Executive Summary

Industrialization began in the 1850s with the Toronto harbour being transformed into an industrial zone for a century to come. By 1911, the manufacturing sector became the largest source of employment for the entire city (City of Toronto, 2006). In the mid-twentieth century, the rise of the automobile and construction of major highways provided alternatives to the traditional transportation methods, allowing people to live and work a greater distance from the city. Industries soon followed their workforces, moving facilities to the suburbs where there was an abundance of inexpensive land available for development and future expansion. Thus, the existing industrial buildings in the downtown region of the City of Toronto often became vacant and began to show signs of disrepair.

Infill development, including the reuse of vacant and derelict industrial buildings, is a desirable form of development as municipalities face the pressure of continuous growth. There have been numerous industrial sites in Toronto that have already been redeveloped through adaptive reuse, but there are still sites that remain underutilized, and additional sites continue to become vacant across the city. As the prior use can no longer be supported, these buildings are demolished in order to construct new buildings, or they undergo adaptive reuse.

The purpose of this report is to explain how the environmental, locational, legislative, market and financial characteristics of industrial buildings located in Toronto affect whether they are chosen for adaptive reuse. Additionally, the similarities and differences between public and private sector adaptive reuse projects will be studied, reflecting the variety of projects present in today’s market. This report will complement existing research completed by others on the characteristics of adaptive reuse projects in Ontario, and provide more specific information regarding the industrial adaptive reuse market in Toronto.

The case study approach used in this report consists of eight industrial adaptive reuse projects in the City of Toronto. Interviews with the developers were completed to gain valuable insight into the factors that were present and affected the selection of the building. The analysis involved reviewing the data from the interviews to identify the similarities and differences between the characteristics of the developers’ projects. Through the use of a table, the characteristics for each building were identified as being an asset or challenge to the project. This provided a sense of the characteristics that were most
common to the projects, as well as which projects experienced a significant number of characteristics viewed as assets or challenges. Comparing the presence of the characteristics in the developers’ projects provided insight into how the type or use of the development affected whether certain types of buildings are selected for reuse, or if the project being developed by public or private sector in Toronto affects the building selection.

Additionally the characteristics that were seen as being common to a number of the projects as per the table were discussed further. The significance of the characteristics was based in part on their commonality between projects and the importance of them as noted by the developer. The characteristics as noted above were also compared to the information gathered from the literature where it was applicable to do so. Through the comparison, it was possible to determine if the characteristics that were shown to generally be barriers or drivers for the eight case studies in Toronto are unique to the City or are common to adaptive reuse projects elsewhere. The interviews with the developers clearly demonstrate that the characteristics identified as assets or challenges varied amongst the eight buildings. With the exception of Evergreen Brickworks project, not yet completed, each project was deemed by the developer to be successful.

The environmental characteristics that were considered to be important were contamination, architectural and structural conditions, and building flexibility. Contamination present on six of the eight sites was costly to remediate, and caused delays. The typical structural types concrete and timber frame were both identified as desirable in all buildings. However, in the case where there was an addition added to the existing structure, concrete structures were preferred over timber and steel structures, due to their ease of adaptability to the Ontario Building Code. The architectural conditions are the initial reason that developers are attracted to buildings with the commonly desirable elements being tall ceilings, large number and size of windows, historical character, and open concept space. Additionally, a flexible space allows the developers the greatest opportunity for creativity and design, allowing the space to appeal to the potential prospects who will eventually make use of it.

The developers saw that the location of the buildings in downtown Toronto was imperative to the feasibility of most of the projects, due to the strong real estate market for this type of development. The success of the projects is shown to be independent of the existing neighbourhood conditions, although the projects themselves have assisted in revitalizing the surrounding areas that were in decline. Generally, the price of the building and land were shown to have little effect on whether the buildings were chosen. Most were acquired at no discount due to their ideal location within Toronto. However,
two buildings were purchased at a discount due to the timing and their location in a declining neighbourhood. Although very few financial incentives were offered by government agencies for the studied buildings, similar incentives may be more important for adaptive reuse projects today as there appears to be more incentives available for heritage designated sites and brownfields.

As for the comparison of public and private projects, demonstrated in this study by the 51 Division Police Station, there is a significant difference in the factors affecting whether a public or private building is chosen because the fact site was chosen based on the client’s needs. With this project, a site was required for a new police station within a certain area. This site fit the usage perspective for location and size as required by the client. If there had been another site that fit the client’s criteria, adaptive reuse or not, there may have been a comparison to determine which site would have cost less to develop, and the most economical location could have been selected. In respect of environmental contamination, the estimated cost required for remediation is deducted from the purchase price of the building and land. With this model, any building and site, no matter the contamination level, could be redeveloped by the city. The Facilities and Real Estate department of the city was able to work with other city agencies and divisions with similar goals of completing the project, thereby simplifying processes such as dealing with the site containing a heritage designation.

Based on the analysis of the interviews, four recommendations were made. These recommendations are provided with the goal of assisting developers during the selection of industrial buildings in Toronto to undergo adaptive reuse. Each recommendation considers the characteristic that a building and site should or should not possess.

**Recommendation 1: The site should not contain ground water contamination**

**Recommendation 2: Use concrete buildings if planning an addition**

**Recommendation 3: Select a building with interior demising walls removed**

**Recommendation 4: Select a building that has financial or development incentives promoting reuse**
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I would like to extend my gratitude and thanks to everyone who contributed to this report, both directly and indirectly. I would first like to thank my supervisor, Professor John Andrew, for his guidance and insight in the development and completion of the report.

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Chapter 1 – Introduction

1.1 Context

As municipalities face rapid growth, infill developments— including vacant and derelict industrial sites—are becoming more desirable to the development community. These sites are typically located centrally within a large city, such as Toronto. In many cases they are situated along major transportation routes, and in existing neighbourhoods that have developed over time to surround the sites.

The railroads and ports allowed the Toronto harbour, from the mid nineteenth century, to develop into an intensive industrial zone. By 1911, the manufacturing sector became the largest source of employment for the entire city (City of Toronto, 2006). In the mid twentieth century, the rise of the automobile and construction of major highways provided alternatives to the traditional transportation methods, allowing people to live and work a greater distance from the city. This suburbanization trend continued with industries following the workers and moving out of the city centre, resulting in the existing industrial sites in the City of Toronto beginning to show signs of neglect.

There have been numerous industrial sites in Toronto that have already been redeveloped through adaptive reuse, but there are still sites that remain under-utilized, and additional sites continue to become vacant across the city. Industrial sites tend to remain vacant due to complications including, but not limited to, historical designations and environmental contamination from previous uses. As the prior use can no longer be supported, these buildings are demolished in order to construct new buildings, or they undergo adaptive reuse. Overcoming these complications through adaptive reuse has been proven possible in many cases due to the dedication of developers and other individuals within the city who do not want to see these sites and buildings with a strong sense of history lost to the wrecking ball as previously experienced in Toronto.

1.2 Adaptive Reuse Definition

Adaptive reuse, according to Burchell and Listokin (1981), is defined as a revitalization strategy which employs a series of linked procedures to plan for, inventory, acquire, manage and reuse surplus or abandoned real estate. An imperative aspect of adaptive reuse projects is that the land or building which is being considered for had a previous use that is no longer suitable in that type of building or
location, and therefore the potential value of the property will be maximized by adapting the space (Burchell and Listokin, 1981). The adaptive reuse of buildings can include modifications that are purely aesthetic, and are made to the building while retaining its structure and character.

1.3 Report Description & Outline

This report seeks to answer the question: How do environmental, locational, legislative, market and financial characteristics of industrial buildings located in Toronto affect whether they are chosen for adaptive reuse? A secondary objective is to identify the similarities and differences between the characteristics deemed to be important for building selection in public and private sector adaptive reuse projects. The following list of secondary questions was developed to guide the main question.

*Environmental*
1. How does contamination of the site affect the reuse potential?
2. What are the desirable structural and architectural conditions of the building that facilitate its conformity to the building code?

*Locational/Market*
3. How do the location and site accessibility of a building affect the adaptive reuse decision?
4. How important is the analysis of the surrounding market area to the selection of a building?

*Legislative*
5. What effect does the building/site being designated as historic have on the selection decision?
6. How much of an impact do the zoning by-law(s) and Official Plan have on selecting a site?

*Financial*
7. How important is the valuation of the property prior to the purchase?
8. Are there financial incentives provided for certain sites?

Chapter two describes the method used to complete the study, divided into three sections: analytic method, procedure and limitations. Chapter three reviews the literature related to the adaptive reuse of projects, specifically industrial sites, and the characteristics that may be barriers or drivers to their development potential. Chapter four outlines and provides background information on the eight case studies that are used and analyzed in this report. In chapter five, the analysis of the case studies is completed, are the relevant findings are presented. The final chapter consists of recommendations based on the analysis, and conclusions regarding the characteristics related to building selection for industrial adaptive reuse projects.

This report attempts to complement the prior studies completed by Heath (2001), Bullen (2007), Shipley, Utz & Parsons (2005), and Shipley, Utz & Parsons (2006) that considered adaptive reuse projects. These studies briefly discuss the characteristics that are barriers or drivers of adaptive reuse
projects. This report is narrower in focus than the above-noted studies in that it only considers adaptive reuse projects in downtown Toronto in buildings that were originally used for industrial purposes. Having a narrower focus should provide more specific and can be translated into recommendations for future projects in Toronto, specifically highlighting characteristics that may be specific to industrial buildings. A more detailed discussion on prior studies and how this report relates can be found in Chapter 2.

Eight case studies were used to complete this report, and directors, vice presidents, and project managers of industrial adaptive reuse projects in Toronto were interviewed about characteristics of their respective projects. An analysis of the information obtained from the interviews was completed by identifying the similarities and differences between the developers’ views of both the presence and relevance of the characteristics in Toronto. Based on the findings, conclusions were developed that explain how the characteristics of industrial buildings in Toronto affect whether they are chosen for adaptive reuse. In addition, a set of recommendations was compiled for developers to refer to during the building selection process for adaptive reuse projects. Further details on the method used can be seen in Chapter 3.
Chapter 2 – Adaptive Reuse Background Information

2.1 Principles of Adaptive Reuse

The challenge comes in finding the desired balance between change, adaptation and restoration to appease the stakeholders. In finding the right balance, adaptive reuse projects should integrate five principles into the design as stated by (Loures and Panagopoulos, 2007):

- Perform the functions well for which they are redesigned
- Be long lasting and adaptable to new uses
- Respond well to their surroundings and enhance their context
- Have a visual coherence and create ‘delight’ for users and passers-by
- Be sustainable – non polluting, energy efficient, easily accessible and have a minimal environmental impact

The process of adapting a building requires dedication from the developer and the developer’s team of professionals, as these projects are unique and require creative solutions. Jane Jacobs (1961) identifies the importance of using an existing built form in a city, and the possibilities it can create, when she states, “Old ideas can sometimes use new buildings. New ideas must use old buildings.” Adaptive reuse can be applicable to any type of existing building, from industrial buildings to churches and anything in between, with a resultant use that can vary just as much. Wherever a redundancy in the prior use of the vacant building is present, an opportunity for a change of use presents itself.

2.2 Advantages of Adaptive Reuse

There are evident environmental, social, and economic benefits to adaptive reuse projects for all stakeholders. The environmental benefits are experienced through the reuse and recycling of the existing materials and structure, reducing the amount of waste entering landfills. The ability to reuse these materials is mainly due to the fact that older buildings are often constructed with materials of a higher grade and quality that therefore have a longer lifespan than those used in current construction (Langston et al., 2007). Additionally, with the envelope of older buildings generally consisting of stronger materials and containing numerous windows, the energy efficiency of the heating and cooling can be improved. Finally, the reuse of a building can allow for the use of the existing public infrastructure which reduces the pressure on municipalities, preserves the natural environment and reduces urban sprawl (Langston et al., 2007).
The social benefits of reuse projects include rejuvenating the heritage and cultural values of a building. During the time period when the building was originally in use, it served a specific purpose in the neighbourhood to which people, in one way or another, were connected. Older buildings have the ability to provide character to an area and create a ‘sense of place’; acting as a link to the past. Retaining and improving the building to highlight its important features instead of demolishing the structure helps to create a diverse community through varying building types and ages. A reduction in the quantity of vacant or derelict buildings assists in reducing the crime rate and other antisocial behaviours in an area. As well, it can facilitate the revitalization of the surrounding neighbourhood (Langston et al., 2007).

There are economic benefits as a result of adaptive reuse projects that can be experienced by both the municipality and the developer. The municipality benefits from the increased property tax that the developed site creates over a vacant site. There is also no need to extend public infrastructure services to the site.

While there are numerous benefits to adaptive reuse for the municipality and community, the adaptive reuse of a building is dependent almost entirely on developers. Specifically for developers, adaptive reuse projects are attractive for several reasons. First, if a developer owned the building during its prior use that eventually became redundant, a change of use of the building may be the only method in which they can attain liquidity from the land and building (Heath, 2001). In this case, adaptive reuse is the option that would produce the greatest financial gain. Also, there may be legal constraints in place, such as heritage designations that prevent the building from undergoing demolition or other significant redevelopments. Another reason developers are drawn towards adaptive reuse projects is the possibility of lower construction costs as compared to new build projects. The developer may benefit from potential cost savings associated with construction and materials by reusing many of the existing elements rather than incurring the expense of demolishing an old building, disposing of old materials, and then constructing a new structure (Bullen, 2007). In addition, the cost may be reduced due to a shorter timeline for the project given that the main structure is already constructed (Douglas, 2006). The attributes associated with adaptive reuse projects, such as the physical conditions and locations of the buildings, are also generally highly desirable to developers (McCormick, 2002). These attributes transfer into attractive aspects for potential buyers or tenants. Lastly, certain developers value history and the environment, and adaptive reuse projects can incorporate these elements through the retention of notable buildings and elements in various sustainable forms (Chung, 2004).
2.3 Reasons for Disuse of a Building

At the start of the Industrial Revolution in the 1850s, a network of industrial buildings grew and became clustered in areas around the major transportation routes in Toronto such as the railway and harbour. This trend continued and flourished into the twentieth century with the expansion of the industrial facilities for war efforts. To accommodate the growing industries, the Toronto shoreline was extended south by approximately 900m through lakefill operations (City of Toronto, 2006). Nearing the mid-twentieth century, the constraints that tied industry to these areas were loosened with the rapid growth of motor vehicle use coupled with the improving road networks. Workers had the ability to live in the outskirts where the land was less expensive, and could travel to their workplace with motor vehicles. With the growing populations moving outside of the city centre, the industries and businesses followed and moved outwards to where the market and employees were. The transportation of goods and services shifted from rail and water towards truck transportation due to the increasing number of roadways connecting cities (Hodge and Gordon, 2008).

Since the industrial revolution, the technology associated with industrial practices has been continually evolving. The industries themselves desired more modern facilities in areas where expansion could easily occur and be adaptable to the changing technologies (Stratton, 2000). This combination of technological innovations and the advances of the automobile led to industries shifting from city centres to the fringe agricultural lands. This is shown between 1946 and 1954 when the suburbs and farmlands surrounding Toronto began to develop, while at the same time the percentage of manufacturing businesses within the boundaries of the City of Toronto fell from 90 to 77 percent (City of Toronto, 2006). By the late 1960s, environmental and social impacts of the suburban growth and lifestyle were being criticized, and by the 1980s more sustainable practices became a significant issue in the development of municipalities (Hodge & Gordon, 2008).

The development trends from the previous mid-century have resulted in vacant and derelict industrial buildings located in downtowns. These buildings present the opportunity for reuse, replacing the once important industrial use that assisted in shaping the form and function of the City of Toronto with a new use that is economically viable and complimentary to the current surrounding community.
2.4 Adaptive Reuse Development Process

For any adaptive reuse project to be successful, a detailed planning process must be undertaken. As part of the planning process there are six main stages of development for any project type: feasibility and acquisition, design, financing, construction, marketing and leasing, and operation and management (Peiser and Frej, 2007). Selecting an industrial building for adaptive reuse from the available stock of buildings is a vital step in the development process, as seen in Figure 11 in Appendix A. Within the feasibility phase of the development process seen in Figure 11, elements such as the site plus market, economic, comparable, and locational evaluations should be considered. The characteristics that can affect the selection of a site are shown under the Data Collection heading and will be studied in further detail in this report to demonstrate how they affect the site selection for adaptive reuse projects specifically.

2.5 Adaptive Reuse Characteristics

The adaptive reuse of industrial buildings in Toronto began occurring on a widespread basis in the mid 1990s. There have been numerous studies completed on the adaptive reuse process and concept although few studies have been completed on adaptive reuse projects in Canada regarding the ideal characteristics of a building. Below are relevant studies completed on adaptive reuse projects that influenced this report and provided the focus.

A study, *Adaptive re-use of offices for residential use: the experience of London and Toronto* by Heath (2001), looked at the overall conversion process of office buildings. General categories of barriers and drivers in relation to office- to- residential conversions were identified with specific characteristics listed for each. The characteristics were not described in great detail and were, in part, adapted to be used as a basis for this report in the overall outline of characteristics to be considered.

An additional important article focusing on adaptive reuse is titled *Adaptive reuse and sustainability of commercial buildings* written by Bullen (2007). This study looks at adaptive reuse and the sustainability aspects of projects, but also considers several other factors that should be considered during the feasibility stage of the decision process. Similar to the article by Heath, this article lists various characteristics, but details are not discussed. All forms of adaptive reuse projects are considered, not solely industrial buildings.
The Heritage Resource Centre, located at the University of Waterloo, is one of the leaders in research dealing with heritage properties and adaptive reuse in Canada. Two studies were published through The Heritage Resource Centre: *Does Adaptive Reuse Pay? A study of the Business of Building Renovation in Ontario, Canada* and *The Lazarus Effect: An Exploration of the Economics of Heritage Development in Ontario* written by Shipley et al. (2005 and 2006). These reports focused on the cost of heritage development, consisting of adaptive reuse and renovation in Ontario. These studies identify the characteristics that are benefits and constraints to a successful renovation project in terms of building type, architectural and marketing method, financing, and regulatory environment while also looking at the costs of the project. Both articles used case studies consisting of all types of adaptive reuse projects from across Ontario, thus producing generalized results.

Since the main focus of this report is understanding how the environmental, locational, legislative, financial, and market characteristics of industrial buildings in downtown Toronto affect whether they are chosen for adaptive reuse, the report by Shipley et al. (2005) provides strong direction in terms of determining the characteristics of the projects that led to their success. The aim of focusing on adaptive reuse projects in Toronto is to provide more specific results than those found in the above-noted studies and can be translated into recommendations for future projects. Similarly, considering only industrial buildings there may be characteristics specific to these types of projects. With the characteristics varying in significance depending on the city and building type, there may be certain characteristics that differ in degree of importance for adaptive reuse of industrial projects in Toronto.

A similar study could be completed in another city and the results compared to Toronto in order to understand how the characteristics for industrial buildings may vary by city. Overall the recommendations may provide further understanding into why certain buildings may be better suited for adaptive reuse. With this report I am looking to determine whether there are any differences or similarities between public and private adaptive reuse projects as this has not been discussed in the previous research considered.

The feasibility of adaptive reuse projects is based upon several characteristics which should be considered in detail to ensure that the most suitable site is selected. Through the review of relevant literature, the following characteristics will be discussed in further detail: environmental concerns, locational, legislative imperatives, financial/economic issues, and market (Heath, 2001).
2.5.1 Environmental Characteristics

A building’s specific physical conditions such as size, construction material, structural integrity, and space layout are elements that form a solid foundation for a project’s design (Heath, 2001; Shipley et al., 2006). A developer, along with a professional team of engineers and architects, will look at these physical elements to ensure a project can be adapted for an alternate use while still remaining profitable given the existing conditions. The physical environmental elements affecting adaptation that will be discussed further are building systems, architectural and structural conditions, space layout, site work, and contamination.

2.5.1.1 Building Systems

An analysis of the building’s systems for functional and aesthetic purposes can assist in determining the suitability of the building for its intended use. The buildings consist of structural, electrical, mechanical, and plumbing elements which are all interconnected and vital for any building’s operation (Rabun and Kelso, 2009). The evaluation of these systems should be completed by a group of professionals who are experts in their respective fields through on-site inspections and review of original drawings and documents where available.

The electrical, mechanical and plumbing systems are similar in that they may still be functional at the time of inspection but not adequate for the new development in terms of being able to handle the required loads. Unlike the structural system, it may be economically viable to replace any or all of these systems in their entirety during construction, providing a higher level of assurance that the systems will function properly and efficiently during the remaining lifespan of the development (Rabun and Kelso, 2009). If these systems are replaced they can be upgraded to green energy standards to provide a more sustainable development.

2.5.1.2 Structural Conditions

The construction type and materials used are typically a reflection of the time period during which the building was constructed. Buildings erected prior to 1860 were typically fashioned of either load-bearing masonry or heavy timber frames (Rabun and Kelso, 2009). In the late nineteenth century and early twentieth century buildings were generally mill construction which consisted of a combination of both load-bearing masonry exterior walls and interior heavy timber frames together in one structure (Rabun and Kelso, 2009). Also in the late nineteenth century, skeletal frame buildings began to appear where the columns, beams, and joists were made of iron or steel and the walls were no longer constructed to
be load-bearing. Reinforced cast-in-place concrete began to appear in the mid twentieth century and, with the combination of steel, allowed for larger buildings to be constructed due to the increased strength in materials (Rabun and Kelso, 2009). The varying styles of construction can each be desirable for the differing aesthetic character.

A structural attribute of older industrial buildings is that they were typically built to accommodate the loads produced by large machinery and storage of items used at the time, with the ability to withstand 100 to 200 pounds per square foot (Cantell, 2005). The flooring, typically consisting of concrete slabs, can be thicker than that of typical developments seen today and can be difficult to alter for future use. To withstand the large loads columns were placed relatively close together at approximately every eight to ten feet, creating limitations for the future layout of the space (Cantell, 2005). In general, buildings of an older age have lasted longer due to a higher level of quality exhibited in the construction, as opposed to more modern buildings that have a useful lifespan (Cantell, 2005). A detailed assessment will determine if the existing structure is capable of handling the loads resulting from the future use and that the construction meets the Ontario Building Code standards (Rabun, 2000).

2.5.1.3 Architectural Conditions and Space Layout

There are three typical types of industrial buildings that provide different layout opportunities and architectural characteristics: loft, storage, and heavy manufacturing. Characteristics of loft structures are tall windows, high ceiling heights, and open concept floor space and are therefore able to provide an abundance of natural light, storage space, and configurations of floor space. Loft structures are typically three to eight stories and are located within districts of similar type buildings (Karl, 1990).

Storage structures differ from loft style structures in the form of fewer windows and lower ceiling heights. These features were common to this type of building as natural light was not as important for storage and items were not stacked vertically as objects are today. Typically, this type of industrial building was located along major transportation routes for the ease of transportation of goods (Karl, 1990).

The third type of building, designed for heavy manufacturing, was built for a specific manufacturing process housing machinery in a one storey building with a large footprint. Manufacturing structures were generally divided into sections with separate operations occurring in each area, while remaining as an open concept layout allowing for various configurations (Karl, 1990).
The flexibility of the space within the building, and the ease with which it can adapt to alternate uses, can be attractive to developers. The range in the types of tenants that can be accommodated also increases with flexible open space concept buildings, broadening the market for leasing opportunities. Leasing one section of the building, while another area is undergoing modifications to accommodate another tenant is possible thus providing an income while completing the changes (Karl, 1990).

2.5.1.4 Site Work

Utility connection, demolition, paving, and grading form the basis for site work and are elements for which the cost can range significantly and therefore must not be overlooked during the assessment of the building and site. As the prior use may not have required all utility connections it should be ensured that it is feasible to extend the required water, sewage, electricity, or gas lines to the development (Henehan, 2004). If the required connections are present, it must also be ensured that the capacity of the existing utilities is adequate for the potential increased demands that may be required by the development as it may be the financial responsibility of the developer to increase the capacity of the utilities.

The need for demolition may arise depending on the condition of the building and the plans for the redevelopment. It may consist of selective demolition where only a portion of the structure is demolished or an entire supportive structure may require demolishing to provide needed space. The cost of the demolition of industrial buildings can be substantial due to the fact that the structure may have been built with heavy strength materials such as thick reinforced concrete floors requiring more extensive work (Chung, 2004). If demolition is required, the task of disposing of or recycling the unusable debris will be necessary, lengthening the timeline of the project. Some items may be recovered from the existing structure prior to demolition such as historic fittings, fixtures, and finishes and may be incorporated into the new development giving character and a link to the previous use of the building (Henehan, 2004). If a building is on the heritage protection list there may be specific requirements to be abided by that limit or specify the construction and/or demolition of the building.

The provision for onsite parking may already be available from the existing industrial use if it can be incorporated into the design and remain intact during the construction period (Shipley, Utz & Parsons, 2006). Paving a portion of the site for parking purposes may be required if there are not enough existing spaces, unless the parking requirements can be satisfied by economically and physically viable underground parking. Where paving is required, site grading must occur to allow for proper site
drainage and storm water runoff. Grading may also be required on site for the construction of other design features such as walkways and building additions (Henehan, 2004). The less site work that is required, the lower the overall cost and the shorter the timeline of the project, both of which are highly beneficial to the developer.

2.5.1.5 Contamination

The site on which the building is situated and the materials used in the construction can contain contamination - potentially one of the largest costs of an adaptive reuse project (Shipley et al., 2006). The term brownfield is used to describe sites whereby development is complicated due to environmental contamination for both known contaminated sites as well as sites that are alleged to be contaminated based on the prior use of the site (De Sousa, 2001). An environmental assessment of the site must be completed to determine the presence of any hazardous chemicals stemming from the building materials used or storage of chemicals on the site that would require remediation (Scadden and Mitchell, 2001). Dependent upon the prior industrial use, the severity of contamination could vary considerably depending on the processes and operations that were performed.

Contamination can be unforeseen and may only be discovered during the construction period, as not all prior uses or processes are properly documented. A contingency should therefore always be considered for any unexpected issues that may arise during the construction process. The remediation of brownfield sites is the financial responsibility of the developer and in Ontario the process is governed by the Ministry’s Guidelines for Use at Contaminated Sites in Ontario. If the guidelines are adhered to, it is shown that development permits are accepted more quickly, and developers have a greater chance of getting financing, having their liability risks reduced (De Sousa, 2001).

2.5.2 Locational Characteristics

The capability of the developer to understand the local environment and how it changes over time can be a great benefit in determining the best location for developments (Peiser and Frej, 2007). The considerations related to the location of adaptive reuse projects are the same for those of a new building construction, including quality of the environment, safety and security, surrounding land uses, views, accessibility to services and transportation, and convenience of personal vehicle parking (Heath, 2001). With a limitation on the availability of potential adaptive reuse sites, the factors relating to the location become crucial as the design for the building is unique and cannot be transferred to another site.
2.5.2.1 Surrounding Land Uses and Compatibility

The location advantage of certain vacant industrial buildings is that they may be situated in the heart of established and highly desirable neighbourhoods with the advantage of utilizing the amenities and services such as public transportation, retail, and community facilities (Heath, 2001). This aspect is a strong marketing tool that the developers can use to attract potential tenants to their development.

A building developed in an existing neighbourhood has the possibility of creating a live/work situation. The combination of building features such as high ceilings coupled with an excellent property location within a city can eliminate the need for commuting (Chung, 2004). Additionally, the adaptive reuse of a building could be a catalyst for the renewal of a neighbourhood if located in a derelict area. Being one of the first few successful developments in an area can prove highly beneficial to developers in terms of opportunities for future developments (Chung, 2004). There may be additional opportunities for adaptive reuse or new projects that could be undertaken by the developer in the surrounding area, compared to an infill development where it may be completely built up around the project with no other opportunities available.

Sites located within an area that still contain industrial operations may have issues with noise and large vehicular traffic in the neighbourhood. More serious conflicting issues such as proximity to flammable or toxic storage can be potentially undesirable and unsafe for tenants. Compatibility issues are typically dealt with through the local zoning regulations, but developers must use their best judgement in such situations to create a project that is suitable and safe for the tenants (Peiser and Frej, 2007).

2.5.2.2 Quality of the View

The view from within a building to the outside is highly valued by some people who are willing to pay a higher amount for a space with a better view. With industrial buildings historically located along major water and rail transportation routes, which at the time may not have been desirable locations due to the pollution produced, today can be highly sought after for their views. That is then reflected by higher rent or leases (McCormick, 2002).

2.5.2.3 Site Layout

A difficulty that some buildings may possess is their inaccessibility and awkwardly located entrances. These can create complications for the developer in planning and completion of the construction. The location in which the building is situated on the site can create issues. Although the building may
physically be ideal for adaptive reuse, the configuration may not allow it to occur and a complete renewal of the site may be a more appropriate option (Douglas, 2006).

2.5.3 Legislative Characteristics

The municipal, provincial, and federal governments along with agencies, boards, councils, and commissions within these levels of government, both individually and collectively, have control over and/or regulate the use of land and the buildings situated on them. Through means such as Official Plans and Zoning By-Laws, Ontario Building Code, heritage designations, and incentives, the reuse of industrial buildings is controlled as well as encouraged.

2.5.3.1 Official Plan and Zoning Regulations

Municipalities in Ontario, through the use of Official Plans, secondary plans, and Zoning By-Laws, are able to plan for and help guide growth and development toward a desired future. The City of Toronto’s Official Plan within sections 2-2 and 2-14, encourages reurbanization as it helps to reduce demands on the environment and improves the “livability” of the urban region. There are areas designated for regeneration in the Plan that are key to the City’s growth and revitalization of areas that are largely vacant or under-utilized. Zoning by-Laws can be restrictive with regard to adaptive reuse projects, in that they are used to separate land uses as well as specifying standards for things like building height, setbacks, parking, density, and open space. A variance or amendment may be required in order to deviate from those standards or to change a designated land use from industrial to an alternate desired use. If either an amendment or variance is required there are associated costs and public consultations that must be held, often resulting in lengthy delays for a project (Cantell, 2005). Obtaining variances for industrial buildings located in certain areas of a city may prove difficult due to the existing surrounding developments or the opinions of local residents as voiced during the public consultation period.

2.5.3.2 Ontario Building Code

The building itself is regulated through provincial regulations such as the Ontario Building Code, ensuring a standard level of safety for the occupants of the buildings. Regulatory agencies set minimum requirements that must be met and do not distinguish between new construction or reuse. This can create issues since buildings that are physically different must adhere to the same Code. It is said that reuse projects should be considered on a case by case basis and not in a general category due to the uniqueness of the buildings (Shipley et al., 2006). In many instances, the buildings were constructed before the current Building Code was enacted and therefore are not in full conformity with the
current Code. Industrial buildings of a specific nature may meet the Building Code and fire regulations more easily than others and therefore may be more attractive for reuse.

2.5.3.3 Heritage Designated Buildings

In Bullen’s (2007) report, cultural and historical significance are identified as being important and should be kept in the forefront of the minds of developers during the feasibility stage of the project. Properties having historical significance can be designated through any of the three levels of government. At the provincial level, sites can be designated under the Ontario Heritage Act, and at the municipal level in the City of Toronto, sites can be listed on the Inventory of Heritage Properties. Properties may have historical significance whether designated as a heritage site or not and that can have both benefits and disadvantages for the developer.

If a building is designated, the consultations that must ensue between the local heritage committee and the developer may not proceed as efficiently and smoothly as desired. The developer’s and the committee’s views of each other can at times be contentious. They may not agree with each others’ plans for the future of the building. Inflexibility by either stakeholder on the issue of elements of design can compromise an entire project (Shipley et al., 2006). If a building is not designated under the Ontario Heritage Act that does not necessarily ensure the project will proceed smoothly. Although a building may not be designated, it can still hold historical value to a number of individuals and groups, and alterations of any detail can be seen as significant (Beare, 2000).

Alternatively, a building having historical significance can be beneficial to the developer in that it provides an opportunity to create a sense of place and can, in turn, be a great marketing tool for the sale or lease of the building’s space. The developer is unlikely to want to alter the structural and architectural characteristics significantly, as that is generally what attracted them in the first place (Shipley et al., 2005). The legislative challenges associated with a heritage project may be well worth the developer’s time and effort in order to be able to work with a building that has a valued history in the community.

2.5.3.4 Development Incentives

Encouragement through the provision of incentives can be offered by the three levels of government for the development of underutilized sites, such as vacant industrial and brownfield sites within a city. The benefit for the city in encouraging development on a vacant industrial site is that the property value will increase and in turn the property taxes will increase. Incentives in some circumstances can be in a
physical form such as the waiving of development fees as well as providing height and density bonuses (Shipley et al., 2006).

2.5.4 Financial Characteristics

The financial feasibility of reusing a building can be complex, considering the variability of the elements of an existing structure. The value of the land for its highest and best use, less the demolition and construction costs of existing buildings and new buildings respectively, must be lower than the value of the land with its existing buildings, less the costs of adaptive reuse, for a project to be considered financially feasible for conversion instead of new construction (Heath, 2001). Typical to adaptive reuse projects, there may still be issues that materialize throughout the construction period and therefore it is vital that appropriate assessments have been completed to reduce the costs that could appear further along in the project timeline.

2.5.4.1 Sources of Finance/Risk

Obtaining financing for the projects is crucial. Typically there are three types of financing options for developments: private, public and public/private partnerships. The scale of the project determines the amount of financing that is required, which for many projects will have to be obtained from outside private sources. The level of financing from banks and finance/investment companies depends on the risk of the proposed project. That level of risk is affected by the previous experiences of the developer with regard to their existing portfolio of properties along with physical characteristics of the proposed project (Hirshberg, 2003). If a developer has completed adaptive reuse projects in the past and has a team of experienced professionals with backgrounds in conservation work they are more likely to have an understanding of the redevelopment process and therefore there is a lower overall risk for the project. The greater the level of uncertainty in the project, the higher the risk of the project and financing will become more difficult to obtain.

2.5.4.2 Financial Incentives

Incentives through various government agencies, as mentioned in the Legislative section, can be obtained depending on the nature of the project. Generally there are strict conditions that must be adhered to in order to qualify for the funding (Douglas, 2006). At the federal level, incentives can be obtained through: Infrastructure Canada, Industry Canada, Millennium Fund, and Canada Parks. The incentives provided at the provincial level can be obtained through SuperBUILD, Ontario Heritage Foundation, and Trillium Funding (Shipley et al., 2005). Incentives provided through the City of Toronto
for designated heritage properties are the Toronto Heritage Grant Program and the Toronto Heritage Property Tax Rebate Program. Both of those programs are governed by the Heritage Preservation Services Unit of the City Planning Division. The grant program provides funds of up to 50% of the estimated costs of the heritage restoration work for commercial, institutional, multi-residential and industrial buildings (City of Toronto Heritage Preservation Services, 2009). The tax rebate program provides designated heritage properties with up to a 40% property tax rebate on the property that contains the heritage building (City of Toronto Heritage Preservation Services, 2009). Sites that are designated as brownfields may also qualify for grants such as the Brownfield Remediation Tax Assistance through the City of Toronto, as well as the provincial level Brownfield Financial Tax Incentive Program (City of Toronto Investments, 2009) (Ontario Ministry of Municipal Affairs, 2009). Through the brownfields programs, assistance can be provided to cover a portion of Environmental Site Assessments or environmental remediation, again with guidelines that must be strictly adhered to (Ontario Ministry of Municipal Affairs and Housing, 2007). The availability of grants such as these allows for a greater opportunity for designated heritage properties as well as brownfield sites to be adaptively reused.

2.5.5 Market Characteristics

Before a project is completed, the fast moving markets can change demand. Understanding the current and future market requires expertise in the field through consultation with real estate appraisers and solid knowledge of the historical background of the area in which a development is to occur. The market demand for adaptive reuse projects is similar to that of new developments and what needs to be considered are the level of demand, target market and building location. Some important questions to be asked regarding the market, according to Peiser (2007) are:

- Where are the desirable areas or parts of town?
- What are the hot segments of the market?
- For what types of buildings are lenders giving loans?
- What physical features and amenities are especially popular?
- Who else is developing in a particular area? What are they building?

2.5.5.1 Target Market

The demographics of an area can, in part, determine the best use and layout of an adaptive reuse development. Through the completion of a demographic study and first-person observations, much can be learned about a neighbourhood, including the population, social aspects and travel behaviours (Henehan, 2004). The results of a demographic study can be utilized to determine if a certain location
will be able to accommodate the development plans and, if so, to finalize the details of the plan to match the desired needs of the market. This is evident, for example, when determining whether a residential rental project should contain more or less of a specific room type, since it has been shown that one bedroom residential units have a much higher turnover rate than that of multi bedroom units (Henehan, 2004).

2.5.5.2 Level of Demand
The demand in the market for the type of proposed development should be estimated by the developer and should determine how much of the demand can be captured by a specific project (Peiser and Frej, 2007). The unique character exhibited through adaptive reuse projects can help distinguish it from standard projects seen entering the market every day - providing a better opportunity for capturing the demand. Similar to new construction projects, if the demand is not present for the proposed development, either the project must be postponed or redesigned to adapt to the present needs of the market.

2.5.5.3 Location
As previously mentioned, the effect of location on adaptive reuse projects is significant, especially in terms of the market demand. The demand to live in certain neighbourhoods of a city can be much higher than that of other areas. A reuse project has the opportunity to enter into an established or an up-and-coming neighbourhood, but this is dictated by the market and can only be successful if there is potential seen in that location by the tenants.
Chapter 3 – Method

3.1 Introduction

In order to describe how the study was completed this chapter is divided into three sections: Analytic Method, Research Approach, and Limitations. The analytic method segment explains the framework and the overall coordination of the study. The procedure section discusses the research techniques and the method used in data collection and the remaining section discusses the limitations and ethical issues of the study.

3.2 Analytic Method

Based on initial background research through the use of books, journal articles, newspaper articles, Master’s theses, websites and government documents, a set of secondary research questions was developed in order to provide support in answering the main research question. An even further in-depth literature review was conducted on the factors associated with the building selection of adaptive reuse projects to determine previous research that had been completed.

Given the nature of the issue, the explanatory case study approach, as described by Yin (2009), was used as it sought to clarify and understand the internal dynamics of how and why a particular experience occurs. The case study approach is applicable because there are numerous industrial adaptive reuse sites and the purpose of this report is to understand the reason they were selected by the developer who completed the project. A list of ten development organizations with industrial adaptive reuse projects in the City of Toronto was established in hopes of obtaining at least five that would be willing to participate in the study. Of the ten organizations contacted, six agreed to participate in the study, providing a total of eight adaptive reuse projects. In-person interviews were completed with partners, directors, vice presidents, and project managers of the various developers. These individuals all had experience with, and could provide valuable insight into, the building selection process for private and public projects.

Following this chapter, an analysis of the information obtained in the interviews was completed. The analysis for this study was based in part on the approach utilized in the previous Master’s Report by Mark Martynyzhyn in 2002 titled, Successful Brownfields Redevelopments: A Study of What Makes a
Successful Brownfields Redevelopment Using Case Studies from Cornwall, Ontario. The analysis involved reviewing the data from the interviews to identify the similarities and differences between the characteristics of the developers’ projects. Through the use of a table, the characteristics for each building were noted as being an asset or challenge to the project. This provided a sense of the characteristics that were most common to the projects, as well as which projects experienced a significant number of characteristics viewed as assets or challenges. Comparing the presence of the characteristics in the developers’ projects provided insight into how the type or use of the development affected whether certain types of buildings are selected for reuse, or if the project being developed by public or private sector in Toronto affects the building selection.

Additionally the characteristics that were seen as being common to a number of the projects as per the table were discussed further. The significance of the characteristics was based in part on their commonality between projects and the importance of them as noted by the developer. The characteristics as noted above were also compared to the information gathered from the literature where it was applicable to do so. Through the comparison, it was possible to determine if the characteristics that were shown to generally be barriers or drivers for the eight case studies in Toronto are unique to the City or are common to adaptive reuse projects elsewhere. A flow chart depicting the analytical procedure used for this study can be seen on the following page in Figure 1.
STUDY QUESTION:
How do environmental, locational, legislative, financial, and market characteristics of industrial buildings in downtown Toronto and their locations affect whether they are chosen for adaptive reuse?

Broad Focus
Literature review on adaptive reuse of industrial buildings

Analysis of Literature
Analyze literature to acquire a list of key characteristics of adaptive reuse of industrial buildings

Building Selection
Select adaptive reuse industrial buildings to perform case study investigations

In-Depth Interviews
Interview developers to obtain information and opinions associated with each adaptive reuse project regarding the characteristics that affect building selection

Analysis of Findings
Complete general comparison of the characteristics between case studies to identify the similarities and differences by means of a chart

Detailed Analysis & Literature Comparison
Compare the characteristics identified by the developers in detail to those derived from the literature looking for similarities or discrepancies

Conclusion
Answer the question of how the characteristics of industrial buildings affect the decision of whether they are chosen or not for adaptive reuse

Recommendations
Recommendations will be compiled for developers to consult during the building selection process for adaptive reuse projects

Figure 1 - Analytical Procedure Flow Chart
3.3 Research Approach

3.3.1 Sources of Information

In order to gain background knowledge on adaptive reuse, sources were reviewed including books, journal articles, government documents and websites. From the information gathered, a list of secondary questions was established to assist in answering the main research question:

**Environmental**
1. How does contamination of the site affect the reuse potential?
2. What are the desirable structural and architectural conditions of the building that facilitate its conformity to the building code?

**Locational/Market**
3. How do the location and site accessibility of a building affect the adaptive reuse decision?
4. How important is the analysis of the surrounding market area to the selection of a building?

**Legislative**
5. What effect does the building/site being designated as historic have on the selection decision?
6. How much of an impact do the zoning by-law(s) and Official Plan have on selecting a site?

**Financial**
7. How important is the valuation of the property prior to the purchase?
8. Are there financial incentives provided for certain sites?

Using the secondary questions as a base, a more in-depth literature review was completed in order to understand the previous relevant research written and how this report will complement the existing studies. This was completed through the use of books, journal articles, newspaper articles, Master’s theses, websites and government documents, such as the City of Toronto Official Plan. This review provided an understanding of the characteristics of adaptive reuse projects that were deemed to be important for their success by other researchers. Research that pertained to a local Toronto scale and specifically to industrial buildings was sought for its direct relevance to this study. The characteristics that appeared to be most relevant regarding building selection with adaptive reuse projects were identified and formulated into a series of questions to be used during interviews with developers of the case study projects.

3.3.2 Site Selection

With the identification of the characteristics that affect site selection, it was noted that both the physical attributes and the new use of industrial adaptive reuse projects in Toronto vary significantly. Such a
variety of buildings in the market makes it important to have an appropriate mix of building types in the study in order to realistically replicate current conditions. The minimum number of developers to be interviewed was determined to be five, with each having at least one industrial reuse building in their respective portfolios. Additional developers and buildings would have been desirable had there been no time constraints.

The process of selecting buildings to use in the study began at the literature review stage while noting projects that were mentioned in articles, books and websites. Adaptive reuse project finalists were highlighted for their distinguished achievements of design through various Toronto design awards, and were noted as potential case studies. Through the process of speaking with individuals in the City of Toronto Facilities & Real Estate Department and architects in Toronto who had experience with adaptive reuse projects, I was able to identify additional buildings to accompany the list of projects already established. Ten development organizations located in Toronto were chosen based upon the industrial reuse projects in their respective portfolios. This group collectively provided well over 50 projects, mainly due to one development company which had an extensive number of properties in its portfolio.

These ten development organizations were contacted via phone and email and offered an explanation of the nature and purpose of the study plus a request for their assistance with the study through participation in an interview. Of the ten organizations contacted, six agreed to participate in the study, providing a total of eight adaptive reuse projects. The projects that have been included in the study provide a wide mix of uses - from residential to community and cultural learning centres - consisting of both public and private sector projects reflecting the diversity of the market.

3.3.3 Interviews

An individual from each of the development organizations including partners, directors, vice presidents, and project managers were interviewed in person during the weeks of October 5th and 19th at their offices located in Toronto. The interviews were manually transcribed and digitally recorded to ensure that the accuracy of the responses is reflected in this report. All participants were asked to sign a consent form prior to the interview. The form outlined the process and ensured the confidentiality of the information gathered during the interview (see Appendix B).

A list of structured, but open-ended questions (see Appendix C) stemming from the literature review was developed and used during the interview. The questions were recited verbatim to ensure
consistency across the interviews. The interviews garnered the experiences and views of the developer on a specific adaptive reuse project or projects that developer had completed. Along with the interview questions, general background information regarding projects was collected, where possible, for inclusion in the *Site Description* chapter.

### 3.3.4 Data Analysis

The information obtained through the interviews focuses on the characteristics, as determined from the literature review, that affect whether a building is chosen for adaptive reuse. The data evaluation consists of two stages. The first stage involves reviewing the data from the interviews to identify the similarities and differences between the characteristics of the developers’ projects. Through the use of a table, the characteristics for each building were noted as being an asset or challenge to the project. The total number of characteristics that were determined as being assets or challenges was totalled by project, as well as by the specific characteristic. This provides a sense of the characteristics that were most common to the projects, as well as which projects experienced a significant number of characteristics viewed as assets or challenges. Comparing the presence of the characteristics in the developers’ projects provides insight into how the type or use of the development may affect whether certain types of buildings are selected for reuse, or if the project being developed by public or private sector in Toronto affects the building selection.

In the second stage, each of the characteristics associated with site selection were examined individually to establish and describe which characteristics were identified as being pertinent to an industrial site being selected for redevelopment. The characteristics that were seen as being common to a number of the projects, whether they were considered to be assets or challenges, as per the table in the previous section, were discussed further. The significance of the characteristics is based in part on their commonality between projects and the importance of them as noted by the developer. The characteristics as noted above were also compared to the information gathered from the literature where it was applicable to do so. Through the comparison, it was possible to determine if the characteristics that were shown to generally be barriers or drivers for the eight case studies in Toronto are unique to the City or are common to adaptive reuse projects elsewhere.

A set of recommendations and conclusions was compiled based on the findings. Those recommendations can be used as reference by developers during the building selection process for
adaptive reuse projects. This will assist in locating a building containing the preferred characteristics earlier in the building selection process, and will thus help developers save time and money.

3.4 Limitations

This study has a number of associated limitations - the first being that time constraints limited the number of possible case studies. By using only a limited quantity of case studies it is possible that the characteristics established from the literature review, and discussed in the interviews, may not have been relevant in each particular case. This may result in characteristics appearing to be insignificant in site selection, while they actually may be quite important to other projects. Also associated with the use of a limited number of case studies is the chance that there may not be a proper representation of the types of building uses for adaptive reuse projects in the market, which could result in characteristics of a certain nature appearing more important.

A second limitation is that the recommendations made are only valid in Toronto at this particular point in time. With all case studies located in the City of Toronto, there could be discrepancies in the characteristics for the selection of sites for adaptive reuse projects in other cities. There are numerous factors that affect the real estate market for specific cities and these vary from city to city. Therefore, results from one city may not necessarily be directly applicable to another. Also with the real estate market fluctuating over time, current or recent conditions may cause certain characteristics to be important now, while they may not be at another point in time.

Another limitation is that since information was gathered through interviews, some information may have been withheld by the developers as they felt it to be confidential and detrimental to the success of a particular project. The developers were willing to participate in the study with the understanding that their answers during the interviews must be forthright, however during the analysis of the results it became clear that the responses may have been incomplete as well as biased and subjective. Also, since some of the projects were completed a while ago the information might not be correct because they’ve forgotten over time or learned more about it since they were actually in the process of developing these projects. Thus, their own perspective on their own past decisions may be skewed.

Finally, specific information regarding the finances and hurdle rates were not discussed in detail. While these are important aspects affecting building selection, developers would likely not divulge the exact information for reasons of confidentiality. Developers may have different hurdle rates, which may lead
to buildings being appropriate for one developer, while not for another. Since these aspects were not considered, there may be variations between projects in the costs associated with the characteristics. For the purpose of this report, the costs associated with similar characteristics between projects are assumed to be equal.

### 3.4.1 Ethical Considerations

The ethical concern for this study is minimal. A letter of information and a consent form were provided to each of the interviewees outlining the intent of the study and the participation that would be required on their part. The information provided by those interviewed will be kept confidential with the name or organization omitted from the report. All interviewees were given the option to skip any questions that they found uncomfortable, and to withdraw from the interview at any point.

As outlined in this chapter, the method used will allow for case studies within downtown Toronto to be studied and analyzed. The results of the report will give developers the insight into the characteristics specific to Toronto that affect adaptive reuse projects. The following chapters demonstrate what has been previously discussed while keeping in mind the aforementioned limitations.
Chapter 4 – Building Descriptions

The buildings in Toronto that were selected for the case studies are listed below, along with their respective addresses (see Figure 2). The following sections provide background information on each of the buildings before and after the conversion occurred.

1) Tip Top Lofts – 637 Lakeshore Boulevard West
2) Toronto Carpet Factory – 67 Mowat Avenue
3) 401 Richmond – 401 Richmond St West
4) The Robertson Building – 215 Spadina Avenue
5) 51 Division Police Station – 51 Parliament Street
6) Brewery Lofts – 90 Sumach Street
7) Broadview Lofts – 68 Broadview Avenue
8) Evergreen Brickworks – 550 Bayview Avenue

Figure 2 - Location map of the buildings utilized in the case studies
4.1 Building 1: Tip Top Lofts

Address: 637 Lakeshore Boulevard West
Building Size: 5 floors, 23800 sq.m. gross

The building was designed by Bishop and Miller Architects and was completed in 1929 for Tip Top Tailors Ltd., a men’s clothing retailer, accommodating their manufacturing, warehousing, retail, and office space. The building was designed in Art Deco style including a symmetrical facade, strong vertical lines and turrets, multiple wall planes at the corners, two storey front entrance with brass doors, and various geometric and figurative decorations (AHS Holdings, 2009). The main material of construction was concrete with a large expanse of windows on every side of the building. Initially five storeys in height, an additional storey was constructed above the fifth floor in 1951 by way of enclosing the facade on which the Tip Top Tailors sign was located (AHS Holdings, 2009). In the times of the Great Depression, Tip Top Tailors Ltd. was sold and their building soon went into disrepair.

In 2002, the Tip Top Tailor Building was converted into more than 250 residential condominium units (Context Developments, 2009). Six additional floors were added to the existing structure using steel construction set back from the original exterior wall to provide for a clear distinction between the new addition and the heritage designated building. The addition complements the original building, matching
the architectural lines but differentiating between them with an expanse of glass walls providing a glass box look. Parking was provided through one storey below grade in the building’s basement and a four storey underground garage on the north side of the property (Macht, 2006).

4.2 Building 2: Toronto Carpet Factory

**Address:** 67 Mowat Avenue  
**Building Size:** 5 floors, 28800 sq.m. gross

![Figure 4 - Toronto Carpet Factory post adaptive reuse (York Heritage Properties, 2009)](image)

This building was constructed in 1899 for the Toronto Carpet Manufacturing Company, housing its manufacturing, storage, and office space. Due to increasing demand, within five years the company required an addition to be constructed to accommodate the expanding business. The buildings were constructed in nineteenth century manner with perimeter buildings forming a quadrangle with a powerhouse in the centre. The main structural type is heavy timber with load bearing brick walls, wooden columns and beams, and hardwood floors with ceiling heights ranging from 12 to 24 feet. There is an expanse of windows enveloping the entire building each up to 6 feet wide by 13 feet high complementing the red brick masonry exterior. Heat, power, and electricity were provided on site via steam generation along with a fire pump and underground cistern for emergency uses (York Heritage Properties, 2009).

The Toronto Carpet Factory Building has been converted into office space housing more than 150 businesses ranging from video production companies to law firms. Restoration of the building is an
ongoing process with no major additions to the existing structure occurring. The interior space highlights the existing features, restoring them to their original state with sandblasted brick feature walls, hardwood floors, and timber trusses. The office complex has been updated with the required amenities and technology of a twenty first century office building for its tenants use (York Heritage Properties, 2009).

4.3 Building 3: 401 Richmond

**Address:** 401 Richmond Street West  
**Building Size:** 4 floors plus lower level, 18600 sq.m. gross

![Figure 5 - 401 Richmond post adaptive reuse (Artscape North Society, 2005)](image)

Construction of the 401 Richmond Street building began in 1899 occupied by the Macdonald Manufacturing Company, a company that produced lithography on tin ware (Urbanspace Property Group, 2009). This building was originally two storeys in height along with a basement and between the years 1903 and 1923 there were four four-storey expansions that occurred connected via an elevated crosswalk. The construction type is heavy timber frame, with brick masonry including Flemish headers and segmental arches (Urbanspace Property Group, 2009). There is an expanse of windows enveloping the entire building consisting of both metal and wood reflecting the period of the additions. In 1944, the Macdonald Company was sold and was operated by various owners for the following four decades (Urbanspace Property Group, 2009).
As of 1994, the 401 Richmond building has been redeveloped into an office building providing space to over 140 artists and various creative businesses leading to a mix of tenants. The redevelopment project received the 1999 Award of Merit from Toronto Heritage for being an outstanding adaptive reuse project of a heritage building (Urbanspace Property Group, 2009). Renovations throughout the entire building were completed, including restoration of the floors, windows, ceilings, walls, and the pedestrian walkway between buildings. An inner courtyard was created between the buildings along with a rooftop garden which was developed with a 6,500 square foot cedar deck complete with various types of flowers and vegetation (Urbanspace Property Group, 2009).

### 4.4 Building 4: The Robertson Building

**Address:** 215 Spadina Avenue  
**Building Size:** 5 floors, 9300 sq.m. gross

The Robertson Building was constructed in 1911 by Denison and Stephenson Architects, for the James Robertson Company, a manufacturing and distribution company for plumbing fittings and fixtures. The construction style of the building is Douglas Fir post and beam with the exterior walls consisting of solid brick masonry. The ceiling heights range but are a minimum of 12 feet (Urbanspace Property Group, 2009).
In 2002, the Robertson Building was converted into office space housing a variety of tenants, including the Centre for Social Innovation consisting of over 170 non-profit organizations, social enterprises, artists, activists, and social entrepreneurs. Two years were spent restoring and renovating the space to suit the needs of the tenants and showcasing the original features of the building including the timber support structure and exposed brick walls. Several green elements, such as a 250 square foot bio wall and an extensive green roof, providing environmental and health benefits to public and private interests, were included in the redevelopment. In 2008, the building was given the Green Toronto Award for the green roof project (Urbanspace Property Group, 2009).

4.5 Building 5: 51 Division Police Station

**Address:** 51 Parliament Avenue  
**Building Size:** 2 floors, 4450 sq.m. gross

![Figure 7 - 51 Division Police Station post adaptive reuse (City of Toronto TUDA, 2007)](image)

This building was constructed in 1989 by Bond and Smith, housing the Industrial Gas Company’s Purifying House where gas was purified and sold (ERA Architects Inc, 2009). In the 1950s, Consumer Gas moved out of the space and a crane rental and metal fabricator moved in. The building contained large double hung windows as well as louvered vents above each of the windows for the heavy ventilation required. The facility became vacant in the 1980s, remaining that way until acquisition for its current use (W. Moss, personal communication October 5, 2009).
The Gas Purification building, as of 2004, has been converted into the headquarters for the 51 Division of the Toronto Police Service. There is also space designated within the structure for a community room and exhibition space for public use. The project has been the recipient of numerous design awards including the Canadian Urban Institute Brownie Award in 2003 (Canadian Brownfields, 2009). The project involved the restoration of the roof, exterior brick and stonework. An addition to the existing building complements it by providing a clear distinction between new and old building by use of materials and glazing. A two storey parking deck was constructed to provide the required parking for its use as a policing facility (W. Moss, personal communication October 5, 2009).

4.6 Building 6: Brewery Lofts

Address: 90 Sumach Street
Building Size: 6 floors

![Brewery Lofts post adaptive reuse](turner_fleisher_architects_inc_2009)

This building was constructed in 1956 and was used as a props warehouse along with other alternate uses by the Canadian Broadcasting Company (CBC). In 1993, the building was vacated as the props were moved to CBC's new downtown office location (Turner Fleischer Architects Inc, 2009). The construction type is concrete with fluted columns and ceiling heights of up to 14 feet. The original building had very few windows as it was used as a storage warehouse, where passive light was not important in its operation. The exterior of the building consisted of non bearing brick masonry.
The Brewery Lofts as of 1998 have been converted into over 100 residential condominium loft units. The interior space reflects the original industrial character with exposed concrete floors, columns, and ductwork. A significant number of windows were constructed bringing large amounts of natural light into the units, along with balconies to provide for amenity space in addition to a rooftop patio. Onsite parking was able to be provided within the first two storeys of the building, providing protection from the elements (L. Moore, personal communication, October 7, 2009).

### 4.7 Building 7: Broadview Lofts

**Address:** 68 Broadview Avenue  
**Building Size:** 7 floors

The Broadview Lofts was originally constructed in 1914 and was used as a warehouse by the Rexall Drug pharmacy company. Over the period of its operation there were a number of additions to the original building resulting in a final horseshoe layout, with various materials present dependent on the year of construction. The construction type is timber post and beam with concrete floors and ceiling heights of 12 feet (L. Moore, personal communication, October 7, 2009). The exterior of the building is red brick masonry with an expanse of windows of varying sizes and shapes. A unique identifying feature is the water tower that sits atop the roof that provided water during its previous use.
Beginning in 2003, the Broadview Lofts was converted into over 150 residential condominium loft units. A two storey addition was constructed atop the existing structure designed to contrast the original building through the use of glass facade and setback. The original timber post and beam structure along with wood ceilings and brick walls were restored to their original state highlighting their architectural features. Balconies were provided as an option and are not provided for every unit as it was deemed to diminish the industrial feel of the building (Winsa, 2003). A rooftop garden and interior courtyard were developed to provide outdoor amenity space to the tenants, with parking provided via an underground structure.

### 4.8 Building 8: Evergreen Brickworks

**Address:** 550 Bayview Avenue  
**Buildings Size:** 16 buildings various heights, totalling 17000 sq.m. gross

The Don Valley Pressed Brickworks was founded in 1889, with a number of buildings being constructed on site to house the machinery and processes. Between the opening and 1980 the Brick Works changed owners numerous times and with that, alterations to the buildings occurred including the demolition and construction in order to adapt to the evolving technology used during the brick making process. The quarry on the site was filled in and the Brick Works was permanently closed in 1989. At the time of the closing of the Brick Works, there were sixteen buildings varying in age and size as well as the brick manufacturing artifacts contained within the structures.
In 2005, the Evergreen Brick Works Site had a Master Plan created for the entire 16.4 hectare site, including the industrial pad containing the buildings and the Brick Works Park. The site and buildings situated on it will house a large-scale environmental community centre and national hub for sustainability. New buildings will also be constructed in and around the existing buildings, respecting their heritage values, by utilizing material such as glass to contrast the heritage buildings. Restoration work will entail a variety of efforts from exterior masonry repair work to the repair of corroding steel structures (Evergreen, 2006). The facilities will demonstrate innovative green design features including high efficiency buildings, operable windows, solar chimneys, waste-heat harvesting, as well as a solar cogeneration system to power, heat, and cool the spaces (Evergreen, 2009). Most of the buildings that form the Evergreen Brick Works project are estimated to open to the public in 2010.
Chapter 5 – Analysis

5.1 Overview

This chapter focuses on analyzing the characteristics that were considered in the interviews with the developers. Their presence and relevance in the adaptive reuse projects in Toronto were discussed through several steps. Overall comparisons of the characteristics between the case studies were completed to easily identify their similarities and differences by means of a table. Next, the characteristics identified as being pertinent to an industrial site being selected for redevelopment were established and described. The characteristics that were seen as being common to a number of the projects, whether they were considered to be assets or challenges as per the table, were discussed in further detail. Also, the characteristics were compared to the information gathered from the literature by means of their presence amongst the projects. It was noted where similarities were present and those characteristics were deemed to not be unique to adaptive reuse projects in Toronto.

5.2 Overall Building Comparison

In examining the eight buildings, it was clear that the characteristics varied between the buildings. All but one project was deemed by the developer interviewed to be successful. The exception was the Evergreen Brickworks project, as it is yet to be completed. An overall comparison of the characteristics that were deemed to be challenges and assets of the projects can be seen in Table 1. Utilized within the table x, o, and xo represent the characteristic being viewed as a challenge, asset, or both, respectively. The characteristics in the table are the main characteristics considered during the interviews. The characteristics are weighted equally as the table provides an overview, not of the severity of the characteristics, but of the range in the number of characteristics present or not.
### Table 1 - Comparison of characteristics between projects as assets or challenges

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Tip Top Lofts</th>
<th>Toronto Carpet Factory</th>
<th>401 Richmond</th>
<th>The Robertson Building</th>
<th>51 Division Police Station</th>
<th>Brewery Lofts</th>
<th>Broadview Lofts</th>
<th>Evergreen Brickworks</th>
<th>Total Challenges</th>
<th>Total Assets</th>
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<td>7</td>
<td>7</td>
<td>9</td>
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</tr>
</tbody>
</table>

×: Characteristic viewed as a challenge  
o: Characteristic viewed as an asset

### 5.2.1 Environmental Characteristics

#### 5.2.1.1 Contamination

Contamination of the soil and building materials was perceived in varying degrees of severity in a significant number of the eight case studies researched. Minor to no contamination issues were present
at the 401 Richmond, Robertson Building, and Toronto Carpet Factory as many of the issues were dealt with by the previous owners who completed renovations prior to the acquisition of the buildings by these developers. The remaining five buildings contained more serious issues involving contaminants located in the soil. The contaminated soil or material (which typically originated from the by-products of the previous manufacturing or storage processes) required excavation from the ground and disposal, as required by law, at a premium cost, or remediation on site. Some of these contaminants consisted of heavy metals, petroleum products, and industrial rubble and were typically found in pockets at varying depths in the soil over the sites. Additionally, there were minor issues at the five buildings due to the construction materials used, including light fixtures containing mercury and shingles and insulation containing asbestos.

Site, risk, and environmental assessments were completed by the developers, but it was indicated that the extent of the soil contamination was still unknown and was remediated as it appeared on site until it was removed. Two developers specifically noted that groundwater contamination would deter them from selecting a building for redevelopment as it can be extremely difficult to remove the contaminants. With regards to the remediation of contamination, the Ministry’s Guidelines for Use at Contaminated Sites in Ontario was followed via the procurement of a consultant.

5.2.1.2 Construction Type/Structural Condition

The construction types of the buildings each included attributes that were considered by the developers to be architecturally and structurally desirable. It was noted that the aesthetics of the structural systems, both concrete and wood post and beam, were desirable for all buildings except the 51 Division Police Station. The structural integrity of the buildings in all cases but three, Broadview Lofts, 51 Division Police Station, and certain buildings with Evergreen Brickworks, was well-suited to accommodating the new uses.

Three major issues that required consideration in these cases were: if a new addition was being added to the existing building; if there had been any alterations made to the structure during the previous use; and the specific prior use of the building. The Tip Top and Broadview Lofts were able to accommodate additions on the roof, though Broadview required reinforcement of the existing timber structure. As was noted by the developer for Broadview Lofts, dealing with heavy timber frame construction proved to be extremely difficult compared to concrete construction. What appeared to be high quality, high strength wood, was in fact not, and therefore reinforcement of the materials and bearing capacity tests were
required to ensure the structural integrity of the building. Due to the difficulties during the construction period, the developer of the Broadview and Brewery Lofts stated, “we would not do a wood building again...knew wood would be a little more difficult...but didn’t really know”. Another structural issue arose with the 51 Division Police Station in that the entire structure required reinforcement with a building being constructed inside the existing building shell. Select buildings within the Evergreen Brickworks project were deemed to be in such poor structural condition that they had to be demolished and not adapted.

5.2.1.3 Architectural Elements
The architectural characteristics of the buildings in all the projects, except the 51 Division Police Station, deemed desirable were: tall ceilings, large quantity of big windows, large amount of interior open space, and the overall uniqueness and character of the building. Specific characteristics such as a water tower and one of a kind Art Deco style were identified as desirable features for the Broadview and Tip Top Lofts respectively, giving the buildings landmark statuses.

5.2.1.4 Systems
The electrical, mechanical, and plumbing systems of the Tip Top Lofts, 51 Division Police Station, Evergreen Brickworks, Brewery, and Broadview Lofts had all been completely replaced or were nonexistent at the time buildings were acquired. The only system that can typically be reused from an original building are the sprinkler lines, as mentioned in the cases of Broadview Lofts, Brewery Lofts, and the Evergreen Brickworks. The only building that had all of the existing systems in place at the time of acquisition was 401 Richmond as they had been replaced during a prior renovation to the building. Partial replacement of the systems was required in the Robertson Building and Toronto Carpet Factory. The Robertson Building required work only to the HVAC system, while the Toronto Carpet Factory required the replacement of boilers, electrical transformers and wiring, and the plumbing - which is an ongoing process during the turnover of tenants.

5.2.1.5 Site Work
There was a variety of site work required for completion of the projects. The sites on which the residential and office buildings are located are relatively compact with the structures occupying a significant portion of the sites. The provision of parking becomes more complex when less land is available. New parking facilities consisting of underground spaces or a parking deck were required at three of the projects: Tip Top Lofts, Broadview Lofts, and the 51 Division Police Station. Constructing
underground parking at the two residential sites was costly and time-consuming as the construction occurred around the existing building. The parking deck at the police station was constructed over an area of contaminated soil covered with a vapour barrier in order to eliminate the need to excavate the soil for other construction purposes.

Partial demolition was required with the 51 Division Police Station, Evergreen Brickworks, and Tip Top Lofts. The accessory structures demolished were in such poor condition or of no practical use for the developments and were not of significant importance. It was identified for the 51 Division Police Station that all historical components were kept and reused in the building.

The 51 Division Police Station and Toronto Carpet Factory both required utility connection upgrades, including a combination of water, electricity, sewage and storm water, to meet the additional load requirements of the new developments. The connections for the Toronto Carpet Factory were upgraded as the electrical and other systems were updated for the building in order to meet the requirements of those new systems.

5.2.1.6 Space Layout
Seven of the eight buildings were identified as containing space that was easily adaptable to the desired end use. The exception was the Robertson Building as this was almost entirely built out. The Tip Top Lofts, 51 Division Police Station, Brewery Lofts, and Evergreen Brickworks were already vacant with limited to no demising walls in the buildings. It was noted by the developer of the Tip Top Lofts that, of the desirable features of the building, “the most desirable was the structural grid...it was perfect in terms of creating a layout of the units”. The structural grid of the columns and width of the wings of the building produced ideal distances for the layout of the residential units. The Toronto Carpet Factory, Broadview Lofts, and 401 Richmond contained existing corridors and partitions from previous uses and additions that had to be removed or incorporated into the design. Because the Toronto Carpet Factory and 401 Richmond were both office buildings, they worked in conjunction with their tenants to create office space that was suitable for their needs, working with and around the existing features to create unique spaces.
5.2.2 Locational Characteristics

5.2.2.1 Surrounding Land Uses and Quality
It was stated by numerous interviewees in the private sector that the location of an adaptive reuse project is of the utmost importance in their success and feasibility...something that can only occur where there is a strong market for the project. Four of the buildings studied, Toronto Carpet Factory, 401 Richmond, Brewery, and Broadview Lofts, are located in neighbourhoods that were in decline and showed significant signs of neglect at the time of acquisition. The immediate surrounding areas of the Brewery and Broadview Lofts have seen an improvement since the completion of the projects, including residential and commercial establishment.

The 401 Richmond and Toronto Carpet Factory are located West of University Avenue and both existed in neighbourhoods with similar qualities, including a significant number of vacant buildings in poor physical condition due to the lull in the office market in the 1990s – something that created a desolate neighbourhood at times. The desolation of the neighbourhood did not hinder the developments but helped in the acquisition due to the lower property values in the surrounding area. These buildings, along with others in the area, contributed to revitalizing the surrounding area to the very sought after locations they are today.

It was noted for both the 51 Division Police Station and Evergreen Brickworks that the existing surrounding neighbourhood conditions were not important to their development. Evergreen Brickworks is unique in that it is located within the lower Don Valley area and is therefore surrounded by parkland and residential developments further outward.

5.2.2.2 Compatibility
There were no issues identified relating to any of the buildings. All of the buildings are located in neighbourhoods that contain residential, commercial, or park uses. Even with the buildings located in the neglected areas, there were no major compatibility issues present at the time of acquisition.

5.2.2.3 Site Layout
The eight projects showed few to no issues regarding accessibility of the site during the construction period. The only minor issue identified was for Tip Top Lofts during the construction of the underground parking garage due to the physical constraints of it abutting the street and the building. Six of the eight buildings are located in areas surrounded by streets on all sides of the property thus providing
numerous opportunities for access to the site, with the exception of Evergreen Brickworks and the Tip Top Lofts.

5.2.3 Legislative Characteristics

5.2.3.1 Heritage Designation
The Tip Top Lofts, Toronto Carpet Factory, 401 Richmond, 51 Division Police Station, and the Evergreen Brickworks are all listed or designated buildings by the Toronto Heritage Preservation Services or Ontario Heritage Act. The process of dealing with these buildings which were listed or designated as possessing heritage significance was noted to be a relatively straightforward process, with the exception of the Tip Top Lofts. The objectives of the developers and heritage staff were similar, including the protection of the aesthetics and character of the building through proper material use. The heritage consultation process for the Tip Top Building was said to add another layer of complexity to the development process with additional approvals.

It was noted by the developer of the Evergreen Brickworks that the heritage designation is desirable, “walk around the site and it is a really attractive site...the buildings are very special and everyone feels that when they go inside the buildings...the site is really cool and people of all ages use that word to describe it”.

5.2.3.2 Official Plan & Zoning By-Laws
Of the eight buildings studied, none had issues with the direction stated by the Official Plan in place at the time, but there were amendments required with regards to the zoning by-laws. The Tip Top Building, 51 Division Police Station, Brewery, and Broadview Lofts all required rezoning from their prior use. In all of these cases, the City of Toronto was supportive of the change of use as it was a means of bringing revenue into the areas. Evergreen Brickworks required Committee of Adjustment approval to add accessory uses to the site, such as small scale retail and administration offices. Rezoning issues led to Ontario Municipal Board, or OMB hearings for the Brewery Lofts and Evergreen Brickworks projects due to the strong opposition of a Residents Association and a local resident respectively. There were very limited arguments made with regards to legitimate planning concerns by the opponents which resulted in both developers winning their cases, but it was a costly and drawn out process for the developer. The Toronto Carpet Factory, 401 Richmond, and Robertson Building were already zoned for
the appropriate use or were currently nearing completion of the rezoning process at the time of acquisition of the building and therefore there were no issues with their new uses.

5.2.3.3 Ontario Building Code

Adhering to the Ontario Building Code proved to be an issue with the Broadview and Tip Top Lofts, and to a lesser extent with the Toronto Carpet Factory. The issues related to the Broadview and Tip Top Lofts stemmed from additions being constructed on top of the existing structure. In the case of Tip Top Lofts, the addition was constructed of steel to allow for an additional two floors. The use of steel as the main structural material was delay-ridden due to problems such as construction trades being unable to work with the material efficiently as steel is not often used as the main structural material in Toronto. Also there were difficulties with the fireproofing and soundproofing of the residential units. These difficulties resulted in the project surpassing the original timeline planned. Challenges with the addition to the Broadview Lofts revolved around the main structural material of wood which did not possess the structural capacity to handle the additional floors. The minor issue at the Toronto Carpet Factory concerned a problem created by the remodelling of the office space to suit tenants’ needs.

5.2.3.4 Other Government Agencies

Environmental authorities were not mentioned in any great detail in the literature, but the Toronto and Region Conservation Authority was involved with the Broadview Lofts and Evergreen Brickworks as both were located within the 100 year floodplain level of the Don River. Construction within this area required approval from the conservation authority to ensure that the impact of flooding would be minimized on the developments. The Broadview Lofts development was restricted by the conservation authority, which disallowed new openings to be constructed below the theoretical 100 year storm level. Similar care had to be taken with the Evergreen Brickworks project, as it was governed by the Canadian Environmental Assessment Act Screening since the project received funding from the federal government.

5.2.3.5 Development Incentives

The Tip Top Lofts was the only project for which a bonus was provided by the municipality to encourage the development. There was a density bonus for retaining the existing building as stated in Section 14.26 of the former City of Toronto Official Plan. The Gross Floor Area (GFA) of the existing building was excluded in the overall calculation of the permissible density, therefore providing a bonus of the
converted space. This allowed for a greater amount of floor space to be added to the development than would have been permitted otherwise.

5.2.4 Financial Characteristics

5.2.4.1 Building Costs
The price of the building was deemed important for both the 401 Richmond and Toronto Carpet Factory because of a low per square footage price given the declining neighbourhood conditions. The 51 Division Police Station, was acquired at market rate because it was a public project. If there had been any issues on-site that would have reduced the market value, it would have been taken into consideration at the time of purchase. The Evergreen Brickworks land is being leased from the City for a very small cost with the environmental cleanup being the responsibility of the City of Toronto and the remaining portion of the project being the responsibility of the not-for-profit organization. The City of Toronto would have acquired this property in a similar manner to that of the 51 Division Police Station. The costs of the other buildings reflected the conditions of the market at the time of acquisition and were not significantly lower because they were adaptive reuse projects.

5.2.4.2 Sources of Finance/Risk
All of the developers of the studied buildings had previous experience, in one form or another, with adaptive reuse projects prior to these projects, with the exception of Brewery Lofts, Evergreen Brickworks, and 401 Richmond. Aside from the developers themselves, consultants or other professionals with experience with similar projects in the past were hired thus reducing the overall risk of the projects. The developer for the Tip Top Lofts acquired a loan to alleviate the risk to the bank should the developer default on the loan. It was also identified that for the Tip Top Lofts the bank required a higher contingency in the budget because of the numerous unknowns that can develop during the construction process. The Evergreen Brickworks project had issues with concern from the banks about the ability of the not-for-profit organization to see the project through to completion. The completion of site assessments or utilization of internal financing were highlighted by the 51 Division Police Station, Brewery, and Broadview Lofts as reasons there were not increased risks in obtaining financing for the project.
5.2.4.3 Financial Incentives

Financial incentives were provided only in part for the Evergreen Brickworks by the Ontario Heritage Trust due to the project being developed by a not-for-profit organization. The other seven projects were financed through various other means such as banks, equity from investors, cash, and private capital and received no outside funding from government agencies.

5.2.5 Market Characteristics

5.2.5.1 Demand & Demographics

There is considered to be a strong demand for residential adaptive reuse projects as they are unique and there is a limited supply available. The demographics of the immediate surrounding neighbourhood were deemed to be unimportant for the three residential projects as individuals interested in these projects come from abroad and are willing to pay a premium for the unique product. There is also a strong demand in the creative office market for the Toronto Carpet Factory, 401 Richmond, and Robertson Building. The situation of the office buildings in a central location in downtown Toronto is an important aspect given the easy accessibility and proximity to resources. The demand for the development and the demographics of the neighbourhood were not applicable to the 51 Division Police Station and the Evergreen Brickworks projects as they were developed for public use and the buildings were chosen based on availability and requirements from a size and location perspective.

5.3 Comparison of Characteristics

5.3.1 Environmental Characteristics

5.3.1.1 Contamination

Locating a site with little to no contamination is ideal, particularly avoiding sites with groundwater contamination. There were no highly toxic contamination issues at any of the studied sites and in every case the contamination was dealt with accordingly and was overcome due in part to pre-development assessments to ascertain site conditions. Given that the remediation costs are the sole responsibility of the developer, having fewer and less toxic contaminants requiring attention will result in a lower overall cost for the developer. Following the Ministry’s guidelines for remediating contaminated sites is considered to be a standard practice in the development industry. There are few additional benefits or incentives seen in response of adhering to them, as was stated there may be by DeSousa (2001).
It was identified that the presence of contamination for the public projects would be financially accounted for since the cost required for remediation is calculated prior to the building being acquired and is subtracted from the price of the building.

5.3.1.2 Construction Type/Structural Condition
The overall structural integrity of the industrial buildings in their existing states was generally considered to be in good. It was found that dealing with concrete structures is easier than timber structures, especially when repairs or additions are required as there are more concrete buildings in Toronto. The structural issue with the timber construction was an unexpected occurrence that prior assessments of the building did not reveal and resulted in costly delays to the project. However, timber structures appeared to be highly desirable for their architectural characteristics. If the structural issues are known prior to acquisition the process of dealing with the issue can be incorporated into the plan. Timber frame structures may be well-suited for adaptive reuse but if additions are planned, detailed assessments must be completed to prove load bearing ability. Concrete structures are ideal for most adaptive reuse projects including additions.

5.3.1.3 Architectural Elements
Architectural characteristics inherent to older industrial buildings, as mentioned by Karl (1990) are typically the main focus of developers in terms of the initial appeal of the structures. It is beneficial that the building is architecturally appealing, especially for private sector projects with unique features giving the building additional character with which individuals can identify and be drawn towards. The interior architectural features including tall ceilings, vast amounts of windows, and exposed structural features help to create an atmosphere differing from standard developments built today. While considered vital for private projects, the architectural characteristics of public projects are not considered important for the development as they are merely features that are part of the building.

5.3.1.4 Systems
There are benefits to replacing aging systems within buildings at the beginning of the project, but if the systems are still functional and can be updated in phases this can reduce the upfront capital costs. Replacing certain systems in the future may only be possible if the building is used for office or public uses where the space is flexible given the turnover in tenants, or the ability exists to close certain portions of the building. The installation of new systems provides assurance of quality, efficiency, and freedom in the layout of the space as mentioned by Rabun (2009). Although an existing heating system
may not be as efficient as a new system, the characteristics of industrial buildings such as thick insulated walls can act as a heat sink and operational windows can provide natural ventilation, saving energy in a passive form. An ideal situation would have been finding a building with recently replaced systems prior to acquisition, something which would have saved the developer a significant amount in capital costs.

5.3.1.5 Site Work

The broad range of characteristics with site work can contribute significant costs to the overall budget. The site work required with the buildings in Toronto did not amount to a significant level overall due to the fact that the buildings typically occupy such a large portion of the site. If possible, using the existing parking provided on site is ideal thereby reducing the amount of additional construction required. Utilizing the existing parking as mentioned by Shipley et al. (2006) can be difficult in Toronto as land prices are high and not all properties have the luxury of facilitating surface parking. Parking structures were constructed on the compact sites requiring considerable time and effort, but as these were residential projects, a portion of the cost could be recuperated from their sale. Demolition appears not to be a significant concern for developers as it is as beneficial for them to use as much of the floor space of the existing building as possible. The connection or upgrading of services to a building can be an extensive process if not already in place as seen in several of the cases. Buildings with connections already present are considered more desirable.

5.3.1.6 Space Layout

The space in each of the buildings was identified as being flexible to adapt to the new uses and that was important for the developments. As challenges presented themselves, the developers and designers were forced to be more creative to work with the existing layout. Buildings that have had additions constructed over their lifespan tend to possess more unique interior spaces but can have limitations such as once exterior load bearing walls now being interior and not being removable. If buildings have been renovated recently there can be a significant amount of remodelling and removal of materials that must be completed to restore the building to the desired state. Buildings that have been gutted in their recent past can provide the largest opportunity as the potential layout can be easily envisioned. Typical to older loft style industrial buildings, as noted by Karl (1990), the floor plan allows itself to be easily adaptable to different uses, especially with greater distances between existing columns as with Tip Top Lofts.
5.3.1.7 Scale
The scale of the buildings, although not specifically discussed during the interviews, may have an impact on the selection of buildings. Depending on the end use, there may be a scale of building that is more appropriate. The building must be large enough in scale to produce the required sales or leases to meet the hurdle rate determined by the developer. With the relatively high land values in Toronto, it would be expected that the building must be large enough to provide the required space for a significant development, resulting in an appropriate return on investment. Larger complexes of buildings, such as the Toronto Carpet Factory, have opportunity for future expansion and development should the market dictate a demand. Unfortunately, these larger complexes of buildings may not be as readily available today as in the past, limiting the diversity of the buildings available for selection.

5.3.2 Locational Characteristics

5.3.2.1 Surrounding Land Uses and Quality Level
It is apparent that the existing neighbourhood conditions are highly variable. Certain buildings located in neglected neighbourhoods were purchased at a reduced price due in part to the poor conditions. This was a significant benefit at the time and is an important reason why they were chosen for reuse. The buildings located within existing desirable neighbourhoods benefited from being recognized by the communities as landmark buildings in the neighbourhoods as well as utilizing the existing amenities in the area, as reported by Heath (2001). For the public project, the existing surrounding neighbourhood conditions were not important for the development as it was a police station and could be located in any neighbourhood. The existing neighbourhood condition is strongly associated with the buildings being located in downtown Toronto where the real estate market is strong, especially for adaptive reuse projects.

5.3.2.2 Compatibility
Compatibility was shown to not be an issue as neighbourhoods in the case studies were either generally vacant or already heavily developed with mixed uses. There are few uses in downtown Toronto that would pose compatibility issues, but the further the developments are located out of the downtown core the more issues may be present with various industrial uses.
5.3.2.3 Site Layout

With the buildings occupying a significant portion of the sites, the buildings themselves are easily accessible as they are typically bound by roadways. Adaptive reuse projects in Toronto are generally surrounded by developments and if there is significant structural work required, it may prove difficult to undertake given the lack of available land around some of the sites. With none of the developers identifying the site layout as being a significant issue, it is deemed to be a less important characteristic unless major work is required on a compact site.

5.3.3 Legislative Characteristics

5.3.3.1 Heritage Designation

A heritage listing or designation for the buildings studied was viewed as an advantage in that it could provide protection for the building in the future, could be used as a marketing tool, or provide access to certain grants. For public buildings it was noted that having a building designated as containing heritage significance provides no benefits. The lack of a designation or heritage listing did not appear to be seen as being disadvantaged. This is especially true for the residential projects, since adaptive reuse projects of this nature are already viewed as highly desirable and the process is seen to simply add another level of approval, as also noted by Shipley et al. (2006). Most of the developers interviewed agree to the premise of a building being designated as heritage, but none would specifically search for a building with this characteristic.

5.3.3.2 Official Plan & Zoning By-Laws

Adaptive reuse projects are generally promoted by cities such as Toronto, as there are many benefits to the project as well as to the wider community. However, required zoning amendments can develop into a significant issue if there is opposition by any parties as noted with the two buildings previously noted and by Cantell (2005). These processes can cost the developer a significant amount of money and time, especially if the issues are taken to the OMB. A building with the desirable zoning designation in place at the time of acquisition would remove any burdens placed on the developer in dealing with rezoning issues.

5.3.3.3 Ontario Building Code

Adapting a former industrial building to the Ontario Building Code in effect today can have its challenges as seen in the case studies, and was considered by Shipley et al. (2006). The challenges appear to be
strongly related to additions to the existing structure rather than with the reuse of the existing floor space. The materials used in the construction also appear to pose potential issues because of the structural capacity of the existing material, such as timber, as well as the ease in which new materials, such as steel, can be used and applied in construction. Also, given the limitations of locating emergency stairwells and elevators within the building, creative solutions may be required where these elements need to be located in a specific area of the building. This characteristic proves to be significant in determining whether a building should be chosen for adaptive reuse, especially if additions are being considered in the design. If only the existing building space is being converted this may not be important in building selection since there seems to be limited issues arising with these adaptive reuse building projects in Toronto.

5.3.3.4 Other Government Agencies

Environmental government agencies create additional levels of approvals required in the development process. While these agencies serve to protect the environment and the community members, they can have a strong influence on proposed developments, posing issues with the development plans and the timeline of a project. If a building is located in an area that is governed by an environmental agency, the regulations they place on the land can be as restrictive as denying future developments on the site.

5.3.3.5 Development Incentives

The City of Toronto does not strongly promote adaptive reuse projects through the provision of bonuses for the developments. The Tip Top Lofts project seems to be an exception that the city did not want lost to demolition which could be due in part to the prominence of the building in Toronto’s history. If a development incentive is provided, it can be strongly beneficial to the developer in retaining a higher return on the project, by means of creating more sellable floor area. This was identified by Shipley et al. (2006) as being a common method used in smaller municipalities to promote the development of vacant buildings. This can be an important factor in determining whether a building is redeveloped, but in Toronto it seems to be a rarity in locating buildings with such an incentive in place.

5.3.4 Financial Characteristics

5.3.4.1 Building Costs

All of the buildings studied have land value as part of the cost, as all of the buildings considered are well-situated in the downtown area of Toronto. In addition, each of the developments provided a shell for
the building eliminating that part of a construction project. It was noted by one developer that the existing building is quite often considered to have negative value in adaptive reuse projects because it costs more to renovate than to build new, although the project still produces a profit as a result of the demand, as in agreement with Heath (2001). Depending on the location and time period in which buildings are acquired, they can be obtained for a relatively low price, enhancing the feasibility of the project. Public projects are only acquired at market value less estimated contaminant cleanup costs. Therefore, a building that meets all the programming requirements and is the least expensive will be acquired, whether it is an adaptive reuse project or not.

5.3.4.2 Sources of Finance/Risk

There is inherent risk in every adaptive reuse project due to the unknowns that can arise. One of the largest unknowns is environmental contamination. Banking institutions now understand and accept adaptive reuse projects in Toronto. To reduce the risk of the project, carrying a higher contingency in the pro forma calculations can prove helpful as it provides security for unknown issues that may arise. Reducing the risks can be achieved by retaining consultants who have experience with adaptive reuse projects and contamination. It was also noted that developers using non-traditional banks for the financing indicated fewer restrictions and greater control over the potential developments. Similar findings have been identified for public projects. The overall risk of obtaining financing was not demonstrated to vary significantly from building to building as there have now been a large number of adaptive reuse projects completed in Toronto.

A minimum hurdle rate, as determined by developers, was not discussed during the interviews, but may be an important aspect of the building selection process. Adaptive reuse projects are high risk in nature and, as such, the hurdle rate may be higher than that of typical developments. Certain buildings may provide the opportunity for the hurdle rate to be more easily achieved than others, depending on the characteristics discussed and their presence within the projects.

5.3.4.3 Financial Incentives

As mentioned by Shipley et al. (2006), there are numerous incentives offered at the provincial and municipal level, although they were not obtained and may not have been available at the time these eight projects were developed. The incentives may have a more significant effect today than in the past, as the city wants to preserve existing buildings of significance and promote more sustainable growth in the downtown area through the use of vacant or brownfield sites. These potentially applicable
incentives can promote and assist in the development of certain buildings and should be strongly considered for current adaptive reuse projects.

5.3.4.4 Timeline
The overall timeline of projects is important to the financial success of the development. The timeline of the project will be extended by each additional challenge. While it was noted by the developers for the Tip Top Lofts and Broadview Lofts that construction challenges extended the timeline, the projects were still successfully completed. If the due diligence process is completed prior to the building’s acquisition, a general sense of the development process should be understood. If there are several characteristics identified as challenges in the due diligence process that would result in too costly an extension of the timeline, the building would most likely not be chosen. As seen in several of the buildings studied, unforeseen challenges did arise that extended the project timelines but were accounted for in the contingency, allowing the projects to be completed successfully.

5.3.5 Market Characteristics

5.3.5.1 Demand & Demographics
Adaptive reuse projects are a niche market that certain individuals and businesses are attracted to, providing a different environment than traditional building spaces. The market for industrial buildings being adaptively reused for residential or office use in Toronto is strong overall given their desirable location in the downtown area and their demonstrated success even in times of economic slowdown because of their uniqueness and the benefits they have to offer. Similar comments can be stated for the public and community projects. As long as these adaptive reuse projects are located in the downtown area and offer the desired amenities, it has been shown that there is no issue in attracting interest due to their scarcity in the overall market.
Chapter 6 – Conclusions and Recommendations

6.1 Conclusions

In general, it was apparent that the characteristics identified as either assets or challenges by the developers varied amongst the eight buildings. However, it appears there is a combination of characteristics that affects whether a building is chosen. The exception was the public project, 51 Division Police Station, as it was chosen based on specific criteria discussed in detail in Section 6.1.6.

6.1.1 Environmental Characteristics

Contamination, architectural and structural conditions, and building flexibility are the environmental characteristics that are considered to be important for building selection. Contamination was present on six of the eight sites and was shown to be costly to remediate and caused delays in projects due to the unknown extent of the problem. While most industrial sites seem to contain contamination, the severity should be accounted for during the assessment. The typical structural types, concrete and timber frame, were both identified as being desirable in all buildings although where there is an addition being added to the existing building, concrete structures were preferred due to their ease of adaptability. That adaptability was a benefit in the time and costs required to prove their structural capacity and complete construction. The architectural conditions are the initial reasons the developers are attracted to the buildings with the common elements being tall ceilings, large number and size of windows, open concept space, and overall character. Typically, older industrial buildings possess these qualities and buildings without these characteristics are not as unique and desirable for redevelopment. Every developer noted the flexibility of the building to adapt to the new use as important, although challenging for certain projects. A flexible space allows the developers the greatest opportunity for creativity and design to appeal to the potential users of the space.

While the systems and site work were also reviewed, there did not appear to be strong commonalities between the buildings. The systems in some of the buildings were replaced while others utilized the existing systems, but both proved to have benefits and difficulties, making neither more desirable than the other. The site work, consisting of a number of elements, was limited in Toronto due to the compactness of the sites and footprints of the buildings. This resulted in parking being the largest issue.
which was dealt with through a variety of methods, including underground structures. While not ideal, those structures were accepted otherwise.

6.1.2 Locational Characteristics

The location of the buildings in downtown Toronto was seen by the developers as crucial to the feasibility of most of the projects due to the strong real estate market for this type of development. From the analysis completed, the specific characteristics relating to the location were shown to be insignificant issues overall. The existing neighbourhood conditions and quality were evenly mixed between declining and well established, with all projects resulting in success. The success of the projects was shown to be independent of the existing neighbourhood conditions and the projects assisted in revitalizing the surrounding areas that were in decline. Compatibility posed no issues with any of the projects, due, in part, to the downtown location where most incompatible uses had already left the area. Similarly, the site layout posed no problems, with the buildings’ footprints typically covering a significant portion of the site and the sites being bound by roads on all sides. Compatibility and site layout are therefore not as significant in Toronto as they may be in other cities.

6.1.3 Legislative Characteristics

Adherence to the Ontario Building Code was shown to be a big issue for two of the projects. The issue of structural integrity with timber structures versus concrete structures as mentioned previously stems from the building code. A problem with the use of steel instead of concrete for new construction within these projects was identified as being difficult due to the construction trades’ lack of familiarity with the material. The requirement of re-zoning the site was initially not a concern with any projects, but developed into a roadblock with two projects as a result of citizen concern. Although resolved at the OMB, it required an extensive amount of time and money. Therefore, this can hinder a project if there are valid planning concerns made by citizens. Also potentially affecting the viability of a project are environmental agencies, such as the Toronto and Region Conservation Authority, controlling any type of development in an area they have governance over, as experienced by two of the projects.

Heritage designation was part of five of the projects and it was viewed as beneficial if the development possessed it for reasons of preservation and marketing, but seemed to be unimportant criteria in the selection of a building. Development incentives do not seem to be strongly promoted in Toronto although the incentive was made available for one project which resulted in an increase in gross floor
area. Incentives such as this would be highly beneficial in promoting certain buildings to be adaptively reused, but is clearly not a method commonly used in Toronto and therefore is not considered to be of great importance during the building selection period.

6.1.4 Financial Characteristics

Generally the price of the building and land were shown to have little bearing on building selection as most were acquired at no discount due to their acceptable location in Toronto. Two buildings were purchased at a discount due to the economic timing in the market and their location in a declining neighbourhood. If a building can be acquired at a discounted price in Toronto due to the surrounding neighbourhood and economic conditions, it should be considered, especially if it is believed the neighbourhood condition will improve and complement the development. While not all buildings can be obtained at a discount, the cost is a very significant characteristic that may restrict or promote the development of certain buildings. The risks associated with the projects did not seem to vary from project to project, while the past experience of the developers with similar projects was mixed relatively evenly across the projects. These projects today are accepted developments and generally deal with the risk by carrying a higher contingency in order to account for unknown issues that may arise. Financial incentives from the government agencies, utilized by one project, were awarded due to the not-for-profit nature of the project. This characteristic may be more important with adaptive reuse projects today than when the studied projects were completed as there are now more incentives available for heritage designated sites and brownfields.

6.1.5 Market Characteristics

As stated by several developers, overall, the market in Toronto for adaptive reuse projects, especially for prior industrial buildings is strong, if not stronger, than the standard market for both office and residential projects. There is a high demand for these projects as the number available is limited based on the existing building stock. Any high quality adaptive reuse project completed in downtown Toronto should be successful based on the demand, which therefore provides potential opportunity for almost any building. Similarly, the demographics of the surrounding area were identified as unimportant as the end users typically come from outside the immediate surrounding area, especially for residential projects. These projects are desired by all demographics and therefore demographics may not be an important characteristic in building selection as no one specific demographic seems to be more beneficial than any other.
6.1.6 Public vs. Private Projects

The difference between public and private projects, as seen in this study of the 51 Division Police Station, is quite significant given the factors affecting whether a building is chosen. The main difference is that a site for a public project is chosen based on the client’s needs. With this project, a site was required for a new police station within a certain boundary. The chosen site fit the usage perspective for location and size as required by the client. If there was another site that fit the client’s criteria, either an adaptive reuse or not, there may have been a comparison to determine which would cost less overall to develop. The building was generally not chosen based on any of the other characteristics studied. In respect of environmental contamination on public sites, the estimated cost required for remediation is deducted from the price of the building and land prior to purchase. With this model, any building and site, no matter the contamination level, could be redeveloped by the city. The facilities & real estate department of the city was able to work with other city agencies and divisions sharing similar goals, thereby simplifying processes such as dealing with heritage designation issues.

6.2 Recommendations

Four recommendations are provided with the goal of assisting developers during the selection of industrial buildings in Toronto determined to be adaptive reuse projects. Each recommendation considers the characteristic that a building and site should or should not possess.

Recommendation 1: The site should not contain ground water contamination

As mentioned for Broadview Lofts, Brewery Lofts, and Evergreen Brickworks, the extent of the contamination on site was unknown. It was only determined at the time of construction, producing a large risk for the projects. It was noted by the two individuals interviewed for the Tip Top Lofts and Broadview/Brewery Lofts that groundwater contamination was a serious concern. They would avoid the redevelopment of a building if the site contained this form of contamination due to the complexity and costs of remediation and therefore it is recommended that any potential sites with known groundwater contamination be avoided for reuse. Ground water contaminated with such chemicals as vinyl chlorides and methyl chlorides is an issue as these chemicals can be carcinogenic and the Ministry of Environment standards have a low tolerance for their presence. Chemicals in the groundwater can be difficult to remove, sometimes requiring more than just cleaning and disposal of the affected soil. The risk associated, with the extent of soil contamination being unknown in many cases, would be compounded by groundwater contamination due to the toxicity of the chemicals and greater difficulty in removal.
Given that the remediation costs are the sole responsibility of the developer, having fewer and less toxic contaminants requiring attention will result in a lower overall cost for the developer. As well, groundwater contamination can translate into marketing difficulties, as the perceived effects of contamination may hinder potential buyers. For private developments, this degree of contamination may prove to be too great a risk for the developer and the investor, and therefore should be avoided when selecting a building.

**Recommendation 2: Use concrete buildings if planning an addition**

Based on the experiences of developers for the Tip Top and Broadview Lofts, additions to existing structures can prove to be a difficult task, consuming a great deal of money and time. The main issue with an addition is the assurance that the existing building can withstand the additional forces produced. In the case of Broadview Lofts, the timber structure required reinforcement as the timbers were unable to handle the loads of the addition. This process took an extended amount of time, requiring testing and eventually importing wood from British Columbia to reinforce the existing structure. Similarly with an addition, it is recommended that the new structure be constructed with concrete and not steel as this presented difficulties for the Tip Top Loft project, leading to an extended timeline and additional cost. The issue with steel construction is that the construction industry in Toronto is not as familiar with this material type and not many trades have experience with it. Because it is not a commonly used material, there were difficulties with fireproofing and soundproofing in order to adapt to the Ontario Building Code. Concrete is an often used structural material and is accepted in Toronto due to its known loading capacities as well as adherence to the building code. It should be strongly considered when additions are planned for the redevelopment as it can save the developer a significant amount of time and money in adhering to the Building Code. In both cases the issues were identified as being so critical that the two developers would not complete another project that contained a timber structure or would not use steel as a new construction material in the future.

**Recommendation 3: Select a building with interior demising walls removed**

The flexibility of the space within an industrial building is a characteristic that was identified by all developers as being important to the project. Having the interior of the building completely gutted, except for the main structural elements, allows for the layout of the space to be easily envisioned. It is recommended that a building should be selected where the interior demising walls have been removed to provide for the widest range of possibilities with the layout. This was shown to be the case with the
Tip Top Lofts, 51 Division Police Station, Brewery Lofts, and the Evergreen Brickworks. There were more options available with the space as well since without elements such as hallways or mechanical systems there were few limitations on where certain features can be located. As challenges presented themselves, the developers and designers were forced to be more creative to work with the existing layout. Buildings that have had additions constructed such as the Toronto Carpet Factory, 401 Richmond, and Broadview Lofts faced limitations such as former exterior load bearing walls becoming interior and are unable to be removed. There is also a direct cost savings with the existing interior space being vacant because there is no requirement for interior demolition and disposal of existing materials from any previous uses of the space. The more flexible and open the space, the possibility to provide a unique development for future occupants increases, which should result in greater profit for the developer.

**Recommendation 4: Select a building that has financial or development incentives promoting reuse**

Incentives offered for certain buildings in Toronto have been limited, considering the projects that were studied, with only the Tip Top Lofts project receiving a development incentive. This incentive allowed for an increased density on the site by not accounting for the converted building space in the GFA calculation. This may have contributed to the feasibility of the project, which otherwise may have been undevelopable. It is recommended that buildings that contain incentives be sought, as they seem to be offered more readily today than in the past when the buildings studied were being developed. There are incentives offered through all three levels of government specifically for buildings in Toronto designated as having heritage significance as well as for those containing contamination. While a development incentive was provided to one project, there may be other buildings in Toronto that could be presented with a similar opportunity to encourage the development. Financial or development incentives are beneficial to the developers because they can receive a higher financial return when incentives are factored in. It also allows buildings to be reused that may have otherwise not been financially feasible without the incentive. Finally, development incentives assist the developer as it shows that the city may be more flexible and willing to assist in revitalizing that particular building.

**6.3 Next Research Steps**

In looking to study this topic further there are several directions that should be taken. First, as this study only focused in Toronto, the scope of the research was limited and to get a better understanding and more substantial sample, other major cities should be looked at. The same methodology as used in this
study should be followed and similar studies should be completed in major cities such as Montreal, Ottawa, and Vancouver. The results could be compared to understand how the characteristics that affect building selection vary between cities. In doing this, there are benefits to both developers and planners by recognizing how the characteristics elsewhere promote the reuse of older industrial buildings and how they can be adapted to another city.

The second direction that should be taken for further research is looking at the trends in the characteristics affecting building selection. Understanding how the significant characteristics change over time allows for a greater knowledge of how adaptive reuse has evolved and the direction it may be headed in the future. Also it will allow developers to make more sound decisions in regards to building selection, which in turn should minimize costs and maximize profits. Characteristics that were previously viewed as significant may be beneficial to discern. It can assist by providing possible explanations of why the importance of the characteristics changes and how the market adapts.

Another research direction that should be taken is to narrow the focus even further and specifically look at adaptive reuse projects of only one common end use, such as residential. Buildings with different end uses have varying requirements in terms of the architectural and structural elements. Considering buildings with only one end use would provide more focused results that pertain to that particular end use as opposed to the more general findings of this study. This would ensure that characteristics that are deemed important are in fact common to the buildings with similar end uses. Developers would benefit from the results as it would provide more accurate building characteristics to identify when selecting a building for reuse and increase the feasibility of the project. This should be undertaken for projects not considered in this study, such as hotels and other commercial uses.

A final research direction to be addressed is related to three additional characteristics that should be considered: hurdle rates, timeline, and scale of the building. These characteristics may be important in building selection, but were not discussed in any detail in this report. Hurdle rates may vary amongst developers, which may make certain buildings attractive to one developer but not another. Also dependent on the developer is the due diligence performed prior to acquisition and the resultant timeline of the project. Characteristics that are determined to be challenges may directly extend the timeline of the project, and continually compound. The compounding effect may increase the timeline of the project to a point where it may no longer be financially feasible. Lastly, the scale of the building should be considered as an important aspect. Certain end uses may require the building to be a
minimum size for the project to be profitable or vice versa. The scale of the buildings may also have a direct influence on the finances of the project and should therefore be researched in greater detail.

6.4 Concluding Remarks

This report provided insight into the influential characteristics of adaptive reuse projects, specifically of former industrial buildings in Toronto. Common characteristics were identified and deemed relevant, while others that were exclusive to one project were considered to be just as important. Each of the projects studied was considered to be a success despite challenges faced, and provide, a unique experience and product unlike other developments in the market today. The reuse of older industrial buildings is beneficial to the municipality and the broader community and should continue to be explored. As stated by the developer of 401 Richmond and the Robertson Building, “Save old buildings...they are important spaces for the urban fabric and landscape of cities”. Having the option of selecting a specific industrial building over another for reuse will likely continue to occur with the ever-changing growth and development patterns of society. The process may remain the same although the characteristics may change given the trends of the market and the changing form of industrial buildings over time.
Appendix A – Development Process

Figure 11 - Development process with focus on site selection (Peiser & Frej, 2007)
Appendix B – Interview Consent Form

Master’s Report of Corey Wilson – Queen’s M.PL. Candidate 2010

Project Title: Adaptive Reuse of Industrial Sites

Name of Participant:

I have read the letter outlining the terms under which I am participating in the above project and I have had any questions answered. I understand that:

- the purpose of the study is to determine how different characteristics of industrial buildings affect whether they are selected for adaptive reuse
- the interview will be recorded confidentially and for research purposes only
- my participation is voluntary and I am free to withdraw at any time
- the researchers have taken all precautions to ensure confidentiality
- I am aware that I can contact the following with any question, concern or complaint I may have:
  - Assistant Professor John Andrew, telephone: 613-533-6000 x 75756, email: john.andrew@queensu.ca
  - or the Chair of the department Research Ethics Board John Meligrana, telephone: 613-533-6000 x 77145, email: john.meligrana@queensu.ca
  - or the Chair of the General Research Ethics Board, Dr. Joan Stevenson, telephone 613-533-6081, email: chair.GREB@queensu.ca.

- I have been assured that reasonable steps have been taken to maintain privacy.

Name: ______________________________________________________________________________
Address: ____________________________________________________________________________
Phone Number: ______________________________________________________________________
Email: ______________________________________________________________________________

________________________________________________   _______________________
Participant Signature – Consent to participate in interview                           Date
Appendix C – Interview Questions

Environmental

1) Did the site or building have any issues with contamination? If so, with what?
   a) What type of contaminants or previous industrial uses would deter you from selecting a site?
   b) Was the Ministry’s Guidelines for Use at Contaminated Sites in Ontario used? If so were there benefits in using the guidelines?
   c) Were there any other environmental policies that needed to be regarded or dealt with aside from a contaminated site? Please elaborate.

2) What were the desirable architectural and structural conditions of the building? And which were not desirable conditions?
   a) Was the building’s previous use a loft, storage, heavy manufacturing or other? What were the building’s construction and material types?
   b) How were the existing mechanical, electrical and plumbing systems dealt with? Were they upgraded or replaced and what were some of the challenges arose as a result?
   c) How flexible was the existing space to changing the layout? Were walls, columns, etc removed/moved?

3) How extensive was the site work such as grading, paving, demolition, utility connections, etc that was required to be completed?
   a) Were any of these aspects more significant in required level of time or finance than expected? Were there any that were not required?
   b) How was parking dealt with? Were any additional structures required to be constructed?

Legislative

4) Is the building designated under the Ontario Heritage Act? If so what process was completed and what obstacles were present if any?
   a) What are the benefits to the building being a heritage building, whether designated or not?

5) How did the local zoning bylaws and designation and Official Plan affect the development? Describe any difficulties there may have been in getting the zoning changed to adhere to the development if it was not already designated accordingly?

6) What assistance was provided from the planning or other government departments that supported adaptive reuse of certain sites and buildings?

7) What were the difficulties in adapting the building to adhere to the Ontario Building Code? Were there issues with the process in which was required to be gone through?
Appendix C – Interview Questions

Market

8) Was a market analysis completed? How does the market analysis change from site to site?
9) Is there a stronger market demand for a certain type of adaptive reuse structure? What physical features or amenities are most desirable?
10) Is there a certain demographic of the surrounding area that is more desirable than others? What was the target demographic of this development?

Locational

11) What was the pre existing condition of the surrounding neighbourhood? Has it been a catalyst for development in the surrounding area?
   a) Are there any compatibility issues with surrounding land uses? If so, what are they and have they had any effect on the development?
   b) What is the quality of the surrounding area and the view like for the occupants?
12) Is the site layout in a manner that was easily accessible during the construction period and after completion for the occupants? What difficulties were present in this regard?

Financial

13) What effect did the valuation of the building prior to purchase have on the selection?
   a) Does the property need to have negative value to be profitable?
14) What was the main source of funding for the project?
   a) How does the level of risk change from one development to another for obtaining financing? Size, deterioration level, location, etc
   b) What other experiences have you and your professional team dealt with in the past with respect to the reuse of structures?
15) Were there any financial incentives provided by any level of government or other source for the redevelopment of the industrial building for environmental, heritage, or other reason? What were the details of the incentive?
16) Are there certain aspects of a building/site where you would be willing to pay a higher amount because the feature is more desirable in the marketplace?

General

17) How do you determine what the most appropriate use for the building would be? Or is the decision made the other way and look for a building that would support a certain use?
18) What did you find to be the most important factors when it came to site selection for your adaptive reuse project?
19) Were there any issues that you thought may cause more of a problem than what ended up occurring?
20) Are there any other important characteristics that were not brought up by any the above questions that affect building selection for adaptive reuse?
21) Are there any comments that you would like to make regarding this topic?

I am able to contact you in the future if there are any further questions that I may have regarding this project?
References


