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RESEARCH REPORT

BROWNFIELD REDEVELOPMENT
FOR HOUSING:
LITERATURE REVIEW AND ANALYSIS



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Brownfield Redevelopment for Housing: Literature Review and Analysis

**Prepared for
Canada Mortgage and Housing Corporation**

Prepared By



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BROWNFIELD REDEVELOPMENT FOR HOUSING: LITERATURE REVIEW AND ANALYSIS

INTRODUCTION

This research study reviews, analyses and updates the issues and barriers related to brownfield redevelopment for housing in Canada. The study is intended to update the research conducted for Canada Mortgage and Housing Corporation (CMHC) and the National Round Table on the Environment and Economy (NRTEE) in 1996 and 1997.

The study draws on the results of a literature review and a questionnaire administered to a dozen brownfield experts across Canada to examine the progress achieved, emerging issues, and suggested improvements to overcome challenges that remain.

The research aims to answer the following questions:

- a) What changes have occurred in the traditional barriers to brownfield redevelopment for residential uses over the last eight years?
- b) Which barriers have been partially or completely addressed, and how?
- c) Which barriers still exist, and why?
- d) What new barriers have emerged, either as a result of initiatives to address existing barriers, or changes to legislative, regulatory or financial frameworks?

Furthermore, the literature review attempts to identify the larger implications of brownfield redevelopment on transportation, housing supply and affordability, and sustainable approaches to urban planning and growth management, such as Smart Growth.

METHODOLOGY

The focus was on Canadian literature on brownfields and brownfield redevelopment for housing that directly or indirectly addressed one or more barriers. Literature sources included books, professional and scientific journals, research reports, magazine articles, newsletters, presentations at conferences and seminars, media articles, information from several industry websites and personal correspondence with experts in the brownfield redevelopment industry. Canadian literature was selectively augmented through the review of key literature from the United States and United Kingdom.

Key informant interviews were conducted with 12 experts chosen from the brownfield redevelopment industry sectors (developers, property owners, support professionals and the public sector) and various regions across Canada. In addition to the research questions addressed by the literature review, the key informant questionnaire asked respondents to identify possible improvements that could facilitate brownfield redevelopment for residential uses.

GENERAL FINDINGS

The literature review and key informant interviews found that brownfield redevelopment for housing shares the same traditional barriers as those experienced by brownfield redevelopment in general, such as liability, regulations, financing, technology, planning, stigma and others. However, with brownfield redevelopment for housing, the liability and regulatory barriers became more significant than the other obstacles because of the greater number of end land users, such as homeowners and renters exposed to potential risk. This translates into a larger amount of potential claimants, and potentially more expensive civil actions. The relationship between the barriers to brownfield redevelopment—especially for housing—must be better understood to properly evaluate the impact of current and proposed legislation, regulations, financial incentives, planning and other initiatives on these obstacles.

BARRIERS AND ISSUES

Liability

- a) Joint and several liability remains one of the key barriers to brownfield redevelopment for housing. The allocation by provinces of liability on a proportionate share basis holds promise as a tool to address joint and several liability.
- b) Strict interpretation of the “polluter pays” principle in recent landmark decisions by the courts has emerged as a recent obstacle. As well, the inability to transfer liability when land is sold has caused some large corporate landowners to mothball their properties.
- c) The introduction of a mechanism for the termination of regulatory and civil liability was suggested in the literature and by key informants, as a way to reduce civil liability as a barrier to brownfield redevelopment for housing.

Regulations

- a) In several provinces progress has been achieved with respect to reforming the regulatory practices that act as barriers to brownfield redevelopment for housing, including:
 - i) a commitment to review scientific criteria
 - ii) use of a streamlined risk assessment process
 - iii) the availability of direct regulator sign-offThese practices can potentially reduce the regulatory barriers to brownfield redevelopment for housing.
- b) The lack of better tools for risk assessment and assessing risk mitigation measures was noted as a barrier to brownfield redevelopment for housing.
- c) The lack of current best science in generic cleanup standards was noted as a barrier to brownfield redevelopment in some provinces. Suggested improvements to overcome this barrier include:
 - i) toxicological research to update current science
 - ii) a second set of residential use criteria for high densities where there is minimal opportunity for interaction between receptors and contaminants
- d) Despite a number of improvements in some provinces, the provincial regulators’ lack of acceptance of risk assessment and risk management approaches continues to represent a significant barrier to brownfield redevelopment for housing.
- e) Little progress has been made in reducing the lengthy timelines required for provincial ministries to review remediation plans and risk assessment/management reports.

- f) The literature and key informants suggested improvements for provincial regulators to help overcome the regulatory barriers to brownfield redevelopment for housing, including:
 - i) streamlining the risk assessment process to focus more on the complex sites, and increase reliance on qualified professionals for risk assessment/management;
 - ii) appropriate staffing and resources to provide expertise and timely review of risk-based approaches to site assessment and management (where required); and,
 - iii) a shift in focus from “regulation” of brownfield sites to “facilitation” of brownfield redevelopment.

Financial

- a) The reluctance of lenders to provide financing for brownfield redevelopment projects—especially residential projects—continues to be a barrier; however some progress has been made as a result of advances in financial risk management tools such as environmental insurance.
- b) Environmental insurance products have improved over the last five years. However, environmental insurance carriers still do not provide affordable coverage for cleanups of less than \$1 million—which represents most of the remediation projects in the market.
- c) Municipal financial incentives such as tax-increment financing, grants, loans and development charge credits have emerged as a catalyst to brownfield redevelopment for housing in several municipalities; in some municipalities these incentives are explicitly linked to residential development.
- d) The literature and key informants suggested improvements to help overcome the financial barriers to brownfield redevelopment for housing, including:
 - i) federal tax treatment to allow full expensing of remediation costs in the year(s) incurred;
 - ii) introduction of provincial funding programs that provide direct up-front funding for site assessment and environmental remediation, for example, Revi-Sols; and
 - iii) widespread use of financial incentives by municipalities across Canada.

Technology

- a) Alternative remediation technologies have begun to slowly supplant dig and dump as the preferred approach to remediation in certain situations.
- b) One of the emerging barriers to the increased use and acceptance of alternative remediation technologies in Canada is the lack of available information on these technologies in plain, easy-to-understand language.

Planning

- a) The following planning issues were identified as barriers to brownfield redevelopment for housing:
 - i) complexity and time required to obtain municipal planning approvals;
 - ii) municipal land use planning policies that are not supportive of brownfield redevelopment; and,
 - iii) the availability of an ample supply of greenfield land for residential development.
- b) The literature and key informants suggested improvements to help overcome the planning barriers to brownfield redevelopment for housing, including:
 - i) a clearer, more streamlined and facilitative planning approvals process;
 - ii) policies that provide incentives for brownfield redevelopment for housing, including pre-zoning, density bonusing and streamlined development permits;
 - iii) municipalities acting as facilitators and even partners in brownfield redevelopment projects for housing; and
 - iv) disincentives to greenfield residential development, such as restrictions on urban boundary expansions.

Stigma, Education and Awareness

- a) Although improvements have been made, the lack of easily accessible and understood information on brownfield redevelopment is still a barrier to brownfield redevelopment for housing. In some cases, this can lead to brownfield sites being stigmatized.

- b) The literature and key informants suggested improvements to help overcome the stigma, education and awareness barriers to brownfield redevelopment for housing, including:
 - i) publicizing successful brownfield redevelopment projects in the media; and,
 - ii) public outreach programs designed to educate participants in the brownfield redevelopment process on the real risks and benefits of brownfield redevelopment.

IMPLICATIONS OF BROWNFIELD REDEVELOPMENT FOR HOUSING SUPPLY AND SMART GROWTH

With an increased focus on sustainable development and restraining urban sprawl in Canada, brownfield redevelopment is receiving more attention as a potential tool to provide affordable housing within existing urban areas while reducing urban expansion.

Brownfield redevelopment projects can offer a broader range of housing types in an urban setting close to amenities and transportation. Brownfield redevelopment has also been shown to reduce transportation costs in comparison to greenfield development.

The remediation and redevelopment of brownfield sites for housing could allow Canadian communities to meet a number of sustainable development goals, including:

- meeting local housing needs
- preserving historic/locally significant structures
- protecting and improving human health
- encouraging economic development
- revitalizing existing neighbourhoods and stimulating the design of new and innovative neighbourhoods
- promoting stronger live-work relationships
- curbing urban sprawl

Based on the environmental, economic and social benefits of brownfield redevelopment, including brownfield redevelopment for housing, it is clear that brownfield redevelopment is the “epitome” of Smart Growth.

CONCLUSION

In 2002, Angus Ross, Chair of the NRTEE's Brownfield Task Force, commented that the obstacles to brownfield redevelopment were the same as five years ago—liability, financing and public education issues. Although some progress has been made in most provinces on regulatory barriers, and progress has been achieved on financial barriers more generally, the situation today has not improved much from eight years ago.

Liability (civil and regulatory) and financial barriers are still the key impediments to brownfield redevelopment for housing. While the development and application of new and revised regulations in several provinces has helped in some cases to reduce regulatory liability exposure and create greater certainty around the finality of cleanups, these same regulations have built new barriers. The integration of the land use development approvals process with provincial environmental regulations and legislation has also created new obstacles. One of the key conclusions of this study is that the relationship between these barriers must be better understood in order to properly evaluate the impact of legislative, financial incentive and planning initiatives on overcoming these obstacles.

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RÉAMÉNAGEMENT DE TERRAINS CONTAMINÉS À DES FINS D'HABITATION : RECHERCHE DOCUMENTAIRE ET ANALYSE

INTRODUCTION

Cette étude passe en revue, analyse et met à jour les enjeux et les obstacles qui nuisent au réaménagement de terrains contaminés à des fins d'habitation au Canada, tels qu'ils ont été soulevés par des travaux de recherche menés en 1996 et en 1997 pour le compte de la Société canadienne d'hypothèques et de logement (SCHL) et de la Table ronde nationale sur l'environnement et l'économie (TRNEE).

L'étude prend appui sur les résultats d'une recherche documentaire et sur les réponses à un questionnaire soumis à une douzaine d'experts canadiens dans le domaine des sites contaminés, lesquels avaient servi à examiner les progrès accomplis, à connaître les nouveaux enjeux et à prendre connaissance des améliorations suggérées dans l'espoir de surmonter les difficultés qui perdurent.

Les auteurs de l'étude avaient pour mandat de répondre aux questions suivantes :

- a) Au cours des huit dernières années, quels changements sont survenus relativement aux obstacles qui s'opposent habituellement au réaménagement de terrains contaminés à des fins d'habitation?
- b) Quels obstacles ont été partiellement ou complètement surmontés et de quelle manière?
- c) Quels obstacles subsistent et pourquoi?
- d) Quels nouveaux obstacles ont fait leur apparition, soit à la suite d'initiatives lancées pour abaisser certains obstacles, soit après une modification du cadre législatif, réglementaire ou financier?

De plus, la recherche documentaire visait à déterminer les conséquences plus étendues du réaménagement de terrains contaminés pour le transport, l'offre de logements et leur abordabilité, ainsi que pour les efforts axés sur la durabilité qui sont faits en matière de planification urbaine et de gestion de la croissance, tels que la croissance intelligente.

MÉTHODE

Les auteurs ont mis l'accent sur la documentation canadienne traitant des sites contaminés et du réaménagement de terrains contaminés à des fins d'habitations pour lesquels on a aplani, directement ou indirectement, un ou plusieurs obstacles. Ils ont consulté des livres, des revues professionnelles et scientifiques, des rapports de recherche, des articles de magazine, des bulletins d'information, des exposés présentés à l'occasion de conférences et de séminaires, des articles dans les médias, des renseignements provenant de divers sites Web de l'industrie et ils ont communiqué avec des experts de l'industrie du réaménagement des terrains contaminés. La documentation canadienne a été complétée de manière sélective par l'examen d'ouvrages importants publiés aux États-Unis et au Royaume-Uni.

On a questionné 12 spécialistes choisis parmi des gens de l'industrie du réaménagement des terrains contaminés (promoteurs, propriétaires fonciers, professionnels de soutien et employés du secteur public) provenant de diverses régions du Canada. En plus des questions de recherche abordées par la recherche documentaire, le questionnaire remis aux spécialistes leur demandait de suggérer des améliorations susceptibles de faciliter le réaménagement de terrains contaminés à des fins d'habitation.

CONSTATATIONS GÉNÉRALES

La recherche documentaire et les questions posées aux spécialistes ont fait ressortir que le réaménagement de terrains contaminés à des fins d'habitation se heurte aux mêmes obstacles que pour le réaménagement de terrains contaminés à d'autres fins, notamment la responsabilité, la réglementation, le financement, la technologie, la planification, la stigmatisation, etc. Cela dit, quand il est question d'habitation, les obstacles qui ont trait à la responsabilité et à la réglementation prennent le pas sur les autres obstacles en raison

du plus grand nombre d'utilisateurs finaux des terrains, à savoir les propriétaires-occupants et les locataires, qui se voient exposés à un risque. Le nombre de revendicateurs possibles s'en trouve accru et il pourrait donc s'ensuivre un plus grand nombre de poursuites au civil. La relation entre les divers obstacles au réaménagement de terrains contaminés, surtout en ce qui a trait au logement, doit être mieux comprise afin de permettre d'évaluer adéquatement les conséquences des lois et règlements, des incitatifs financiers, de la planification et d'autres initiatives, qu'elles soient en vigueur ou proposées, relativement à ces obstacles.

OBSTACLES ET ENJEUX

Responsabilité

- a) La responsabilité conjointe et individuelle demeure l'un des principaux obstacles au réaménagement de terrains contaminés à des fins d'habitation. Or, des provinces ont commencé à attribuer la responsabilité selon le principe d'une part proportionnelle, ce qui s'avère un outil prometteur pour gérer la responsabilité conjointe et individuelle.
- b) L'interprétation au pied de la lettre du principe du « pollueur payeur » dans des causes qui ont fait jurisprudence s'est avéré un obstacle récemment. En outre, puisqu'il est impossible de transférer la responsabilité lors de la vente du terrain, de grands propriétaires fonciers ont décidé de laisser leurs propriétés à l'abandon.
- c) L'introduction d'un mécanisme d'annulation de la responsabilité de l'autorité réglementaire et de la responsabilité civile est suggérée dans la documentation et par les spécialistes consultés pour réduire la portée de la responsabilité civile en tant qu'obstacle au réaménagement de terrains contaminés à des fins d'habitation.

Réglementation

- a) Dans plusieurs provinces, on a accompli des progrès dans la réforme des règlements qui nuisent au réaménagement de terrains contaminés à des fins d'habitation, tels :
 - i) un engagement à revoir les critères scientifiques;
 - ii) le recours à un processus simplifié d'évaluation des risques;
 - iii) la possibilité d'obtenir une approbation directe de l'autorité réglementaire.

Ces pratiques pourraient réduire les obstacles de nature réglementaire qui freinent le réaménagement de terrains contaminés à des fins d'habitation.

- b) Le manque de meilleurs outils pour évaluer les risques et jauger les mesures de réduction des risques est considéré comme un obstacle au réaménagement de terrains contaminés à des fins d'habitation.

- c) Dans certaines provinces, l'absence de données scientifiques fiables et actuelles sur les normes d'assainissement génériques est également considérée comme un obstacle au réaménagement de terrains contaminés. On propose les améliorations suivantes pour surmonter cet obstacle :

- i) études toxicologiques pour actualiser les données scientifiques;
- ii) une deuxième série de critères d'usage résidentiel pour les densités élevées lorsque les possibilités d'interactions entre les récepteurs et les contaminants sont minimales.

- d) Malgré les améliorations qui ont été apportées dans certaines provinces, le fait que les autorités réglementaires provinciales acceptent difficilement les méthodes d'évaluation et de gestion des risques continue de représenter un obstacle de taille au réaménagement de terrains contaminés à des fins d'habitation.

- e) Peu de progrès ont été accomplis pour réduire le temps qu'exigent les ministères provinciaux pour revoir les plans d'assainissement ainsi que les rapports d'évaluation et de gestion des risques.

- f) Les documents et les spécialistes consultés suggèrent des améliorations aux autorités réglementaires provinciales pour contribuer à vaincre les obstacles de nature réglementaire qui s'opposent au réaménagement de terrains contaminés à des fins d'habitation, notamment :

- i) simplifier le processus d'évaluation des risques afin de mettre encore plus l'accent sur les sites complexes et se fier davantage aux professionnels qualifiés lorsqu'il est question d'évaluer et de gérer les risques;
- ii) affecter du personnel et des ressources pouvant fournir une expertise et des examens opportuns des méthodes d'évaluation et de gestion des sites fondées sur les risques (là où cela s'impose);
- iii) changer les mentalités afin de renoncer à « réglementer » les sites contaminés pour plutôt chercher à « faciliter » leur réaménagement.

Obstacles financiers

- a) La réticence des prêteurs à financer le réaménagement de terrains contaminés, surtout lorsqu'il s'agit de projets à caractère résidentiel, continue de constituer un obstacle; néanmoins, certains progrès ont été réalisés à la suite des avancées qui ont permis l'apparition d'outils de gestion des risques financiers comme l'assurance couvrant les risques de nature environnementale.
- b) Les produits d'assurance couvrant les risques de nature environnementale se sont améliorés au cours des cinq dernières années. Cependant, les sociétés d'assurance qui couvrent ce genre de risque n'offrent toujours pas de primes abordables pour les travaux d'assainissement de moins de 1 million de dollars, ce qui constitue le gros des projets de réaménagement sur le marché.
- c) Les mesures d'encouragement offertes par les municipalités,

telles que le financement par de nouvelles taxes foncières, les subventions, les prêts et les crédits de droits d'aménagement, ont servi de catalyseur pour des projets de réaménagement de terrains contaminés à des fins d'habitation dans plusieurs municipalités; dans certains cas, ces mesures sont explicitement liées aux aménagements résidentiels.

d) Les documents et les spécialistes consultés suggèrent certaines améliorations susceptibles de contribuer à aplanir les obstacles financiers qui freinent le réaménagement de terrains contaminés à des fins d'habitation, soit :

- i) un traitement fiscal par le fédéral qui permettrait l'imputation du total des coûts des travaux d'assainissement durant l'année ou les années où ils ont été effectués;
- ii) la création par les provinces de programmes de financement initial pour l'évaluation des sites et l'assainissement de l'environnement, à l'instar du programme Revi-Sols;
- iii) l'utilisation généralisée d'incitatifs financiers par les municipalités d'un bout à l'autre du Canada.

Technologie

- a) De nouvelles technologies d'assainissement commencent lentement à remplacer l'excavation et l'enfouissement comme méthode de prédilection dans certaines situations.
- b) L'un des nouveaux facteurs qui nuisent à l'emploi et à l'acceptation accrue des technologies d'assainissement non traditionnelles au Canada est l'absence d'information claire et facile à comprendre sur ces technologies.

Planification

- a) Les problèmes suivants propres aux questions d'urbanisme ont été signalés comme étant des obstacles au réaménagement de terrains contaminés à des fins d'habitation :
 - i) complexité et longueur des processus d'approbation municipaux;
 - ii) directives municipales régissant l'aménagement du territoire qui ne soutiennent pas suffisamment le réaménagement des terrains contaminés;
 - iii) disponibilité d'un grand nombre de terrains propres qui se prêtent à la construction résidentielle.
- b) Les documents et les spécialistes consultés suggèrent les améliorations suivantes pour aider à surmonter les obstacles au réaménagement de terrains contaminés à des fins d'habitation dans le domaine de la planification urbaine :
 - i) un processus d'approbation plus clair et plus direct destiné à faciliter les choses;
 - ii) des lignes de conduite qui prévoient des incitatifs pour le réaménagement de terrains contaminés à des fins d'habitation, tels que le zonage préalable, les primes à la densité et la

délivrance accélérée des permis d'aménagement;

- iii) des municipalités qui agissent comme facilitatrices et même comme partenaires dans le réaménagement de terrains contaminés à des fins d'habitation;
- iv) des mesures dissuasives pour réduire l'attrait qu'exercent les terrains propres à des fins d'aménagement résidentiel, comme l'imposition de restrictions sur l'expansion des limites urbaines.

Stigmatisation, information et sensibilisation

- a) Malgré les améliorations obtenues, l'absence d'information facile d'accès et simple à comprendre sur le réaménagement de terrains contaminés demeure un obstacle au réaménagement de terrains contaminés à des fins d'habitation. Dans certains cas, cette lacune peut même entraîner la stigmatisation des terrains contaminés.
- b) La documentation et les spécialistes interrogés proposent les améliorations suivantes pour tenter de surmonter les problèmes de stigmatisation, d'information et de sensibilisation relatifs au réaménagement de terrains contaminés à des fins d'habitation :
 - i) publicisation dans les médias des terrains contaminés qui ont été réaménagés avec succès;
 - ii) programmes de vulgarisation destinés à informer les personnes qui prennent part à un processus de réaménagement de terrains contaminés sur les risques réels et sur les avantages de ce genre d'opération.

CONSÉQUENCES DU RÉAMÉNAGEMENT DE TERRAINS CONTAMINÉS POUR L'OFFRE DE LOGEMENTS ET LA CROISSANCE INTELLIGENTE

Dans le contexte des efforts accrus qui sont déployés au Canada pour respecter les principes du développement durable et pour restreindre l'étalement urbain, le réaménagement de terrains contaminés est un outil potentiel qui suscite un intérêt certain pour créer des logements abordables au sein de l'espace urbain existant tout en freinant l'extension des villes.

Les terrains contaminés qui sont réaménagés peuvent élargir l'éventail de choix de logement en milieu urbain, à proximité des commodités et des services de transport. Il a d'ailleurs été prouvé que le fait de réaménager des terrains contaminés réduit les coûts de transport comparativement aux aménagements en terrain propre.

L'assainissement et le réaménagement de terrains contaminés à des fins d'habitation pourraient permettre à des collectivités canadiennes de réaliser un certain nombre d'objectifs qu'elles se sont données sur le plan du développement durable, tels que :

- répondre aux besoins locaux en matière de logement;
- préserver des bâtiments revêtant un cachet patrimonial ou une certaine importance pour la région;
- protéger et améliorer la santé des gens;
- encourager le développement économique;
- revitaliser des quartiers existants et stimuler la conception de nouveaux quartiers innovateurs;
- promouvoir des liens plus forts entre les lieux de travail et de vie;
- freiner l'étalement urbain.

En tenant compte des avantages environnementaux, économiques et sociaux du réaménagement de terrains contaminés, notamment ceux liés à des projets d'habitation, il est clair que le réaménagement de terrains contaminés est la « quintessence » de la croissance intelligente.

CONCLUSION

En 2002, Angus Ross, président du groupe de travail de la TRNEE sur les sites urbains contaminés, affirmait que les obstacles qui nuisent au réaménagement de terrains contaminés étaient les mêmes qu'il y a cinq ans, c'est-à-dire la responsabilité, le financement et la sensibilisation du public. Bien que certains progrès aient été accomplis dans la plupart des provinces quant aux obstacles de nature réglementaire, et que des améliorations aient aussi été constatées du côté des obstacles d'ordre financier dans l'ensemble, la situation ne s'est pas beaucoup améliorée par rapport à ce qu'elle était il y a huit ans.

Les obstacles liés à la responsabilité (civile et réglementaire) et les obstacles financiers sont encore d'importants freins au réaménagement de terrains contaminés à des fins d'habitation. Bien que la création et la mise en œuvre de nouveaux règlements ainsi que la révision d'anciens règlements dans certaines provinces aient contribué, dans certains cas, à réduire l'exposition aux risques inhérents à la responsabilité de l'autorité réglementaire et à créer plus de certitude quant à la finalité des assainissements, ces mêmes règlements ont entraîné de nouveaux obstacles. L'intégration du processus d'approbation visant les propositions d'aménagement du territoire aux lois et aux règlements provinciaux en matière d'environnement a également créé de nouveaux obstacles. L'une des conclusions clés de cette étude est que le lien entre ces obstacles doit être mieux compris pour être en mesure d'évaluer correctement les répercussions des initiatives législatives, financières et d'urbanisme sur les moyens mis en œuvre pour déjouer ces obstacles.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this research report is to provide an overview, analysis and update of the issues and barriers related to brownfield redevelopment for housing. The report focuses brownfield redevelopment for housing and how barriers can be overcome to create housing opportunities. The report utilizes the results of a literature review and a questionnaire administered to a dozen brownfield experts across Canada to examine progress that has been made, emerging issues, and suggested improvements to overcome challenges that still remain. This research is intended to update and analyze the current issues and barriers specifically related to brownfield redevelopment for housing in Canada previously examined in research conducted for CMHC and NRTEE in 1996 and 1997.

In addition to the substantial socioeconomic benefits of brownfield redevelopment such as the creation of jobs, income, local, state/provincial and federal tax revenues (U.S. Conference of Mayors, 2000; Regional Analytics, 2002), there are other reasons to promote the construction of housing on brownfield sites that have been remediated. First, brownfield sites that are not viable for commercial or industrial use because they are too small, oddly shaped, or located in or adjacent to residential neighbourhoods make good candidates for residential use. Second, in some municipalities, market demand for housing combined with a lack of readily available and serviced land for new housing can drive the market for housing on former brownfield sites (Greenberg, 2002). Finally, the redevelopment of brownfield sites for housing can create numerous positive externalities including improvement of the environment, neighbourhood and community revitalization, the provision of affordable housing, and a reduction in urban sprawl.

The role for brownfields in providing housing and thereby achieving a more sustainable form of urban growth and development has not gone unnoticed (Delcan et. al, 1997a, 1997b; NRTEE, 1998; ICMA, 1997; ICMA, 2003; CMHC 2003a; Adams and Watkins, 2002; McCarthy, 2002). While current efforts to promote brownfields redevelopment for housing are vital, and indeed should be accelerated, these efforts can be placed in the context of community-wide sustainable development and smart growth plans. ICMA (2003a) notes that the integration of residential reuse into brownfield redevelopment projects can enable a local government to achieve multiple environmental, social and economic objectives such as the:

- a) Provision of affordable housing and more housing choices;
- b) Preservation and improvement of locally significant architecture through adaptive reuse;
- c) Revitalization of decaying communities and inner city areas; and
- d) Reduction of urban sprawl and its associated negative impacts.

1.2 Canadian Brownfields

The National Roundtable on Environment and Economy (NRTEE) states that there may be as many as 30,000 brownfield sites in Canada (NRTEE, 2003). The definition adopted by the NRTEE for brownfields is “abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination and

where there is an active potential for redevelopment” (NRTEE, 2003). Brownfields may be publicly and privately owned properties, “orphaned” (abandoned) properties, or sites held under trusteeship.

Credible estimates of the number of brownfield sites, total acreage and percentage of urban area that is in brownfields are very difficult to find. This is the case both in Canada and the U.S. Simons suggests that part of the problem may be explained by a reluctance to accumulate lists of brownfields due to the fear of liability and stigmatizing contaminated properties, lack of a clear definition of brownfields, and a lack of data on sites (Simons, 1998a).

In 1997, Delcan et. al noted that the rate of discovery of brownfield sites across Canada appears to be exceeding the rate of remediation (Delcan et al., 1997a). Despite some advances in liability relief, regulatory environment and provision of financial incentives, the experience in the U.S. suggests that this pattern has not changed in Canada, nor will it change for at least the next ten to fifteen years. Based on this and the industrial history of many urban areas in Canada, and existing municipal lists showing hundreds and even thousands of potentially contaminated sites in individual municipalities across Canada, the NRTEE estimate of 30,000 brownfields in Canada could be conservative. There is no estimate of the number of brownfields sites across Canada that might be suitable for housing. Yet, with many of the estimated 30,000 brownfield sites across the country located in urban areas, close to existing residential uses and services such as public transit, there is clearly an opportunity to redevelop a number of these sites for housing.

1.3 History

The redevelopment of brownfields has been gaining importance in Canada over the past decade. Other countries such as the U.S. and U.K have much more experience with brownfields than Canada and have developed strong policies to promote brownfield redevelopment that have been incorporated into legislative and regulatory frameworks at various levels of government.

Until about ten years ago, legislative and regulatory frameworks in Canada were concerned only with environmental protection and regulatory enforcement. This began to change during the mid-1990’s with seminal research into the environmental, legal, and financial impediments to brownfield redevelopment by government agencies. In 1993, the Canadian Council of Ministers of the Environment (CCME) published its Contaminated Site Liability Report: Recommended Principles for A Consistent Approach Across Canada. These thirteen principles (see Appendix A) have helped to shape legislative and regulatory frameworks in several provinces, especially in British Columbia, Manitoba, Alberta and Nova Scotia (Delcan et. al., 1997a).

Between 1996 and 1998, CMHC and NRTEE commissioned research on issues associated with brownfield redevelopment, including brownfield redevelopment for housing. Several reports were produced including:

- a) Removing Barriers to the Redevelopment of Contaminated Sites for Housing (Delcan et. al., 1997a);
- b) The Financial Services Sector and Brownfield Redevelopment (M.M. Dillon et. al, 1996);

- c) Urban Brownfields: Case Studies for Sustainable Economic Development – The Canadian Example (Delcan et. al., 1997b); and,
- d) State of the Debate: Greening Canada's Brownfield Sites (NRTEE, 1998).

In 2000, De Sousa noted that other than these pivotal background studies, the literature and research examining the redevelopment of brownfields in Canada is limited, particularly in the area of applied matters (DeSousa, 2000). This situation has not appreciably changed in the last four years. The lack of available literature on brownfield redevelopment in Canada is even more acute with respect to brownfield redevelopment for housing. With a few exceptions (Delcan et. al, 1997a; Moyes, 2004) the Canadian literature does not specifically address issues specific to brownfield redevelopment for housing. Rather, the Canadian literature largely discusses the barriers to brownfield redevelopment in general, with housing as one type of brownfield redevelopment.

The paucity of Canadian literature on brownfields is certainly not the case in the U.S. and Europe where there has been an extensive amount of applied work in the areas of identifying and evaluating real world solutions to the barriers to brownfield redevelopment (DeSousa, 2001). This is likely because the development of public policy measures designed to overcome the barriers to brownfield redevelopment is more advanced in the U.S. and Europe than in Canada (DeSuosa, 2001). However, DeSuosa notes that policy efforts to overcome the barriers to brownfield redevelopment, both within Canada and internationally, are converging in style and content as governments are becoming more aware of the types of costs and risks they must share in order to solve the problem effectively (DeSuosa, 2001).

In 2003, the NRTEE released *Cleaning up the Past: Building the Future: A National Brownfield Redevelopment Strategy for Canada*. (NRTEE, 2003) Preparation of this report was guided by an expert panel and involved an extensive consultation process. The Strategy proposes a package of recommendations designed to eliminate key barriers to brownfield redevelopment and implementation of the Strategy requires participation of all three levels of government and the private sector.

1.4 Approach

As there is virtually no Canadian literature specifically on the barriers to brownfield redevelopment for housing, this literature review focuses on the barriers to the redevelopment in general. Simply put, the research found that the redevelopment of brownfields for residential uses faces the same liability, regulatory, financial, and planning barriers as the redevelopment of brownfields in general. (U.S. Conference of Mayors, 2000; Abdel-Aziz and Elliott, 2001; Coletti, 2002; ICF Consulting and E.P. Systems Group, 1999; Colangelo et. al., 2002). However, some of these barriers were (NRTEE, 1997a) and continue to be (Moyes, 2004) more significant for the redevelopment of brownfields to housing;

For ease of analysis and presentation, the literature review discusses the issues around brownfield redevelopment for housing individually, but it is recognized that the issues and associated barriers are inter- related. This literature review seeks to initiate a better understanding of the

issues of brownfield redevelopment for housing, which barriers are being overcome and how, and what new barriers or opportunities are emerging.

A small survey of brownfield experts (key informants) working in various sectors of the brownfield redevelopment industry was also conducted as part of this research. The responses also focus on the barriers and improvements that would help facilitate the redevelopment of brownfields for housing.

1.5 Methodology

The literature review is structured around the issues and barriers to brownfield redevelopment for residential uses as identified in the series of research studies undertaken for CMHC in the mid-1990s, and in particular the report “Removing Barriers to the Redevelopment of Contaminated Sites for Housing” (Delcan et. al., 1997a). The literature review and analysis aims to address the following research questions:

- a) what changes have occurred in the traditional barriers to brownfield redevelopment over the last eight years;
- b) which barriers have been partially or completely addressed, and how;
- c) which barriers still exist; and why, and finally,
- d) what new barriers have emerged, either as a result of initiatives to address existing barriers, or changes to legislative, regulatory or financial frameworks.

Furthermore, the literature review attempts to identify the larger implications of brownfield redevelopment on transportation, housing supply and affordability, and Smart Growth, or sustainable development, urban planning and growth management approaches.

The methodology employed sought out Canadian literature on brownfields and brownfield redevelopment for housing that directly or indirectly addressed one or more of the barriers to brownfield redevelopment. The relevant sources of Canadian literature were sourced from books, professional and scientific journals, research reports, magazine articles, newsletters, presentations at conferences and seminars, media articles, information from several industry web sites and personal correspondence with experts in the brownfield redevelopment industry. Due to the general lack of relevant Canadian literature, the Canadian sources of literature were selectively augmented through the review of key U.S. and U.K. sources of literature.

The key informant interviews were conducted with twelve experts chosen from the various sectors of the brownfield redevelopment industry (developers, property owners, support professionals, and the public sector) and the various regions across Canada. The questionnaire was designed to address the same research questions as the literature review. In addition, respondents were asked to identify improvements that could be made to facilitate brownfield redevelopment for residential uses.

1.6 Report Content

Section 2.0 of the report analyzes the results of the literature review in terms of the various issues and barriers to the redevelopment of brownfields, including a discussion of how some barriers have been partially or completely addressed, why some barriers still exist, and finally, some new barriers that have emerged in the past few years. Section 2.0 concludes with a discussion of the relative significance of the barriers to brownfield redevelopment. Section 3.0 briefly examines the larger implications of brownfield redevelopment for transportation, housing supply, affordability and choice, and urban planning approaches. Section 4.0 presents a summary of the results of the key informant interviews, with the full report included as Appendix B. The report concludes in Section 5.0 with a summary of major findings and issues. Section 6.0 contains a bibliography that cites the literature sources referenced in the literature review and other literature sources consulted as background information.

2.0 BARRIERS TO BROWNFIELD REDEVELOPMENT FOR HOUSING

2.1 Introduction

This literature review and analysis uses the traditional barriers and issues to brownfield redevelopment for housing as identified in the series of research studies undertaken on behalf of the CMHC and the NRTEE in the mid-1990s as a baseline, and provides an update to these studies. Therefore, Section 2.0 divides the barriers to brownfield redevelopment for housing into essentially the same categories as the earlier study (Delcan, et. al, 1997a), namely:

- a) Liability;
- b) Regulations;
- c) Financial;
- d) Technical;
- e) Planning;
- f) Stigma, Education and Awareness; and,
- g) Other.

2.2 Liability

2.2.1 Types of Liability

There are two types of liability that impact brownfield redevelopment (Chalifour and Abdel-Aziz, 2004). Civil liability is a legal obligation that arises under the law of private rights and permits any individual to seek redress in the courts for alleged harm done by others (NRTEE, 2003). For the developer of a brownfield site, it is the potential to be sued in court by a party who has been impacted by remaining on-site or off-site contamination. For example, the developer of a brownfield site that has been remediated and converted to housing could be sued by the owners of houses where the land is discovered to still be contaminated. Regulatory liability is a legal obligation established by statute that creates a regulatory offence (NRTEE, 2003). For the brownfield developer it is the potential to be sued or ordered to do additional environmental remediation by the regulator, i.e., the province. This could be as a result of changes in cleanup standards, change in use of the property, or the discovery of historical contamination that was not adequately addressed at the time of site assessment/remediation.

Much of our federal and provincial environmental laws in Canada are based on the “polluter pays” principle. The “polluter pays” principle emphasizes the responsibility of the polluter to pay for the remediation of contamination of soil and groundwater that was caused or permitted by the polluter (Chalifour and Abdel-Aziz, 2004).

Joint and several liability (civil and regulatory) is a principle that applies to any and all parties (defendants) against whom a judgment in regards of liability for environmental contamination has been entered. These parties may be held individually and collectively liable for paying clean-up costs and any other awards (Chalifour and Abdel-Aziz, 2004). This means that individual defendants, despite being responsible for a very small portion of the damages, may be required to pay up to 100% of the clean-up costs and damages (Hara Associates, 2003). Joint and several

liability is of particular concern to large corporations with deep pockets because it represents a risk of liability if some or all of the other parties to the property transaction, i.e., defendants, may have become insolvent (Chalifour and Abdel-Aziz, 2004).

In the mid 1990's, the concept of joint and several liability was cited as the key liability barrier to the redevelopment of brownfield sites (Delcan et. al, 1997a). The existence of joint and several liability in virtually all provincial environmental legislation at that time was cited as having a significant negative impact on the redevelopment of brownfield sites (Delcan et. al, 1997a). In a few provinces, such as British Columbia, Alberta and Nova Scotia, the situation had begun to change by the mid to late 1990's with the allocation of liability based on the fairness principle being codified in the legislation (Dahme, 2002). Still, joint and several liability remains in the legislation of all Canadian provinces as a fall back position if the allocation process fails (Abdel-Aziz, 2004b).

2.2.2 Liability Avoidance

The CMHC study of barriers to the redevelopment of contaminated sites for housing (Delcan et. al, 1997a) cited the desire to reduce liability to pay for site cleanup and the effects of contamination exposure by all participants in the development process as the most prominent barrier to brownfield redevelopment for housing. In other words, much of the difficulty we see today in terms of redeveloping brownfield sites is related to the parties to brownfield redevelopment (owners, lenders, developers, regulators and municipalities) all trying to avoid liability in the future. The desire of these parties to avoid liability has had a strong influence on both legislation and regulatory policies and practices with respect to the redevelopment of brownfield sites (Delcan et. al, 1997a).

It was just over one year ago that the Supreme Court of Canada rendered a very important decision with regard to brownfield redevelopment (*Imperial Oil v. Quebec*). Imperial Oil sold an old fuel oil depot in Levis, QC. "as is" in 1979. The purchaser demolished the buildings and resold the property to a developer (Fishlock, 2003). The developer cleaned up the land to the satisfaction of the Quebec Ministry of the Environment and Wildlife, obtained a provincial certificate of authorization, approval for a plan of subdivision and municipal building permits. The developer then built the subdivision. The development was completed and throughout, no one contacted Imperial Oil (Fishlock, 2003).

In 1994, homeowners in the subdivision found hydrocarbons in the soils. Testing showed that the soils did not meet the standards of the day (Fishlock, 2003). The homeowners sued the developer, the City of Levis and the Province of Quebec for negligence. Despite approving the remediation of the site, the Province of Quebec then ordered Imperial Oil to assess and clean the site up to current standards. Imperial Oil appealed the Minister's order on the grounds that the Quebec Environment Minister was biased in issuing the order, and had done so only to resolve the province's liability and negligence in this case. The Supreme Court upheld the decisions of two lower courts in Quebec and dismissed the appeal of Imperial Oil (Fishlock, 2003). The Court found that the Minister had followed proper statutory procedural requirements, and in issuing the order against Imperial Oil, the Minister was simply following the "polluter pays" principle (Makin, 2003).

2.2.3 Recent Initiatives

In the U.S., regulatory liability is often limited under state laws pursuant to the state voluntary cleanup program (VCP) in the form of certificates of completion, no further action letters and covenants not to sue. (Abdel-Aziz and Elliott, 2001). Legislation was recently passed in the U.S. to provide for concurrent protection from federal regulatory liability to properties provided regulatory liability under state VCP programs. The overlap of federal jurisdiction is much less of an issue in Canada where the provincial governments are assigned primary legislative authority over the environment (DeSousa, 2001). Some U.S. states such as Indiana have even barred third party (civil) liability claims for conditions that exist when the remedial work plan is approved ((Abdel-Aziz and Elliott, 2001). This is a very progressive step and has been suggested by Canadian legal experts as the next logical step to reducing civil liability as a barrier to brownfield redevelopment (Abdel-Aziz, 2001; NRTEE, 2003).

The Canadian legislative landscape has been undergoing a wave of significant amendments in recent years (Abdel-Aziz, 2004a). In 2001, Ontario adopted Bill 56, the Brownfields Statute Law Amendment Act and the regulations thereunder have been passed in phases with the most recent phase being passed on October 1, 2004. Quebec recently adopted sweeping amendments to its contaminated sites regime through the introduction of Bill 72. Similarly, British Columbia recently adopted Bill 57, the Environmental Management Act, and has begun the process of rethinking its liability regime in light of the recommendations of the NRTEE's National Brownfields Redevelopment Strategy (Abdel-Aziz, 2004a). The positive and negative regulatory impacts of these recent legislative changes are discussed in Section 2.3. Further provincial legislative amendments are likely in the next few years.

2.2.4 Emerging Barriers

Although it may be a barrier that has always existed, with recent court decisions, the reluctance of owners to sell their properties for brownfield redevelopment is emerging as a serious barrier to brownfield redevelopment (Abdel-Aziz and Elliott, 2001). This barrier is becoming particularly acute in major urban areas where many of the positive cash value brownfield sites have now been redeveloped and corporate owners own many of the remaining well located sites. These large corporate owners are reluctant to accept the risk of civil liability to subsequent third party owners and occupants of the site in addition to the regulatory liability that could arise from changing standards or change in use of the site (Abdel-Aziz and Elliott, 2001). As noted above, the provision of regulatory sign-off does not begin to address the civil liability issue.

Even in cases where the owner is willing to transfer the liability risk to the developer, there is no provision in current federal or provincial legislation to permit liability transfers that would be binding on regulators and third parties (Chalifour, 2004). This holds true even where the owner transfers title to a site that has already been remediated. Therefore, the ongoing exposure to third party civil liability continues to be a barrier to brownfield redevelopment. Some advances such as environmental insurance can help deal with this barrier, but it persists as a significant barrier to brownfield redevelopment.

2.2.5 Analysis

The existence of joint and several liability in virtually all provincial environmental legislation has been cited as having a significant negative impact on the redevelopment of brownfield sites (Delcan et. al, 1997a). Naturally, there is a strong desire on the part of all participants to brownfield redevelopment to avoid liability.

The liability barrier is logically even more pronounced in the case of the redevelopment of brownfield sites for housing. There are usually more potential risk receptors (people) on a residential site for longer periods of time than on non-residential sites. These residents may therefore be exposed to contaminants through normal everyday activities such as consuming produce grown in backyard gardens, or spending time in their basements. There may be children present at residential sites who may be exposed to contaminants for extended periods of time through their normal activities such as playing on lawns. This is not usually the case on non-residential sites as children are not usually present, or not present for extended periods of time on non-residential sites (except for schools and day care facilities). The involvement of mortgage insurers on residential properties adds another potential party to the liability chain. Finally, the costs of mitigating liability may be much higher for residential than non-residential sites, particularly if a large number of residential properties or units must ultimately be remediated or purchased, or if a number of residential property owners must be compensated. Clearly, the liability barrier to brownfield redevelopment is exacerbated for brownfield redevelopment for residential uses.

Several legal experts have been critical of the Supreme Court decision in the case of *Imperial Oil v. Quebec* (Ferrara and Mesquita, 2003; Saxe, 2002). These legal experts are particularly critical of the ability of the polluter pays principle to reach into the past and override an “as is” sale, a government approved cleanup, municipal approvals, and the passage of nearly twenty years. These legal experts also agree that this decision and the court’s broad statements could have a “chilling effect”, stopping corporate owners from making their brownfield properties available for sale and redevelopment, not only in Quebec, but possibly across Canada. Although it is too early to tell if this single decision has had an effect on brownfield redevelopment, it is certain that large corporate owners are now even more aware of, and sensitive to, their potential liabilities, even on historical sites. Such a decision can logically be expected to have a negative impact on the future availability of corporately owned brownfield sites for redevelopment, and especially sites for residential development, because of the additional liability concerns.

There is widespread support for the notion that the liability regime should be reformed to facilitate the remediation and redevelopment of brownfields (Chalifour, 2004). In this regard, the NRTEE National Brownfield Strategy recommends the following actions:

- a) Allow binding contractual allocation of civil and regulatory liability;
- b) Provide for termination of regulatory liability;
- c) Provide for termination of civil liability after a limitation period;
- d) Create an insurance fund for post-liability termination claims (NRTEE, 2003)

As noted by Chalifour, real progress on these recommendations will go a long way toward reducing the liability barrier and allowing more brownfield sites to be redeveloped (Chalifour, 2004). Presumably, a number of these brownfield sites would be redeveloped for residential uses, and therefore the same conclusion can be reached for the redevelopment of brownfields for housing.

2.3 Regulations

2.3.1 Traditional Barriers

Regulations and regulatory practices are essentially how the provinces translate their environmental legislation into practice. Regulatory risk tends to parallel civil risk because both follow the same principle of joint and several liability (Hara Associates, 2003; Chalifour, 2004). The impact of regulatory risk on potential future costs to developers is arguably (in theory) greater than civil risk, although civil risk often receives more attention. In the case of civil risk, the costs of pursuing a claim and the burden of proof that contaminants have caused damage and lost use and enjoyment of property act as deterrents to such claims (Hara Associates, 2003). Governments pursuing regulatory claims are not generally deterred by the cost of such actions, and need only prove that the contamination exists rather than proving causation or contribution (Hara Associates, 2003). Therefore, the power of provincial governments in Canada to issue regulatory orders is encoded in legislation, is fairly broad, and can act as a barrier to brownfield redevelopment.

Several regulatory practices in Canadian provinces, including the policies and guidelines that govern the development of contaminated sites, were cited as significant barriers to brownfield redevelopment for housing in the mid-1990's (Delcan et. al, 1997a). These barriers included:

- a) Exceedingly onerous, unrealistic and unscientific remediation criteria;
- b) Lack of acceptance of risk assessment (RA)/risk management (RM) approaches;
- c) The lack of readily available sign-offs or certificates of completion from provincial regulators where sites have been remediated;
- d) Ability of regulators to reopen approved cleanups at some future point in time as a result of new toxicity information or a change in land use;
- e) Lack of consistent qualifications for qualified professionals carrying out site assessment, risk assessment/management, and planning and supervising site remediation;
- f) The inability to relocate soil that may not meet residential criteria at one site to another site being used for industrial purposes;
- g) The lack of licensed hazardous waste disposal facilities;
- h) Inefficient and overlapping approvals processes, for example between provincial regulators and municipalities;
- i) Inconsistent and uncertain approvals processes between provinces;
- j) The lack of area wide designations and approaches to deal with multiple site contamination on a regional basis;
- k) Slow regulatory reviews, especially of risk management approaches.

The Delcan et. al report (1997a) proposed a number of best practices designed to remove or reduce these regulatory barriers, including:

- a) Consideration of exposure pathways for the development of numerical remediation criteria;
- b) Restricted use of re-openers (future clause);
- c) Acceptance of the risk assessment/risk management approach;
- d) Regulatory sign-off;
- e) Certification and registration of qualified professionals;
- f) Acceptance of soil relocation;
- g) Approval process consistency;
- h) Area wide designation;
- i) User pay for review services to speed up regulatory reviews.

Of all the traditional regulatory barriers listed above, perhaps the most significant issue with respect to the future liability is the lack of regulatory sign-off. Up to 1996, the provinces of Ontario, British Columbia and Nova Scotia all issued regulatory sign-offs or certificates of compliance. In Ontario, with the passing of the Guideline for Use at Contaminated Sites in 1996, the province no longer provides regulatory review and sign-off. The responsibility for environmental plan review essentially rests with municipalities.

Lenders and developers require the certainty provided by regulators signing-off on remediation of a site. Because civil liability is often tied to and arises from regulatory liability, regulatory sign-off is particularly important on residential sites because residential sites must be cleaned to higher standards, and as discussed earlier, there are a number of increased risk factors associated with residential uses that are not generally present with non-residential uses.

Where no sign-off on the cleanup is provided by the regulator, the owners, lenders, mortgage insurers and buyers may be concerned with future regulatory and even civil liability. Regulatory sign-off provides greater confidence to all parties and arguably provides a higher level of regulatory and even civil liability protection because civil liability can often be tied to and flow from regulatory liability. This is why the issuance of certificates of completion, no further action (NFA) letters and covenants not to sue are basic tenets of Voluntary Cleanup Programs in many U.S. states (Gracer, 2004; Abdel-Aziz and Elliott, 2001) and most Canadian provinces, subject to reopeners.

A 1997 report examined the results of a round robin screening level risk assessment prepared by nine different consulting firms for a hypothetical contaminated industrial site being remediated and redeveloped for residential use (Golder Associates Ltd., 1997). The results revealed considerable variability in the way the participating firms performed human health risk assessments, and significant variation in risk estimate values for various chemical exposure pathways, with risk estimates ranging over several orders of magnitude (Golder Associates Ltd., 1997). The 1997 study also surveyed provincial regulators and found that while governmental agencies indicate they support the use of human health risk assessments in the management of contaminated sites, they currently do not provide formal regulation for its application.

Slow regulatory review of remediation plans and risk assessment/management plans can tie up capital and significantly increase project costs. Turnaround times for risk assessments in Ontario and British Columbia can range from several months to more than a year (Moyes, 2004). This uncertainty in timing can reduce lender confidence and reduce developer interest in brownfield sites.

The remainder of Section 2.3 discusses the progress on regulatory reforms that have been made in Canada over the last eight years in the provinces with the greatest amount of regulatory change over this period, i.e., British Columbia, Ontario and the Atlantic provinces. These provinces were selected to compare and contrast approaches to reducing regulatory liability. This is not intended to be a complete review of the regulatory regime in these provinces nor across Canada. Other sources more fully examine the details of provincial brownfield legislation (Abdel-Aziz, 2004a). Section 2.3 concludes with a discussion and analysis of emerging regulatory barriers to brownfield redevelopment for housing in Canada.

2.3.2 British Columbia

In 1996, British Columbia (BC) was viewed as the most progressive province in Canada with respect to environmental regulation (Delcan et. al., 1997b; Abdel-Aziz, 2004b). In part, this is attributed to the lack of suitable low cost disposal options for contaminated soil, and in part due to the development of Pacific Place, the former site of Expo'86. This development forced the province to address a risk-based approach to remediation due to the high costs of meeting generic criteria on this site.

In 1997, BC introduced a very prescriptive “command and control” system to investigate, identify and ensure remediation of contaminated sites (Moyes, 2004). This system caused rezoning, subdivision, purchase and sale, financing, and demolition of former commercial or industrial properties to grind to a halt until suspected contaminants were identified, dealt with, and a Certificate of Compliance was issued for the property (Moyes, 2004).

BC passed a new Environmental Management Act in October of 2003, and in April 2004, BC gave Royal Assent to an Amendment Act governing codes of practice and enabling a provincial Land Remediation Fund (Moyes, 2004). Over the next few years, B.C. and its Expert Advisory Committee intend to review their generic criteria levels to reflect current science. They may also be considering separate criteria for a second residential end use where there are higher densities and minimal opportunity for interaction between receptors and contaminants.

BC's new legislation introduces a Screening Risk Assessment system. This system is based on point scores and will identify sites as no risk, low, moderate or high risk based on a number of factors. The document would be used to guide screening for sites which may have contamination above regulated levels, but which can be deemed to pose no unacceptable risk. High risk sites and those undergoing complex risk-based corrective action will continue to be dealt with by the provincial government. Where the screening assessment shows no unacceptable risk, the qualified professional can register a Record of Site Condition (RSC) in the provincial site registry and the province will issue a certificate of compliance and offer protection against future regulatory liability, including liability based on changes in standards (Moyes, 2004).

Planning approvals such as rezoning, subdivisions, and variances are tied to a new system of site profiles (Records of Site Condition or RSC's). A person must submit a site profile that is registered in the provincial site registry when seeking these planning approvals prior to the removal of soil or demolition, in certain circumstances (Abdel-Aziz, 2004b). The site profile must be updated until the site is no longer contaminated, not at risk, or remediated (Moyes, 2004).

2.3.3 Ontario

In Ontario, the Brownfields Statute Law Amendment Act (Bill 56) passed in 2001, and associated regulations passed in 2002 and 2004, provide for the following changes (Bowman et. al., 2002; Farber, 2002; Saxe, 2004; Cooper, 2004):

- a) Regulatory liability relief from Ministry of Environment (MOE) orders is offered to property owners who voluntarily file a Record of Site Condition (RSC) in a publicly accessible Environmental Site Registry (ESR). This protection is extended to:
 - i) Future owners;
 - ii) Current and future occupants and tenants;
 - iii) Prior owners who meet certain requirements.
- b) A RSC must be signed by a "qualified person" with the definition of qualified person contained in the recently issued RSC regulation (Ontario Regulation 153/04). Risk assessments require a higher level of qualification than Phase I or II Environmental Site Assessments (ESA's).
- c) Protection from regulatory liability for lenders, receivers, trustees in bankruptcy and municipalities;
- d) Certain changes in use, e.g., industrial to residential, require mandatory filing of a RSC. The regulations for this section have been delayed until 2005;
- e) A streamlined risk assessment process with defined pre-submission requirements and suggested ministry review timelines;
- f) Municipalities have enhanced powers with respect to conducting environmental investigations on failed tax sale properties without incurring regulatory liability, and a five year protection window from regulatory liability should the municipality choose to vest (take ownership) of a failed tax sale property; and,
- g) Financial incentive in the form of abatement (freeze or cancellation) of municipal and provincial (education) property taxes to pay for environmental remediation costs.

2.3.4 Atlantic Provinces

One of the most important regulatory advancements in the four Atlantic provinces is the Atlantic Risk Based Corrective Action (RBCA) procedure that was introduced in 1997¹. The Atlantic RBCA procedure is an adaptation of the RBCA process developed in the United States. It includes computer software and training that helps in the assessment of risks from petroleum products, which is a typical problem in the Atlantic provinces. Each of the Atlantic provinces using the RBCA procedure establishes its own regulations governing environmental protection, while they promote the Atlantic RBCA approach to assessing and restoring sites. This allows the

¹ For more information, see the CMHC Brownfield Redevelopment Case Study on the Atlantic RBCA Process.

Atlantic provinces to establish different criteria but utilize a standardized risk based process. Effective RBCA remediation should mean more sites are returned to safe use and at a reduced cost (Atlantic RBCA web site, 2004).

The RBCA program is overseen by a committee of petroleum company representatives, environmental consultants and government regulators from the four Atlantic provinces. This committee is known as the Atlantic Partners in RBCA Implementation or Atlantic PIRI (Atlantic RBCA web site, 2004). The purpose of the Atlantic PIRI is to ensure the Atlantic RBCA process is effective and serves the needs of Atlantic Canadians. Atlantic PIRI functions as a forum where provincial regulators, representatives of the petroleum industry and regional technical experts come together to guide the implementation of the RBCA process in Atlantic Canada. The Committee meets several times a year to review national initiatives, identify regional issues and management approaches, and to discuss communications and outreach needs. The Committee reports annually to the Provincial Ministers responsible for environment (Atlantic RBCA web site, 2004).

2.3.5 Emerging Barriers

In 1996, risk assessment was still a new and emerging process. Delcan et. al noted that more proponent education and user awareness was required for risk assessment to become an accepted practice (Delcan et. al., 1997a). From the perspective of the environmental professional in Canada, risk assessment and management has now become a commonly accepted industry practice. A common complaint among industry practitioners is the length of time it takes to review remediation action plans and risk assessments. This can take from several months to over a year (Moyes, 2004).

While regulatory systems being put in place in several provinces such as British Columbia and Ontario rely more on qualified professionals, the shift to provincial regulatory processes that increasingly rely on external qualified professionals may have in the short term weakened the ability of provincial regulators to expeditiously review more complex risk management plans. In Ontario, historical concerns around levels of MOE staffing remain (Farber, 2002). This emerging barrier may act as a drag on the positive steps several provinces have taken to accept risk assessment and management approaches. While in theory risk assessment/management approaches are welcome in some provinces, practice over the last several years has shown most of these frameworks to be lacking in resource commitment and support (Abdel-Aziz and Elliott, 2001). In short, these are not mature frameworks and this diminishes the ability to consistently use risk assessment and management (Abdel-Aziz and Elliott, 2001).

In addition, in the U.S., regulators act as facilitators and actively encourage brownfields redevelopment. Some states have staff to assist in site investigations and the preparation of remedial action plans and some also offer these services to municipalities. In contrast, legal experts Abdel-Aziz and Elliott describe the regulatory environment in Canada as “hostile” toward contaminated lands and their owners and “lacking a facilitative attitude” at all levels of government (Abdel-Aziz and Elliott, 2001).

The cost of preparing risk assessment/management plans is often cited by developers as a barrier to the use of this approach for brownfield redevelopment. It is not uncommon for the cost of conducting a risk assessment on a large site (10+ acres) to exceed \$75,000 and even \$100,000. The expectation in Ontario is that the cost of preparing risk assessments will actually increase based on the requirements of the new risk assessment process (Cooper, 2004). These monies must be expended by developers without any assurance that the risk assessment/risk management plan will be accepted by the regulator.

2.3.6 Analysis

In general, there has been some improvement across most provinces with respect to the acceptance of risk assessment and management approaches, issuance of certificates of completion, and other regulatory barriers over the last eight years. Most provinces now provide protection from regulatory liability for owners (albeit subject to re-openers) upon completion of cleanup and issuance of a certificate of completion or a Record of Site Condition (RSC). However, the issuance of a direct certificate of completion represents a stronger form of sign-off and regulatory liability protection than the protection afforded by indirect mechanisms such as a RSC (Abdel-Aziz, 2004b).

Regulatory processes still vary considerably across the provinces in Canada. Dahme notes that there are still significant differences between provinces with respect to:

- a) Identification of contaminated sites;
- b) Issuance of certificates of compliance;
- c) Acceptability of risk based remediation;
- d) The relationship between the issuance of environmental approvals and other approvals such as land use approvals; and,
- e) Administrative practices including financial incentives for brownfield redevelopment (Dahme, 2002).

These different regulations and regulatory approval practices and emerging barriers have combined to create an inconsistent regulatory framework for the redevelopment of brownfield sites for housing across Canada. Inconsistent practices and standards can raise the level of risk and uncertainty among the key brownfield sector participants, namely owners, developers and lenders. This can act as a barrier to brownfield redevelopment (Coletti, 2002). However, citing the existence of varying cleanup criteria across successful state VCP programs in the U.S., Coletti suggests variable cleanup standards/criteria may not be the real barrier to brownfield redevelopment (Coletti, 2002). Instead, it would appear that the inability to consistently rely on risk assessment and regulatory sign-off, both internally (within provinces) and cross jurisdictionally (between provinces) is the crucial issue (barrier). In addition, some new barriers have been introduced during the last eight years, including the shifting of environmental plan review responsibilities to municipalities, reductions in the number and expertise of environment ministry staff reviewing risk assessments in some provinces, and the lack of a facilitative regulatory environment.

2.3.6.1 British Columbia

BC's new screening risk assessment system is a simplified method for dealing with contaminated sites that pose no threat to human health or the environment and is being hailed as a significant step forward (Moyes, 2004). The new system also allows courts or the director to apportion or allocate liability for site cleanup.

The regulatory reforms in BC have the potential to reduce many of the regulatory barriers to brownfield redevelopment. The commitment to review scientific criteria, the innovative use of a tiered risk assessment process, and the continued availability of direct regulator sign-off are all positive developments which should help to provide much needed developer and lender confidence in the regulatory framework in B.C.

On the other hand, it is not clear if the new system of site profiles will streamline the integration of planning and environmental approvals. The reforms in BC do not significantly address some of the other regulatory barriers, such as the ability for re-openers and the slow pace of ministry review, particularly for risk based approaches, where the ministry retains considerable control (Moyes, 2004). And, civil liability is not dealt with by these reforms, although by reducing regulatory liability, civil liability has also likely been reduced.

On balance, the recent regulatory reforms in BC are positive and should help to reduce some of the regulatory barriers to brownfield redevelopment for housing. Of course, the true potential of these regulations will be realized (or not) through their actual implementation. In this regard, some experts have expressed doubt whether the new regime will actually make much difference to brownfield redevelopment projects, especially as it keeps considerable control over projects using detail risk-based corrective action (Moyes, 2004).

2.3.6.2 Ontario

Bill 56 incorporates several positive developments with respect to overcoming the barriers to brownfield redevelopment (Abdel-Aziz, A et. al., 2001). These include:

- a) regulatory liability relief which reduces uncertainty for lenders;
- b) the certification of qualified professionals;
- c) the availability of municipal and provincial (education) property tax assistance; and,
- d) the ability for municipalities to deal with orphaned tax sale properties.

The provision for municipalities to provide property tax assistance for brownfield redevelopment is discussed in Section 2.4 Financing of this review.

Several municipalities in Ontario such as Hamilton, Cambridge and Brantford have already begun to use their new tax sale powers to aggressively put failed tax sale brownfields properties back on the market. This is having a positive impact on brownfield redevelopment in these municipalities.

Nevertheless, a number of concerns have been raised by stakeholders regarding Ontario's new brownfields legislation and particularly the regulations that implement the legislation. These concerns include:

- a) Lack of protection from regulatory liability during the site assessment and remediation phase (up until the RSC is registered in the environmental site registry (ESR). This is the period of greatest regulatory liability exposure for the developer (Gowlings, 2001; Villemaire and VanRensburg, 2002; Bowman et. al., 2002);
- b) Lack of direct regulatory sign-off (Evans, 2004; Abdel-Aziz, 2004b)
- c) Lack of protection from civil liability (Bowman et. al, 2002);
- d) Possibility that the publicly accessible RSC registry may in fact increase exposure to civil liability (Kirby, 2004).
- e) Shifting liability onto municipalities by the Province protecting itself from inaccuracies in the RSC, but not providing the same protection to municipalities who by law are the approval authority for planning applications and building permits (Kirby et. al, 2001);
- f) Vague direction provided to municipalities with respect to the relationship between planning and environmental approvals (Cooper, 2004; Piccioni, 2004b);
- g) Removal of the statement in the affidavit of the principal consultant in the RSC that allows municipalities to rely on the statements in the RSC; (Piccioni, 2004b);
- h) Lack of sufficient upfront financial incentives for site assessment and remediation to actively spur brownfield redevelopment (Farber, 2002; Bowman et. al., 2002)

The issue of lack of regulatory protection between the date contaminated lands are acquired and the date they are cleaned up, i.e., a RSC is filed, is of concern. Environmental information provided to the Ministry during the site assessment and remediation stage could potentially trigger regulatory orders. As investigative activity takes place on the site, this can raise the awareness and curiosity of neighbors and the general public, who can also put pressure on the provincial ministry to utilize its regulatory powers. This period after the developer purchases the site and before the site is remediated represents the period of greatest liability exposure for the developer. Yet, there is no protection provided to the developer from regulatory orders during this time.

The time frame guidelines for review of the more complex risk assessments by the Ministry of Environment have been criticized as still too long (Dill, 2004). These timeframes are only guidelines and can in fact be exceeded by the Ministry of Environment without any recourse for the developer. Dill notes that lengthy periods of time spent obtaining regulatory approvals can financially kill a project (Dill, 2004). The key for developers in this regard is certainty with respect to the regulatory approval timeline (Dill, 2004). It is not clear that the new risk assessment review timelines will have much impact on already long review times.

Saxe contends that the new regulations and approach to risk assessment will in fact make it more difficult to remediate and redevelop the more complex sites than under the old regulatory regime (Saxe, 2004). In the short to medium term, Ibbotson agrees (Ibbotson, 2004). Ibbotson suggests that the province has missed the opportunity to improve numerous scientific aspects of the risk assessment process (Ibbotson, 2004). Ibbotson believes that the costs of risk assessments will likely increase due to more onerous requirements (Ibbotson, 2004). Therefore, the conclusion regarding risk assessments in Ontario is that at least in the short to medium term, they will likely

take on less and not more of a role in the redevelopment of brownfields (Saxe, 2004; Ibbotson, 2004; Abdel-Aziz, 2004).

The Province of Ontario has not provided regulatory sign-off on completed cleanups since 1996. Ontario is one of only three provinces (Newfoundland and Prince Edward Island being the other two) that do not provide direct regulatory sign-off in the form of a certificate of compliance. Ontario's new system of filing records of site condition (RSC) in a public registry upon completion of assessment or remediation includes a legislated protection against future liability from regulatory orders. This is an indirect way of issuing sign-off on regulatory liability. While this is certainly an improvement in Ontario and may help to reduce regulatory liability, as noted earlier, direct provincial sign-off is the preferred method for providing protection from regulatory liability (Abdel-Aziz, 2004b).

Municipalities in Ontario could previously rely on the statements made by a qualified person in the RSC. This reliance statement has now been removed from the RSC. In addition, the Province has legislatively protected itself from civil liability arising from inaccuracies in the RSC without extending this same protection to municipalities. As noted by Kirby et. al., the fact that the province felt it necessary to provide itself with such protection suggests that the province believes it could be exposed to civil liability (Kirby et. al., 2001). Municipalities relying on the RSC could now be similarly exposed to civil liability. This seemingly minor wording change could have significant negative ramifications for residential redevelopment projects on brownfield sites in Ontario because municipalities may now have to find other means to ensure that these sites have been remediated in accordance with provincial regulations. These means could include requiring the qualified professional to sign an affidavit or statement of reliance, in-house or peer review of environmental reports, or some combination of these techniques.

The mandatory requirement for filing an RSC when there is a change in land use has also been criticized as posing a barrier to brownfield redevelopment for housing (Piccioni, 2004b). The definition of change in use contained in the regulations is fairly broad and includes any change in use from industrial, commercial and community use to residential use. This means that an RSC would have to be filed in the ESR for a former office building or even a community recreation centre that is being converted for residential use. The delay of the passing of the change in use regulation until 2005 creates a policy vacuum for municipalities who are essentially charged with determining how to implement this regulation through their planning and building permit approvals processes. Based on the uneven practice of municipalities using the RSC as a condition of certain planning approvals since 1996, it is unlikely that municipalities in Ontario will develop a consistent approach to implementing the mandatory change in use component of the new RSC regulation.

In summary, the new regulations in Ontario have received mixed reviews from legal and other brownfield experts. The regulations include several positive aspects such as new regulatory liability relief, certification of qualified professionals, the availability of municipal and provincial (education) property tax assistance, and the enhanced ability of municipalities to deal with orphaned tax sale properties. However, other aspects of the regulations such as the lack of direct regulatory sign-off, changes to the RSC, and a complex and time-consuming risk assessment process, suggest that the government's reform efforts may not significantly reduce the regulatory barriers to brownfield redevelopment in Ontario.

2.3.6.3 Atlantic Provinces

Environmental consultants across Canada cite the Atlantic RBCA process as a very useful tool for risk assessment/management of petroleum contaminated sites (Moyes, 2004). For example, PEI only released 16 of 67 sites between 1990 and 1998. It then released 18 more sites using risk assessment in just two years between 1999 and 2001, after the RCBA process was introduced (Atlantic RBCA web site). The Atlantic PIRI committee allows regulators, representatives of the petroleum industry and regional technical experts to come together to identify and discuss issues, management approaches, and communications and outreach needs in a non-adversarial environment. This is a positive way of engaging key brownfield redevelopment stakeholders that could be emulated in other provinces.

In the fall of 2004, the Province of New Brunswick created a Brownfield Liability Working Group to review the current status of liability issues as they relate to brownfield sites management in New Brunswick. The working group, composed of representatives from the financial, legal, and regulatory sectors and the petroleum industry, will identify opportunities and challenges to furthering the implementation of the Province's brownfield development strategy. Issues to be addressed include:

- a) Regulatory Liability (Government imposing regulations; scope of the potential for liability)
- b) Government Liability (Risk of being sued – self insurance fund)
- c) Lender Liability
- d) Civil Liability
- e) Transfer of Liability
- f) Liability Exemption (voluntary remediation; orphan sites)
- g) Stigma
- h) Tax Treatment
- i) Limited access to insurance

2.4 Financial

2.4.1 Traditional Barriers

The 1997 Delcan et. al report and other reports (M.M. Dillon Ltd. et. al., 1996; Abdel-Aziz and Elliott, 2001; Moyes, 2004) collectively identified the following financial barriers to the redevelopment of brownfields:

- a) As a result of liability concerns and the related uncertainty of the real estate asset to retain its value, major lenders and financial institutions will not provide capital financing for the redevelopment of brownfields projects until contamination issues have been resolved, usually to the satisfaction of the provincial ministry of environment. As a result, brownfield developers are often forced to obtain financing from non-traditional capital markets, usually at a premium;
- b) The additional project costs of site remediation (per unit and total) can render an otherwise pro forma profitable project not financially feasible;

- c) Brownfield projects can become orphaned sites when lenders routinely do not realize their security due to fear of liability exposure;
- d) Even when the costs of site remediation have been estimated based on detailed environmental study, costs can escalate rapidly if new or additional contamination is found during the remediation;
- e) Insurance industry products are expensive, relatively unknown and possibly underutilized.
- f) CMHC will not normally provide mortgage insurance on brownfield sites being converted for housing unless adequate regulatory sign-off is provided.

The Delcan et. al report (1997a) proposed a number of best practices designed to remove or reduce these financial barriers, including:

- a) Public funding, incentives and joint venture programs at all levels of government;
- b) Further development and promotion of environmental insurance products by the insurance companies.

2.4.2 Recent Initiatives

2.4.2.1 Private Sector Funding

In an effort to fund more profitable brownfield projects, Moyes notes that some financial institutions in Canada have hired dedicated experts in brownfields to pursue profitable brownfield redevelopment projects (Moyes, 2004). Because this is a relatively recent development, the effectiveness of this approach is not yet clear. It is not clear if these experts function more as brownfield project facilitators or risk assessment and liability avoidance experts. Also, this expertise is not necessarily available in regional sub-markets across the country.

Government mortgage guarantees have been one of the principal instruments used to encourage brownfield redevelopment for housing in the U.S. This type of government backed mortgage guarantee provides lenders with significantly increased confidence in the financial viability of the project and is often the key to obtaining financing for a residential brownfield project. In Canada, CMHC has acted as a key vehicle to enable higher-risk mortgage financing for residential development by providing mortgage insurance. CMHC's policy is to provide mortgage insurance for brownfield sites only where there is regulatory sign-off. Yet, several brownfield industry participants have called for CMHC to establish a program of mortgage insurance for brownfield sites that sets out the criteria for qualification (Abdel-Aziz and Elliott, 2001; Evans, 2004).

Environmental insurance coverages are designed to protect the developer from project cost overruns, and regulatory and civil liability. Therefore, coverages generally fall into two categories. Pollution legal liability (PLL) coverage protects against claim costs arising out of regulatory orders and/or third party civil claims for both on-site and off-site cleanup costs and damage. Cleanup cost cap insurance provides insurance for cleanup costs over and above those estimated at the time of site assessment. These coverages can be purchased separately or in tandem. Environmental insurance can assist vendors, purchasers and lenders in facilitating property transactions and project financing (Manderville, 2000). Environmental insurance offers lenders an increased comfort level, assuring that environmental cleanup costs and third party liabilities will not adversely affect a borrower's ability to repay a loan (Boire and Little, 2004).

Lending institutions may use lender liability environmental products to help manage the risk on sites where there is an environmental concern and the site is being used as collateral (Boire and Little, 2004).

2.4.2.2 Public Sector Funding

The Canadian federal government announced in its 2004 Budget that it will spend \$4.0 billion over the next ten years on remediation of contaminated sites. Most of this money will be spent on cleaning up federally owned sites and sites for which the federal government has shared responsibility. Most of the sites eligible for this funding are in the North, and a few meet the definition of a brownfield used in this report, that is, having an active potential for redevelopment.

The Government of Canada has endowed the Federation of Canadian Municipalities (FCM) with \$250 million to establish and manage the Green Municipal Funds (FCM web site). The Funds support innovative environmental infrastructure projects for Canadian municipal governments and their public or private sector partners.

Through its \$50 million Green Municipal Enabling Fund (GMEF), the FCM offers grant funding for environmental feasibility studies (FCM web site). This includes, among other studies, environmental site assessments, brownfield redevelopment feasibility studies, and brownfield redevelopment plans. Grants cover up to 50% of eligible costs to a maximum grant of \$350,000. Several municipalities, including Niagara Falls, Cornwall, Toronto and Portage la Prairie have used or are now using this fund to prepare brownfield redevelopment plans. Through its Green Municipal Investment Fund (GMIF), a permanent \$200 million revolving fund, FCM offers low interest loans and grants to projects that support the implementation of innovative environmental projects, which can include brownfield remediation (FCM web site).

Canadian municipalities cannot offer the range of financial incentives to promote brownfield redevelopment comparable to their U.S. counterparts. Legislation in most provinces prevents municipalities from bonusing brownfield developers by providing grants, loans or other financial inducements for the purpose of brownfield remediation and redevelopment. U.S. municipalities and brownfield developers working in those municipalities can often take advantage of funding for brownfield redevelopment from all three levels of government (federal, state and local). In Canada, only the FCM Green Municipal Funds offer any direct federal funding for brownfield redevelopment to municipalities. Among the provinces, only the Province of Quebec (Revi-Sols) provides direct funding assistance to municipalities for brownfield redevelopment. The Province of Ontario now provides tax assistance to developers in the form of a freeze/cancellation of education property taxes in combination with a similar freeze/cancellation of municipal property taxes to pay for the costs of remediation.

The Revi-Sols program was introduced in Quebec in 1998 with an initial \$40 million in funding for Montreal and Quebec City (Beaulieu and Hebert, 2002). This was expanded in 2000 by \$50 million over five years to fund projects in other municipalities. The Quebec government funds 50% of the cost of site assessments and cleanups on eligible properties with private developers and/or municipalities funding the other 50%. In total, \$90 million was budgeted and this will be matched by a contribution of \$90 million from the private and municipal sectors, for a total of

\$180 million over 7 years directed to the rehabilitation of contaminated sites in the Province of Quebec (Beaulieu and Hebert, 2002). In just six years, the Revi-Sols program has funded the clean-up and redevelopment of 153 projects, with 101 in Montreal and 52 in other municipalities. (NRTEE, 2003). This has resulted in a total increase in municipal property taxes of \$39 million (Moyes, 2004). By 2004 in Montreal, 58 projects have included residential uses for a total of 5,624 dwelling units built, under construction or in the planning pipeline. (CMHC, 2003a). The Revi-Sols Program has been well utilized and is meeting a genuine need in many Quebec municipalities. Unfortunately, the current funding for the Program is scheduled to end in 2005.

Saskatchewan has used money from its Centenary Fund (now closed) to clean up contaminated sites. The four year \$6.5 million initiative was geared toward orphaned sites and particularly abandoned service stations, typically acquired by municipalities through failed tax sales. The Centenary Fund provided funding for 436 site assessments and the clean up of 103 sites offering municipalities a new potential for economic development and added tax revenues (EcoLog Week, 2004).

Through Bill 56, the Province of Ontario has introduced property tax assistance (abatement) for properties undergoing remediation such that a RSC can be filed in the ESR. This tax assistance takes the form of a freeze or partial/total cancellation of both the provincial (education) property taxes and municipal property taxes during the remediation and development period to pay exclusively for remediation costs. Municipal taxes must be frozen/cancelled in order for provincial taxes to be frozen/cancelled. With the recent passing of the enabling regulations, this assistance is now available to developers remediating land within part or all of a municipality that is covered by a community improvement plan that has been approved by the province.

In the last few years, some municipalities in Ontario have become involved in the provision of financial incentives for the redevelopment of brownfield sites, including residential projects. Some municipalities have even begun to acquire and cleanup brownfield sites either on their own or through public-private partnerships and joint ventures. Municipalities in Ontario with established financial incentives dedicated to promoting brownfield redevelopment include Guelph, Brantford, Cambridge, Kitchener, and Hamilton. Taken as a whole, these five Ontario municipalities manage to offer eight different types of brownfield redevelopment incentive programs (see Figure 1). Hamilton, Guelph and Cambridge offer the widest variety of brownfield redevelopment incentive programs (Piccioni, 2003b).

A major economic benefit of brownfield redevelopment is the increase in property taxes collected by municipalities. Mechanisms for transferring these gains to the developer to pay for front-end environmental costs are required, especially where these costs exceed real estate values, i.e., negative value properties (Dill, 2004). Examples include up-front grants to conduct site assessment, tax-increment financing (essentially rebates to the developer of part or all of the increased taxes generated by a brownfield redevelopment), and even the partial or total waiving of development charges (Dill, 2004). This last incentive is particularly attractive to developers because it represents a significant upfront cost savings for the developer which can be applied against the added costs of environmental remediation (Dill, 2004).

Figure 1 Summary of Municipal Brownfield Redevelopment Incentive Programs in Selected Ontario Municipalities

Type of Program	Municipality				
	Guelph	Brantford	Cambridge	Kitchener	Hamilton
1) Environmental Assessment Study Grant	X (\$200K budgeted per year)			X (part of feasibility studies)	X (\$100 K budgeted per year)
2) Tax Increment Financing (TIF) Grant	X			X (Downtown – general program-Max. 3 years TIF provided)	X (Max. 10 years TIF provided)
3) Up-front Grant			X		
4) Tax Freeze/Cancellation	X				X
5) Tax Arrears Cancellation Policy	X		X		X
6) Development Charge Waiver/Exemption	X	X	X		X
7) Municipal Leadership/Brownfield Pilots	X (No initial funding-framework only)	X (\$800 K initial funding, \$250K per year)		X (No initial funding-framework only)	X (\$500 K initial funding)
8) Planning and Development Fee Rebates			X	X	X

Source: Piccioni, 2003b

Hamilton's ERASE Community Improvement Plan (CIP)² was approved in 2001 and was the first comprehensive municipal plan including financial incentives to promote brownfield redevelopment in Canada (Piccioni, 2003a). The ERASE Plan covers an older industrial area of 3,400 acres and contains a comprehensive framework of programs, including:

- a) ERASE Redevelopment Grants which are tax-increment financing (TIF) based grants to those undertaking brownfield development in order to pay for remediation, demolition and site preparation costs. These grants are funded through the tax increase that results from redevelopment of the property.
- b) ERASE Environmental Study Grants which are matching dollar for dollar grants for one-half of the costs of environmental studies (Phase II or III ESA), up to \$10,000 per study from the municipality.
- c) ERASE Planning and Development Fee rebates which provide rebates for a series of planning and development fees.

² For more information, see the CMHC Brownfield Redevelopment Case Study on Hamilton's ERASE CIP.

These programs were augmented by a proactive Municipal Property Acquisition, Investment and Partnership Program where the City of Hamilton budgeted \$500,000 to acquire, remediate and prepare for redevelopment key brownfield sites. Part of these funds are now being used in partnership with a private developer to remediate a former gasoline/service station using bioremediation to permit the construction of 93 new medium-density residential units, known as The Hamilton Beaches³. The City of Hamilton also launched an aggressive marketing and promotional campaign to educate the development and real estate industry on the ERASE programs and redevelopment opportunities available in the city's older industrial area.

Since the ERASE programs were approved in 2001, several property owners have received ERASE Environmental Study Grants. As at the end of 2003, six brownfield redevelopment projects (5 non-residential and 1 residential) had been awarded a total of approximately \$2,500,000 in ERASE Redevelopment Grant and Pilot Project funding. The Hamilton Beaches residential project was provided with \$175,000 in pilot project remediation funding. This project will result in:

- a) construction of 93 residential units;
- b) construction costs in excess of \$10,000,000;
- c) an increase in assessed value of the property of from \$750,000 to \$25,000,000;
- d) an increase in property taxes from \$20,000 per year to \$425,000 per year.

The City of Hamilton also recently approved a program to reduce development charges on brownfield sites by the cost of environmental remediation, and another program to address the cancellation of tax arrears on/disposition of properties that fail tax sale. The ERASE CIP is now being improved and expanded to cover the entire municipality. This should result in more residential redevelopment projects taking advantage of the ERASE programs to assist in the remediation and rehabilitation of brownfield sites. Several other municipalities in Ontario such as Guelph and Brantford developed similar programs based on Hamilton's ERASE CIP. The City of Edmonton is also developing a proposal to provide tax incentives, broadly based on Hamilton's ERASE model (Dahme, 2002).

The City of Cambridge offers a Contaminated Sites Grant Program (CSMP) aimed at promoting both residential and non-residential redevelopment of brownfield sites in its core areas. The program was implemented in 1999 and originally provided a grant to cover 50% of site remediation costs up to \$1,500 per residential unit. The program was expanded in 2001 to cover all types of development and 100% of site remediation costs up to \$1,500 per residential unit (CMHC, 2003a). To date, Cambridge's CSMP has resulted in construction of Phase I of Wellington Square (82 townhouse units)⁴. Several other projects have also been approved for funding under the program, including (Davies, 2004):

³ For more information, see the CMHC Brownfield Redevelopment Case Study on The Hamilton Beaches, Hamilton, ON.

⁴ For more information, see the Wellington Square, Cambridge, ON. case study in CMHC's Residential Intensification Case Studies: Built Projects (CMHC 2004).

- a) Phase II of Wellington Square (124 residential units in two buildings);
- b) The Bridges in Galt City Center (20 residential units); and
- c) Winson Homes Development (58 residential units).

The City of Cambridge also offers a reduction of development charges on contaminated sites by the cost of the remediation. As shown in Figure 1, the CSMP in Cambridge is supported by a range of other financial incentive programs including building revitalization loans and a heritage building development charges allowance.

2.4.3 Emerging Barriers

Again, while not a new barrier, the unwillingness of conventional lenders to provide financing, especially for residential projects on potentially contaminated sites, is a barrier that has emerged as particularly stubborn despite the success of numerous brownfield redevelopment projects for housing. Developers must convince bankers that the project risks are worth taking in the face of civil and regulatory risk. Lenders are reluctant to involve themselves in projects that may create ongoing liabilities, especially when they can only acquire insurance that is limited to a maximum of 15 years.

The usual step of acquiring financing for real estate, the mortgage of land, is also problematic (Hara and Associates, 2003; Coletti, 2002). The value of brownfield land as collateral is very limited. Lenders do not wish to take possession of these lands in case of default. This leaves the developer faced with providing more capital in equity form and/or seeking capital from non-traditional higher interest sources. Either way, a higher rate of return will be required to justify the project. This in turn means fewer brownfields are redeveloped than would be the case if capital markets were more accessible (Hara and Associates, 2003). The increased risk associated with brownfield projects may skew the ability to obtain financing to larger redevelopment companies who have greater equity (Coletti, 2002). This may be counterbalanced by the ability of smaller firms to readily identify and respond to local opportunities for smaller scale projects on smaller sites.

The limited legislative and financial ability of municipalities across Canada to offer financial incentives is another barrier to brownfield redevelopment. Despite successful brownfield redevelopment incentive programs in several Ontario municipalities, municipal governments in Canada simply do not have the financial resources to offer substantial financial incentives to promote brownfield redevelopment. Unlike the U.S., where all three levels of government contribute substantial amounts of funding to the promotion of brownfield redevelopment, in Canada, only Quebec and Ontario currently provide financial incentives for brownfield redevelopment at the provincial level.

2.4.4 Analysis

The Canadian financial services sector is generally more risk averse than the US financial services sector, (M.M. Dillon Ltd. et. al., 1996). The reason cited for this is that there is less competition in the Canadian financial services sector and the willingness to accept risk is a direct function of the degree of competition in the marketplace. The level of competition in the

Canadian financial service sector has remained largely the same over the last eight years. In fact, several major banks have merged.

The 1996 M.M. Dillon Ltd. et. al report indicated that the financial services sector needs to become better educated about environmental risk (M.M. Dillon Ltd. et. al., 1996). Some major financial institutions have developed and enhanced their capacity to evaluate the risks involved with brownfield sites by hiring dedicated experts in brownfields to pursue profitable brownfield redevelopment projects. Because this is a relatively recent development, the effectiveness of this approach is not yet clear. Also, this expertise is not necessarily available in regional sub-markets across the country. The concept of having expert staff involved in the evaluation of financing for brownfield projects is a positive step because lenders without brownfield experience will almost always err on the side of caution, i.e., denial of financing. However, most major financial institutions are still very reluctant to finance or even consider brownfield redevelopment projects (Abdel-Aziz, 2004b). Therefore, it is clear that the financial services sector still needs to become better educated about environmental risk.

Environmental insurance products have improved significantly over the last several years. The length, scope and type of coverages have been expanded, and insurers are more likely to accept existing site data. The use of environmental insurance is increasing and becoming widely accepted in Canada. Some of the modest advances in liability protection for lenders and borrowers across the country, along with the use of environmental insurance, holds the potential to reduce lender liability and improve lender confidence in brownfield redevelopment projects. To date, the key to obtaining financing from traditional lending institutions, e.g., Schedule A banks, appears to be regulatory sign-off.

Generally speaking, the cost of insurance remains a barrier where the value of the cleanup is less than \$1 million. Therefore, the growing acceptance of environmental insurance has done little to assist with property transactions and project financing on properties where the remediation costs are less than \$1 million. These properties likely represent the majority of contaminated sites in Canada.

The property tax assistance (abatement) offered by the Province of Ontario is a positive step forward in providing much needed funding for site remediation, as well as some additional financial assurance to lenders. However, it is not clear how much of an impact on the financial barrier this program will have. The process for accessing the education portion of the tax assistance requires the passage of municipal by-laws and Ministerial approval of that by-law for each site applying for said tax assistance. The matching education tax assistance is limited to only three years. Applications with longer periods will not be approved by the Minister of Finance unless there are exceptional circumstances (Ontario Ministry of Finance, 2004). Legislative discretion is available for approval of a longer development period. Any such application needs to be discussed with the Minister of Finance. Next, the tax assistance is not assignable, i.e., it runs with the land and not the developer. Therefore, this tax assistance will be of no benefit to developers who do not retain ownership of the project. For example, a developer selling residential condominium units would not be provided with tax assistance, but a developer renting units would be.

Despite the Canadian federal government's recent budget commitment to spend \$4.0 billion over the next ten years on remediation of contaminated sites, virtually all of this money will be spent on cleaning up federally owned sites and sites for which the federal government has shared responsibility. Most of these sites are in the North and only 40% of the sites affected by this budget announcement are in or even near urban areas. Therefore, the federal government's announced spending on remediation is expected to have little impact on brownfields in Canada's major urban areas, where most of the estimated 30,000 brownfield sites are located.

With the federal government spending money largely to clean up federally owned contaminated sites many of which are not in urban areas, and only the provinces of Quebec and Ontario offering any type of ongoing funding for brownfield redevelopment, the lack of funding from upper levels of government is a serious barrier to the redevelopment of brownfields. Without significant, dedicated and reliable funding from the upper levels of government for the assessment and remediation of brownfield sites (as is the case in the U.S.), the impact of a relatively small number of Canadian municipalities offering limited financial incentives for the promotion of brownfield redevelopment will be limited.

2.5 Technology

2.5.1 Traditional Barriers

Soil excavation and landfill disposal, also known as "dig and dump" has been a low technology favourite for dealing with contaminated soils for years. While costs of landfill disposal can be very high, particularly for large quantities of soils and/or soils containing hazardous wastes, the dig and dump approach offers the benefits of a well defined timeline and confirmed removal of all contaminated soils (subject to complete identification through the Phase II ESA). Dig and dump cannot be used at sites where the contaminant area is not accessible, e.g., under buildings or infrastructure, or where the impacted soils are too deep to be excavated cost-effectively. One of the biggest barriers to the use of alternative or innovative technologies has traditionally been that these technologies were not proven and usually cost more than landfill disposal (Delcan et. al., 1997a).

2.5.2 Recent Initiatives

Advances have been made in the last five to ten years with new approaches to site assessment and monitoring (U.S. EPA, 2001). Advances have also been made in remediation technologies to the point where traditional dig and dump approaches can be replaced or augmented by treatment technologies that use biological, physical, chemical and thermal processes (U.S. EPA, 2001). This is largely because there have been significant advances in the effectiveness and efficiency of these alternative technologies (U.S. EPA, 2001).

Some of the more established alternative technologies include (U.S. EPA, 2004):

- a) Bioremediation;
- b) Source control containment;
- c) Natural attenuation;

- d) Incineration;
- e) Mechanical soil aeration;
- f) Multi-phase extraction;
- g) Neutralization;
- h) Physical Separation;
- i) Soil washing;
- j) Soil vapor extraction; and,
- k) Thermal desorption.

Some of the more experimental alternative technologies include:

- a) Chemical treatment/oxidation (U.S. EPA, 2004);
- b) Electrokinetics;
- c) Flushing;
- d) Phytoremediation;
- e) Solidification/Stabilization;
- f) Solvent extraction;
- g) In-situ thermal treatment; and,
- h) Vitrification.

Bioremediation (both in-situ and ex-situ) has become an often less expensive way of dealing with hydrocarbon contamination, particularly in groundwater and where contaminated areas are inaccessible for excavation, e.g., under buildings (U.S. EPA, 2004). The downside of bioremediation is that it can take a relatively long time (months up to two years) to complete and ex-situ bioremediation requires a large amount of space. Also, the use of bioremediation is restricted in colder climates. However, the costs of bioremediation are often lower than other alternatives and there is no requirement for trucking of materials. Treated soils can be used as backfill. This approach minimizes the movement of heavy equipment and trucks in established neighbourhoods, thereby significantly reducing the impacts of site remediation on the neighbourhood. In one particular example, the City of Hamilton received no complaints about truck traffic, heavy equipment noise or mud tracked streets during an eleven month in-situ bioremediation of a former gasoline/service station in an established residential neighbourhood (The Hamilton Beaches). Bioremediation also deals with and eliminates contamination on a site rather than simply moving the contaminants (dig and dump) or leaving the contaminants on site (containment) (U.S. EPA, 2004)

Source control containment can involve the use of caps, covers and liners to isolate contaminated soils. Solidification/stabilization are both risk management approaches that usually require site restrictions and the use of long-term institutional controls such as monitoring or land use controls. (U.S. EPA, 2004). Incineration is the only option available for certain contaminants, such as PCB's. Incineration can be done on-site or off-site, but it is expensive. Mechanical soil aeration involves agitating contaminated soil to volatilize contaminants. Multi-phase extraction uses a vacuum system to remove various combinations of contaminated groundwater, petroleum product and vapour from the subsurface. Once above ground, the extracted vapours or liquid-phase organics and groundwater are separated and treated. Some of the more experimental approaches, such as phytoremediation and chemical treatment/oxidation have shown promise in particular applications (U.S. EPA, 2004).

2.5.3 Analysis

The Delcan et. al. 1997a report identified the general lack of toxicological research and data as one of the barriers to brownfield redevelopment. Some progress has been made with respect to toxicological research (mostly in the U.S.), but regulators in some provinces in Canada have been slow to accept this research data as current science despite the acceptance of this data by U.S. regulatory agencies (Ibbotson, 2004). This is of particular importance for residential development as residential cleanup criteria are typically more restrictive than industrial/commercial cleanup criteria.

Unfortunately, the wide acceptance and availability of the dig and dump approach has itself resulted in an inertia on the part of developers and even environmental engineers to use alternative and sometimes lower cost technologies. As mentioned, these alternative technologies have begun to supplant dig and dump in certain situations (U.S. EPA, 2004). Some of these technologies are also being used to augment dig and dump to improve overall remediation performance (U.S. EPA, 2004).

Technologies which eliminate contamination rather than simply move or contain it hold the most promise as long-term sustainable methods for dealing with contaminated sites. The fact that these technologies are being used in an increasing percentage of remediation projects in the U.S. (U.S. EPA, 2004) suggests that the potential is there in Canada to move to remediation approaches and technologies that are themselves more environmentally sustainable.

One of the barriers to the use of alternative treatment technologies in Canada is that some of these technologies are reliant upon or used in risk management approaches to site remediation. As discussed in the sections on regulations, risk management is still not a universally accepted and facilitated approach in Canada, even though most provinces permit risk management approaches. Therefore, it appears that the use of alternative technologies in Canada may continue to be limited not by the efficacy of the technologies, but by regulatory practices.

Another barrier to the use of alternative technologies in Canada today continues to be a general lack of information on these alternative technologies and successful remediation projects that have used these alternative technologies. Developers, provincial regulators, municipal planning staff and even some environmental professionals in Canada are not aware of the potential and range of application of alternative technologies. Information on these newer technologies is not readily available to environmental professionals and especially developers in an easy to understand and accessible format, as it is in the U.S. where the EPA regularly publishes guides and primers to remediation technology.

Developers often rely on their environmental consultants or conferences for information on remediation technologies (Moyes, 2004). Even experienced brownfield developers can be overwhelmed by the enormous amount of information on different remediation approaches. Therefore, better information on the cost-effectiveness, constraints and contradictions of these technologies, written in plain easy to understand language would be helpful (Moyes, 2004). These technologies are much more widely accepted and used in the U.S. where the EPA provides funding for the development and application of these technologies, actively promotes these technologies and provides resources and guides to the use of these technologies (U.S. EPA, 2001)

Another barrier to the use of alternative technologies in Canada is that most of these technologies must be introduced into the remediation process through an advanced planning regime. For example, bioremediation can add between six months and two years to the redevelopment timeline. If this is not incorporated into the project planning process from the beginning, it will cause serious unexpected delays and could lead to market mistiming and financial loss.

Finally, the Delcan et. al. 1997a report clearly identified the lack of government support (financial and resources) for the development of new remediation technologies as a barrier. There is still no significant financial support at the federal or provincial levels for the development and application of alternative treatment technologies. Part of the goal of making these technologies more widely accepted in the industry is to raise the awareness of these technologies. The brownfield industry itself will not necessarily take the lead in this regard. Some environmental engineers and consultants are not fully aware of the applicability and recent advancements in these technologies. The purveyors of these technologies are often small companies that do not have the resources or coverage to widely market their innovative technologies.

2.6 Planning

2.6.1 Traditional Barriers

The CMHC report (Delcan et. al., 1997a) identified the following planning barriers to the redevelopment of brownfield sites for housing:

- a) Lack of information on the location of potentially contaminated sites;
- b) Lack of early identification of contaminated sites;
- c) Land use policies that encourage greenfield development and urban sprawl instead of residential infill, intensification and brownfield redevelopment;
- d) Lack of municipal planning practices and incentives which recognize the cost savings of developing residential uses in already serviced areas;
- e) Planning approvals requirements which add an additional layer of regulation on contaminated sites causing project delays;
- f) Lack of favourable planning policies and development incentives for brownfield redevelopment.

In response to these barriers, the Delcan et. al., 1997a report proposed a number of best practices, including:

- a) Municipalities maintaining mapping of potentially contaminated sites based on historical land use databases, mapping and aerial photography;
- b) Municipalities maintaining contaminated site registries;
- c) Municipalities streamlining the integration of land use planning with environmental approvals.

In Moyes' view, one of the other traditional barriers to brownfield redevelopment in existing urban areas is the ample supply of greenfield land that equates to a lack of demand for brownfield sites (Moyes, 2004).

2.6.2 Potentially Contaminated Sites Databases and Mapping

It is important to make the distinction between a contaminated sites registry and a database/mapping of potentially contaminated sites. A contaminated sites registry, as required in B.C., is usually a provincially maintained or mandated list of known contaminated sites. This list is maintained for the express purpose of ensuring that potential purchasers are aware of the property condition and promoting the use of risk assessment (Delcan et. al., 1997a). A municipal list of potentially contaminated sites or brownfield sites is a less formal tool designed to promote appropriate land use planning and act as an economic development tool. This section considers the municipal list of potentially contaminated (brownfield) sites.

Simons notes that there is no comprehensive accounting of brownfield sites in the U.S. (Simons, 1998). Although the U.S. EPA has its lists, this appears to be on the wane. Although most states track Superfund and leaking underground storage tanks (LUST) sites, most states and cities do not attempt to keep a comprehensive list of brownfield sites. One important reason lists of brownfield sites are not popular in the U.S. is that many property owners fear the stigma of being on a list, with its potential for reduced property values. Many cities also do not have the staff and resources to compile and maintain such lists (Simons, 1998a).

Still, considering the critical role played by land supply in a municipality and the potential economic development benefits of brownfield redevelopment, it is somewhat surprising that more municipalities do not maintain such lists. The reasons for this are likely as proposed by Simons, i.e., stigma and lack of staff resources to maintain the database (Simons, 1998a). The third reason is that municipalities may in fact incur civil liability by maintaining databases and/or mapping of “brownfield” sites if a clean site is mistakenly included in the database/mapping, or conversely, if a contaminated site is omitted.

Clearly, knowledge of the location and characteristics of potentially contaminated sites could be used by municipal planning and economic development departments to:

- a) estimate the size and geographic scale of the brownfield problem in the community;
- b) match interested brownfield developers with the owners of these properties;
- c) apply to higher levels of government for funds to remediate contaminated sites in support of municipal interests.

2.6.3 Brownfield Redevelopment Supportive Land Use Policies

Land use policies that encourage a long term supply of development land can actually promote urban sprawl by working against policy efforts to develop contaminated sites (Delcan et al., 1997a). Experience in Canadian cities suggests that the redevelopment of brownfields for housing will be attractive in those cities where residential land in the urban area is in short supply and has a high market value. These cities include Vancouver, Montreal and Toronto (Moyes, 2004). More will be said about urban sprawl later, but the continued expansion of residential and other uses onto greenfields in Canadian municipalities is not sustainable. The economic and social costs of this practice are now beginning to be seen in many Canadian cities with deteriorating downtown cores as population and business migrates to suburban greenfield sites (Regional Analytics, 2002; Deason et al., 2001; Delcan et. al., 1997a).

Essentially, provincial and municipal land use policies can support the redevelopment of brownfields for housing by providing planning incentives for brownfield redevelopment and/or by providing planning disincentives to greenfield development. Incentives for brownfield development include pre-zoning of less contaminated brownfield sites for residential use, density bonusing and streamlined development approvals such as development permit systems. Disincentives to greenfield development include restrictions on urban boundary expansions.

A good example of the use of both these approaches can be seen in Ontario where recent and proposed planning reforms are designed to place a heightened emphasis on brownfield redevelopment while restricting development on greenfields. These reforms include:

- a) changes to the Planning Act and the Provincial Policy Statement (PPS) to emphasize intensification and redevelopment, including brownfield sites;
- b) changes as a result of the Strong Communities (Planning Amendment) Act, 2004, that make it more difficult to expand urban boundaries into greenfield areas;
- c) imposition of a moratorium on new urban development on rural and agricultural lands toward the establishment of a permanent greenbelt to protect these areas; and,
- d) a long-term growth management plan for the Golden Horseshoe (Ontario MMAH web site).

2.6.4 Planning Approvals

Official plans, secondary plans, district plans, zoning by-laws and plans of subdivision and condominium can place an additional layer of regulation on contaminated sites including the placement of additional restrictions on their use, and unnecessary clean-up requirements. Abdel-Aziz and Elliott cite the many layers of municipal requirements that govern issues of land use planning and the environment as another barrier to brownfield redevelopment (Abdel-Aziz and Elliott, 2001). This barrier has likely existed for some time, but seems to have become more acute, especially in provinces such as Ontario where the province has given the responsibility for environmental plan review to municipalities.

Scrutiny by municipalities is also generally greater where former industrial sites are being converted for residential use. Abdel-Aziz and Elliott cite instances of municipalities demanding the most stringent remediation criteria, even though the applicable legislation does not require them (Abdel-Aziz and Elliott, 2001). While it is not clear how many municipalities are actually engaging in this practice, there is a lack of consistent standards across the country and even within provinces for municipalities to screen contaminated and potentially contaminated sites during the planning review process and require appropriate assessment and remediation of these sites (Cooper, 2004). The end result of these uneven planning approvals practices is additional time and expense for the brownfield developer.

2.6.5 Institutional Controls

Institutional controls can be defined as the combination of land use restrictions and engineering controls (Brownfield News, 2004). The purpose of institutional controls is to prevent exposure to contaminants that may remain on a site after a risk-based cleanup and avoid future liability issues. Engineering controls may be put in place to cap or contain contaminants or for example to

pump and treat contaminated groundwater. Not all engineering controls automatically involve an institutional control. Land use controls are a formal legal mechanism such as a deed restriction that is registered on title which restricts future use of a site based on the location, depth and type of contamination that is permitted to remain on a site through a risk management approach to site remediation (Brownfield News, 2004; Meyer, 2002).

Several U.S. states make extensive use of institutional controls to attain acceptable levels of risk to human health and the environment (ICF Consulting and E.P. Systems Group Inc., 1999). American municipalities have gained considerable experience in the use of institutional controls. In fact, the International City/County Management Association (ICMA) has gone so far as to hold peer exchanges in order to bring government officials together to discuss the challenges they face and the strategies they employ to address land use controls in their communities. Meyer notes that the use of institutional controls is likely to become more prevalent (Meyer, 2002). In Moyes's view, one of the barriers associated with institutional controls is the wording of the notices placed on title. It is important how notices are worded to avoid creating unnecessary stigma (Moyes, 2004).

Finally, one of the barriers to increased use of institutional controls in the U.S. is ensuring that institutional controls are maintained over time (Kastman, 2004). There have been numerous instances in the U.S. where a use restriction has been agreed to by the regulator but has been circumvented, either purposely or inadvertently, by the subsequent site user (Kastman, 2004). In the U.S., this issue is being given significant attention by interested parties. At least eight different sessions at the EPA-sponsored National Brownfields Conference in Portland, Oregon in October 2003, dealt with establishing and maintaining institutional controls. Computer based record keeping systems have been developed to log deed restricted properties in a GIS database that is linked to a local utility clearance system (Kastman, 2004).

2.6.6 Municipal Facilitation and Leadership

Several municipalities in Ontario, including Hamilton, Guelph, Brantford, Niagara Falls, and Chatham-Kent have prepared or are in the process of preparing comprehensive brownfield redevelopment strategies and plans. Some municipalities who are now offering financial incentives for brownfield redevelopment are becoming involved as facilitators and even partners in brownfield redevelopment projects for housing. Examples include Hamilton, Kitchener, Cambridge, and Brantford. These municipalities have developed an environment of facilitation around brownfields, as opposed to an environment of regulation.

A valuable indirect benefit of municipalities offering financial incentives and becoming involved in public-private partnerships is that they then have a vested interest in the project (Moyes, 2004). This results in municipal "buy in" in the form of an expedited planning approvals process, facilitation of public consultation and input, and even acting as facilitators between the developer, his/her environmental consultant and provincial regulators.

2.6.7 Analysis

With freedom of information legislation now broadly applied to government information in Canada, municipalities maintaining databases/mapping of brownfield sites must be very careful with respect to the use and distribution of this information. Where used, these databases and mapping should always be presented accompanied by suitable warnings regarding usage and accuracy of the information. Also, the term “brownfields” should not be used to label these databases and mapping.

In practice, it is not clear that the few municipalities across Canada that do maintain these lists are aggressively using these lists to engage in planning and economic development activities for brownfields. It is not clear that the municipalities who maintain these lists have an advantage over those that do not. Savvy brownfield developers rarely request these lists from municipalities and instead focus their efforts on exploring and understanding the local market first hand. Perhaps, most importantly, it is not clear that the benefits of maintaining these lists outweigh the potential liability risks and the stigma that could be attached to listed sites. Therefore, in light of the much more serious legislative, regulatory and financial barriers, the lack of lists and mapping of potentially contaminated sites at the municipal level is not viewed as a significant barrier to brownfield redevelopment for housing.

Developers and real estate agents in the Greater Toronto Area and the Golden Horseshoe suggest that residential land values are already rising in response to the proposed provincial greenbelt legislation. The decreasing supply of new land to accommodate residential development in greenfield areas will translate into increased demand for residential development on brownfield sites. These types of reforms, combining planning incentives and restrictions, whether at the provincial or even municipal level, can help to overcome the barrier to brownfield redevelopment for housing of an ample supply of available greenfield land. Housing affordability is impacted by the availability/scarcity of land and by the costs of remediating brownfield sites or providing municipal services to greenfield sites.

The many layers of municipal requirements that govern issues of land use planning and the environment and instances of municipalities demanding the most stringent remediation criteria, even though the applicable legislation does not require them, represent a barrier to brownfield redevelopment (Abdel-Aziz and Elliott, 2001). Increased delays in project approvals resulting from the planning approvals process serve to increase project costs and delay project timing. Therefore, it is advisable for municipalities to have clear, consistent, standardized and streamlined policies for the integration of the planning approvals process with the environmental approvals process.

As the best sites for brownfield redevelopment (the positive cash value sites where the value of the site exceeds the costs of remediation) are redeveloped, the more difficult and complex sites, i.e., sites with higher remediation costs as compared to land value, will come into play. *Ceteris paribus*, this will likely result in more sites using risk assessment and management because these sites with higher remediation costs may not be able to be feasibly remediated from a financial perspective using traditional dig and dump technology.

There are still municipalities in Canada that will not accept a risk-based approach on residential sites despite approval of that approach by the province. The integration of planning and environmental approvals will continue to be a barrier to brownfield redevelopment for housing unless municipal staff responsible for integrating planning and environmental approvals further educate themselves on the real risks of brownfield redevelopment. Municipalities within the various provinces should also come together to establish standardized processes to integrate the planning and environmental approvals processes in each province (Cooper, 2004). Ultimately, a standardized approach to this issue for all municipalities across the country would be ideal, but based on current differences in provincial legislation and regulations, this does not appear feasible at this time.

One of the other barriers to the wider acceptance of risk based approaches to brownfield redevelopment for housing in Canada is that Canadian municipalities have much less experience with institutional controls than their U.S. counterparts. This often manifests itself in reluctance on the part of Canadian municipalities to become involved in approving or managing institutional controls. Yet, this is one of the very activities in the U.S. which has helped facilitate the acceptance of risk based approaches to residential development on brownfield sites (Meyer, 2002).

2.7 Stigma, Education and Awareness

2.7.1 Traditional Barriers

The Delcan et. al. 1997a report identified the following barriers to the redevelopment of brownfield sites for housing around stigma, education and awareness:

- a) Misconceptions and fear of liability on the part of all participants in brownfield redevelopment stemming from a basic lack of information on brownfield redevelopment;
- b) Lack of educational tools that can be used by non-technical participants such as developers, municipal planners, politicians, financial institutions and the general public;
- c) Lack of public consultation and transparency with respect to the development of housing on contaminated sites;
- d) Exacerbation of environmental and liability risks and fears by the media.

The Delcan et. al. 1997a report also proposed a number of best practices designed to remove or reduce these barriers, including:

- a) Contaminated site profile;
- b) Notice of site remediation;
- c) Information tools and processes to increase public input;
- d) Education and awareness programs.

2.7.1.1 Stigma

Stigma, as it relates to brownfields, is the perception on the part of developers, lenders, perspective purchasers, municipal officials, and the general public that these sites present serious environmental and health dangers. A site that has been labeled as a “brownfield” that may be derelict or abandoned, connotes images of unseen contaminants, and a myriad of financial, legal and planning related issues, all of which can translate into increased risk and uncertainty. Stigma can negatively influence potential developers, particularly those with little or no experience in the brownfield industry. It can also negatively affect the willingness of financial institutions to consider financing a project.

From the more rigorous perspective of property value, environmental stigma can be defined as “an adverse effect on property value produced by the market’s perception of increased environmental contamination due to risk” (MacNair, 2004). MacNair notes that for the purposes of valuating property, the remediation costs may not fully account for the loss in value to the property owner (MacNair, 2004). Residential developments are particularly vulnerable to stigma as it can often persist and negatively affect residential property values even after a site has been properly remediated (Hara Associates, 2004).

Other factors may influence value, including any negative impact on marketability and the positive impact of a possibility of change in highest and best use (MacNair, 2004). The theory behind environmental stigma is that stigma is considered to be at its highest before remediation when contamination is first discovered, and uncertainty is greatest. During the remediation stage, stigma is reduced as the problem becomes better understood. Finally, after the remediation is complete, stigma is reduced even further (MacNair, 2004).

One of the key barriers to the redevelopment of brownfield sites is the lack of adequate information with respect to the impaired market value of the property. Owners of contaminated land, especially owners who are still using that land, often overestimate the value of their land to a developer because the owner considers the “value in use” of the property rather than the “value in exchange” (MacNair, 2004). In other words, even if the property is contaminated but the present owner can continue to use the property safely and legally, the property fulfills a utility and therefore has a value in use for the owner that is often much higher than the exchange value of the property (unimpaired market value – cost of remediation) (MacNair, 2004). This mismatch between owner valuation and market valuation can represent a barrier to the transaction of brownfield sites that are potentially developable for residential uses.

Property appraisers in the U.S., have developed new techniques for appraising contaminated real estate that more accurately reflect contaminated property values (MacNair, 2004). These techniques are making their way into the Canadian property appraisal industry and this should provide owners and investors with more accurate and complete information to make sale and purchase decisions regarding contaminated sites. (MacNair, 2004). In theory, more accurate and complete information will result in a greater number of brownfield site transactions, and therefore a greater number of brownfield sites being redeveloped.

A lack of knowledge with respect to the magnitude, nature and extent of contamination on brownfield sites on behalf of developers, municipal officials and financial institutions can also act as a barrier to redevelopment (NRTEE, 1998; DeSousa, 2001). Often the key to reducing stigma is simply the release of adequate information (studies) and education of the public. For example, McNair cites a closed municipal landfill in Ottawa where there is off-site contamination (McNair, 2004). A human health risk assessment was completed by the City which confirmed that there is no potential risk to residents in the area. Furthermore, the City has undertaken remediation at the source of contamination within the closed landfill to decrease potential long-term migration of contaminants leaving the site. Finally, the City has been proactive with this remediation project and has kept the public informed throughout the process. As a result, studies have shown that there is no environmental stigma in this case to the impacted surrounding properties (MacNair, 2004). Therefore, the presence of environmental contamination does not always result in environmental stigma.

2.7.1.2 Education and Awareness

The market for a housing project on a remediated brownfield site consists of the individuals who inhabit and visit a city. Each person by virtue of his or her exposure to the media, level of engagement in community issues, level of trust placed in municipal decision makers, and exposure to the process of brownfield redevelopment in the past will develop his or her own degree of comfort with the idea of living on a former brownfield site (Greenberg et. al, 2001a). Greenberg et. al., (2001a) shows that residents of cities which have experienced brownfield redevelopment in the past are more trusting of remediated sites. This suggests that the lack of knowledge about brownfield redevelopment on the part of the general public can act as a barrier to the redevelopment of brownfields for residential use.

Several authors have indicated that while community mistrust and opposition to brownfield redevelopments for residential use will surely be greater for residential than non-residential projects, community engagement early in the process can lessen considerably any fear, apprehension, and organized opposition (Greenberg et. al., 2001a; McCarthy, 2002; Adams and Watkins, 2002; ICMA, 2003a). Indeed, Greenberg et. al., (2001a) contend that if people can be assured that their health has been protected, and that the value of the residential asset is guaranteed because the developer has created a neighbourhood which will become more valuable over time, they could be enticed to consider the purchase of a home on a former brownfield site. A survey of developers found that those experienced in brownfield development were far less concerned about public hearings and meetings, and in fact found that public notification and involvement can help to build broad community support for a project, and even generate regulatory support and help eliminate future liability claims (Meyer et. al., 2004).

Community outreach initiatives to educate the public on the types of contamination present, where it is located, and how it will be addressed can aid considerably in gaining community support.⁵ No doubt, this is why NRTEE added recommendations around building capacity for

⁵ A case study in Regional Analytics (2002) focuses on the CLC redevelopment of the former Moncton Shops. The community had become used to the idea of the entire site being fenced off to protect them from the contamination within. To combat this, and to gain community acceptance, the CLC produced a variety of educational materials in support of their redevelopment. They also engaged the community at several community consultations where

and community awareness to its recommendations on reducing liability and providing financial incentives in the National Brownfield Redevelopment Strategy for Canada (NRTEE, 2003). Several municipalities in Ontario have responded to the education and awareness barrier by developing and distributing information packages on brownfields and brownfields redevelopment to assist in the brownfield redevelopment planning and marketing efforts. The Province of Ontario has developed Brownfields Showcase I (2000) and II (2004a) which highlight best practices and case studies to promote brownfield redevelopment. CMHC included a number of brownfield projects and municipal initiatives in its series of residential intensification case studies (CMHC 2003a, CMHC 2004).

2.7.2 Analysis

The mismatch between owner valuation and market valuation is often simply the result of inflated expectations on the part of the owner. Where there is the possibility of rezoning to permit residential uses, owners who have little experience in the real estate market for residential land often carry inflated expectations of the value of their properties. This happens because these owners do not take into consideration the full impaired value of the property (costs of remediation), even after adjusting for the increased value of the property that will result from rezoning. Of course, without a detailed Phase II ESA, which is often not done by the vendor or purchaser, it is impossible to calculate with any certainty the costs of remediation. The lack of information can therefore act as a culprit in the valuation of contaminated property and a barrier to the transfer and remediation of contaminated properties for residential purposes.

Given the complexity of the legal, financial, regulatory and other issues surrounding the redevelopment of brownfields, stakeholders may sometimes base decisions on incomplete or incorrect information. To fill this gap, progressive municipalities such as the Region of Niagara and City of Hamilton have started to market information to developers, financial institutions, and real estate professionals. This interaction between municipal staff and the brownfield industry will not only provide brownfield market makers with better information, but it will also help municipalities and their staff to develop the capacity to facilitate brownfield redevelopment projects.

The use of risk management approaches and even generic stratified approaches to residential development means that institutional controls, including the registration of certificates of property use on title must often be utilized. Industry experts believe that home buyers are generally willing to accept risk-based cleanups (Moyes, 2004). However, outside the small environmental legal community in Canada, the meaning of these land use control instruments is not well understood. Prospective purchasers are often concerned about these registrations on title and what this will mean for their use and enjoyment of their property and resale value. These purchasers are in some cases receiving very conservative legal advice from legal professionals who are not specialized in the area of environmental law, and do not fully understand the true implications of a certificate of property use or deed restriction. The stigma attached to certificates of property use by some legal professionals and prospective buyers can affect purchase decisions.

questions were answered, remediation work described, and community concerns addressed. Interviews with CLC officials in 2002 indicated that the community had “bought in” to the mixed-use development which is still unfolding on the site.

As such, some developers have found it difficult to market and sell residential units that are subject to any form of registration on title. This initial difficulty in selling such units is usually overcome as buyers and their legal professionals become more aware and informed.

Greenberg et. al., (2001a) shows that residents of cities which have experienced brownfield redevelopment in the past are more trusting of remediated sites. This suggests that the lack of knowledge about brownfield redevelopment on the part of the general public can act as a barrier to the redevelopment of brownfields for residential use.

2.8 Other

2.8.1 Traditional Barriers

One of the key long standing barriers to the assembly of land for residential projects on former brownfield sites is the issue of land fragmentation. Adams and Watkins note that "...alongside issues of contamination and access, the difficulties of site assembly is seen as a major constraint on the development of urban sites." (Adams and Watkins, 2002, p. 230). Well located brownfield sites of a suitable size are often owned by multiple owners. These owners may not wish to sell to a developer for a variety of reasons such as fear of liability, or as a result of their own inflated speculative price expectations. In many cases, particularly where sites have been abandoned, actual ownership is difficult to determine.

Due to far fewer transactions being completed, the contaminated sites real estate market in Canada is far less mature than the general real estate market. According to Moyes, the more owners involved in land assembly, the more difficult land assembly and issues of liability become (Moyes, 2004). This is especially true where contamination has migrated off-site, or where there is cross contamination from several sources held by different owners.

Adams et. al. (2001a) studied 80 large parcels of land in four British cities and found that on 64 (80%) of these parcels, plans to use, market, develop or purchase these sites were disrupted by ownership issues. Adams et. al (2001a) also note that ownership issues can be particularly troublesome in the context of redeveloping contaminated sites for residential use since the parcels required are generally quite large and will undoubtedly involve ownership related complications. Indeed, the authors go so far as to say that: "...institutional reform aimed at delivering a smooth and rapid resolution of ownership conflicts deserves as much attention from policy makers as does the planning for the remediation of contamination." (Adams and Watkins, 2002, p. 235).

Another barrier to brownfield redevelopment is that sellers of potentially contaminated land are often unwilling to pay for environmental assessment of their lands in order to provide adequate information to a purchaser. In fact, sellers often will not permit their land to be environmentally assessed by a prospective purchaser due to fears that the results may trigger regulatory requirements for costly cleanup without assurance that the buyer will remain interested (Hara and Associates, 2003).

Another barrier to brownfield redevelopment for housing is the issue of federal and provincial liens. For example, even when municipalities are proactive in putting failed tax sale properties

back on the market, federal and provincial liens on these lands can survive tax sale and bankruptcy. Any new owner is faced with paying off these excessive charges which include penalty and interest. This acts as a barrier to attracting developer and investor interest to the property.

2.8.2 Recent Initiatives

Fragmented ownership is particularly troublesome where there is cross contamination of properties. Recent initiatives such as the allocation of liability and area wide risk-based approaches may prove helpful in solving the dilemma of fragmented ownership. It is also difficult to find strong leadership in cases of fragmented ownership. In the U.S., some independent redevelopment corporations have been very successful in overcoming the barrier of fragmented ownership. But, these successful corporations relied on (Piccioni, 2003b; Gordon, 1997):

- a) Substantial amounts of funding from various levels of government for the purposes of land acquisition and preparation for development;
- b) Streamlined plan approvals and developer selection processes;
- c) Project partnerships with the private sector; and,
- d) Aggressive marketing.

In Canada, redevelopment corporations are a more recent initiative and most have been set up for the purposes of waterfront redevelopment, e.g., Halifax and Toronto, rather than specifically for brownfield redevelopment. Regardless, these waterfronts contain a large number of brownfield sites and these corporations are already in place to deal with the brownfields in these areas.

2.8.3 Emerging Barriers

Discussions with developers suggest that one of the interesting side-effects of the modest success that we have seen in some Canadian cities with respect to the redevelopment of brownfield sites is that the supply of available developable brownfield sites has been reduced. At first, proposing this as a barrier would seem ridiculous. But, brownfield developers are in agreement that the best brownfield sites, i.e., those with a “positive cash value” where clean land value exceeds remediation costs, have largely been redeveloped by the market without any incentives. What remains are the marginal sites, also known as “neutral cash value” sites, where the costs of remediation roughly equal the clean value of the land, and the “negative cash value sites” where the costs of remediation exceed the clean value of the land and can often be two, three or several times the clean value of the land (Bartsch et. al., 2001). Combined with the mothballing of sites by large corporate landowners in response to liability concerns discussed earlier, this has resulted in a diminishing supply of well located, developable brownfield sites in some Canadian cities.

2.9 Significance of Barriers

2.9.1 Introduction

The different types of barriers to brownfield redevelopment are inextricably related. For example, delays in regulatory or planning approvals can increase the costs of a brownfield redevelopment project. Cleanup costs can prevent a brownfield redevelopment project altogether. Conversely, the use of alternative technologies can decrease the costs of remediation and make a project feasible. The liability barrier, whether civil or regulatory, is ultimately tied to the financial barrier, as are all the other barriers. A regulatory order or successful third party civil suit can turn a financially lucrative project into a financial disaster. Ultimately, the fear of liability, especially among large corporate brownfield landowners who will not sell their lands, particularly for residential development, is a fear of future financial loss. The rest of this section reviews empirical research into the relative significance of the barriers to brownfield redevelopment.

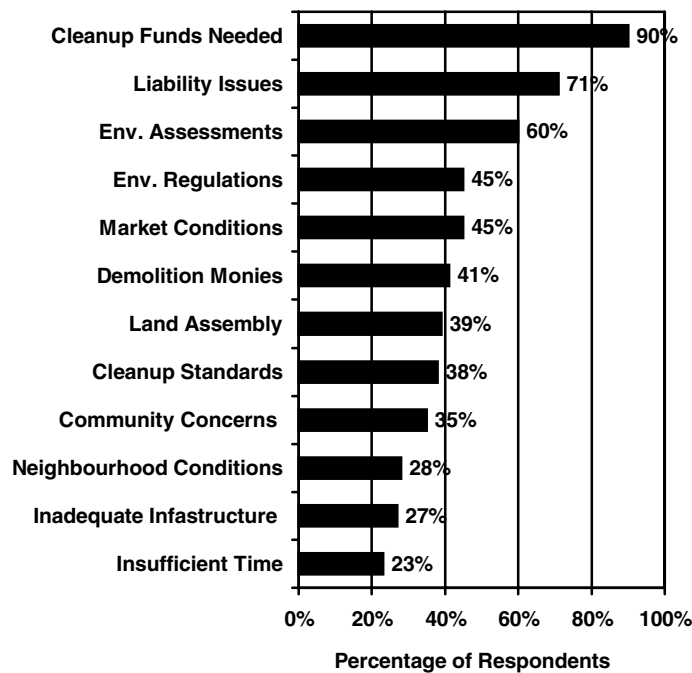
2.9.2 Studies

The M.M. Dillon Ltd. et. al. (1996) report on the financial services sector and brownfield redevelopment in Canada utilized selective telephone interviews and a review of Canadian and U.S. literature to conclude that direct (economic) incentives are more potent in attracting and sustaining private sector brownfield redevelopment than indirect (liability/regulatory) incentives. No other Canadian studies that examined the various barriers to brownfield redevelopment made conclusions with respect to the relative significance of these barriers.

Several studies in the U.S. have examined the relative significance of barriers to brownfield redevelopment. A survey conducted by the U.S. Conference of Mayors in 2000 of 232 cities across America who were asked to identify the impediments to brownfield redevelopment reached the same conclusion (U.S. Conference of Mayors, 2000). Figure 2 displays the results of this survey.

For the third straight year in a row, the “lack of funds to clean-up sites” was the most frequently cited impediment to brownfield redevelopment with 208 or 90% of the cities identifying this as an impediment. The next most often cited impediments were liability issues (71%), the need for environmental assessments (60%), environmental regulation (45%), and market conditions (45%). Clearly, municipalities across the U.S., some in states with strong liability limitation regimes and some in states without, have indicated that the lack of clean-up funds is the single most important impediment to brownfield redevelopment (U.S. Conference of Mayors, 2000).

A 1999 assessment of U.S. state initiatives to promote the redevelopment of brownfields reached a different conclusion than the U.S. Conference of Mayors study regarding the relative importance of financial incentives and regulatory reforms. ICF Consulting and E.P. Systems Group Inc. examined brownfield programs in three states (Massachusetts, Michigan and Pennsylvania) in detail and interviewed developers and local brownfield redevelopment agencies. This study concludes that financial support was cited as helpful, but regulatory reforms (in the form of state approval of the cleanup) and the reduction of liability were the critical factors in the project being initiated and proceeding (ICF Consulting and E.P. Systems Group Inc., 1999).

Figure 2 Impediments to Brownfield Redevelopment - Survey Results

Source: U.S. Conference of Mayors, 2000.

In 2003, the University of Louisville Resources for the Future and the University of Maryland conducted a survey of 2,500 members of the Urban Land Institute (ULI) (Meyer et. al., 2004). Over 300 developers responded to the survey which used trade-off scenarios to gauge developer preferences regarding incentives designed to encourage the cleanup and redevelopment of brownfield sites (Meyer et. al, 2004). Using a hypothetical residential rental redevelopment project with total redevelopment costs in the range of \$20-\$24 million⁶, this was the only study that looked specifically at brownfield redevelopment for housing. Among the respondents, residential conversions account for roughly one in every four current brownfield projects.

The survey found that:

- a) Avoiding a public hearing has the monetary equivalent of over \$200,000 to a project's expected bottom line;
- b) Eliminating regulatory liability has a monetary value of over \$700,000; and,
- c) Eliminating civil liability has a monetary value of almost \$1,000,000.

The study came to several conclusions:

- a) Protection from risk of civil liability claims is the most important consideration for brownfield developers, even more important than protection from regulatory liability;
- b) Brownfield development specialists prefer site assessment funds to cash subsidies that apply only if the project goes forward, i.e., the experienced brownfield developer prefers

⁶ All figures quoted from this study are in U.S.\$.

- the reimbursement of assessment costs over cash subsidies that are paid only if the project goes forward;
- c) Making a brownfield project pay is not just a matter of getting a higher risk-adjusted return on investment; it may have more to do with managing risks and reducing future uncertainties.

2.9.3 Analysis

Despite what would appear to be contradictory results in the above-referenced literature, if the research associated with prioritization is put into context, the general conclusion that can be reached is that civil liability warrants top priority, followed very closely by regulatory liability, and then very closely by the financial incentives. The main reason for this is that the literature that suggests that financial barriers are the most important is largely based on a limited survey of information provided by the financial services sector and a survey of municipalities. The literature that suggests that civil and regulatory liability are the most important barriers is based on surveys and information provided by redevelopment agencies and developers. The sample size of over 300 developers in the Meyer et. al. (2004) study is very large for a study of this type and this was the only study that looked specifically at brownfield redevelopment for housing. Therefore, for our purposes of determining the significance of barriers to brownfield redevelopment for housing, this study is given more weight.

Ultimately, it is the developer who makes the decision to invest in redeveloping a brownfield site, and the developer who is involved at every stage of the process from pre-planning, to planning approvals, through to site remediation, construction and sales. No other actor in the brownfield industry can make this claim. This suggests that the developer should understand the real barriers throughout the process to brownfield redevelopment somewhat better than the other participants. Therefore, it is felt that the opinions of experienced brownfield developers in this regard should carry somewhat more weight than those of other participants in the brownfield industry.

The other possibility, although there is no empirical evidence to support it, is that in general, relatively more progress has been made over the last several years in Canada in addressing financing issues through the use of financial incentives, environmental insurance and non-traditional sources of financing, than has been made on liability and regulatory reform. This may have caused a slight shift in prioritization of the barriers to brownfield redevelopment for housing toward the liability and regulatory concerns and away from financing issues.

Moyes reached the conclusion that residential development on brownfield sites in municipalities with land shortages and high land values, e.g., Toronto, Montreal and Vancouver, may not require the level of financial incentives that are required in lower demand and lower land value locations where there is ample greenfield land for development (Moyes, 2004). Still, the inability to access traditional financing sources is a major barrier to the remediation and redevelopment of brownfield sites for housing. Again, this barrier is directly related to the fear of liability on the part of lenders and other parties. If the liability and regulatory barriers can be adequately dealt with, there may be less need for financial incentives, particularly in higher growth areas.

In Canada, regulatory liability issues are often aggravated by onerous provincial regulations and the lack of a facilitative regulatory environment at all levels (Abdel-Aziz and Elliott, 2001). Experience with voluntary cleanup programs (VCP's) in the U.S. indicates that investors ascribe real economic value to the benefits of VCP's because the regulatory reforms (no further action letters and covenants not to sue) contained in VCP's provide more certainty to developers (ICF Consulting and E.P. Systems Group Inc., 1999). This greatly reduces regulatory liability, and in the case of some states, even civil liability. The implication is that once adequate and appropriate regulatory relief is in place, adding financial incentives may in fact over-subsidize some brownfield sites while sites in depressed communities with lower demand may not be able to access the financial incentives (ICF Consulting and E.P. Systems Group Inc., 1999).

In conclusion, this literature review suggests that civil liability, regulatory liability and financing are the three key barriers to brownfield redevelopment for housing. It appears that civil liability and regulatory liability may be slightly more significant barriers to brownfield redevelopment for housing than financing issues. The other barriers such as technology, planning, education and awareness, while still significant, play a secondary role. Numerous North American brownfield experts share the viewpoint that liability/regulatory and financial barriers must be addressed in tandem in order to promote brownfield redevelopment (M.M. Dillon Ltd. et. al. 1996; Colangelo et. al., 2002; Abdel-Aziz and Elliott, 2001; Dahme, 2002). This was also the conclusion of the Delcan et. al study seven years ago (Delcan et. al., 1997a). The results of this literature review serve to reinforce the need to reduce and eliminate civil and regulatory liability and remove the financial barriers to brownfield redevelopment.

3.0 IMPLICATIONS OF BROWNFIELD REDEVELOPMENT FOR HOUSING SUPPLY AND SMART GROWTH

In their report on removing barriers to the residential reuse of contaminated sites, Delcan et. al. note that there is every reason to expect the demand for high-density urban housing to increase into the future (Delcan et al., 1997a). Many of the attributes of urban brownfields give rise to their suitability for residential development. For example, these urban brownfield sites are usually:

- a) surrounded by urban development;
- b) in locations near major transportation routes;
- c) close to amenities and services;
- d) near lakes, waterways other bodies of water;
- e) in or near city centres; and
- f) fully serviced with sewer and water infrastructure.

Delcan et. al. note that many of the brownfields in Canada possess this very combination of desirable attributes, attributes which would make them excellent candidates for housing development were it not for the issue of contamination (Delcan et. al., 1997a). Indeed, Delcan et. al. suggest that the existing supply of brownfield land in Canada could, if redeveloped for housing, yield a 10 to 20 year supply of residential land Canada-wide (Delcan et. al., 1997a). While it is unlikely that all or even most of the brownfield sites in Canada could be redeveloped for housing, there is a large amount of brownfield land in Canada that could be suitably remediated and redeveloped to provide a wide variety of housing types in accessible and well serviced urban locations.

Greenberg et. al. (2001a), offers similar evidence in the context of the U.S. Specifically, their study shows that many of the brownfields in New Jersey are not suitable for commercial use (owing to their location⁷, size and shape) and that if redeveloped for housing, these sites could meet as much as 29 percent of the projected housing demand in the state from 2001 to 2005. Adams and Watkins (2002) provide similar evidence in the context of the U.K. Specifically, they note that the British Government has gone on record as saying that by 2008, 60% of all new housing in Britain will be built on former contaminated sites. While these authors are somewhat critical of the efficacy/feasibility of this objective, they do show that urban areas in Britain contain a substantial supply of brownfields which are best suited to residential use, and that such use could go a considerable distance toward helping the British Government meet its 60% target.

Using Brantford as an example, Moyes estimates that even in highly industrialized and brownfield proactive municipalities, brownfield redevelopment will provide no more than 15% of housing required each year over the next ten years (Moyes, 2004). Therefore, Moyes concludes that the potential for brownfield redevelopment to reduce urban sprawl may be misleading because residential brownfield development projects are usually higher density and service

⁷ Specifically, Greenberg et. al. (2001a) show that 80 percent of more than 100 brownfield sites in their sample were located within ¼ mile of the nearest residence, and that nearly 30 of these sites were smaller than ½ acre in size. Based on this, these authors concluded that the majority of these sites were best suited to residential use, as opposed to commercial or industrial reuse.

specific segments of the market, and therefore, should not be compared directly to greenfield development (Moyes, 2004).

While Moyes could be correct in asserting that housing development on brownfield sites in Canada will likely provide no more than 10% to 15% of housing supply in the coming years, this fails to acknowledge that brownfield sites generally accommodate higher residential densities than greenfield sites. A recent U.S. study found that every acre of brownfield land redeveloped for residential projects would have required a minimum of 5.6 acres of greenfield land (Deason et. al., 2001). While this ratio may not be as high in most Canadian municipalities due to differing zoning standards for greenfield development between Canadian and U.S. cities, this indicates that even if brownfield projects account for only 10% of all new housing in a municipality, they have the potential to reduce total residential land requirements by far greater than 10%.

Also, while residential brownfield developments may serve a different sector of the market than residential greenfield developments, the brownfield projects expand the choice of housing available in an urban setting. In some small way, this may in fact adjust government policy and overall market demand, as has happened in the U.K., where the British government has set a goal that 60% of all new housing by 2008 be built on brownfield sites (Adams and Watkins, 2002). The key aspect of this target is not whether the 60% is strictly achieved by 2008 or not, but the fact that the government has made a very public pronouncement and has developed and implemented funding and regulatory policies to help reach this goal (Adams and Watkins, 2002).

The ICMA noted that the coordination of urban brownfield redevelopment with housing initiatives could allow communities to meet specific community needs including affordable housing, senior citizen housing, and artists lofts (ICMA, 2003). Other authors point to the potential of coordinating brownfield redevelopment with other community initiatives to achieve multiple objectives (Greenberg et. al. (2000 and 2001b); Schopp (2003); McCarthy (2002); and ICMA (2003)). The ICMA concludes that there is enormous potential to strategically coordinate brownfield redevelopment activities with housing initiatives in order to:

- a) meet local housing needs;
- b) preserve historic/locally significant structures;
- c) protect human health;
- d) encourage economic development;
- e) revitalize neighbourhoods;
- f) stimulate the design of new and innovative neighbourhoods; and,
- g) curb urban sprawl.

The themes of using brownfield redevelopment to promote cost-effective urban development and the development of sustainable communities have been mentioned in both the Canadian (Roseland, 1992) and U.S. literature (Greenberg, et. al., 2001b; Adams and Watkins, 2002) for a number of years. DeSousa (2000) and M.M. Dillon Ltd. et. al. (1996) note that the benefits of controlling urban sprawl have long been realized by planners and policy makers in Canada.

Hara Associates notes that every hectare of brownfield land redeveloped for residential purposes can save as much as \$66,000 a year in transportation costs (relative to equivalent greenfield development) (Hara Associates, 2003). Greenberg et. al., (2001b) notes that a Smart Growth policy that is centred on brownfield redevelopment has the potential to direct "...legislation, dollars and government's moral powers toward attracting developers and individual investors, non-profit organizations, and community groups to neighbourhoods with underutilized or abandoned properties rather than to pristine greenfields." (Greenberg et. al., 2001b, p. 130). Chalifour et. al. note that brownfields represent an untapped opportunity to revitalize some of the older and most neglected neighbourhoods of many communities. There are opportunities to restore environmental quality and bring new life to these properties in the form of housing, small businesses and recreational opportunities. Cleaning up and revitalizing a brownfield site can generate environmental, societal and economic benefits not only at the community level, but also at the city, provincial and even national levels (Chalifour et. al., 2004).

Drawing attention to neighbourhoods with brownfields can and has been accomplished in a number of ways including:

- a) making the redevelopment of neighbourhoods with brownfields an unambiguous government priority;
- b) locating or expanding government facilities in these locations (to act as catalysts);
- c) providing incentives to private investors who locate in these neighbourhoods including funds to remediate sites, demolish buildings, tax reductions and liability protection;
- d) making it financially disadvantageous for businesses and speculators to retain properties in an unutilized or under-utilized state;
- e) providing incentives to upgrade and/or add infrastructure and services to improve the quality (and hence attractiveness) of affected neighbourhoods; and,
- f) aggressive marketing of these locations and of the advantages they offer potential investors (Greenberg et. al., 2001b).

Many of these strategies are currently in use at the state and local level in the U.S., and to a lesser extent, in Canada. In the National Brownfield Redevelopment Strategy for Canada, the NRTEE proposed federal leadership in many of these areas (NRTEE, 2003). This could go a long way toward putting Canada on par with the US in terms of its policy focus on utilizing brownfield redevelopment, and particularly, residential redevelopment on brownfields, to promote Smart Growth.

4.0 SUMMARY OF KEY INFORMANT INTERVIEWS

4.1 Purpose

Section 4.0 summarizes the results of the key informant interviews. The full report on Key Informant Interviews can be found in Appendix B.

The rationale for undertaking the key informant interviews was to add detail to issues identified in the literature review, confirm key issues and barriers identified in the literature review, and obtain information specifically relating to the barriers to brownfield redevelopment for housing, as opposed to the barriers to brownfield redevelopment in general. The key informants were also asked to recommend improvements needed to overcome the barriers to brownfield redevelopment for housing. The key informants were asked to identify potential case studies that could be profiled.

4.2 Key Informants

A list of potential candidates for the key informant interviews was prepared. A total of 31 individuals were identified from across the country in the four major sectors of the brownfield redevelopment industry (i.e., developers, property owners, support professionals, and the public sector). With the assistance of CMHC staff, 16 of the 31 potential key informants were chosen to receive the questionnaire.

4.3 Questionnaire Administration

The questionnaire was designed to elicit the respondent's professional opinions regarding:

- a) impediments to brownfield redevelopment for residential uses, including the relative importance of these impediments;
- b) examples of how these impediments delayed or prevented the redevelopment of one or more brownfield sites for housing;
- c) which impediments to brownfield redevelopment have been partially or completely overcome, and how this has been done;
- d) new impediments to brownfield redevelopment that have emerged; and,
- e) improvements that could be made on several fronts to facilitate brownfield redevelopment for residential uses.

The questionnaire was approved by CMHC and is included in Appendix B as Attachment 1.

The 16 key informants were e-mailed the questionnaire with a request to complete and return the questionnaire via e-mail or facsimile by a set date. Where necessary, these e-mails were followed up with a telephone call, and another e-mail to encourage respondents to complete and return the questionnaire. In total, 12 of the 16 (75%) key informants returned completed questionnaires. Once the questionnaires were received, where necessary, follow-up telephone interviews were conducted with respondents to clarify their responses.

4.4 Questionnaire Results

4.4.1 Significance of Barriers

In terms of the types and relative importance of the barriers to brownfield redevelopment for housing, the results of the key informant interviews support the results of the literature review. Concerns around liability (civil and regulatory) stand out as the most significant impediments to brownfield redevelopment for residential uses. Liability is acting as a barrier to brownfield redevelopment for housing in two main ways. First, the fear of liability is apparently preventing or delaying brownfield redevelopment projects on a regular basis because developers are not purchasing brownfield properties as a result of liability concerns. Developers are also finding that liability concerns are negatively impacting their ability to obtain financing. Recent court decisions and the threat of civil and regulatory liability in the future have caused some corporate owners to mothball their brownfield sites indefinitely, thereby reducing the number of brownfield sites available for redevelopment.

Liability is followed very closely in importance as a barrier to brownfield redevelopment by regulations and regulatory practices. The most often cited regulatory barrier is the lack of acceptance of risk assessment and risk management measures on the part of provincial regulators. The complexity, cost and time it takes to obtain approval of a risk assessment is also cited as a major barrier by the key informants.

The cost differential between greenfield and brownfield redevelopment is still a barrier to brownfield redevelopment for housing. However, according to the key informants, the most significant financial barrier to brownfield redevelopment for housing is the reluctance of lending institutions to finance projects that involve remediation and redevelopment of a contaminated site. This problem is particularly acute for risk assessment/mitigation based projects.

While the key informants also cited barriers related to municipal planning policies, stigma, education and awareness and technology, these “second tier” barriers are generally regarded as less significant than the “first tier” barriers of liability, regulatory and financial issues. Among the second tier barriers, the timeframe and complexity of the municipal planning approvals process for brownfields was cited as a particularly significant barrier to brownfield redevelopment for housing.

The key informants indicated that there have been modest improvements over the last several years in overcoming some of the barriers to brownfield redevelopment for residential uses. Specifically, improvements in the area of financial incentives, both at the municipal and provincial level, and public education and awareness were cited. Some of the key informants feel that several provinces have also become more accepting of risk assessment and management approaches. The RBCA process in the Atlantic provinces was cited as an example. Unfortunately, the key informants suggested little had been done to overcome the liability barrier. In fact, several respondents suggested that with recent court decisions in Quebec and Alberta finding former corporate owners liable for historical contamination remaining on site, the liability barrier has become even more significant.

4.4.2 Suggested Improvements

Not surprisingly, one of the most popular suggested improvements among the key informants is the limitation or termination of civil and regulatory liability. Some respondents even recommended that the contractual allocation of liability between parties to a brownfield property transaction be binding upon the courts and regulators.

Several suggestions were made by the key informants to improve the risk assessment process. This includes:

- a) making more use of qualified professionals to approve risk assessment/management reports;
- b) less government involvement in the risk assessment process;
- c) a facilitative government environment.

In the area of financial incentives, the increased use of municipal and provincial tax incentives, including TIF, is viewed by key informants as an improvement. The key informants also recommended the provision of direct provincial and municipal grants and loans for the assessment and remediation of contaminated sites. Many of the financial recommendations in the NRTEE National Brownfield Redevelopment Strategy, such as brownfield supportive income tax changes and mortgage insurance, were echoed by the key informants.

Planning policy improvements suggested by the key informants focused on reducing the time required to obtain development approvals for brownfield projects. Several respondents also suggested that municipalities take a more proactive role in planning for brownfield redevelopment, for example, by pre-zoning brownfield sites for development. Municipalities were also encouraged by several key informants to adopt a more facilitative role with respect to brownfield projects. Finally, the key informants recommended a number of activities promoting education and awareness around brownfields, including:

- a) publicizing successful brownfield redevelopment projects in the media;
- b) public outreach and communication programs; and,
- c) programs to educate municipal staff and officials.

The results of the key informant interviews serve to confirm and support the results of the literature review. In their responses to the questionnaire, several of the key informants echoed the recommendations in the 2003 NRTEE National Brownfield Redevelopment Strategy for Canada. Therefore, the results of the key informant interviews provide further support for these recommendations.

5.0 SUMMARY OF MAJOR FINDINGS AND ISSUES

5.1 Introduction

This literature review and key informant interviews were conducted to answer the following research questions:

- a) what changes have occurred in the traditional barriers to brownfield redevelopment for residential uses over the last eight years;
- b) which barriers have been partially or completely addressed, and how;
- c) which barriers still exist; and why, and finally,
- d) what new barriers have emerged, either as a result of initiatives to address existing barriers, or changes to legislative, regulatory or financial frameworks.

The interviews asked the key informants to identify improvements that could be made on several fronts to facilitate brownfield redevelopment for residential uses. Furthermore, the literature review identified the larger implications of brownfield redevelopment on transportation, housing supply and affordability and smart growth.

Brownfield redevelopment for housing was found to share the same traditional barriers as those experienced by brownfield redevelopment in general, i.e., liability, regulations, financing, technology, planning, stigma, and other barriers. However, the liability and regulatory barriers took on more significance than the other barriers because of the increasing number of end land users, i.e., homebuyers, exposed to potential risk. This translates into a larger number of potential claimants, and therefore a potentially more expensive civil action. The relationship between the barriers to brownfield redevelopment, especially for housing, must be better understood to properly evaluate the impact of current and proposed legislation, regulations, financial incentives, planning and other initiatives on these barriers. The results of the literature review and key informant interviews for each of the barriers is summarized below.

5.2 Barriers to Brownfield Redevelopment for Housing

5.2.1 Liability

- a) Joint and several liability remains one of the key barriers to brownfield redevelopment for housing. The allocation by provinces of liability using the fairness principle holds promise as a tool to address joint and several liability.
- b) Strict interpretation of the “polluter pays” principle in recent landmark decisions by the courts has emerged as a serious barrier to brownfield redevelopment for housing because it is causing large corporate landowners to mothball their properties.
- c) The introduction of a mechanism for the termination of regulatory and civil liability was suggested in the literature and by key informants as a way to reduce civil liability as a barrier to brownfield redevelopment for housing.

5.2.2 Regulations

- a) There has been progress in several provinces with respect to reforming the regulatory practices that act as barriers to brownfield redevelopment for housing, including:

- i) a commitment to review scientific criteria;
- ii) innovative use of a streamlined risk assessment process; and
- iii) the availability of direct regulator sign-off.

These practices have the potential to reduce the regulatory barriers to brownfield redevelopment for housing.

- b) The lack of better tools for risk assessment and assessing risk mitigation measures was noted as a barrier to brownfield redevelopment for housing.
- c) The lack of current best science in generic cleanup standards was noted as a barrier to brownfield redevelopment in some provinces. Suggested improvements to overcome this barrier include:
- i) toxilogical research to update current science; and,
 - ii) a second set of residential use criteria for high densities where there is minimal opportunity for interaction between receptors and contaminants.
- d) Despite improvement in some provinces, the lack of acceptance of risk assessment and risk management approaches by provincial regulators continues to act as a significant barrier to brownfield redevelopment for housing.
- e) There has been very little progress in reducing the already lengthy timelines required for provincial ministries to review remediation plans and risk assessment/management reports.
- f) The literature and key informants suggested improvements for provincial regulators to help overcome the regulatory barriers to brownfield redevelopment for housing, including:
- i) streamlining the risk assessment process to focus more on the complex sites, and increase the reliance on qualified professionals for risk assessment/management;
 - ii) appropriate staffing and resources in regards to providing expertise and timely review of risk based approaches to site assessment and management (where required); and,
 - iii) a shift in focus from “regulation” of brownfield sites to “facilitation” of brownfield redevelopment.

5.2.3 Financial

- a) The reluctance of lenders to provide financing for brownfield redevelopment projects, and especially residential projects, continues to be a barrier, but some progress has been made as a result of advances in financial risk management tools such as environmental insurance and government mortgage guarantees.
- b) Environmental insurance products have improved over the last five years. However, environmental insurance carriers still do not provide affordable coverage for cleanups of less than \$1 million, which represents most of the remediation projects in the market.
- c) Municipal financial incentives such as tax-increment financing, grants, loans and development charge credits have emerged as a catalyst to brownfield redevelopment for housing in several municipalities and in some municipalities these incentives are explicitly linked to residential development.
- d) The literature and key informants suggested improvements to help overcome the financial barriers to brownfield redevelopment for housing, including:
 - i) federal tax treatment to allow full expensing of remediation costs in the year(s) incurred;
 - ii) introduction of Provincial funding programs that provide direct funding for site assessment and remediation, e.g., Revi-Sols;
 - iii) widespread use of financial incentives by municipalities across Canada.

5.2.4 Technology

- a) Alternative remediation technologies have begun to supplant dig and dump as the preferred approach to remediation in certain situations.
- b) One of the emerging barriers to the increased use and acceptance of alternative remediation technologies in Canada is the lack of available information on these technologies in plain, easy to understand language.

5.2.5 Planning

- a) The following planning issues were identified as barriers to brownfield redevelopment for housing:
 - i) complexity and time required to obtain municipal planning approvals;
 - ii) municipal land use planning policies that are not supportive of brownfield redevelopment; and,

- iii) the availability of an ample supply of greenfield land for residential development increases the cost differential between greenfield and brownfield development.
- b) The literature and key informants suggested improvements to help overcome the planning barriers to brownfield redevelopment for housing, including:
 - i) a clearer, more streamlined and facilitative planning approvals process;
 - ii) policies that provide incentives for brownfield redevelopment for housing, including pre-zoning, density bonusing and streamlined development permits;
 - iii) municipalities acting as facilitators and even partners in brownfield redevelopment projects for housing;
 - iv) disincentives to greenfield residential development, such as restrictions on urban boundary expansions.

5.2.6 Stigma, Education and Awareness

- a) Although improvements have been made, the lack of easily accessible and understood information on brownfield redevelopment is still a barrier to brownfield redevelopment for housing. In some cases, this can lead to brownfield sites being stigmatized.
- b) The literature and key informants suggested improvements to help overcome the stigma, education and awareness barriers to brownfield redevelopment for housing, including:
 - i) publicizing successful brownfield redevelopment projects in the media; and,
 - ii) public outreach programs that are designed to educate participants in the brownfield redevelopment process on the real risks and benefits of brownfield redevelopment.

5.3 Implications of Brownfield Redevelopment for Housing Supply and Smart Growth

With an increased focus on sustainable development and restraining urban sprawl in Canada, brownfield redevelopment is receiving more attention as a potential tool to provide affordable housing within existing urban areas while reducing urban sprawl. Brownfield redevelopment projects can also offer a broader range of housing types in an urban setting close to amenities and transportation. Brownfield redevelopment has been shown to reduce transportation costs in comparison to greenfield development.

Brownfield redevelopment for housing could allow Canadian communities to meet a number of sustainable development goals. This includes:

- a) meeting local housing needs;
- b) preserving historic/locally significant structures;
- c) protecting and improving human health;
- d) encouraging economic development;
- e) revitalizing neighbourhoods;
- f) stimulating the design of new and innovative neighbourhoods;
- g) promoting stronger live-work relationships; and,
- h) curbing urban sprawl.

Based on the environmental, economic and social benefits of brownfield redevelopment, including brownfield redevelopment for housing, it is clear that brownfield redevelopment is the “epitome” of smart growth.

5.4 Conclusion

In 2002, Angus Ross, Chair of the NRTEE’s Brownfield Task Force, commented that the obstacles to brownfield redevelopment were the same as five years ago – liability, financing and public education issues (Piccioni, 2002). Although some progress has been made in most provinces on regulatory barriers and on financial barriers more generally, the situation today has not changed much from eight years ago.

Liability (civil and regulatory) and financial barriers are still the key impediments to brownfield redevelopment. While the development and application of new and revised regulations in several provinces has helped in some cases to reduce regulatory liability exposure and create greater certainty around the finality of cleanups, these same regulations have created some new barriers. The integration of the land use development approvals process with provincial environmental regulations and legislation has also created some new obstacles. One of the conclusions of this study review is that the relationship between these barriers must be better understood in order to properly evaluate the impact of recent legislative, financial incentive and planning initiatives on overcoming these barriers.

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**APPENDIX A - Canadian Council of Ministers of the Environment (CCME)
Contaminated Site Liability Report – Recommended Principles for a
Consistent Approach Across Canada**

**Canadian Council of Ministers of the Environment (CCME)
Contaminated Site Liability Report – Recommended Principles for a
Consistent Approach Across Canada**

- 1) Polluter pays.
- 2) Fairness.
- 3) Site remediation openness, accessibility and public participation.
- 4) No unfair enrichment – beneficiary should contribute according to benefits accrued.
- 5) Sustainable development – integrates environmental, human health and economic concerns.
- 6) Lenders should be exempt from personal liability, with pre-existing contamination.
- 7) Recovery of public funds from responsible parties.
- 8) Avoidance of excessive litigation in site remediation process.
- 9) Liability Allocation.
- 10) Four step dispute resolution.
- 11) Clarification of designation of contaminated sites.
- 12) Certificate of compliance and exemption of future liability.
- 13) Benchmark standards.

Source: Delcan et. al., 1997a, Figure 7, p. 22.

APPENDIX B - Key Informant Interviews

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1.0 INTRODUCTION

1.1 Purpose

This report summarizes the responses to questionnaires completed by brownfield experts from across the country. Twelve experts or key informants in four sectors of the brownfield redevelopment industry (developers, property owners, public sector, and support professionals) were sent a questionnaire containing questions on:

- a) current barriers to brownfield redevelopment for housing, including the relative importance of these barriers;
- b) barriers that have been partially or completely overcome in the last several years; and,
- c) barriers that have emerged in the last several years.

The rationale for undertaking the key informant interviews was to add detail to issues identified in the literature review, confirm key issues and barriers identified in the literature review, and obtain information specifically relating to the barriers to brownfield redevelopment for housing, as opposed to the barriers to brownfield redevelopment in general. The key informants were also asked to recommend improvements needed to overcome the barriers to brownfield redevelopment for housing. The key informants were asked to identify potential case studies that could be profiled. This report summarizes the professional opinions of the key informants on the barriers to brownfield redevelopment for housing and what should be done to overcome these barriers.

1.2 Report Content

Section 2.0 of the report presents the methodology used to develop the questionnaire, chose the key informants and administer the questionnaire. The results of the key informant interviews are provided in Section 3.0, including a discussion of the relative importance of the barriers to brownfield redevelopment and improvements on several fronts suggested by the key informants to facilitate and promote the redevelopment of brownfields for residential uses. Finally, Section 4.0 presents a summary of the major findings of the key informant interviews and compares these findings with those of the literature review.

2.0 METHODOLOGY

2.1 Questionnaire Design

The questionnaire was designed to elicit the respondent's professional opinions regarding:

- a) impediments to brownfield redevelopment for residential uses, including the relative importance of these impediments;
- b) examples of how these impediments delayed or prevented the redevelopment of one or more brownfield sites for housing;
- c) which impediments to brownfield redevelopment have been partially or completely overcome, and how this has been done;
- d) new impediments to brownfield redevelopment that have emerged; and,
- e) improvements that could be made on several fronts to facilitate brownfield redevelopment for residential uses.

Respondents were also requested to identify key literature sources and possible case studies. This information was requested so that it could be used in the literature review and the case study reports. The questionnaire was approved by CMHC and is attached as Appendix 1.

2.2 Key Informants

A list of potential candidates for the key informant interviews was prepared. A total of 31 individuals were identified from across the country in the four major sectors of the brownfield redevelopment industry (i.e., developers, property owners, support professionals, and the public sector). With the assistance of CMHC staff, 16 of the 31 potential key informants were chosen to receive the questionnaire.

2.3 Questionnaire Administration

The 16 key informants were e-mailed the questionnaire with a request to complete and return the questionnaire via e-mail or facsimile by a set date. Where necessary, these e-mails were followed up with a telephone call, and another e-mail to encourage respondents to complete and return the questionnaire. In total, 12 of the 16 (75%) key informants returned completed questionnaires. The breakdown of the 12 respondents by sector and geographic location of respondents is shown in Figure 1. Once the questionnaires were received, where necessary, follow-up telephone interviews were conducted with respondents to clarify their responses.

Figure 1 Key Informants by Sector and Geographic Location

SECTOR			LOCATION		
	Ontario	Quebec	Western Provinces	Atlantic Provinces	TOTAL
Developer	1		1		2
Property Owner			1	1	2
Public Sector	1	2		1	4
Support Professional					4
- Legal	1				
- Insurance	1				
- Environmental				1	
- Planning	1				
TOTAL	5	2	2	3	12

3.0 ANALYTICAL RESULTS

3.1 Introduction

This section analyzes responses to questions 1 to 4 and Section D of the questionnaire. Question 1 is an open-ended question which asked respondents to list what they felt were impediments to brownfield redevelopment for residential uses. Section D asked respondents to indicate which of 12 different impediments to brownfield redevelopment for housing they considered as significant, and then rank the top five of these impediments from most to least significant.

Question 2 asked respondents to give specific examples of how the impediments they identified in question 1 delayed or prevented the redevelopment of one or more brownfield sites for residential uses. Question 3 asks respondents to indicate which of the impediments they listed in question 1 had been partially or completely overcome in the last several years, and how that had been done. Finally, Question 4 asked respondents to indicate what new impediments to brownfield redevelopment for residential uses have emerged over the last several years.

3.2 Barriers to Brownfield Redevelopment for Housing

Figure 2 shows the number of times the respondents as a group listed each type of barrier in their responses to question 1. Liability (civil and regulatory) was the most frequently cited barrier to brownfield redevelopment for residential uses. Regulations and financing issues were also cited frequently as impediments to brownfield redevelopment for residential uses. Planning, and stigma, education and awareness were mentioned far less often by respondents, and technology was mentioned by only one respondent. These results support the results of the literature review which indicated that liability, regulatory practices and financial barriers are the key impediments to brownfield redevelopment for housing.

Figure 2 Barriers to Brownfield Redevelopment for Residential Uses – Responses to Question 1

Type of Barrier (Impediment)	Frequency of Response (Number of Times Listed)
Liability (civil and regulatory)	14
Regulations and Regulatory Practices	11
Financial	11
Technology	1
Planning	5
Stigma, Education and Awareness	5
Other	4

3.2.1 Liability

Liability was the most often cited impediment to brownfield redevelopment for residential uses. Of the types of liability, civil liability was the most often identified. This included:

- a) fear of liability among the lending and legal communities;
- b) fear of future liability on the part of owners of brownfield sites who sell these sites, regardless of indemnities, agreements or restrictive covenants; and,
- c) fear of potential health impacts and loss of property value from residual contamination.

The word “fear” appeared regularly in the responses to question 1. One respondent indicated that this fear was heightened around residential properties as a result of the presence of people, and especially children.

Regulatory liability was also viewed by respondents as a barrier, but was mentioned somewhat less than civil liability. The consistent themes around regulatory liability were the lack of closure of liability from provincial regulators and fear of future regulatory liability. Again, this result supports the conclusions of the literature review.

3.2.2 Regulations

The most often mentioned regulatory impediment was the lack of acceptance of risk assessment and risk mitigation measures by regulators. The complexity and time required to complete a risk assessment was also cited as a barrier by several respondents, with one respondent suggesting a general lack of understanding of risk assessment among brownfield stakeholders. Several respondents from different parts of the country also identified a lack of confidence in government cleanup standards and the existence of non-scientific based cleanup standards as an issue. The lack of provincial government regulatory sign-off on remediated properties was mentioned as another problem. Other specific regulatory impediments included the need to register a certificate of property use on title for sites subject to a generic stratified cleanup (Ontario) and the increased costs resulting from the classification as waste of recyclable materials such as soil, rock, asphalt and concrete (Ontario).

3.2.3 Financial

Several respondents cited the cost differential between greenfield and brownfield development as an impediment to brownfield redevelopment for residential uses. Two respondents also mentioned the lack of funding to remediate sites prior to redevelopment as an impediment. One respondent noted that it is too expensive to remediate many contaminated sites to generic standards and it is difficult to obtain financing on risk assessed sites. The overwhelming financial impediment to brownfield redevelopment listed in response to question 1 was the reluctance of lending institutions to lend for the redevelopment of a contaminated site, and particularly for risk assessed sites. This is the key financial barrier to brownfield redevelopment mentioned by respondents, and it is an obvious source of frustration for many of the key informants.

3.2.4 Technology

Only one respondent listed technology as an impediment. Specifically, the respondent recommended more research and development on remediation technologies in order to lower the costs of remediation. It is instructive that technology is not viewed as an impediment by these experts in the brownfield redevelopment industry.

3.2.5 Planning

While only five respondents listed planning issues as impediments to brownfield redevelopment, the responses showed considerable variation, suggesting that there are a number of planning issues that act as barriers to brownfield redevelopment. Two respondents suggested that municipalities need to develop land use policies, regulations and administrative procedures that facilitate brownfield redevelopment. The abundance of greenfield sites available for development was also cited as an impediment to brownfield redevelopment. In addition, the lack of pre-zoned residential brownfield land and the application of overly stringent land use compatibility and noise separation guidelines were noted as impediments.

3.2.6 Stigma, Education and Awareness

Issues around stigma, education and awareness were mentioned by five of the respondents. One respondent saw the lack of public understanding and national awareness of brownfields as an impediment. One Ontario respondent cited the lack of understanding of the role of the record of site condition (RSC) as the regulatory sign-off. Another respondent identified the lack of flexibility on the part of stakeholders to accept risk based approaches because of fear of post-remediation regulatory requirements. Finally, one respondent mentioned the negative impact of environmental stigma on property values as an impediment.

3.2.7 Other Barriers

Few of the respondents listed barriers other than the traditional barriers identified in the literature review. One respondent cited the lack of a market for residential uses as an impediment to the redevelopment of brownfields for housing. However, this does not appear to be a common theme. Two other respondents, both in Ontario, cited difficulty obtaining CMHC mortgage insurance, particularly for sites using risk assessment, as an impediment converting brownfields for residential use. One of these respondents elaborated with an example which is discussed in Section 3.2.9 on the barriers delaying or preventing brownfield redevelopment projects.

3.2.8 Relative Importance of Barriers to Brownfield Redevelopment for Residential Uses

Section D of the questionnaire asked respondents to identify from a list of 12 traditional barriers to brownfield redevelopment, those they believe to be significant barriers to the redevelopment of brownfield sites. Respondents were then asked to rank the top five barriers they chose from this list with “1” being the most significant and “5” being the least significant. The results, including the number of respondents who ranked each barrier in their top five and the average score for each barrier are shown in Figure 3. The lower the average score, the more significant the barrier or impediment.

Figure 3 Relative Importance of Barriers to Brownfield Redevelopment for Residential Uses (Rank)

Barrier	Number of Respondents (N=12)	Average Score
Environmental legislation/regulations	9	1.9
Other (Lack of financing from financial institutions)	3	2.0
Inability to use risk based remediation approaches	8	2.1
Community concerns	4	2.3
Market conditions	4	2.3
Lack of public awareness and education on brownfields	5	2.8
Environmental remediation funds needed	8	2.9
Municipal planning approvals	5	3.2
Demolition and other site preparation	3	3.3
Environmental assessment funds needed	4	3.5
Inadequate infrastructure	3	3.7
Lack of alternative remediation technologies	3	4.0

Once again, environmental legislation/regulations were mentioned by the greatest number of respondents (9 of 12) as being a significant barrier to brownfield redevelopment for housing. Environmental legislation/regulations also had the lowest average rank score at 1.9, suggesting that this is the most significant impediment to brownfield redevelopment among the respondents surveyed. Following closely with 8 of 12 respondents and an average score of 2.1 was the inability to use risk based assessment/remediation approaches.

The lack of environmental remediation funds was cited by 8 of 12 respondents as a significant barrier, but the average score was 2.9, suggesting that this barrier is not as important as environmental legislation/regulations and the inability to use risk based approaches. The lack of front-end financing from financial institutions was not included as an impediment in the list because it was felt that this impediment would be captured under the environmental remediation funds needed category. In total, three respondents specifically cited the lack of front-end financing from financial institutions as an impediment and the average score was 2.0, indicating that among those respondents who felt this was a barrier, it is considered a significant barrier.

While the results of the ranking in Figure 3 generally support the results of the open-ended question on impediments, the picture did change somewhat. Some of the impediments that were not particularly significant in the responses to question 1 were somewhat more significant here. For example, while ranked by only 4 of the 12 respondents, the average scores for community concerns and market conditions were low at 2.3. Similarly, the lack of public education and awareness was ranked by 5 of the 12 respondents and the average score was 2.8, indicating that while these barriers were not ranked by most of the respondents, those respondents that did rank these barriers believed them to be relatively significant.

3.2.9 Barriers Delaying or Preventing Brownfield Redevelopment Projects

Question 2 asked respondents to give one or more examples of how and when the barriers to brownfield redevelopment they listed in question 1 had delayed or prevented the redevelopment of a brownfield sites for residential use. Several themes emerged among the responses. First, several respondents suggested that numerous transactions of brownfield properties had not taken place as a result of liability concerns. One respondent cites two examples of brownfield sites proposed for redevelopment where liability concerns caused the developers to abandon the projects. Another respondent noted that most large corporations will not sell their brownfield sites for residential development as a result of future liability concerns.

Several respondents gave examples of brownfield sites that could have feasibly been redeveloped, but where financing could not be obtained because a risk-based approach was proposed. One developer noted that in examining opportunities for brownfield redevelopment, sites which require the use of a risk assessment process are often ignored by developers due to the lack of financing options for such sites and the lengthy approvals process often associated with a risk-based approach. Several respondents, and especially the developers, cited delays in the regulatory approvals process, and specifically the risk assessment process as a significant barrier to brownfield redevelopment for housing.

One respondent relayed information on the proposed redevelopment of a contaminated former commercial property for residential use using a risk assessment approach. This respondent indicated that CMHC took several months to decide whether or not to provide mortgage insurance to the lender as a result of concerns over direct liability. Ultimately CMHC provided mortgage insurance to the lender, who in turn provided the developer with financing, allowing the project to proceed.

Finally, two developers noted that the practice of municipalities tying planning approvals to provincial regulatory approvals was delaying brownfield redevelopment projects. One developer in Ontario also cited onerous and overly restrictive planning guidelines such as minimum distance separation guidelines and noise guidelines as delaying or even preventing some brownfield redevelopment projects. This is a common impediment to redevelopment projects in urban areas and is not unique to brownfield redevelopment projects.

3.2.10 Recent Improvements

Respondents were asked in Question 3 to indicate which barriers to brownfield redevelopment for housing they felt had been partially or completely overcome in the last several years. Several respondents suggested that the financial barriers were beginning to be addressed, although largely through non-standard financing sources such as private equity funds established specifically for brownfields. Incentive programs such as Quebec's Revi-Sols program and some municipal incentive programs were also cited as helping overcome the financial barrier.

Several respondents also indicated that the stigma associated with brownfield sites was slowly being addressed as a result of successfully completed brownfield projects across the country. Public education and communication programs, usually implemented as part of these successful projects were also mentioned as helping to reduce stigma.

Several respondents, including the developers noted that generic level remediation is now well understood and accepted, but the use of risk assessment is still viewed as problematic. The use of the Atlantic risk-based corrective action (RBCA) process was cited by several respondents from the Atlantic provinces as a significant improvement in helping to overcome the barriers to brownfield redevelopment in the Atlantic region.

In summary, respondents indicated that some progress had been made in the last several years on financial and stigma barriers, but liability remains a significant and persistent barrier to brownfield redevelopment for residential uses where little progress has been made.

3.2.11 Emerging Barriers

Numerous respondents to question 4, which asked respondents to identify new impediments that may have emerged over the last several years, cited recent court decisions regarding environmental liability in Quebec (Levis, QC.) and Alberta (Lynnview Ridge, Calgary, AB) as having a “chilling effect” on transactions in the brownfields property market. Both decisions involved judgments against Imperial Oil for historical contamination on oil refinery or fuel depot sites that had been redeveloped for residential use. These decisions were cited by several respondents as having caused corporate owners to “mothball” their sites. These court decisions and the associated chilling effect is seen by respondents as a serious barrier to brownfield redevelopment, especially for residential uses.

Two of the Ontario respondents indicated that the new record of site condition (RSC) regulations and risk assessment process in Ontario has increased the administrative complexity associated with using the risk based approach. The reluctance on the part of regulators to accept the risk assessment approach was cited by several respondents across the country as an emerging barrier. Also echoing the results of the literature review, several respondents also noted that the lack of regulatory resources to review risk assessments was an emerging barrier. Yet, several of the respondents indicated that they viewed the risk based approach as the future of brownfield site remediation and redevelopment.

Finally, both of the developers in the survey noted that the emerging practice of municipalities tying land use planning approvals to environmental approvals, issued directly or indirectly by the provincial regulatory agency, is slowing down the development approvals process. This is adding significant delay (months and in some cases years) and cost to the process of developing brownfield sites for residential use.

3.3 Suggested Improvements

3.3.1 Legislation and Regulations

Question 5 asks respondents to indicate which improvements to provincial and/or federal legislation/regulations (if any) would help facilitate the redevelopment of brownfields for residential uses. As shown in Figure 4, respondents suggested a number of improvements to legislation and regulations. Chief among these was the limitation or termination of civil and/or regulatory liability. This was mentioned by 7 of the 12 respondents, several of whom indicated support for the recommendations on termination of civil and regulatory liability in the NRTEE National Brownfield Redevelopment Strategy (NRTEE, 2003). Two of the respondents

specifically recommended creation of an insurance fund to protect owners of former brownfield sites that have been remediated from any future liability associated with remaining contamination. Two respondents wanted to the contractual allocation/transfer of liability to be binding upon regulators and the courts.

Figure 4 Suggested Improvements to Legislation and Regulations

Suggest Improvement	Number of Respondents (N=12)
Limitation/Termination of Civil and Regulatory Liability	7
Timely provincial review of risk assessments/limit provincial government involvement in risk assessments/give responsibility to qualified professionals	3
Develop better tools for risk assessment and analysis and assessing mitigation measures	3
Improve the scientific basis and review of cleanup criteria/guidelines	3
Streamline and harmonize federal and provincial legislation	3
Clarify the cleanup and environmental approvals process	2
Permit binding contractual liability allocation and transfer	2
Reduce urban sprawl/promote brownfields over greenfields	2
Ensure land use/engineering controls are properly recorded and managed into the future	2
Develop a facilitative provincial regulatory environment/government leadership	2
Establish an insurance fund to protect owners of remediated brownfield sites from future liability	2
Provide regulatory sign-off	1
Define “non-polluting owner” in federal and provincial legislation	1
Remove federal protection for railway operators	1
Update provincial noise and land use compatibility guidelines	1

Several comments were made around improving the risk assessment process. This included developing better tools for risk assessment, reducing the timeframe required for the review of risk assessment reports, and making better use of qualified professionals to provide an approval rather than government staff. In general, the respondents recommended less government involvement in the risk assessment process. Two respondents suggested municipalities and provincial regulators ensure land use/engineering controls are properly recorded and managed into the future through the use of mechanisms such as databases. Two respondents suggested that provincial governments take a more facilitative and leadership role in accommodating and promoting brownfield redevelopment.

Three of the respondents suggested that federal and provincial legislation be harmonized. Two of the respondents also suggested that legislation and regulations regarding environmental liability be clarified. Three respondents from different provinces proposed that the clean up standards (criteria) for some substances be revised based on improved scientific knowledge.

One of the most interesting suggestions made by two of the respondents was the passing of smart growth laws to promote brownfield redevelopment and restrict greenfield development (urban sprawl). Other suggestions that were made by individual respondents included:

- a) creating a definition of “non-polluting owner” in both federal and provincial legislation;
- b) removing federal protection enjoyed by railway line operators and forcing them to comply with local and provincial planning policies, standards and by-laws; and,
- c) updating provincial noise and land use compatibility guidelines (Ontario).

3.3.2 Municipal Planning Policies and Procedures

Question 6 asked respondents to comment on the improvements that could be made (if any) to municipal planning policies and procedures to facilitate the redevelopment of brownfields for residential uses. The results are displayed in Figure 5. Again, there were a number of popular suggestions put forward by respondents.

Figure 5 Suggested Improvements to Municipal Planning Policies and Procedures

Suggest Improvement	Number of Respondents (N=12)
Clearer, more streamlined and facilitative planning approvals process for brownfields	6
Proactive planning and pre-zoning of brownfield sites and areas	2
Inventory of brownfield sites or vacant sites that can be used to promote redevelopment of these lands to developers	2
Municipality provides meaningful indemnity to vendor of brownfield site	1
Reduce/eliminate parkland dedication requirement on redevelopment projects	1
Reduce parking requirements on redevelopment projects in downtown cores	1

The most often mentioned planning improvement was to decrease the amount of time required to obtain municipal planning approvals by streamlining the approvals process and making it simpler. Again, this is likely the case for all redevelopment projects. Another suggestion that was mentioned by several respondents is to give priority to planning applications on brownfield sites over greenfield sites. Two respondents also suggested that municipalities engage in proactive planning for brownfield sites, e.g., pre-zoning these sites for development in order to attract development interest. One respondent suggested that municipalities act as planning approvals facilitators and refrain from engaging in environmental regulation.

Two respondents suggested that municipalities maintain inventories of brownfield sites or vacant lands. It was suggested that these inventories could be used to promote developer interest and proactively plan for these areas, e.g., through pre-zoning.

Some suggestions focused specifically on the general planning process for redevelopment projects, and not necessarily brownfields, for example, comments were made about reducing or eliminating parkland dedication requirements and reducing parking standards for redevelopment projects in downtown cores.

3.3.3 Financial Incentives

Question 7 asked respondents to indicate what types of financial incentives (if any) would help to facilitate the redevelopment of brownfields for residential uses. The results are shown in Figure 6. Nine (9) of the 12 respondents or a full 75% suggested that municipalities introduce property tax abatement or tax-increment financing (TIF) programs to help pay for the costs of site remediation and reduce the impact of property tax increases on brownfield redevelopment projects. Five (5) of the 12 respondents in several provinces suggested similar property tax abatement/ TIF programs be offered by the provincial level of government.

Figure 6 Suggested Improvements to Financial Incentives

Suggest Improvement	Number of Respondents (N=12)
Municipal property tax abatement/ tax-increment financing (TIF)	9
Provincial property tax abatement/ tax-increment financing (TIF)	5
Direct provincial grants/loans for site assessment and remediation	5
Federal tax treatment to allow full expensing of remediation costs in year(s) incurred	4
Direct municipal grants/loans for site assessment and remediation	3
Development charge credits	2
Mortgage insurance for brownfield redevelopment projects	2
Federal tax credit for investment in remediation technology	1
Property tax arrears cancellation	1
Reduced property tax assessment treatment on contaminated sites prior to redevelopment	1

Five (5) of 12 respondents recommended direct provincial grants and loans for site assessment and remediation. These were seen as essential for dealing with sites that cannot otherwise be feasibly remediated and redeveloped due to their level of contamination and/or poor geographic location. One respondent suggested that provinces provide these grants and loans directly to municipalities and developers. A few respondents from Quebec and other provinces cited Quebec's Revi-Sols program as a good example of this type of program. Three (3) of the 12 respondents also suggested that municipalities provide direct grants and loans for site assessment and remediation.

Four (4) of the 12 respondents suggested improvements to federal and provincial income tax laws so that remediation costs can be fully deducted against income in the year they are incurred or carried forward. Currently, these expenses must be depreciated as capital costs over a period of time. One (1) of the respondents also suggested the introduction of a federal tax credit for investments in remediation technology.

Other suggested improvements that were mentioned less frequently included:

- a) development charge credits (mentioned by both developers);
- b) mortgage insurance for brownfield redevelopment projects;
- c) property tax arrears cancellation; and,
- d) reduced property tax assessment on contaminated sites prior to redevelopment.

Several of the respondents remarked that simply implementing the financial recommendations in the NRTEE National Brownfield Redevelopment Strategy would greatly help to facilitate the redevelopment of brownfields for residential uses.

3.3.4 Education and Awareness

Question 8 asked respondents about the need for activities to educate and raise awareness about the redevelopment of brownfields for residential uses among the various participants in brownfield redevelopment. The results are shown in Figure 7.

Figure 7 Suggested Improvements to Education and Awareness Activities

Suggest Improvement	Number of Respondents (N=12)
Publicize successful brownfield redevelopment projects in the media	5
Public outreach and communication programs	4
Educate municipal officials and staff about brownfield redevelopment	3
Use workshops and conferences	3
Better monitoring by municipalities of impacts of successful brownfield redevelopment projects	1
Disseminate provincially developed information packages	1
Use of best practices	1
Develop partnerships among governmental and non-governmental agencies to promote brownfield redevelopment	1
Introduce brownfields into education curriculum	1

The most popular response, with 5 of the 12 respondents citing this activity was the publicizing of successful brownfield redevelopment projects and program in the media. Respondents felt this was the most effective way to spread the word on brownfield redevelopment. One respondent suggested the publication of best practices taken from successful brownfield redevelopment projects. Another respondent did note that it can be difficult to persuade developers of successful brownfield redevelopment projects to discuss these projects and agree to have these projects profiled in the media.

Four (4) of the 12 respondents suggested public outreach/communication programs around site contamination, level of risk and potential solutions. The goal of these programs would be to involve local citizens in the process so that they understand the decisions that are being made by the experts. The municipality was usually suggested as the delivery agent for these public outreach and education programs. One respondent suggested that provincially developed information packages that are easy to understand and available to the public would be instrumental in this regard.

The next most often mentioned improvement around education and awareness was the need to educate municipal officials and staff about brownfield redevelopment (3 of 12 respondents). One respondent remarked that a lack of staff expertise at the municipal level may be hindering the ability of municipalities to facilitate complex brownfield redevelopment projects, particularly when there are complex environmental issues. Another respondent suggested that municipalities

should do a better job of monitoring the impacts of successful brownfield redevelopment projects, both as a way to publicize these efforts but also as a way to improve municipal brownfield redevelopment programs.

Finally, 3 of 12 respondents suggested the use of workshops and conferences across the country as a good way to spread the word about brownfield redevelopment for residential uses. Another respondent suggested that the development of partnerships among the various governmental and non-governmental agencies and organizations involved in brownfield redevelopment could be used to spread the message about brownfields. Finally, one of the most unique suggestions made by one of the respondents was to actually address the need for public education on the positive impacts of brownfield redevelopment on quality of life through the long-term introduction of brownfields related curriculum into the education system.

3.3.5 Other Improvements

Respondents suggested quite a large number and variety of legislative, regulatory, planning, financial, and education and awareness improvements in response to questions 5 to 8. Therefore, it was not surprising to find that respondents had little to add in response to Question 9, which asked respondents if they had any other improvements to help facilitate the redevelopment of brownfields for residential uses. One respondent suggested that federal legislation and funding may be the way to improve brownfield redevelopment for housing. Another respondent simply suggested a pragmatic approach in government and the courts toward contamination and liability. Finally, one respondent suggested that creating a better living environment around brownfield sites would help to reduce and reverse the social stigma associated with these sites. Several of the respondents indicated that it is important to counteract the social stigma affecting some brownfield sites.

4.0 SUMMARY OF MAJOR FINDINGS

4.1 Barriers to Brownfield Redevelopment for Housing

The results of the key informant interviews indicate that liability (both civil and regulatory) appears to be the most significant barrier to brownfield redevelopment for housing. Liability is acting as a barrier to brownfield redevelopment for housing in two main ways. First, the fear of liability is apparently preventing or delaying brownfield redevelopment projects on a regular basis because developers are not purchasing brownfield properties as a result of liability concerns. Developers are also finding that liability concerns are negatively impacting their ability to obtain financing. Recent court decisions and the threat of civil and regulatory liability in the future have caused some corporate owners to mothball their brownfield sites indefinitely, thereby reducing the number of brownfield sites available for redevelopment.

Liability is followed very closely in importance as a barrier to brownfield redevelopment by regulations and regulatory practices. The most often cited regulatory barrier is the lack of acceptance of risk assessment and risk management measures on the part of provincial regulators. The complexity, cost and the time it takes to obtain approval of a risk assessment is also cited as a major barrier.

The cost differential between greenfield and brownfield redevelopment is still a barrier to brownfield redevelopment. However, according to the key informants, the most significant financial barrier to brownfield redevelopment is the reluctance of lending institutions to finance projects that are remediating and redeveloping a contaminated site. This problem is particularly acute for risk assessment/mitigation based projects.

While the key informants also cited barriers related to municipal planning policies, stigma, education and awareness and technology, these “second tier” barriers are generally regarded as less significant than the “first tier” barriers of liability, regulatory and financial issues. Among the second tier barriers, the timeframe and complexity of the municipal planning approvals process for brownfields was cited as a particularly significant barrier.

The key informants indicated that there have been modest improvements over the last several years in overcoming some of the barriers to brownfield redevelopment for residential uses. Specifically, improvements in the area of financial incentives, both at the municipal and provincial level, and public education and awareness were cited. Some of the key informants feel that several provinces have also become more accepting of risk assessment and management approaches. The RBCA process in the Atlantic provinces was cited as an example. Unfortunately, the key informants suggested little had been done to overcome the liability barrier. In fact, several respondents suggested that with recent court decisions in Quebec and Alberta finding former corporate owners liable for historical contamination remaining on site, the liability barrier has become even more significant.

4.2 Suggested Improvements

Not surprisingly, one of the most popular suggested improvements among the key informants is the limitation or termination of civil and regulatory liability. Some respondents even recommended that the contractual allocation of liability between parties to a brownfield property transaction be binding upon the courts and regulators.

Several suggestions were made by the key informants to improve the risk assessment process. This includes:

- a) making more use of qualified professionals to approve risk assessment/management reports;
- b) less government involvement in the risk assessment process;
- c) a facilitative government environment.

In the area of financial incentives, the increased use of municipal and provincial tax incentives, including TIF, is viewed by key informants as an improvement. The key informants also recommended the provision of direct provincial and municipal grants and loans for the assessment and remediation of contaminated sites. Many of the financial recommendations in the NRTEE National Brownfield Redevelopment Strategy, such as brownfield supportive income tax changes and mortgage insurance, were echoed by the key informants.

Planning policy improvements suggested by the key informants focused on reducing the time required to obtain development approvals for brownfield projects. Several respondents also suggested that municipalities take a more proactive role in planning for brownfield redevelopment by for example, pre-zoning brownfield sites for development. Municipalities were also encouraged by several key informants to adopt a more facilitative role with respect to brownfield projects. Finally, the key informants recommended a number of activities promoting education and awareness around brownfields, including:

- a) publicizing successful brownfield redevelopment projects in the media;
- b) public outreach and communication programs; and,
- c) programs to educate municipal staff and officials.

In terms of the types and relative importance of the barriers to brownfield redevelopment for housing, the results of the key informant interviews support the results of the literature review. Concerns around liability (civil and regulatory) stand out as the most significant impediments to brownfield redevelopment for residential uses. Liability is followed closely by regulatory practices and lack of access to project financing as significant impediments to brownfield redevelopment. Regulatory practices, specifically the lack of acceptance of risk assessment and management measures, is a significant barrier to brownfield redevelopment. The reluctance of lending institutions to finance brownfield redevelopment projects is also a significant barrier. The other barriers to brownfield redevelopment, namely municipal planning policies, education and awareness, and technology, are all less significant impediments to brownfield redevelopment for housing.

The results of the key informant interviews serve to confirm and support the results of the literature review. In their responses to the questionnaire, several of the key informants echoed the recommendations in the 2003 NRTEE National Brownfield Redevelopment Strategy for Canada. Therefore, the results of the key informant interviews provide further support for these recommendations.

5.0 REFERENCES

Delcan, Golder Associates, and McCarthy Tetrault. (1997a). “Removing Barriers to the Redevelopment of Contaminated Sites for Housing.” CMHC: Ottawa.

NRTEE (2003). Cleaning up the Past, Building the Future: A National Brownfield Redevelopment Strategy for Canada. Ottawa.

ATTACHMENT 1

CMHC Questionnaire – Brownfield Redevelopment for Housing



CMHC Questionnaire Brownfield Redevelopment for Housing

A. Impediments

Based on your experience in the brownfield industry, we would like to know what you feel are the impediments to the redevelopment of brownfield sites **for residential uses**. Unless otherwise indicated, please answer the following questions in as much detail as possible. If you require additional space, please attach a separate page(s).

1. What do you feel are the impediments to brownfield sites being remediated and developed for **residential uses**? (Please simply list the impediments below in point form)

-
-
-
-
-

2. If possible, please give one or more examples of how and when the impediments you listed above delayed or prevented the redevelopment of one or more brownfield sites for **residential uses**.

3. Which of the impediments to brownfield redevelopment for **residential uses** that you listed above in 1) do you feel have been partially or completely overcome in the last several years? How have these impediments been overcome?

4. What new impediments to the redevelopment of brownfields for **residential uses** have emerged in the last several years? Why have these new impediments emerged?

B. Improvements

Based on your experience with brownfields, we would like to know what improvements could be made in several areas to facilitate the redevelopment of brownfields for **residential uses**. Unless otherwise indicated, please answer the following questions in as much detail as possible. If you require additional space, please attach a separate page(s).

5. Do you feel that improvements could be made to provincial legislation/regulations/cleanup standards and/or federal legislation/regulations to facilitate the redevelopment of brownfields for **residential uses**? [☐] Yes [☐] No

If Yes, what type of improvements would be helpful?

6. Do you feel that improvements could be made to municipal planning policies and procedures to facilitate the redevelopment of brownfields for **residential uses**? [☐] Yes [☐] No

If Yes, what type of improvements would be helpful?

7. Do you feel that financial incentives would help to facilitate the redevelopment of brownfields for **residential uses**? [] Yes [] No

If Yes, what type(s) of incentives would be helpful?

8. Do you feel that activities to educate and raise awareness about redevelopment of brownfields for **residential uses** among the various participants in brownfield redevelopment (including the public) would help to facilitate the redevelopment of brownfields for **residential uses**? [] Yes [] No

If Yes, what type(s) of activities would be helpful?

9. What other improvements do you feel (if any) would help to facilitate the redevelopment of brownfields for **residential uses**?

C. Case Studies

Briefly highlight up to three (3) brownfield redevelopment projects for **residential uses** (built, under construction or in the planning stages) that you have been involved in or are aware of. Please include as much information as possible for each project:

Case Study No. 1

a) name and location (city/province) of the project? _____

b) previous land use? _____

c) approximate number of residential units? _____

d) status of project ☐ Built ☐ Under Construction ☐ Planning Stage

e) impediment(s) to the project? _____

f) how the impediment(s) were overcome? _____

g) lessons learned from the project? _____

h) impact(s) of the project on the community? _____

Case Study Contact Information

Name: _____ Organization: _____

City: _____ Province: _____

Phone: _____ Fax: _____

E-Mail: _____ Web Page: www. _____

Case Study No. 2

a) name and location (city/province) of the project? _____

b) previous land use? _____

c) approximate number of residential units? _____

d) status of project ☐ Built ☐ Under Construction ☐ Planning Stage

e) impediment(s) to the project? _____

f) how the impediment(s) were overcome? _____

g) lessons learned from the project? _____

h) impact(s) of the project on the community? _____

Case Study Contact Information

Name: _____ Organization: _____

City: _____ Province: _____

Phone: _____ Fax: _____

E-Mail: _____ Web Page: www. _____

Case Study No. 3

a) name and location (city/province) of the project? _____

b) previous land use? _____

c) approximate number of residential units? _____

d) status of project ☐ Built ☐ Under Construction ☐ Planning Stage

e) impediment(s) to the project? _____

f) how the impediment(s) were overcome? _____

g) lessons learned from the project? _____

h) impact(s) of the project on the community? _____

Case Study Contact Information

Name: _____ Organization: _____

City: _____ Province: _____

Phone: _____ Fax: _____

E-Mail: _____ Web Page: www. _____

D. Impediments Revisited

Without reviewing your responses in the previous sections, please mark an “X” beside those items below which you believe are **significant** impediments to the redevelopment of brownfields for **residential uses**. Then rank the top five (5) impediments with “1” being the most significant and “5” being the least significant of the top five impediments.

	RANK
<input type="checkbox"/> Environmental remediation funds needed	_____
<input type="checkbox"/> Community concerns	_____
<input type="checkbox"/> Environmental assessment funds needed	_____
<input type="checkbox"/> Environmental legislation/regulations	_____
<input type="checkbox"/> Inadequate infrastructure	_____
<input type="checkbox"/> Demolition and other site preparation (excluding environmental funds) needed	_____
<input type="checkbox"/> Municipal planning approvals	_____
<input type="checkbox"/> Lack of alternative remediation technologies	_____
<input type="checkbox"/> Inability to use risk based remediation approaches	_____
<input type="checkbox"/> Lack of public awareness/education on brownfields	_____
<input type="checkbox"/> Market conditions	_____
<input type="checkbox"/> Other (please specify) _____	_____

E. Key Literature

Please identify any key literature that you feel provides a good discussion of one or more of the impediments to brownfield redevelopment for **residential uses**.

Author: _____ Title: _____

Author: _____ Title: _____

F. Respondent Information

Your Name: _____ Organization: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Phone: _____ Cell: _____ Fax: _____

E-Mail: _____ Web Page: www. _____

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