stages in Canada. In fact, only a few of the major insurance brokers provide environmental insurance for brownfield sites. Basically, three environmental insurance products are currently available to developers of contaminated sites. These products are outlined below:

**(A) Clean-up Cost Cap (CCC) Policies**
This insurance product, also known as 'stop-loss', operates similarly to a major medical policy. "The property owner agrees to for present or future remediation, up to a predetermined dollar amount, and then insurance takes over up to the insured amount (typically double the cost of remediation). Hence the owners' loss is stopped at a certain point. Clean-up Cost Cap insurance is usually taken during site remediation. This insurance is preferred by lenders as it eliminates fears of costs overruns that could render the developer incapable of completing a project. Moreover, provided the developer has funds to cover costs up to the predetermined stop loss amount, lender's concerns about default are minimized." [42]

**(B) Pollution Legal Liability Insurance (PLLI) or Spills Insurance**
The purpose of this insurance is to protect the policy holders from the liability of future contamination problems such as from a future spill, or the detection of existing yet unknown contamination. This insurance more comprehensive than the Clean-up Cost Cap insurance and is typically applied concurrently with CCC insurance.

**(C) Environmental Wrap-up Insurance**
The purpose of this insurance is to provide "contractors, operations and professional services to insure themselves from liability, all under one policy for each project, as oppose to various individual policies".[43]

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[42] Robert A Simons. Turning Brownfields into Greenbacks. Urban Land Institute. 1998. Pg.71.

[43] DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Page 33.

## 9.2 Potential Barriers to Insurance

As discussed in the previous chapter, determining who is responsible for managing or remediating contaminated sites is a difficult process: its methods are inconsistent and the outcome is not always “fair”. The National Round Table on the Environment and the Economy created a list of Potentially responsible parties (PRPs) in their background paper, *Contaminated Site Issues in Canada*. They are the following, but not exclusive:

- present and previous owners;
- the operator, if different than the owner;
- tenants;
- manufacturers of the contaminant;
- distributers and transporters of the contaminant;
- lenders;
- directors and officers of any organization which contributes to pollution; and
- regulators

There are several controversial topics related to the liability of parties related to contaminated sites, and are described under the subheadings below:

### 9.2.1 Joint and Several Liability

The issue of joint and several liability is a widely debated issue, as it entails that any party can be held responsible for all costs of remediation, even though they are but one of many contributors to contamination. In turn, these members can recover some of the costs required for remediation through court action against the other parties[44]. This approach is easy on the regulator, as well as the public, but not so for the party that was held responsible for clean-up: recovering costs from other parties involved in contaminated sites can be lengthy and expensive court battles. This brings up the next issue: fairness.

### 9.2.2 Fairness and Apportioned Liability

In the previous situation, one party is held responsible for the doing of many parties. Unfairness is almost impossible to escape, so efforts must be made to minimize it, and distribute it among all responsible parties. Apportioned liability involves an allocation process by which the parties determine amongst themselves who is responsible for what portion of the contamination. This allows the parties to avoid court battles. Should this process not reach any conclusions, it is defaulted to a joint and several process[45].

### 9.2.3 The Polluter Pays

The principle that the “polluter pays” is widely accepted, however the definition of “polluter” is widely disputed[46]. Should the polluter skip town or go bankrupt, then who is responsible for cleaning up? Often, it falls into the hands of the public. Or, in some cases, a “deep pockets” approach is taken, whereby the

[44]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 6.

[45]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 7.

[46]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 9.

responsible party that is most capable of paying for the remediation is held responsible for the contamination, whether they are the most responsible party or not. A “deep pockets” approach goes against the ideas of fairness and “polluter pays”.

### 9.2.4 Absolute or Strict Liability? Prospective and Retroactive Liability?

There are still many issues to debate about liability. Absolute liability entails that you are entirely responsible for all contamination from your operation or on your property. The advantage of this approach is that it guarantees that someone can be held responsible to pay remediation costs. The disadvantage is that it may not be fair. Strict liability allows a party to use a due diligence defence, to demonstrate that they are not at fault and so escape liability[47]. This approach is consistent with the principle of fairness, however, it may leave the costs of remediation in the hands of the public.

Other debatable topics include (1) Prospective liability: If correct measures are taken to remediate a site and further pollution is discovered, is that party responsible for the further remediation? (2) Retroactive liability: if legislation regarding contamination is revamped and made tougher, are the previous owners held responsible even though when they operated the site they were in compliance with the laws of the day?[48].

These issues are debatable and there is an inconsistency in how they are dealt with across the country. This inconsistency creates confusion and uncertainty for all PRPs. The uncertainty causes lenders to be unsure and unwilling to become involved in brownfield redevelopment.

### 9.2.5 Orphaned Sites

An orphan site is one in which “viable responsible parties cannot be found”[49]. An orphan share is one where one party of several is unavailable or unable to pay their share of the clean-up. So who pays?. This often puts pressure on the government to pay, even though there is a shortage of public funds.

In 1989, the National Contaminated Sites Remediation Program (NCSRP) was created to fund the remediation of priority brownfield sites. It was a 50/50 cost-shared federal-provincial program. It was successful in that 45 sites across the country were fully or partially remediated[50]. The mandate was for five years, but as it drew to a close, no solutions could be made for the remediation of the remaining brownfield sites and discussions came to an end. The issue of orphan shares was brought to the table in that if there was a fund that would cover these costs, how would they prevent the orphan share from growing during the voluntary negotiation process: the other responsible parties could divert responsibility to the orphan share, therefore reducing their costs and increasing the costs to be covered by the fund.

There is currently no national funding for orphan sites and shares. In Alberta, however, Alberta Labour, Alberta Environmental Protection and the Canadian Petroleum Products Institute are working together to

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[47]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 9.

[48]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 9.

[49]National Round Table on the Environment and the Economy. State of the Debate: Greening Canada’s Brownfield Sites.1998, Ottawa, Canada. Pg. 7.

[50]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 20.

"see a special levy placed on wholesale gasoline sales dedicated to the clean-up of orphaned underground gasoline storage sites"[51]. Other provinces are watching closely to determine whether similar approaches can be taken there[52]. The U.S. Superfund is not a model which Canada would like to base its funding methods on. The largest criticism is that too much is spent on litigation, while little is actually spent on clean-up.

## 9.3 Options to Overcoming Liability Issues

The insurance industry has recognized that there is little in place to protect owners of contaminated sites. New types of insurance have been developed for this purpose:

**(A) Post-Remediation Insurance Policy**
This type of insurance covers changes in environmental regulation after remediation has already taken place.

**(B) Property Transfer Liability Insurance**
This type of insurance protects the owner from contamination caused by previous owners.

These policies, however, are very expensive and not always an option for everyone. Osler, Hoskin & Harcourt LLP in their presentation *Brownfield Redevelopment Strategy for Canada: Liability Issues,* dated June 2002 listed the following recommendations for overcoming liability issues:

1) "Enable contractual allocation of liability between parties which is binding on Regulators and Third Parties with financial assurances from the parties voluntarily assuming liability;
2) Where lacking, provide for a regulatory approval process to confirm that a site has been remediated to regulatory requirements;
3) Terminated regulatory liability after remediation is provincially approved;
4) Terminate civil liability after the expiry of a limitation period which is to be no greater than six years counted from public notice of conclusion of remediation;
5) Create a public insurance fund to cover remediation claims discovered post-liability termination;
6) Provide for public notice of remediation."

Other methods to deal with liability issues are to establish formal agreements between the buyer and the seller of a contaminated site (Prospective Purchaser Agreements, Buyer-Seller Agreements). These are binding contracts that divide the responsibility of contamination. The environmental agencies can provide Covenants Not to Sue: they offer assurance that, provided the site is remediated to specific standards, they will not sue for further clean up[53]. No Further Action Letters can also be issued, which are issued following a site cleanup and state that the site requires no further clean up at that time. However, there is always a reopener clause: the wording of this clause is where the value lies in terms of liability protection[54]. Another method to avoid liability of a contaminated site is to break "the chain of ownership". If a public agency takes over the title of a contaminated site, it is generally protected from liability. Once

[51]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 23.

[52]National Round Table on the Environment and the Economy. Contaminated Sites Issues in Canada: backgrounder. 1997, Ottawa, Canada. Pg. 23.

[53]E. P. Systems Group, Inc. Financing Small-Scale Urban Redevelopment Projects. July, 1997. Retrieved from the World Wide Web on June 4th, 2002 from: http://www.smartgrowth.org/library/finsbk.html, p.12.

[54]E. P. Systems Group, Inc. Financing Small-Scale Urban Redevelopment Projects. July, 1997. Retrieved from the World Wide Web on June 4th, 2002 from: http://www.smartgrowth.org/library/finsbk.html, p.12.

the site has been cleaned up, the agency can sell the site, and often offer the buyer liability protection[55].

[55]E. P. Systems Group, Inc. Financing Small-Scale Urban Redevelopment Projects. July, 1997. Retrieved from the World Wide Web on June 4th, 2002 from: http://www.smartgrowth.org/library/finsbk.html,p.13.

# Chapter Ten Technical and Scientific Information: Opportunities and Constraints Related to Brownfield Redevelopment

Technical and scientific information is necessary in order to fully understand the degree or complexity of land based environmental problems, and is especially useful for developing site specific remediation plans. The technical requirements primarily relate to areas of assessment and remediation. In Canada, several key programs have been implemented to advance the technical and scientific fields specific to contaminated sites:

## 10.1 The National Contaminated Sites Remediation Program

A national effort to address issues concerning contaminated sites was approved by the Canadian Council of Ministers on the Environment (CCME) in 1989. "Concerning the more technical areas of assessment and remediation, the CCME began by developing interim soil quality criteria. These criteria were established to meet a defined need, and were based on existing soil and water criteria gathered from various jurisdictions. However, recognizing the limitation of both the interim guidelines and the criteria based approach, the CCME has subsequently developed additional products to help assess contaminated sites[56]:

**(A) Updated Soil Quality Criteria**
In 1997, the existing interim soil-quality criteria were updated to twenty new guidelines. As a result of this effort the CCME published a document entitled Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines.

**(B) Risk Based Approaches**
In 1996, the CCME developed risk based approaches for remediation. Specifically, the CCME published a document entitled A Framework for Ecological Risk Assessment: General Guidance. These guidelines would only be used where specific situations deemed warranted.

**(C) Managing Contaminated Sites**
In 1997, the CCME published a document entitled Guidance Document on the Management of Contaminated Sites in Canada. The primary intent of this document is to demonstrate the interconnectedness among available technological and scientific products for assessing and remediating contaminated sites.

## 10.2 Site Specific Information

"Well defined, organized information is the foundation for managing the land base, and a basic component for developing government policy. At present, governments in Canada require companies to inform them, through mechanisms such as the National Pollution Release Inventory, about chemical pollution released into the air and water".[57] In fact, hundreds of environment-related databases exist across Canada, of which many are land based. However, the information contained within these is not readily shared or easily accessed across the board. Consequently, a number of initiatives have been

[56]National Round Table on the Environment and the Economy. State of the Debate on the Environment and the Economy: Greening Canada's Brownfield Sites. Ottawa, 1998. Pg. 14.

[57]National Round Table on the Environment and the Economy. State of the Debate on the Environment and the Economy: Greening Canada's Brownfield Sites. Ottawa, 1998. Pg. 20.

implemented to improve the quality of, and accessibility to site specific data on the environmental condition of the land. Key among these is a land title and land registry systems. Such systems have been, or are, in the process of being digitized, which should make cross referencing among data bases more feasible across the country.

## 10.3 Technical/Scientific Barriers

The technical and scientific issues involved in brownfield redevelopment are best described by DELCAN in their Urban Brownfields report prepared for the CMHC. "The main issues are that there are limitations to current knowledge, technologies and procedures as well as their lack of widespread use:

1. There is a need to continue developing new technologies and improve existing ones to achieve more cost effective solutions;

2. The lack of treatment and destruction options for some contaminants such as PCBs has resulted in a large number of storage sites, which themselves may be a large potential risk;

3. The economic cost of long term storage may significantly outweigh the cost of treatment and/or destruction. For example, the opening of Swan Hill incinerator in Alberta has relieved the specific PCB situation somewhat, however the high cost of transportation and destruction make this option unattractive for most proponents. Remediation alternatives for many contaminants are not available and/or proven;

4. RA/RM (risk assessment/risk management) is still a developing process and more proponent education and user awareness is required;

5. Statistical evaluation of contamination is lacking. In some cases one exceedance of a criterion may trigger site remediation. Decisions should be based on statistically significant testing to determine whether detected contamination is truly significant;

6. Improved or new technologies for more cost effective investigation and remediation are lacking. Although technologies exist today for investigation and remediation, improvements will undoubtedly result in better contaminant elimination, and lower costs. Improved remediation that is more cost effective will obviously encourage redevelopment. However, progress is expected to be continuous and gradual;

7. Some of the more unusual contaminants are not well studied for their toxicological impacts. As a result, scientific professions are often forced to forecast impact through the extrapolation of limited existing data. This is not normally a factor on most sites, however in locations such as the arctic, this is a critical deficiency;

8. The ecosystem is a complex interaction of numerous components. Society has only relatively recently begun to study the interaction between contaminants and various ecosystem components. Our understanding can be termed preliminary at best. With such a complex system, the modelling of impacts is difficult. The following two factors are particularly difficult to understand at this stage of scientific understanding: (1) long term impacts associated with low levels of contamination, and (2) cumulative (or sometimes synergetic) impacts of various contaminants." [58]

[58]DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Page 16.

## 10.4 Options for Overcoming Technical and Scientific Barriers

The study completed for the Canada Mortgage and Housing Corporation titled *Urban Brownfields: Case Studies for Sustainable Economic Development* outlines several methods for overcoming the technical and scientific issues:

**(A) "Develop exposure pathway specific and depth restricted numerical clean-up criteria (based on toxicity)"**
Traditionally, remediation of contaminated sites for residential purposes required the removal of contaminated soil to the depth where the soil reached the standards for residential use. There was no depth limitation. Depth limitations need to be established and migration pathways and receptors need to be considered.

**(B) "Make provisions for contaminated soil relocation"**
Relocation of contaminated soil can be quite costly. However, soil that could be unsuitable for residential purposes may be suitable for industrial purposes. Rather than relocate and dispose the soil, it can be relocated and reused.

**(C) "Require the registration or certification of qualified practitioners"**
A wide variety in the background of those undertaking site investigations. Registration of these practitioners under one entity would ensure better consistency in site redevelopment.

**(D) "Develop and encourage the use of risk assessment/risk management (RA/RM) methods"**
This contemporary remediation strategy works on a case by case basis. It assesses the risk involved with different ways to manage site contamination. In place management is one RA/RM method. The contaminants are isolated from receptors. Another method is to remediate the site to the standards required for the intended land-use, not necessarily to pristine conditions. For example, if the site will be used for industrial purposes, it can be remediated to the industrial standards, rather than being remediated to the standards required for residential use. RA/RM can reduce remediation costs, and it provides additional site information through site specific assessment of exposure and migration pathways.

**(E) "Encourage a statistical evaluation of soil and water quality data"**
Hundreds of samples may be taken on a site where only a few exceed the criteria for contamination. Statistical evaluation of soil and water can determine more appropriately the significance and impact of a specific exceedance.

**(F) "Pursue further research regarding toxicological data and environmental effects"**
Predicting the impacts of different types of contamination is still relatively new. Further studies will increase the knowledge available on the subject and research into contaminants and their impacts should be encouraged.

**(G) "Improve support for the development of new remedial technologies"**
New methods for disposing and treating contaminated soils need to be developed. The creation of new methods could lead to more cost-effective remediation, and governments should support these developments.

The major technical and scientific obstacle to brownfield redevelopment is the lack of sufficient knowledge. With more research and case studies, new developments will be made, criteria will be more consistent, and the costs of remediation should decrease.

# Chapter Eleven Land Use Planning: The Opportunities and Constraints Related to Brownfield Redevelopment

Land use planning plays a significant role in the redevelopment opportunities for brownfield sites. Land use plans typically provide comprehensive frameworks for delivery of specific programs to stimulate clean-up and redevelopment of industrial and commercial properties in older or industrial neighbourhoods. The following provides an overview of planning in Nova Scotia, with particular emphasis on HRM.

## 11.1 Planning in Nova Scotia

In Nova Scotia, the province grants authority to HRM Council to govern the municipality by providing good government, services, facilities and other things necessary to develop and maintain safe and viable communities, through legislation known as the Municipal Government Act (MGA).

Respecting planning matters in HRM, Part 8 of the MGA enables HRM to assume the primary authority for planning through the adoption of municipal planning strategies and land use by-laws that are consistent with interests and regulations of the province.

### 11.1.1 Municipal Planning Strategies

A Municipal Planning Strategy is a legal document that has status of a law of the municipality. The purpose of a strategy is to provide statements of policy for the management of the municipality. They focus primarily on the establishment of polices to deal with problems and opportunities related to the development of land.

### 11.1.2 Policy Implementation

A Municipal Planning Strategy is not the legal mechanism for regulating development, rather, regulation is achieved through a number of other tools. The following provides an overview of the tools available in Nova Scotia.

**(A) Land Use By-law**
A land use by-law is the principal mechanism for implementing the policies of the Municipal Planning strategy. It is similar to a strategy in that it is a law of the Municipality. The by-law establishes the land use zones which include provisions governing permitted land uses, building height, setbacks, lot sizes etc.

**(B) Development Agreements**
A development agreement is a legal agreement between a Council and a property owner. It is an instrument through which council may consider a proposal that would not otherwise be allowed because the use is not permitted in the zone placed on the land, or cannot meet the requirements of the zone.

**(C) Performance Standards**
Performance standards are essentially design standards used predominantly in addressing land capability. They are often employed to ensure new development reflects a site's environmental capability. For instance, a performance standard would be that "no more than 20% of a sites surface be impervious, or run-off shall not exceed more than 5% above the natural level of run-off post construction.

### 11.1.3 HRM 's MPSs and LUBs

A total of eighteen MPSs and LUBs have been adopted to regulate various plan areas throughout HRM. In addition, several secondary plans have been prepared to focus on smaller areas within these larger plan areas.

**(A) Brownfield Policies**
Within the eighteen plans, specific policies for guiding the redevelopment of brownfield sites are generally absent. However, as shown by Table III.11.1 some Plans contain policies that indirectly address brownfield properties.

The Sackville Drive Secondary Planning Strategy, approved in 2002, is the only HRM plan containing specific reference to the redevelopment of greyfield malls. Specifically, Section 5.2.3 of the Plan encourages the reinvigoration of Sackville's greyfield mall known as the Downsview Shopping Centre. The plan recognizes that the Downsview shopping centre is "viewed as an important community centre" but because of the recent closure of K-Mart, the growing competition among retail establishments, and the cyclical shifts in the retail industry, maintaining the community shopping has become increasingly less viable.

**Table III.11.1: Excerpts from the Halifax Development Plan: Brownfield Plan Policy**

**Policy 2.6**
The development of vacant land, or of land no longer used for industrial or institutional purposes within existing residential neighbourhoods shall be at a scale and for uses compatible with these neighbourhoods, in accordance with this Plan and this shall be accomplished by Implementation Policies 3.1 and 3.2 as appropriate.

**Policy 1.6.1**
When disposing of City-owned lands in residential areas, consideration will be given first to: recreation uses; second, to residential uses; and third, to any other use compatible with residential areas which meet the needs of the residents of the area.

**Policy 3.2.1**
The City shall give priority consideration to re-use of properties previously used for local institutional uses to uses which are neighbourhood-serving and which include medium-density residential, recreation, community facilities and/or private non-profit activities.

## 11.2 Case Studies

At a minimum, most Canadian redevelopment projects involved a land use planning process requiring the Municipality's approval, and usually the Province or body with delegated provincial authority. In terms of the Canadian case studies reviewed, at least 75% required a rezoning process. The timing of each respective rezoning typically ranged anywhere from 3 months to 5 years. The longest delays were attributed to a deferment of land use approvals until the contamination issues were addressed. Consequently, the technical, scientific and regulatory processes dictate the timing of the land use planning processes.

## 11.3 Barriers to Brownfield Redevelopment Associated with Land-Use Planning

The CMHC report on Urban Brownfields lists several examples of urban planning issues related to brownfield sites:

1. "It is difficult to plan for contaminated sites when their location and nature is not known. In this context, many municipalities have initiated mapping, registries, and databases for potentially contaminated sites. This has the potential to be a valuable tool, especially if it can be a living database which is regularly updated. The issue is whether or not these issues should be mandatory, and what level of government should be responsible;

2. Given the choice, land developers will select greenfields for development, as there is more certainty. Thus land use policies that encourage a long-term supply of development land can actually work against policy efforts to develop contaminated sites;

3. Official plans, secondary plans, district plans, and zoning by-laws often place another layer of regulation on contaminated sites, by putting special restrictions on the use of contaminated sites, or the redevelopment of industrial sites which may not necessarily be contaminated. In Ontario, for example, such sites are sometimes placed in a 'holding zone' until the contamination or its potential is addressed by applicants;

4. High clean-up costs can force developers to pursue higher cost housing, which runs contrary to many planning policies that encourage the development of more affordable housing;

5. Municipalities should recognize that it can be less expensive to redevelop sites in already-serviced areas, and should consider development incentives and favourable planning policies; and,

6. Site designers such as planners, architects, and civil engineers seldom work with contaminated soils specialists in an integrated manner early in the site design process to create plans that minimize export pathways and the subsequent need for soil remediation"[59].

### 11.3.1 Land Assembly

Land assembly can be a large obstacle to overcome when redeveloping brownfield sites. Often the site which a developer wishes to redevelop is composed of several lots, each with different owners, as well as different land designations. Clearing land titles requires extra time and money, which can deter any developer from that particular site.

Many cities have thousands of brownfield parcels of land, scattered throughout the city. However, most developers require tracts of land between five and ten acres to even consider a project. Parcels of land in these sizes are relatively easy to assemble in greenfield sites, but much more difficult for brownfield sites.

### 11.3.2 Old Zoning

Another issue is that the zoning is often outdated, and rezoning takes a significant amount of time and money. Mixed-use development is often restricted in most zoning ordinances: shops and businesses are prohibited from being built in walking distance to residential areas, or they require setbacks, removing the stores from the streets and hiding them behind large parking lots[60]. This type of zoning is not pedestrian friendly, and encourages the use of automobiles.

### 11.3.3 Intergovernmental Competition

In their pursuit for development, many local governments in greenfield areas offer incentives for development of their greenfields. These incentives make it very tempting for developers to seek out these greenfields, rather than consider brownfield redevelopment. The governments wishing to develop their greenfield sites compete with those wishing to redevelop their urban cores[61].

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[59]DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Page 20.

[60]Strategies for Successful Infill Development. Northeast Midwest Institute and Congress for the New Urbanism: 2001. p.21

[61]Deason, Jonathan P.,George William Sherk, and Gary A. *Carroll.Public Policies and Private Decisions Affecting the Redevelopment of Brownfields: An Analysis of Critical Factors, Relative Weights and Areal Differentials***.** The George Washington University, Sept., 2001: p.32.

### 11.3.4 Stigma

The lack of information on brownfield sites creates stigmas, that are often hard to overcome. Developers do not wish to get involved in the redevelopment of brownfield sites for fear of future liability, and the high costs of remediation. In the events where brownfield sites have been redeveloped, often the public is weary of using these redeveloped sites because they are not well informed on the health impacts of contamination and the remediation process.

### 11.3.5 Crime

Even just the perception of crime can deter a developer from even considering a site for development. The image of abandoned and vacant sites is often associated with crime (theft, vandalism, drugs, etc.). Abandoned buildings give an image of an unsafe neighbourhood.

### 11.3.6 The Public

The citizens of a community can be a strong barrier against any redevelopment, whether brownfield or not. Residential intensification is increasingly becoming more prominent. The public often fears that residential infill in their neighbourhoods will increase traffic, crime and often reduce their views. On the Halifax Peninsula, many projects have been stalled due to public opposition. Residents of neighbourhoods do not want large apartment buildings, as they feel that they will bring in more students, and therefore more traffic and more noise. The public needs to be informed about the prospective projects and informed about how these projects will affect their current neighbourhoods.

## 11.4 Options for Overcoming Land Use Planning Barriers for Redeveloping Brownfield Sites

**(A) Integration of Land Use Planning with Other Approvals**

The redevelopment of contaminated sites requires a complex approval process, involving several processes to be completed by different departments. These processes should be streamlined and integrated to encourage the redevelopment of brownfield sites. One example of this could be the zoning and site plan approval by the municipality taking place at the same time as the remediation application is being processed by the province. The following initiatives, as outlined in the Canada Mortgage and Housing Corporation Report, should be undertaken to pursue this option efficiently:

- "provincial legislation and regulations should be reformed, where necessary, to ensure that an integrated approvals process can be utilized; and,
- municipal planning documents such as Official Plans should contain policies that enable special planning processes for developments on contaminated sites[62]."

**(B) Contemporary Comprehensive Plan**

A contemporary comprehensive plan of an area recognizes the uniqueness of that area. It outlines the goals of the area, and enables flexible, mixed-use zoning. For example, the Sackville Drive Secondary Plan clearly outlines the expectations of development and redevelopment along Sackville Drive. Guidelines are in place to set developers in the right direction. Should a developer's plans coincide with

[62]DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Page 30.

the goals of the Secondary Plan, the approval process becomes much simpler..

**(C) Land Assembly Analysis**

Municipalities need to create a database with the brownfield sites available for redevelopment. The availability of land records information plays a key role in the redevelopment of a site. Patterns can also be determined, which will allow planners to designate areas which need infill and redevelopment. These areas can be incorporated into Official Plans, or can have their own Secondary Plans.

**(D) Contaminant Risk Mapping**

Historical land use can often indicate potentially contaminated sites. Mapping these areas and creating a historical land use database would allow planners to designate contaminate risk areas in Official Plans and Zoning By-Laws. This would give interested parties early notice of the sites, promote awareness, as well as facilitate land use planning[63].

**(E) Inform and Involve the Public**

The public can be a barrier as well as an asset to redevelopment. Educating the public on site remediation and involving them in the redevelopment process will create awareness on the subject and increase public support. This will reduce fears and misconceptions and keep contaminated sites relieved (or partially relieved) from stigmas. Working with the public and addressing their concerns will help developers gain the public's support.

In 1998, the Salt Lake City region launched the "Envision Utah" plan. It was sponsored by the nonprofit Coalition for Utah's Future. It examined four growth scenarios. When the public learned that auto-oriented growth would increase urbanized land by 409 square miles in 50 years, a consensus was established based on a public survey to pursue infill development and limit newly urbanized land. Public processes such as this one educate the public on the advantages of infill development, and often rid them of their fears of increased traffic and density.

[63]DELCAN, Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development The Canadian Example. Canada Mortgage and Housing . Page 34.

# Part Four Successful Brownfield Redevelopment Programs

Part 2 of this report - “The Options”, suggests that a brownfield redevelopment program is an appropriate measure for HRM, given the potential reduction in the consumption of raw land, and the quantifiable social, economic and environmental benefits associated with such development. Part 3 of the report suggests that, despite these benefits, there remain several barriers to brownfield redevelopment, and in order to overcome these, a massive collaboration at all three levels of government, the financing and insurance industries, and private developers, would be required.

In recognition of these issues, this Part of the report will review the approaches used by other cities that have successfully facilitated and fostered brownfield redevelopment.

# Chapter Twelve A Case Study Review of Local Brownfield Redevelopment Programs

## 12.0 The Roles of Governments

Government roles varied significantly between the American and Canadian case studies. In Canada, various federal, provincial, regional and municipal government agencies assumed roles in the redevelopment process. Primarily, governments acted as the key regulators charged with ensuring the health of the future occupants are protected, and to ensure the brownfield site can promote and support an urban ecosystem. Governments emphasized efficient use of land and resources, reduced consumption of materials and energy, and encouraged long-term social and ecological health. The government also assumes a risk management role. Specifically, in developing contaminated brownfield sites, governments ensured that the environmental health is protected, while simultaneously addressed social and political needs (i.e. affordable housing). It is also important to note that no government in Canada today typically acts in the role of "developer", with the exception of non-profit housing projects. Table IV.12.1 [64] outlines the various roles of Canadian government departments and agencies.

The American federal government's traditional role in setting standards appears to be on the wane, while State level government has taken a more active role. Specifically, the voluntary clean-up programs offered at the State level were an important influence on many of the American case studies. At present, the US government has no financial role.

In most of the American case studies, public funds were an important part of the brownfield redevelopment projects' financing. However, public subsidies, for the most part, were not available for any of the Canadian studies[65], with the exception of the City of Hamilton cases, where an Environmental Remediation and Site Enhancement program (ERASE) is in place.

The most common forms of subsidy provided were grants for remediation, mortgage loan subsidies, and property tax abatement. The ERASE program, which was adopted in 1999, "provides grants to offset the increase in municipal taxes that result from an increase in property assessment due to the improvement/

**Table IV.12.1: Government Interest and Roles in the Process of Brownfield Redevelopment in Canada**

**Federal Government**

Interest: To facilitate the development of sustainable communities and to avoid future liability.
**Role:** Legislator, Research, National standards

**Provincial Governments**

**Interest**: To ensure health and safety of area residents and to avoid future liability.
**Role**: Legislator, Policy maker, Regulator, Research

**Municipal Governments**

**Interest**: To ensure health and safety of existing and future residents, facilitate and benefit from urban development and growth, reduce infrastructure costs, and avoid future liability.
**Role**: Land use planning and Development

[64] DELCAN , Golder Associates Ltd., and McCarthy-Tetrault. Urban Brownfields: Case Studies for Sustainable Economic Development, The Canadian Example. Canada Mortgage and Housing. December, 1997. Pg. 3.

[65] The NCSRP discontinued its brownfield redevelopment assistance fund in 1995.

redevelopment of brownfield properties"[66]. The program also offers grants to offset the costs of environmental studies it provides rebates of various municipal fees and development charges.

In most cases, the amount of public subsidy depended upon the level and extent of environmental contamination and clean-up required. In terms of the subsidized portion of total project costs, approximately 22% of the projects received 15 to 21% in subsidy, while 44% of the projects received 24 to a maximum of 50% in subsidy. Moreover, projects on low-valued land, or involving conversions to industrial or public housing uses, tended to receive a greater percentage of subsidy.

A publication developed by the Ontario Provincial Government demonstrates the range of potential financing tools available to encourage redevelopment, revitalization, and improvement of existing built-up areas and neighbourhoods. The study concludes that a number of municipalities provide financial assistance in form of grants or loans, while others provide incentives through waiving fees and charges. Table IV.12.2 provides an overview of the type of financing tools available in Ontario, with specific reference to sites that display on site contamination[67].

**Table IV.12.2: Municipal Financing Tools for Redeveloping Brownfield Sites**

**Contaminated Site Related Tools**

Core Area Grants Program
Development Application Fee Waiver/Rebate
Realty Tax Arrears Cancellation
Realty Tax Equivalent Rebate
Development Allowance/Charge Credit or Exemption
Building Revitalization Program
Design Guidelines

**Incentives for Property Owners**

Tax Incentive Rebate
Downtown Rehabilitation and Redevelopment Program
Convert to Residential Program
Core Area Rehabilitation and Redevelopment
Feasibility Study Grant Program
Facade/Interior Improvement Loan Program
Building Renovation Loan Program

[66]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.2.

[67]Ontario Ministry of Municipal Affairs and Housing. Municipal Financial Tools for Planning and Development. Summer 2000,. Pg.3.

## 12.1 Case Study One: Hamilton, Ontario

In Hamilton Ontario, a brownfield redevelopment program entitled Environmental Remediation and Site Enhancement (ERASE) has been adopted. The following provides an overview of the program components and its accomplishments, to date.

### 12.1.1 ERASE Community Improvement Plan

As a component of the ERASE program, a Community Improvement Plan (CIP) is developed and applied to a specific project area only, in the older, heavy industrial areas of the City of Hamilton. The Project Area covers 3,400 acres of land characterized by vacant, idled, and underutilised buildings properties[68]. Tax arrears are in the area of $2,635,000 for privately owned vacant properties (no buildings on property) and $13 million for abandoned properties with buildings on them[69]. This represents a significant loss in revenue for the City as well as the Province. Most of the properties have some level of contamination, due to the industrial past of the area.

### 12.1.2 The Goals of the ERASE CIP

With the intent of promoting the redevelopment of brownfield sites in the Community Improvement Project Area, the goals of the ERASE CIP are the following:

- "retain and facilitate the expansion of existing industrial and commercial uses and attract new industrial and commercial uses;
- increase tax assessment and revenues for the City of Hamilton and the Province of Ontario;
- retain and increase employment opportunities;
- reduce urban sprawl an its related costs;
- improve the visual quality of the area;
- improve environmental health and safety;
- increase the provision of city core housing opportunities;
- increase the provision of waterfront access and recreational opportunities; and,
- stimulate private investment activity and private property maintenance."[70]

### 12.1.3 Planning Policies

To be approved, the ERASE Community Improvement Plan had to meet criteria from the provincial, regional and municipal planning policies.

**(A) Provincial Policy**

Section 28 of the Ontario Planning Act allows communities that have provisions in their official plans relating to community improvement to designate a "community improvement project area", and then to

[68]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.4, 6.

[69]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.7.

[70]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.16.

prepare a community improvement plan for this area[71]. According to Section 28(1) of the Ontario Planning Act, a "community improvement project area is defined as an area within a municipality, the community improvement of which in the opinion of the council is desirable because of age, dilapidation, overcrowding, faulty arrangement, unsuitability of buildings or for any other reason"[72]. Section 28 also outlines that the following actions may be engaged by the municipality for this community improvement project area:

- "acquire, hold, clear, grade or otherwise prepare land for community improvement (28(3));
- construct, repair, rehabilitate or improve buildings on land acquired or held by it in conformity with the community improvement plan (28(6));
- sell, lease, or otherwise dispose of any land and buildings acquired or held by it in conformity with the community improvement plan (28(6)); and,
- make grants or loans to the registered owners, assessed owners (and in the case of the City of Hamilton also tenants), to pay for the whole or any part of the cost of rehabilitating such lands and buildings in conformity with the community improvement plan (28(7))"[73].

**(B) Regional Policy**

The Official Plan for the Region of Hamilton-Wentworth outlines the need to redevelop the older industrial areas of Hamilton, specifically the Bayfront Area which is located within the Erase Community Improvement Project Area, and the preference of redeveloping vacant or underutilised land rather than "taking up agricultural lands or naturals areas"[74].

**(C) Municipal Policy**

The City of Hamilton Official Plan recognizes the importance of industry to the area and outlines the need to maintain its position of industrial centre by promoting new industrial growth in the area. The plan also identifies a "Community Improvement Area", in which a "Community Improvement Project Area" may be determined. It outlines the criteria that council must use to define the Community Improvement Project Area. The following measures can be applied to community improvement project areas according to section 10.4 of the Official Plan:

- "the use of appropriate funding programs;
- the acquisition of land;
- enforcements of property standards by-law; and,
- consideration of more flexible zoning, including bonus zoning provisions."[75]

**(D) Vision 2020**

Vision 2020's goals, among others, are to curb urban sprawl and to increase awareness of the potential

[71]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.8.

[72]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.8.

[73]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.8.

[74]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.9.

[75]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.10.

for brownfield redevelopment[76].

The City of Hamilton ERASE CIP's goals concur with those from the provincial, regional and municipal policies. It also incorporates the goals of the Central Neighbourhood plan , the West Habourfront Development Study, and agreements on future land use between the City of Hamilton and the Hamilton Harbour Commissioners. Several areas within the Project Area are in land use transition and more flexible policies have been incorporated into the plan for these sub-areas[77].

### 12.1.4 Task Forces and Public Involvement

The Industrial Redevelopment Task Force, comprised of senior private and public stakeholders from the legal, finance, real estate, environmental management, engineering and urban planning professions, was formed in 1997 to develop a strategy to bring contaminated industrial sites back into productive use. Many of the components of the ERASE CIP were developed in this group. In 2000, the Brownfield Redevelopment Task Force, comprised of five members of City Council, was formed to coordinate municipal efforts to promote brownfield redevelopment. Section 28 of the Planning Act outlines the public meeting requirements for a project such as the ERASE CIP, and the preparation of this plan has conformed to these guidelines[78].

**Table IV.12.3: City of Hamilton ERASE Program Municipal Fees Waived, Refunded or Exempted for Brownfield Redevelopments**

| Development Charges | Fees($) |
|---|---|
| Commercial Dev. Charge | 2.64/ft2 |
| Residential Dev. Charge | 5,113 |
| Plan Amendment | 2,300 |
| Zone Amendment | 2,300 |
| Minor Variance | 400 |
| Demo Permit | 220 +25 for 3000m² |
| Inspection Fee | 200 +10/93 m² |
| Change in Use | 150 |
| Zoning Verification | 120 |
| Bldg. Permit | 150 for 10,000 + 9 for each 1000 |
| Site Plan Application | 1,500 |

Source: Ontario Ministry of Municipal Affairs and Housing

### 12.1.5 Programs

**(A) ERASE Redevelopment Grant Program (Redevelopment)**

This program is provided to property owners who chose to redevelop their properties in the Community Improvement Project Area. The developer must pay the entire costs of redevelopment, as well as taxes owing, and the grant is provided annually based on the increase in taxes due to redevelopment. The Redevelopment Grant will equal 80% of the increase in the municipal portion of property taxes. The remaining 20% of the increased taxes will be devoted to the ERASE Municipal Property Acquisition, Investment and Partnership Program (discussed further on). Owners who have had tax arrears cancelled under other programs, will still be eligible for the Redevelopment Grant, but the amount of the tax arrears will be deducted from the grant. The total grant payment is equal to the costs of environmental studies (unless already paid for under another program), environmental remediation, site preparation including construction or improvement of municipal

[76]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.10.

[77]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.12.

[78]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.15.

infrastructure, and demolition[79], and payments will stop when this total amount has been granted to the owner, or after a period of ten years, whichever comes first[80].

**(B) ERASE Study Grant Program (STUDY)**

The intent of this program is to acquire substantial environmental information on priority sites in the Community Improvement Project Area in a short period of time. Grants will be awarded to owners of properties within the Project Area wishing to complete environmental studies (Phase II Environmental Site Assessment (ESA) and/or Phase III ESA - Remedial Work Plan) of their properties[81]. An owner may receive 50% of the environmental study costs, to a maximum of $10,000. An annual limit of $100,000 will be imposed for this program, and applications for this funding will be considered according to a list of priority sites and available funding. Environmental studies must be paid in full by the owner. Upon presentation of required documents, the owner will be reimbursed for the amount agreed upon[82].

**(C) ERASE Planning and Development Fees Program (PDFEES)**

The intent of this program is to stimulate investment in the Project Area by providing a rebate towards the development and planning fees required for redevelopment. Upon application for the program, all fees for planning approvals and demolition permits must be paid in full. Upon completion and occupation of the project, all the eligible fees collected will be refunded to the property owner. The following fees are eligible for refund:

- "Official Plan Amendment;
- Zoning By-Law Amendment;
- Minor Variance;
- Zoning Verification;
- Site Plan Application;
- Revision of Approved Site Plan;
- Demolition Permit;
- Building Inspection Fee; and,
- Permit for Change of Use."[83]

**(D) ERASE Redevelopment Opportunities Marketing and Data Base Program (ROMDB)**

This program has been designed to make redevelopment of brownfield sites more attractive. This program has information, education and marketing components. The database will be created to provide important information on the vacant and underutilised sites in the Project Area. A list of key redevelopment sites will be compiled and their information will be made available to potential investors.

**(E) ERASE Municipal Property Acquisition, Investment and Partnership Program (MPAIP)**

Many properties in the Project Area are already owned by the City. Others, however are not. There are several properties in the Project Area that have been in tax arrears for over three years, and could be

[79]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.23.

[80]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.20.

[81]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.25.

[82]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.27.

[83]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.28.

taken for tax sale by the City. This has often been discouraged due to liability issues. The Erase MPAIP intends to place the 20% of the Redevelopment Grants (see section (A)) that was retained by the city into a Brownfield Budget Account (BBA). The Municipality can then use these funds for the acquisition and/or redevelopment of brownfield sites within the project area and for public/private partnerships. This account will function as a revolving fund, and profits from redevelopment will be deposited back into the BBA.[84].

[84]Economic Development Department. City of Hamilton Environmental and Site Enhancement (ERASE) Community Improvement Plan. City of Hamilton: March 2001, p.33.

## 12.2 Case Study Two: Louisville's Brownfield Program

The city of Louisville, Kentucky created an Empowerment Zone application, for the federal grant program. In 1994, the city was awarded an Enterprise Community designation and $3 million (US)[85]. This Empowerment Zone (EZ), located in the western region of Louisville, covers 5,401 acres of land, and is home to 49,080 residents. Approximately 25% of the land is vacant or severely underutilised, and 70% of Louisville's brownfields are located in the EZ. Almost half the population in the EZ live at or below the federal poverty level. Brownfield site redevelopment in the EZ is one of the city's goals, as it will spur economic development and create new jobs for its residents[86].

The brownfields program evolved from the Environmental Practitioners Group that was involved with environmental issues for the EZ. In 1994, the group re-formed to apply for EPA assistance to develop a Brownfield Demonstration Pilot. In July 1995, they were granted an EPA brownfield pilot project grant of US $200,000, and by September, the Brownfields Working Group was formed. The group was formed of members of the Environmental Practitioners Group, developers, bankers, community residents, environmentalists, city and county government officials, members who could offer technical support, and individuals from the Housing and Urban Development Department. The Housing and Urban Development Department contains the Land Bank Authority, which is a non-profit organization that "acquires, through mass foreclosure, abandoned and derelict property on which taxes are owed, clears the title, and then provides the land to developers at fair market value."[87]

### 12.2.1 Objectives

Members of a variety of backgrounds were essential to establishing a good set of goals. The objectives established are outlined in Table IV.12.4. The Working Group divided themselves among several subcommittees in order to accomplish various tasks to fulfill the objectives. The subcommittees created were:

- "Big Picture"
- Community Outreach and Public Education
- GIS/LOJIC Database
- Site Management and Selection
- Grant Administration
- Legislative, and

[85]Biemer, Bonnie. *Partnerships, Strategies, and Work, Work, Work :The Louisville Kentucky Story*. *Biemer Presentation Material*. Retrieved from the world wide web on October 23rd, 2002, from: http://www.instrm.org/dialogue/dialog6/biemer/biemer.html

[86]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool.* Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 5.

[87]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool.* Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 1.

‘ Project Administration[88]

**Table IV.12.4: Louisville's Objectives for Brownfield Redevelopment**

**1. A Local Public Entity** will provide and maintain an environmental data base; maintain capacity to perform Phase I site assessments; conduct marketing activities, and maintain a program to educate the public about these properties.

**2. Scope of Work for Pilot Projects** will be limited to sites defined as brownfields that are located within the city of Louisville Empowerment Zone. Results from the projects may be applied to other brownfield sites.

**3. We will Select Sites Where an End User is Present** and "but for" our intervention, redevelopment would not occur, or sites determined to be strategic for redevelopment in the Empowerment Zone.

**4. We will Seek a New State Law to Provide a Voluntary Cleanup Program** which also would provide liability protection to local public entities and prospective purchasers from costs to clean up contamination they did not cause. The state will continue to pursue responsible parties. We will seek a memorandum of Understanding between EPA, the State and the city, to allow local control of cleanups without federal intervention, under this program. An assigned public entity may take title to sites through foreclosure to clear title and hold harmless future purchasers, until new legislation is in place.

**5. A State-Local Partnership, Including the Kentucky Department of Environmental Protection,** will commit resources to work with brownfield sites and the brownfields process.

**6. A Brownfield Program Entity will Conduct Assessments of Site Conditions.** We will use our GIS-LOJIC system data base as a tool in performing Phase I assessments. We will also do minor Phase IIs and minor remediation or removals as indicated.

**7. A Neighbourhood-Based Public Consultation Process** will be a key element of this process. The consultation will be for purposes of exchanging information, educating the public, and receiving public input in developing a site redevelopment plan.

**8. Contamination that Poses an Immediate Danger to Human Health** will be referred to the state Natural Resources Cabinet for action.

**9. We will Develop Site Management Plans** that are appropriate to intended use and protective of the surrounding community.

Source: *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool.* Smart Growth Network: Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 2.

## 12.2.2 Site Selection

The Working Group established a set of site selection criteria to address the concerns of developers and the community:

[88]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool.* Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 2.

- Probable end user
- Empowerment Zone - Cleanup furthers EZ objectives and is in target are
- Potential business (job) impact
- Existence of responsible party
- Site currently not under state, federal or private legal action and not subject to RCRA regulations
- Usefulness as a model for addressing administrative obstacles to cleanup and reuse of brownfields in other cities[89]

The first criterion is that the sites have a probable end user. For the first two pilot projects, developers initiated the site selection in that they were interested in expanding their sites onto adjacent brownfield sites. The Working Group proposed other approaches to target other brownfield pilot sites, such as, assembling marketable land into larger parcels and adjusting the zoning so that it is uniform and suitable; and targeting sites in the most economically depressed areas, where projects would most likely be publicly-funded, for housing, recreational space, or job training centres[90].

### 12.2.3 Framework for Site Selection

The working group created a more proactive approach to target specific brownfield sites. The approach consists of five steps, which can be seen in Table IV.12.5. Louisville has created a Geographic Information System (GIS) Database that contains information on the land in the Enterprise Community. This information is public and is used to attract investors to the area, and to target areas for remediation and redevelopment[91].

### 12.2.4 Revolving Loan Fund

In 1997, the EPA awarded Louisville, Kentucky with a US $350,000 grant to create a Brownfields Cleanup Revolving Loan Fund (BCRLF) Pilot program. The goal of this program is to fund loan programs for the remediation of contaminated sites, and to return them to productive use. The BCRLF loan pool is used to fund relatively small cleanup projects, US $40,000 to US $50,000. The funds could also be used to guarantee loans made by private institutions.

The City of Louisville used the EPA to create a brownfield redevelopment program. Several sites have been cleaned up and redeveloped, successfully. Until last year, Kentucky was one of the few states left in the U.S. that did not have a brownfields redevelopment program. Two new bills were introduced last year, which will help streamline the redevelopment process. The passage of the Brownfields Bill in the 2001

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[89]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool.* Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 4-5.

[90]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool.* Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 6.

[91]Outreach and Special Projects Staff. *National Brownfields Assessment Pilot*, Louisville, Kentucky. U.S. Environmental Protection Agency. Washington, D.C. : May 1997. Retrieved from the World Wide Web on October 23rd, 2002 from: http://www.epa.gov/brownfields/pdf/louisvil.pdf

General Assembly has made the cleanup and appropriation of brownfield sites easier, and the city of Louisville intends to show its continuing commitment to brownfield redevelopment. The city contributed $150,000 last year to the Brownfields Acquisition/Remediation Revolving Loan Fund[92]. The city also continues to invest in brownfield redevelopment programs, and is creating a Commercial/Industrial Land Strategy to address the issues of lack of available industrial and commercial land due to contamination[93].

**Table IV.12.5: Framework for Targeting Brownfield Redevelopment Sites**

1) Target areas of city where community benefits from brownfields redevelopment are likely to be the greatest based on socioeconomic factors (e.g., Empowerment Zones or Enterprise Communities).

2) Identify potential brownfield sites in those areas. While a GIS database is a useful tool for accomplishing this step, unavailable data are a potential obstacle. For example, data on site contamination and properties that are abandoned or underutilised may not be readily available.

3) Screen potential brownfield sites based on marketability and availability of suitable end users. Key factors that concern developers include:

- Extent and level of contamination
- Regulatory/legal barriers
- Availability of financing
- Zoning
- Land tract size
- Configuration of existing buildings

(4) Evaluate potential community benefits and costs associated with redevelopment of screened sites. These benefits and costs depend on the site location, type and extent of contamination, and end land-use:

- Jobs
- Tax revenues
- Aesthetic improvements
- Increased property values
- Community services
- Human health impacts

5) Select sites or groups of sites that are attractive to developers, for which there are probable end users, and that achieve community, environmental and economic objectives.

Source: Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 7.

[92] http://www.louky.org/mayor/budget2001/capitalpdf/Capital_2002_recommended_table.pdf

[93] City of Louisville Capital Improvement Program. Retrieved from the World Wide Web on October 23rd, 2002, from: http://www.louky.org/mayor/budget2001/capitalpdf/c-lda.pdf

## 12.3 Case Study Three: Trenton, New Jersey

The City of Trenton began its brownfield redevelopment strategy in 1992. At that time, the city developed an inventory of the industrial sites within its Urban Enterprise Zone (similar to Louisville's EZ). It was determined that 40% of the land in the UEZ was comprised of brownfield sites[94]. In 1993, the city decided to expand its brownfield redevelopment efforts to areas outside the UEZ. At this time, the New Jersey Department of Environmental Protections (NJDEP) was developing a strategy for brownfield redevelopment, more specifically discussing issues of cleanup and future land use for the city of Trenton. They developed a pilot site, and in 1995, the EPA awarded the city of Trenton with a Brownfield Demonstration Pilot Grant. The funds awarded by the EPA were coupled with state regulatory and legislative incentives, that allowed Trenton to create a successful brownfields redevelopment program[95].

### 12.3.1 Goals of Brownfield Redevelopment Program

The city's focus "is to promote sustainable community development that actively involves residents in site selection and land-use planning."[96] The city determined that the types of projects that would most reflect this focus were residential, parks and open space uses, and neighbourhood services. For the pilot program, the city selected four sites:

1) *Magic Marker Site*: This site has an area of 7.5 acres and is located in a residential neighbourhood. Potential uses were determined to be residential, open-space and/or retail.
2) *Champale Brewery Site*: This site is located along the waterfront, making it prime real estate. Future uses were determined to be mixed-use, perhaps restaurants and apartments.
3) *Thropp Brothers Site*: This 2 acre site is located near the city's largest elementary school and potential uses included a playground for the school and residential development.
4) *Crane Site*: This site is approximately nine acres and was the largest vacant industrial site available for redevelopment in the city. It is bordered by a poor neighbourhood and a nearby school.[97]

**(A) Industrial Site Remediation Act (ISRA)**

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[94]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 8.

[95]*City of Trenton, New Jersey: Brownfields Assessment Demonstration Pilot*. U.S. Environmental Protection Agency, February, 2002. Retrieved from the World Wide Web on October 23rd, 2002: http://www.epa.gov/region02/superfund/brownfields/trentonfs.pdf, p.1.

[96]Smart Growth Network. An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 8.

[97]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 8.

The State of New Jersey passed this act in 1993 to overcome some of the regulatory impediments to brownfield redevelopment. The 1983 Environmental Cleanup Responsibility Act (ECRA) was enacted to promote contaminated site cleanup, by requiring environmental audits and cleanup prior to the sale of certain industrial properties. Unfortunately, due to the high costs of remedial activities, sites did not get sold, and many were land banked by the ECRA[98]. The ISRA was created to address the issues of the ECRA: "the ISRA streamlines environmental assessments and cleanups, allows for risk-based cleanups, protects government entities that acquire property from cleanup liability under certain conditions, and provides loans and funding for site assessments and cleanup."[99]

**(B) Targeted Sites**
Trenton Targets two types of brownfield sites for redevelopment. There are those that have low market value but are in close proximity or visibility to surrounding communities and their redevelopment will have significant community benefits. For this type of redevelopment site, community involvement is crucial for successful redevelopment. The other type is the site that is of high market value, and therefore attractive for private development. For this type of site, the existence of an end-user and the value of redevelopment to the community are important considerations. These sites may require significant public assistance to prepare the site to attract developers[100].

**(C) Community Involvement**
The City of Trenton has realized that community involvement is important to brownfield redevelopment. By encouraging community involvement in redevelopment, potential conflicts can be discovered early on and dealt with appropriately. Trenton identifies relevant stakeholders and community leaders. Community leaders can promote redevelopment and motivate residents and gain their support. Another important consideration for Trenton was involving the mayor. The mayor can influence other city and state organizations, as well as streamline many procedures. Another important factor was determined to be identifying those that would oppose redevelopment projects and address their concerns[101].

## 12.3.2 Framework for Site Selection

The report titled *An Integrated Approach for Brownfield redevelopment* created by the Smart Growth

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[98]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 10.

[99]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 10.

[100]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 11-12.

[101]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 12.

Network[102] outlines the city of Trenton's approach to the site selection process, which comprised five steps:

1. "Identify brownfield sites that are owned by the city or could be owned by the city through tax foreclosure or other means.

2. Screen brownfield sites on the basis of development potential and expected community benefits. Table – outlines the factors to consider.

3. Identify sites that are either highly marketable or have high potential for community benefits and neighbourhood revitalization. Proceeds from the sale of highly marketable sites could be used to cleanup less marketable, but highly beneficial brownfield sites in Trenton.

4. Evaluate economic feasibility of highly marketable sites by analyzing the potential for them to generate an adequate return on investment. Public expenditures for each cleanup need to be considered, as well as the expected sale price of the site, tax revenues generated from the redevelopment, and other financial considerations. As is the case with many older cities, many of the brownfield sites in Trenton will need to be financed with public funds because responsible parties have gone bankrupt or cannot be identified.

5. Evaluate relative costs and benefits of sites with high potential for community benefits. Costs include cleanup and redevelopment costs. Benefits include environmental, social and economic benefits. Different communities are likely to value each of these types of benefits in unique ways. For example, residents in one community may be primarily concerned with job creation, whereas residents in another area may consider aesthetic improvements most valuable. Community input and involvement therefore is required to properly evaluate various benefits of brownfield site redevelopment."

**Table IV.12.6: Factors to Consider in Screening Brownfield Sites for Redevelopment**

**Development Potential**

1) Size of land tract;
2) Presence of other development activities in surrounding area;
3) Water frontage;
4) Highway or railway access;
5) Proximity to markets (both customers and suppliers);
6) Labor availability (with suitable skills);
7) Cost of cleanup; and,
8) Geology.

**Potential for Significant Community Benefits**

9) Existence of community leaders who can motivate local residents;
10) Residential population of the area (number and age distribution of nearby residents);
11) Presence of schools or playgrounds near site;
12) Extent and nature of contamination and health risk;
13) Potential for secondary development activities;
14) Potential for redevelopment activity to generate city taxes;
15) Job creation potential; and,
16) Opportunities for environmental education.

### 12.3.3 Achievements Since 1996

[102]Smart Growth Network. *An Integrated Approach for Brownfield Redevelopment: A Priority Setting Tool*. Urban and Economic Division, Office of Policy, Planning and Evaluation, U.S. Environmental Protection Agency, September, 1996. Retrieved from the World Wide Web on October 22nd, 2002, from: http://aix1.uottawa.ca/~rroberge/AN%20INTEGRATED%20APPROACH%20FOR%20BROWNFIELD%20REDEVELOPMENT-SGN%20Library.htm, p. 13.

The Brownfields Environmental Solutions for Trenton (BEST) Advisory Council has been meeting since 1996. This group consists of environmental consultants, bankers, scientists, private business and industry associations, community representatives and non-profit organizations, and provides advice to the city on redevelopment, remediation and legislation issues[103].

**(A) Showcase Community**

The U.S. EPA has a Brownfields Showcase Community Initiative which has three main goals:

- "to promote environmental protection and community revitalization through the assessment, cleanup and sustainable reuse of brownfields;
- to link federal, state, local and non-governmental action to restore and reuse brownfields; and,
- to develop national models demonstrating the positive results of public and private collaboration."[104]

In March 1998, Trenton was selected as a Showcase Community. The city received funding and technical assistance, as well as a federal government employee for two years to "link federal, state, local and private sector action toward redeveloping brownfields."[105] Trenton has also received supplemental funding from the EPA, amounting to at least $200,000[106].

Trenton, New Jersey has redeveloped or cleaned up more than 30 brownfield sites, amounting to almost 100 acres of land. Private and public investment in the redevelopment of brownfield sites in Trenton exceeds US $16 million, and an estimated 1,000 jobs have been created or preserved[107].

**(B) Site Inventory**
There is a comprehensive brownfields site inventory in Trenton, which is updated and maintained as necessary. There are currently 74 active brownfield sites in the Trenton Pilot inventory, and 56 of these sites are targeted by the Pilot program.

## 12.3.4 Approach to Brownfield Redevelopment

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[103] *City of Trenton, New Jersey: Brownfields Assessment Demonstration Pilot*. U.S. Environmental Protection Agency, February, 2002. Retrieved from the World Wide Web on October 23rd, 2002: http://www.epa.gov/region02/superfund/brownfields/trentonfs.pdf, p.2.

[104] *City of Trenton, New Jersey: Brownfields Assessment Demonstration Pilot*. U.S. Environmental Protection Agency, February, 2002. Retrieved from the World Wide Web on October 23rd, 2002: http://www.epa.gov/region02/superfund/brownfields/trentonfs.pdf, p. 1-2.

[105] *City of Trenton, New Jersey: Brownfields Assessment Demonstration Pilot*. U.S. Environmental Protection Agency, February, 2002. Retrieved from the World Wide Web on October 23rd, 2002: http://www.epa.gov/region02/superfund/brownfields/trentonfs.pdf, p. 1.

[106] *City of Trenton, New Jersey: Brownfields Assessment Demonstration Pilot*. U.S. Environmental Protection Agency, February, 2002. Retrieved from the World Wide Web on October 23rd, 2002: http://www.epa.gov/region02/superfund/brownfields/trentonfs.pdf, p. 2.

[107] U.S. Environmental Protection Agency. *Brownfields Showcase Community, Trenton, NJ.* Washington D.C., November 1998. Retrieved from the World Wide Web on October 23rd, 2002: http://www.epa.gov/swerosps/bf/pdf/sc_trent.pdf

There are four steps to Trenton's approach to Brownfield Redevelopment:

1) **Planning**: Trenton's Master Land Use Plan provides a scheme for future development in each neighbourhood. Community involvement allows the city to determine what each community needs. Brownfield redevelopment projects can then be evaluated based on the future land use suggested in the Plan.

2) **Acquisition**: Once a goal for redevelopment of a site has been determined, the city will usually acquire the site (either by tax purchase, tax foreclosure or condemnation).

3) **Environmental Investigation/Remediation**: The city will usually fund environmental site assessments. The regulatory agency for Trenton is the New Jersey Department of Environmental Protection (NJDEP). Should the site require remediation, the city will often fund it. Upon completion, the NJDEP will issue a No Further Action Letter (NFA) , which comes with a *covenant not to sue*.

4) **Redevelopment**: Upon receipt of the NFA, the city can sell the site to a developer.[108]

[108]Michele, Christina and Ira Whitman. *Brownfields Redevelopment of Block 3 of the Roebling Complex: Trenton, New Jersey*. City of Trenton, Department of Housing and Development. Retrieved from the World Wide Web on October 23rd, 2002: http://www.brownfields2001.org/proceedings-old/3-02c.pdf

## 12.4 Case Study Four: Chicago Brownfields Initiative

The City of Chicago is nationally recognized in the U.S. as a leader in brownfield redevelopment. The Chicago Brownfields Initiative was created in 1993 to remove the urban blight associated with contaminated sites, and return them to productive use. The initiative began with a pilot program coordinated by the Department of Environment, the Mayor's Office, the Department of Planning and Development, the Department of Buildings and the Department of Law[109].

### 12.4.1 Brownfields Pilot Program

The pilot program consisted of rehabilitating five contaminated sites. The five sites were all abandoned or owned by the city. The city funded the pilot program with US $2 million in obligation bonds. It expected that this would cover environmental assessment on all five properties, and remediation for two of them. As it turns out, the city was able to remediate all the sites for productive use for about US $850,000. The experience gained from these projects laid the groundwork for the development of a more innovative brownfield redevelopment strategy.

### 12.4.2 Brownfields Forum

In 1995, Chicago and the MacArthur Foundation hosted the six-month Brownfields Forum. More than a hundred people were present at the forum, and they were divided into work groups. The forum members brought a diversity of opinions and expertise. The groups met between four and six times and completed a final report. The members of the Forum agreed upon 63 recommendations for overcoming the barriers associated with brownfield redevelopment. There were 98 action items originally identified, and as of 2000, 78% had been completed or underway and 22% had either not been addressed or were no longer relevant[110].

### 12.4.3 Illinois Site Remediation Program

This program is a voluntary remediation program administered by the Illinois EPA. It promotes risk-based, site specific clean-up. Once the site owner has completed remediation to the EPA's approval, a "No Further Remediation" (NFR) letter is issued. The federal government recognizes this NFR. The city of Chicago enrolls its sites in this programs end encourages private developers to do the same. The NFR provides liability relief for future purchasers of the sites. The City of Chicago established two "institutional controls" to encourage the use of risk-based management of contaminated sites. The Groundwater Ordinance prohibits the installation of any new potable water wells, therefore reducing the potential source of exposure to contamination through groundwater. The second "control" is the Highway Authority Agreement. The site owner and the City enter into an agreement where the owner assesses how the contamination has affected the public right-of-way, and the City limits the access to the contamination. Appropriate precautions and removals of contamination shall take place in the event that workers need access to the contaminated soil or groundwater in the right-of-way[111].

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[109] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[110] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[111] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

### 12.4.4 Chicago's Brownfield Sites

As of early 1999, the City of Chicago had remediated or overseen the remediation of 33 brownfield sites, with a total area of over 50 acres. Of these 33 sites, 10 were remediated and ready for redevelopment; 9 sites were far enough along in the remediation process that they had been made available to potential purchasers for redevelopment; and the remaining 14 sites were in the assessment process. Chicago focuses on sites with high development potential where redevelopment is unlikely without the City's support[112].

### 12.4.5 Financial Assistance

There are several incentives for brownfield redevelopment in Chicago, offered by all levels of government:

**(A) Environmental Loan Program**

This program is designed for small businesses who can borrow up to US $150,000 to cover the costs of assessments, audits, consulting fees, design solutions, and the costs associated with procedural changes or capital improvements necessary for pollution protection. The City's Treasurer Office has dedicated US $10 million in City funds to go to banks that provide this type of loan. For every dollar that a bank loans to a small business for environmental purposes, the City will deposit three dollars into the lending bank. Should the small business be owned by a minority member or a woman, the deposit increases to five dollars for every dollar loaned. The goal is to give banks an incentive to lend for environmental projects, especially to women and minority-owned businesses[113].

**(B) Federal Tax Incentive for Brownfields**

This incentive is provided by the federal government and is outlined in the Taxpayers Relief Act (1997). This incentive is available to businesses that were not involved in the pollution of the site, and where the remediation costs were associated with the control and/or reduction of contaminants on the designated site. It allows taxpayers to charge expenses to the cleanup costs in the year that they were incurred. The site must be certified by the state environmental agency to be in a designated target area. This incentive will reduce the first year federal income tax payment by approximately 30%[114]. This incentive was made available for four years, and ended in 2001. Many of the brownfields incentives are only available for a pre-determined amount of time, to allow a government entity to evaluate and improve the program as needed.

**(C) State of Illinois Income Tax Incentive for Brownfields**

This incentive is available to sites that have been entered in the Illinois State Site Remediation Program and that have received a "No Further Action" letter from the Illinois EPA. The program allows a site to receive a 25% credit for remediation costs, with a US $100,000 deductible. The result will be a yearly savings of up to US $40,000 to a total of US $150,000 per site. Sites located in the Enterprise Zone will

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[112] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[113] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[114] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

be exempted from the US $100,000 deductible, and the tax credit is transferable with the property[115]. This program was also in place until 2001.

**(D) Cook County Property Tax Incentive for Brownfields**

The Cook County Class 6(c) tax incentive program is available for properties acquired for industrial use, that have been vacant or abandoned for at least two years, where remediation costs are a minimum of US $100,000 or 25% of the property's market value at the time of sale. The new property owner cannot have any connection to the previous owners, and the site must be engaged in a remediation plan approved by the Illinois EPA. This incentive will reduce the property's assessment rate by 16% of the market value for a period of three years during the remediation and redevelopment time, with the possibility of two one-year extensions. The Class 6(b) incentive extends tax benefits for ten years, and owners with high remediation costs are eligible for three additional years of this incentive[116].

There are many other financial assistance programs available for brownfield redevelopment in Chicago. These programs are more specific to type of projects and locations. There are many development incentives offered that are not specifically designed for contaminated sites, but where the redevelopment project for a contaminated site could be eligible for this incentive.

## 12.4.6 Chicago's Brownfields Procedures

### 12.4.6.1 Staffing

The City of Chicago has recognized that successful brownfield redevelopment is a complex real-estate issue, that is not only an environmental issue. Experts are required from many different fields, notably law, planning, environmental management and financing. The Chicago Brownfields Initiative has core members from the following departments, although the city often requires assistance from other departments as well: The Office of the Mayor, the Office of Budget and Management, the Department of Environment, the Department of Planning and development, and the Department of Law.

### 12.4.6.2 Funding

the City of Chicago has aggressively pursued funding for brownfields cleanup and redevelopment:

- As of 2000, the City had received over US $72 million in loans from the Federal Department of Housing and Urban Development (HUD);
- The HUD awarded the City of Chicago with a US $2.5 million *Brownfields Economic Development Initiative Grant* in late 1998*;*
- The city is currently administering over US $1 million in supplemental environmental projects in conjunction with the United States EPA;
- The City has accumulated over US $1.3 million in litigation settlements for use in brownfields remediation;
- The City has spent US $2 million in General Obligation bonds for brownfield redevelopments;
- The City has spent over US $4 million in corporate funds on brownfields cleanup;
- The City of Chicago was named a Brownfields Showcase Community in 1999 and received a US $200,000 grant from the US EPA; and,

[115] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[116] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

- In 1998, the City was awarded a US $500,000 grant to create a brownfields revolving loan fund.[117]

### 12.4.6.3 Property Acquisition

The City of Chicago acquires property through the following primary methods:
- Negotiated purchase
- Eminent domain
- Tax reactivation
- Lien foreclosure
- Settlement

### 12.4.6.4 Cleanup Strategies

Chicago's Department of Environment (DOE) assesses and remediate brownfield sites in concordance with the Illinois EPA. The following steps are taken:
- Preliminary site assessment
- Phase I Environmental site assessment
- Phase II Environmental site assessment
- Additional assessment
- Final selection of cleanup strategy
- Environmental clearance

The DOE works closely with the IEPA to ensure they will receive a "No Further Remediation" letter.[118]

The City of Chicago also aims to contract with local companies for the cleanup work, and uses a public process to select the companies. They also try to use disadvantaged businesses as often as possible[119]

### 12.4.6.5 Site Control Tools

- Municipal Environmental Lien: this gives municipalities in Illinois the authority to test and/or remediate properties, which are abandoned and unsafe, and to place a lien for the costs on the property.
- Garbage or Debris Removal Lien: this gives Illinois municipalities the authority to remove garbage and debris from private properties, where the owner has failed to remove it after being given sufficient notice. The costs of the removal may be imposed on the property as a lien.
- Eminent Domain: the Illinois legislature has amended the Illinois Code of Civil Procedure to allow the consideration of environmental condition when determining the fair price due a property owner. This protects taxpayers from having to incur the inflated costs of acquiring a contaminated property, and then paying for the cleanup as well.[120]

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[117] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[118] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

[119] Reynolds, David and William Trumbull. *The Chicago Brownfields Initiative*. Presentation from Sept. 26th, 2001. Retrieved from the World Wide Web on October 24th, 2002: http://brownfields2001.org/proceedings/LR-06-01.pdf

[120] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

#### 12.4.6.6 Public Involvement

The community is always invited to get involved in brownfield redevelopment in Chicago. Project plans are discussed with community leaders, community meetings are held, the public is allowed to access site data, and plans are adjusted as necessary to respond to concerns[121].

### 12.5.7 Achievements

Since 1993, Chicago has returned over 1,000 acres back into productive use, creating and/or retaining more than 30,000 jobs. The City of Chicago has increased its tax base by million of dollars annually[122]. Since 1998 the City has been working to determine the link between brownfield redevelopment and air quality. Chicago believes that the air quality is improved with brownfield redevelopment as less vehicles are required for people to get to work than in sprawl development[123].

[121] Reynolds, David and William Trumbull. *The Chicago Brownfields Initiative*. Presentation from Sept. 26th, 2001. Retrieved from the World Wide Web on October 24th, 2002: http://brownfields2001.org/proceedings/LR-06-01.pdf

[122] Reynolds, David and William Trumbull. *The Chicago Brownfields Initiative*. Presentation from Sept. 26th, 2001. Retrieved from the World Wide Web on October 24th, 2002: http://brownfields2001.org/proceedings/LR-06-01.pdf

[123] *The Chicago Brownfields Initiative*. Department of Environment, City of Chicago, 2000. Retrieved from the World Wide Web on October 24th, 2002: http://www.cityofchicago.org/Environment/Brownfields/index.html.

## 12.5 Case Study Five: Philadelphia's Blight Free Plan

In September 2000, *Research for Democracy*, a report on the issue of blight in Philadelphia, was created to develop new approaches to blight elimination and make recommendations that will eventually be part of a public-private blight elimination strategy. Philadelphia's Blight Free Plan does not directly address contaminated sites, but it does address the issues of vacant land and abandoned and derelict buildings. Philadelphia has seen many neighbourhoods deteriorate, and this plan is part of a Neighbourhood Transformation Initiative. Its goal is to attract and retain population by increasing the city 's value as a place to live and work[124].

### 12.5.1 Community Involvement

The effort made for the report was collective. The community was directly involved in designing the research and making sense of the results. The community residents are the ones who will be most affected by the proposed policies, and involving them in the process will help produce policy changes that better meet the needs of the community[125].

### 12.5.2 Safety First

The first priority of the proposed plan is to ensure public safety, for children in particular. The report recommends that the city prioritize demolition and encapsulation of vacant buildings based on its proximity to schools and institutions serving children. The Safety First Proposal has four parts:

**(1) Dangerous structures within 1,000 feet of elementary schools**
The report recommends that over the next six months there should be a commitment to demolish all dangerous buildings and to seal all vacant but structurally sound buildings within 1,000 feet of any public elementary school. Funds from the supplemental authorization to Licenses & Inspections (L & I) should be used for this work[126].

**(2) System for tracking and prioritizing treatment of vacant property**
The report recommends that the City establish a tracking system to prioritize the treatment of vacant property. The information required for the vacant properties would be:

- the City criteria on what is considered an imminently dangerous building to determine if the buildings meet the criteria;
- whether the building is open, sealed, boarded up or encapsulated;
- the proximity of the building to a school, recreation facilities or a day care centre;

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[124]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.1.

[125]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.4.

[126]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.39.

- the proximity to a commercial corridor;
- whether there is adjoining residential structures; and,
- whether the property is part of a neighbourhood development plan.

Dangerous properties should be demolished or sealed should be based on the physical condition of the building, its proximity to institutions serving children, commercial strips and other occupied structures[127].

**(3) Performance Standards**
The report proposes that the City establish performance standards on the time frame in which it will seal or demolish newly reported vacant structures.

**(4) Costs of Demolition**
The City of Philadelphia needs to accurately estimate the costs of demolition of dangerous buildings. The currently estimated figures do not correspond to the City's past experience, and accurate estimations are essential to the overall design of the Neighbourhoods Transformation Initiative[128].

### 12.5.3 Consolidation and Streamlining for Prevention

There are four basic city government functions that serve to prevent and reuse vacant property:

1) Early intervention to prevent a property from being abandoned;
2) Emergency treatment to ensure public safety
3) Transfer of title to new owner for reuse or redevelopment; and,
4) Public subsidies to encourage renovation or new construction.

However, these functions have been carried out unevenly in the past, and there is no record that the different entities carrying out each function have ever collaborated. The system has been characterized as being slow, fragmented and unclear. The system was also poorly advertised to the public[129]. The report recommends that the four functions be consolidated into a single office, with the proper mission and resources. As well, the office would take over responsibility for demolition oversight, encapsulation, clean and seal activities which are currently under the responsibility of the L&I. This will help to coordinate resources for demolition and encapsulation. This new office would have the same four program areas as before. The City also needs to establish clear standards for sealing and demolition of dangerous property, and transfer of ownership. Legislative changes should also be made to make the transfer of abandoned

[127]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.40.

[128]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.40.

[129]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.30.

properties where the owner has left and stopped paying taxes[130].

### 12.5.4 Blight Free Zones

The report proposes that the City create "Blight Free Zones" in neighbourhoods across Philadelphia, to improve the quality of life, stabilize property values, and stimulate neighbourhood activity. The Blight Free Zone proposal is based on the following principles, which are taken directly from the *Blight Free Philadelphia: Research for Democracy* Report[131]:

- Partnerships of existing businesses (or other economic generators) and adjacent neighbourhoods can, if stimulated by City funding, efficiently produce new value, employment, and housing opportunities;
- The City's capacity to stabilize neighbourhood value and increase Philadelphia's attractiveness to home buyers and businesses is more likely to be achieved by funding such partnerships across council districts, rather than by limiting the preponderance of the public's capital to a handful of assembled parcels which are now in questionable locations;
- Clearance and assembly of large parcels will not necessarily generate market interest. Delivering cleared land without sufficient resources to transform that land into new and valuable uses will not necessarily revitalize the city;
- This approach recognizes and builds upon existing value within the Cit's many neighbourhoods and their existing residents and businesses. This approach focuses upon the assets already present in the neighbourhoods, instead of the transformation of areas of distress into unproven, future value. The report proposes that large-scale demolitions, assembly and retention for future marketing is appropriate, but only when it is done strategically and can reasonably be said to produce a more immediate contribution to the creation of value;
- This plan also reserves the community development resources that fall outside of its own plan. This feature recognizes that no plan can encompass all of the valuable and deserving projects that will be conceived within the next five years;
- This plan is a significant departure from the City's past practices in spending community development funds on scattered projects without an overriding strategy. The plan is to use the City's money to catalyse partnerships of existing businesses with their surrounding community to produce housing and economic development efforts. The plan would fund those partnerships in each council district, including but not only neighbourhoods with a strong moderate and middle-income presence. These communities have been ignored by the City in the past when community development initiatives have been shaped and the money awarded;
- In addition, rather than rely upon a central pre-selection of the locations where funds will be spent, the plan would have the City issue Requests for Proposals (RFP) to partnerships of businesses and communities, then select the plans which promise the most effective outcomes of generating value, eliminating vacant, leveraging private dollars with the proposed City funding, etc. This RFP process could take place every year.

"This plan thereby, leverages the private investment up-front as a condition of spending scarce public funding, rather than making a huge public expenditure with only a hope of a private investment

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[130]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.42.

[131]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.43-44.

response."[132]

### 12.5.5 Approach

The approach outline in the report is to build upon existing value in Philadelphia's neighbourhoods. Neighbourhoods with positive dynamics such as new immigration, past neighbourhood investment, commercial corridors and concentrations of blocks with fewer than 3 vacant homes, are considered to be of value, and it is believed that if the few vacant lots are treated, these areas will maintain their attractiveness for investment.

Another step in the approach is that local businesses have a stake in the blight elimination process. They may wish to invest in their neighbourhood to ensure that business stays good.

City grants should have the effect of the formation of creative partnerships between businesses and institutions to help promote the rehabilitation of their neighbourhoods.

Another recommendation is that the City get members from the real estate sector involved as they are knowledgeable in creating value and selecting projects worthy of public investment.[133]

### 12.5.6 Relocation Standards

The report outlines the desire to keep relocation of families at a minimum. As well, the City needs to establish very clear guidelines for the relocation process. A few suggestions were made: a household that is relocated receive a home that is of equal or greater value; and any new or renovated homes should be offered to relocated families first[134].

### 12.5.7 Budget

The total cost of the plan is estimated to be US $273 million, over a five-year period. The funding would go as follows[135]:

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[132]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.44.

[133]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.45.

[134]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002: http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.45.

[135]Eastern Pennsylvania Organizing Project, Temple University Center for Public Policy, and Diamond & Associates. *Blight Free Philadelphia: Research for Democracy*. October, 2001, Philadelphia, Pennsylvania. Retrieved from the World Wide Web on October 24th, 2002:

- US $81 million from the total of US $250 million blight bonds that were issued;
- US $ 78 million from Community Development Block Grant and Federal Home Funds, out of a total of US $449 million;
- US $10 million through the capital city budget; and,
- US $103 million would be funded through proceeds from home sales and financing from the private sector.

### 12.5.8 Results

As a result of the report described above, the City of Philadelphia included the blight elimination recommendations in their *Five-Year Financial Plan (FY2003-FY2007)*. The city outlined the following goals to reduce the amount of blight in Philadelphia[136]:

- In year one, the city intends to demolish 2,000 dangerous residential buildings. A demolition program with two prototype projects were supposed to begin in April 2002, to allow the city to test its procedures before implementing the demolition program;
- The City will spend approximately US $4 million in FY2003 demolishing vacant commercial and industrial buildings: this program is separate from the residential demolition program;
- The City intends to stabilize and encapsulate 350 properties: the City is streamlining the property acquisition and disposition processes to support viable rehabilitation and reuse;
- The City had intended to clean all 30,730 vacant lots in Philadelphia at a cost of US $6.5 million. The maintenance of these lots will be contracted out in FY2003, for a total costs of US $4.5 million per year;
- Re-engineer the housing and community development delivery systems to assemble land for redevelopment more efficiently;
- The Commerce Department and the American Street Empowerment Zone are directing a pilot project to assemble 72 individual formerly blighted lots to create a 3.5 acre parcel: this pilot will identify the barriers and make recommendations to overcome them;
- The City will establish the Philadelphia Land Bank, which will acquire titles to vacant land;
- The City will develop the Vacant Property Management System, a database of the City's Vacant properties;
- The City has proposed state legislative changes to facilitate the City's ability to acquire vacant properties, while still protecting the rights of the owners; and
- The Redevelopment Authority will issue Neighbourhood Transformation Initiative bonds on behalf of the City for a total of US $295 million over five years:
  - US $140 million for demolition of dangerous residential buildings;
  - US $20 million for demolition of dangerous commercial and industrial buildings;
  - US $50 million for land assembly for new development;
  - US $5 million for the creation of the vacant property database;
  - US $80 million for housing preservation (encapsulation and rehabilitation and homeowner assistance).

These are some of the many steps the City of Philadelphia has taken to eliminate the blight caused by derelict land and buildings in their neighbourhoods.

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http://www.temple.edu/CPP/content/reports/Blight_Free_Phila_Pt1.pdf, p.47.

[136]City of Philadelphia. *Five-Year Financial Plan, Fiscal Year 2003 - Fiscal Year 2007 (including Fiscal Year 2002)*. May 2, 2002. Retrieved from the World Wide Web on October 26th, 2002: http://www.phila.gov/mayor/pdfs/fiveyearplan.pdf, p.30-31.

# Part Five Conclusions

In recognition of these issues, this Part of the report will review the approaches used by other cities that have successfully facilitated and fostered brownfield redevelopment. The purpose of this report was to determine if brownfield redevelopment is an appropriate option or component for managing HRM's overall growth. In order to determine if brownfield redevelopment is a viable growth management tool for HRM, the report first focuses on understanding the opportunities and constraints associated with redeveloping these sites. A review of several case studies revealed that there are very real quantifiable benefits to be derived from brownfield redevelopment, yet, several hurdles still exist, preventing most private developers from pursuing redevelopment options. In this regard, by examining the methods employed by other cities, and several successful redevelopment projects, it has been shown that brownfield redevelopment can be an important part of a city's overall growth management strategy, and every effort to overcome potential obstacles, should be employed.

Consequently, assuming that HRM should wish to pursue brownfield redevelopment as a real option for managing future growth, this next Part of the report provides general recommendations for future, short, medium and long terms priority actions for HRM.

# Chapter Thirteen General Recommendations for HRM

## 13.1 The Conclusions

The following provides a summary of the conclusions drawn from the preceding Chapters which form the basis of the recommended actions for HRM to implement over the short, medium and long term:

- By 1996, HRM's suburban population doubled the urban core population;
- Most of HRM's new population growth has occurred in suburbs and the rural commutershed;
- The growth occurring in HRM's suburban areas is primarily low density in form, resulting in significant amount of land consumption;
- In an effort to promote fiscally responsible and "smarter growth", Cities across North America have begun to focus on brownfield redevelopment projects as a means for reducing the amount of new growth in the rural and exurban areas;
- In fact, brownfield redevelopment has gained considerable attention given their quantifiable social, environmental and economic benefits;
- The exact supply of brownfield sites in HRM is unknown, although HRM staff expect the number to be in the range of approximately 2,000 acres (1400 of which include Shearwater) of available brownfield land;
- Maintaining this extensive supply of abandoned or underutilised brownfield sites will only stimulate significant losses in property tax revenue to HRM;
- Brownfield redevelopment presents tremendous opportunities to HRM for not only increasing tax revenues, but it would help to reduce development pressures in the rural and exurban areas, and the overall consumption of raw land and the need for the extension of costly services;
- Although brownfields are typically much cheaper to acquire and to develop given the presence of existing infrastructure and other services, the demand for brownfield sites by private developers is lower than the demand for raw greenfield sites, which cost much more to acquire and develop given the lack of existing infrastructure and services;
- Despite the ability to acquire brownfield sites cheaply, many private developers continue to avoid them due to perceived levels of contamination, and the potential for costly remediation. Moreover, an overly complicated regulatory bureaucracy, non-supportive financing and insurance industries, have generally discouraged private investment;
- Typically, the more heavily contaminated sites, that exhibit low to medium marketability, have required some form of public subsidy to facilitate their redevelopment;
- Despite these hurdles, in HRM, several brownfield sites have been redeveloped. Although, it is expected that these sites have not been heavily contaminated, or that they

are located within highly marketable neighbourhoods, where any additional cost associated with on-site remediation would be offset based on potential profit;

- However, several of HRM's known highly contaminated sites, especially those located outside of the Peninsula, have remained underutilised, or abandoned for several years;

- The redevelopment trend in HRM is to convert from industrial or commercial to residential uses, which is similar to trends across North America. However, the greatest public benefits are derived from commercial or industrial redevelopment projects;

- The lack of site specific information regarding the number and condition of the brownfields sites makes it difficult to effectively promote redevelopment; and,

- If all of HRM's brownfield sites were redeveloped, a reduction of almost 9,000 acres in developed greenfield land would be potentially realized.

## 13.2 The Recommendations

- **HRM should commit to reducing the consumption of raw natural land and open space, and the unnecessary extension of hard and soft services to the exurban and rural areas of HRM by identifying, marketing and promoting local brownfield redevelopment opportunities.**

- **In order to identify, market and promote local brownfield redevelopment opportunities, the following actions should be implemented, based on immediate, short, medium and long term priorities:**

### 13.2.1 Immediate Priority Actions

- HRM should formally support and contribute towards, where appropriate, the Federal Government's effort to develop and implement a **Canadian Brownfield Redevelopment Program**; and

- HRM should immediately commence with the development and implementation of a Brownfield Redevelopment Pilot Program to foster a high profile brownfield redevelopment project. Specifically, it is recommended that the **Bayne Street lands** serve as the first Brownfield Redevelopment Pilot Project in HRM. The purpose of the pilot Project should be threefold:

    - to promote environmental protection and community revitalization through the assessment, cleanup and sustainable reuse of brownfields;
    - to link federal, provincial, local and non-governmental action to restore and reuse brownfields; and,
    - to demonstrate positive results of public and private collaboration.

- HRM should lobby to become one of the first cities to take part in future demonstration projects implemented through the Federal Brownfield Redevelopment Program, if the opportunity arises.

### 13.2.2 Short Term Priority Actions

- **Develop and maintain a comprehensive GIS data base** of all suspected brownfield sites located throughout HRM; and,

- **Formally adopt the proposed Brownfield Redevelopment Framework** as described in Section 13.3 of this Chapter for purposes of identifying the high, medium and low priority brownfield redevelopment opportunities in HRM.

### 13.2.3 Medium Term Priority Actions

- Initiate the development of an HRM Brownfield Redevelopment Strategy;

- Host an **HRM Brownfield Redevelopment Forum** involving all levels of government, private and public stakeholders, and members of the finance, insurance industries to explore options for creating a brownfield redevelopment strategy that specifically focuses on tools for overcoming and removing the hurdles in HRM;

- **Clarify and define the public's roles in brownfield redevelopment**. For instance, typically, extensive community involvement is necessary for brownfield sites displaying low market value, but are within close proximity or visibility to surrounding communities, and if redeveloped will achieve significant community benefits;

- **Explore options for amending the Municipal Government Act** to enable Community Improvement Plans (CIP), or similar tools, that would define specific project areas in the older, heavy industrial areas of HRM, where brownfield redevelopment program and policies would apply and foster brownfield redevelopment; and,

- **Explore options and feasibility of developing and implementing brownfield redevelopment programs** such as, a Redevelopment Grant Program (Redevelopment), a Study Grant Program (STUDY), and a Planning and Development Fees Program (PDFEES) as established in Hamilton, Ontario.

### 13.2.4 Long term Priority Actions

- **Amend all relevant Municipal Planning Strategies pursuant to the above referenced MGA amendment**, to introduce provisions relating to the development of a community improvement plans and for designating "community improvement project areas"; and,

- **Continue to aggressively identify and pursue funding opportunities** to assist private developers with redeveloping brownfields with only low or medium marketability.

## 13.3 A Proposed Redevelopment Strategy Framework For HRM: The Benefit Based Priority Setting Approach

A recently completed study entitled AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, prepared by the Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental

Protection Agency provides a general framework and criteria for identifying brownfield sites that are economically feasible to redevelop and provide economic, environmental and social benefits to urban communities. This framework was developed to be applied by cities and other stakeholders for establishing priorities and developing strategies to enable and accelerate brownfield site redevelopment.

The framework is a product of several case studies, research, and observations and conclusions developed by its authors. The framework has been tested and has been found to be effective. Consequently, in consideration of a brownfield redevelopment program for HRM, it is recommended that this framework be adopted.

### 13.3.1 The Objectives

As stated in the Study, "the proposed framework is intended to integrate economic, environmental and social factors, as shown by Table V.13.1. In consideration of these key factors, the preparation of brownfield redevelopment strategies will ultimately achieve the objectives of:

- Generating investment in urban areas which ultimately provides increased tax revenues and jobs,
- Reducing human health and environmental risk, and
- Benefiting low income and minority populations by revitalizing their neighbourhoods."[137]

**Table V.13.1: FRAMEWORK and CRITERIA for TARGETING SUCCESSFUL BROWNFIELD REDEVELOPMENT**

| SOCIAL FACTOR | ECONOMIC FACTORS | ENVIRONMENTAL FACTORS |
|---|---|---|
| Those associated with benefiting low income and minority populations | Those affecting the creation of business tax revenues and jobs | Those related to human health and environmental benefits |

Source: Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996. Pg. 5.

### 13.3.2 Framework Overview

The Study states that the "general framework and criteria can be used as a tool to set priorities for redevelopment projects, target economic development incentives and programs, and develop strategies for brownfield site redevelopment. Specifically, by applying the framework, it has been demonstrated that the brownfields offering the greatest redevelopment potential, and the highest economic, environmental and social benefits, will be uncovered. The framework also demonstrates the potential costs and benefits of brownfield redevelopment projects, and the impediments to successful redevelopment from both the community and developer perspectives."[138] Table V.13.2. provides the basic framework used to analyse potential brownfield redevelopment projects.

[137] Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

[138] Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996. Pg. 5.

| Table V.13.2: Framework for Successful Brownfield Redevelopment | | |
|---|---|---|
| **Step 1: Target Geographic Areas** | | |
| Mixed use areas with highly exposed, low income, and minority populations | Industrial areas with large tracts and significant job creation potential | Waterfront/downtown areas that are attractive to businesses |
| **Step 2: Identify Brownfield Sites in Each Area** | | |
| | Local Knowledge<br>Land Use Surveys<br>Real Estate Offices<br>Planning Applications<br>Environmental Data Bases | |
| **Step 3: Characterize Brownfield Site's Marketability** | | |
| **Neighbourhood Characteristics**<br><br>Crime<br>Labour Availability<br>Proximity to Markets<br>Other costs | **Site Characteristics**<br><br>Size<br>Access to transportation Condition and Structure<br>Environmental Contamination<br>Regulatory Design | **Geology/Landscape**<br><br>Floodplain<br>Wetland<br>Zoning<br>Building Codes<br>cost of utilities<br>proximity to waterfront or urban park parking areas |
| **Step 4: Screen Sites for High Potential Community Benefits** | | |
| **Neighbourhood Characteristics**<br><br>Poverty Rates,<br>Unemployment Rate,<br>Population Rate,<br>Population Loss,<br>Neighbourhood Stability,<br>Development Activity | **Site Characteristics**<br><br>Potential Human Health and Environmental Risks<br>Market Value<br>Ownership | **Redevelopment Plan Characteristics**<br><br>Economic Return<br>Social return<br>Timeframe<br>Partnerships |

**Table V.13.2: Cont'd**
**Framework for Successful Brownfield Redevelopment**

| **Step 5: Evaluate Potential Impacts of Redevelopment Alternatives** | | |
|---|---|---|
| **Social Benefits**<br><br>Increase access community services<br>affordable housing<br>Neighbourhood empowerment<br>Improved city services<br>Aesthetics | **Economic Benefits**<br><br>Job Creation<br>Improve Labour Market Effcy.<br>Increased property values in Surrounding area and redeveloped brownfields<br>Increased Tax Revenues<br>Spill-over economic effects<br>Avoided congestion, accidents, and highway costs<br>Prevent Housing Abandonment<br>Increased Utilization of Existing Infrastructure | **Environmental Benefits**<br><br>Reduce Health Risks<br>Environmental Justice<br>Prevention/Reduction of air Pollution<br>Ground Water Protection<br>Ecosystem and Wetland Restoration<br>Creation of Green Spaces |
| **Costs**<br><br>Blight<br>Future human Health Risks<br>Environmental Risks<br>Disruption | **Costs**<br><br>Clean-up Costs<br>Public Development Costs<br>Infrastructure Improvements<br>Environmental Characterization<br>High Financing Charges | **Costs**<br><br>Re-pollution<br>Blight<br>Future human Health Risks<br>Environmental Risks<br>Disruption |
| **Step 6: Develop Strategy for Brownfield Redevelopment Activities** | | |
| Work with multistakeholder groups to establish priorities for public funding efforts and an action plan | Work with multistakeholder groups to establish priorities for development projects and to identify a diverse base of funding sources | Coordinate with development and environmental agencies to market sites, streamline development process, and manage community involvement |

Source: Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

### 13.3.3 Overview of the Key Steps in the Brownfield Redevelopment Framework

As shown by Table V.13.2, the framework is comprised essentially of six key steps. In order to fully comprehend the intricacies of each step, each are described in more detail below.

**Step I. Target Geographic Areas**

One way of dealing with brownfield site redevelopment in a practical way is to focus attention on certain geographic areas where successful brownfield redevelopment is most likely to occur. Based on the review of the case study, the Study suggests that "brownfield redevelopment efforts are focussed in three general geographic areas:

A. Mixed use areas with highly exposed, low income, minority populations;
B. Industrial areas with large land tracts and significant job creation potential; and,

C. Waterfront/downtown areas that are attractive to businesses."[139]

In addition, the Study indicates that "these locational characteristics influence the objectives likely to be achieved by brownfield redevelopment efforts. For example, redevelopment in mixed use areas with highly exposed, low income, minority populations will address environmental justice issues and revitalize residential neighbourhoods that have deteriorated with the abandonment of old industrial properties. Redevelopment of industrial areas with large land tracts will provide employment and the potential for higher wage jobs. Lastly, redevelopment of brownfields in desirable waterfront and downtown areas will have significant economic redevelopment benefits associated with increased tax revenues."[140] Furthermore, depending on the HRM's objectives, efforts could be focussed in one, two, or all three areas.

**Step II. Identify Brownfield Sites in Each Area**

The Study suggests that by "identifying brownfield sites in each area, the potential redevelopment opportunities will become more apparent, and will ensure sites offering the greatest potential for providing substantial community benefits are not overlooked. In addition, it is also suggested that the identification of brownfield sites and information on characteristics of these properties is a useful tool for developers because site location and planning costs are reduced, making urban redevelopment potentially more attractive than greenfield site development."[141]

However, the Study concludes that identifying brownfield sites is often difficult. In all three case study reviewed, the Study found that no one city contained or maintained a comprehensive list of brownfield sites. Rather, it was found that such information is gathered from a variety of sources, such as local knowledge and land use surveys, community organization, and information related to urban planning activities.

"While developing a comprehensive list of brownfield sites is an important preliminary step in identifying those sites with the greatest redevelopment potential, some developers and economic development offices explained that placing properties on such a list could stigmatize these properties, further impeding their redevelopment. Creating a list of "available urban properties," regardless of potential contamination, may fulfill the need for a comprehensive "brownfields list," while avoiding the stigma that a "brownfields list" may create."[142]

**Step III. Characterize Brownfield Sites Based on Marketability**

"In order to assess the marketability of brownfield sites, both site-specific and more general

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[139]Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

[140]Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

[141]Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

[142]Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

neighbourhood characteristics are important. Site marketability may change over time, as more site information becomes available, and as the general economic conditions of the area change and other business activities provide spin-off economic effects. For this reason, characterizing the marketability of sites may need to be revisited as information, market and social conditions change." Table V.13.3 provides a detailed overview of the screening criteria that correspond with Step 3 of the redevelopment framework for identifying the brownfield sites with the greatest market potential.

It should be noted that the importance of a site's market potential is not only related to determining the sites with the greatest potential, but such information also enables decision makers to determine what, if any, level of public assistance might be necessary to spur redevelopment. Specifically, such information will help decision makers with the allocation of appropriate resources toward sites that might not be redeveloped under private market forces alone. "On the basis of market potential, sites can be grouped into three broad categories to help develop a plan for successful redevelopment. Sites can be characterized as:

A. Low marketability sites, where public funding is necessary;
B. Sites that are marketable for specialized developers with experience in site remediation, and knowledge of and access to alternative funding sources; and,
C. Highly marketable sites, such as waterfront or downtown areas for which traditional sources of development funding are likely to be available for redevelopment, but non-monetary assistance such as guidance pertaining to environmental issues or help with zoning or permitting may be necessary."[143]

**Table V.13.3: SCREENING CRITERIA FOR IDENTIFYING SITES THAT ARE HIGHLY MARKETABLE**

| Site Characteristics | Discussion |
|---|---|
| Size of land tract | Most industrial or commercial development requires at least two acre parcels. Smaller sites should not be automatically precluded from consideration, however, because several small properties could be assembled into sites of developable size. |
| Access to transportation (rail, highway, water) | Distance from highway exits and major truck routes are both important factors. In general, highway access tends to be more important than rail or water access. |
| Condition and structure of buildings | Buildings need to be assessed to determine whether renovation or demolition is required. Older buildings generally cost more to repair and update. The number of stories in a building is also an important factor; buildings with more than two stories are not desirable for industrial redevelopment. |
| Environmental contamination | The type, extent and severity of the contamination must be evaluated to assess cost, time for remediation, and associated uncertainties. Availability and quality of environmental data for the site should also be evaluated. |
| Regulatory Designation | If the site is regulated under state hazardous waste programs, Superfund, RCRA or UST, various remediation and redevelopment requirements will apply. |

**Table V.13.3 Cont'd: SCREENING CRITERIA FOR IDENTIFYING SITES THAT ARE HIGHLY MARKETABLE**

| | |
|---|---|
| Geology/Landscape | Impacts the cost and feasibility of construction. |
| Floodplain area | Properties located on a floodplain may be difficult or impossible to develop |

[143]Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996.

| | |
|---|---|
| | due to engineering, liability, financial or regulatory reasons. |
| Wetland area | Wetlands regulations restrict development; open-space uses may be the only viable use of these areas, although wetlands mitigation exchanges may enable development of wetlands in urban areas. |
| Zoning | Must be assessed to determine viability of project; re-zoning requires time and resources, although the city may be able to streamline this process if redevelopment provides significant community benefits. |
| Building codes and other requirements | These requirements include architectural codes, permits, inspections and union contract requirements; these are likely to be stricter in urban areas than in suburban areas of greenfield development. |
| Cost of utilities | Water, electricity, sewer. |
| Proximity to waterfront or urban park | Important for residential and recreational development. |
| Parking area | Existence of a parking area is important for industrial and commercial uses. |
| **Neighbourhood Characteristics** | **Discussion** |
| Crime | The site value, both before and after remediation, is affected by real and perceived criminal activity in the area. |
| Labour availability | Availability of workers, as well as skill levels of workers in the area; proximity to residential areas and/or availability of public transportation are important factors to consider. |
| Proximity to markets | Access to both suppliers and consumers. |
| Empowerment Zone/Enterprise Community or state programs targeted at the area | Properties located in these areas may be eligible for development grants or tax incentives. |
| Other costs | Workers' compensation, medical insurance, and unemployment insurance requirements for businesses that locate in the area. |
| Source: Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996. | |

### IV. Screen Sites for High Potential Community Benefits

Although the marketability of the site is an extremely important component in determining the redevelopment potential, equally important should be the potential community benefits associated with the remediation and redevelopment of each site. For example, if redevelopment will create jobs but residents are not trained for the type of employment available, the job creation benefits will be realized instead by people outside the area, unless a job training program accompanies the redevelopment plan. The study has identified several criteria to be used for evaluating a site's potential for providing significant community benefits. Table V.13.4 provides an overview of the criteria.

| Table V.13.4: SCREENING CRITERIA FOR IDENTIFYING SITES THAT ARE LIKELY TO PROVIDE SUBSTANTIAL COMMUNITY BENEFITS | |
|---|---|
| **Neighbourhood Characteristics** | **Discussion** |
| State or Federal Empowerment Zone or Enterprise Community | These areas meet certain socioeconomic eligibility criteria, including poverty rate, area size and general distress indicators. |
| Poverty rate | A high and/or increasing poverty rate suggests that improvements in the area could reduce the poverty rate. |
| Unemployment rate | A high and/or increasing unemployment rate indicates that job creation may be an important benefit of redevelopment. |
| Population Loss | Population loss in an area indicates that the neighbourhood may be declining; redevelopment may help prevent and possibly reverse such decline. |
| Neighbourhood stability | Redevelopment in stable neighbourhoods with active community groups is more likely to be successful due to the participation and investment of area residents. To evaluate this criteria, the number and nature of civic, social and religious groups in the community could be assessed. |
| Development activity | Lack of development activity in an area and/or business closures suggest a need for economic development and revitalization; new economic development in the area can provide community benefits. |
| **Site Characteristics** | **Discussion** |
| Potential Human Health and Environmental Risks | Remediation and redevelopment of sites posing high risks will reduce those risks. |
| Market value | Evaluate the expected value of the remediated site minus cleanup costs, and assess associated uncertainties to determine the potential for net public benefits. |
| Ownership | For public redevelopment projects, preferred sites are those owned by the city or those that could be acquired by the city without taking on additional liability. |
| **Redevelopment Plan Characteristics** | **Discussion** |
| Economic return | Redevelopment has potential to generate revenues for the community (taxes, profits). |
| Social return | Redevelopment has potential for job creation, neighbourhood revitalization, improved aesthetics, and other business opportunities. Land-uses that provide desired community services such as health centres and grocery stores also benefit communities. These types of benefits are more likely for projects that include public participation in the cleanup and redevelopment plans. |
| Timeframe | Reasonable time period for completion of project in order for benefits to be realised by current area residents. |
| Partnerships | Partnerships between local governments and stakeholder groups may enable projects to progress more quickly and smoothly. |
| Source: Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996 | |

**V. Evaluate Potential Impacts of Redevelopment Alternatives**

The final stage in the priority setting approach to brownfield redevelopment is to identify the type and range of impacts that are expected from site redevelopment. Table V.13.5 provides an overview of the Study's findings regarding the specific factors that should be considered in evaluating potential impacts. Traditionally, the information garnered during this stage has been used for establishing priorities for public funding efforts and redevelopment projects. Specifically, by comparing the potential impacts of

alternative site redevelopment projects, cities are able to identify the sites likely to provide the greatest economic, environmental and social benefits.

**Table V.13.5: FACTORS TO CONSIDER IN EVALUATING POTENTIAL IMPACTS OF REDEVELOPMENT ALTERNATIVES**

| Environmental Benefits | Discussion |
|---|---|
| Reduced health risks | Evaluation of existing risks, based on contamination and exposures, and reductions in those risks resulting from remediation and redevelopment. |
| Environmental justice | Socio-demographic evaluation of the beneficiaries of redevelopment. |
| Prevention/Reduction of air pollution (mobile source emissions) | Due to curbing urban sprawl; most significant as commercial and industrial redevelopment occurs, providing jobs for city residents. |
| Ground water protection and flood risk reduction | Due to reduction in urban sprawl; greenfield development replaces absorptive land with impervious surfaces and treated lawns which can prevent clean rainwater from flowing into aquifers and streams. |
| Ecosystem and wetland restoration | Redevelopment plans may also include wetland restoration and protection within urban areas; also due to curbing urban sprawl. |
| Creation of green spaces | This applies to parks, open spaces, and community gardens redevelopment. |
| **Economic Benefits** | **Discussion** |
| Job creation and potential for higher incomes | Jobs created by the redevelopment may not benefit the local community if residents do not have the necessary education or training to fill these jobs. The redevelopment project may need to be coupled with education and/or job training. |
| Improve labour market efficiency | Increasing urban infill may provide more job opportunities to city residents, thereby reducing job search costs, labour market search costs, and relocation costs. |
| Increased property values in surrounding area and redeveloped brownfield site | While increased property values will increase owners assets and the city's tax revenues, increases in property values are not always desirable because higher taxes and rents may lead to gentrification. |
| Increased tax revenues | Due to returning property to productive use and increasing property values. |
| Spill-over economic effects | Redevelopment has the potential to improve neighbourhood quality and overall business conditions in the area. |
| Avoided congestion, accidents, and highway costs | Due to reduction in urban sprawl and commuting. |
| Prevent housing abandonment | Increasing the desirability to live in the city may result from urban infill. Commensurate benefits include avoiding expenses of new construction, preventing crime that often occurs in and around abandoned buildings, and improving the aesthetics in the area. |
| Increased utilization of existing infrastructure | Reduced pressure to provide infrastructure to outlying areas as urban sprawl is reduced; higher utilization of public utilities and transportation in the city. |
| **Social Benefits** | **Discussion** |
| Increase in easily accessible services | This applies to commercial development; many inner city neighbourhoods do not have easy access to grocery stores or other important amenities. |
| Affordable Housing | For residential development only. |
| Restored sense of control and neighbourhood empowerment; renewed sense of hope and pride | These types of benefits are most likely to result when there is a high degree of community involvement in brownfield site cleanup and redevelopment planning. |
| Improved city services | Increases in tax revenues generated by redevelopment may enable the city to provide better public services (e.g., schools, transportation, recreation). |

**Table V.13.5: FACTORS TO CONSIDER IN EVALUATING POTENTIAL IMPACTS OF REDEVELOPMENT ALTERNATIVES**

| | |
|---|---|
| Aesthetics | Improved appearance and overall neighbourhood quality may result from all types of redevelopment projects, although these are especially likely for parks, open spaces and community gardens. |
| **Social and Environmental** | **Discussion** |

| Costs | |
|---|---|
| Re-pollution or creation of eyesores | Industrial redevelopment of sites may have a negative impact on the community, if redevelopment occurs carelessly without pollution prevention and aesthetic consideration |
| Potential future human health and environmental risks | Non-permanent, low-costs remedies (e.g. institutional controls) may harbor future risks, particularly if land uses change. |
| Disruption | Cleanup and development may cause temporary disruption, risk and annoyance to nearby residents |
| **Economic Costs** | **Discussion** |
| Cleanup Costs | Estimate cleanup costs and consider associated uncertainty |
| Public Development costs | Subsidies to business, building expenses associated with public projects, such as community centres, parks and open areas |
| Infrastructure Improvements | Road access, utilities, and other conditions may need to be improved before development can occur |
| Environmental Characterization | Environmental site assessments required, which involve engineering consulting fees and legal fees |
| High financing charges | Liability uncertainties create difficulties in obtaining loans and may also increase the collateral required or the interest rates. |

Source: Smart Growth Network and the Urban and Economic Development Division Office of Policy, Planning and Evaluation of the U.S. Environmental Protection Agency. AN INTEGRATED APPROACH FOR BROWNFIELD REDEVELOPMENT: A Priority Setting Tool, September 1996