Rethinking suburban power retail: A redevelopment plan for a power centre in Cambridge, Ontario

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Abstract

Power retail first came to Canada in 1987, and has since come to dominate the suburban retail landscape. With more than 487 power centres nationwide, these large, isolated developments are symptomatic of larger suburban problems: they generate traffic congestion, they are not accessible to those without cars, they have negative consequences on the environment, and they are unattractive. As cities enter the 21st century, many governments have introduced policies to stop suburban sprawl by focussing on the redevelopment of existing areas. In Southern Ontario, policies like the Growth Plan for the Greater Golden Horseshoe call for a large percentage of future residential development to take place within the built-up area. Suburban municipalities like Cambridge, Ontario, will have to examine underutilized areas to evaluate their development potential in order to handle future growth. This process is known as retrofitting, where existing areas are redeveloped in a way to support high-density development. Using primary and secondary sources, this paper tracks the history of power retail in Canada and how it interacts with the suburban landscape. Then, a number of retrofitting urban design techniques are examined with respect to how they were used in real projects. This leads to a redevelopment plan for a power centre in Cambridge, Ontario, that is retrofitted to a mixed-use, transit-oriented neighbourhood that can serve as a benchmark for the city to reach its growth targets. The redevelopment plan was fiscally evaluated using pro-forma, which results in a profitable development for the private sector.

Résumé

Les centres de magasin à grande surface ont rendu au Canada dans l'année 1987. Depuis ce temps, les magasins de grand format sont devenus une des plus populaires formes de vente au détail. Avec plus de 487 centres de magasin à grande surface à travers le Canada, ces grands ensembles isolés sont symptomatiques des plus grands problèmes qui se trouvent aux banlieues: ils génèrent la congestion, ils ne sont pas accessibles aux citoyens qui n'ont pas de voiture, ils ont des conséquences négatives pour l'environnement, et ils sont moches. Pour se préparer pour le 21e siècle, les gouvernements introduisent les politiques pour réduire les effets de l'étalement urbain par concentrer sur la rénovation des endroits déjà bâtis. Dans l'Ontario du Sud, les politiques comme the *Growth Plan for the Greater Golden Horseshoe* demandent qu'un grand pourcentage de nouveau développement résidentiel arrive dans les zones bâties. Les villes qui se comprennent principalement des endroits de densité faible, comme Cambridge Ontario, auront besoin d'examiner les endroits sous-utilisés dans la ville pour les nouveaux bâtiments pour atteindre l'augmentation de population qui est prévue. Ce procès de rénover les zones bâties pour accueillir le développement de plus grande densité deviens plus en plus commun. En utilisant les articles primaires et secondaires, ce travail raconte l'histoire des centres de magasin à grande surface et comment ils ont développé avec les banlieues. Ensuite, les projets qui ont redéveloppé des endroits commerciaux bâtis sont examinés pour en connaitre comment ils ont utilisé le design urbain pour réaliser leurs objectifs. C'est après ça qu'il y a un plan pour une rénovation d'un centre de magasin à grande surface dans Cambridge, qui est transformé dans un endroit d'usage mixte axé sur le transport collectif. Le plan de rénovation est évalué fiscalement avec un pro-forma, qui démontre que le projet serait profitable pour le secteur privé.

Table of Contents

Introduction

The suburbs are the most ubiquitous form of living in Canada. Up to 66% of Canada's total population and up to 80% of Canada's metropolitan population now live in the suburbs (Gordon & Janzen, 2013). Built over large swaths of land, suburbs are automobile-dependent settlement patterns that emerged over the second half of the 20th century. Suburban sprawl has led to changes in the structure of cities, and suburban lifestyles have had a profound impact on everything from the economy to the environment to mainstream culture.

Suburbs have long been criticised. Low-density, single-use neighbourhoods have led to an increase in traffic congestion and air pollution. Suburbs are built on greenfield land, which has led to the loss of productive farmland and ecologically sensitive areas. Others have argued that the generic, isolated building typology in the suburbs has contributed to the decline of the public realm (Southworth & Parthasarathy, 1996).

One characteristic that sets the suburbs apart from the central city is the segregation of land uses. Whereas central cities often have a mix of buildings and land uses, outlying suburbs are more likely to have massive areas made up of just one type of use (e.g. residential neighbourhoods, business parks, shopping malls, etc.). One type of single-use site that is still relatively new on the suburban landscape in North America is the retail power centre. A power centre is a collection of big-box stores located on large sites with abundant parking, generally located close to expressways. Power retail has become successful in the retail landscape partially due to their efficient operating schema, as power retailers buy and sell large volumes of goods at prices lower than conventional stores. The discounts and purpose-oriented shopping offered by power retailers have been successful because they emerged at a time when consumers are time-pressed and value discounts. Power centres have also been criticised, as their large campuses are generally cut-off from surrounding neighbourhoods, they are only accessible by car thus generating traffic congestion and hampering pedestrian and cyclist access to the sites, they cost municipalities more than they pay in taxes, they

lack diversity, they contribute to environmental problems by requiring large amounts of land and providing little greenery, and the buildings are monotonous and unattractive.

Low-density suburbs are expensive for municipalities to maintain. Carruthers & Ulfarsson (2003) undertook a study that tracked capital budgets from 283 metropolitan counties in the U.S. over 10 years. They found a clear relationship between density and the amount spent on municipal service provision, where the per capita cost of services declines with density, but rises with larger land areas (Carruthers & Ulfarsson, 2003). This means that municipalities that have lots of low-density sprawl have to spend more money to provide services, including infrastructure, to their residents and businesses, which are costs that are passed onto taxpayers through higher taxes (Environmental Defence, 2013). In Canada, the Canadian Mortgage and Housing Corporation conducted a study that found that it was 16% cheaper per unit to build, and 9% cheaper per unit to maintain, physical infrastructure in areas that are dense and compact as opposed to spread out suburban areas (Environmental Defence, 2013). Different cities across the country have also taken a look at the costs of suburbanisation: Edmonton found that building a handful of proposed suburban neighbourhoods on the periphery will cost the city four billion dollars more than it will make in tax revenue, Calgary found that adopting a more dense growth pattern that uses 25% less land will save $11 billion in capital costs, and Halifax found that it will save $700 million by favouring infill developments in the core (Diamond & Thompson, 2013, Nov 04). Other studies found that infrastructure costs in the suburbs are one-third higher, and that suburban neighbourhoods generate about 1/10 the tax revenue per hectare than more compact developments (SGA, 2013). Overall, in low-density areas, it is estimated that for every dollar raised in real estate tax in Canada, it costs about $1.50 for municipalities to bring services to suburban neighbourhoods (Diamond & Thompson, 2013, Nov 04). When it comes to power centres in particular, one study in Massachusetts found that big-box stores costs the city $4.68 per nine square meters more than the store pays in property taxes (Evans-Cowley, 2008, p.333). This is largely the result of the negative externalities associated with box store development, such as having to expand roads to

deal with the increase in traffic (Evans-Cowley, 2008). Building future areas in a more compact manner and using infill to add density to existing areas presents an opportunity for the public sector to save money in the long-term.

Compact, diverse development is often an alternative presented to curb urban sprawl (Bourne, 2001). However, as Bourne (2001) argues, compact development will only go so far, because there is a limited capacity and many people still desire to live in cheap single-family homes. Bourne (2001) points out that residential densities in new suburbs are much higher than they were in the 1950s and 1960s, and that the real culprits of sprawl are non-residential land uses (such as shopping malls and office parks) where densities have decreased over time, and from poor regional planning that leads to disconnected neighbourhoods that in turn puts lots of pressure on roads and other infrastructure.

Compact development also has environmental benefits, as it requires less land to house more people, which saves agricultural land and may allow its residents to produce fewer emissions than low-density suburbs. In Southern Ontario, the provincial government has introduced legislation that has provisions to reduce the amount of land available for sprawl (Ministry of Infrastructure, 2013). The preferred alternative is for cities to redevelop underused land within their boundaries into dense, mixed-use developments that have access to transit. Compact development has already played a role in saving land from development. An update to Ontario's Growth Plan for the Greater Golden Horseshoe found that from 1991 to 2001, the population in the Toronto region had grown by 19% while the urban area expanded even more so, by 26% (Ministry of Municipal Affairs, 2016, p.4). However, between 2001 and 2011, when restrictions against suburban sprawl were put in place, the population grew by 18%, but the urban area expanded by only 10% (Ministry of Municipal Affairs, 2016, p.5). The reduction in land consumption means that the region has enough land for secured growth for an additional 10 years without having to annex new areas (Ministry of Municipal Affairs, 2016). Compact development is important in areas experiencing rapid growth, to ensure that there is enough room for future growth.

In Cambridge, Ontario, a predominantly suburban city located west of Toronto, city council has recently approved an Official Plan that is focussed on redeveloping existing areas into compact mixed-use neighbourhoods. This strategy will be used to help the city accommodate exceptional growth that is expected to arrive over the next 20 years. In order for this to be successful, it is necessary for Cambridge to explore different ways that land within its boundaries can be redeveloped.

Objectives and methodology

The diversification and densification of existing single-use sites is one way for cities like Cambridge to reach their development targets. Many redevelopment projects have found ways to reuse dying shopping malls, but very few have delved into retrofitting power centres. Conceptually, power centres are good candidates for redevelopment because they have lots of land and are located in proximity to transportation nodes. With the use of urban design techniques and a financial feasibility analysis, this supervised research project presents a redevelopment plan that transforms an 81 ha power centre in Cambridge into a dense, mixed-use neighbourhood.

First, this paper presents a detailed overview of the development of power retail in a North American context. The changes in retail type and structure, from downtown department stores and regional shopping malls to power centres, is tracked over time. The impact that power centres have on the built environment and shopping behaviour is discussed, as well as the conditions that led to the rise of power centres. Consideration is also given to the recent decline in power retail, as big-box stores struggle to compete with online shopping.

Secondly, the paper examines urban design techniques that can be used to retrofit a single-use site. These techniques are drawn from case studies of redevelopment projects elsewhere. The process for undertaking a redevelopment of this sort is also discussed, from finding and selecting a site to developing the goals and objectives. Design interventions are discussed based on their ability to increase land use diversity,

improve public space, reuse parking, and develop connections with neighbouring areas. Some of the difficulties that are bound to arise in these complex projects are explored, as well as methods to evaluate the financial feasibility of a project.

The third section presents a site analysis, followed by a redevelopment plan for a power centre in Cambridge in the fourth section. An overview of power retail in Cambridge is presented, as well as the context of new legislation and policies that aim at promoting redevelopment and intensification. Other aspects of the power centre are looked at as well, including its strategic location next to a rapid transit corridor and its ability to act as a hub for community services. The redevelopment plan was developed in conjunction with a preliminary financial analysis, which provides a brief overview and breakdown of associated expenses and revenues. The fiscal analysis presented in the pro-forma shows the imperative for power centre owners to redevelop, who stand to make money by diversifying and densifying their locations.

A variety of primary and secondary sources were used. Assessing the existing conditions of the site was done by conducting field observations, reviewing key policy documents including provincial, regional, and municipal plans, and an interview with a city planner. Describing an overview of power retail development in North America and reviewing urban design techniques was done with the use of scholarly articles, professional reports, news sources, and reports from organisations.

Part 1: Evolution of power retail

The current power retail landscape in North America is dominated by large parking lots and isolated big-box stores. Power centres developed over time, and have succeeded due to technological developments, favourable economic policies, consumer preference, and expanding suburban lifestyles. In Canada, power centres are a defining feature of the post-war suburban landscape. In order to understand why such centres are prevalent today, it is critical to examine how the retail landscape has evolved over time.

1.1 Streetcar suburbs and the downtown department store

Towards the end of the 19th century, new technological advancements facilitated the outward growth of cities from the central core. Electric streetcar lines were built in many cities, connecting the inner core with outlying areas (Wheeler, 2008). Development followed these transit routes, as the outlying areas offered an alternative to the crowded, polluted inner cities with greenery and a brand new housing stock (Southworth & Parthasarathy, 1996; Wheeler, 2008). Commercial establishments also expanded outward along streetcar lines, as businesses followed their clients (Wheeler, 2008).

Major department stores (such as Eaton's) were common in Canadian cities by the late 1800s. These department stores are an early example of large-format retailers, and rose to success in this period for their ability to deliver convenience and customer satisfaction. Department store owners were very concerned with finding the optimal location for their store. The stores needed to be at high-status intersections in the city with good transit connections to serve their customers (Hernandez & Simmons, 2006). In order to maximize visibility, store owners built large 'flagship' buildings that fit well into the dense, urban environment (Hernandez & Simmons, 2006). The flagship buildings had commemorative architecture and attracted many pedestrian shoppers (Hernandez & Simmons, 2006).

Department stores offered a great variety of products, allowing consumers to do much of their shopping in one place (Hernandez & Simmons, 2006). As department stores became a more integral part of the urban landscape in the 20th century, many store owners began offering their patrons personal services, such as washrooms, banking, and home delivery. The ultimate goal was to make the shopping experience as convenient and luxurious as possible (Hernandez & Simmons, 2006). Shopping in department stores became a habitual pastime, particularly for middle-class women, who were in part drawn by the luxurious atmosphere which was reflected both in the architecture of the buildings and the services offered inside (Longstreth, 1997).

Downtown department stores had large purchasing power, and were able to refine the wholesaler system in order to stock their shelves at a lower price than independent merchants (Longstreth, 1997). Shopping by catalogue also became very important to the retail sector, particularly in Canada. Jones & Simmons (1993) document the importance of the Eaton's catalogue system. Beginning in 1884, the Eaton's catalogue allowed for people from all over the country to order items that were shipped to their homes, even in rural areas where there was no physical store. This was made possible in part by advancements in rail transportation that led to a drop in shipping prices and a new postal system that allowed for goods to be delivered and money orders to be taken with efficiency (Jones & Simmons, 1993). The catalogue service had a dramatic effect on independent retailers, even in rural areas, that were unable to compete with the selection and prices offered by Eaton's. It was not until later in the 1920s that Eaton's began to pursue a chain-based system, opening up department stores in other areas of the country to more aggressively capture the market (Jones & Simmons, 1993). Just as shopping in department stores became an important social activity for middle-class women, the Eaton's catalogue also played a large role in Canadian culture, where it was present in many homes. It also created demand for national markets, as it was an effective medium to convey products, wants, and desires to the average Canadian (Jones & Simmons, 1993). The department store was the predominant retail type in Canada from the 1910s to the 1940s (Hahn, 2000).

1.2 Suburbia and the regional shopping mall

After the Second World War, suburban development in North America proliferated on a large-scale. There were many factors that influenced development. From a technical perspective, new advancements in transportation technology and massive public investments in roadways allowed for people to live further and further away from the city centre (Calthorpe, 2014; Dieleman & Wegener, 2004). These advancements led to an increase in household mobility, and allowed for a new city form that favoured low-density development over large areas (Jones & Simmons, 1993). Governments across North America promptly built new highways which both segregated cities and made automobiles the most time-effective mode of transport (Calthorpe, 2014). The old compact, streetcar-oriented city was dead. People no longer had to rely on walking or transit to reach their destinations.

Other technological advancements transformed the construction industry. New procedures and improvements to the construction process led to the standardisation and mass production of new buildings, allowing for the rapid building of large neighbourhoods over vast tracts of land (Wheeler, 2008). The Fordist building style, when implemented for new subdivisions, led to the construction of many homes at a low price, the caveat being that many neighbourhoods ended up with a generic look. It was common for large swaths of land to be composed of just one use, reducing the ability of residents to reach destinations on foot or by transit (Carruthers & Ulfarsson, 2002; Wheeler, 2008).

Land developers played a big role in shaping the post-war suburban landscape. Developers generally preferred to build on large tracts of land, which only existed at the edge of the cities, as land within city limits had already been spoken for (Carruthers & Ulfarsson, 2002). It became common for single developers to buy and build on massive amounts of land. Gans (1982) describes the story of developers that built Levittown, large residential neighbourhoods in New York and Pennsylvania. The developers marketed their developments as communities, with styling and design of the

neighbourhood being expertly crafted to appeal to the imagination of the working-class (Gans, 1982). Further, the developers also built large regional shopping malls alongside these neighbourhoods, to service the burgeoning population. The creation of these neighbourhoods offered people an escape from the city, and the type of lifestyle offered quickly became pertinent in mainstream culture, with many aspiring to live a quiet life in the suburbs (Gans, 1982).

In Canada, the Don Mills neighbourhood in Toronto was the first to be built in this manner. Construction of Don Mills began in the 1950s using many of the principles employed in Levittown: low-density houses, wavy 'lollipop' streets as opposed to the classic grid, and segregated uses (Sewell, 1991). The design of the neighbourhood influenced the lifestyles of its residents. For instance, the labyrinth street-network was designed to discourage through-traffic, but there were also no sidewalks installed, which was intentionally done to emphasise the use of the car (Sewell, 1991).

These large suburban neighbourhoods were built in part to support population growth from the baby-boom. Baby-boomers had large families, nearly four people per household was the average size of households in 1961 in Canada, compared to just 1.9 on average in 2011 (Statistics Canada, 2015a). These large families had capital, and an appetite for consumption that was unprecedented (Cohen, 2004). The result was a large increase in commercial activity, both in terms of demand and supply. Shopping malls became the favourite location for suburban baby-boomers in part due to proximity to suburban neighbourhoods, the fact that the malls were easily accessible by cars, and that the malls carried family-oriented products that baby-boomers wanted to buy (Cohen, 2004; Gans, 1982). Consuming was part of the identity in the neighbourhoods that the developers had built, and consuming became engrained in mainstream culture (Gans, 1982). All of this contributed to the demise of the downtown department stores, which had been unable to attract suburban shoppers.

Municipalities also influenced the construction of suburban neighbourhoods. Single-use zoning codes were developed in an attempt to separate land uses that did not fit well

together (Southworth & Parthasarathy, 1996). Zoning was originally developed as an effort to improve public health, a direct response to the polluted industrial city. The idea was simple: industry should be separated from where people live (Southworth & Parthasarathy, 1996). Zoning provided planners with a simple way of categorizing different areas of the city. As suburbs began to develop in the post-war era, zoning did not allow developers to build neighbourhoods that had multiple uses (i.e. residential and commercial) (Calthorpe, 2014; Southworth & Parthasarathy, 1996). This new direction was in contrast with how cities had grown over time. In the compact streetcar-oriented city, plots of land were developed ad-hoc, and a mix of uses allowed people to reach a variety of destinations with a short walk or transit ride (Hernandez & Simmons, 2006).

A second type of zoning was used by municipalities that further promoted large, segregated districts. Fiscal zoning is a strategy used to attract different types of businesses in order to boost local property taxes and economic development (Carruthers & Ulfarsson, 2002; Southworth & Parthasarathy, 1996). Fiscal zoning refers to the type of use that will generate the most property tax over time, where municipalities may be willing to give financial incentives to private land owners if they can develop the site in a way that will generate economic benefits (i.e. employment). Some examples of the types of uses that municipalities aimed to attract include shopping malls and office parks (Southworth & Parthasarathy, 1996). From a logistical perspective, it made sense for retailers to desegregate from the central city and setup in the suburbs to follow their customers, and municipalities made the transition very attractive (Calthorpe, 2014; Southworth & Parthasarathy, 1996).

Decentralization and the construction of new suburbs and highways favoured the establishment of regional shopping malls (Lorch, 2005). However, indoor shopping malls were originally designed to accommodate more than just retail uses. One of the pioneering architects of the enclosed mall, Victor Gruen, designed it to function as a type of civic centre for new suburban neighbourhoods (Dunham-Jones & Williamson, 2009). His idea was to provide a safe space for pedestrians in an increasingly auto-

centric world. Gruen's vision was to recreate a functional downtown that served entire regions (Dunham-Jones & Williamson, 2009). These regional downtowns were designed with automobiles in mind. As such, they are easy to access by car, which explains the location of many malls at the nodes of major arterials and highway interchanges. The interior of the mall was supposed to mimic a traditional mainstreet, but with the addition of climate control and pedestrian-only walkways (Dunham-Jones & Williamson, 2009). Malls originally had civic functions in them as well, such as banks, postal offices, and pharmacies, to function as the mainstreet that suburban municipalities never had (Dunham-Jones & Williamson, 2009).

New neighbourhoods on the periphery and new spending power led to the development of planned shopping clusters in order to deal with demand. In the 1950s, these planned centres were indoor shopping malls, the first in Canada being Park Royal in Vancouver, which opened in 1950 (Jones & Simmons, 1993). At first, the shopping centres were constructed after a neighbourhood was built. This was safe for the retailers, who had the opportunity to study the market and appropriately react to the needs and demand of the area (Jones & Simmons, 1993). In fact, mall development in Canada was somewhat stunted in the early 1950s because the large department stores were originally reluctant to move out to the suburbs, partially owing to their massive investments in Canadian downtowns, but also because the scale of the downtown stores was sufficient to deal with the market (Jones & Simmons, 1993). It was not until later, in the 1960s, that suburbs began to really appeal to the major chains. It was at this time that new shopping malls were built concurrently with new residential subdivisions, as it became apparent to the major chains that downtown department stores were no longer sufficient to handle market demand. (Jones & Simmons, 1993). Building shopping malls at the same time as new subdivisions became the standard in development, a practice that was replicated across the country for decades (Jones & Simmons, 1993). Later, in the 1970s, some developers built shopping malls on the outskirts of cities before the residential neighbourhood, as the shopping mall was meant to induce future development (Jones & Simmons, 1993). These malls were usually located in greenfields

at major highway interchanges, which are areas that development can easily follow and where easy access is available for both shoppers and suppliers (Jones & Simmons, 1993).

However, the immense mall construction boom that lasted for the better part of three decades left mall retail saturated, and eventually the popularity of the mall declined (Jones & Simmons, 1993). In the United States, the majority of shopping mall sales levelled off in 1972 (Burns & Warren, 1995). On top of that, people visit malls less frequently. Shoppers made fewer trips to malls in 1990 (on average twice per month) as compared to 1980 (where the average shopper visited a mall 3.1 times per month) (Burns & Warren, 1995). Over that same time the number of stores that people visited per trip dropped by half (from seven store visits in 1980 to just 3.5 in 1990) and the amount of time shoppers spent in malls decreased by two-thirds (from 12 hours per month in 1980 to four hours per month in 1990) (Burns & Warren, 1995). The downfall of the mall was caused by several factors, including a saturated market and a shift in consumer preferences towards yet another type of retail (Burns & Warren, 1995).

1.3 Components of power retail

In 1986, the first power centre in North America opened in Colma, California at the interchange of Interstate 280 and State Route 1 (Lorch, 2005). The feat was replicated for the first time in Canada the next year, in 1987, when a power centre opened at the intersection of Weston Road and Highway 401 in Toronto (Jones & Doucet, 2001). By 2010, there were 487 power centres across Canada, containing a total of 12,086 tenants, over 3,500 big-box stores, and an average of nearly 25 tenants per power centre (Industry Canada, 2013).

Large-format stores trace their origin to the downtown department stores of the early 20th century, but the power centre phenomenon is relatively new (Hernandez & Simmons, 2006). A power centre is simply a cluster three or more box stores. They rose into significance with changing consumer preferences, as shoppers wanted cheap discounts and greater variety all in one place (Hahn, 2000). Power retail is largely a

product of post-Fordism, as many of its key characteristics are designed to keep costs low and to keep the process as efficient as possible in order to offer a large selection of goods.

Power retail development in Canada accelerated in 1994, when the North American Free Trade Agreement came into effect. This international trade agreement allowed American retailers to access the Canadian market (Hernandez & Simmons, 2006). It was then that Wal-Mart first entered Canada, opening 122 stores across the country in 1994 (Industry Canada, 2013; Jones & Doucet, 2001). The impact that American retailers had on the Canadian landscape was astounding. In just two years of operation, Wal-Mart alone acquired 24% of the Canadian department store market share, and this number increased to 36% in 1999 (Jones & Doucet, 2001, p.498). American retailers offered greater discounts than their Canadian counterparts, which was partially responsible for the closure of many Canadian chains, such as Consumers Distributing, Eaton's, and Woolworth's (Jones & Doucet, 2001).

It is the convenience and access to a large variety of products at low prices that draw consumers to regional power centres. The allure is so great that power centres draw people from as far as 100 km away (Hernandez & Simmons, 2006). The popularity of big-boxes is profound. One estimate found that superstores in Canada were responsible for $550 billion in annual sales, a total of one third of all retail revenue (Jones & Doucet, 2001, p.498).

Power retail has grown popular because of its capability to offer consumers a large variety of products with good discounts. The ability of power retailers to offer discounts is in part tied to the form and function of the power centre. Several elements combine to make power retail ideal for suburban shoppers.

1.3.1 Location

The location principles of big-boxes are similar to that of the regional shopping mall: auto-oriented developments located along major arterials to accommodate vehicles (Lorch, 2005). Locating next to major freeways and suburban arterials not only makes access easy for consumers, it also allows for a steady stream of deliveries, which is key to the logistical success of power retail (Jones & Doucet, 2000; Jones & Doucet, 2001).

1.3.2 Logistics

Big-box retailers use high-tech logistical tactics to keep costs down. Retailers must be efficient at tracking and moving goods, which is done by sophisticated computer technology and just-in-time delivery, further necessitating their location next to major highways (Hahn, 2000). Just-in-time delivery is a close relationship between manufacturers and retailers, where the products are able to flow freely from the production line to she shelves while eliminating the need for the warehouse (Jones & Simmons, 1993). Cutting out the middle step is one way that big-box retailers save money, and their large purchasing power makes it possible for them to buy lots of items in bulk, which again translates into savings for the consumer (Hahn, 2000; Jones & Simmons, 1993). This process allows power retailers to buy and move large quantities of products quickly, which gives them a competitive edge over smaller retailers. For example, one study has shown that grocery prices at Wal-Mart can be 8% to 27% less than at conventional grocery stores, partially due to Wal-Mart's efficient goods distribution and tracking system, which are savings that are passed on to the consumer (Evans-Cowley, 2008, p.331).

There are two major types of big-box stores: category killers and discount stores. Category killers are stores that are specialized in one type of retail category (e.g. Home Depot, Chapters, and Rona) (Hahn, 2000). It is the category killers that often have negative consequences on smaller retail outlets of the same type in the same region, as they kill the need for the small stores (Hahn, 2000; Jones & Doucet, 2001). On the

other hand, discount stores offer many different types of general merchandise at large discounts (e.g. Wal-Mart) (Jones & Doucet, 2001). Discount stores may also have a negative impact on smaller retailers. One study found that for every job a Wal-Mart store creates, 1.5 to 1.75 other retail jobs in the region are lost, showing how difficult it is for smaller retailers to compete with the big-box system (Evans-Cowley, 2008, p.332).

1.3.3 Arrangement

Power centres are arranged in a very specific way to maximize visibility and automobile access. For a long time, the construction of enclosed shopping malls had been favoured because their design was thought to minimize key issues such as congestion, noise, and commercial competition (Jones & Doucet, 2000). On the other hand, power centres have the inverse structure of a shopping mall: whereas malls have stores in the middle with parking along the exteriors, power centres have parking in the middle with stores dotting the edges (Lorch, 2005). This is to ensure maximum visibility of the stores, which allows drivers to see the stores before deciding where to park (Hahn, 2000; Hernandez & Simmons, 2006). Power centres are also developed in phases, where land that is not being used is simply left vacant until a tenant comes along (Lorch, 2005).

Power centres have their activities focussed inward, ignoring the street and surrounding functions. The design of the site also does not facilitate interactions between people because it is a very direct, privatised landscape in which the main activity is shopping (Blanchard et al., 2003). Walking in these sites is discouraged, as each store is separated by vast parking lots. In order to fully benefit from the power centre, users need a car (Jones & Doucet, 2001). In this respect, power centres may not be part of the urban fabric of the rest of the city, as they are not places that promote social activities or gathering (Erickson, 2001).

1.3.4 Construction quality

Big-box retailers generally try to build as cheaply as possible for savings that can be passed on to consumers (Hernandez & Simmons, 2006; Lorch, 2005). This characteristic helps to explain the location of power centres, often in greenfield or declining industrial areas, because the land is cheaper (Jones & Doucet, 2000; Jones & Doucet, 2001; Lorch, 2005). The typical box store is quite large, occupying anywhere from 1,800 to more than 14,000 m^2 of floor space (Jones & Doucet, 2000). The buildings are usually one storey, but they often have the height of a two or three storey building. The height allows stores to stock more inventory. The size of the stores may have originally been influenced by the stores specialising in selling 'bulky' or household goods, which were generally larger items that required more room for display and were not available in shopping malls (Baker & Wood, 2010). However, power retailers now sell all types of retail, including items that can be found in shopping malls and in downtown stores (Baker & Wood, 2010).

Whereas traditional department stores put money and effort in displaying grand buildings at key intersections in the city to allow access for pedestrians and transit users, power centres are located at the fringe of the city with little consideration given to walkability or transit. Part of the reason has to do with cheap construction, which allows the retailers to pass off large discounts to their clients. Instead of spending money on location and high-quality buildings, power retailers spend the majority of their budgets on advertising to ensure that the local market is aware of upcoming promotions and sales (Hernandez & Simmons, 2006). Tenants in power centres also do not have to pay high leases like those in malls, another factor in their ability to offer discounts (Hahn, 2000). The low-quality construction of the buildings is another factor that enables power retailers to pass on savings to consumers.

Spending on promotion and sales is more important to power retailer's then building quality because of the sheer size of the retail market. With the increase in household mobility in the post-war era, retailers now have to deal with competitors across the

entire region, rather than just competing locally (Jones & Simmons, 1993). It is now important for retailers to ensure that shoppers are aware when there is a specific promotion available. Another strategy that retailers might employ is product differentiation, which entails advertising that emphasises being different from competitors in terms of particular brands carried, pricing, or service (Jones & Simmons, 1993).

1.3.5 Parking

The most striking visual aspects of power centres are their surface parking lots. The lots are rarely full and exist in part because of high minimum-parking requirements implemented by municipalities (Shoup, 1997). However, the parking requirements may be in place because they reflect what the tenants of power retailers want. The tenants will often argue in favour of large parking lots which they believe to be integral to their businesses (Richter, 2006). Nonetheless, the large parking requirement contributes to the negative aesthetic and poor environmental performance of power centres.

Redeveloping a power centre, which has hundreds, if not thousands of workers on its premises, to include residential uses may be extremely beneficial to the municipality in the long run. This has to do with the fact that compact developments, which includes those with employment nodes, may generate ten times more tax revenue and be less costly to maintain infrastructure over the long run (SGA, 2013).

1.3.6 Architecture

Many power centres feature ‘cute’ architecture, with long, elongated façades, lego-like signs that rise many storeys high, and large boxy lettering that is visible from far away. The reason for this is that the stores have blended building form, sign, architecture, and advertising together (Loukaitou-Sideris, 1997). The stores need to be visible from afar to fast-moving motorists, and standardized forms and signs are used so that consumers can easily recognize the brand (Loukaitou-Sideris, 1997). The long

façades of big-box stores allow many people the convenience of parking close to the front entrance (Hahn, 2000; Hernandez & Simmons, 2006).

The architecture of the power centre is representative of purpose-driven shopping. Whereas on a traditional downtown street, shoppers might wander from store to store to browse different items, power centre shoppers already know what they want to buy, and they have little time for detours (Hahn, 2000). Power retail arrived in an era of time-pressed consumers that favour convenience and cheap discounts (Hahn, 2000; PwC, 2015). The large selection offered to shoppers influences their behaviour, as consumers are less-likely to visit multiple stores when on a shopping visit to a power centre than if they were in a mall (Lorch, 2005). In fact, most power centre shoppers enter just one store per visit, since any one store carries the items one needs (Hernandez & Simmons, 2006).

1.3.7 Shopping behaviour

There is some evidence that power centres attract shoppers from all income levels, whereas other types of retail are geared towards segregated income niches (Hernandez & Simmons, 2006). Traditional shopping malls tend to be either tailored to high-end retail and fashion items, or low-end fashion items, but not both (Hernandez & Simmons, 2006). Power centres, on the other hand, offer selection and pricing that everyone finds attractive (Hernandez & Simmons, 2006). There is a degree of social mixing that occurs in power retail; however, the location of power centres makes them primarily accessible to residents that live in the suburbs, which are predominantly middle-class.

1.4 The decline of power retail

Recent events suggest that the power centre motor might be running out of fuel. This has been exemplified by the closure of many large chains across Canada since the 2008 recession: Future Shop (closed 66 locations), Best Buy (closed seven locations), Staples (closed 15 locations), Rona (closed 11 locations), Zellers, which has become completely

defunct, and Target which opened and closed 133 stores in just two years (Fitzpatrick, 2015). Much of this might have to do with an evolving retail landscape, which favours responsiveness to change, convenience, and efficiency. The new retail landscape replaces physical 'brick and mortar' stores with online retail, where the convenience of a few clicks allows consumers to order practically anything, and depending on location, many items can be delivered the next day (Fitzpatrick, 2015; PwC, 2015). This has similarities to the old catalogue system that Eaton's and other stores used over a hundred years ago. The direct effect that online shopping has on physical stores is not immediately clear, but some retailers have already closed their locations to consolidate their activities online, such as Linens n' Things and Grand & Toy (Fitzpatrick, 2015).

In the words of Hernandez & Simmons (2006: 467), "the department store offered greater variety, the shopping centre provided all the predictable goods that the family required, but the big box store displays bargains that you did not think you could afford". This is a fairly succinct description of the history of retail in North America, but it is important to also take into consideration the important role that online retailers have begun to play – with bargains, convenience, and incredibly low costs on the supply side.

1.5 Summary

Over the past century, the form of cities in Canada has changed dramatically due to a variety of factors. In the compact walkable city, retail activities were centrally located and offered consumers a combination of services and a delightful shopping experience. In the post-war era, cities began to spread out, thanks to new technology and new land use policies. Retail activities relocated into regional suburban malls, allowing customers easy access to the site by car before they entered a pedestrianized, controlled atmosphere. Towards the end of the 20th century, large corporations sought to offer cheaper deals and greater convenience with lower overhead costs, resulting in isolated big-box stores located in power centres. These expansive power centres have had a profound impact on local retailers, the urban form, and the function of the city

and region in which they are located. Large, isolated power centres generally have a negative effect on local retailers, they cost a lot for municipalities in the long run, and are only accessible by car. They arose because they satisfied consumers' needs for convenience and cheap prices. Since 2000, online retail outlets have increased in popularity, whereas power retail stores seem to be suffering increasingly from closures and buyouts.

Part 2: Urban design strategies for retrofitting single-use sites

Power centres are shopping districts characterized by their large surface parking lots and big-box stores. As municipalities have been negatively impacted by suburban sprawl, many of them are looking for alternative ways to grow in the future, which can be done by redeveloping existing areas. Retrofitting is the process of reusing existing space for the purpose of adding new forms and functions. This chapter outlines the retrofit process on single-use sites, based on various completed projects in North America. First, criteria used to identify and evaluate project sites are discussed. Then, design interventions are explored. Interventions are analyzed in terms of how they add diversity, improve common space, utilize parking, and create connections with outlying areas. Some of the difficulties that arise in large-scale redevelopment projects are also discussed. The findings in this chapter are incorporated into a redevelopment plan in Part Four.

2.1 Identify and evaluate the site

The first step in the retrofit process is to identify a site that has promise for redevelopment. Some sites are more suitable for redevelopment than others. The objective is to find an area that has the best chance of being redeveloped successfully both in terms of process, such that it is a site that will attract municipal and private sector interest, and in terms of function, such that it has the conditions to support an influx of residents and jobs.

To identify a site, there are several variables to examine. Table 1 below lists the variables and questions about whether or not a site is suitable for redevelopment. The questions are aggregated from the works of Lukez (2007), Tachieva (2010), and Dunham-Jones & Williamson (2009). The higher the score, the greater the chances of having a successful redevelopment.

Table 1: Evaluating site suitability.

Description	Questions
Location	Is the site located in proximity to major transportation nodes?
	Is the site located in proximity to transit?
	Is the site centrally located?
	Is there market demand for the project?
Infrastructure	Is the infrastructure on the site in good condition?
	Can the existing infrastructure be used to support additional development?
	Is it possible to reuse the infrastructure if the site is going to be developed?
Size	Is the site larger than 15 acres?
	Is the site large enough to incorporate a mix of uses and public space?
Connections	Are there surrounding neighbourhoods that can utilize the site?
	Do surrounding communities have good connections to the site?
	Can new connections be built to surrounding areas?
Scale	Is this an area of significance in the community? In the city? In the region?
	Can this site function as a gathering place in the city?

Once sites have been identified, it is necessary to evaluate their performance. In order to do so, Tachieva (2010) uses void analysis, which is a tool that determines whether the projected environmental, economic, and social benefits outweigh the costs of redevelopment. According to void analysis, a good site for redevelopment must have five elements. The first is the neighbourhood structure, where it must be possible to develop a functional neighbourhood with a discernable centre that can function as a common space and/or a transit hub. The second element has to do with infrastructure, where it should be possible to reuse and repurpose much of the infrastructure. The third element has to do with environmental performance, and to what extent natural features can be restored, protected, and connected. The fourth element examines the flexibility of the existing building stock, and whether buildings can be reused as part of the redevelopment and retrofitted to green building standards. The last element is financial viability and whether there is market demand for the project. This relates to whether the project can demonstrate job generation and economic growth on a scale that makes sense for private investment. Using these criteria to evaluate helps provide planners with insight into which sites may have success in a retrofit (Tachieva, 2010). Overall, a suitable site is one that is large enough and has the right infrastructure to support dense development, one that can support greening to benefit the local

community, and one that can generate returns that will attract investors and benefit the local economy.

2.2 Identify project goals

After an appropriate site is selected, discussions should be held among the stakeholders, including planners, the community, and the private sector, to identify the goals of the project (Dunham-Jones & Williamson, 2009; Lukez, 2007; Tachieva, 2010). It is important to have consensus on desired outcomes of the project. If increased residential density and more office space is desired, then a redevelopment plan can be created with considerations to balance the liveliness and economic possibilities of other areas in the city. Another critical discussion is whether or not the local market can support a large-scale, dense development (Tachieva, 2010). In order for retrofit projects to be financially viable, developers favour high-density. If there is no market for high-density development, the redevelopment project, which is predicated on growth, may not be possible.

In areas where there is not much demand for new housing, the site may be reused for other purposes. Some big-box stores have been converted for other uses, such as a new Public Library in Denton, Texas (Figure 1) (Dunham-Jones & Williamson, 2009). Parking lots can serve other functions as well, such as space for a local market, which is an event that happens twice per week on derelict parking lots in a shopping area in Sebastopol, California (Figure 2 below) (Németh & Langhorst, 2014). Condominiums and new office space may not always be the answer. There are low-cost solutions that

Figure 1: A converted big-box store in Denton, Texas, with a new overlay-facade.

municipalities can consider if there is a will to improve single-use sites, but not much development interest.

Figure 2: A parking lot turned into a market in Sebastopol, California.

2.3 Design interventions

Retrofitting an area is difficult because of the need to balance new growth with the existing conditions on site. This aspect will be discussed with respect to how new interventions can increase the diversity of land uses, create or improve common space, deal with parking, and develop connections to neighbouring areas.

2.3.1 Diversity

Jacobs (1992) argued that diversity is key to creating interesting places, places where people want to gather and spend time. This concept has been built on by Trip (2007) and Trip (2008) who argued that diversity is crucial to have a high-quality urban environment, and that overall a diverse mix of buildings and functions leads to a better place. A diversity of land uses is an important aspect in the development of a healthy neighbourhood, as different uses attract different users and allow people to flow through the city seamlessly (Erickson, 2001).

By definition, power centres lack functional diversity. The primary ingredients in power centres are large monotonous big-box stores (Jones & Doucet, 2000). That said, power centres in Canada have since grown to encompass a mix of different tenants outside of the traditional discount or category-killer box store, including restaurants, financial

services, pharmacies, and entertainment services (Industry Canada, 2013). The problem is that these functions are retail-oriented. There is very little activity in power centres outside of the operating hours of the stores.

To increase diversity, it is necessary to introduce new land uses. This allows the site to become part of the urban fabric of the city, rather than just an isolated, car-oriented development. To add new uses, either old buildings must be converted or new buildings must be constructed. Lukez (2007) provides examples of nine different ways that new additions can be brought into an area that allow the diversity of uses to increase while respecting the existing form. These examples are provided in Table 2 below.

Table 2: Writing operations, extracted from Lukez (2007).

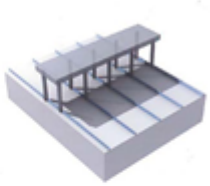
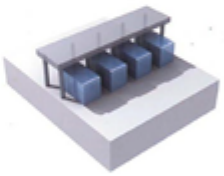
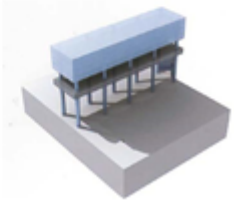
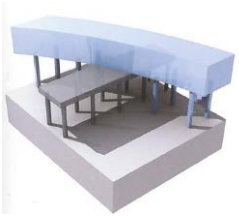
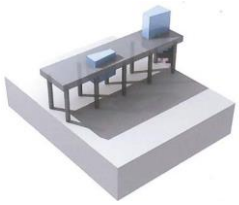
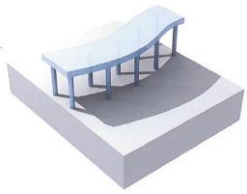
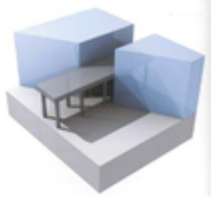
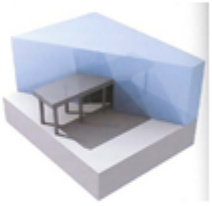
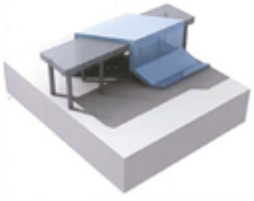
Operation	Description	Example
Parceling	• Often first act of writing • Defines boundaries of site	
Infill	• Filling or constructing in a void	
Addition	• Adding new material on the original form	

Table 2 continued.

Operation	Description	Example
Overlay	• A new form or system built over an existing structure, • Sharing air rights but maintaining the integrity of the structure below	
Parasitic	• A large construction serving as a host to smaller embedded forms and spaces	
Morphing	• Material and volume of building remain constant • Shape and configuration transform into new forms	
Absorption	• Change that occurs when the space around a building is encroached upon • Original object is no longer distinguishable as a separate entity	
Enveloping	• A structure is entirely enveloped by its surrounding context • Not even a trace of the original form can be distinguished from the exterior	
Wrapping	• Sheathes an existing volume or surface in a new skin • Redefining the boundary between the interior and exterior	

There are many redevelopment projects that have strived to increase the diversity of a large, single-use site. One such project involved redeveloping a defunct shopping mall in Lakewood, Colorado. The City of Lakewood is a suburb of Denver, and is characterized by monotonous low-density suburbs. In the 1960s, a new shopping mall opened in Lakewood for suburban shoppers, eliminating their need to travel downtown (see Figure 3 below) (Dunham-Jones & Williamson, 2009). The Villa Italia mall eventually grew to house approximately 130,000 m^2 of retail on a superblock that was completely disconnected from surrounding neighbourhoods (Myers, 2013). When it opened, the Villa Italia mall was the largest enclosed shopping mall in the United States west of Chicago (Colorado Brownfields Partnership, 2015). The mall acted as the commercial core for Lakewood and provided identity for residents of the quickly growing suburb (Belmar Colorado, 2012). The only way to access the mall was by two major arterial roads, requiring the use of a car (Dunham-Jones & Williamson, 2009). By the 1990s changing consumer preferences, increased regional competition, and a slowing economy led to the decline of the Villa Italia mall (Dunham-Jones & Williamson, 2009; Myers, 2013). Many tenants left, and by 1999, 50% of the property was vacant

Figure 3: Villa Italia shopping mall soon after its opening in Lakewood, Colorado.

(Colorado Brownfields Partnership, 2015). The city council had started to think about ways to redevelop the site. They had entertained the idea of converting the dying mall into a power centre, in order to retain its regional commercial function (Belmar Colorado, 2012). Over time, the council found this scenario to be undesirable, and instead decided to pursue the redevelopment of a mixed-use neighbourhood.

The redevelopment, named Belmar, was done with the cooperation of local authorities and private investors, at a total cost of $750 million. Over 10 years, it saw the construction of 306,580 m^2 of new floor space, half of which was residential, with 1,300 new dwellings in the form of apartments, condominiums, townhouses, and zero-lot-line homes (Dunham-Jones & Williamson, 2009). The superblock was also broken up into walkable blocks that mirror a traditional downtown: 22 new blocks were created over 42 ha (Myers, 2013). In order to make room for the new blocks, many of the existing structures were demolished (Belmar Colorado, 2012). The demolition and erasure of many buildings on site made the redevelopment process easier, as there were fewer obstacles for urban designers.

When redeveloping a large site, there is consensus that it is better to create short, walkable street blocks in order to prioritize pedestrians (Dunham-Jones & Williamson, 2009; Lukez, 2007; Tachieva, 2010). This is in line with ideas proposed by Jacobs (1992) on diversity, as she argued that short blocks are necessary to have activity on the streets, a precondition to a vibrant neighbourhood. At Belmar, the demolition of most of the mall allowed urban designers to plan a new grid in such a way that there were short blocks organized around a central public plaza (see Figure 4 below) (Dunham-Jones & Williamson, 2009).

Some large-scale buildings were retained in Belmar, specifically a big-box store and a movie theatre. Physical changes were made to ensure the large buildings remained compatible with new developments. A partial or full wrap was built around both buildings (Dunham-Jones & Williamson, 2009). This was to reduce the negative effect

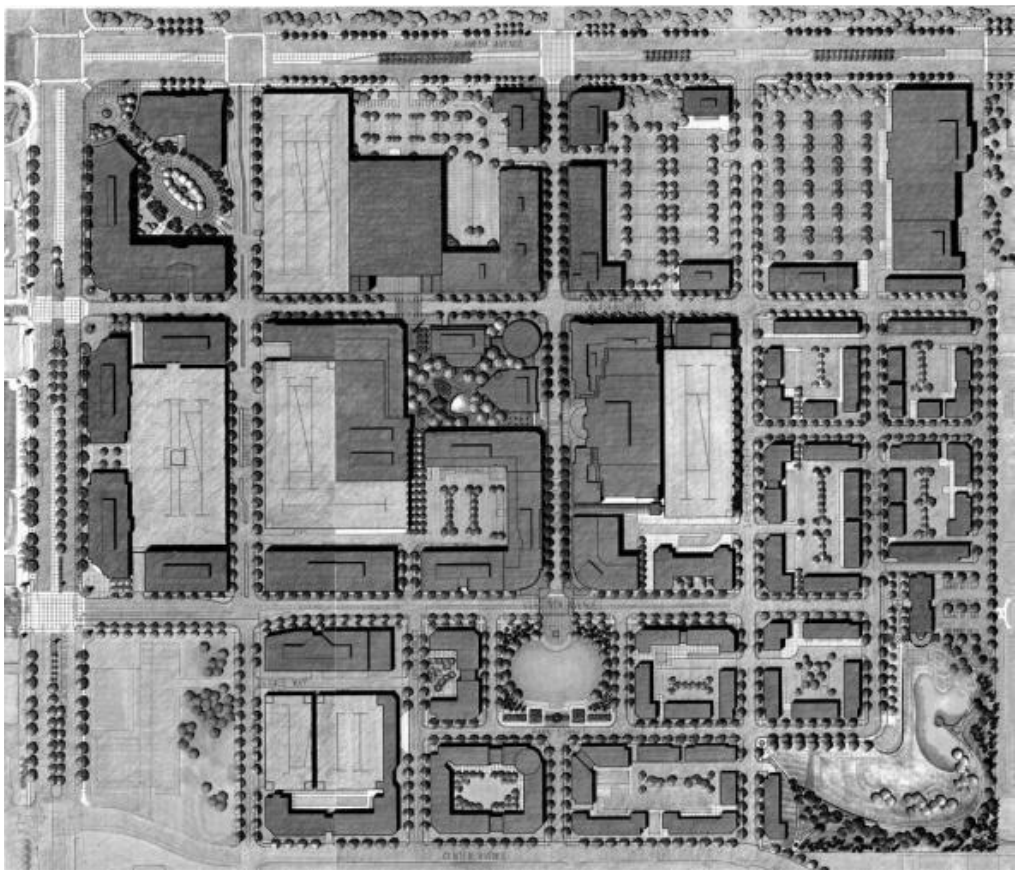


Figure 4: The new block patterns at Belmar.

that the long, boring façades had on the liveliness of the street. Now, smaller storefronts occupy ground-floor space in the wrap buildings to animate the street (Dunham-Jones & Williamson, 2009).

The Belmar redevelopment occurred with a dead mall, but it is also possible to retrofit around a live retail centre. Loukaitou-Sideris (1997) discusses strategies that may be used to build residential infill around live commercial strips. Incremental changes are proposed at first, such as the construction of small granny flats on top of stores or in vacant parking lots. Once there has been sufficient interest, more large-scale developments may be possible. Eventually, infill projects will transform the street into a more walkable neighbourhood, as surface parking lots are replaced by new development, and parking is condensed into structures (Loukaitou-Sideris, 1997).

An example of retrofitting around a live mall exists in Surrey, British Columbia. Surrey Central City Mall underwent a redevelopment that saw new uses built on top of the mall (Dunham-Jones & Williamson, 2009). It was critical that the mall remained open throughout the construction, which required the developers to establish a creative approach (Dunham-Jones & Williamson, 2009). The approach saw the construction of a three storey galleria on top of the old two storey mall. New offices and university spaces occupied the galleria (Bing Thom, 2016). Once the galleria was completed, the roof of the two storey mall was demolished, creating a large five storey atrium (see Figure 5) (Bing Thom, 2016). This is a good example of an overlay construction, where renovation did not disturb the vitality of the mall.

Figure 5: A new three storey podium built over a two storey mall in Surrey, BC.

In a live power centre, where buildings are separated from one another, there is opportunity for infill at different scales. At the larger-scale, development may establish around existing stores on surface parking lots. Filling the gaps between stores is necessary to create a cohesive block structure, and allows opportunities for different uses to become established on site. On a smaller-scale, individual buildings can be

retrofitted to allow for a diversity of uses. One way to do that is to wrap buildings around a big-box, as done in Belmar, to negate the effect of the monotonous façade. A second example, if there is sufficient demand, is to build new additions on top of a building, as done in Surrey. There are many design solutions that can be implemented to allow for new building forms that will increase the diversity of single-use shopping centres.

2.3.2 Public space

There is a discernible lack of high-quality public space in the suburbs. This is typical of the suburban landscape, which is notorious for being a privatised landscape that discourages social interaction, a characteristic that Southworth & Parthasarathy (1996) refer to as the decline of the public realm. The power centre is no exception. It is a site designed to lure consumers, but the design of the campus itself, which is completely oriented towards private automobiles, as well as the design of the stores, which are organized in a way to keep shoppers focussed on the products rather than each other, promotes isolation (Blanchard et al., 2003; Lagerfeld, 1995).

Public space is a very important aspect of city planning. It is a place for casual interactions, it can act as a landmark to help people in way-finding, and it gives all people access to that area of the city (Erickson, 2001; Southworth & Parthasarathy, 1996). The availability of good public space has an effect on social relations within the city, as Dunham-Jones & Williamson (2009) summarize the work of sociologist David Brain: “public spaces make visible the orders that signal societal stability, trust, and mutual respect in the shared common world” (p.111). Public space gives people a place to gather, which in turn exposes everyone to different ideas, cultures, and races, which makes society more tolerant (Erickson, 2001; Mitchell, 1995; Southworth & Parthasarathy, 1996). In many ways suburban cities, whose main activity hubs consist of isolated superblocks, contain areas where there is isolation and intolerance (Southworth & Parthasarathy, 1996). Adding places that facilitate interactions between people may increase the quality of life for all citizens.

Public space is always given attention in retrofit projects. In the Belmar project, two main public spaces, a 0.5 ha plaza and a 0.9 ha park, were incorporated into the plan (Dunham-Jones & Williamson, 2009). The public spaces were connected with greenways to create linear parks (Belmar Colorado, 2012; Dunham-Jones & Williamson, 2009). The park served transit users as well, as several bus routes congregated around it (Dunham-Jones & Williamson, 2009).

The plaza was designed to be animated by social uses that promote interactions between people, such as cafes, restaurants, bars, and art galleries (Dunham-Jones & Williamson, 2009). These uses line the perimeter of the plaza, which acts as a type of porous lining that complements the plaza itself (see Figure 6). The businesses surrounding the plaza were hand-picked by the Belmar developer. The developer identified and targeted local businesses across Denver that were successful and popular (Dunham-Jones & Williamson, 2009). The company then offered favourable leasing agreements to entice the businesses to relocate to Belmar (Dunham-Jones & Williamson, 2009). This practice is controversial, as the developer essentially robbed neighbourhoods of their local businesses. That said, the practice was successful in attracting businesses that improved the experience of the plaza.

Figure 6: Belmar plaza, lined with buildings that have social uses.

Public spaces can be one of the most difficult aspects of a redevelopment to plan properly. Dunham-Jones & Williamson (2009) warn against doing too much in public spaces, and how over-prescribing and over-manicuring can be detrimental to the space. Public spaces are areas where people should feel free to express themselves in a variety of ways, and a space that is over-prescribed may not promote those kinds of behaviour. It is best to not do too much and allow the users to regulate the space themselves.

2.3.3 Parking

One of the biggest problems with power centres is parking. Shoup (1997) outlines many issues caused by minimum parking standards, not the least of which relates to a dispersed urban form. The problem with minimum parking standards is that it forces land owners to provide parking that is not always needed (Shoup, 1997). Parking takes up a lot of space, and since surface parking is the cheapest to build, there ends up being a lot of room between buildings because that is where parking lots must go. This in turn promotes an auto-dependent society, as driving is the most convenient form of transportation in low-density neighbourhoods (Shoup, 1997). Furthermore, many parking lots sit perpetually empty, only occupied on the busiest shopping days, leaving large vacant landscapes that are unpleasant and underused (Lorch, 2005; Shoup, 1997). However, it is also important to reinforce the point that many commercial retailers demand high parking minimums, and that the minimum standards set by municipalities may just reflect the desires of commercial tenants (Richter, 2006).

One of the advantages of redeveloping a power centre is that there is plenty of parking space available to conduct interventions. It is absolutely necessary for many of these parking lots to be built on in order to form cohesive, complete, walkable urban blocks. In the Belmar project, this is exactly what was done. Surface parking lots were replaced with a variety of uses, and parking was relocated into structures (Dunham-Jones & Williamson, 2009). The structured parking provided on the site was free, and additional roadside parking was added (Dunham-Jones & Williamson, 2009). The parking was added to enhance the liveliness of the street, and it is metered to encourage high

turnover, encouraging people to stop for short shopping trips (Dunham-Jones & Williamson, 2009).

Parking structures are, too often, large drab buildings that are unappealing to pedestrians. To ensure parking garages did not negatively affect the street in Belmar, the building wrap technique was used around the structures (Dunham-Jones & Williamson, 2009). Where wrapping was not possible, the parking garage became part of a mixed-use building (see Figure 7). Since the cost of building parking structures is very expensive, it may be in the interest of the public sector to subsidize construction costs (Dunham-Jones & Williamson, 2009). This has been accomplished in some retrofit projects, but may be prohibitively expensive for the municipality. It will ultimately be up to the public sector to decide how much they are willing to invest in the project in order for it to make sense. Public involvement may be necessary in order to allow the private sector to redevelop the site, for which the public sector may receive other benefits (for example, increased tax base and employment).

Figure 7: Structured parking at Belmar, where the ground-floor is dedicated to retail and adds to the streetscape.

2.3.4 Connections

Power centres are, by their nature, isolated from surrounding neighbourhoods and the larger community (Lorch, 2005). When redeveloping a site, it is necessary to bridge the gap between the site and the rest of the city. The first way to do this is by physically building connections that previously did not exist. In Belmar, several new blocks were directly connected to neighbouring areas, connections that had not previously existed (Dunham-Jones & Williamson, 2009). In some cases, there are large physical barriers that need to be addressed. For instance, in the redevelopment of a big-box store in the Uptown District in San Diego, a pedestrian bridge was built across a highway to an adjacent neighbourhood that was difficult to reach on foot (Buntin, 2013). This was done to attract nearby residents (Buntin, 2013). Building physical connections to outside areas is critical in a redevelopment project.

Beyond physical connections, it is also critical to build social connections. Redevelopment projects provide opportunities for municipalities to provide services for their residents. At Belmar, the development provided opportunities for social mixing to occur among demographic groups that were previously isolated from one another. Spanish-speaking residents in an east side neighbourhood and English-speaking residents in a west-side neighbourhood were able to congregate together at Belmar, despite the fact that these two social groups share very little in common with one another (go to different churches, attend different schools, etc.) (Dunham-Jones & Williamson, 2009).

2.4 Redevelopment constraints

Redeveloping a power centre into a mixed-use neighbourhood is a project that carries risk because there are many unknowns. In order for the project to be successful, there needs to be strong leadership from the public sector. This leadership may come in the form of promotion by the public sector, and having a united elected body (Dunham-Jones & Williamson, 2009; Lukez, 2007; Tachieva, 2010). Good relationships between private developers and investors are also critical to success (Dunham-Jones &

Williamson, 2009; Lukez, 2007; Tachieva, 2010). Furthermore, many developers are specialised in their own niches, which may make finding interested parties difficult (City planner, personal communication, April 7, 2016). The problem is that residential developers tend to stick with residential and do not build commercial, because it is not their market, and likewise for commercial developers. However, there is a new breed of developers that specialized in mixed-use projects, though they may be more few and far between (City planner, personal communication, April 7, 2016). That is because mixed-use projects are more difficult to manage and must be designed in a specific way where different uses to dot conflict with one another (Richter, 2006).

Procedurally, it is difficult to redevelop these sites because of the number of tenants involved, i.e., fragmented ownership (Dunham-Jones & Williamson, 2009). A power centre owned by one central corporation has many plots of land leased off to various tenants. The tenants usually have a clause in their lease that allows them to veto changes made to the power centre, and may have non-compete clauses over new tenants that want to come in to the site (for example, an established Wal-Mart may be able to block rival Target from setting up in the same power centre) (Rose, Aug 22, 2003). This means that a redevelopment is only possible with the consent of all established tenants within the power centre.

A second procedural factor that may discourage investors is the time and value gap, as explained by Dunham-Jones & Williamson (2009). In order to get the site ready for development, significant investments must be made to improve the infrastructure, add utilities, etc. These investments have to come before the first phase of development, meaning that the costs of the first phase may actually outweigh the revenue brought in from sales of new buildings. It may not be until later phases that developers will be able to break even on the project. Trying to entice a developer to take on such a project may not be easy, and perhaps some of the upfront costs are better shared with the public sector.

In order to determine whether a project is financially viable for a developer, there are tools available which allow developers to assess the cost and revenue of a project. Pro-forma financial analysis uses known variables of a project to provide an estimation of revenue over time. Several calculations, such as the internal rate of return (IRR), net-present value (NPV), and the return on investment (ROI) can be used to determine whether a project is financially viable. In order to calculate this, some background information must be known (or estimated), such as the cost of land, the cost of construction, the cost of parking/infrastructure, the revenue from sales, and the total amount of square meters being built. Generally, the higher the numbers are from the results of the IRR, NPV, and ROI, the more profitable a project will be. It will be up to the developer to decide what level of risk they are willing to undertake for the project.

There are also economic factors that can cause issues for retrofit projects. The first is the market demand for the project. If there is no demand for the type of new growth coming into the redevelopment, then there is little that can be done for a redevelopment (Dunham-Jones & Williamson, 2009). These projects are predicated upon growth, meaning that if the city or region is in tough times economically, retrofitting a site may not be possible.

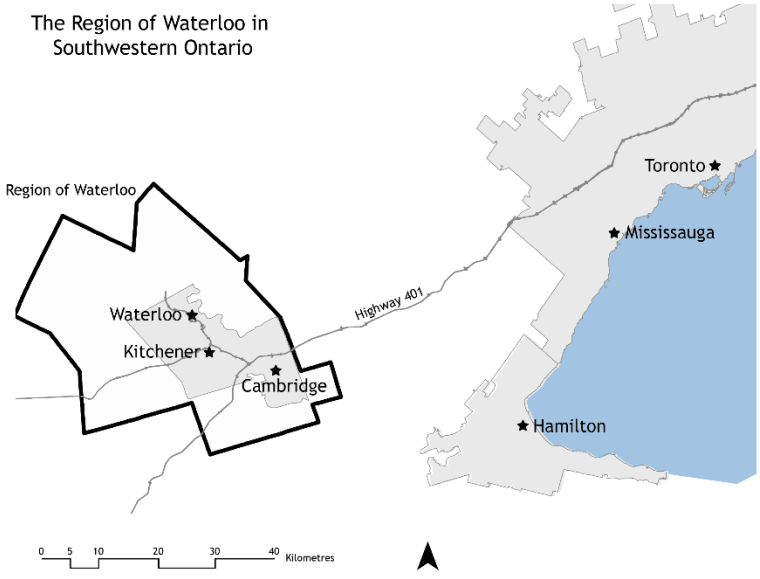
2.5 Summary

A wide variety of interventions can be applied in order to increase density and diversity on single-use sites. Using the Belmar redevelopment as an example, different strategies were explored that may increase the diversity of land uses, create vibrant public spaces, allow for sensitive parking, and build connections to other areas in the city. These lessons may be applied to other single-use sites as well, such as power centres. It is important that any site that is redeveloped first be identified and evaluated. Once it is evaluated, the goals of the project must be well-defined in order to create a plan. If a dense redevelopment is desired and possible, it is then possible to create a plan tailored to the area, using knowledge from finished projects to guide the process.

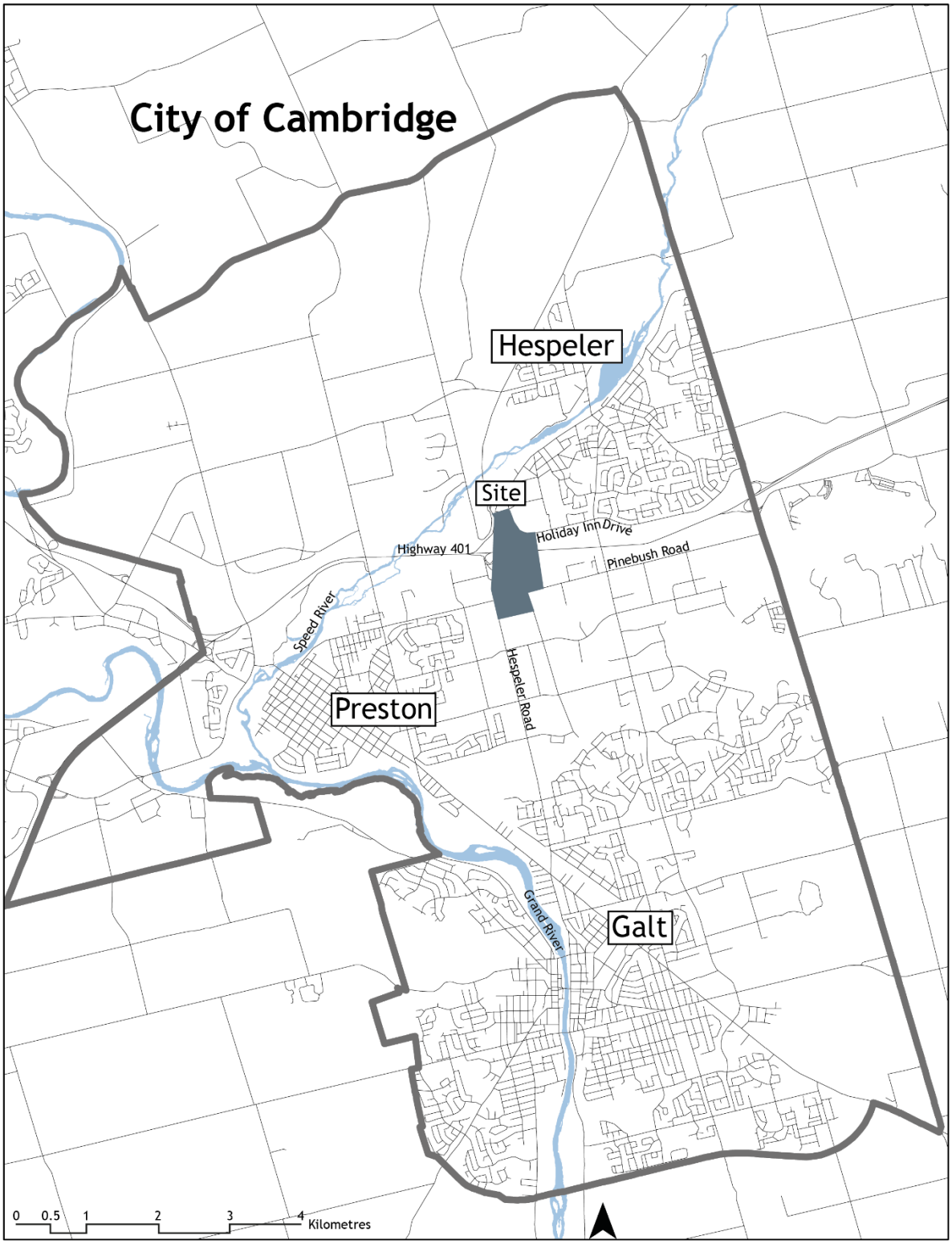
Part 3: Power retail in Cambridge, ON

This chapter presents an analysis of a site in in Cambridge, Ontario, and how it has changed over time. New policies that support sustainable development were introduced at the provincial, regional, and city level. These policies, and the impact they have had on development, are explored. A brief history of how power retail evolved in Cambridge and how it impacted other areas follows. Further analysis is carried out to better situate the site, including a look at socioeconomic factors and the physical environment.

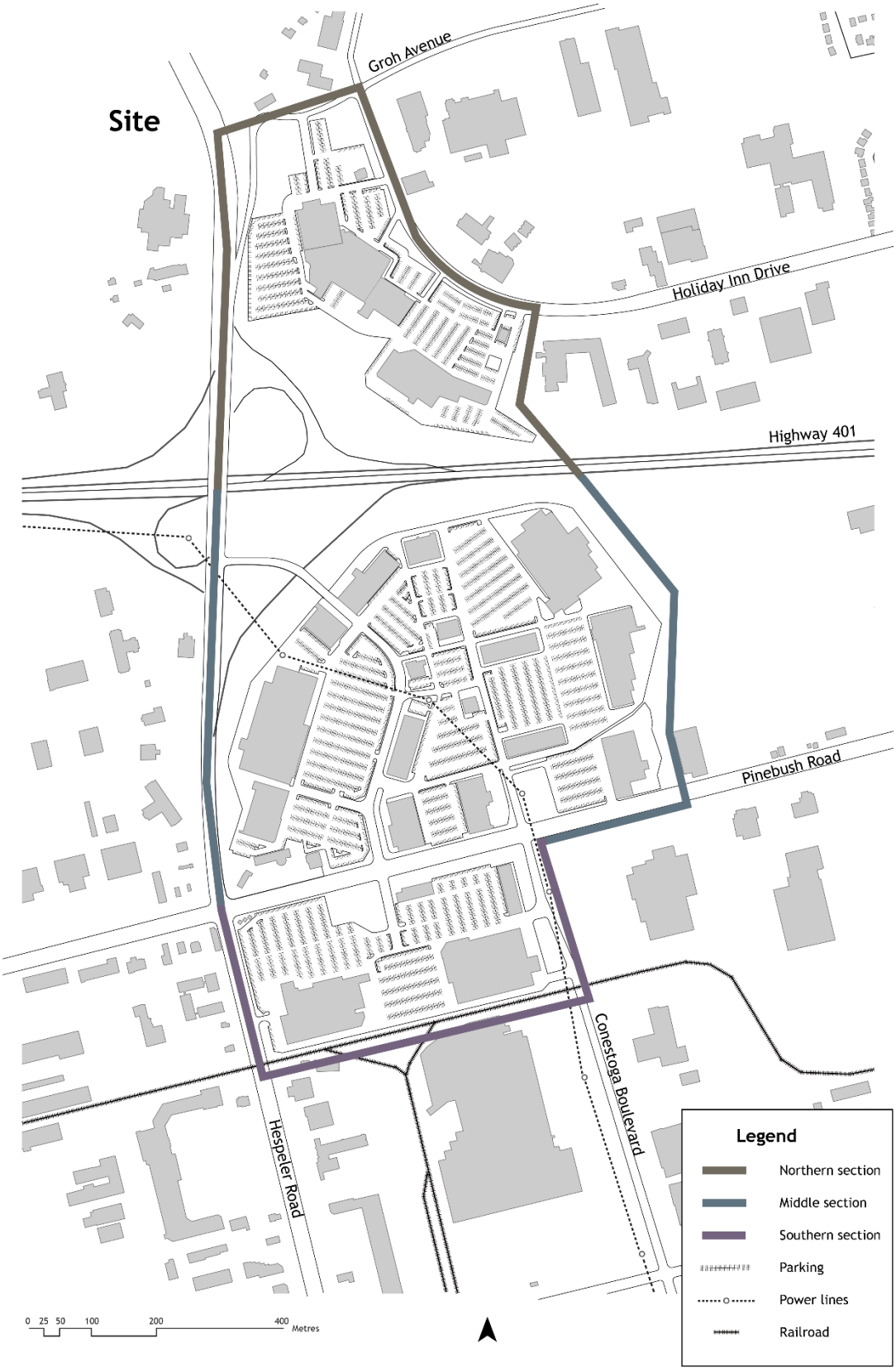
The City of Cambridge is located at the confluence of the Grand and Speed Rivers in Southwestern Ontario, approximately 100 km west of Toronto (see Map 1). It is one of three cities in the Region of Waterloo, along with Kitchener and Waterloo. The site is a power node located in the city's northern end that stretches along Hespeler Road on both sides of Highway 401 (see Map 2). It is divided into three sections: the north, the middle, and the south (see Map 3). The site is spread over approximately 81 ha, and houses more than 92,900 m^2 of gross retail floor area with over 50 different tenants (SmartCentres, 2016). The area is accessible from three major roads: Hespeler Road, Pinebush Road, and Holiday Inn Drive.



Map1: Regional context.



Map 2: Location of the site in Cambridge.



Map 3: Site map.

3.1 Precedents

Redeveloping large single-use retail areas in suburban municipalities is becoming more and more common. There are many examples of this in Metro Vancouver, such as Burnaby's Metrotown, Coquitlam's Town Centre, and Surrey's Central City. These developments are each oriented around an old shopping mall, with a dense mixed-use neighbourhood built around the mall (Bing Thom, 2016; Burnaby, 2016; Coquitlam, 2008). Each of these developments is also linked to rapid transit, thanks to municipal policies that favoured transit-oriented developments. In Ontario, there is an example of a power node redevelopment in the suburban City of Vaughan, just north of Toronto. A power centre at the intersection of Highway 7 and Highway 400 is expected to undergo massive change as it transforms into a high-density mixed-use civic core (Vaughan, 2016). This redevelopment is also anchored around the extension of the subway network and a new BRT, which was integral to the project.

3.2 Policies

In 2005, the Ontario government passed the Greenbelt Act. Heralded as a key piece of legislation by many environmental organizations, the Greenbelt was designed to protect approximately 728,434 ha (1.8 million acres) of greenfield and ecologically sensitive land (MMAH, 2013). The Greenbelt, which encircles the Greater Toronto Area, was designed to act as a buffer against urban sprawl. Other key pieces of legislation such as the Places to Grow Act and changes to the Provincial Policy Statements enacted around this time all reinforce similar principles of sustainability. For municipalities across the province, this was meant to signify the end of the status quo of sprawling neighbourhoods relying on freeways (Walkom, 2013, Nov 8). New developments were to be denser and focussed in built-up areas, which makes transit more efficient and protects outlying agricultural land (Walkom, 2013, Nov 8).

One policy that has had major influence on municipalities that are outside of the Greenbelt is the Growth Plan for the Greater Golden Horseshoe, which was originally

enacted in 2006. The guiding principles of this plan include protecting undeveloped land, ensuring future growth is compact, and building complete communities that are well-served by transit (Ministry of Infrastructure, 2013, p.10). The intensification targets in the plan call for at least 40% of new residential growth to occur in a built-up area by 2015 (Ministry of Infrastructure, 2013, p.14). The plan also details strategic targets for urban growth centres, which are central areas where much of the intensification is expected to take place (Ministry of Infrastructure, 2013). The urban growth centre in Cambridge (see Appendix A) is identified as Historic Downtown Galt, in which the target is 150 residents and jobs combined per hectare by the year 2031, which is the least ambitious target for all urban growth centres (Ministry of Infrastructure, 2013, p.17). By contrast, Downtown Kitchener and Uptown Waterloo (which is less populated than Cambridge), are both required to hit a minimum of 200 residents and jobs combined per hectare by 2031 (Ministry of Infrastructure, 2013, p.16). The Growth Plan for the Greater Golden Horseshoe also includes population projections for the next 20 years that municipalities are expected to accommodate.

The Ontario government, apparently not satisfied with how the Greenbelt Act and the Growth Plan for the Greater Horseshoe has performed to date, have released plans to update the plan and to implement new stipulations to force municipalities to follow growth targets. Growth targets set by the province have been ambitiously increased by a third (requiring 60% of all new residential developments to occur in the built-up area), but also require municipalities to pre-zone areas around transit stations for high residential and employment densities before receiving transit funding (Ministry of Municipal Affairs, 2016; Grewal, 2016, May 10).

3.2.1 Regional policies

Formed in 1973, the Region of Waterloo consists of four townships and three cities: Kitchener, Cambridge, and Waterloo. In order to direct future growth, the Region of Waterloo has unveiled a new official plan that promotes compact development and intensification in built-up areas, in line with provincial policies (Region of Waterloo,

2015a, p.1). With the intent of protecting local farmland from developers, the Region's Growth Management Strategy called for the implementation of a countryside line – an urban growth boundary that is designed to stop sprawl (Region of Waterloo, 2003). The countryside line encircles the urban centres in the Region and is designed to act as a regional greenbelt, with land outside of the countryside line protected from development (Region of Waterloo, 2003). In order to justify the countryside line, the Region set a more rigorous target than the one set by the province for intensification, requiring that 45% of all new residential development occur in the built-up area by 2015 (Region of Waterloo, 2015a, p.18).

On top of that, an ambitious rapid transit corridor, part in-operation and part under-construction, will help guide development in the Region while attempting to increase the modal share of transit. The Ion Rapid Transit corridor is a 19 km light rail transit (LRT) route from North Waterloo to Fairview Park Mall in South Kitchener, which is expected to open in 2017 (Rapid Transit Division, 2012). A further 17 km abbreviated bus rapid transit (aBRT) runs from Fairview Mall in Kitchener to Ainslie Street Terminal in Downtown Galt in the south end of Cambridge, which began operating in September of 2015 (see Appendix B) (Rapid Transit Division, 2012). An aBRT is a system that does not have all of the elements of a 'true' bus rapid transit corridor. For instance, the aBRT in Cambridge has signal priority, queue jump lanes, and bypass shoulders, but does not have a dedicated right-of-way or pay-before-boarding services. The aBRT will eventually be converted to an LRT. The $818 million project connects the three urban growth centres, and the route forms the Central Transit Corridor (CTC) across the region. The CTC is identified in the Regional plan as an area where redevelopment and intensification is strongly encouraged, especially around rapid transit stations (though specific density targets have not yet been set) (Rapid Transit Division, 2012; Region of Waterloo, 2015a).

3.2.2 City policies

The City of Cambridge recently updated its Official Plan to adhere to the growth targets sought by the Province and the Region. The City of Cambridge also requires a 45% growth target for new residential development to be within the built-up area by 2015, with emphasis on redevelopment within the urban growth centre (Downtown Galt), the CTC, and at major transportation nodes (Cambridge, 2014). Discussions with the planning department revealed that the City has exceeded the 45% target for many years, although this may have been caused in part by a liberal definition of 'built-up' by the Province (City planner, personal communication, April 7, 2016). The built-up area in Cambridge includes greenfield land at the edge of the City (Ministry of Infrastructure, 2013). The City's Official Plan, like the regional plan and provincial legislation above it, promotes compact growth while recognizing that auto-dependent urban forms (Cambridge, 2014).

The site is located in the built-up area defined by the province, the CTC defined by the Region, and a major transportation node as defined by the City. As the City continues to look for ways to bring 45% (and soon 60%) of new residential developments within its built-up area, existing areas will have to be examined for their infill potential. With provincial, regional, and local policies all supporting intensification and with the development of a new rapid transit corridor, now is a good time for the City of Cambridge to look at the possibilities of redeveloping within its boundaries.

3.3 History

The City of Cambridge was formed in 1973 when the City of Galt, the Town of Preston, and the Town of Hespeler were amalgamated along with the Township of Blair (Cambridge, 2016a). Each of the three has a long and rich history, which is still a source of identity for local residents (Cambridge, 2016a). As an example, many residents still identify as being from one of the three as opposed to Cambridge.

Early settlements in this area of the Grand River Valley date back to the 13th and 14th centuries, as Mohawk aboriginals inhabited the area (Moyer, 1971). The Mohawk, along with other First Nations, helped British soldiers fight the Americans in the revolutionary war in 1776, for which they were awarded 230,670 ha (570,000 acres) in the Grand River Valley, or nearly 10 km on either side of the river (Moyer, 1971). Recently in 2008, a land dispute in nearby Caledonia, Ontario, led Six Nations leaders to ask for compensation for the lost land and to have a say in all future developments (CBC News, 2008, Jan 14; Harries, 2009, Mar 13). At 10 km on either side of the Grand River, the territory to which the Six Nations lay claim includes all of present-day Cambridge, and most of Kitchener and Waterloo.

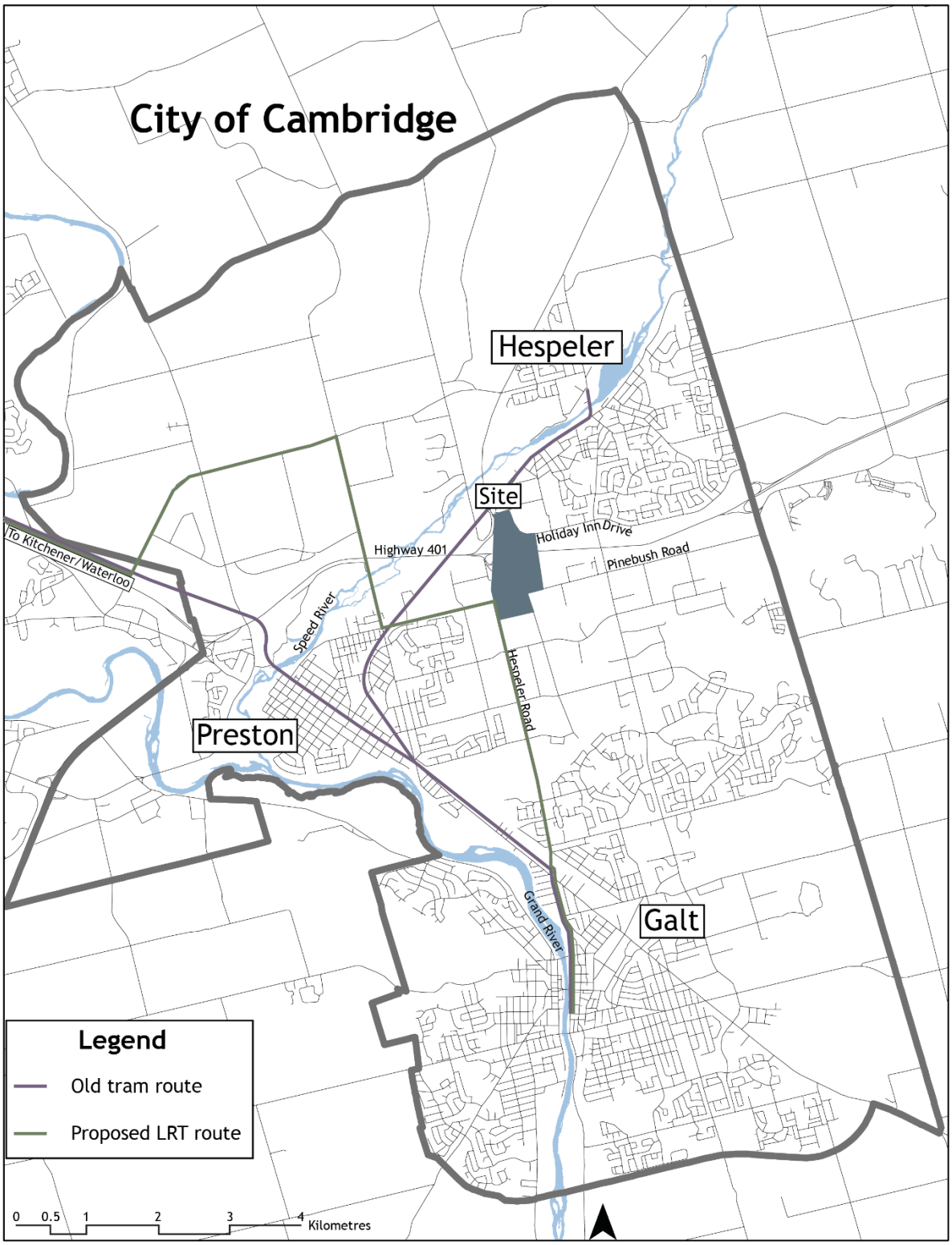
British settlers first arrived in the Galt area at the beginning of the 19th century. A mill was first constructed along the Grand River in what is now downtown Galt in 1802 (Moyer, 1971). Development continued along the river, and in 1827 a new road was built to connect Galt with the Village of Guelph (Moyer, 1971). This road has been in use ever since, and it more-or-less follows the present configuration of Hespeler Road (Fear, 2011, Oct 01). In 1850, Galt had a population of about 2,000, the largest in Waterloo County, and was incorporated as a Town (Moyer, 1971). The Villages of Preston and Hespeler had been well established at this time, and the three towns, each about five kilometres apart, were developing independently of one another, with new roads built between them (Moyer, 1971). Various farms began to develop along these roads.

In the 1890s, the provincial government introduced new legislation, the Street Railway Act, which supported the use of tramways for interurban transport (Galt & Preston Street Railway, 2006). By July of 1894, a half-hourly electric street-tram service was in place between Galt and Preston, and the service was later expanded from Preston to Hespeler in 1896 and from Preston to Berlin (Kitchener) and Waterloo in 1904 (Galt & Preston Street Railway, 2006; Grand River Railway, 2009). What is interesting is the direction of the routes, which followed the Grand River from Galt to Preston, and then strayed into wilderness from Preston to Hespeler (see Map 4 below). Development

followed these routes, and the three settlements formed unique downtowns around the stations (Galt & Preston Street Railway, 2006). The passenger tram service was cut in 1955 and replaced with buses (Grand River Railway, 2009).

In 1960, the opening of Highway 401 had a profound impact on Cambridge. The expressway runs across the Province from the southwest to the northeast, connecting with the United States border on one end and the Quebec border near Montreal on the other. It is among the busiest in the world, and there are more than 125,000 vehicles that pass through Cambridge on the expressway each day (Ministry of Transportation, 2010). It was the first direct road link between Cambridge and Toronto, which made commuting by car between the two cities quicker and easier. The original interchange between Hespeler Road and Highway 401 opened in 1960, although at the time Hespeler Road was a farm road just two lanes wide, it was not expanded to four lanes until the late 1960s (Fear, 2011, Oct 01; Swayze, 2005, Feb 19). Most of the urban form at this time in Cambridge was concentrated around the three city cores, with farmland filling the space in-between.

The amalgamation in 1973 had a big impact on growth. Suddenly, all of the land that was at the fringe of each of the three towns was now at the centre of the new City, which rightly prompted a frenzy from developers to purchase the existing farmland and build whole neighbourhoods (Pender, 2010, Mar 24). Hespeler Road, which crossed through the geographic centre, became an important artery connecting Highway 401 to Downtown Galt. As such, retail development began to creep up around Hespeler Road, while suburban single-family neighbourhoods and industrial districts became prominent on either side of the roadway (Pender, 2010, Mar 24; Swayze, 2005, Feb 19).



Map 4: The old tramway and the new proposed LRT.

Hespeler road quickly became the new commercial core for the City of Cambridge. It now has more than 241,500 m^2 of strip retail, including the City's only mall (Swayze, 2005, Feb 19). The effects of this auto-oriented strip on the original downtown cores were negative, leading to tension between business owners in the former cities and new strip retailers. As a result, the three downtowns became littered with empty storefronts as vacancy rates soared (Warrington, 2003, Aug 12). The City of Cambridge has since spent millions of dollars in an attempt to revitalize the areas, mostly by upgrading road and pedestrian infrastructure and by rebranding the areas (Warrington, 2003, Aug 12). These programs have had some success, but there are still many vacant retail spaces in the historic downtowns. The struggle between the downtown retailers and strip retailers of Hespeler Road continues to this day.

Air photos (see Figures 8 – 11) as late as 1974 show that the site is still farmland, with the exception of some development in the northern section. In 1986, Cadillac-Fairview, a developer, proposed a plan for the greenfield site, which included a regional mall, a hotel, and a convention centre (Swayze, 2005, Nov 04). Cadillac-Fairview did receive permission for the project, but due to a recession and a change in market trends, they were not able to develop the site (Burtt, 1998, Mar 24; Swayze, 2005, Nov 04).

Figure 8: 1945 air photo of the site.

Figure 9: 1974 air photo of the site.

Figure 10: 2006 satellite photo of the site.

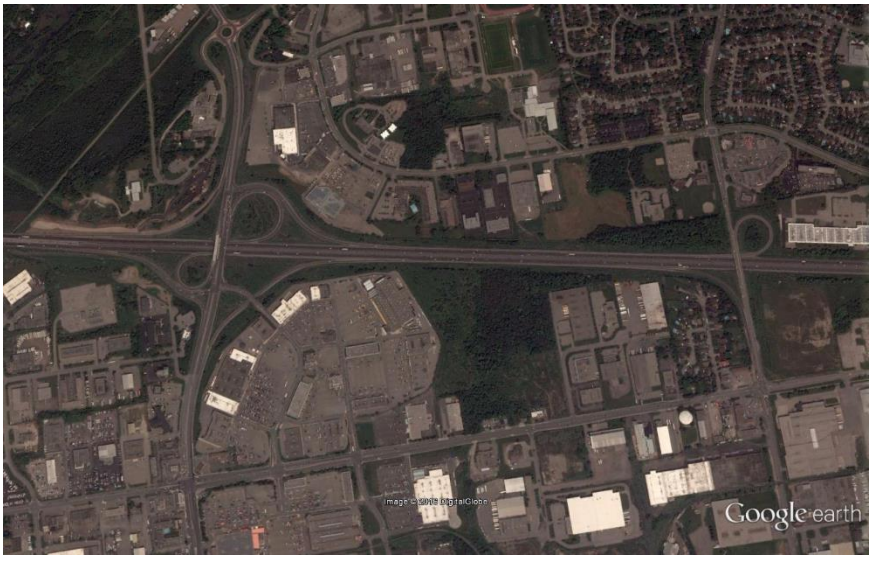


Figure 11: 2015 satellite photo of the site.

In 1990, Highway 401 was expanded from four lanes to six lanes between Kitchener in the west and Mississauga in the east (Aagaard, 1991, Nov 23). This prompted the redesign of the Highway 401 and Hespeler Road interchange, which subsequently allowed for the widening of Hespeler Road to its current six lane configuration, a symbol of its fast auto-centric growth (Aagaard, 1991, Nov 23; Kitchener-Waterloo Record, 1990, Dec 21). Another symbol of auto-dependency, a new superstore, opened in the southern section of the site at Pinebush Road and Hespeler Road in 1990. The Knob Hills Farm supercentre was a 31,590 m^2 supermarket built by former Toronto Maple Leafs owner Steve Stavro (The Guelph Mercury, 2002, Oct 30). It was marketed as the 'world's biggest supermarket' and employed approximately 80 people (Misner, 2000, Aug 26). In 1993, Cadillac-Fairview sold the middle section of the site, the property north of Pinebush Road, to another developer, Bridgecam Shopping Centres Limited (Swayze, 2005, Nov 04). Bridgecam had ambitions of developing the site as a power centre, which was in line with market trends at the time.

It was not until 1997 that the City of Cambridge officially dedicated the land held by Bridgecam suitable for a power centre with a maximum of 54,255 m^2 (584,000 sqft) of retail, with no store smaller than 650 m^2 (Aargaard, 1999, Oct 05; Swayze, 2005, Nov 04). In 1998, the first anchor tenant, Wal-Mart, opened a 9,754 m^2 store with 300 employees on site, with other tenants following soon afterwards (Burtt, 1998, Mar 24). In 1999, the Region found that the Hespeler Road and Pinebush Road intersection was one of the busiest and most dangerous in the Region of Waterloo, due to a confusing layout and an increase in traffic caused by the new power centre (Misner, 2001, Apr 04).

In the year 2000, the Knob Hills Farm Supermarket closed when the owner ran into intractable financial problems (Misner, 2000, Aug 26). At the same time, the Bridgecam developer asked the city for a zoning amendment to allow for smaller stores, as small as 278 m^2, in the power centre (Purnell, 2000, Aug 30). This request was apparently due to a change in consumer preferences which favoured small-format outlet stores (Swayze, 2005, Nov 04). Local business owners in the three original downtowns and the

mall all decried the proposal, arguing that smaller store sizes would be harmful to their businesses and that a power centre should only contain big-box stores (Aargaard, 1999, Oct 05; Swayze, 2005, Nov 04; Warrington, 2003, Aug 12). The City agreed and blocked Bridgecam's request to allow small stores.

In 2002, Bridgecam launched another request to build smaller retail spaces (278 m^2) in the power centre (Cambridge Reporter, 2002, Apr 30). Bridgecam also wanted to boost the amount of retail allowed on site to over 56,485 m^2 (608,000 sqft) (Cambridge Reporter, 2002, Apr 30). This again came to the dismay of other small business owners. Local business leaders argued that stores of that size are better suited in the historic downtowns or the mall (Cambridge Reporter, 2002, Apr 30). The City was also against the idea, as its priority at the time was to revitalize the historic downtown cores, which had high vacancies (Warrington, 2003, Aug 12). The rationale remained the same: power centres are for big-box stores, and 278 m^2 is too small (Warrington, 2003, Aug 12). Meanwhile, on the former Knob Hills Farm site in the southern section of the site, the Home Depot received approval from the City for a redevelopment that included two big-box stores and three smaller stores that were 278 m^2 in size (Warrington, 2003, Aug 12). The northern section of the site also saw development during this time, as more big-box and smaller format retail stores established there.

In 2005, Bridgecam led yet another charge to open smaller stores, this time in the 450 m^2 to 650 m^2 range, citing that tenants were not interested in building big-box stores (Swayze, 2005, Nov 04). Bridgecam also wanted to expand the total amount of retail allowed in the site to over 65,000 m^2 (700,000 sqft) (Swayze, 2005, Nov 04). This time the City accepted Bridgecam's 700,000 square foot proposal, and allowed some stores as small as 450 m^2 (Swayze, 2005, Nov 04). Currently, the site has nearly 60 tenants, and the middle and southern sections of the site have been sold to SmartCentres, who continues to pursue smaller developments in the 450 m^2 to 650 m^2 range (See Figure 12 below) (SmartCentres, 2015).

Figure 12: View of key tenants in the middle section of the site, retrieved from SmartCentres (2015).

The City of Cambridge is a suburban municipality with three distinct areas that each carry their own identities. The three core cities developed in a piecemeal fashion and independently from one another. New infrastructure and a merger by the province in the 1970s led to a new form of suburban, auto-oriented development that has come to dominate and largely define the modern Cambridge landscape, one that is plagued with surface parking lots and congested arterials. Developers took advantage of a large farms in the middle of the newly formed City, which attracted new suburban neighbourhoods and strip retail to major arteries. New big-box retail along Hespeler Road has been detrimental to small retailers in the old downtown area, who have vehemently opposed continued proliferation of strip and box retail. What is especially disliked by the traditional downtown retailers are the smaller-format outlet stores being built in the power centre, which have recently been favoured by developers because of changes in consumer preference. There are clear tensions between the historic downtowns and new box retail developed in the late 1990s.

3.4 Retail typology

There are four types of retail that dominate the landscape in Cambridge: the historic downtown retail, which has small-format stores and is oriented to the street; strip retail, which exists along major arterial roads and on the extremities of some subdivisions, and is characterised by small to medium sized stores that are setback far from the street to make room for large parking lots; there is one regional enclosed shopping mall, which houses over 65,000 m^2 of retail; and finally there are at least two power centres in the City, which are characterised by large-format box stores that share large parking lots.

The shops that were built prior to the Second World War are almost exclusively found in the three historic downtowns. This retail typology, with distinct architecture, small independent shops on the ground floor and other uses on the floors above, is mixed-use and pedestrian-oriented. Much of it was built prior to any municipal regulations, such as zoning. Conversely, the other three types of retail in the City were built in the post-war era, and were brought about under strict zoning codes, as was the majority of the City's residential and industrial areas. The result of the master planned neighbourhoods is that much of the city looks repetitive and dull, which are assessments that fall under the contemporary critique of 20th century modernism (Fainstein, 2005). As a rebuttal against 20th century modernism, much of the narrative in planning has switched to create places that are diverse in terms of building form and function, the kind of places that were built before the Second World War. Some characteristics that many professionals and academics thought were important to diverse downtowns were street-oriented retail, cultural activities, employment nodes, and friendly pedestrian streetscapes (Fillion et al. 2004).

Diversity is largely presented as the alternative to modernism, and the monotony created by large, single-use zones that are common in the suburbs, whether they be residential subdivisions, regional commercial nodes, or industrial parks. The process of how to achieve diversity in terms of built form was previously outlined, but it has to do

with mixing building form and land use in order to achieve a high-level of activity. Further, these active areas are generally imagined as being more compact and with higher density than their single-use suburban counterparts.

3.5 Demographics

The population of the Region of Waterloo in 2014 was nearly 570,000 (Region of Waterloo, 2016). The City of Cambridge had a population of about 134,000 in 2014, just under one-quarter of the total regional population. The Region is expected to see significant growth over the next 15 years, as the population is expected to grow to 729,000 by 2031, and to 835,000 by 2041 (see Table 3) (Ontario, 2013). Cambridge is expected to grow to 177,000 by 2031 with more than 25,000 new jobs (Cambridge, 2016b). From 1986 to 2006, Cambridge was growing faster than the rest of the Region and the Province of Ontario (see Table 4), however the growth rate decelerated from 2006 to 2011 (Office of the City Manager Economic Development Division, 2016). In the coming years, the Region of Waterloo faces a rapidly aging population, as the number of people aged 65 years and older is expected to double. In 2031, 20% of the Region's population, one in five, will be 65 years or older (Norris, 2015).

Table 3: Population increase in the Region of Waterloo.

Region of Waterloo population estimates			
Area	**2014 Population**	**2031 Population**	**Increase (%)**
City of Kitchener	236,500	319,500	35.1
City of Cambridge	133,800	176,000	31.5
City of Waterloo	98,780*	140,000	41.7
Township of Woolwich	24,650	36,500	48.1
Township of Wilmot	20,580	28,500	38.5
Township of Wellesley	11,000	12,500	13.6
Township of North Dumfries	9,730	16,000	64.4
Region of Waterloo	**568,500**	**729,000**	**28.2**

*2011 population

Table 4: Population growth in Cambridge, the Region of Waterloo, and Ontario.

Population growth in Cambridge compared with the Region of Waterloo and Ontario						
Year	Population			Percentage increase		
	Cambridge	Region of Waterloo	Ontario	Cambridge	Region of Waterloo	Ontario
1986	79,920	329,404	9,102,000			
1991	92,772	377,762	10,084,885	16.1	14.7	10.8
1996	101,429	405,435	10,753,573	9.3	7.3	6.6
2001	110,372	438,515	11,410,046	8.8	8.2	6.1
2006	120,371	478,120	12,160,282	9.1	9.0	6.6
2011	126,748	507,096	12,851,821	5.3	6.1	5.7
2031	176,000	729,000	16,130,000	31.5	28.2	25.5

There are issues of marginalisation and inequality present in the Region of Waterloo. Over the past decade, the Region has seen an influx of immigrants. In Cambridge, approximately 20% of the population in 2011 (about 25,000 people) were immigrants (Statistics Canada, 2015b). More than 15,000 of these immigrants were visible minorities, and about 5,000 immigrants arrived in the region from 2001 to 2011 (Statistics Canada, 2015b). However, new immigrants have had to deal with considerable challenges. In 2009, the Region of Waterloo was named the hate-crime capital of Canada, as there were more hate-crimes committed per capita in the Region than anywhere else in Canada (Desmond, 2013, Jul 12). Most of the hate crimes were based on ethnicity. The situation has since improved, but the Region consistently has some of the highest hate-crime rates of any major city in Canada (Desmond, 2013, Jul 12).

The Region of Waterloo was also named the worst place for women in Canada in 2015 (McInturff, 2015). This was found in a policy report that ranked the living conditions of women in major Canadian cities based on a variety of factors. The results show that women in the Region are under-represented in the workforce, that there is larger wage inequality than the national average, that poverty rates for women are above average, that there are few women in leadership roles in the private and public sectors, and that

levels of domestic abuse against women were higher than the national average (McInturff, 2015).

3.6 Economics

Cambridge has an economy that is centered on industry, as one-quarter of all jobs in the city are in the manufacturing sector (Office of the City Manager Economic Development Division, 2016). Industries benefit from proximity to Highway 401, which is integral to the success of just-in-time manufacturing. Industries in Cambridge are concentrated in three main business parks, one of which is just south of the site (Office of the City Manager Economic Development Division, 2016). There are also many who work in the retail, healthcare, and technology sectors. Cambridge is part of Canada's Technology Triangle, a term given to the Region of Waterloo due to a large concentration of high-tech companies (BMO Capital Markets, 2008). Cambridge's growing economy has led to an average annual building permit value in the City of approximately $244 million over the past 10 years (see Figure 13 below) (Office of the City Manager Economic Development Division, 2016). Although the value of industrial building permits have stabilized, the value of commercial building permits have dropped, and the number of residential housing starts in the City dropped in 2015 to 429, down from highs of more than 1,100 in 2002 (see Figure 14 below) (Office of the City Manager Economic Development Division, 2016).

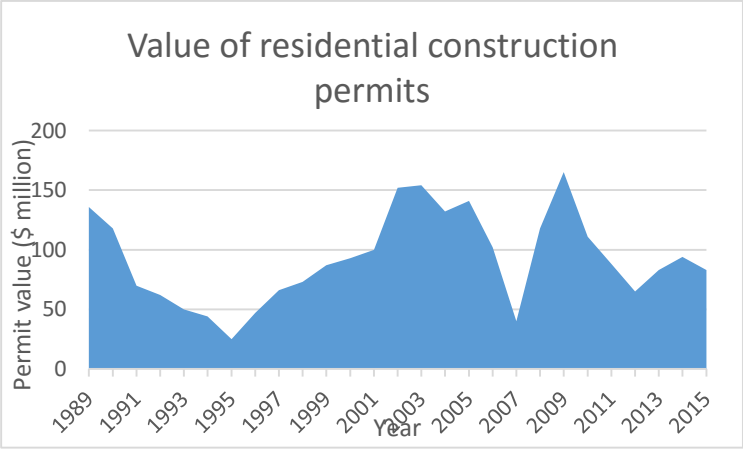


Figure 13: Average annual building permit value from 1989 to 2015.

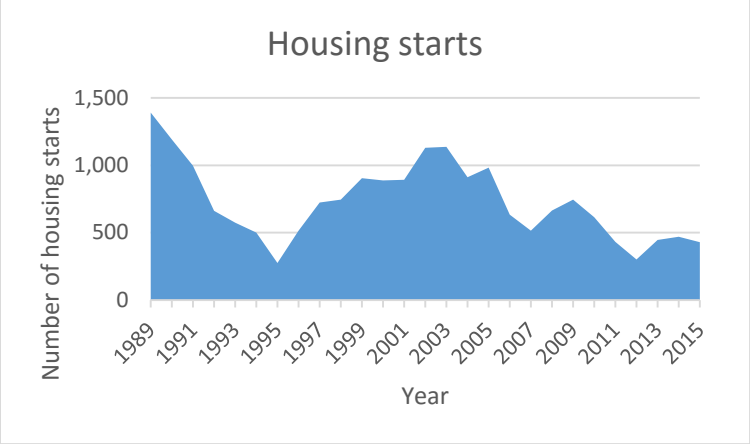


Figure 14: Number of housing starts from 1989 to 2015.

3.7 Summary

Retail sectors in Cambridge developed much as they have elsewhere. Downtown stores at the turn of the 20th century were important to the three original settlements, and a transit-based city meant that retail activities were largely consolidated along streetcar lines. The shift towards automobiles was prompted by road-building projects and new low-density suburban neighbourhoods. The retail form also changed at this time with the construction of new retail strips and an enclosed shopping mall. With amalgamation, new development occurred on farmland, and power retail began to appear in the city, which directly competed with downtown stores. Power retail and low-density development are problematic because they require more tax money for upkeep than they contribute to the municipality. Legislation from the provincial, regional, and local governments support redeveloping areas within city boundaries in order to suppress urban sprawl. As Cambridge begins to reach the boundaries of its urban growth boundary, and with a new rapid transit corridor connecting the region that will be funded on the contingent that the area is zoned for high-density development, it is critical that the City begin to look to redevelop areas within its boundaries to support the expected influx of population. One such area, located at an important transportation axis and with a lot of underutilised land, is the Cambridge power centre. The power centre is located in an ideal location and is large enough to accommodate future growth, which would help increase density of both commercial

and residential uses, leading to a more compact development that is less draining on city funds and helps to satisfy density and environmental targets.

Part 4: Retrofitting a power centre in Cambridge, Ontario

This chapter presents a redevelopment plan for the Cambridge power centre that transforms it into a dense, mixed-use development. The plan was structured to ensure it addresses issues such as densification, diversification, accessibility, and sustainable transportation. Furthermore, attention is given to the phasing of the project and the relationship needed between the public and private sectors. This section concludes with a financial analysis that estimates the viability of the project from a development standpoint.

4.1 Site selection

The first step in preparing the plan was to select a site that is appropriate for redevelopment. Site selection was conducted using the criteria established in Part Two (see Table 5 below). The site is in a good location at the intersection of major transportation nodes and major transit routes, there is market demand for growth and high-density development, there is infrastructure that can be reused, the site is large enough to incorporate a mix of uses, and there are nearby neighbourhoods that could have easy access to it.

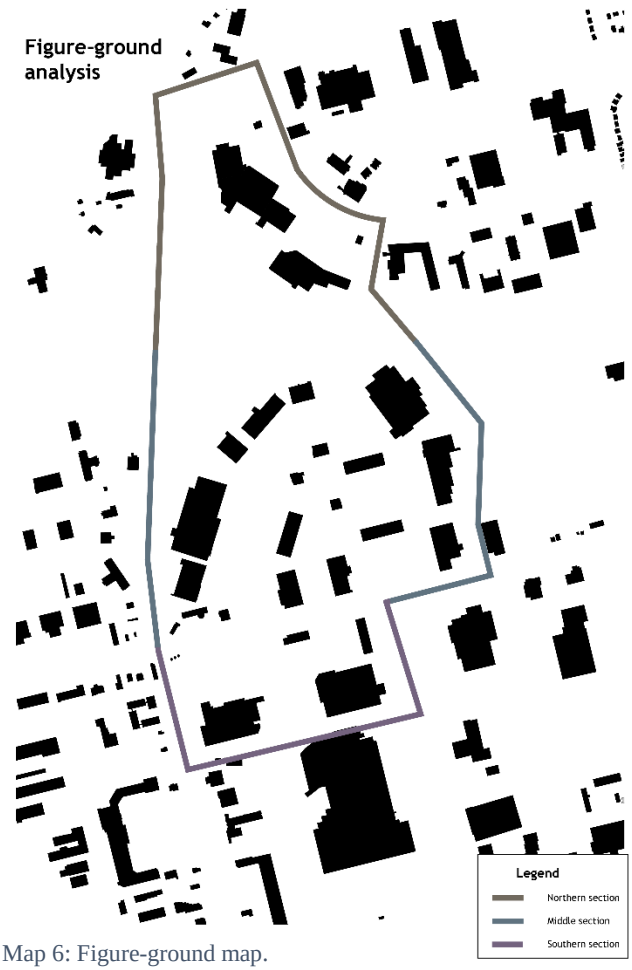
The Cambridge power centre is a worthwhile area to redevelop for several reasons. For one, the redevelopment plan deals with the problematic non-residential land uses described by Bourne (2001) that have seen densities decrease in recent years. Redeveloping a power centre to include a higher employment and retail densities, addresses one of the most problematic land uses of sprawl. Moreover, the infill development will increase density in general, which may be more beneficial for the municipality in terms of service delivery, and it serves as an alternative form of development that saves land outlying land for development in the future. This redevelopment also addresses Bourne's (2001) concern of poor regional planning, as this is a project that is located along a future rapid transit line, and will be needed in order to secure provincial funding for the project.

Table 5: Site evaluation.

Description	Questions	Results
Location	Is the site located in proximity to major	Yes, Highways 24 and 401
	Is the site located in proximity to transit?	Yes, GRT and GO Transit
	Is the site centrally located?	Yes, central and along main arterial
	Is there market demand for the project?	Yes, future high-density growth is expected
Infrastructure	Is the infrastructure on the site in good condition?	Yes, roadways and parking lots in good condition
	Can the existing infrastructure be used to support additional development?	Yes, roads and parking lots can accommodate new growth
	Is it possible to reuse the infrastructure if the site is going to be developed?	Yes, basic layout of site can be maintained
Size	Is the site larger than 15 acres?	Yes, site is 81 hectares (about 200 acres)
	Is the site large enough to incorporate a mix of uses and public space?	Yes, lots of underutilised space
Connections	Are there surrounding neighbourhoods that can utilize the site?	Yes, neighbourhoods on the north side
	Do surrounding communities have good connections to the site?	No, connections favour automobile users
	Can new connections be built to surrounding areas?	Yes, new blocks and bridging the highway will help
Scale	Is this an area of significance in the community? In the city? In the region?	Yes, at the border of the three historic towns
	Can this site function as a gathering place in the city?	Yes, it is already a destination frequented by thousands each day

There is approximately 92,900 m^2 of retail floor area in the power centre that serves more than 270,000 people (Rose, 2002, Aug 23; SmartCentres, 2016). More than 40% of power centre shoppers come from outside of Cambridge (Jackson, 2014, Nov 27). The centre's strategic location, just off of Highway 401, makes it easily accessible from nearby Kitchener and Waterloo. It is the largest power centre in the City, and one of the largest in the Region. The power centre acts as a northerly anchor to Hespeler Road, the City's main commercial artery. Vacancies on site are low, with a few empty small-format stores noticeable in the southern section. Overall the City of Cambridge, which has about 631,740 m^2 of retail in total, and may need an additional 306,580 m^2 of retail by 2031 to handle new growth (Jackson, 2014, Nov 27).

4.1.1 Built form



Map 6: Figure-ground map.

The built form of the power centre consists of large, isolated buildings that are oriented inward towards large parking lots. As is evident from the figure-ground map (Map 6) there are large perimeter buildings surrounding the north and south portions of the site, with a few smaller, seemingly randomly-placed buildings in the interior. There is no cohesive block structure to speak of, and there is a lot of open, unbuilt land (see Figure 15). All of the buildings are one storey, yet most have the height of a two or three storey building using false fronts for show. There are many large signs along Hespeler Road, Pinebush Road, and Holiday Inn Drive that list the tenants of the site. These signs are tall as well, sometimes three to four storeys high in order to be visible to fast-moving traffic (see Figure 16).

There are three concrete water fountains at the southeast corner of Pinebush Road and Hespeler Road that rise approximately four storeys high (see Figure 17). The waterfalls were originally built by Knob Hills Farm, the original tenant on the site, in the 1990s, and have since become a landmark for the City (Aagaard, 1997, Jul 07, Ray, 2005, Aug 02). The waterfalls still run daily in the summer time. There is also a large hydro corridor that runs through the site (see Figure 18), and there are active railroad tracks at the southern boundary of the site that serve the business park.

Figure 15: Lack of a discernable block structure in the power centre.

Figure 16: Tall signs for power centre tenants along Hespeler Road.

Figure 17: Landmark water fountains.

Figure 18: Hydro corridor that runs through the power centre.

There are 58 tenants on site. See Appendix C for a list of tenants and their uses. What is noticeable is the distribution of tenants. For instance, all of the clothing stores are concentrated in the middle section where there are no services. There are few restaurants, but most are located in the middle section as well. There is one supermarket in the site located in the north section (although Wal-Mart does have a sizeable grocery option).

4.1.2 Transportation

The site is served by three main arterial roads, Hespeler Road (six lanes), Pinebush Road (four lanes), and Holiday Inn Drive (two lanes plus a centre turning lane). There is direct access to Highway 401, which is currently undergoing an expansion from six lanes to ten lanes between Hespeler Road and Highway 8 to the west in Kitchener. The arterial intersections are large and congested at peak hours. The intersection at Pinebush and Hespeler Road (see Figures 19 and 20) is the busiest in the City, and one of the busiest in the Region, with more than 55,000 vehicles passing through each day (Misner, Apr 04). There are thousands of vehicles that access the site everyday (Region of Waterloo, 2015b).

Figures 19 and 20: The intersection at Hespeler Road and Pinebush Road, the busiest in Cambridge.

There are currently four bus stops in the site that serve three different routes (see Map 7 below). There is also an interurban GO bus stop that provides daytime hourly service to Kitchener, Waterloo, and Mississauga. Regional aBRT stops are located at the intersection of Hespeler Road and Pinebush Road. The aBRT will be converted to an LRT in the next 10 years, a project that will see Galt reconnected to Kitchener and Waterloo by rail. However, if proposed provincial legislation is enacted, high-density zoning around station areas may be required for the region to get funding for the LRT. This will require the power centre, which is at a station area, to be drastically rezoned and redeveloped. Ridership along the rapid transit corridor is currently 20,000 people per day, and is expected to increase to 25,000 riders per day in 2017 (Region of Waterloo, 2014, p.25). Public transit in Cambridge accounts for about 4.5% of all home-work commutes, with just under 2,730 rides per day (Statistics Canada, 2015b).

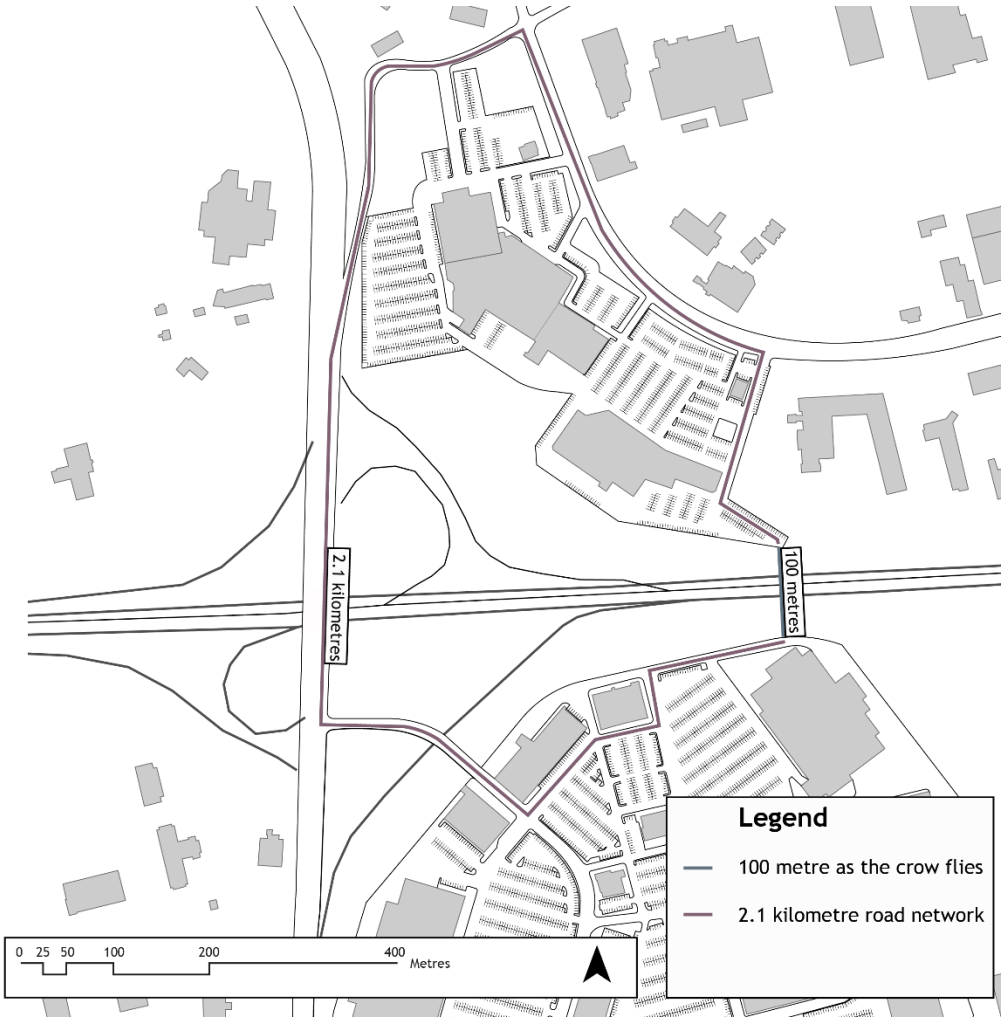
Map 7: Transit access in the study area.

There are at least 2,000 surface parking spots in the site. Based on direct observations done at different times of day, and different days of the week, it is estimated that the surface parking lots are usually 30% to 40% full during the day (see Figure 21). Since no stores are open at night, and most close at 9pm, the parking lots are essentially empty for 12 hours a day. This represents a lot of open space that is being underutilized, and could serve other purposes. The current zoning bylaw stipulates that five parking spaces must be built for every 100 m^2 of gross leasable commercial floor area in retail districts (Cambridge, 2012, p.65). This appears to be excessive, but again may be a reflection of the parking that big-box tenants typically ask for (Richter, 2006).

Figure 21: Typical parking lot usage at midday on a Saturday.

Pedestrian access to the site is unattractive and difficult. Although there are sidewalks along Hespeler Road, Pinebush Road, and Holiday Inn Drive, these are low-density, unappealing environments for pedestrians that must navigate large, dangerous intersections with fast-moving traffic. There is currently no route for pedestrians in Cambridge to legally cross Highway 401. There is a one-metre wide sidewalk on the eastern side of the Hespeler Road overpass, where pedestrians are pinned between a concrete barrier and large vehicles driving by at speeds near 70km/h (see Figure 22). However, there are no sidewalks connecting to the north side of the bridge, leaving pedestrians in limbo. Pedestrians have no other options to cross Highway 401, save for a pedestrian/cyclist bridge some 6.5 km to the west, which connects Cambridge to Kitchener. Although the middle and northern sections of the site separated by the highway are just 100 m apart as the crow flies, it is an approximate 2.1 km journey along the road network (see Map 8).

Figure 22: The Hespeler Road overpass, a difficult environment for pedestrians.



Map 8: Accessibility issues.

Within the site, the most common pedestrian movement is from the parking lot to the store. The stores have sidewalks before the entrances, and many have zebra paint on the asphalt, bollards, and speed humps to keep motorists aware of people entering and exiting the stores. Walking between different stores and different parking areas is discouraged though, as there are no sidewalks that connect different areas of the power centre, and motorists can reach speeds along the main throughways of up to 50km/h. To cross the site by foot entails walking across large parking lots where pedestrians have to deal with lots of vehicle movements. There is also very limited cycling infrastructure. There are painted bike lanes along Pinebush east of Hespeler Road and along Holiday Inn Drive. A new separated bike path will also be built along Conestoga

Boulevard this summer, terminating at Pinebush Road, just south of the site (Times, 2016, Mar 14). Crossing the 401 is difficult even for experienced cyclists, due to the amount of traffic and high speed limits. There is one bridge crossing the 401 that has painted bike lanes on it in Cambridge, but it is more than 3.5 km to the east of the site. The City of Cambridge currently has a network of about 50 km of separated and painted bike lanes, with plans to add more in the future (Cambridge, 2016c). Currently, only about 0.6% of commutes in Cambridge take place by bicycle (Statistics Canada, 2015b).

4.2 Identify project goals

Ideally, the goals of the redevelopment would be defined through a participatory process with local stakeholders, allowing community members to form a vision for the redevelopment. For this academic exercise, however, the goals and objectives are based on a synthesis from existing legislation at the local, regional, and provincial level. To reflect the objectives of the legislation, the redevelopment should be a complete community that is dense, mixed-use, transit-oriented, accessible, and environmentally friendly. The redevelopment allows for the City of Cambridge to grow in a more compact way, which helps to make better use of the land inside its boundaries to reduce the need for future urban sprawl.

4.3 Vision statement

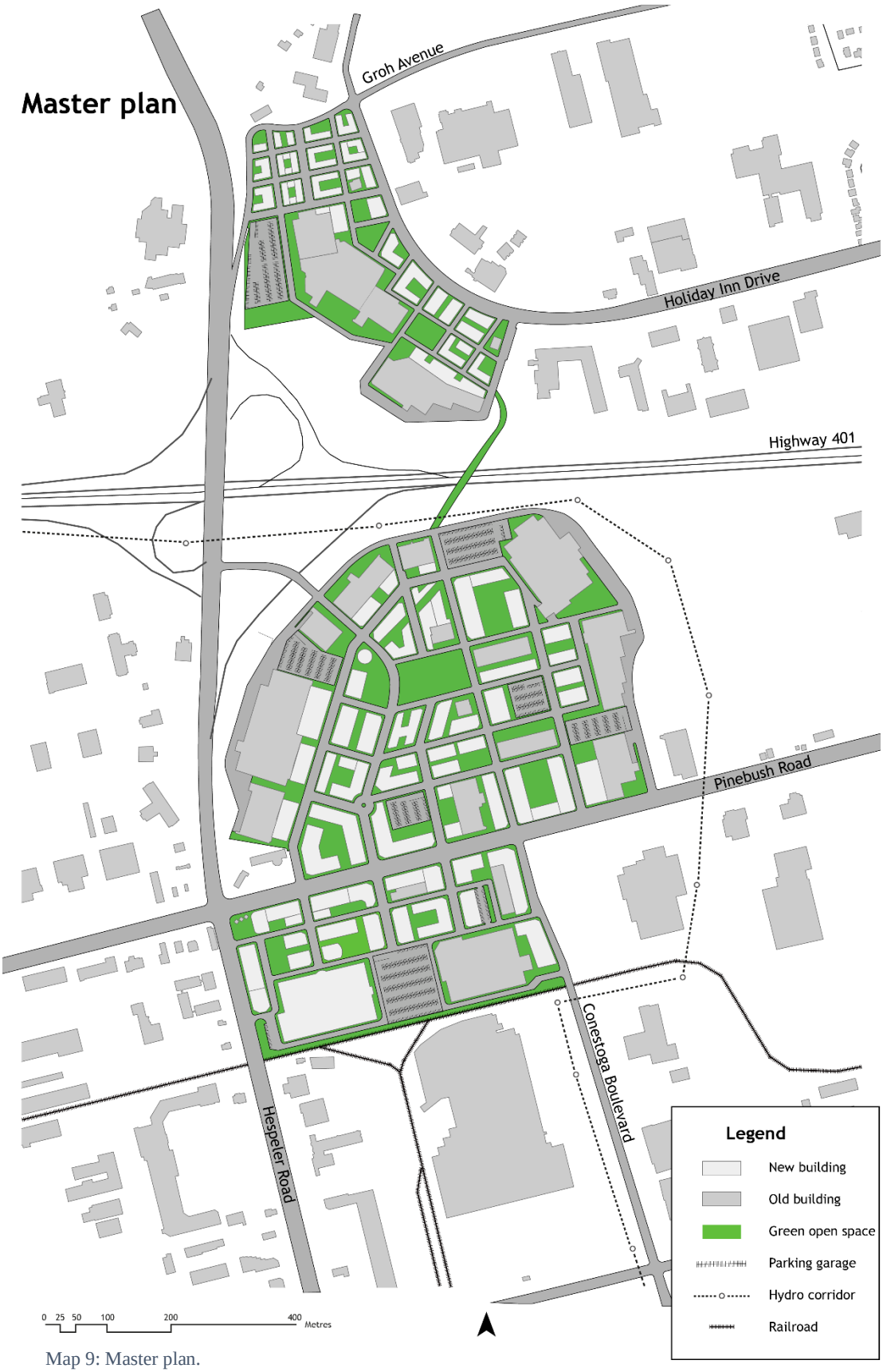
In 2040, the Cambridge Power Centre will be a dense, vibrant hub with a diversity of uses and services that are accessible to all. The development is a meeting point in the City, whose residents benefit from strong public and active transportation corridors within and around the site.

4.4 Goals and objectives

1. Increase the density and diversity of land uses
    - To add a variety of residential, office, and retail units
    - To repurpose surface parking lots for new development
    - To create an urban grid
2. Improve public and active transportation
    - To encourage use of the rapid transit corridor
    - To improve connections between interurban and regional transit lines
    - To create a network of pedestrian and cycling routes
    - To design an attractive streetscape for pedestrians
3. Provide accessible community amenities
    - To offer space for community services
    - To construct a central common space
    - To create a network of parks and greenways
4. Promote economic vitality
    - To sustain the existing big-box anchor tenants
    - To increase prosperity for the public and private sectors
    - To provide incentives for the private sector

4.5 Redevelopment plan

Map 9 shows the final scenario that was developed to meet the goals and objectives of the project. The plan depicts a dense, mixed-use development replacing surface parking lots. The community is developed in conjunction with live big-box stores, many of which have undergone physical changes.



Map 9: Master plan.

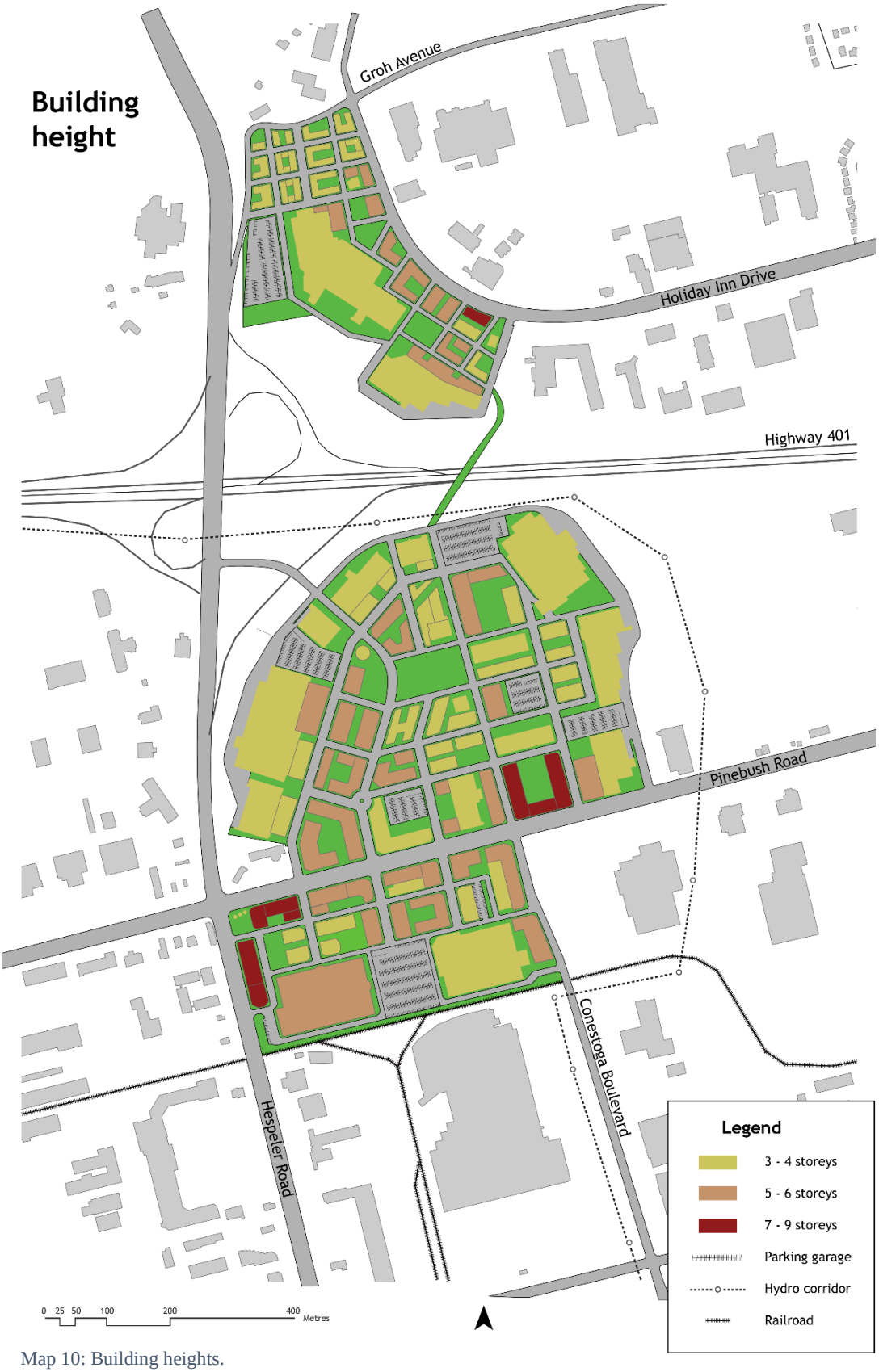
4.5.1 Increase density and diversity of land uses

To increase the density and diversity of land uses, significant changes must be made to the building stock. To address this, more than 427,353 m^2 of gross residential floor space will be built. This is primarily in the form of apartments and townhouses (which are located in the northern section). Additionally, there will be 41,806 m^2 of retail space and more than 51,096 m^2 of office space located on site. A new urban grid comprising 50 new short blocks increases connectivity throughout the site. In order to build the grid, it is first necessary to relocate the hydro corridor that runs through the site. A rerouting that follows the perimeter of the site is proposed.

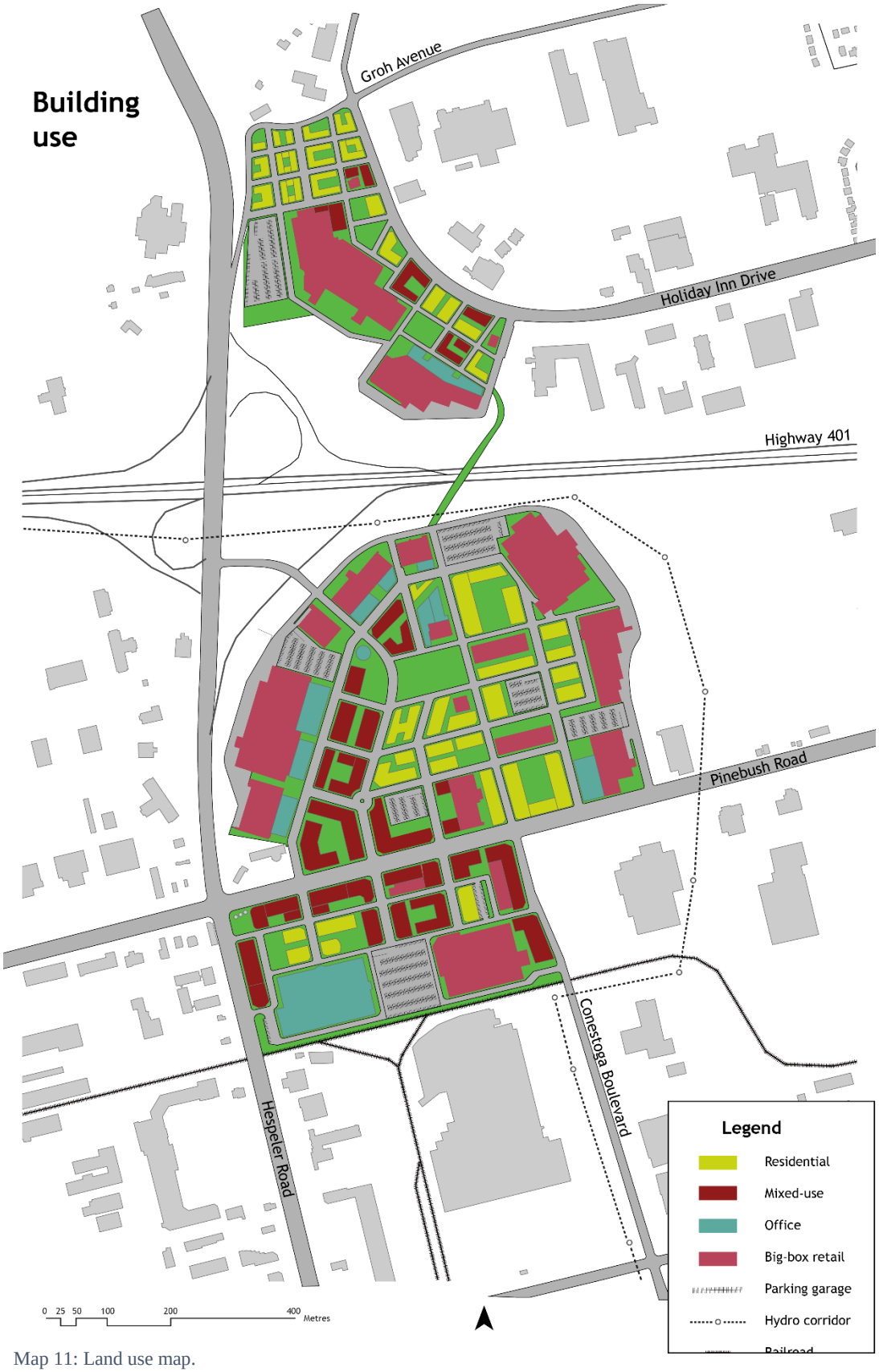
Map 10 shows building height by number of storeys. The tallest buildings appear along major corridors next to transit stations, while the majority of the buildings are four to five storeys tall. Many of the residential buildings along the main corridors have retail on the ground level. Retail is built in early phases to allow for some businesses to transition before their buildings are demolished in later phases, as some of the smaller tenants in the power centre will have to be relocated for the construction of the street grid. Other retailers that establish in the new spaces are those that do not directly conflict with power centre tenants, such as restaurants, banks, and art galleries. The construction of office space occurs in later phases, and is largely positioned around big-box stores (see types of uses in Map 11).

4.5.2 Improve active and public transportation

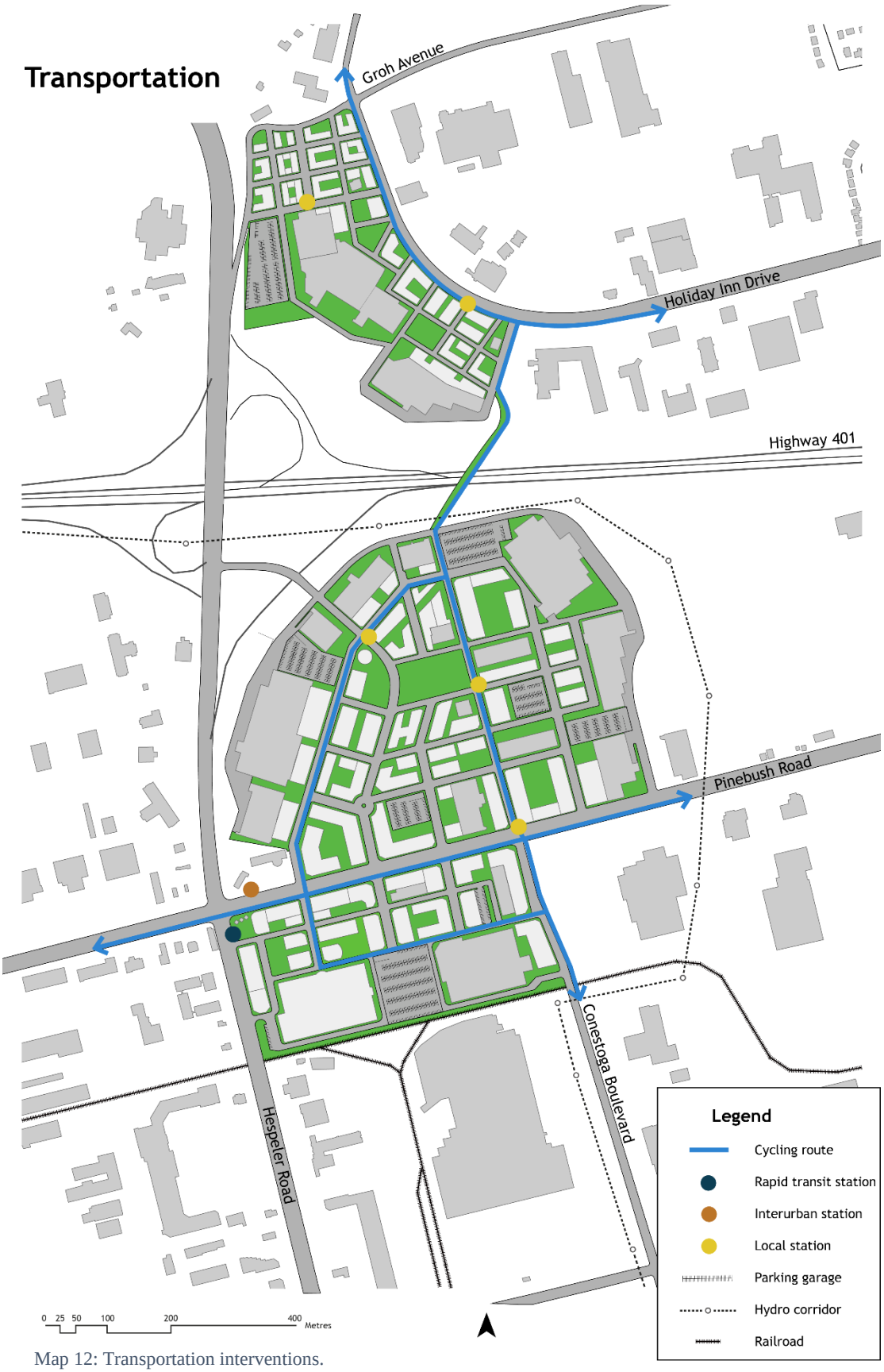
The active and public transportation networks are visualized in Map 12. The public transportation routes are consolidated around the rapid transit stop at the corner of Pinebush Road and Hespeler Road. The rapid transit corridor provides a seamless



Map 10: Building heights.



Map 11: Land use map.



Map 12: Transportation interventions.

connection for residents travelling to Downtown Galt and Kitchener/Waterloo. The interurban GO bus stop that was located in the site and an interurban Greyhound bus stop located in another area of the City have been moved to this intersection as well to allow for a seamless transition between the interurban and local network. A local route will continue to serve the interior of the site. Improved transfers and higher densities next to the transit stations will encourage residents to use transit, while easy-to-access retail and office space makes the area a viable destination for transit users as well.

New cycling routes on site connect with the city network. New bicycle racks at key locations also encourage cycling. There are sidewalks on all of the roads, and good urban design along with short street blocks and a mix of uses enhances the pedestrian realm. Even the parking garages have space for activities on the ground-floor, meaning that they contribute to the urban environment (similar to the parking structures in the Belmar redevelopment). For pedestrians, new tree-lined sidewalks and a more active streetscape makes walking across the site more attractive and safe. The introduction of short blocks, resulting in more frequent intersections, impedes vehicle speed and provides more opportunities for pedestrians to cross streets safely. The pinnacle of active transportation improvements on site culminate in the construction of a new pedestrian bridge over Highway 401. This allows pedestrians and cyclists to cross the highway safely, which is a critical piece of infrastructure that is long overdue in Cambridge.

4.5.3 Provide accessible community amenities

One of the major benefits of this project is that it adds a significant amount of greenery and common space to the site. New parks are located in strategic locations, and are connected by a series of walkable green routes. The parks may be surrounded by ‘social’ uses, in order to make the area more vibrant.

The space designated for office uses is intended to have a portion that will be designated to services for the local community. One such service is the provision of below-average-market-rent (BAMR) residential spaces. BAMR is a regional housing-affordability program that allows for low-income families to rent units that are not geared to income changes (Horne, 2010). Five percent of residential floor space on site is dedicated to BAMR. To address other shortcomings of the City, specific services may be added in the development include space for mentorship and educational programs specific for new immigrants and women. In theory this space will be built by the developer and sold to another entity (such as the City). These services are designed to help overcome much of the inequality and problems faced by local residents. The location of these services in a central area, with proximity to transit, means that the services will be accessible to many people throughout the City and will further enliven the site as a place of multiple destinations.

4.5.4 Promote economic vitality

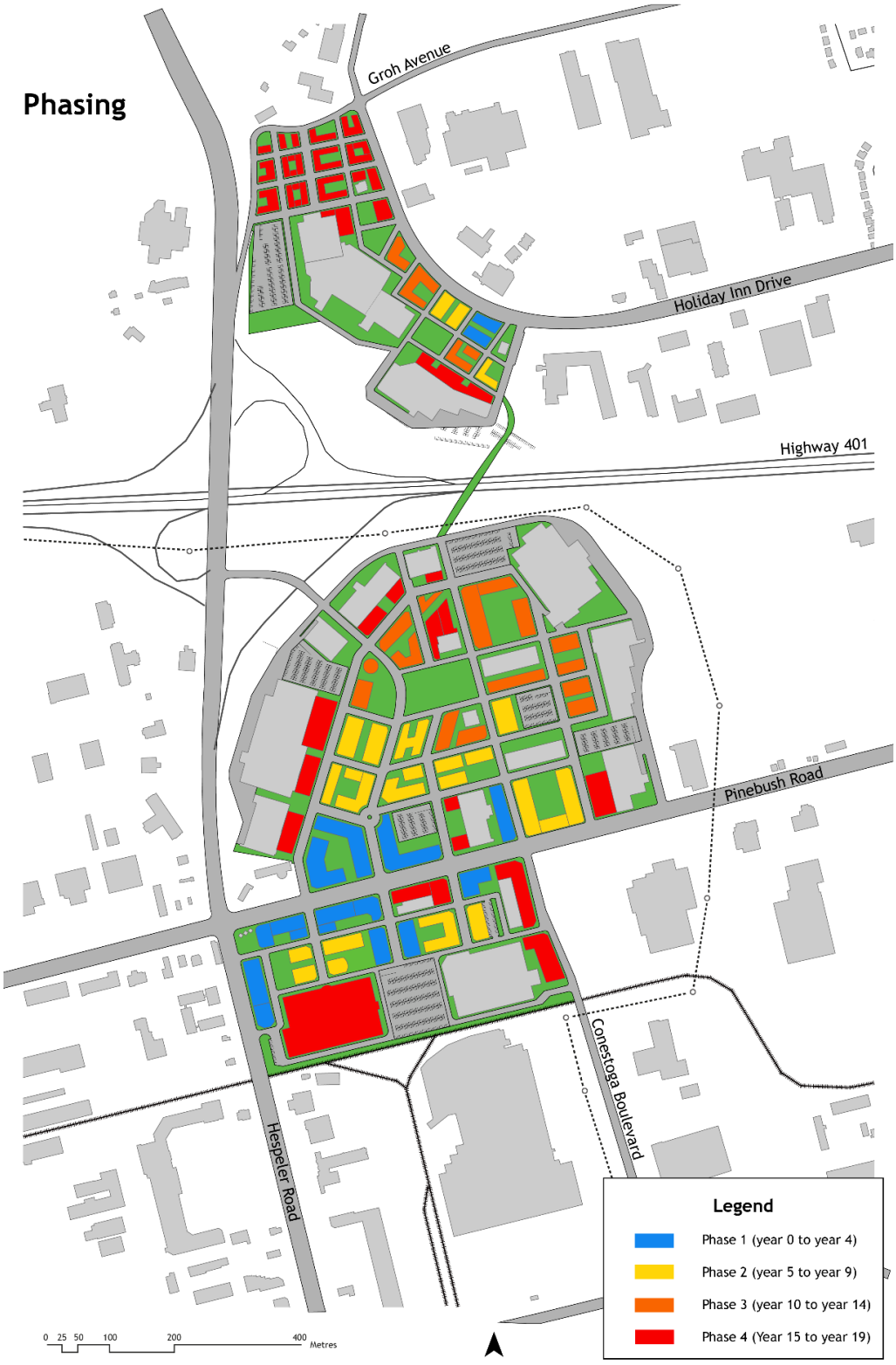
One objective of the project is to retain big-box anchor tenants. To accomplish this, several interventions were developed to minimise the impact on retailers while integrating the structures into the rest of the project. Functionally, there are parking structures located near major tenants that are accessible from periphery roadways, allowing shoppers to bypass residential streets to reach their destination. The periphery roadways also facilitate deliveries for stores. On-street parking along new roads makes parking convenient for shoppers, though this parking is metered to ensure high-turnover. Additionally, specific design treatments to big-box façades help the buildings integrate into the neighbourhood structure. Building operations to minimize the monotonous effect of the façades include addition, absorption, overlay, enveloping, and wrapping (see Part Two). The big-box stores continue their function, but are essentially pushed to the backdrop, where new, more lively buildings are the ones fronting the streets, making the streetscape more attractive to its users.

In order for the project to be successful, the actors in both the public and private sector must gain economic prosperity. For private actors, such as the retailers and the power centre owner, economic prosperity will come from increased residential density, thus expanding the customer base, improved transportation connections, which provide other areas with better connections, potentially drawing more customers as well. From the perspective of the municipality, prosperity will come in the form of increased tax revenue, as well as more employment opportunities for citizens. In order for the development to take place, the public sector should provide incentives to the developer to make the project more attractive. These incentives may take shape in many forms, including sharing some of the capital costs of the project (for parks and community buildings, for example), which is outlined further in section 4.7. Unlike other projects, like Belmar, the retailers will not be given incentives, because they are large chains that have the flexibility to open in new locations. Attracting independent retailers is not an explicit goal of this project. In that sense, this development project does not further conflict with the downtown retailers, which benefit from distinct architecture and small, independent shops.

4.6 Phasing

A major challenge to this project is the timing of implementation. Development of the site must proceed incrementally in order for the project to be tested and changed if it is not performing adequately. A phasing technique was developed which requires relatively small amounts of capital from both the public and private sector at first, with larger infrastructure investment being made later in the project lifecycle, once new development has been established.

Map 13 shows possible construction phasing in five year increments. The first phases focus on ‘low-impact’ areas within the site, which are areas that are located in prominent positions but require little intervention to develop. This first area is on both sides of Pinebush Road and on the eastern side of Hespeler Road. These developments may occur on existing parking lots and undeveloped land.



Map 13: The phasing of the project.

The next phases focus development around major nodes. It is now that a new block structure may to be introduced, which requires more investment from the developer. Some of the smaller retail buildings that are not properly oriented will have to be demolished, with their tenants relocated into new ground-floor retail where possible. Other major investments, such a parking garages and parks, may also take place at this time. In later phases, development continues within the blocks, and expands to the northern part of the site. The pedestrian bridge across Highway 401 may be considered at this time. The last phase, if the project has been successful, should focus on the more difficult 'envelopment' of existing box stores. This may be the most disruptive phase for retailers, who need to be able to serve customers throughout the construction.

4.7 Public and private sector responsibilities

There is a certain amount of risk for developers to undertake this project owing to its complexity and its uniqueness. In order to ease pressure on the developers, the City should take a proactive role in the redevelopment process. One of the ways that the City can do this is by providing some of the necessary infrastructure needed for the site. The first thing the City can do is to update its zoning bylaws and to create design guidelines for the area. The project will be much more appealing once planning permission has been granted. The developer may be best suited to pay for some of the capital infrastructure costs upfront, such as new roadways and plumbing. The City should absorb maintenance costs afterwards. It will ultimately be up to the City to decide what level of investment is possible to make the project worthwhile.

4.8 Financial analysis

The costs and benefits of the project are projected with a pro-forma analysis (see Table 6; the detailed pro-forma is in Appendix D). This is not a comprehensive financial analysis, but it does provide a preliminary assessment of how much this project might

cost versus how much revenue it could potentially generate. The financial analysis covers a twenty year period, and makes several assumptions:

- Land purchase occurs in two phases, the first is for the southern section and lots abutting Pinebush Road, the second is for the rest of the site;
- Construction time for each building is 12 months;
- The year after construction, 85% of the total square footage is sold;
- The developer pays for parks on site by contributing 1% of the total construction cost to landscaping;
- The developer shares the cost of building infrastructure with the municipality by contributing 1% of the total construction cost to an infrastructure fund; and
- Construction costs include the cost of parking.

Table 6: Pro-forma results.

Variable	Result
Internal-rate-of-return (IRR)	14%
Discount rate	6%
Net-present value (NPV)	$84,211,627.34
Total Cost	-$1,365,923,120.10
Total Sales	$1,630,754,415.95
Return-on-investment (ROI)	19%

The cost of construction was estimated using a cost-guide for Waterloo Region (Altus Group, 2014). The costs per square foot are meant to represent the full costs of construction, including materials, parking, labour, etc. Medium range cost estimates were used. The selling prices were determined by investigating the prices of similar properties across Cambridge. Medium range selling prices were used (see Appendix D for prices). Approximately five percent of the total residential space is offered at below-average-market-rent, which the developer will sell at a much lower cost than market rent housing.

It was estimated that 23,225 m^2 (250,000 square feet) of residential floor space is built each year. If each residential unit was to be 93 m^2 in size, this represents 250 housing units coming on the market each year. Given the history of housing starts in Cambridge, these units represent a small portion of total housing starts in any given year, meaning it is reasonable that the local housing market can support this over the long-term. Retail and office spaces are built at a pace of 4,645 m^2 (50,000 square feet) per year.

The total cost of the project using these estimates is more than $1.36 billion, with the total sales revenue being about $1.63 billion, leaving the developer with a return-on-investment of 19%. The internal-rate-of-return from the yearly cash flows was calculated to be 14%, and the net-present value is about $84 million using a 6% discount rate. This assessment makes it clear that there is money to be made in the redevelopment project, but it will not be a very lucrative project unless it is followed through to the end, which presents a level of risk for the developer.

4.9 Summary

With the use of planning interventions explored in Part 2 and the information revealed in the site analysis in Part 3, a redevelopment plan was developed for a power centre in Cambridge. The plan focussed largely on densification and diversification of the existing site. New residential, office, and retail uses were added along a brand new urban grid, with new parks that provide areas for people to interact with one another. The plan includes space for services that may be geared at addressing the shortfalls experienced in the region. The higher densities will be useful in the future, as rapid transit will serve the area. The redevelopment was, at first glance, profitable for the developer, though there needs to be a well-established guide to sharing responsibilities and costs with the public sector. This redevelopment plan is in conformity with legislation, and is the type of development that the City of Cambridge and other municipalities can seek in the future if they are to find alternatives to urban sprawl.

Conclusion

There is enough land in the suburbs to accommodate long-term growth if it is properly managed. On a single-use suburban site, the redevelopment plan presented in this paper found a way to reuse the land in order to accommodate more than 464,515 m^2 of new floor space in a mixed-use development. This development can be oriented in a way to minimize the negative externalities of big-box retailers, while promoting healthier modes of transportation and provide the community with a variety of services. The development is profitable for developers, albeit it requires a great deal of commitment from the public sector.

Retail form in North America has changed over the years, along with the form of cities. In the late 19th century, department stores were commonplace in major downtowns. The stores were located at important intersections, easily accessible by transit, and provided their customers with lots of services and a luxury shopping experience. These stores were quite large and had purchasing power that outcompeted many independent retailers. In Canada, a catalogue service was implemented that allowed people to order items from the comfort of their home, owing in part to new technological developments in the form of reliable rail and mail service. In the post-war era, cities expanded outwards into new areas, as large areas were built in single-use neighbourhoods, using efficient methods to mass produce homes, a symbol of the Fordist period. Enclosed shopping malls began to appear in new suburbs, many of which had the same anchor tenants from the downtown department stores. Malls were originally designed to act as a civic centre for suburbs that lacked such space. The shift towards automobile-dependent urban forms and new shopping malls ended up hurting the performance of the downtown retailers. In the 1980s, large-format retailers began to congregate in power centres. Power retailers employ a number of techniques, such as advanced shipping and tracking of goods, cheap construction, and purchasing directly from manufacturers, in order to make their processes as efficient as possible, which results in large discounts for consumers. By the 1980s, the retail market was saturated with too many malls, and an increase in household mobility meant that stores were

competing across entire regions. Power centres capitalised on this given their location next to highways and their ability to offer many of the same products available in malls and downtown stores for less money. That said, power centres do have problems: they take up a lot of land, they generate traffic congestion, they pay less in property taxes than they cost the municipality, they are isolated from other neighbourhoods, and they are oriented towards automobiles.

One method of reacting against urban sprawl and low-density areas such as power centres is to focus future development in more compact centres, which can be accomplished through infill. There are many examples of projects that have redeveloped large retail sites to add diversity and density to the sites. One such site was the redevelopment of a defunct shopping mall in Lakewood Colorado, which transformed the site into a new urban centre, complete with new housing, new retail, new public spaces, and new connections to surrounding neighbourhoods. This was done by a private developer and with strong support from city council. The result is a compact development that is a destination and an origin for many people.

Existing and proposed legislation in Ontario puts an emphasis on redeveloping within built-up areas in order to reduce the need for future urban sprawl. In Cambridge, one area that could support more development is the power centre located at Hespeler Road and Highway 401. This area is very large and much of the land is underutilised. It is also an area identified for future intensification by the Region of Waterloo and the City, and it lies in the station area of a proposed LRT, which means the power centre is poised to be rezoned and rethought in the future. One such possibility to redevelop the area was proposed in this paper, which focussed on meeting the objectives outlined in various legislation enacted by different levels of government. These include creating a dense, compact neighbourhood that supports active and public transportation, while also providing services for the community at large. The financial analysis conducted here shows that the project will be profitable for developers. What has not been shown is the underlying costs of the existing power centre that will be reduced. With new

density in this area, it contributes more to the municipality in taxes, and the municipality in turn is more capable of providing services to this area.

Looking forward, with the provincial government of Ontario further supporting infill and compact development, it will be necessary for municipalities in the province, especially those in the Greater Golden Horseshoe, to explore different ways to grow in the future. With substantial population growth expected in the region over the next few decades, it is imperative that municipalities and developers alike begin to put more emphasis on rethinking existing areas in cities, and to target underutilised land for redevelopment as opposed to continuous sprawl.

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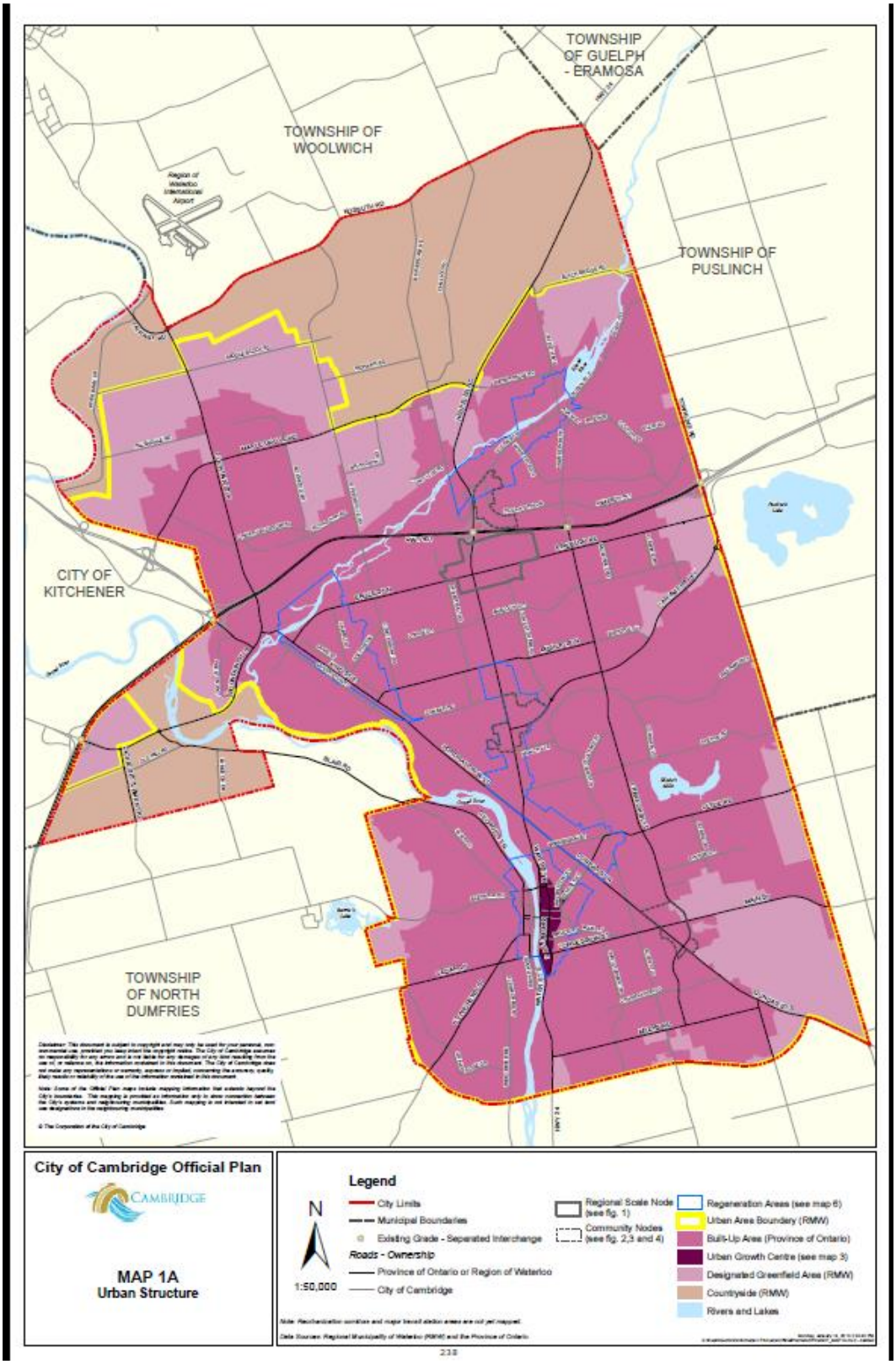
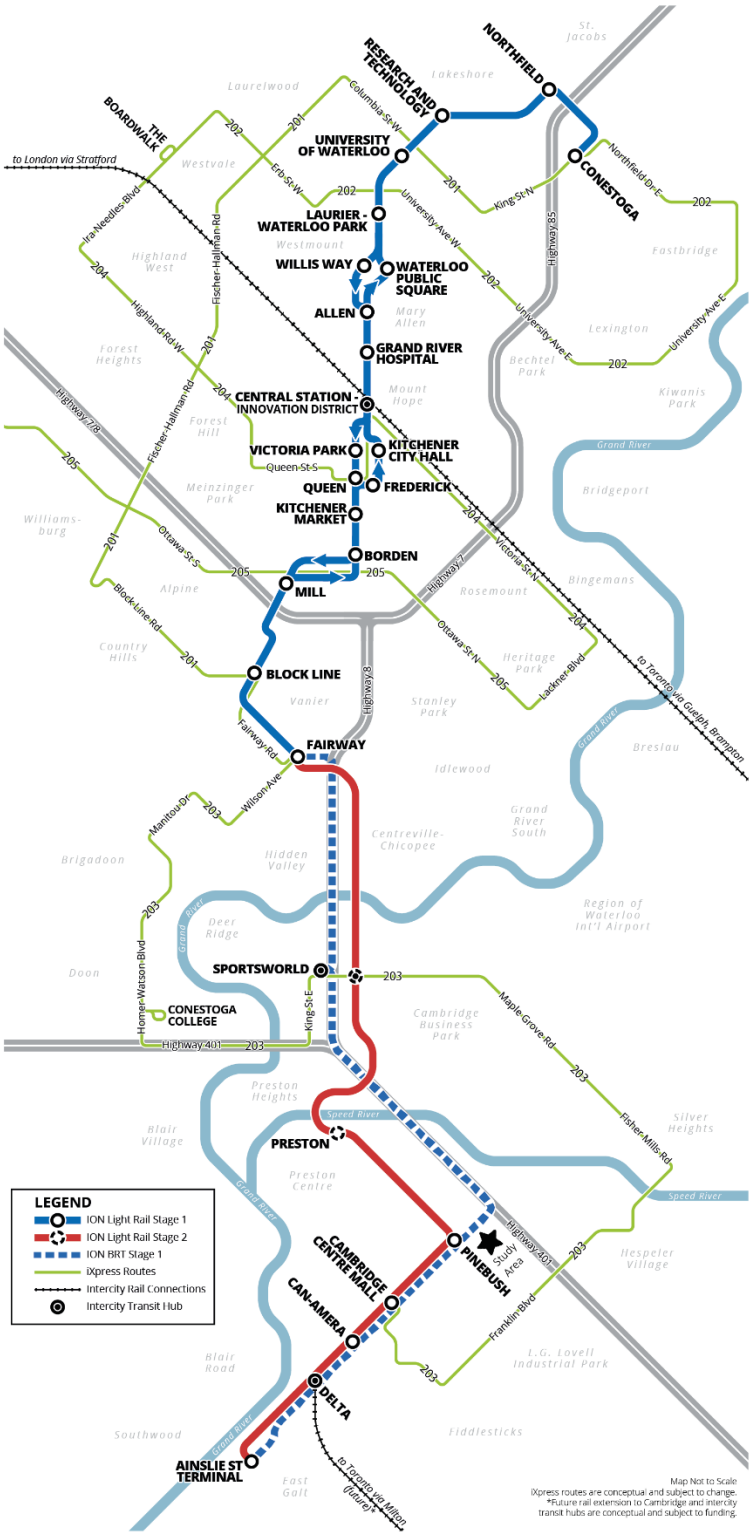
Appendix A: Urban growth centre in Cambridge



Appendix B: Ion rapid transit



Appendix C: List of tenants in power centre

South section	
Tenant	**Type**
2001 Audio Video	Retail general
Allstate Insurance	Service
Canadian Tire	Retail general
Dawson Dental	Service
First Choice Haircutters	Service
Henry's Photography	Service
Home Depot	Hardware

South section	
Tenant	**Type**
Rogers	Service
Sally Beauty	Service
Telus Mobility	Service
The Source	Retail general

Middle section	
Tenant	**Type**
Addition Elle	Clothing
Ardene	Clothing
Bed Bath & Beyond	Retail general
Best Buy	Retail general
Boston Pizza	Restaurant
Carter's Osh Kosh	Clothing
Chuck E. Cheese's	Restaurant
Danier	Clothing
David's Bridal	Clothing
Dollarama	Retail general
Gap	Clothing
Garage Clothing	Clothing
Guess	Clothing
L.A Fitness	Service
La Vie En Rose	Clothing
Laura's Shoppe	Clothing
Le Chateau	Clothing
Lone Star	Restaurant
Mark's Work Warehouse	Clothing

Middle section	
Tenant	**Type**
Maurices	Clothing
Melanie Lyne	Clothing
Michaels	Retail general
Montana's	Restaurant
Moores	Clothing
Old Navy	Clothing
Reitmans	Clothing
Ren's Pets	Pet
Rona Home & Garden	Hardware
Roots	Clothing
Smart Set	Clothing
Solutions	Clothing
Staples	Retail general
The Keg	Restaurant
Tommy Hilfiger	Clothing
Town Shoes	Clothing
Urban Barn	Furniture
Urban Planet	Clothing
Walmart Supercentre	Retail general

North section	
Tenant	**Type**
Dollar Tree	Retail general
Gino's Pizza	Restaurant
Jamieson Dental	Service
Pet Value	Pet
Sail	Retail general
TD Canada Trust	Service
The Beer Store	Food store
Tim Hortons	Restaurant
Treasure Hunt	Retail general
Zehrs Markets	Food store

Appendix D: Detailed pro-forma

	Year 0	Year 1	Year 2	Year 3	Year 4
Land Cost	-30000000				
Demolition					
Residential sqft	250000	250000	250000	250000	250000
Construction cost	-58750000	-58750000	-58750000	-58750000	-58750000
Sales		76500000	76500000	76500000	76500000
Below Average Market Rent sqft					
Construction cost					
Sales					
Retail sqft	50000	50000	50000	50000	50000
Construction cost	-5500000	-5500000	-5500000	-5500000	-5500000
Sales		6587500	6587500	6587500	6587500
Office sqft					
Construction cost					
Sales					
Park landscaping	-642500	-642500	-642500	-642500	-642500
Infrastructure	-642500	-642500	-642500	-642500	-642500
Cash Flow	-95535000	17552500	17552500	17552500	17552500

	Year 5	Year 6	Year 7	Year 8	Year 9
Land Cost	-41000000				
Demolition	-3000000				
Residential sqft	250000		250000	250000	250000
Construction cost	-58750000		-58750000	-58750000	-58750000
Sales	76500000	76500000		76500000	76500000
Below Average Market Rent sqft		250000			
Construction cost		-58750000			
Sales			55250000		
Retail sqft	50000	50000	50000	50000	3429
Construction cost	-5500000	-5500000	-5500000	-5500000	-377190
Sales	6587500	6587500	6587500	6587500	6587500
Office sqft	50000	50000	50000	50000	50000
Construction cost	-10750000	-10750000	-10750000	-10750000	-10750000
Sales		14577500	14577500	14577500	14577500
Park landscaping	-750000	-162500	-750000	-750000	-698771.9
Infrastructure	-750000	-162500	-750000	-750000	-698771.9
Cash Flow	-37412500	22340000	-85000	21165000	26390266.2

	Year 10	Year 11	Year 12	Year 13	Year 14
Land Cost					
Demolition					
Residential sqft	250000	250000	250000	250000	250000
Construction cost	-58750000	-58750000	-58750000	-58750000	-58750000
Sales	76500000	76500000	76500000	76500000	76500000
Below Average Market Rent sqft					
Construction cost					
Sales					
Retail sqft					
Construction cost					
Sales	451770.75				
Office sqft	50000	50000	50000	50000	50000
Construction cost	-10750000	-10750000	-10750000	-10750000	-10750000
Sales	14577500	14577500	14577500	14577500	14577500
Park landscaping	-695000	-695000	-695000	-695000	-695000
Infrastructure	-695000	-695000	-695000	-695000	-695000
Cash Flow	20639270.75	20187500	20187500	20187500	20187500

	Year 15	Year 16	Year 17	Year 18	Year 19
Land Cost					
Demolition					
Residential sqft	250000	250000	250000	173523	
Construction cost	-58750000	-58750000	-58750000	-40777905	
Sales	76500000	76500000	76500000	76500000	53098038
Below Average Market Rent sqft					
Construction cost					
Sales					
Retail sqft					
Construction cost					
Sales					
Office sqft	50000	6224			
Construction cost	-10750000	-1338160			
Sales	14577500	14577500	1814607.2		
Park landscaping	-695000	-600881.6	-587500	-407779.05	
Infrastructure	-695000	-600881.6	-587500	-407779.05	
Cash Flow	20187500	29787576.8	18389607.2	34906536.9	53098038

Cost to build	Selling Price
Residential: $235/sqft	$360/sqft
BAMR: $235/sqft	$260/sqft
Retail: $110/sqft	$155/sqft
Office: $215/sqft	$343/sqft
Park Landscaping: 1% of total construction cost	
Infrastructure: 1% of total construction cost	

Variable	Result
Internal-rate-of-return (IRR)	14%
Discount rate	6%
Net-present value (NPV)	$84,211,627.34
Total Cost	-$1,365,923,120.10
Total Sales	$1,630,754,415.95
Return-on-investment (ROI)	19%

Total residential sqft	4673523
Total retail sqft	453429
Total office sqft	556224