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An Examination Of The Benefits And Constraints Of Adaptive Reuse Of Surplus School Sites

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AN EXAMINATION OF THE BENEFITS AND CONSTRAINTS OF ADAPTIVE REUSE OF
SURPLUS SCHOOL SITES

by

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A Major Research Paper
presented to Ryerson University

in partial fulfillment of the requirements for the degree of

Master of Planning
in
Urban Development

Toronto, Ontario, Canada, 2012

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AN EXAMINATION OF THE BENEFITS AND CONSTRAINTS OF ADAPTIVE REUSE OF SURPLUS SCHOOL SITES

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ABSTRACT

There is an increasingly pressing issue in Canadian cities related to under-enrolment and the consolidation of schools, which has recently been recognised in the City of Toronto. As a result, a number of school buildings must be closed and sold. This paper addresses the trend of adaptive reuse as an alternative to demolition and new development of surplus school sites. Through an analysis of three case studies: Stinson School in Hamilton, Saint Michael's High School in Niagara Falls and Queen Elizabeth Park High School in Oakville, the benefits and constraints of adaptive reuse of surplus school sites are detailed. Recommendations are made for future adaptive reuse of school sites in order to capture the potential benefits and mitigate the constraints. These recommendations can enhance the adaptive reuse process in municipalities, specifically in Toronto, to redevelop existing built-up areas and reinforce policies of sustainability, smart growth, intensification and place-making.

Key words: adaptive reuse; surplus schools; redevelopment; heritage schools; smart growth

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CHAPTER 1: INTRODUCTION

Problem Statement

The school age population in Canada is shrinking, especially in inner cities and mature suburbs as a result of declining birth rates and shifting residential patterns (Giljahn & Matheny, 1981). In many cities, school districts require construction of new schools in suburban areas to meet the population demand. This results in the closing of older surplus schools, where student numbers have dropped (Wiebe, 2010). Often located in built up areas, these schools offer easy access from residential neighbourhoods. They also provide a centre for local activity and facilitate community involvement (Beaumont & Pianca, 2002). The communities are then faced with the challenge of re-using the school buildings which are no longer needed for educational purposes. Similarly, school districts are faced with the prospect of selling the surplus properties to generate funds for the construction of new schools (Wiebe, 2010).

This is an increasingly pressing issue in Canadian cities, especially larger cities such as Toronto. In a *Toronto Star* article published Friday March 30th, 2012, the excess supply of pupil spaces in the Toronto District School Board was recognised. Under-enrolment is faced by a number of Toronto schools, with an excess totalling 71,000 pupil spaces. The Toronto District School Board faces having to close approximately 171 schools as a result of a funding decrease from the province. Across 461 elementary schools, the board has 48,030 excess spaces. In the 98 high schools, there is a capacity for 23,397 extra student spaces. These under-enrolment levels are equivalent to the capacity of 143 elementary schools and 28 high schools (Brown & Rushowy, 2012).

It was recognised that schools must be consolidated in order to reduce the under-enrolment numbers. Issues related to school closures and long-range enrolment projections were raised.

The projections showed an increase in enrolment at the elementary level which indicated the future need for more schools (Brown & Rushowy, 2012). The school board and the city are challenged with the issues behind the surplus schools in order to address future population needs.

The change to redevelopment and adaptive reuse of buildings is a trend which has begun as an alternative to demolition and new development of surplus school sites. Surplus schools are existing built resources which can host a variety of public and private development options (Giljahn & Matheny, 1981). School buildings can continue to offer years of use to the community given that it has been conscientiously maintained and renovated (Rubman, 2000). Though school districts recognize the need to find new uses for these buildings, many still remain vacant.

Research Questions and Goals

This paper will address the following question as the central focus of research: What are the benefits and constraints to redevelopment and adaptive reuse on the sites of surplus schools?

A series of sub – questions stem from this overarching question:

- How are the benefits and constraints similar or different with various adaptive reuse options?
- How are the benefits and constraints addressed in various adaptive reuse options?
- What are the current concerns regarding adaptive reuse of surplus school sites?
- How does adaptive reuse of surplus schools in other municipalities inform what is occurring in Toronto?

Ultimately, the overarching goal is to analyse the adaptive reuse case studies in order to extract lessons learned to then develop a set of recommendations for future projects that can be applied to the City of Toronto.

This goal is supported by a number of objectives. The first objective is to develop an understanding of the literature behind adaptive reuse processes. The second objective is to assess the case studies in order to identify adaptive reuse strategies for vacant school sites. The final objective is to identify the benefits and constraints of adaptive reuse alternatives to develop a series of recommendations for future implementation and practice.

Relevance of Research

This paper makes the assumption that demolition of surplus schools is an inappropriate redevelopment option. The issue here goes beyond simply the preservation of the school itself and includes the sustained vitality of the neighbourhood. The loss of this community use reflects the disappearance of neighbourhood meeting places, open space and play spaces. In addition, the loss of the schools has a ripple effect within the community which impacts a number of other neighbourhood uses. This research is important as it establishes recommendations for cities and developers in order to enhance the benefits and mitigate the constraints of adaptive reuse of school buildings. Furthermore, it supports key concepts of sustainability of the built environment through the regeneration of social and economic growth as well as the reduction of negative impacts from demolition on the environment.

This research is therefore, an examination of various adaptive reuse projects which are a part of the larger concepts of community building and sustainability. Existing research on options for adaptive reuse of vacant school sites is less common than information on the reasons for closure. It becomes relevant to understand the options for reuse in order to address the

potential benefits and constraints of redevelopment on existing and future surplus school properties. Before reuse, it is important that various options are considered which reflect a practice exemplary of sustainable community development.

Paper Overview

This paper will make the case of adaptive reuse of surplus school in Toronto by addressing the benefits and constraints of the process. This major research paper is organized into eight chapters. *Chapter 2* will provide a background on the City of Toronto and the factors affecting school closings. In *Chapter 3*, a review of literature on adaptive reuse and the barriers and constraints associated with it is explored. Details on the methodological approach of this paper as well as its limitations are outlined in *Chapter 4*. *Chapter 5* will explore various case studies which will help inform the potential options for adaptive reuse. The intention is to explore in detail, case studies which implemented different adaptive reuse options in cities outside of Toronto. Sections within each case study will provide background information on the topic as well as an overview of the redevelopment of the site. Issues that were faced will be outlined as well as how they were addressed. To conclude each section, a look into the current status of the project will be outlined. From these case studies, a synthesis and analysis of benefits and constraints from the case studies will be outlined in *Chapter 6*. This analysis will provide the basis for a series of recommendations for future implementation of adaptive reuse in *Chapter 7*. Those recommendations can be used as reference during the development process for the adaptive reuse of vacant schools. A direction for future research will also be outlined.

CHAPTER 2: BACKGROUND

City of Toronto

Over the past 40 years, the population in suburban municipalities surrounding the City of Toronto has grown with the attraction of new housing opportunities beyond the city. Young families have been drawn to communities of the Greater Toronto Area (GTA). The results of the 2011 census indicate that this trend is still prominent. Between 2006 and 2011, the GTA's population increased by 9.0% or by 498,336 people. As seen in *Table 1* the growth rates of the GTA regions ranged between 8.4% and 15.7%. York Region had the strongest growth rate at 15.7%, followed by Halton Region at 14.2%, Peel Region at 11.9%, and Durham Region with 8.4% (City of Toronto, 2012).

	Percent Change				Annualized Compound Growth Rate	
	1991-1996	1996-2001	2001-2006	2006-2011	2006-2011	2001-2011
GTA/H	8.7	9.3	8.8	8.5	1.64	1.67
Toronto	4.8	4.0	0.9	4.5	0.88	0.53
Rest of the GTA	14.5	15.9	17.4	12.7	2.41	2.84
Halton	8.5	10.4	17.1	14.2	2.69	2.95
Peel	16.3	16.0	17.2	11.9	2.27	2.75
York	17.3	23.1	22.4	15.7	2.95	3.54
Durham	12.1	10.5	10.7	8.4	1.62	1.84
Hamilton	3.6	4.8	2.9	3.1	0.60	0.59

Table 1: Growth Rates, 1991 – 2011, Greater Toronto Area/Hamilton (City of Toronto, 2012)

Simultaneously, the growth of the City of Toronto has also remained on track with the population forecast in the Growth Plan for the Greater Golden Horseshoe (GGH) of 2,760,000 people in 2011. Between 2006 and 2011, Toronto's population grew by 111,779 residents, an increase of 4.5%. This is more than 5 times the population growth reported by the census for the City of Toronto in the previous five-year period. The census data for 2011 stated that the population of

Toronto was 2,615,060 people. Statistics Canada estimates that the actual City of Toronto population in 2011 was 2,751,000 (City of Toronto, 2012).

Many of Toronto's older neighbourhoods are comprised of lower density housing built throughout the latter half of the last century. These neighbourhoods were built to accommodate the population boom of the 1950s and 1960s. Now, the majority of the children once housed in these neighbourhoods have grown and moved elsewhere (City of Toronto, 2003). The change in the total number of occupied private dwellings indicates the direction of movement of people and the extent to which it takes place for the GTA. Between 2006 and 2011, occupied dwellings in the GTA increased by 10.2% from 1,965,502 people to 2,166,964 people. The growth rates of the GTA regions ranged between 9.8% and 17.4%. As seen in *Table 2*, York Region showed the largest growth in occupied dwelling units, an increase of 17.4%, followed by Halton Region at 14.1%, Peel Region at 12.2% and Durham Region at 9.8%. The City of Toronto rate was 7.0% (City of Toronto, 2012).

Percent Change

	1991-1996	1996-2001	2001-2006	2006-2011
GTA/H	8.5	9.5	9.8	9.8
Toronto	4.5	4.4	3.8	7.0
Rest of the GTA	14.9	17.0	17.8	13.5
Halton	11.0	13.1	17.4	14.1
Peel	15.8	16.1	16.3	12.2
York	18.0	25.7	23.5	17.4
Durham	13.2	11.4	13.4	9.8
Hamilton	5.1	5.4	4.0	4.8

Table 2: Change in Occupied Dwelling Units, 1991 – 2011, Greater Toronto Area/Hamilton (City of Toronto, 2011)

Consequently, the population of people living in these older communities in Toronto is reaching an older age. As of 2006, Toronto had a slightly older population than the province as a whole. The proportion of the population aged 65 and over was 14.1%. The working-age population is getting older as the Baby Boom generation ages. As of 2006, the 35 to 39 and 40 to 44 age groups accounted for the highest proportion of Toronto's population (City of Toronto, 2007).

At the same time, younger generations are also declining in numbers. Less than one in six residents were under the age of 15 (16.4%) in 2006. Significant decreases have also been recorded in both the younger working age (25-34) and in the pre-school age population groups (OTF, 2008). In addition, school age populations in areas of Toronto are declining. As the majority of school age youth remain in the family home during their school years, it can be expected that these residents will be found in areas with a higher degree of family households. School age children fall into two census categories of Children (0 – 14 years) and Youth (15 – 24 years). It is observed in *Figure 1 & 2* that these groups are distributed in relatively broad arcs extending through the more suburban parts of the City (City of Toronto, 2007).

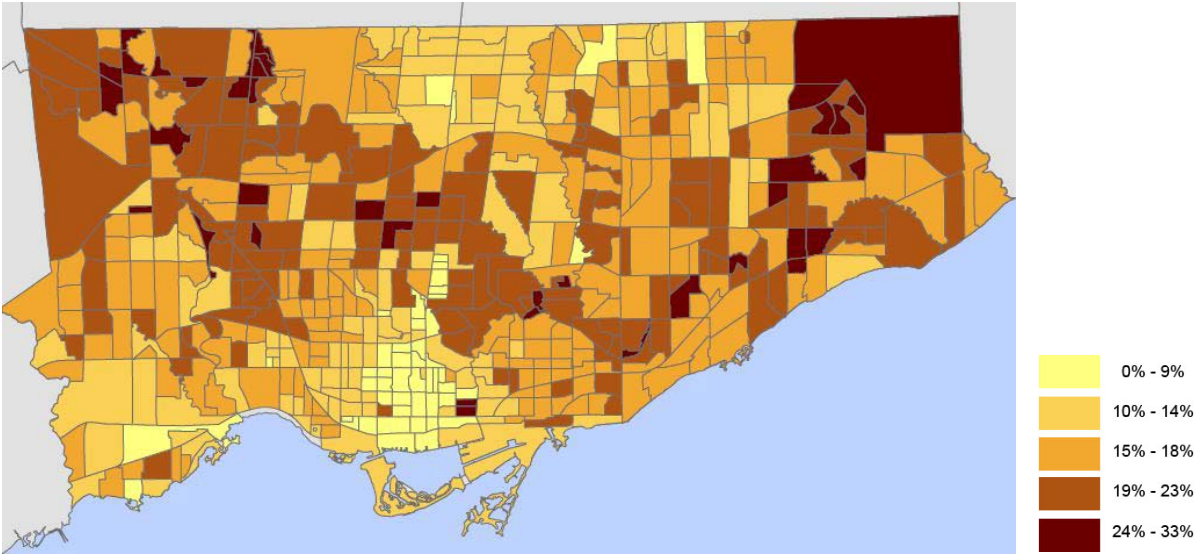


Figure 1: Concentration of Children (0 – 14) 2006, Toronto, (City of Toronto, 2006)

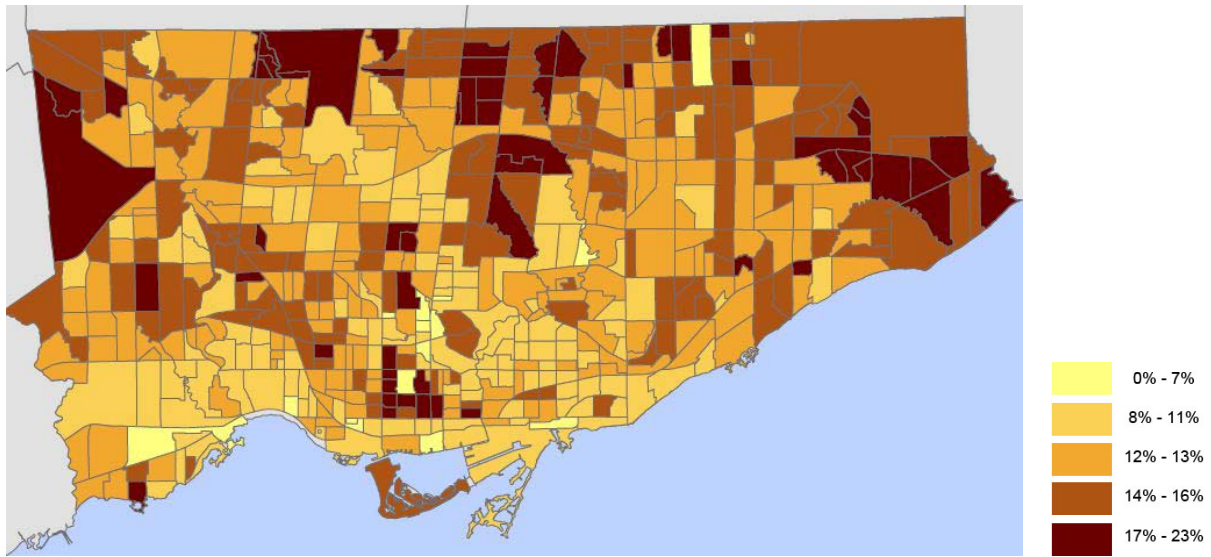


Figure 2: Concentration of Youth (15 – 24) 2006, Toronto, (City of Toronto, 2006)

As a result, the higher concentration of children and youth result in the increased need for pupil spaces in schools. The locations of these concentrations in *Figure 1&2* show the needs for increased pupil capacities. In particular, *Figure 1* shows the location of needs for elementary schools, whereas *Figure 2* shows needs for secondary schools. It must be noted however, that certain concentrations of youth, especially the high concentrations in downtown around the universities, may be more reflective of post-secondary students who are included in the age bracket. Contrary to the needs for schools, the areas of potential surplus school capacity are also recognised by the low concentrations of school-aged children.

Toronto District School Board

The Toronto District School Board (TDSB) is the largest school board in Canada. There are currently 591 schools operating in 558 facilities which are currently a part of the TDSB. During the 2010 – 2011 school year, the TDSB served approximately 259,000 elementary and secondary school students in the regular day school system. The TDSB is the largest school board in Canada and one of the largest in North America. The number of new students in the

TDSB has remained relatively constant. Simultaneously, the TDSB's total enrolment has decreased by 14, 983 students over the past five years. As a result, it is evident that the decrease in overall enrolment is a result of students leaving the TDSB. Students who left the TDSB and enrolled in other boards (62% of those who transferred outside the TDSB) usually went to boards in the Greater Toronto Area. The most frequent of these were the York Region District School Board, the Toronto Catholic District School Board, and the Peel District School Board (TDSB, 2011).

The standard Ontario school board uses a financing formula prescribed by the Ministry of Education. The Provincial funding formula establishes the total revenues available to school boards to provide programs and services to their students. This formula is based on student enrolment and the unique needs of students in each board. The number of schools, their distribution and their physical condition are also factors (MOE, 2011). These funds are based on the area requirement of 104.4sq ft per elementary student and 130 sq. ft for secondary school student. The calculation includes all functional spaces including hallways, washrooms and other spaces (Weibe & Quinn, 2010). The TDSB has a very complex budget system as a result of its facility size and area (TDSB, 2011). With its vast number of older schools with larger hallways and foyer spaces, it receives funding for less pupil spaces than it has space for (Weibe & Quinn, 2010).

Building systems in over 450 TDSB schools have surpassed the end of their 35 year designed life cycle. The TDSB is challenged with finding strategies and funds to care for the entire building stock. As buildings age, there is a need to maintain the building. As small problems become unattended, they grow into bigger problems, which cost more money out of the budget to fix. A trend in Toronto has occurred where a number of buildings have continued to deteriorate and under-perform because they have not been renewed (TDSB, 2011).

In the last 10 years (2000-2010), emergency repairs and health and safety projects have increased in cost from \$2 million to \$30 million, resulting in relatively fewer dollars from funding to go towards planned upgrades. These unplanned projects impact the ability of the TDSB to plan proactively for future education facilities. The total projected cost of updating and repairing TDSB schools is \$8.2 billion dollars. This amount includes: addressing the repair backlog, re-designing learning spaces to meet new program needs, and updating compliance with building codes. *Figure 3* shows the available funding for major renewal over the next 14 years. It does not cover the projected costs (TDSB, 2011).

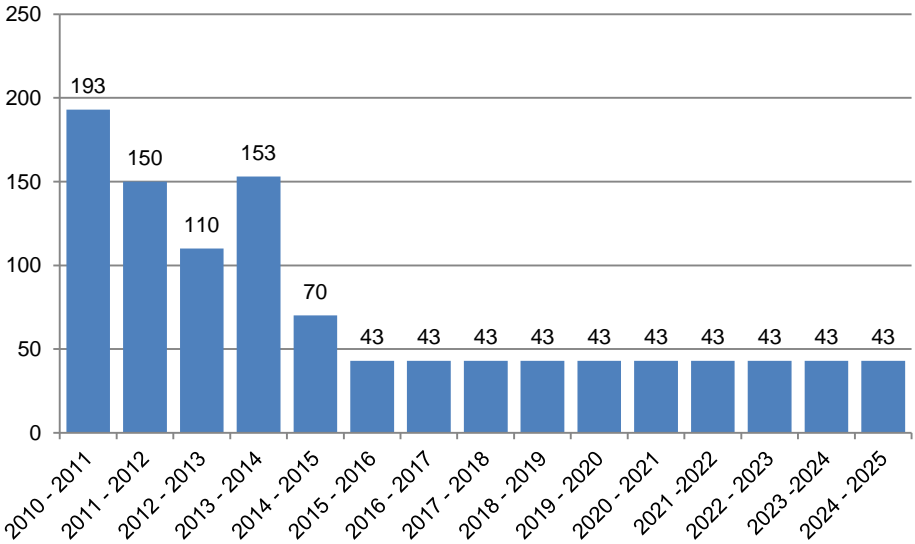


Figure 3: Available Funding for Major Renewal of TDSB Schools, (TDSB, 2011)

The total projected cost of 8.2 billion does not include the cost of emergency repairs and health and safety projects to keep schools open. The TDSB recognises that the cost of updating and repairs of the building stock is less than the cost of constructing a new school. It is also recognised that if the number of schools in the TDSB were reduced from the current total, the costs of repairs and building renewal would decrease. In addition, the costs associated with emergency repairs and health and safety projects would decrease. Finally, the increased growth of backlog repairs will slow (TDSB, 2011). As a result of this precarious situation of

constrained budget funds and extensive underused school building stock, the potential for new innovated uses for these buildings has arisen.

CHAPTER 3: LITERATURE REVIEW

The following is a summary of existing literature for the purpose of defining adaptive reuse.

Specifically, the literature addresses the current application of adaptive reuse on surplus school sites. A focus is made on the stakeholders involved in the process as well as the benefits and constraints of reuse

Adaptive Reuse

Buildings are built for a specific function or use. However, the building often outlasts its original purpose (Velthus & Spennemann, 2007). When this occurs, there are a number of alternatives for the building. Kinkaid (2002) outlines the basic options that are available for vacant buildings. The first option is to market the building to potential buyers or tenants. The second option is to leave the space vacant to reduce tax liabilities and to prepare the property for future change. A third option is to refurbish the building to upgrade the property standards to improve marketability. A fourth option is to demolish the building in order to redevelop the site. The fifth and sixth options suggested involve the modification or refurbishment of the building to accommodate reuse.

In a paper examining the opportunities for building component reuse in Canada, Gorgolewski (2008) outlines three methods of reuse: relocation, component reuse and adaptive reuse. The third method, involves the reuse of an existing structure on-site, with the possibility of new additions or extensions. In some cases, this method may also result in a change in current function of the building. The following definitions of adaptive reuse have been presented in a series of academic literature. Woodcock et al., (1988) defines adaptive re-use as the redevelopment of structurally sound buildings for economically viable use. Latham (2000) presents adaptive reuse as the process that retains as much as possible of the original quality

of the building and combines it with a changing use. Douglas (2006) modifies this definition by outlining adaptive reuse as a conversion of a building to a more efficient and modified change of use to extend the life of the building. More recently, definitions of adaptive reuse have included aims of sustainability through the improvement and reuse of old buildings (Bullen, 2007; Bullen 2010; Pearce et. al, 2004; Velthus and Spennemann, 2007).

History of Adaptive Reuse

Adaptive reuse is not a recent concept in city building. In the past, demolition and construction of new buildings in Europe would sometimes be too costly and require more time and energy than reuse (Velthus & Spennemann, 2007). Mainstream knowledge of adaptive reuse in North America began in the 1960s. In Jane Jacob's *The Death and Life of Great American Cities* (1961) she advocates for the need for old buildings within a city. This began a growing advocacy towards the preservation of older buildings which had been overlooked for the more famous historical sites within cities. Over the next three decades, adaptive reuse projects began emerging in large cities in North America (Cantell, 2005). Douglas (2006) indicates that building conversion is the primary adaptation response in accommodating changes in the demand for the use of vacant buildings. A larger shift to adaptive reuse has had increased within the past decade (Ball, 1999) through the introduction of Smart Growth principles (Schilling, 2002). The Smart Growth movement encourages compact urban development in order to reduce development pressures on greenfield sites. The potential contribution of adaptive reuse to this movement includes the reduction of public funds for new infrastructure, attracting reinvestment into older suburban and downtown city neighbourhoods, improving the social conditions of communities and preserving agricultural lands on the edge of urban areas (CMHC, 2005).

This change in the use of built form and infrastructure has placed adaptive reuse as a priority focus for sustainability. Bullen (2007) explores how adaptive reuse can have an impact on the sustainability of the existing built environment. It is concluded that although there are many factors of concern that must be considered in any project, adaptive reuse is a positive strategy to employ towards the sustainability of the built environment. Furthermore, Bullen notes that adaptive reuse enhances the longer term usefulness of a building and is a more sustainable option than rebuilding or demolition.

Tools

Langston et. al (2008) developed a generic adaptive reuse potential (APR) model used to identify and rank existing buildings for reuse. The model uses an estimate of the expected life of the building and the current age of the building. It also requires an assessment of the obsolescence of a number of factors including physical, economic, functional, technological, social and legal. This framework provides a range of values with known limits that enable ranking and prioritization of buildings to occur. Using case studies in Hong Kong, Langston et. al provided increased knowledge on the environmental impacts of construction, materials and related systems, particularly related to buildings.

Shen (2010) identifies the APR model as a strategy to ensure that social value is optimised for all and potential discrepancies are planned for. An analysis of sites in Australia and Hong Kong was made using the APR framework. It was determined that the case studies in Hong Kong had more of a potential for adaptive reuse. Despite the potential in Hong Kong, Australia had more completed adaptive reuse cases. The findings suggested that actions should be taken sooner rather than later to reap both the economic and social benefits of building reuse.

Application of Adaptive Reuse on Surplus School Sites

A recent phenomenon which has sparked adaptive reuse interest is the existence of surplus school sites in inner city and mature suburb neighbourhoods (Weibe & Quinn, 2010). Surplus school sites can become a new resource, in which a host of programs and activities can take place. It also offers suitable possibilities for private sector development (Giljahn & Matheny, 1981)

In a guide to adaptive reuse of schools, Giljahn & Matheny (1981) outline possible reuse opportunities including creating more space to house new school activities, leasing surplus space to tenants for commercial office use and incorporating elements of a community service center. Converting surplus school buildings to these uses often requires only minor demands in terms of construction or maintenance. The method of adaptive reuse is introduced here as a way of preserving the school building with an entirely new use.

According to Phipps (2006) on an examination of the adaptive reuses of closed schools in Windsor, Ontario, a surplus school is more easily reusable for people focused services and use than other brownfield sites. This is a result of accessible locations, less risk of contamination and a unified ownership.

Stakeholders

In order for actions to be taken on a redevelopment project of a school, there are a number of stakeholders that must be considered. Kincaid (2002) refers to these stakeholders as decision agents. The five decision agents recognised to be involved in all major decisions of any project are investors, producers (designers and constructors), marketers, regulators and users. The developer was recognised as a sixth agent whose work combines the roles of the first three

agents. These decision agents were used as a criteria for selection of participants for the qualitative research methods for this paper.

Ball (1999) outlines the importance of developers as having a major role to play in the reuse of buildings. Through a survey of developer-related organizations in the UK, it was found that there is a positive outlook towards refurbishment and reuse, given favourable conditions. It is suggested that the quality of refurbishment is not solely based on local factors such as building condition. Instead, a more significant factor concerns the company or individual who takes over the responsibility of the reuse project.

One decision agent not mentioned by Kincaid (2002) is the general public living in the community where the adaptive reuse process occurs. Beaumont & Pianca (2002) advocate for the vested interests of the communities where closed schools are located. It is recognised that consolidation of schools displaces community members because the various neighbourhood uses are sprawled across a larger area. Children must travel further to get to school and many are bussed. The community then becomes vehicle-oriented and users without access to certain modes of transportation become displaced. Schools are seen as the anchors of many older neighbourhoods whose viability is enhanced by their presence. Velthus & Spennemann (2007) state that the process of adaptive reuse would not happen without a strong desire from the community to protect and reuse a building. Latham (2000) states that the real limitation to adaptive reuse is psychological. Once the motivation and desires of the community are clear, the creative re-use of these buildings will follow.

Wiebe & Quinn (2010) discuss the role that school boards play in Canada. Although the funding is provided by the province, it is the school districts within each city that decide on the allocation of the money and determine whether or not to levy education taxes. As a result of limited

budgets, school districts must sell surplus property to generate funds for the construction of new schools in suburban areas. Schools are then consolidated into larger structures built in the outer areas. A future role for school boards to play is to co-ordinate decisions about efforts to focus on the reuse of these sites. This allows for the protection of community resources and improves the neighbourhoods by reclaiming the surplus structures (Pearce et al., 2004).

Often in adaptive reuse cases, the major stakeholders and decision agents have different views on the project as well as the risks involved. As these differentiated views can cause issues, Kincaid (2002) recommends that it would be useful to those running the project to understand the different perceptions.

Drivers and Barriers

Traditional criteria of design and construction such as cost, time and quality have guided decision-making over the past century (Pearce et al. 2004). However, the evolution of city form and the function of urban spaces and buildings are influenced by a number of economic, social, political, legislative and environmental factors (Ratcliffe and Stubbs, 1996; Miles et al., 2007) which drive decision-making in adaptive reuse projects.

Through a study of the views and experiences associated with adaptive reuse, Bullen & Love (2010) builds on his previous research in order to gain an understanding of the issues with which owners and practitioners are confronted. Each city is inherently unique in relation to the requirements and needs for success in an adaptive reuse project. However, results from this study indicate that there are similar issues which planners experience regardless of city location which impact the outcome of a project.

The potential success of an adaptive reuse project is an important measurement of the contribution towards the communities in which it exists. Freer (1999) notes that project complexity is an issue with a strong influence on investment decisions. There are however a number of different dimensions of project complexity. Kurul (2007) argues that the components of an adaptive reuse project are the direct and indirect agents involved, the activities undertaken and the issues taken into consideration during decision making.

There are a number of factors which influence the viability of surplus school conversions. Factors include changes to demographic and household composition, new patterns of housing demand and consumer views towards home buying (Heath, 2001). New patterns of housing demand which emerged in the 1990s resulted in household buyers seeking accommodation closer to the workplace (Sohmer and Lang, 1999). Downtown living has grown in popularity and increased in residential values, which has had an effect on the reuse of school sites. Older buildings are often in locations closer to city centres and transit use (Langston et al., 2008). In a survey on potential benefits of adaptive reuse, Ball (1999) notes that the location of the building is one of the strongest elements in the value of a project. In addition to being centrally located in a neighbourhood, school buildings are designed for large occupancies (Giljahn & Matheny, 1981).

A driver for adaptive reuse of schools is to preserve the cultural value of the building within the neighbourhood. In a paper revisiting development in the United Kingdom, Ball (2002) concludes that the reuse of older buildings has various positive advantages. There is significant character to older buildings that is not seen in many modern contemporary structures. Latham (2000) recognizes that the continuity of a place is beneficial to the psychological health of a neighbourhood where a building has existed. Whether it is a place of worship, education or

work, these buildings are “very closely associated with the identity of the local population.” (Latham, 2000, 6).

Reuse of vacant buildings offers a strong means of heritage conservation (Ball, 2002) especially for older schools with heritage value. Older buildings may provide social benefits like intrinsic heritage values. They can contribute to attractive streetscapes and add historic character to a place. (Langston et al., 2008). They also contain valuable architectural features which cannot be replicated in the construction of newer buildings (Pearce et al., 2004). Heritage redevelopment has also been illustrated by Shipley et al. (2006a) as being profitable to the developer and delivering a greater Return on Investment (ROI).

The availability of any building for conversion into an alternative use is dependent on the state of the economy. (Heath, 2001; McCarthy, 2002). Changes in market demand yield uncertainty in future development processes (Kurul, 2007). Older buildings were often built with goals other than economic returns in mind and thus have features which would never be built today because of economic constraints. In addition to design features, the materials of older structures tend to be of a higher quality than what is available on the current market (Pearce et al., 2004). The conversion of the historic structures to new uses can keep older communities vibrant. It allows for an optimum use of community resources, saves on energy costs and improves the neighbourhood by reclaiming the space (Wiebe & Quinn, 2010; Beaumont & Pianca, 2002).

Building materials have a large energy expenditure associated with manufacturing, transporting, processing and installing (Ball, 2002). According to Pearce et al. (2004), reuse projects often cost far less than new development as many materials and energy components already exist. Reuse of existing school buildings also eliminates the need for much of the site work needed on

a greenfield development. It is possible to take advantage of the cheaper labour and material costs of the past rather than demolishing the existing structure. Construction costs are lower than new construction since the shell of the original building already exists (Giljahn & Matheny, 1981, Latham 2000). Wiebe & Quinn (2010) also note that many older schools are more attractive to prospective developers due to the architectural qualities.

Alternatively, Shipley et al., (2006) indicates that there is a range of profitability associated with adaptive reuse, but often times there is a greater degree of uncertainty. The perception of risk within any adaptive reuse project is higher than other development projects. This includes unforeseen costs which often create difficulty in securing financial support. McCarthy (2002) recognises that financial uncertainties about the costs of development have deterred some developers.

The capacity of surplus schools to undergo change is dependent on factors which concern the building itself. Heath (2001) recognises that physical design of a building is a barrier to a building conversion process for any adaptive reuse project. In order to avoid these issues, the building must be used efficiently and to its greatest potential. There are a number of possible combinations for changing a building's use. However, Douglas (2006) notes that the configuration and size of a building may not suit certain uses. Configuration to residential and non-residential single uses is more popular than mixed use conversions because they require less rigorous technical requirements.

In an analysis of the adaptive reuse of a former educational building, Kurul (2004) concludes that development control has a significant influence on the adaptive reuse process. It is shown that project complexity at the initial stages is strongly influenced by the developer's view of cost and risk. Up front investment is required in the project when there is still a risk of not getting

planning and development consent from the local government body. The costs of reconstruction of a building must be taken away from the present value of the revenue from the project (Phipps, 2008). According to Douglas (2006), one of the best ways of overcoming these initial financial risks is to incorporate a mixed use scheme into the adaptive reuse project. Financially, the risks are spread across multiple occupancy types, which could result in the discovery of untapped sources of revenue.

Giljahn & Matheny (1981) note that older buildings with thick insulating walls are found to use less energy for heating and cooling than newer buildings. In some cases however, older buildings may require extensive and costly refurbishment to meet the performance standards of the new use (Bullen, 2007). Occasionally, the energy efficiency of an older building for example may be insufficient compared to newer construction. Pearce et.al (2004) recommends that in these cases, certain features such as window panes should be removed and replaced with updated fixtures. Ball (1999) suggests that these challenges require a wide range of renovation and refurbishment techniques. Despite their age, older schools can be adapted to meet modern day building codes, accessibility uses and technology (Beaumont & Pianca, 2002). In certain cases innovative solutions must be found that can be applied within the constraints imposed upon the practitioners and designers (Shipley et al. 2006).

According to Pearce et al. (2004), another factor influencing prospective developers is the time it takes to complete a project. The reuse of old buildings such as schools often saves significant amounts of time as compared to new construction. However, due to the need to improve performance standards in older buildings, time may be added to the design and construction phases. Unfamiliarity with older materials and potential downfalls in adaptive reuse projects can further add time until completion.

Builders and developers may be inexperienced with reuse methods for small urban sites (Phipps, 2008). Shipley et al., (2006) recognises professional experience and skills of architects, engineers and tradespersons as a factor affecting adaptive reuse projects. In heritage buildings in particular, the complexity of the building and its specific features can add to the time and costs associated with reuse. Kincaid (2002) notes the special skills and experience required for an adaptive reuse project. Designers must be more innovative in their use of space. Constructors and engineers must be more creative in developing methods to provide supports in the existing building while new construction is going on around it. Developers must see the market potential in the use of these buildings as well as in the user demands. Professionals who have experience in the field can save money on the project.

Adams et al., (2001) demonstrated that ownership constraints to brownfield development arise because of the strategies, interests and actions of landowners. At times, owners of school sites might be willing to sell to potential purchasers, but the terms and conditions of the sale may deter potential purchasers. Wiebe & Quinn (2010) note that in Ontario, the school boards are expected to get full market value for their properties and there are no discounts. Development is further constrained by the owner setting a high asking price for the land or by refusing price offers. Building owners may let the building sit vacant for a number of years, thus depreciating its land value and potential sale price (Phipps, 2008).

Phipps (2008) recognises a number of reasons for a variation in sale prices for schools. At times, school board administrations are often inexperienced with respect to the sale of property. Inexperience in property sales can result in a rush or a delay in listing the property (Ratcliffe & Stubbs, 1996). It is difficult to compare prices of surplus schools as each parcel varies in terms of its attributes. Attributes include those of the existing building, the grounds and the

surrounding neighbourhood. A valuation of a site may also be based on the potential reuse plans of the buyer (Phipps, 2008).

The presence of statutory bodies and their objectives in an adaptive reuse project is an issue recognised as a possible conflict. Adaptation of existing buildings is sometimes considered less creative than designing and constructing a new building and therefore attracts less support (Bullen, 2007). Kurul (2007) notes that developer groups are aware of the important issues expressed by statutory bodies and are prepared to take them into consideration. This significantly increases the chances of delivering a successful outcome. Issues arise in certain projects where the developers perceive the views of the statutory body to be biased. Negative attitudes toward these views caused a delay in the project.

Phipps (2008) notes that reuse of a closed school may have certain costs due to the need for rezoning, alternative planning permissions and eligibility for grants and subsidies. Most school sites are zoned exclusively as institutional uses. Depending on the municipality, the permitted uses within this zone vary. In the City of Toronto, these permitted uses generally include a place of worship, a community center, a museum, a nursing home, a library etc. (City of Toronto, 2010).

A rezoning process may alert neighbourhood residents who were opposed to the school closure, which could result in an extended planning and development period. Many residents may wish to see the preservation of an institutional use on the surplus site (Phipps, 2008). In this case, there is a resistance to a change of use. The potential success of the project is impacted by the degree of resistance. However, a preferred alternative is to rezone to a residential use (Douglas, 2006) that complements the existing surrounding uses (Phipps, 2008).

In Canada, for example, Smart Growth initiatives encourage regional planning to direct residential growth to designated areas to intensify the existing urban areas (CMHC, 2005).

Phipps (2008) speculates that community residents are more eager to endorse adaptive reuse if the following criteria are met. First, upon closure of a school the new use of the site is revealed. Secondly, this reuse project should occur without delay upon closure of the school. Finally, the new use must remain in place.

Summary

This chapter summarized the existing literature on adaptive reuse and its application to surplus school sites. The literature informed the central research question of this paper by addressing a number of barriers and constraints to the success of adaptive reuse projects. Much less is known in adaptive reuse literature about the specific reuses of school sites. The existing literature informs this paper as it provides a base overview of adaptive reuse which can be built upon with the direction of study. This paper will add to the current existing research by providing a case study analysis of the reuse of surplus school sites in Ontario.

CHAPTER 4: METHODOLOGY

Research Design

The methodology behind this research design was qualitative. This is because the purpose of this research was to explore the benefits and constraints of adaptive reuse of surplus schools through a case study analysis. According to Babbie & Benquisto (2002, pg 304), “Qualitative research allows researchers to observe social life...the observational techniques used in this type of research enable the properly skilled researcher to collect rich, detailed data”. Denzin & Lincoln (2005, pg. 3) add that “Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible”.

Qualitative research is appropriate in this case as there is a problem which needs to be explored beyond the existing literature and beyond results from other research studies. This type of research is also employed because there is a need for a detailed understanding of the issue. A detailed understanding of the context of each adaptive reuse project is needed in order to address the problem. Qualitative methods are also used in this paper because quantitative measures and statistical analysis do not fit the problem nor help to inform a recommendation. In this case, quantitative measures may not be sensitive to certain characteristics of the projects such as barriers and constraints, building condition and the plans for redevelopment. To associate each project with a series of numbers and statistics overlooks the uniqueness of each project in providing recommendations for the future (Creswell, 2007).

This paper will employ an approach, where multiple qualitative methods will be used in research design and data collection. Each individual qualitative method has different limitations. As a result of using complementary qualitative methods, the biases in individual methods can be

neutralized (Creswell, 2009). Specifically, a sequential mixed methods procedure was used where the data and results of one method were expanded on with another method. Due to time constraints on this paper, a triangulation of data sources across qualitative and quantitative methods could not be conducted.

Case studies are one of the strategies for qualitative research in this paper. They are a strategy of inquiry used to obtain detailed information about a group, community, organization or practice (Babbie & Benquisto, 2002). The overall intent of a case study is to shape the larger structure of the paper. Case studies are framed by time and activity as researchers collect data over a period of time (Stake, 1995), through detailed and in-depth data collection from multiple sources (Creswell, 2007). The main purpose of a case study is to focus on the specifics of each case in order to provide rich and detailed data. Sources of information on case studies may be gathered in a number of ways, including questionnaires, documentation, interviews, participant observation or a combination of modes (Babbie & Benquisto, 2002).

Case studies are often exploratory and descriptive and researchers often compare multiple cases (Laurel, 2003). They can be used as a preliminary research method to a more in-depth study. (Stake, 1995). A multiple case study methods analysis will be employed in this paper, where the issue of adaptive reuse of closed schools is addressed through the selection of multiple case studies. In this case, the selection will be from projects in multiple cities in order to show different perspectives on the issue. The goal of the case study is often descriptive. In this paper, it will take an account of a particular adaptive reuse project of a surplus school property. In total, three case studies, each employing a different adaptive reuse practice were identified and examined. The three case studies were Stinson School in Hamilton, Saint Michael's High School in Niagara Falls and Queen Elizabeth Park High School in Oakville.

Data Collection

The first step to data collection was to develop a detailed literature review which conveyed what knowledge and ideas have already been established on this topic, in order to provide a context for the research. The literature review determines whether or not past findings are consistent and whether there are flaws in the research which could be remedied through this paper (Babbie & Benquisto, 2002). Two sets of literature were reviewed and analysed: 1) Academic literature and public documents and 2) grey literature. It will be guided by a number of themes which will illustrate the strengths and weaknesses of the existing research. A web search was also conducted to identify locations for case studies. Most searches provided information on projects in the United States. Information on case studies from Canada was the focus for this project. The reason for this was to ensure that there would be sufficient information on each case and that information would be easy to obtain.

Background information on the City of Toronto was also gathered and reviewed during the initial stages of the research. Additionally, document from the Toronto District School Board (TDSB) and relevant planning legislation in the Province of Ontario was reviewed to assess if and how these documents impede the implementation of adaptive reuse projects.

In order to gain an understanding of the case studies beyond the information provided, a set of key informant interviews were conducted. This qualitative research uses a set of prepared questions (see *Appendix A*) to guide interviews, but is flexible in that it allows the respondent to direct the conversation (Denzin & Lincoln, 2005). These interviews also provide the researcher with the opportunity to explore more topics, specifically unanticipated issues which may arise during the interview as well as pursue certain issues and topics in greater depth (Babbie & Benquisto, 2002).

Interviews were conducted in person and by telephone. Notes were taken at all interviews. The format of the interview was semi-structured involving a core set of questions to guide the discussion. Open ended questions were used to gain a better understanding of the adaptive reuse project and the benefits and constraints faced during the project. Key informants of different professions were intentionally selected who had worked on or had knowledge of the projects. The advantage of interviewing key informants was the detailed information and insight which could be provided by those involved in the project which could not be retrieved through the case study analysis.

Data Analysis

The data obtained through research and interviews was analysed for patterns. Broad categories outlining the benefits and constraints of the adaptive reuse methods and the challenges encountered during the redevelopment process were made in order to inform the analysis and recommendations.

Limitations

This study has a number of associated limitations. The primary limitation was the time constraints which restricted the number of possible case studies. By using only a limited quantity of case studies it is possible that the barriers and constraints established in this paper, may not be a proper representation for adaptive reuse of surplus schools. This may result in certain constraints for reuse appearing to be insignificant in the initial design and development stages, while they actually could be fairly significant to a successful development outcome. Using a selected number of case studies may also limit the idea of potential adaptive reuse alternatives that could be implemented effectively.

A second limitation is that the validity of these recommendations in Toronto or any other city is strongly dependant on the real estate market. There are numerous factors that can affect the real estate market that vary from city to city. Therefore, a development outcome in one city may not necessarily be directly applicable to another. The fluctuation of the real estate market over time, may cause certain reuse projects to be important now, while they may not be at another point in time.

Another limitation addresses specific information regarding the finances and returns on investment which were not discussed in detail. While these are important aspects which should be considered with the adaptive reuse of a building, interviewees would likely not reveal the exact information for reasons of confidentiality. Certain projects may have different returns on investment, which may lead to some uses being appropriate for one project, over another.

Finally, the interviewee may have withheld some information as they felt it to be confidential and detrimental to the success of a particular project. It is also possible that interviewees may have forgotten some of the information over time or learned more about it since they were actually a part of the redevelopment process.

CHAPTER 5: CASE STUDIES

Three adaptive reuse school sites were examined: Stinson School, Saint Michael's High School and Queen Elizabeth Park High School. These sites were chosen because they were exemplary redevelopment cases, each one reflecting a different reuse. Each case study has been completed or is currently in the process of redevelopment. Stinson School and Saint Michael's represent adaptive reuse of vacant schools into different residential uses, while the Queen Elizabeth Park High School is an example of a community use.

Case Study 1: Stinson School, Hamilton, ON

Site Description

The site of the Stinson School is located in the City of Hamilton, Ontario on the southwest corner of Stinson Street and Grant Avenue. The site is bounded on the north by Stinson Street, the East by Grant Avenue, the south by Alanson Street and the west by Ontario Avenue.

Site History

In May 1894, the property was purchased for the purpose of a school building. Construction began in September 1894. The school took its name from the street it was located on. Designed by Alfred W. Peene, the 10-room building was built out of brick and Credit Valley Stone. Each room had large windows and could accommodate 50 students. Each of the five rooms on the first and second floor was situated around a central foyer. Washrooms, furnaces and playrooms were located in the basement (Aikman, 2008).

The school opened for classes in 1895 when six classes were transferred from nearby schools. The Stinson School was one of the last Victorian-style schools built in Hamilton (Aikman, 2008). In September, 1914 a new building was added to the south side. In 1959, an additional building

housing a gymnasium and assembly hall was added. A school library was built in 1978 (The Stinson, 2009). In 1989 Stinson School was designated as a historical building (Aikman, 2008). In 2009, the Hamilton-Wentworth District School Board declared the school surplus. The students from Stinson School and the students from Queen Victoria School were consolidated in order to build a newer school with a greater capacity in the catchment area. (Personal Interview, March 5th, 2012). The school was closed in June 2009 (The Stinson, 2009) and bought by developer Harry Stinson (Stinson School Inc, 2012).

Redevelopment Plans

The site was purchased by developer Harry Stinson for the purpose of redevelopment. The choice for reuse was a reflection of the fact that it was a heritage building and that the unique features created a market opportunity for the site (Personal Interview, March 15th, 2012).

The school is being turned into 66 loft condominiums (Hemsworth, 2009). Additional floor space will be added with a new extension, connecting the two existing buildings (Stinson School Inc, 2012b). This project will retain the historic Victorian character and strength of the building. Existing historic architectural elements which will be incorporated into the redevelopment include the brick and Credit Valley stone facades, rainbow arches, tall windows and ceilings, the peaked slate roof, the stone wooden steps and spacious lobby (Mays, 2009).

The condominiums will range in size from 700 to 2,600 square feet and will be incorporated into the existing school classrooms and amenity spaces. All the existing internal systems in the building will be modernized. Prices range from \$170,000 up to \$400,000 (Mays, 2009).

Current Status of the Property

The school is currently under construction with a completion date of August 2012.

Case Study 2: Saint Michael's High School, Niagara Falls, ON

Site Description

The site of the Saint Michael's High School is located in the City of Niagara Falls, Ontario at 6009 Valley Way. The site is bordered on the north by Stevens Street, the east by Portage Road, the south by Valley Way and the west by Drummond Road.

Site History

Lord Elgin Vocational Institute was opened in September 1967. It was a vocational school which offered training programs to prepare students for employment in various trade industries. In October 1968, an addition was added to the existing building which increased the capacity of students by 192. In 1989, Lord Elgin Vocational Institute was transferred to the Welland County Separate School Board, which renamed it Saint Michael's Secondary school. Vocational training for students was transferred to Niagara Falls Secondary School (NFHM, 1997). The Glengate Alliance Church purchased the school in November 2004 (Spiteri, 2011).

Redevelopment Plans

In 2008, members of the Glengate Alliance Church created the Valley Way Non-Profit Housing Corporation. This new corporation consisted of a number of volunteers within the community who were active towards the completion of the redevelopment project (Personal Interview, March 6th, 2012). The church sold the building and its surrounding 10 acres to that company for the cost of the mortgage at the time, plus \$1. Building construction began in order to accommodate a church and 34 rent-geared-to-income residential units. The original building footprint of the school was used, as costs would be less than if the building was demolished for new construction. Sustainable elements were incorporated into the redevelopment with a geothermal heat exchange system, and solar energy collection with future plans for solar hot water heating (Spiteri, 2011).

Many of the former classrooms were converted into the residential units and additional uses. Approximately 36,000 square feet of the 108,000 square-foot property was developed for the apartments. Four types of apartments were built facing Valley Way, with the majority being 650 square-feet, one-bedroom units. The Valley Way Non-Profit Housing Corporation has a 25-year agreement with the federal and provincial governments to offer the apartments to people who make \$36,000 or less a year at 80% of the posted Canada Mortgage and Housing Corporation rate (Spiteri, 2011).

Current Status of the Property

The building is now home to Glengate Alliance Church and the Valley Way Non-Profit Housing Corporation. It accommodates the church, administrative offices, community services and 34 rent-geared to income seniors housing units which were completed in July 2011. It is also a rental facility for a number of community groups (Spiteri, 2011). A community garden for use by the residents was also temporarily implemented on site (Personal Interview, March 6th 2012). The project left 75, 000 square-feet undeveloped, for future development. Two-thirds of that space will be used by the Glengate Alliance Church. The remaining 25, 000 feet is open for future educational uses (Rickard, 2011).

In 2011 it received an honourable mention in the Niagara Community Design Awards, which recognizes community design excellence in the Niagara Region. The awards focus on projects which enhance the built environment, efficiently use land and demonstrate creativity and vision (Niagara Region, 2012).

Case Study 3: Queen Elizabeth Park High School, Oakville, ON

Site Description

Queen Elizabeth Park High School is a 144,000 square-foot facility located at 2302 Bridge Road in Oakville, Ontario. The site is bordered in the north and west by Bridge Street, Yolanda Drive to the south and Sunset Drive in the east. It is located adjacent to Queen Elizabeth Park, which is owned by the Town of Oakville.

Site History

Queen Elizabeth Park High School was built and opened in 1971. Additions were built in stages throughout the 1970s and 1980s. An extension was added in 1975 and the most recent addition was a pool, operated by the Town of Oakville. Upon completion of the pool, the school had a capacity for 779 pupils. In 2000, the Halton District School Board began a process of looking at school closures. It was recognised that there was a greater demand for a secondary school in the Glen Abbey Neighbourhood in Oakville. It was recognised that another nearby secondary school could accommodate the pupil spaces of Queen Elizabeth Park High School (Personal Interview, March 15th, 2012). When the school board declared the school a surplus facility, it was closed in 2004. The Town of Oakville then purchased the site (TRA, 2011).

Redevelopment Plans

The site was purchased for community purposes. Upon purchase by the Town, the Recreation and Culture Department continued to operate the swimming pool on site, offered programming and rental in the community spaces and rented out the gymnasium space. The Town subdivided and sold lots on the perimeter of the site to a residential developer to offset the costs required for purchase (TRA, 2011).

The Parks, Recreation, Culture and Library Master Plan was developed in 2006 in order to study and recommend future recreation and cultural requirements for Oakville over a 15-year timeframe. The Master Plan focused on the need to meet recreational needs and recommended the redevelopment of the Queen Elizabeth Park School into a community centre. It also recommended considerations for arts programming and affordable access to arts and cultural opportunities in the design and operations of future community centres (Town of Oakville, 2006). A functional design study was completed in order to define the program of the building based on the needs of the Oakville community (Personal Interview, March 12, 2012).

In 2009, three options were presented to the Town outlining development options for the community centre. The following three options were:

Option 1: A renovated modern community centre with arts space

Option 2: A new, state-of-the-art community centre with arts space

Option 3: Use of existing school as community centre space and significant multi use space that would accommodate arts and culture needs utilizing the entire existing structure (Town of Oakville, 2009)

At the time, Option 3 was not considered, as the floor plate of the school was too big for the defined program. Council directed staff to proceed with community and stakeholder consultation on the three options. Certain cultural groups became interested in the use of the building and advocated for cultural space (Personal Interview, March 12th, 2012). In a report dated March 24th 2009, staff reported that a more detailed Operating Plan was necessary in order to develop the best operating model (Town of Oakville, 2009b). With the addition of space for cultural groups, the program of the building changed and additional space was required (Personal Interview, March 12th, 2012). As a result in April 2009, Council approved the

renovation of the former Queen Elizabeth Park High School, using Option 3. The Town of Oakville issued a Request for Proposals (RFP) for a consulting team to complete the operational analysis of the community centre. The project was awarded to Tucker-Reid and Associates in association with Ginder Consulting (TRA, 2011). In August 2011, the staff Operating Plan was presented to council (Town of Oakville, 2011).

The Queen Elizabeth Park Community Centre (QEPCC) was adapted from the existing layout of the high school with minor interior changes. It houses the pool, family change rooms, gymnasiums, multi-purpose rooms, youth and seniors spaces, arts and cultural spaces, active living program rooms, a welcome centre and a cafe (Town of Oakville, 2012).

Current Status of the Property

The building is currently in its final stages of construction, with a planned Grand Opening on March 24th 2012 (Town of Oakville, 2012).

CHAPTER 6: BENEFITS AND CONSTRAINTS ANALYSIS

In an examination of the three case studies outlined above it was evident that there were some similar and varied characteristics between each project. The overall analysis of case study characteristics below was completed to identify the benefits and constraints of the adaptive reuse of schools. General elements related to benefits and constraints were derived from the literature review. The specific information related to each case study was gathered using the interviews. Characteristics identified as being influential to the successful completion of an adaptive reuse project were established and detailed. Additional benefits and constraints not covered in the literature review were determined during the interviews. It can be noted that while similarities in characteristics between the case studies may be evident, they may not be reflective of all adaptive reuse projects.

Interior Layout

For all case studies, data collected from interviews indicated that the spatial layout of the building was favourable for adaptability to the desired use. Classroom sizes were ideal for conversion to residential units at the Stinson School. The Stinson School also contained a unique attic area which required some design work in order to maximize the use of the space for residential units. Classroom sizes at Saint Michael's High School were too large for conversion into senior's residential units. There was minimal difficulty however, converting to smaller units. The load bearing walls in that area of the school were the hallway walls, so the interior walls separating the classrooms were able to be torn down. Additional constraints to the architectural layout of the school were recognised by and interviewee, with the existence of long hallways connecting the residential units. Despite the length of the corridors, they were also wide enough to for activity spaces. With the removal of the locker bays, there was enough room to use the hallways as public gathering spaces. Additionally, these corridors are single-loaded hallways so

they receive a lot of natural lighting from the corridor windows opposite the residential units. Similarly to the Saint Michael's project, the classroom sizes in the Queen Elizabeth Park High School redevelopment were bigger than required for certain community centre uses. For example, meeting room spaces ended up being much larger than required due to the existing classroom configurations. This also impacted the acoustics of certain spaces. In the newer addition, many of the classrooms were separated by drywall and were therefore easy to convert to smaller spaces. The older section of the school was built with concrete block walls and therefore proved more difficult to work with. In the Queen Elizabeth Park project, interior demolition was completed prior to the creation of a design in order to develop a thorough understanding of the architectural and structural layout of the building.

The flexibility of the space to adapt to the new uses of the building is recognised in the case studies as being important for the redevelopment process. As noted by Gorgolewski (2008), structural component reuse is easier if components can be reused for a purpose similar to their original use. Using similar structural layouts in the new design makes reuse easier. Working with the existing layout of hallways and classrooms challenges developers and designers to think creatively. The existence of long hallways becomes an issue in schools converted for seniors use. Some residents may be located very far away from the entrance to the building as well as to other amenity spaces within the building. Those with physical disabilities may find it difficult to travel longer distances required by the layout of the building. New additions to schools over time, in some cases have different construction techniques or materials, and can benefit or constrain the redevelopment process. Concrete walls are appropriate for reuse as they have proved their load-bearing abilities throughout the building's use as a school. However, they pose a difficulty in terms of the flexibility of the interior design of the space, as it becomes timely and costly to remove the walls. Buildings that have been gutted prior to the design of the interior provide insight as to how the potential layout can be designed.

Architectural Elements

Data collected from the interviews indicated that the architectural elements in all school buildings were favourable in the redevelopment process. These elements included: tall ceilings, large windows, wide hallways, appropriate classroom orientation and building square footage. More specific characteristics were identified in the Stinson School as being favourable. They included wood and cast iron stair cases, multiple corners resulting from classroom orientation and a unique attic space.

As noted by Pearce et al. (2004) older buildings contain valuable architectural features which cannot be replicated in new construction. It is beneficial to the landowner that the school building already contains the elements discussed. These elements must be of interest to the buyer as features that will work well with the conversion of the building. Elements must also be attractive to the users of the space with a character that individuals can identify with. The attractiveness of architectural features contributes greatly to the character of the building. As mentioned by Ball (2002) and Latham (2000), the character of older buildings has a very positive value to the identity of the surrounding neighbourhood. The common architectural features between all case studies help to create a unique character only found in school buildings. Private sector development projects may enhance these unique features as a selling feature for the project. These architectural features are not considered to be profit-generating points of interest for public sector projects. Instead, they are viewed as a way to decrease the costs of redevelopment as they are already features which exist that can be an advantage to the public body.

Site Work

Site work varied between each case study. Overall, each site had existing roadways and access points already in place from its previous institutional use. Site work for Saint Michael's

High School was minimal as the majority of redevelopment was within the parameters of the existing building. In the case of the Saint Michael's redevelopment, the existing parking from the previous use was adequate enough in terms of size and quality to accommodate the new use. The conversion of part of the school into senior's apartments was one phase of a potential future plan for redevelopment of the entire site. Future site work may be required if further development beyond the parameters of the building occurs. The remaining case studies required some moderate site work. The Queen Elizabeth Park High School redevelopment required an increased number of parking spaces for change to a community centre. A parking lot was planned where a previous ball diamond was located, bordered by existing residential. Additional site work was involved here in order to dig below the existing ground level and buffer the edges of the site to ensure that car lights would not shine into the neighbouring backyards. To date, the Stinson School has required some site work with the removal of a coal bunker. In addition, some site work was required with the surplus playground spaces. When the school was open, the existing playground was open to the public. In the early stages of the redevelopment process, the city expressed an interest in keeping the playground as a public park. Subject to turning the park over to the city, the developer is required to change the condition of the park to meet city standards. Future site work may be required with a planned extension, connecting the two existing buildings.

The extent to which site work is required in the project can have an impact on the costs of the project. Due to the location of the redevelopment projects within established neighbourhoods, each site already contained access points and was connected to the municipal road network. The site work was minimal on projects where the redevelopment was focused solely within the parameters of the building. In any redevelopment, the ideal parking scenario would be to utilize the existing parking on site in order to reduce the amount of additional construction required. The implementation of onsite parking was a result of the large extensive school yard space

surrounding the building. Parking demand for the change of use might increase the current amount of parking. Reducing the impact of additional parking on neighbouring residential areas is considered. Demolition was not a concern for site work in these projects, as the entire floor space of the buildings was utilized. This was beneficial to the landowner as costs were not incurred for demolition. Site work for further redevelopment of school sites beyond the building can be implemented in future phases. Site work related to playground spaces surplus to the needs of the redevelopment use can provide an opportunity to keep the space as a public park. This may increase the costs for site work depending on the conditions that must be met prior to the space being turned over to the municipality. Issues may arise if there is a difference in park standards between the municipality and the landscaping vision of the developer.

Existing Neighbourhood

All case study schools are located in residential neighbourhoods. Each neighbourhood has its own distinct characteristics as identified during the interview process. The Stinson School is located in a neighbourhood in transition, close to the downtown core. It is an older neighbourhood with single-family housing built in the early 1900s. Past trends have shown the conversion of these houses into rental units. However, in recent years, the neighbourhood has been changing back into single-family homes. Housing prices in the area have increased over the past few years as people from outside Hamilton have begun to buy property and invest in the area. Community support in this project stemmed from the interest in neighbourhood reinvestment. Saint Michael's High School is located in an established neighbourhood of single-family homes built in the 1960s. It is an aging community with many senior residents. In several cases, parents who sent their children to the school while it was open are still living in the area. There is a high demand for seniors housing and affordable housing in the area. As residents have aged in this neighbourhood, this has become important to the redevelopment of the school. Queen Elizabeth Park High School is located in an established community with

single-family homes built in the 1960s and 1970s. It is a bookend community, with a large population of seniors as well as families with young children. In the Town of Oakville, there was a strong demand for increased community and cultural centre space.

The existing neighbourhood conditions for the three case studies are somewhat variable. All school sites are located in older residential neighbourhoods. As a result of the aging population living in the neighbourhood, the community does not generate the same number of students as newer development areas elsewhere in a municipality. Therefore, there is no demand for schools in the area. Langston et al. (2008) noted that older schools are also located near other services and uses due to the location of these schools in built up areas. However, the character of these neighbourhoods varies slightly. Characteristics of the surrounding neighbourhood were taken into consideration for each project. As noted by Heath (2001), there are a number of factors including changes to demographic composition, new patterns of housing and consumer views towards home buying that influence the viability of reuse projects. In the Oakville case however, the existing neighbourhood characteristics did not solely impact the uses in the building. This was because the centre was built for the town as a whole and not just the surrounding community. In some cases, such as Oakville, the municipality does not normally build in established areas. Therefore there is a need for a plan to be put in place for the community with a focus on how to mitigate any disruptions. All school sites are recognised by the surrounding neighbourhood as community landmarks. As a result, the characteristics of the surrounding neighbourhood were considered because individuals were interested in the project and wanted to see that the building was retained on site. In some cases, redevelopment may have positive spinoff effects for a community. It can be speculated that adaptive reuse projects in transition neighbourhoods can be a catalyst for reinvestment in the area, which could bring in more redevelopment opportunities. As indicated through a survey by Ball (1999), the location of the building is the strongest element of a reuse project. The market

for the adaptive reuse of school sites is strong given their central location within a neighbourhood, the potential to offer desired amenities and uses and the reinvestment in existing neighbourhoods.

Use Compatibility

There were no issues identified in the interviews relating to the new uses in the buildings. In all three case studies, the municipality supported the new use and provided guidance throughout the development process. All of the schools are located in the neighbourhoods with residential, park and nearby commercial uses.

Compatibility was not an issue as the neighbourhoods in these case studies contained complementary uses to the proposed reuse. In the case studies, the proposed reuses were within the existing zoning for the site or were changed to a residential use which complemented the neighbourhood residential zoning.

Site Access

There were no issues identified related to site access with any case study, as municipal roads and access points already existed with the previous use. All buildings are located on a site bordered on each side by a residential street. In one interview it was recognised that two streets bordering the Saint Michael's High School dead-end on the property and that in future development phases, it may cause site access issues. In two cases, the school yard occupied a large portion of the site. The school yard surrounding the Stinson School is smaller in size and does not accommodate sports fields like the others. Since the Stinson School project is an ongoing process, any site access issues cannot be identified until completion.

With the school site already built up with connections to the municipal road network, road access issues are minimal. Multiple street boundaries provide numerous opportunities to enhance existing access points and/or create new connections to the site. Access issues with dead end streets could result in the need to extend the streets for future development. There may be community opposition to this, which could slow down the development process. The school sites surrounding the buildings allow for extra space required for potential construction work that would require space beyond the building walls. The extent of the school yard land around the school building can also determine whether future redevelopment beyond the building walls is possible.

Heritage Designation

Two of the case study buildings were not listed or designated heritage buildings. The Stinson School is designated under Part IV of the *Ontario Heritage Act* for individual designations. The designation covers the entire building envelope, as well as certain interior areas such as the stairs and the floors of the common areas. Interviewees indicated that there were some concerns with heritage alterations to the building throughout the design process. Concerns from the city in maintaining the historic character of the building occurred with the removal of certain staircases and the potential presence of balcony cut-outs in early design phases. Essentially these concerns stemmed from the fact that any changes to the building facade and interior needed to be reversible in the future. Concerns were expressed regarding the new addition between the existing buildings. As a result, the addition was set in from the existing buildings in order to maintain the square building masses. Conditions with the design of the site were negotiated prior to approval for heritage alterations. Objectives of city staff and the developer both reflected the interest in maintaining the heritage features.

Heritage designation of the school building was seen to be a benefit. First, it meant that the building would be retained on site. Secondly, it was noted that heritage features are marketable for this site as they create uniqueness to the project which cannot be found anywhere else in the city. In the Stinson School many features were kept in place because they appeared to be selling features. While the financial details of the projects were not discussed, a central motivating factor in taking on an adaptive reuse project is the return that can be made on the investment. As noted by Shipley et al. (2006a), heritage lofts and condos sell out faster and for more money than new construction and can result in a greater Return on Investment (ROI). Redevelopment of a heritage building also provides protection for the building in the future. Being a heritage building, it becomes eligible for exemptions from development charges as well as access to certain funding in some municipalities. However, the extra time and money required for these conversions may be viewed as a constraint. Shipley et al. (2006) notes that when these projects are undertaken by experienced professionals, they require a significant initial investment compared to new construction. In the cases where the building was not designated heritage, there appeared to be no disadvantage to the project.

Municipal Legislation

Interviewees indicated that none of the three case studies experienced issues with the policies of the municipal Official Plans. Two case studies did not require any amendment to the zoning bylaw, as the legislation was broad enough to accommodate the new use. The Stinson School required a rezoning from Neighbourhood Institutional "I1" to "E/S-1635" (Multiple Dwellings, Lodges, Clubs) Zone in order to permit the reuse of the school into a multiple residential building. In this case, the City of Hamilton approved the staff recommendation for the zoning bylaw amendment. This zoning amendment was met with little opposition, as residents were glad to see reinvestment being directed into the area. Residents were also favourable towards the application, as it retained the existing school building. Future phasing for accessory uses are

planned for the future development of the site at the Saint Michael's School. Future amendments as well as site plan approvals will be required.

The redevelopment of the site is supported by policies laid out in each municipality's Official Plan. The *Urban Hamilton Official Plan* states that "The City shall encourage the adaptive reuse of the existing building stock for appropriate land uses" (Chapter E, s. 3.2.15). The *City of Niagara Falls Official Plan* encourages "the preservation, restoration, adaptive reuse and improvement of historical or architecturally significant buildings" (Part 4, s. 11.5.2). The *Livable Oakville Plan* states that "The Town will encourage innovative programs and construction methods which support the sustainable development and redevelopment of buildings" (Part C, s. 10.6.1). Issues with amending an Official Plan or zoning bylaw become apparent with the requirement of a public process. As noted by Douglas (2006), a preferred alternative is to rezone to a residential use. Many residents who were opposed to the school closure may wish to see the preservation of an institutional use on site. Potential neighbourhood opposition may result from personal issues or unfounded fears towards the project. If issues are unsettled, it can lead to an Ontario Municipal Board hearing, which can result in a costly and drawn out process for the developer and the opposition. A new use which fits within the existing zoning would prevent any of these issues. The retention of a surplus school in a neighbourhood which views the building as a community asset sees more positive feedback and support towards the project.

Incentives

Development incentives for adaptive reuse were not provided by the municipalities for any of the case studies as they were not located within downtown community improvement areas or in areas of focus for redevelopment. However, interviewees for each project each project did note that there was access to other related incentives. The Stinson School project did not receive

any financial incentives as there were none available at the time. As of February 2012 however, the City of Hamilton exempted heritage buildings from development charges. The Saint Michael's project received an affordable housing grant for \$4 million to build the seniors housing units. Without the grant, the market rents would be too low for the project to be successful. The project also received renewable energy grants for the sustainable technologies implemented on site. The solar collector array also provides a source of revenue for the project, as it sells energy back to the grid. The funds received for the Queen Elizabeth Park project were received through the budget for the Town.

The impact on the success of a project with access to incentives and grants is a positive one. Exemption from development charges can significantly decrease the costs of development. However, some issues with the affordable housing grant were raised regarding the need for approvals by the MMAH on any future development of the site. The renewable energy grants allowing for the installation of sustainable technologies has resulted in low costs for heat and hydro for both the residents and other users in the building. Development incentives for adaptive reuse can be beneficial in reducing costs in all projects and retaining a higher rate of return on private projects. For public projects, it can help promote and assist in the redevelopment process. This can be an important factor in ensuring the reuse of surplus school sites.

Acquisition Costs

The purchase price of each school building was based on market value. Although the specifics of the financials were not discussed, the costs of the buildings reflected the market conditions for the sale of institutional buildings. In one interview, the comparison between the acquisition of surplus school sites compared to the more expensive real estate land in downtown Toronto was made.

Under the *Education Act, R.S.O. 1990*, Ontario Regulation 444/98 guides the disposition of surplus real property. It adopts the process for which a school board may sell, lease or dispose of property. Part I s. 1.3 states that “A sale, lease or other disposition under this section must be at fair market value”. All of the case study schools have had acquisition as part of the overall costs. The nature of adaptive reuse with these projects kept the shell of the building as well as many interior features, thus reducing that part of the construction process. It should be noted that market value depends on the location and time the buildings are acquired. If purchased for a low price, it can reduce the overall project costs.

Contamination

Contamination within the building was found in minimal degrees of severity between the three case studies. In two of the case studies, the contamination was removed by the school board prior to the acquisition of the building by the current owner. In the Saint Michael’s High School case study, the building contained asbestos as a result of an old hot water system in the building. The asbestos was found on the pipes as well as the vinyl floor tiles. The construction materials containing asbestos required removal from the building and proper disposal. As a result of the change of use to residential at the Stinson School, a record of site condition was required, which resulted in the removal of a coal bunker. In addition there was so site contamination found in each study.

Acquisition of a site with little to no contamination is ideal in any redevelopment project. There were no heavy site contamination issues at any of these case study sites. In cases with the discovery of asbestos, it was found and dealt with accordingly. Any contamination resulted in the removal and replacement of certain features within the building. The redevelopment of the Saint Michael’s High School, required a replacement of all mechanical, heat and water systems.

Therefore the removal of the pipe materials did not incur any extra time or costs. The Ministry of Environment administers a set of guidelines for the remediation of contaminated sites as well as for the removal of asbestos. It was recognised that older schools generally contain asbestos contaminated construction materials. However, upon prior purchase of the property, any conditions assessment is minimal as only the exterior condition can be observed. The Ministry of the Environment also regulated when a record of site condition is mandatory for redevelopment of a site. Ontario Regulation 153/04 outlined the procedures which may be followed to meet the Phase 1 and Phase 2 Environmental Site Assessment requirements for submitting a Record of Site Condition. Contamination of a school yard site is fairly minimal as the institutional use does not particularly equate to soil or water pollution. However, there is a potential for contamination through buried oil tanks which were used in older schools to heat the building.

Structural Condition

Concerns related to structural condition in these case studies were raised during the interviews. These concerns included the age of the building and any additions added to the building at a later date. Each case study school was built in a different construction period and therefore the condition of each building varied. It was noted that the aesthetics of the structural systems, in the Stinson School were desirable, as it was built over 100 years ago and was still structurally sound. Reasons that attributed to this included the high standard of construction techniques and material which were used for the building. Another reason was that the school was never abandoned or vacant. It was occupied as a school until the day it was bought, thus reducing the potential for damage or vandalism. However, some specific elements such as the windows, roofing and eaves troughs were found to be poorly maintained. The structural integrity of the other two case studies was also favourable because schools built in the late 1900s were easily adaptable to the new use. Each school experienced numerous development phases with the

construction of new wings and additions. The structural condition of the additions in most cases was well suited to accommodating the new use. The Saint Michael's High School had some structural issues with the roof, which required repair. Additionally, water erosion had decreased the quality of the outside brick and mortar. Money was spent to harvest new brick to replace it. There was also an issue with the west wing of the school as it remained vacant and unheated after purchase from the school board. As a result, roof drains began to freeze and the condition of the building deteriorated. In an attempt to prevent this, the water was shut off, which in turn accelerated the deterioration further. Upon purchase of the Queen Elizabeth Park High School, the Town of Oakville had a structural report completed. It was discovered that the roof was failing and that additional construction on the roof would be required. Aside from the roof condition, the building was in suitable condition.

Generally in adaptive reuse projects, there is a concern with respect to the prior use of the building and its structural layout. As noted by Bullen & Love (2010), the considerations of building demand and function must be made for the new use in order to achieve sustainable outcomes. The prior institutional use was not an issue in these case studies as the buildings were built to accommodate a large number of users. Overall, issues with the structural condition of the buildings were minimal. It was found that the high quality of construction in historic buildings was favourable as the building had proved its durability over time. Structural issues that are unknown prior to the building acquisition can result in additional costs which were not originally planned for. By turning off heat and water for example, it can further accelerate any existing deterioration of the building. Structural issues that are known prior to the acquisition of the school property can be incorporated into the design plans for redevelopment

Building Systems

All electrical, mechanical, plumbing and heating systems in each case study were removed and replaced with modern systems. Issues with the removal of these systems were recognised in the Saint Michael's High School case. Replacement of some of the systems in the west wing of the building required the removal of flooring. This resulted in the temporary displacement of the church as well as the administrative offices. This cost more money as it required the replacement of the floor and ceiling as well as the repositioning of a major furnace. In the case of Queen Elizabeth Park High School however, some of the plumbing was kept, as the system had already been built for use by a large number of people. Additional work identified in the interviews was required in all case studies to bring the building up to code for fire safety. This included updating the sprinkler systems for the new use. The Queen Elizabeth Park High School, did not have a sprinkler system and a new one had to be installed. The school also incorporated a number of solar panels on the roof in partnership with Oakville Hydro. The replacement of the systems is an ongoing process for the Stinson School during the continued development of the project. This project also recognises the thick structural walls as a feature that can improve the energy efficiency of the building. Beyond the replacement of the systems within the building, the Saint Michael's High School project also implemented a number of sustainable initiatives including a solar collector array and a solar water heating system.

Bullen (2007) noted that older buildings may require extensive and costly refurbishment to meet the performance standards of the new use. Upgrading systems to code is a costly endeavour which can influence the amount of time and money spent on a project. In some cases these systems may be difficult to remove and require additional interior demolition. This impacts both private and public projects. The increase in cost can decrease the rate of return on a private sector project. In public sector initiatives, the time and money spent on a project can have an effect on the budget, which in turn may limit the scope of other parts of the project that the

budget accounts for. Although this may impact upfront capital costs, the replacement of the systems now, may prevent related issues in the future. Replacement of systems in the future may be more difficult and costly, especially if the building is converted to private uses. Public or rental units such as offices have the increased flexibility to close certain units to allow for replacement.

Occasionally, the energy efficiency of an older building for example may be insufficient compared to newer construction. Pearce et.al (2004) recommends that in these cases, certain features should be removed and replaced with updated fixtures. Certain features however should remain in place. Thick building walls can act as insulation for the building and increase energy efficiency. In addition, existing windows that open and close can provide an option for ventilation which does not require extensive systems upgrading. Finally, the use of renewable energy grants for sustainable initiatives allows for the upgrade of a building's systems beyond the required standards in the Ontario Building Code.

Ontario Building Code

Adhering to the building code was an issue recognised in the interviews on the Saint Michael's High School and to a lesser extent with the Queen Elizabeth Park High School. The issues related to the Saint Michael's project were a result of the number of uses unrelated to one another being located within the same building. This resulted in a more complicated adaptation to the building code. Accessibility and fire safety were the top issues with this project. To provide accessibility for the seniors living in the apartments, installation of ramps was required. Since the school was more than one storey, the building code requires the installation of an elevator. With regards to fire safety, the building has a very ornate fire plan in order to coordinate the multiple uses within the building. Fire exits and stairwells were required that worked within the new layout of the building. The organization of the fire plan ensures that there

is a separation between the different uses, which involved removing stairwells and access points from the residential units to other parts of the building. Fire-proofing of the inside of ceilings was required where different uses were adjacent to one another.

Additionally, there was a requirement for fire truck access to the residential units. Existing parking lots were able to accommodate this requirement. The Queen Elizabeth Park High School redevelopment met building code issues of accessibility and fire safety, to a lesser extent than the previous case study. Accessibility standards are high with community centres and the school was updated to meet them. Queen Elizabeth Park is a one-storey school and therefore did not have to comply with a requirement for an elevator. There was a requirement however, for large accessible washrooms. This requirement was met with ease, as the building already contained a number of existing washrooms. One challenge that was dealt with was the implementation of a sprinkler system to meet building code. This was due to the fact that previously, one had not existed. There were also some code issues with updating the look of the pool. At the time the interviews were conducted, the Stinson School was still in the process of Building Code Review. One consideration noted in the interviews was that the building code allowed for flexibility with heritage features.

Adapting an older school building to the *Ontario Building Code* is challenging and costly, especially with a change of use. Construction materials as well as building layout can pose potential fire safety issues, which must be addressed. Accessibility standards are increased significantly with uses for seniors or the community at large. Fire safety codes are enforced with all uses and are more elaborate with the greater number of unrelated uses within the same building. Part 11 of the *Ontario Building Code* recognises that certain existing features in a heritage building such as doors are acceptable and do not require alteration or replacement to comply with the exact specifications of the building code. Section 11.3.3.1 recognises that

“...construction may be carried out to maintain the existing performance level of all or part of an existing building, by the reuse, relocation or extension of the same or similar materials or components, to retain the existing character, structural uniqueness, heritage value, or aesthetic appearance...”

Issues with adhering to the building code can be costly to the developer and directly impact the time and money required for a project.

Investments and Risk

In total, six out of ten interviewees had previous experience with adaptive reuse projects prior to their involvement with these projects. Of those six, five interviewees had experience specifically with the adaptive reuse of school buildings. In the case of Queen Elizabeth Park High School, no outside investment from alternative parties was required as this was a public project completed by the Town. Through the process of completing interior demolition prior to the creation of a design for the community centre, the associated risk was decreased. Incentives provided for the Saint Michael’s School were not reflective of the fact that this project was adaptive reuse. However, it was noted that the increasing financial burden of the school prior to the creation of the Valley Way Non-Profit Housing Organization resulted in a loss of supporters on the project. Beyond the financial burden, the building was seen to be a low risk project. The Stinson School is still in the process of redevelopment and therefore the overall risk of the project is still variable. Unique building features within the school affecting the progress of the project, are being found along the way. These features are then incorporated into the design as feasibly possible in order to reduce potential costs of removal or redesign. An interviewee noted that financing for any adaptive reuse project is hard as it is subject to cost overruns.

As noted by Shipley (2006), the perception of risk within any adaptive reuse project is higher than other development projects. The risk of adaptive reuse projects is higher than that of new construction due to the level of unknowns. Upon purchase of the surplus school property, there

is little to no knowledge of potential issues behind the building walls. Assumptions are made through examination of the condition of the outside. For example, if outside bricks are worn, it could be an indication of water leakage on interior walls and potential mold or other foundation issues. As noted by Freer (1999), the complexity of a project has a strong influence on investment decisions. Despite the extensive list of successful adaptive reuse projects, banks are very wary of such undertakings. Unknown characteristics of the surplus schools are so varied. It therefore becomes difficult to convince a bank that the project is a worthwhile investment. This limits the development of surplus schools to individuals who readily have the initial investment required for the project. As noted by McCarthy (2002), financial uncertainties have deterred some developers. While this may not be as big of an issue in areas like Toronto, where there are financially endowed individuals willing to invest in the project, this may be a problem in smaller municipalities. During the interviews it was noted that there is a willingness of buyers to buy into private adaptive reuse projects, as there is a higher risk involved. Oftentimes people will wait until the project is started or completed before they put money into it.

Consultants or other professionals with experience in adaptive reuse projects can reduce the overall financial risk associated with the project. Completing interior demolition prior to obtaining financing can reduce the level of risk in the project as the majority of the unknowns are known. In heritage buildings in particular, there are a number of “discovery items” that are found along the way which impact the design of the interior space. Making use of these features and incorporating them into the design reduces the risk of future project costs. The risk of adaptive reuse of surplus schools varies between each project and is significantly impacted by the characteristics behind the walls of the building.

Through an examination of three case studies: Stinson School, Saint Michael’s High School and Queen Elizabeth Park High School, a number of benefits and constraints to the redevelopment

process were realised. Many factors affecting reuse were found to be both a benefit as well as a constraint due to the variability of each project. In some cases, what may be considered to be a beneficial to one project was a challenge in another. The following chapter addresses a number of recommendations for future adaptive reuse of school sites in order to capture the potential benefits and mitigate the constraints.

CHAPTER 7: RECOMMENDATIONS AND CONCLUSIONS

The results analysed in the previous chapter indicate a need to address the benefits of the adaptive reuse of schools to ensure that they are captured in all future projects. The results also indicate that there is a need to mitigate the constraints of adaptive reuse in order to create a more seamless redevelopment process for future surplus school sites. The following recommendations are provided to address these needs for any adaptive reuse project. The recommendations vary in scale from implementation at the provincial level to a site-specific basis. In some cases, they may be particularly important in the City of Toronto. It must be recognised that each adaptive reuse case study in itself is unique and that not every recommendation below will apply to each project.

Provincial

Changes to the *Provincial Policy Statement* (PPS) should be made in order to develop specific Official Plan guidelines for provincially-funded buildings. Specifically, the PPS should be amended to provide specific guidelines for municipal Official Plans regarding school closures and surplus school buildings. Currently, provincial ministries operate independently from the PPS, thus allowing for certain leverages over municipalities. In the case of the Ministry of Education, this allows for more freedom in site selection for school buildings. These changes should allow decisions to be made within the municipal jurisdiction instead of at a higher level provincial committee. This will help minimize any disconnect between the broad provincial goals and the more specific focus on planning objectives of municipalities. With a stronger focus on the planning decisions around school buildings, municipalities can work together with the school boards to address how school buildings can support the objectives of the Official Plan.

Even though this recommendation suggests that municipalities and school boards work together independently from the province, there may be instances where the province would have to step in as a moderator. In cases where issues cannot be resolved, the province must act as a referee to which the school board and municipality can appeal for resolution. This is a recommendation that can be implemented over the long-term. Meanwhile, the opportunity remains for school boards to work together with municipalities.

Municipal

Goals and objectives for reuse of the school sites should be developed by the school board in partnership with the municipality prior to any school closure. To support these goals and objectives, an assessment should be made in order to determine the highest and best use of land for that site. These goals should recognise the school as an asset to the community and should reflect adaptive reuse potential that is complementary to the existing neighbourhood. Currently, decisions on closures are to the sole discretion of the school board with no requirement to adhere to any provincial planning legislation. School boards should be required to share information about the economic, social and environmental costs of a school's reuse and its impact on the surrounding neighbourhood. After sale to a buyer, the school board is no longer involved in the adaptive reuse process and therefore cannot influence the direction of redevelopment. Once the school is sold, the buyer is the ultimate decision-maker as to the use on site. An integrated and collaborative approach is necessary for the redevelopment of surplus schools.

The creation of overarching goals enforced by the municipality to address the adaptive reuse of a school site, can help to ensure that the negative impacts of demolition are avoided. Plans for implementation could address a number of options for reuse and provide justification for the implementation of a certain use was recommended. Examples of precedence should be

applied to each adaptive reuse case. More specifically, these goals should address appropriate and inappropriate land uses for the site. Public bodies can purchase the properties with the intention of providing the recommended use. This can also benefit private organizations as part of the school can be sectioned off and kept in the public sphere, and the remainder of the building can be used for private redevelopment. By recognising and addressing the recommended use, the private organization can work with the municipality to speed up the redevelopment process. This is particularly important for the City of Toronto, as the increase in school closures will result in a number of vacant buildings. If goals for reuse are in place, then it may reduce the length of time they remain unused, as well as reduce any negative spinoffs in the neighbourhood.

Planners should develop appropriate local approaches for encouraging and promoting adaptive reuse of surplus schools. Updating policies in municipal Official Plans to encourage adaptive reuse of school sites and discourage their demolition can help to protect the buildings on site. In addition, encouraging adaptive reuse of schools within secondary plan policies adds another dimension to the support for adaptive reuse. Considerations should also be made with the zoning by-law to allow for flexibility within the current site designation. In Toronto for example, there is potential to generalize the existing institutional zoning in order for specific uses to be allowed because they are a community benefit. This exemption can be given, provided that it is an adaptive reuse project and that no demolition to the existing building will occur. This can allow for a more streamlined process on the redevelopment of school sites and can encourage landowners to consider adaptive reuse as an option for the site.

Municipalities should develop an adaptive reuse program in order to streamline the process landowners must follow to get their projects approved. This program should be outlined in an adaptive reuse handbook to guide landowners through the redevelopment process. The

handbook can provide all of the regulations adopted by the municipality to encourage adaptive reuse. One volume of this handbook could address guidelines specifically focused on school properties. Sections of these guidelines could address objectives related to the adaptive reuse of school sites and considerations of the relationship between the school location and new use. The guidelines would also address site specific criteria including design standards, scale, parking, etc. In Toronto, the program should be recognised as an essential element in the municipality's strategy to redevelop existing built up areas and reinforce policies of smart growth and intensification in municipal Official Plans.

As a part of a streamlined development process, development charges should be exempted or significantly reduced for adaptive reuse projects. Similar to the Hamilton case study where development charges are exempted for heritage buildings, this could significantly reduce the costs associated with development. By reducing the costs of development, the rate of return on investment would increase. For private development projects, this also reduces the costs that may be imbedded in the price to purchase or rent the space. This may also encourage landowners to reinvest in the existing building instead of demolishing it and building new.

Incentives should also be implemented to encourage the landowner or developer to build beyond the bottom-line standard of development. LEED certification provides an increase in energy efficiency for a building, but a higher standard of building materials and construction techniques should also be considered. In the adaptive reuse of a school building, it must be brought up to code for the desired use. If incentives are available to build beyond what is required, then more individuals would be encouraged to build higher quality buildings. This can ensure that the structural condition of the building will last through various lifecycles of the neighbourhood. In public sector projects, it can ensure that there is a potential for the reuse of

the building for future neighbourhood demands. In private sector developments, it can ensure high quality building units which will last beyond the expected lifecycle of a standard building.

Adaptive reuse of heritage schools should be encouraged as a way of promoting smart growth, intensification and place-making principles. Instead of addressing heritage considerations as attempts to freeze growth and change, they should be viewed as a way to direct change in a rational manner. In order to encourage heritage development, municipalities should adopt policies which promote the building reuse in a way that aligns with their growth strategies.

Municipalities should also make the considerations for redevelopment of heritage buildings very clear. If there are a number of heritage schools in a municipality, it may be appropriate to adopt a set of design guidelines to protect the character of the area and not just the building.

Municipal planners should also develop projections for future demographics in the neighbourhood in order to determine future needs and the direction of growth. With these future projections in mind, municipalities can then set their goals and objectives of reuse to reflect the future trends. Specifically, these projections can help to address the need for flexibility in the redevelopment of a school. Particularly in Toronto, through the anticipation of the future community characteristics, the city can address the potential life cycling of the neighbourhood demographics where there may be a future demand for a school in the area.

Community

Local heritage advocates who are interested in seeing these schools reused can also become involved in the process, by finding and supporting developers who specialize in the adaptive reuse of historic buildings. Finding a potential landowner with expertise in working with heritage buildings can benefit all stakeholders. The developer has experience in working with heritage buildings and therefore can anticipate that there will be potential unknowns. An individual with

expertise working with heritage buildings also has access to a number of resources which can be used to ensure success on the project. Working with an experienced individual with heritage redevelopment can allow for a more stream-lined development process through the municipality. An individual who specializes in heritage development generally supports the retention of heritage features and can work in partnership with the municipality, reducing the amount of back and forth during the approvals stage.

In cases where the school is not designated a heritage building, individuals with experience in adaptive reuse projects should still be hired to work on the project. Consultants and other professionals can work with the interior spatial elements of the school. Working to convert specific interior elements found in schools such as large classrooms, wide hallways, concrete walls and large windows, requires creative configurations. This will save the land owner time and money in the overall design of the space as the experienced professionals can provide advice based on their previous experiences. This is particularly important in communities in Toronto that wish to see their school building occupied with a new use and kept in place.

Site

Surplus schools should be leased out on a series of short-term leases between the time of closure and the implementation of a redevelopment plan. Municipalities should allow for the location of a variety of services within schools through temporary use zoning. At times, school closure and redevelopment plans are not made simultaneously, especially if the ownership changes. This results in the school building sitting vacant. An empty school building is often a target for vandalism and can become damaged. In addition, keeping an empty school vacant can increase a deficit as costs accumulate to heat the building and run the water without a profit generating use inside. Shutting off the heat or water, as experienced in the Saint Michael's High School can prove to be detrimental to the overall cost of the project. Short-term leases on

spaces in schools can allow for continued use of the school building with smaller ancillary uses until redevelopment plans are in place. Inexpensive spaces can be leased to government, non-profit and community organizations. Options for leasing to individuals for office space could also be considered provided the flexibility of the zoning on the property allows for the use. If implemented in the City of Toronto, this can ensure that at least part of the school can remain open and that the costs for heating, water and hydro are mitigated by the revenue from the short-term rentals. Leases can be written so that the owner retains their right to the property, while the tenant assumes the costs of upkeep as well as absorbs some of the costs of utilities. This is an option that should be considered in Toronto, as the increased number of schools on the market may be greater than the purchase demand which can result in an increased time between closure and redevelopment.

The strengths and limitations of the building should be assessed by the owner prior to any preliminary design work and development submission. By requiring a strengths and limitations assessment, this encourages landowners to begin interior non-structural demolition prior to the design of the building and interior space. This process should be put in place for development in order to reduce the risk of unknown factors and to prevent potential increases in cost and project timeline. Structural issues that are known ahead of time can be incorporated into the design plans for redevelopment. It also can provide a better understanding to the city, potential investors and outside consultants of the impact unknown features of the building have on the redevelopment process. By reducing the risk of the unknown, potential investment opportunities into the project can increase.

Developing for flexibility should be encouraged regarding the reuse of surplus schools. School boards have the option to retain ownership of the building. This can be accomplished by leasing space to other institutions such as private schools, over the long-term. When demand

for increased pupil spaces in the area occurs, the building can be reoccupied as needed. This is a potential cost-efficient way of planning for future uses, provided that the school board retains the building and does not sell it.

In cases where the school board is required to sell off the building, developing for flexibility is still recommended. With the retention of the building in the public hands, the municipality has a greater influence on the flexibility of design for potential future changes. This will allow the municipality to reuse the building according to current needs, while keeping in mind the potential use demands for the future. By maintaining as much of the interior configurations as possible, the adaptively reused building can be reverted back to a school use if needed, or easily adapted to an alternative use. By addressing the need for flexibility, potential future costs for the construction of a new school are reduced. The funding required to build a new future school in the same neighbourhood as the old school would result in the need to close down and sell off another school somewhere else in the district, thus continuing the cycle of selling off surplus schools. Repurchasing a school building from the municipality which can easily be converted into a school use can be less expensive than new construction.

Developing for flexibility can also be recommended for private sector reuse projects such as residential uses. By providing a wide variety of housing units within the existing school building, a diverse population including students, families, seniors, singles or couples can be supported. This reinforces neighbourhood stability by allowing people to live in their community throughout the different stages in their lives. By encouraging this diversity in the design of the project, private sector companies can increase the attractiveness of their development to potential buyers.

The recommendations outlined in this chapter provide options and alternatives to the current processes of adaptive reuse recognised in the case studies. They are influential to the adaptive reuse of surplus schools in the City of Toronto as well as other municipalities. It is important to note that the success of the recommendations is strongly paralleled with the willingness of various stakeholders to work together towards a common goal. In this case, the focus is on the successful adaptive reuse of the surplus school site. Another factor affecting the successful implementation of these recommendations is the stakeholders involved. Individuals must be innovative thinkers, risk-takers and creative investors with a passion for adaptive reuse and community building. It is recognised that this ideal scenario may not occur with every project, however it is something for which stakeholders should strive for in order to build partnerships and strengthen community connections.

Future Research

There are several directions for future research with this topic. First, as this study focused on three case studies, each from a different municipality, a more focused scope of research could be conducted addressing adaptive reuse of schools in one municipality. A similar case study and interview methodology could be followed. A benefits and constraints analysis could be completed to discuss the characteristics of each building. This could allow for an understanding of municipality-specific characteristics which impact the adaptive reuse of schools.

A more detailed study could be conducted addressing the adaptive reuse of schools into one type of use, such as residential units or a community centre. This scope of research could develop an understanding of specific benefits and constraints of adaptive reuse, related to a specific use. The results from a study like this would be more focused, compared to the more general findings of this study. This would ensure the results would provide more accurate results focused on a specific reuse.

A third study direction of future study would be to focus on heritage buildings in particular. As discovered in this study, heritage buildings have a unique set of benefits and constraints related to redevelopment which are not present in non-designated or listed buildings. Understanding the different challenges with heritage buildings can help benefit future reuse projects of designated schools and help to retain heritage buildings in neighbourhoods.

An alternative direction for future research could be examining the life cycling of neighbourhoods. It could address a number of current trends affecting the change in demographics of a neighbourhood, with a focus on the role of neighbourhood schools. Furthermore, it could analyse the impact of school closures on surrounding neighbourhoods and focus on the need for collaborative decision-making related to school closures and the design and location of new schools.

Conclusion

Many Canadian cities are experiencing under-enrolment issues due to the declining school-age population. This results in the closing of schools where student numbers have dropped. The City of Toronto recognises the need to consolidate a number of their schools to address the under-enrolment issue. This paper provided insight into the change to redevelopment and adaptive reuse which has begun as an alternative to demolition or new development of school buildings. Specifically, a number of benefits and constraints of adaptive reuse of surplus schools were detailed to inform the redevelopment process. The Stinson School in Hamilton, Saint Michael's High School in Niagara Falls and Queen Elizabeth Park High School in Oakville were used in the case study analysis. Each project was unique and therefore the number of benefits and constraints varied. In some cases, there were similarities in characteristics between each case study. Current concerns of adaptive reuse projects were revealed through the analysis of constraints. In order to capture the benefits and mitigate the constraints of future

adaptive reuse projects, recommendations were provided. The recommendations varied in scale from implementation at the provincial level to a site-specific basis. These recommendations are particularly important for the City of Toronto and help to inform what will be occurring in the next few years with under-enrolment pressures and school closures. The existence of innovative, risk-taking and creative stakeholders with a passion for adaptive reuse can ensure the retention of the school building within the neighbourhood. Emphasizing the importance of schools within a community and maintaining the building for future use can achieve important sustainability, smart growth, intensification and place-making principles.

APPENDIX A: COPY OF INTERVIEW QUESTIONS

1. Can you provide a quick overview of the project? What was your role in this project?
2. What alternatives for redevelopment were considered throughout the process?
 - a. What was the rationale for choosing the current option?
3. What were some of the most important factors considered in the selection of this site for redevelopment?
4. What was the architectural or structural condition of the building in at the beginning of this process? Was this a benefit or constraint to redevelopment
 - a. What were the desirable (architectural and structural) conditions of the building? Which were the non desirable conditions?
 - b. How were the existing mechanical, electrical and plumbing systems dealt with? Were there any challenges?
 - c. How flexible was the existing space to changing the layout? What was removed, moved or kept in place?
5. Did the site or building have any issues with contamination?
 - a. How were these issues dealt with?
6. Was there any site work such as grading, paving, demolition etc that was required to be completed?
 - a. Would this be considered a benefit or constraint? Why?
7. Is the building designated under the *Ontario Heritage Act* or located in or near a historical district? If so what process was completed and what obstacles were overcome?
 - a. What are the benefits to the building being a heritage building?
 - b. What are the benefits to the building not being a heritage building?
8. What policy considerations for the zoning by-law and Official Plan were needed for this project?
 - a. What are the difficulties that may have been addressed in getting the zoning changed if it was not already designated accordingly? How would it be addressed?
 - b. What are the difficulties that may have been addressed in getting an Official Plan amendment if required? How would it be addressed?
9. What issues occurred in adapting the building to adhere to the Ontario Building Code?
 - a. Were there issues regarding the process which was required to be followed?
10. What other policies not mentioned already were considered a benefit to the project? Why? How did this impact the development process?
11. What other policies not mentioned caused a constraint on the project? Why? How did this impact the development process?

12. What was the pre-existing condition of the neighbourhood in which this development was located?
 - a. Has the building been a catalyst for development in the area? Do you think it will be a catalyst for future development?
13. How does the level of risk in development change with adaptive reuse projects? Is this a benefit or constraint? Why?
 - a. Were financial incentives provided by municipal, provincial and federal governments? Expand.
 - b. Were there any other financial incentive sources (environmental, heritage etc.)? Expand.
 - c. What benefits did these sources provide? Any constraints?
14. What assistance was provided from the planning department or other municipal departments that supported the adaptive reuse of this site?
15. Were there any initial factors in this project that were perceived as a major issue, which ended up being a benefit?
16. Are there any factors that were not touched on in this interview that affected the adaptive reuse of this site? Could they be considered a benefit or constraint?
17. What other experiences with adaptive reuse projects have you dealt with in the past?
18. Are there any additional comments you would like to add?
19. Do I have permission to contact you with any further questions that may arise?

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