

A Desolate Moor or Something More:
An Investigation on How Brownfield
Redevelopment contributes to the Public Good

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1 Introduction

1.1 Energy Use in Urban Environments

Climate change is perhaps the biggest environmental challenge humans have *ever* faced (Intergovernmental Panel on Climate Change, 2008). In the last 100 years, Earth's average surface temperature increased by about 0.8 °C (1.4 °F). About two thirds of the increase has occurred over just the last three decades. Warming of the climate system is unequivocal, and scientists are more than 90% certain most of it is caused by increasing concentrations of greenhouse gases (hereon "GHGs") produced by human activities such as deforestation and burning fossil fuel.

It is increasingly evident that anthropogenic¹ contributions GHGs are unsustainable in the sense that they pose a threat to the ecology of the planet and the survival of human beings as a species. The atmosphere currently holds over 380 ppm of CO₂. Some argue that 350 ppm is the "tipping point" which is likely to the point after which a 2° global average temperature increase will result (Morrigan, 2010). This 2° increase after which many positive feedback loops² will begin to accelerate climate change in *non-linear ways*³ (Morrigan, 2010). Examples include the melting of polar ice resulting in decreased albedo effect which will, in turn, result in accelerating temperature increase. Another is that increased ocean heating will change oceans from a net carbon

¹ In fact, the current era has been referred to as the "anthropocene era" precisely because humans having such a palpable impact on earth that our one species is the primary distinguishing feature of this time period in earths overall history. The term was coined by ecologist Eugene Stoermer around 1999 in an off-the-cuff remark making an analogy with the Halocene era. It has since been popularized by Nobel Prize-winning atmospheric chemist Paul Crutzen.

² "For instance, melting of ice sheets produces positive feedbacks by reducing surface albedo (i.e. surface reflectivity) that leads to more absorption of heat by the exposed underlying surface, which then accelerates the melting of the remaining ice" (Morrigan, 2010)

³ A non-linear system such as the climate system may exhibit rapid climate change as a response to internal processes or rapidly changing external forcing. Because the probability of their occurrence may be small and their predictability limited, they are colloquially referred to as "unexpected events" or "surprises" (Ahlonso, et al. 2001).

sink to a net emitter of carbon resulting in increased GHGs emissions and, again, accelerating temperature increases with possible cascading effects. While methodology, research, and prediction on anything related to weather is very complex, the general principle of the greenhouse effect is not. Were it not for the heat-trapping abilities of CO₂, it is highly unlikely that earth would ever been able to provide an environment capable of fostering life itself (Ahlonso, Ding, & Schimel, 2001).

Such scientific findings indicate very strongly that a top priority for humanity needs to be reducing anthropogenic greenhouse gas emissions. Without action on this, all other human policies may become moot.

Primary sources of these gases⁴ can be found in the transportation and building and heating sectors. After water vapour, CO₂ is the biggest contributor to the greenhouse effect. The primary source of the anthropogenic GHGs is burning fossil fuels for transportation and heating and deforestation. Transportation and heating/cooling are said to represent 25% and 50% of GHG emissions in industrial countries (Cambridge Systematics, Inc., 2009). GHG reduction policies would, therefore, be best advised to focus on the largest contributing sectors in order to make the biggest reductions in GHG emissions.

There is a growing scientific literature on the relationship between population density and GHG emissions (National Research Council of the National Academies,

⁴ The main GHGs are: 1. Water Vapor (H₂O)(36-72% contribution to the greenhouse effect); 2. carbon dioxide (CO₂)(9-26% contribution to the greenhouse effect); 3. Methane (CH₄)(4-9% contribution to the greenhouse effect); 4. ozone(O₃)(3-7% contribution to the greenhouse effect); and nitrous oxide (NO_x)(low contribution to the greenhouse effect). For CO₂ the atmospheric fraction (AF) over the last 50 years (1956–2006) has been increasing at $0.25 \pm 0.21\%$ /year.

2009). Urban sprawl⁵ is now understood as a “driver” of increased GHG emissions. “Levels of car ownership are rising, along with distances driven per car” (Blais, 2010). Canada’s national rise in vehicles from 1975 – 2004 has increased significantly from about 11 million to around 19 million (Statistics Canada, 1975), (Statistics Canada, 2004). “The move to larger vehicles and SUVs in recent decades, along with increases in truck traffic, has cancelled out these gains in efficiency” (Blais, 2010).

Bringing living and working places closer together is therefore an important means of lowering GHG emissions. When living and working spaces are more compact, emissions per capita are reduced. For example, when places of work are closer to residences, less transportation fuel (and commute time) is required. The more dwellings there are per building, the less heating and cooling energy (as well as other infrastructure) is required. Both result in lower GHG emissions (with no apparent reduction, and some argue even improvements to, quality of life) (Fahy, n.d.)⁶.

We begin notice a shift of more people moving into cities as opportunities grow in urban settings. The global trend is that rural people are moving increasingly to urban environments (United Nations, 2006). This is a “good” thing in terms of creating the conditions for more “compact and complete communities”⁷ that require lower GHG emissions. But land (like, atmosphere) is a finite resource. As the famous Mark Twain stated “Buy land, they have stopped making it”.

⁵ Urban Sprawl: urban landscapes having certain characteristic physical elements identified as leapfrog development, commercial strip development, low-density development and single-use development on or near the urban fringe (Gillham, 2002)

⁶ Recent discoveries in hidden opportunities that cities offer create densification and reduce dependence on personal vehicles. Many of the networks and services are within walking proximity, thus encouraging active lifestyles, lower commute times, and safer communities.

⁷ Ahwahnee Principle for Economic Development #11 coined the principle.

Several studies⁸ indicate that transportation by means of personal vehicles reflects a correlation with the density of a city (UNEP/GRID-Arendal, 2009). The link between these two components is illustrated in the graph below; where transport-related energy consumption tends to be lower within high-density cities. Due to influences such as densification, and rising gas prices, these compact and complete communities offer an alternative for people to leave their vehicles at home thereby achieving a reduction in transportation energy consumption – and a better environment.

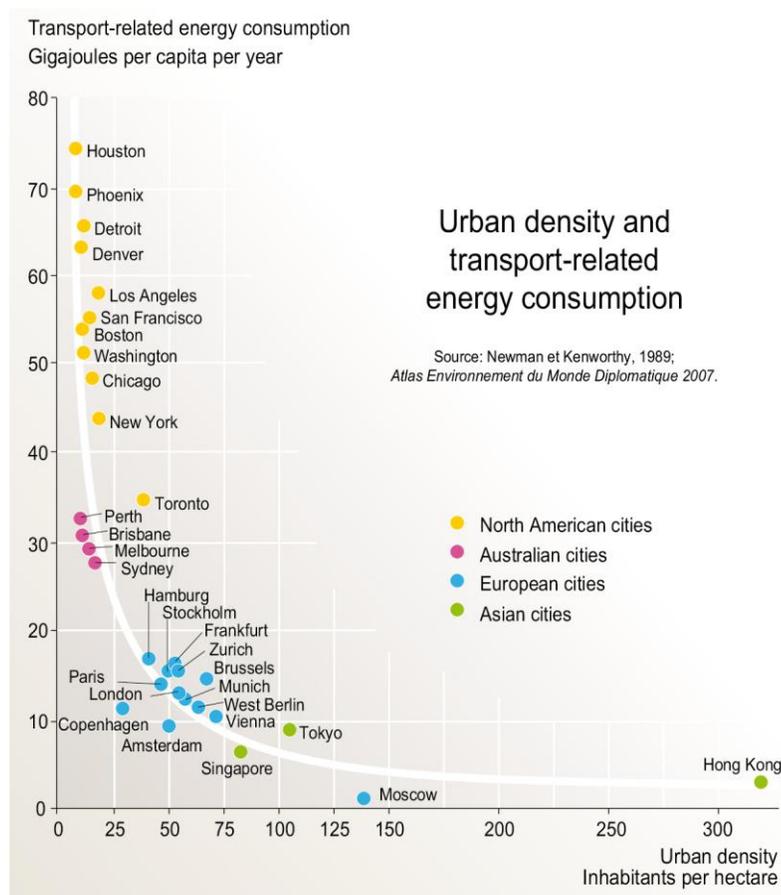


Figure 1: Urban Density and Transport-related Energy Consumption (UNEP/GRID-Arendal, 2009)

⁸ *The Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions, and Reducing Traffic Congestion And Improving Travel Options In Los Angeles*

Although there are opportunities for urban growth initiatives, such as new urbanism, retrofitting, and eco-districts; urban cities face harsh pressures due limited land space, and especially increased population. For nearly a decade, cities in Ontario have tried mitigating these challenges by revitalizing urban setting, retrofitting historical structures and redeveloping abandoned, vacant industrial/commercial lands, which are no longer operable – commonly referred to as brownfields. Exploring these options have yielded some successes, however the shift towards brownfield redevelopment has been slow due to current policies (Informant: E1-I, 2011) (Informant: M1-M, 2011) (Informant: D2-I, 2011).

Since sprawl incurs unpredictable time and space costs that seriously affect our quality of life (e.g. monetary and non-monetary costs of infrastructure maintenance, mortgages, property taxes, social welfare, etc.) this greatly impacts resources such as fossil fuels and links towards our limiting capacity in food production, living space, and our valuable greenfields. (Calthorpe et. al, 2004)

Greenfields have great opportunities that extend beyond suburban dwellings as they can provide local agriculture and improve ecosystems. Unfortunately, several decades of urban sprawl have transformed these lands into networks for low-density subdivisions, and auto-centric communities (Blais, 2010). To help preserve these valuable resources and reduce urban sprawl (and its many undesirable and unsustainable consequences), programs and policies such as *Smart Growth*, *Places to Grow* and the *Greenbelt Plan* have encouraged public and private stakeholders to shift towards urban redevelopment within city limits. Statistics Canada provided a review of manufacturing sales declining in North America (Canada and USA), which dropped to 4.6% between

2007 and 2008 (Flynn, 2009). This continuing trend results to more bankrupt and abandoned industrial facilities – meaning, more brownfields.

As future opportunities progress in cities, evidence⁹ suggests that heavy industrial and commercial manufacturing infrastructures are closing, no longer serving as viable economic drivers in urban cities. What is left then is the residual pollution from these vacant, abandoned areas companies leave behind. The general public also realizes the potential for growth as downtown cores include amenities within reasonable walking distance, and available public transit systems; suddenly, the shift from personal vehicle use becomes less viable and greatly inconvenient.

1.2 Background

Urban redevelopment can take many forms such as “re-purposing” and renewing land use. One example where revitalization and redevelopment takes place is former industrial and commercial sites in or nearby urban downtown cores. This research will focus on the phenomenon known as brownfield redevelopment.

Several public and private stakeholders involved in the brownfield industry agree that brownfields are generally identified as being “potentially contaminated due to historical, industrial or commercial land use operations, becoming derelict, vacant and underutilized as a result” (Brownfields Ontario, 2007). This creates negative stigma because of the risks from contamination, time, costs, and liability. Additionally, location, legislative and regulatory components also influence the development of these lands. Due to the nature of these current conditions, brownfields easily become “lost causes”. However, beyond their desolate state they can be seen as valuable opportunities for new

⁹ Major cities such as Toronto, Hamilton, Montreal, Ottawa have all transformed into strong communities and become desirable locations to live in.

mixed-use residential dwellings, urban features¹⁰ and play a key role in optimizing real estate value¹¹ by adding the space required to fulfill plans to encourage urban intensification. Although the concept of brownfields is perceived as a valuable component towards sustainability, several barriers remain for many involved stakeholders.

Many environmental, economical and social implications are embedded with obstacles regarding liability, regulatory, time and location.

Environmental aspects considered in brownfields include:

- Contamination from previous use,
- Physical deterioration from untreated sites (e.g. poor air, water and soil qualities),
- Amendments to O.Reg 153/04 (511/09),
- Benefits,
- Environmental liability

Economic components to consider include:

- Property land value,
- Return on investments,
- Feasibility,
- Costs for remediation,
- Incentive programs (grants and tax-based)

Social aspects comprise of:

- Public health impacts,
- Community development,
- Accessibility and convenience,
- Stigma,
- Liability

¹⁰ Parks, public spaces, culture revitalization, etc.

¹¹ http://www.cmhc.ca/en/inpr/su/sucopl/sucopl_004.cfm - Several case studies listed on the Canada Mortgage and Housing Corporation website

The purpose of undertaking these projects tend to address the issues that are associated with environmental, economical and social concerns as a whole rather than individually.

2 Methodology

This inquiry will explore whether brownfield redevelopment benefits the public good¹². By identifying multiple aspects of present barriers and facilitators frequently arising in the remediation and redevelopment stages, a greater comprehension of brownfield redevelopment may be achieved. As a result, considering factors such as: Ontario's current status relating to brownfield redevelopment, applicable discussions, interviews and professional opinions¹³, qualitative comparisons between greenfield development and brownfield redevelopment, recommendations and current policy programs, as well as advantages and disadvantages will assist in eliminating the negative stigma and provide better insight regarding this emerging topic.

3 Why Ontario?

Growth in Canada is captured in provinces such as Alberta, British Columbia, Quebec and Ontario (Statistics Canada, 2011). It is evident that one of the key components contributing to this growth is focused within urban settings (United Nations, 2006); a concerning trend that cities begin to face from pressures of population increase. The graph below represents the population increase in all provinces and territories, and shows that Ontario makes up for most of population across the nation.

¹² Defined as "a good that is consumed in common" (Goodstein, 2008). The benefits of the public good always evolve. For example, it used be that we wanted personal vehicles, our own property, and our dream home. Seemingly, cities have grown into widespread, low-density subdivisions for the convenience of our auto-centric counterparts, losing sight of the benefits for the public good. The closest convenience store isn't a five-minute walk, but a five-minute drive.

¹³ Includes various industry stakeholders involved in the subject – both in the public and private sectors

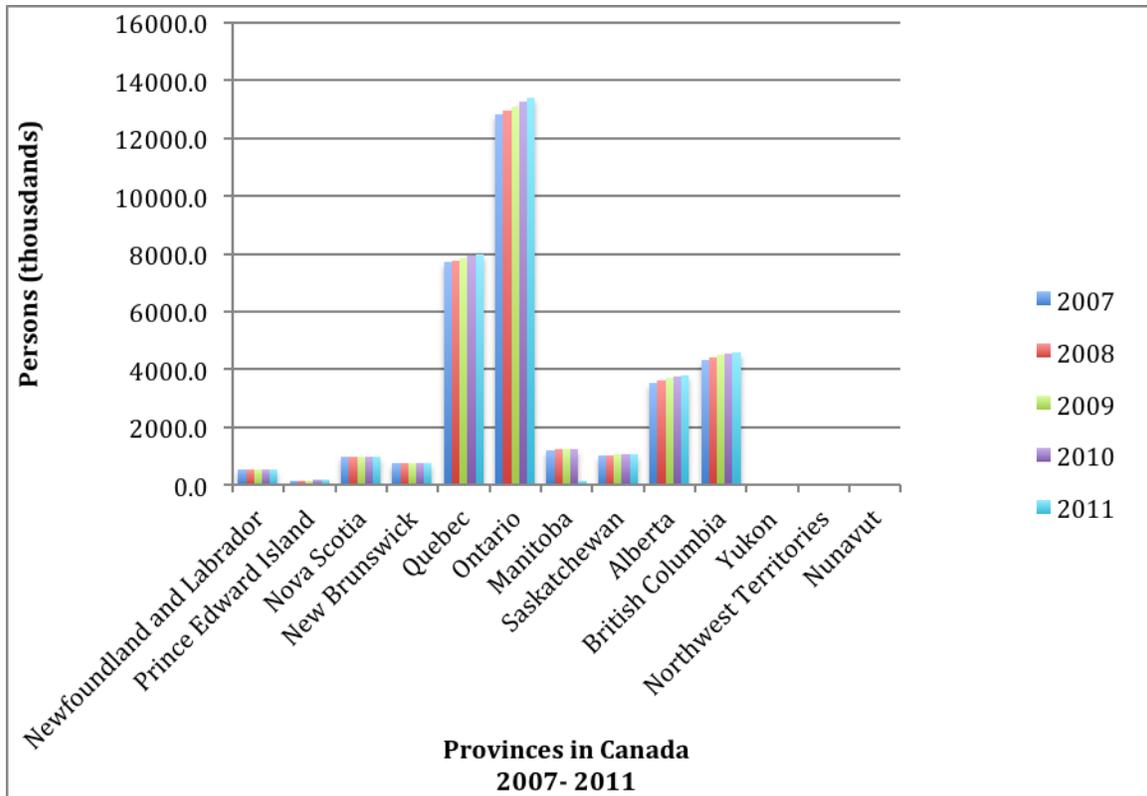


Figure 2: Population for Provinces in Canada as of July 1, 2011 (Statistics Canada, 2011)

Since Ontario’s demographic accommodates the highest number of persons with “(T)he Greater Golden Horseshoe account(ing) for 84% of Ontario’s population increase” (Statistics Canada, 2009), it can be concluded that Ontario faces the most significant urban pressure in providing livable spaces and jobs.

4 Current Situation

Analysis of the discussions from the participating informants dictates that beyond Ontario’s populace concern, current brownfield policies and actions are lagging behind which hinder the pace of infill development.

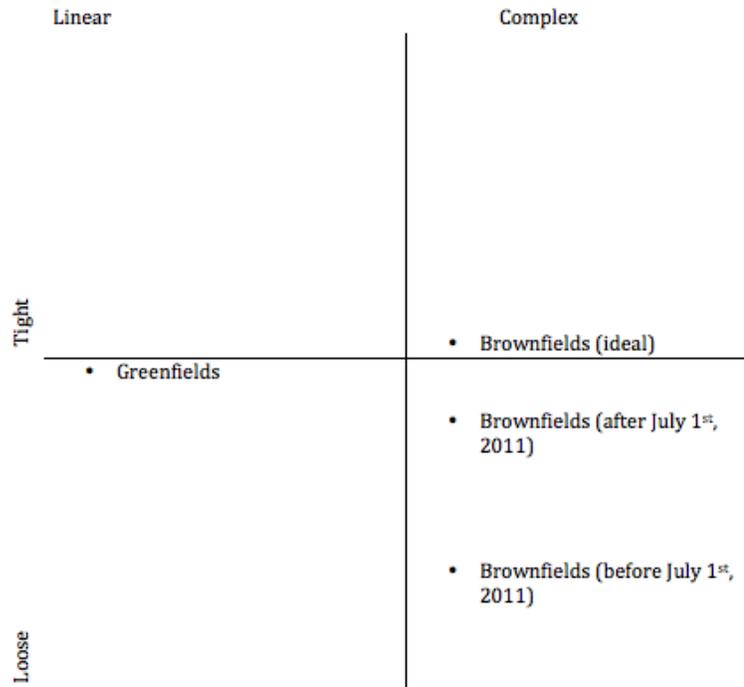


Figure 3: Interaction-Coupling Chart of Greenfield-Brownfield Policies¹⁴

This chart briefly depicts Ontario’s brownfield policies. Greenfield development usually retains a linear process and is impervious to physical and intangible (policy and social) barriers. Brownfields do not share the same ‘stability’, but gradual improvements over decades with policies, and stringent regulatory amendments (notably July 1st, 2011) have shaped the current industry. Due to the reality of unknown conditions found on brownfields, these sites are categorized as complex. Ideally, brownfields should be positioned just above the loose spectrum, leaning towards the complex-tight spectrum. The result would yield better policies targeting development strategies in the industry.

¹⁴ The y-axis represents the strength of the policies and regulations, where as the x-axis represents typical construction characteristics.

5 Brownfields and Greenfields

Redevelopment and improvements in the brownfield industry has received limited attention until recently within the past decade (National Round Table on the Environment and the Economy , 2003). The high hidden costs of standard living in suburban cities are inevitable (Blais, 2010). It is apparent that unforeseen implications of urban sprawl are escalating as expansive subdivisions, high-traffic infrastructures, and large commercial warehouses occupy our green space (Blais, 2010). These are examples of the cities leading towards an unsustainable future.

Greenfields have a valuable role in contributing to provide a sustainable way of life. Since they are transformed into sprawling communities, they become a critical issue that cities face today. Therefore, “Sprawl can be defined as an inefficient land use pattern. It embodies a misallocation of resources that is wasteful, consuming resources that could have been put to more productive uses. It occurs when prices for urban goods, infrastructure, and services do not reflect marginal costs, as they vary with urban form” (Blais, 2010).

Policies and programs such as Community Improvement Plans (CIP), Brownfield Tax-Incentive Program (BF TIP), Smart Growth, along with development strategies like brownfield redevelopment provide solutions to alleviate sprawl. Although these tools and approaches are available to facilitate this shift, there are still many barriers that exist in the context of the brownfield industry.

5.1 Defining Brownfields and Greenfields

The info-graphics below provides a visual on key indicators that characterize typical brownfields and greenfields. They summarize the terms frequently mentioned when informants were asked to define the two development types¹⁵.

The contrast between both developments is not only determined by the end-production, but influenced by pre-construction stages as well.



Figure 4: Considerations in Brownfield Redevelopment



Figure 5: Considerations in Greenfield Development

¹⁵ Although these graphics represent structures, the potential to create or improve these into other development initiatives such as parks, walkable communities, or infrastructures is possible.

5.1.1 Advantages of Greenfields

The initial stages of greenfield development is “effortless” compared to brownfields (Informant: C2-M, 2011). Greenfields rarely deal with situations where remediation is needed, providing huge advantages to begin development sooner, whereas brownfields require several procedures that must ensure proper remediation is completed before development. Basically, “[T]he lack of capital in the early stages of brownfield redevelopment—for the upfront costs of site assessments and cleanup—is a significant obstacle to brownfield redevelopment”¹⁶ (National Round Table on the Environment and the Economy , 2003).

5.1.2 Disadvantages of Greenfields

Greenfields offer large opportunities for unique developments. Unfortunately, expansive developments onto pristine land cannot continue because land is not as available as it once was¹⁷. Additionally, they can disrupt natural contours of land, incurring significant costs, and cause difficulties in directing energy to subdivisions and infrastructure development¹⁸. If brownfields and greenfields were to compare infrastructure costs, “commercial development would yield annual savings of an estimated \$18 thousand per hectare in infrastructure costs alone.” (De Sousa, 2002) Brownfields may not need to extend their infrastructure and utilities, but the possibility to serve capacity for high-density structures depends on the age of these existing facilities. (Informant: M1-M, 2011), (Informant: M2-M, 2011)

¹⁶Developers will likely incur a high initial cost during remediation stages compared to greenfield development (C2-M, 2011).

¹⁷ Urbanized land grew 96% from 1971-2001, showing that people use more and more land per person (Filoso, et. al, 2005).

¹⁸ “Reurbanization (in association with brownfields), present a relatively low-cost way to accommodate new urban growth. Why build expensive new infrastructure to service development in greenfields areas when capacity exists and land is languishing in the already-urbanized areas?” (Blais, 2010)

5.1.3 Advantages of Brownfields

“Brownfields represent an untapped opportunity to revitalize older neighbourhoods and generation wealth for communities” (National Round Table on the Environment and the Economy, 2003). Investing in these areas would create viability, transforming brownfields currently suffering from the blight. The outcomes promote numerous advantages that “improve infrastructures, revitalize communities, opportunities to reuse land, generate economic growth, and promote urban culture diversity towards achieving sustainability” (Informant: C2-M, 2011).

It has been reported that nearly 12,000 brownfields exist, which provides tremendous opportunity for reusing these sites (Ontario Real Estate Association, 2011). Additionally, these opportunities represent hundreds of millions of dollars in property value and economic potential (Ontario Real Estate Association, 2011).

5.1.4 Obstacles to Brownfield Redevelopment

Prior to brownfield remediation and redevelopment stages, many public consultations take place in contrast to greenfield development – encouraging participation in civil engagement.

The process for redevelopment of brownfield sites encounters tremendous obstacles in contrast to conventional greenfield development. Such obstacles that need to be addressed are: environmental, economical, social, legal, regulatory, time, and location. These specific obstacles will be discussed in later sections of this study.

6 Environmental Aspects

6.1 Contamination from Previous Use

Environmental conditions have generated immense attention for many classified brownfield sites. Residual contamination from previously serviced lands has deterred private developers and created negative stigma in the general public due to fear of potential health concerns¹⁹. Ignoring these sites drive opportunities away from municipalities, as “these sites are eyesores, promote illegal activity and decrease value to cities” (Informant: M1-M, 2011), (Informant: M2-M, 2011).

6.2 Physical Deterioration from Untreated Sites (e.g. poor air, water and soil qualities)

Redevelopment offers opportunities to deal with contamination. (Informant: D2-I, 2011) Since brownfields present difficulties such as leaching source contamination to nearby neighbourhoods, “it is hard control leachate from your neighbor, but you can control what you do and remediate what was previously present on your site” (Informant: D1-I, 2011).

Many of these sites contain chemicals that can manipulate soil and groundwater characteristics that potentially harm human health (Hara, 2003). Standards are put in place to regulate safe and allowable exposure of these contaminants in Ontario.

Site Condition Surveys and Environmental Site Assessments (ESA) are tools used to evaluate site characteristics for future redevelopment. Another important aspect prior to redevelopment, is filing a Record of Site Condition (RSC)²⁰. Although some relief is provided to brownfield owners, there are other areas that can improve this process. One

¹⁹ Presence of chemicals in brownfields that could harm human health include: lead, petroleum hydrocarbons (PHCs), volatile organochloride (VOCs), polycyclic aromatic hydrocarbons (PAHs)

²⁰ Required by the Ministry of the Environment, where a Qualified Person must protect property owners by indicating that appropriate environmental cleanup orders were conducted before converting or commencing to a more sensitive use.

implication that should be improved is the “back-and-forth” or “endless” communication between parties in providing a substantial RSC²¹ (Informant: J1-C, 2011). This factor contributes to uncertainty, leading to possible delays in the process. Popular misconceptions of these sites are that brownfields must retain an expectation to meet the conditions of an undisturbed greenfield site. It is unrealistic to achieve due to the impacts of previous industrial and commercial use (Informant: D1-I, 2011). To undertake a remedial strategy to achieve such a degree would place large time constraints and not be economically feasible.

6.3 Amendments to O. Reg 153/04 (511/09) – Record of Site Conditions

The amendments of O.Reg 153/04 – Record of Site Conditions went in effect as of July 1st, 2011. Several accounts were considered in adjusting to the new amendments.

Key indicators included are:

- “Streamlined Risk Assessment Process,
- Enhanced Record of Site Condition Integrity,
- Offsite liability protection,
- Strengthened soil, sediment and groundwater standards” (Goodin & Loney, 2011)

These amendments were designed to establish clearer processes for moving the brownfields industry forward. However, due to these new classifications under the amendments, “many of the sites that were classified as clean before, are now considered ‘contaminated’ because of the amendments” (Informant: B1-C, 2011).

The Ministry of the Environment (MOE) states that they have confidence in and will recognize RSCs filed under the former 2004 regulations (prior to July 1st, 2011), but other stakeholders²² may not hold the same confidence (Informant: M2-M, 2011).

²¹ Commenting on an RSC submission between developers and private consultants with no end “in sight” Currently, there is no limit for the number of times for commenting on an RSC review (Informant J1-C, 2011)

²² Lenders, insurers, municipalities, bankers, developers, and other direct and indirect stakeholders

Additionally, the implications of these changes would result in:

- Increased time and cost (site assessments, remediation, site redevelopment),
- Unclear as to what is deemed a “clean site” (before and after July 1st, 2011 amendments),
- Public policy objectives (i.e regarding shift to urban development) are difficult to meet because of these technical delays

6.4 *Environmental Benefits*

Redevelopment of brownfields yields many environmental benefits that prevent sprawling to pristine native lands and improve the quality of abandoned sites. Thus, allowing growth in natural ecosystems. Brownfields also improve air quality and reduce GHG emissions in urban areas²³ (National Round Table on the Environment and the Economy , 2003).

6.5 *Environmental Liability*

Protection from environmental liability is a key decision variable along with overall planning process for owners and potential buyers. Although improvements through the RSC processes were designed by the MOE, minimizing environmental liability still remains a significant barrier; this is based on previous industrial activities and extensive use of chemicals, where the site conditions potentially threaten the health of the general public²⁴. Such risks may become too complex and create disinterest for beginning these undertakings. Therefore, resulting in “reluctance to do anything on these sites, unless the problems can be approached and solved properly.” (Informant: E1-I, 2011)

²³ “It has been shown that even the greenest house located in the suburbs, with all latest energy-saving features and an energy-efficient car, consumes more total energy than does a conventional house and a conventional car located at an urban area” (Jonathan Rose Companies, 2004).

²⁴ For example: onsite workers, future residence

7 Economic Implications

Due to the high cost linked to the initial stages of brownfield redevelopment, many sites remain untouched; opportunities to drive economic growth remain idle in municipalities. According to the Federal Contaminated Sites Inventory, nearly 19,000 sites have been listed to contain some type of contamination on federal lands.

(aboutREMEDATION, 2011) This inventory²⁵ provides property identification for improvement (aboutREMEDATION, 2011).

7.1 Property Land Values

7.1.1 Economic Potential: Property Taxes – Greenfields vs. Brownfields

A study conducted by the *Ontario Real Estate Association* (OREA) in May 2011, stated “the lack of start-up government support for brownfield property owners who decide to invest in remediation” was a problem (Ontario Real Estate Association, 2011).

The study indicates that while Community Improvement Plans (CIPs) are available under municipal/provincial incentives, incentives can only be claimed after remediation is completed (Ontario Real Estate Association, 2011). This currently places brownfield redevelopment at a disadvantage against greenfield development. A recommendation suggests introducing a new tax class specifically addressing brownfield properties that are ‘under remediation’ (Ontario Real Estate Association, 2011).

Differences between greenfields and brownfields extend beyond the physical characteristics of these land areas, as costs are a contributory factor in development, especially property taxes. The Canadian Brownfields Network (CBN) provided a case-

²⁵ http://www.aboutremediation.com/toolbox/step1_createlandinventory.asp - As stated on the website, due to legal purposes, this inventory cannot be listed as a ‘brownfields’ inventory without evidence of substantial proven contamination. A separate registry on the Ministry of the Environment website can provide information on sites that are filed under the RSC.

example outlining the hidden economic potential for brownfields. The table shows an estimated savings of \$201,210 over a 3-year development process:

Table 1: Property Taxes - Greenfield vs Brownfield, Source: Canadian Brownfield Network (Ontario Real Estate Association, 2011)

| Assessed Value | | Property Classification | Tax rate | Taxes Owed (annually) |
|----------------|--------------------|-------------------------|--------------|-----------------------|
| Brownfield | \$6,250,000 | Industrial Vacant | 3.22% | \$201,538 |
| Greenfield | \$37,500 | Farmland | 0.26% | \$98 |
| Difference | \$6,212,500 | | 2.96% | \$201,210 |

If an amendment were made in O. Reg. 282/98 of the Assessment Act, this potential ‘reality’ would certainly balance the playing field between brownfields and greenfields, listing an ‘under remediation’ tax class specific to brownfields (Ontario Real Estate Association, 2011).

From a technical practice perspective, achieving a balanced ‘field’ between both development types, “it would take time for greenfield developers to achieve the level of sophistication to develop brownfield sites because the approaches are different and there must be plans for a variety of contingencies” (Informant: L1-D, 2011).

7.2 Return on Investments and Economic Feasibility

7.2.1 Location, Location, Location

Depending on the location, time and costs for remediation processes and associated risks, the return on investments may not be worthwhile for private stakeholders (i.e. potential buyers, developers) to proceed with redevelopment on a contaminated site.

“The issue expands beyond remediation and redevelopment as location contributes a significant role in offering a market and local services.” (Velderman, Southwood, & Capstick, 2001)

Location is the underlying principle of real estate, and in many cases, a factor affecting development of brownfields. In part, the brownfield “market” looks beyond the benefits end use²⁶.

Seemingly, the size of these sites contributes to the feasibility of these undertakings. However, in the case of smaller projects, some could achieve viable or marginal financial output, but location of a site retains a stronger value than its size.

(Informant: A1-F, 2011)

The Greenwich-Mohawk site is an example where size does not matter, as this 60-acre lot holds limited worth because of its “undesirable” location. “It might be possible to save such a large number of buildings like Toronto where there are millions of people. But in a community of 95,000, it’s not quite as easily done” (Ball, 2011) Municipalities similar to Brantford, where property value is low, require community involvement and public consultation as the challenges for redevelopment are more prominent. (Informant: D2-I, 2011)

7.2.2 Time and Costs for Remediation

Time and costs are also contributing factors to the redevelopment industry. Based on site condition comparisons, greenfields seldom require environmental site assessments prior to development, unlike brownfields (Informant: C2-M, 2011).

Several remediation methods and techniques can be applied to soil cleanup and reduce shipping costs and CO₂ emissions. However, the technologies that are available are expensive and can be time consuming compared to the conventional “dig-and-dump” process (Informant: E1-I, 2011). A chart provided in Appendix A provides some common

²⁶ Many informants that participated in this study collectively agree, based on discussions and trends analysis, that redevelopment projects were successful because of: ideal locations reflective of public demand, fairly accessible and viable resources, and good real estate redevelopment opportunities.

methods of soil remediation found in Ontario. The chart summarizes the relative successes, cost (\$K), time, Ontario regulations (O.Reg), and other considerations of each given example. Although this chart targets remediation under generic standards, the availability of these technologies is subject to all standards, including site-specific and generic standards. Please refer to Appendix A for this chart.

7.3 Economic Benefits

The long-term investments yield advantages of positive outcomes. Economic opportunities that branch from redevelopment generate:

- **Job Creation:** Property development creates jobs in all stages in the construction industry. Additionally, tertiary industries²⁷ can expect job increases, resulting in potential local economic growth (Ontario Real Estate Association, 2011).
- **Community Attraction:** Introducing and maintaining culture within the urban setting and increases demand to rejuvenate abandoned areas as urban population increases (Ontario Real Estate Association, 2011).
- **Infrastructure Improvements:** Brownfield redevelopment utilizes and revitalizes existing municipal infrastructure rather than ignoring maintenance and investing in new infrastructures (Ontario Real Estate Association, 2011).
- **Provincial Policy:** Brownfield redevelopment is in line with provincial policies (Provincial Policy Statement, Places to Grow) that encourage urban intensification instead of sprawl (Ontario Real Estate Association, 2011).
- **Larger Municipal Tax Base:** Property redevelopment increases local property values, which lead to greater municipal tax revenues (Ontario Real Estate Association, 2011).
- **Commercial Property Value Increase** (Hara, 2003): Neighbouring property values witness a significant value increase from brownfields that are recoverable upon redevelopment or remediation. “De Sousa (2002) reports case studies where the redevelopment of one parcel of brownfield land led to increases in the property values of neighbouring brownfield parcels of over 50%” (Hara, 2003)
- **Residential Property Value Impacts** (Hara, 2003): “Whether remediation can restore value, stigma effects may perpetuate lower values if perceived risk is decoupled from actual risk” (Hara, 2003).

“Ketkar (1992), in a study of 64 municipalities in New Jersey, found that the clean-up of one hazardous waste site in a municipality has the effect of increasing property values by \$1500 US on average. He further estimated that the cost of clean-up of 129 hazardous waste sites

²⁷ Such as legal, finance, real estate, business growth, etc.

would be \$931 million, but that the resultant increased property values would be \$12.4 billion. The implied benefit-cost ratio exceeds 13 to one” (Hara, 2003).

7.4 *Incentives: Facilitators and Barriers*

There are a variety of available financial incentives for the brownfield industry from all levels of government. These programs have some influence in the move forward for the industry to waive municipal fees and offers grants for environmental and feasibility studies – but ultimately, decisions to undertake these projects rely on other factors²⁸ (Informant: C1-M, 2011).

7.4.1 Federal

The Federation of Canadian Municipalities, and federal government created The Green Municipal Fund (GMF) to encourage project initiatives in sustainable community plan development, feasibility studies and field tests, and capital projects²⁹. (Federation of Canadian Municipalities, 2010)

GMF offers low rates compared to any municipality in the market. Loans are also made available to private sectors and/or corporations that have partnerships in eligible municipal projects (Federation of Canadian Municipalities, 2010). Additionally, GMF provides grants for Community Improvement Plans, remedial action plans and risk assessments, and education/training resources (Federation of Canadian Municipalities, 2009). The GMF has available funding for projects covering 50% of eligible costs to a maximum of \$350,000 (Federation of Canadian Municipalities, 2010). However, the

²⁸ This connects back to the market demands, initial remediation costs, and ‘payback’ period from incentives (Informant C1-M, 2011).

²⁹ Examples include brownfields, energy, transportation, waste and water sectors (Federation of Canadian Municipalities, 2010)

FCM does not provide grants for brownfield capital projects, instead, it offers loans³⁰ to sites that are eligible (Federation of Canadian Municipalities, 2011). This temporary solution helps developers to a certain degree, but may not be as an effective incentive by comparison to other available incentives.

7.4.2 Provincial

The Government of Ontario developed the Brownfields Financial Tax Incentive Program³¹ (BF TIP) that provides municipal tax assistance (that essentially acts as a matching program) for undertaking remediation on eligible brownfield properties within the designated boundaries under the Community Improvement Plan (CIP) (Informant: C1-M, 2011). Serving as part of the *Places to Grow* Initiative, it encourages local development of existing urban areas to reduce urban sprawl (Ministry of Finance, 2004). The Ministry of Finance allocates \$5 million per annum to match property tax contributions. (Ministry of Finance, 2004) This program is limited only to brownfield properties established within the CIP. However, properties within the boundaries can apply for the BF TIP. (Informant: C1-M, 2011)

7.4.3 Municipal

Municipalities use the Community Improvement Plan (CIP) to define all areas or parts of the city contained within city limits where effective use, reuse and restoration may prosper. These established CIP areas are eligible to receive funding relief from incentive-tax-based programs. (Ministry of Municipal Affairs and Housing, 2008)

³⁰ “The loan maximum is \$10 million, and the grant amount is set up at 20% of the loan to a maximum of \$1 million” (Federation of Canadian Municipalities, 2010).

³¹ The Ministry of Finance released “A guide to Brownfields Financial Tax Incentive Program” that is publicly available

Municipalities across Ontario have also made available incentives that contribute to brownfield remediation and redevelopment. Municipalities across the Province may offer the following incentives (Ministry of Municipal Affairs and Housing, 2011):

- Tax assistance,
- Tax increment equivalent grants,
- Study grant programs,
- Development charges reductions or exemptions,
- Façade grant or loan programs,
- Rehabilitation & redevelopment grants/loans,
- Miscellaneous fees grant programs.

The decision to select and implement the types of incentive programs depends on the feasibility, demand for redevelopment, and CIP structure within each municipality, which may contribute to a ‘quicker’ growth in brownfield redevelopment. (Informant C1-M, 2011)

7.4.4 Private Sector Insurance

Some organizations³² offer insurance designed to focus on brownfield redevelopment projects. An overview of the services include:

- **Industry leadership:** providing innovation and engagement to promote best practices (Kilmer Brownfield Equity Fund L.P., n.d.)
- **Risk Management:** due diligence, environmental liability insurance, on-site management, and regulatory site closures are offered to provide additional comfort for sites that have difficulties achieving completion (Kilmer Brownfield Equity Fund L.P., n.d.)
- **Understanding Vendors’ Needs:** working closely with vendors of environmentally-impacted sites indemnification and joint ventures (Kilmer Brownfield Equity Fund L.P., n.d.)

³² Kilmer Brownfield Equity Fund, offers investment fund to create value for stakeholders through revitalizing brownfields (<http://www.kilmergroup.com/brownfield/index.html>); and Marsh Canada Limited (<http://canada.marsh.com/ProductsServices/MarshSolutions/ID/4385/Brownfields--How-Environmental-Insurance-Can-Help.aspx>)

Unfortunately, this may neglect sites that are “undesirable” from being remediated because they do not bring attraction (Informant: D1-I, 2011). Therefore, these organizations target and assess projects that are feasible and evaluate the redevelopment potential and what type of investments it could generate. Regardless of the site conditions and characteristics, if the potential end-use opportunity is achievable, then there is possibility for financial relief (Informant: D1-I, 2011).

7.5 Incentives: Current Improvements

There are many improvements that contribute to promoting awareness of these incentives. The Ministry of Municipal Affairs and Housing released a compendium of Ontario’s CIPs early 2011, providing a resource to allow transparency of brownfield provisions between municipalities to collaborate and educate the public and other stakeholders (Informant C1-M, 2011). By making this chart³³ available to the public, the information provides transparency and a better understanding of what is available in each municipality. Refer to Appendix B for the link to the compendium.

Hamilton’s ERASE Plan was developed to offer marketing assistance, assist with the study and cleanup of brownfields through a grant program, and municipal property acquisition, stakeholder investment and partnership (National Round Table on the Environment and the Economy, 2003). The ERASE Plan undergoes several amendments to reflect the current regulatory demands in remediation and redevelopment strategies (Morris, 2010). Refer to Appendix C for an application of the grant calculation.

³³ The chart includes: copies of individual municipal CIPs, contact information to municipalities, listing of available incentives used, and descriptions of the incentive categories.

8 Social Aspects

8.1 Public Health Impacts

The risks of conducting poor remediation strategies can pose health issues to occupants. For example, Vapor Intrusion is a common concern where chemicals which can escape into structures (Informant: E1-I, 2011). The representation below illustrates a case for potential exposure pathways from contaminated areas. In a case where remediation strategies are not addressed responsibly, the presence of onsite contamination may impact the health of surrounding communities, and would result in future claims for damages (Hara, 2003).

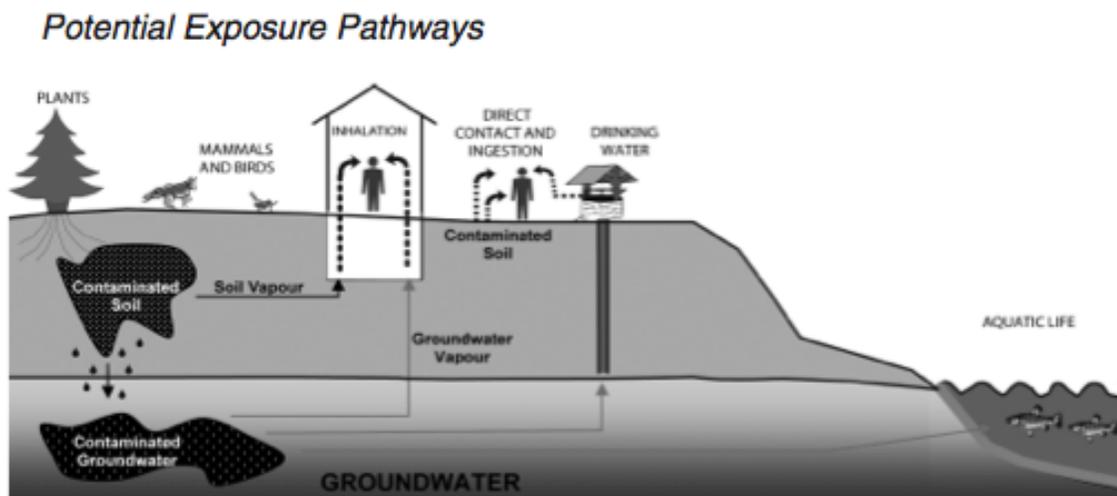


Figure 6: Potential Exposure Pathways (Brownfields Ontario, 2007)

8.2 Community Redevelopment

Brownfield redevelopment provides great opportunity to focus on revitalizing areas suffering from blight. Opportunities in redevelopment create and improve urban cultures that were once occupied by heavy industrial and commercial goliaths. The outcome of redevelopment encourages:

- More high-density dwellings,
- Compactness and completeness of cities and ideal locations,
- Contribution to viable infrastructure,

- Improved accessibility and walkability,
- “Promotes competitiveness and urban attraction” (Informant: J1-C, 2011).

Although these strategies are geared towards improving downtown urban cores, the reality is that not all municipalities are fully aware of the benefits hidden in brownfield redevelopment (Informant: A1-F, 2011). Some municipalities that are located further from the Greater Toronto Area still have available greenfields, where (greenfield) development may still occur (Informant: D1-I, 2011). Seemingly, certain municipalities may have conflicting aspirations as they try to maintain their urban culture while continuing with greenfield development; which can be uncontrolled and counter-intuitive – in essence, a display of poor land use policy (Informant: D1-I, 2011).

8.3 Stigma

“In many cases, the occupants don’t realize that they’re near a redeveloped brownfield site” (Informant: D2-I, 2011). The public perception indirectly “shapes the demand” in brownfield redevelopment. “Although the education on brownfields is limited, the public is gradually becoming aware of these projects” (Informant: A1-F, 2011) because of media attention and successes³⁴ across the Greater Toronto Hamilton Area (GTHA). As for other stakeholders, it is a “mixed-bag” since some view these vacant sites as opportunities to boost economic prosperity, where others consider these to have huge liabilities.

8.4 Liability

“Liability plays a vital function in brownfields but it’s not necessarily preventing more work in the industry” (Informant: D1-I, 2011). It is important in terms of how it is

³⁴ The Distillery District, Toronto Waterfront, parts of Hamilton

managed, and sophistication has been developed around managing various types of risk liabilities (Informant: D1-I, 2011).

Risks surround us everyday; it is impossible to assume that liability can be avoided. “A more relevant question is whether we can manage these liabilities to a certain level?” (Informant: D1-I, 2011)

In Ontario, liability has improved because of RSC standards (National Round Table on the Environment and the Economy, 2003). Due to the amendments, risk assessments follow a streamlined process, and “provide regulatory closure” (Informant: D1-I, 2011). The only mitigation from civil liability is to follow best practices/regulatory standards to maintain minimal civil risk³⁵ (Informant: D1-I, 2011).

Despite these improvements, gaps in liability still requiring improvement is to understand the responsibility for on- and off-site soil contamination (Informant: B1-L, 2011).

9 Policy Roles

There are rising concerns with urban environmental quality within cities. (National Round Table on the Environment and the Economy, 2003) By developing a greater understanding in brownfield redevelopment, opportunities towards improving urban cultures and preserving greenfield landscapes improves the balance between redevelopment and sustainability. The emphasis to refine the brownfield industry should not solely depend on new innovative technologies, but consider collaborative approaches in addressing these concerns.

³⁵ There are two types of remediation standards, generic and site-specific, that may be conducted under the MOE. Generic standards are normally costly, and time consuming because the standard requires “all” contaminants to be tested. Site-specific standards may be a less time consuming approach, and targets contaminants of concerns present on the site. Proper Phase 1 & 2 ESAs minimize surprises found on brownfields, but the reality is every brownfield has its own set of problems.

Although the industry witnesses significant technical improvements and achievements, inconsistencies within policy programs remain a challenge and “slow down” redevelopment. What is needed to “boost” redevelopment is coherent and quality strategies providing a nexus to meet the demands to improve policy programs.

9.1 Policy Obstacles

It can be understood that the actual stages of redevelopment is not threatened, rather the policy structures involving several “pre-conditions and pre-construction” aspects³⁶ are the true barriers preventing the jump start of these projects.

The policies that currently exist do not necessarily encourage brownfield redevelopment. For example,

“Anti-SLAPP³⁷ legislation would allow people and organizations to challenge the development of individual greenfields, but it is difficult to say whether this type of legislation would promote brownfield redevelopment significantly more than, for example, financial incentives for developers, decreasing liability risks through policy changes, or implementing stricter anti-greenfield development policies” (Antonowicz, 2011).

Other gaps that threaten brownfield redevelopment include leapfrogging³⁸.

9.2 Policy Recommendations

The following policy recommendations may contribute to shifting the brownfield redevelopment industry forward.

1. **Brownfield Tax Category:** Proposing a category to the Provincial government, for brownfield sites that are under remediation where the taxes are comparable to agricultural and greenfield spaces will level the playing field for the industry.

³⁶ Such aspects include: remediation, government structures, legislation, incentives, public consultation, etc.

³⁷ SLAPP – Strategic Lawsuits Against Public Participation: an entity that discourages public decision-making (Antonowicz, 2011)

³⁸ Leapfrogging is characterized as a “development 'leaps' over a greenbelt, and targets outlying regions beyond the suburbs” (Antonowicz, 2011). This loophole jeopardizes natural green spaces.

OREA's recommendation for amending O. Reg 282/98 of the Assessment Act by introducing a new tax class for brownfield sites that are 'under remediation'. OREA provides additional clarification on what is considered a brownfield property as "under remediation"; where proof provided by a Qualified Person (as defined by O. Reg 153/04) validates that both Phase 1 and Phase 2 Environmental Site Assessments (ESA) have been conducted and a remedial strategy is to be implemented. (Ontario Real Estate Association, 2011)

2. **Improve on Site-Specific Risk Assessment Policy:** Although the MOE standards have become more stringent after the recent July 1st, 2011 amendments, the MOE recognizes some RSCs filed under the old standards as acceptable sites. Other stakeholders may not feel confident in doing so. Proposing a practical systems approach to the MOE to help stakeholders evaluate/apply for site-specific conditions can instill confidence in identifying constraints (contaminants of high concern) and encourage more redevelopment. Because nearly all brownfields present pre-existing conditions "generic standards are not practical or achievable, the science may be appropriate, but the value of generic standards poses no real values." (Informant: D1-I, 2011)
3. **A True Redevelopment Plan**
The Federal government should:
 - a. Make some degree of tax incentive financing available to all brownfield sites, not only those in areas with community improvement plans. (Antonowicz, 2011)
 - b. Address small-scale projects to provide education and awareness workshops to stakeholders and the public community. Demonstrations can be showcased to provide interim use³⁹ for abandoned sites until realty market demands are available.
4. **Identify Clear Brownfield Remediation/Redevelopment Criteria:** Targeting the MOE, this could minimize individual interpretation between stakeholders, creating better streamlining standards and collaboration for redevelopment strategies⁴⁰.
5. **Discourage landfilling of contaminated soils:** Landfilling contaminated soil is still the most effective and less costly method of soil disposal. Proposing to the Provincial government to establish incentives to encourage alternative sources of remediation can reduce CO₂ emissions from transportation to landfills and contain contamination onsite, reducing liability.
6. **Mixed-Use Urban Development Policy:** Redevelopment of single-use structures does not foster sustainable growth. Encouraging municipal and private urban planning entities to look at brownfields as services will set the foundation for understanding the opportunities of mixed-use developments.

³⁹ Brightfields have recognized and used benefits of cleaning brownfields and developing power where it can be tapped directly into existing grid systems without costly new transmission line installations (Ross, 2011), also see: <http://epa.gov/brownfields/partners/brightfd.htm>

⁴⁰ Not all stakeholders understand the complexity for dealing with brownfields. Usually, stakeholders with sophisticated experience in addressing brownfield sites advocate and collaborate among each other because "[O]ne consideration is that successful brownfield development goes well beyond the contamination itself" (Velderman, Southwood, & Capstick, 2001). The industry addresses "business development, infrastructure improvements, urban planning, engineering the built environment, environmental impacts, and the public." (Informant: M2-M, 2011)

7. **Pollution Prevention Policy:** The Province should consider “Preventing the creation of brownfields in the first place [as] a priority.” (Taylor, et. al, 2010) “Sustainable development practitioners are encouraged to seek out P2 opportunities and to apply the proposed integrative and adaptive framework to bring P2 into practice.” (Taylor, et. al, 2010) Thus, preventing the possibility of used areas becoming future risk liabilities.

10 Conclusion

Perhaps the general public feels that a quality of life is to own property and new things; the idea of living in revitalized areas once occupied by industrial structures seems “undesirable”.

“Instead of obsessing about revitalizing lagging regions, politicians would do better to focus on the people within them” (The Economist, 2011) Although there is some truth to this, ideally, a better connection must develop between revitalization and understanding the public good, not work against one another.

As the shift towards redevelopment becomes more common, it changes the stigma from brownfields from risks, to opportunities.

Brownfield redevelopment addresses the gaps in urban development, as its opportunities provide a “second-chance” in enhancing land use towards urban sustainability⁴¹.

“Sustainable cities are possible when considering elements to achieve quality of life. Such examples are led by: systems interaction within the city, collecting and reusing runoff, working together with ecosystems and restoration, etc.” (Steffen, 2011)

⁴¹ Found in *Environmental Quality in Canadian Cities* study, urban sustainability is “The enhanced well-being of cities or urban regions, including integrated economic, ecological and social components, which will maintain the quality of life for future generations”. (National Round Table on the Environment and the Economy, 2003)

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APPENDICES

| Remediation Type | Examples | Relative Chance of Success | Time (Months) | Cost (\$K) | O. Regs | Other Considerations |
|--|---|----------------------------|---------------|------------|---|---|
| A. Remediation to Generic Standards | | | | | | |
| A1. Soil | | | | | | |
| Excavation of Offsite Disposal | Dig and Haul to landfill for garbage cover (dig and dump) Dig and treat for surface land spreading | Higher | 2 - 4 | 100 - 300 | Licensed hauler, licensed disposal facility (May require PTTW and/or) CofA (sewage) if dewatering required) | Problem removed from site Relatively simple to design and implement Shipping costs may be high depending on location of offsite disposal. May not be feasible for deep or difficult to access contamination Fugitive emissions may be a problem |
| Ex-situ on-site treatment | Bioremediation Allu bucket Composting Thermal Desorption | Medium to Higher | 4 - 36 | 100 - 200 | CofA (water) CofA (air) (May require PTTW and/or) CofA (sewage) if dewatering required) | Requires space to operate Treatment facilities Generally most effective for organic compounds May not be feasible for deep or difficult contamination Effectiveness may be limited by concentration Time varies depending on technology; biopile may take up to 2-3 years. Allu bucket may take only 4 months Fugitive emissions may be a problem |

Appendix B: Compendium for Brownfields and Map of Municipal Brownfield CIPs

<http://www.mah.gov.on.ca/AssetFactory.aspx?did=8982> - Brownfield Compendium

<http://www.mah.gov.on.ca/AssetFactory.aspx?did=8901> - Map of Brownfield CIP drafts

Appendix C

Calculation of Grant Payment in Year 1 (Initial Grant), Source: (Morris, 2010)

Increase in MVA from \$458 to \$ 1.7 million

Municipal Tax Increment = Post-project Municipal Taxes (actual) – Pre-project Municipal Taxes = \$38,813

Maximum Grant Payment in Year 1 = \$38,813 x 0.8 - \$ 28,650

Therefore Grant Payment year 1 is \$28,650

Owner receives \$28,650 per year for 10 years (or up to eligible amount of grant - \$316,405) & program ends.

Interview Questions

A Desolate Moor or Something More:

An Investigation on how brownfield redevelopment contributes to the public good in Ontario

(School of Engineering Practices – McMaster University)

Information about these interview questions: This gives you an idea what I would like to learn about brownfield redevelopment. Interviews will be one-to-one and will be open-ended (not just “yes or no” answers). Because of this, the exact wording may change a little. Sometimes I will use other short questions to make sure I understand what you told me or if I need more information when we are talking such as: “*So, you are saying that ...?*”, to get more information (“*Please tell me more?*”), or to learn what you think or feel about something (“*Why do you think that is...?*”).

- 1. Information about you:**
 - **What is your name?**
 - **What is your title?**
 - **What experience do you have in relation to brownfields research and/or policy.**
 - **How would you describe your role with in the Brownfield “Industry”?**
 - **What happens within your role?**
 - **What is your perception of this industry, outside of your role?**
- 2. How would you define the term “Brownfield”? What constitutes a “good” location for brownfield redevelopment?**
- 3. What are some elements that need to be considered in decision making about brownfield redevelopment?**
- 4. In your view, what are some of the most important factors that influence a decision to move forward on a brownfield redevelopment project?**
- 5. Can you think of examples of great candidates for brownfield redevelopment that did not go through? Why you think they “failed”?**
- 6. In your view, what do you think are the primary obstacles that shape brownfield redevelopment?**
- 7. In your view, what do you think are the primary incentives that shape brownfield redevelopment?**
- 8. Have you ever heard of situations where certain policies are overlooked in certain regions to encourage or “fast-track” more brownfield redevelopment?**
 - a. Yes If yes, please tell me more.
 - b. No If no, please tell me more.

9. **Is there anything else you would like to add about the greater context of BR and the factors the influence BR positively or negatively.**

Appendix E

Email Recruitment Script
Philander Khuu, B.A.T., C.E.T.,
Masters Candidate in Engineering & Public Policy
**A Desolate Moor or Something More: An Investigation on how
brownfield redevelopment contributes to the public good in
Ontario**

E-mail Subject line:

An Investigation on how brownfield redevelopment contributes to the public good in Ontario

Dear [*name of participant*],

My name is Philander Khuu I am doing research on Brownfield Redevelopment in Ontario for my Master's Thesis in Public Policy at McMaster University's School of Engineering Practice. As part of the Masters of Engineering & Public Policy program in Engineering Studies at McMaster University, I am conducting a study to understand what Ontarians think about Brownfield Redevelopment and some of the potential and real socio-economic impacts. I am conducting interviews with people such as you who know about Brownfield Redevelopment.

It would be very helpful if you would to take part in a short 20 minute interview on Brownfield Redevelopment in Ontario.

Your participation is entirely by consent and under no obligation whatsoever to participate. I have attached a copy of a letter of information about the study that provides full details. This study has been reviewed and has received clearance by the McMaster Research Ethics Board. If you have concerns or questions about your rights as a participant or about the way the study is being conducted you may contact:

McMaster Research Ethics Board Secretariat
Telephone: (905) 525-9140 ext. 23142
c/o Office of Research Services
E-mail: ethicsoffice@mcmaster.ca

We would like to thank you in advance for your time and consideration. After a week, I will send you a one-time follow-up reminder.

Philander Khuu BAT, C.E.T.
Masters Candidate in Engineering & Public Policy
Dofasco Centre for Engineering & Public Policy
McMaster University,
Hamilton Ontario
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khuup@mcmaster.ca

DATE: 2011-05-10

APPENDIX F



Inspiring Innovation and Discovery

LETTER OF INFORMATION / CONSENT
A Study of/about: Brownfield Redevelopment

Investigators:

| | |
|---|--|
| Principal Investigator: Mr. Philander Khuu Department of Dofasco Centre for Engineering & Public Policy McMaster University Hamilton, Ontario, Canada (647) 522-5986 E-mail: khuup@mcmaster.ca | Faculty Supervisor: Dr. John R. Ferguson Adjunct Assistant Professor Department of Dofasco Centre for Engineering & Public Policy McMaster University ITB - 106 Hamilton, Ontario, Canada (905) 525-9140 x26566 E-mail: jrfergee@gmail.com |
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Purpose of the Study

I am conducting an investigation of future socio-economic impacts from brownfield redevelopment projects for my inquiry thesis at McMaster University.

Brownfield redevelopment has been discussed for quite sometime as a solution to slowdown urban sprawl and encourages stronger communities. The reuse of abandoned lands has potential to become and serve as functional communities; can improve and strengthen local growth leading towards sustainability. However, this is not the reality. There are many barriers associated with such redevelopment and the public is seemingly not attracted to the idea.

You are invited to take part in this study on brownfield redevelopment. I want to undertake this study and I am hoping to learn if these barriers lie within policy and regulatory guidelines or socio-economic issues. I also hope to find out what improvements can be achieved to target a solution for sustainable future through public policy.

Procedures involved in the Research

*Most of the questions will develop depending on the specialization (**politicians, consultants, city planners, policy planners, developers, experts, academics, lawyers, advocates, engineers and technicians**) of the interviewees of the brownfield redevelopment trade.*

Duration of interview: approximately 20 minutes

Participation of these interviews will take place at your convenience.

These interviews will be recorded if necessary and written

Sample questions:

1. Information about you:

- **What is your name?**
- **What is your title?**
- **What experience do you have in relation to brownfields research and/or policy.**
- **How would you describe your role with in the Brownfield “Industry”?**
- **What happens within your role?**
- **What is your perception of this industry, outside of your role?**

2. **How would you define the term “Brownfield”? What constitutes a “good” location for brownfield redevelopment?**
3. **What are some elements that need to be considered in decision making about brownfield redevelopment?**
4. **In your view, what are some of the most important factors that influence a decision to move forward on a brownfield redevelopment project?**
5. **Can you think of examples of great candidates for brownfield redevelopment that did not go through? Why you think they “failed”?**
6. **In your view, what do you think are the primary obstacles that shape brownfield redevelopment?**
7. **In your view, what do you think are the primary incentives that shape brownfield redevelopment?**
8. **Have you ever heard of situations where certain policies are overlooked in certain regions to encourage or “fast-track” more brownfield redevelopment?**
 - a. Yes If yes, please tell me more.
 - b. No If no, please tell me more.
9. **Is there anything else you would like to add about the greater context of BR and the factors the influence BR positively or negatively.**

Potential Benefits

The research will not benefit you directly. I hope to learn more about brownfield remediation and I hope that what is learned as a result of this study will help us to better understand how this would affect communities across Ontario. This could help create opportunities for achieving a sustainable future.

Confidentiality

You are participating in this study confidentially. I will not use your name or any information that would allow you to be identified. No one but me (or other members of the research) will know whether you participated unless you choose to tell them.

The information/data you provide will be kept in a locked desk/cabinet where only I will have access to it. Information kept on a computer will be protected by a password. Once the study is complete, an archive of the data, without identifying information, will be encrypted, password protected, and stored with no associated names – anonymity ensured.

Participation and Withdrawal

Your participation in this study is voluntary. It is your choice to be part of the study or not. If you decide to be part of the study, you can decide to stop (withdraw), at any time, even after signing the consent form or part-way through the study. If you decide to withdraw, there will be no consequences to you. In cases of withdrawal, any data you have provided will be encrypted,

password protected, and stored with no associated names – anonymity ensured, unless you indicate otherwise. If you do not want to answer some of the questions you do not have to, but you can still be in the study.

Information about the Study Results

I expect to have this study completed by approximately **December 2011**. If you would like a brief summary of the results, please let me know how you would like it sent to you.

Questions about the Study

If you have questions or need more information about the study itself, please contact me at:
Philander Khuu
khuup@mcmaster.ca
647-522-5986

This study has been reviewed by the McMaster University Research Ethics Board and received ethics clearance.

If you have concerns or questions about your rights as a participant or about the way the study is conducted, please contact:

McMaster Research Ethics Secretariat
Telephone: (905) 525-9140 ext. 23142
c/o Research Office for Administrative Development and Support
E-mail: ethicsoffice@mcmaster.ca

CONSENT

I have read the information presented in the information letter about a study being conducted by **Philander Khuu** of McMaster University.

I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time. I have been given a copy of this form. I agree to participate in the study.

Signature: _____

Name of Participant (Printed) _____

1. *I agree that the interview can be audio/video recorded.*

... *Yes.*

... *No.*

2. *...Yes, I would like to receive a summary of the study's results.*

Please send them to this email address _____
or to this mailing address: _____

... *No, I do not want to receive a summary of the study's results.*

3. I agree to be contacted about a follow-up interview, and understand that I can always decline the request.

... Yes. Please contact me at: _____

... No.

Appendix G – Informants with Code Association for Confidentiality

| Code | Professional Designation |
|--------------|--|
| A1-F | CBN – Member |
| B1-C | P.Eng, Consultant |
| B1-L | BA, LL.B, JD |
| B1-M | Ec. D, LEED Green Associate |
| C1-C | P.Eng, Associate |
| C1-M | Coordinator (MMAH) |
| C2-M* | P. Eng, City of Guelph |
| D1-1 | M.Sc, P. Geo |
| D2-I* | Barrister and Solicitor |
| E1-I | Strategic Planning Government Relations: Senior Consultant |
| J1-C | M.A.Sc, P.Eng, FEC, QPESA, QPRA |
| J1-E | M.Eng., P.Geo., P.Eng. (District Engineer) |
| J2-E* | P.Eng (District Engineer) |
| L1-D | M.C.I.P., R.P.P., Ec.D. |
| M1-M | M.Sc |
| M2-M | Director, Policy Planning |
| P1-I | MCIP, RPP, PLE |
| T1-M | Senior Business Development Officer & Brownfield Co-ordinator |

***These indicate that verbal consent was obtained. All other participants consented through written permission.**