

/ A Suburban Transportation Hub Prototype /

By

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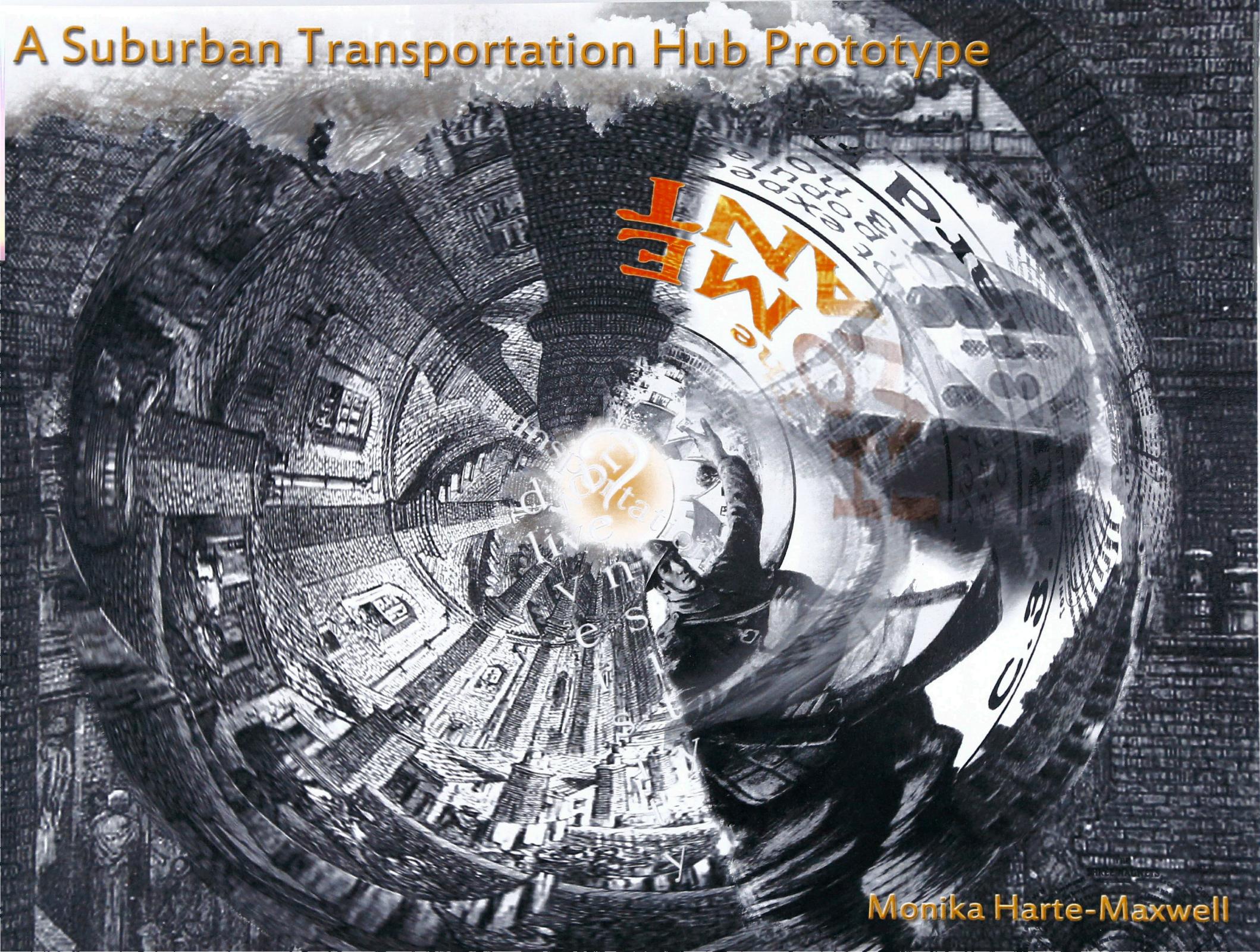
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ABSTRACT

At the end of the 19th century and the beginning of the 20th century, mass transportation was important for the development of a community or city. Throughout the first half of the 20th century, mass transportation maintained its popularity and importance within the greater socio-economic context of city life in Europe. By contrast, in North America, the importance of public transportation and therefore associated infrastructure such as the transportation hub/centre declined as more North Americans opted to travel by car.

Transportation centres are an essential aspect of viable and thriving cities. Transportation centers are gateways for cities and neighbourhoods and they have the ability to cater to the commuter and the adjacent neighbourhood. This project seeks an architectural prototype for the transportation centre/hub in a suburban/exurban environment by examining the history of communities planned around mass transportation.

A Suburban Transportation Hub Prototype



Monika Harte-Maxwell

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1.0 Introduction

The cities will be part of the country; I shall live 30 miles from my office in one direction, under a pine tree; my secretary will live 30 miles away from it too, in the other direction, under another pine tree. We shall both have our own car. We shall use up tires, wear out road surfaces and gears, consume oil and gasoline. All of which will necessitate a great deal of work ... enough for all¹.

More than forty years ago, Le Corbusier described what for many today is a reality.

Thousands of Ontarians spend many hours in the car driving thousands of kilometers a year as part of their daily commute either due to lack of a viable alternative, such as public or mass transportation, or to their desire to live in a particular location. Public transportation refers to a “service that is available to the general public and that carries passengers to destinations for a fee. Public transportation is also known as *mass transportation* or *mass transit*, since many people use it to travel to common destinations”². From here on, public transportation, mass transportation or mass transit will be used interchangeably.

Although the car is important in the daily lives of many North Americans and has been a great enabler in how we organize our daily routines, it does not mean that North Americans should have to sacrifice the quality of their built environment through their accommodation for the car and therefore completely ignore the pedestrian desires and experiences.

Mass transportation is a sustainable solution to moving great numbers of individuals and is therefore an essential service to economically viable and thriving cities. An important component of mass transportation is the transportation centre/hub. Transportation centers and hubs associated with mass transportation have the opportunity to become gateways for

¹ Le Corbusier. *The Radiant City*. (New York: Orion Press, 1967) 74.

² “public transportation.” *Encarta Encyclopedia*. 2009. MSN Encarta Online. 1 April 2009.

<http://ca.encarta.msn.com/encyclopedia_761578120/public_transportation.html>

cities and neighbourhoods. If they include various services they have the ability to cater not only to the commuter, but also to the adjacent neighbourhood. A transportation centre can serve as a public space for a community.

Envisioning the transportation centre as a multiuse facility may enhance its success as well as the vitality and the future neighbourhood. By employing sustainable design principles and drawing upon some of the principles presented in historical case studies, I propose to design a transportation centre/hub that will serve as a blueprint for future transportation centers and help set the terms of reference for pedestrian-friendly communities that will develop around them. The proposed transportation centre is located in Kitchener, Ontario. It will serve the commuter GO Train that is slated to extend its service from Toronto to Kitchener by 2011.

At the end of the 19th century, and throughout the beginning of the 20th century, mass transportation was key at instigating the development of a community or a city. Both in Europe and North America many towns would not have been viable had it not been for the extension of the rail line. Although the concepts behind the new cities and town movements might have at first been in response to more complex social and economic issues, the creators knew the social importance of mass transportation to the towns and its residents, by providing a link to a larger metropolis, services and employment.

Throughout much of the 20th century, mass transportation maintained its popularity and importance within the greater socio-economic context of city life in Europe and thus received great support and funding in most if not all European nations. In North America, by contrast, public transportation's importance and frequency of use declined as the automobile became the primary mode of conveyance.

With the decline in the number of trips North Americans took using mass transportation, the funding for mass transportation and associated infrastructure declined. Along with the greater reliance on the automobile, transportation hubs became mere parking lots, around nondescript ticket booths. Therefore, unlike in Europe, North American transportation centers generally did not evolve into community hubs/public. They often were located on the town's periphery where land was cheaper since several acres were necessary to accommodate large surface parking lots. In Europe the prevalence of car ownership started to rise only in the second half of the 20th century and only rivaled North American rates at the turn of the 21st century. Accordingly the evolution of the transportation centre in Europe was significantly different. In North America, the relationship of commuters to transportation centers was closely linked to the car, whereas in Europe pedestrian needs and accessibility continued to dominate. Through the design I will attempt to reconcile the role of the pedestrian and the vehicle in the North American transportation centre and in relation to a 'main street'.

1.1 The Revolt Against Urban Slums and the Rise of Planned Communities around Public Transportation

During the industrial revolution large number of people began to abandon the country for the city in search of employment and a better life. Within a relatively short period of time, the population of many industrial cities ballooned. Industry needed workers and workers needed a place to live. To cope with the astronomical influx of people, tenement housing quickly sprang up in the least desirable parts of the city near the industrial facilities. More often than not, tenement housing was severely overcrowded, oftentimes accommodating up to eight or more family members to a room, without running water, washroom facilities or ways of disposing of human waste³. Often the rooms in the tenements lacked exterior windows, and where windows existed, they faced into squalid courtyards or alleys. The New York Dumbbells (see Figure 1) shows the shaft-like air well created between the closely crowded tenement buildings. A breeding ground for various communicable diseases, the death rate among the tenement residents—children and adults alike—was far higher than in more affluent parts of the city or the surrounding countryside⁴.

³ Peter Hall. *Cities of Tomorrow*. (Oxford: Blackwell Publishers Ltd., 1996) 19.

⁴ Ibid., 34.

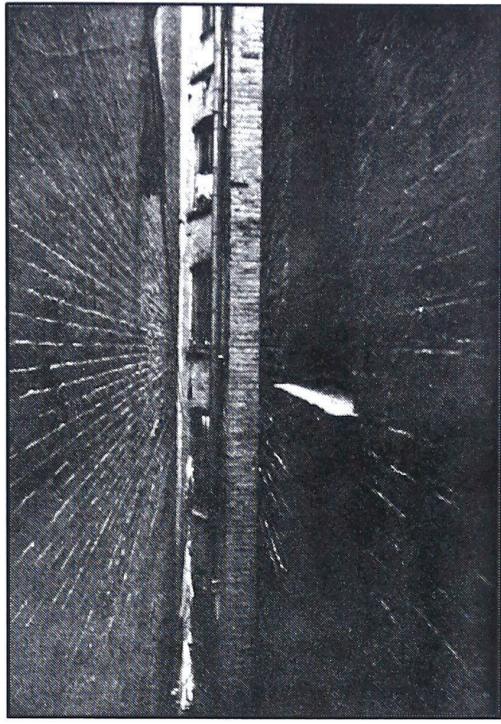


Figure 1: New York Dumbbells

Air pollution, overcrowding, congestion and countless other grievances caused a number of socially minded individuals to become outraged at the living conditions of the growing working class. They began to devise ways to address the plight of the urban poor. Many of the proposed solutions were implemented, including clean up of the tenement districts and sometimes even complete demolition of the worst of the slums. Some of the more successful and interesting solutions were first designed and implemented in Europe around rail lines, subways and streetcars.

2.0 Towns and suburbs before World War II

2.1 United Kingdom: Garden Cities and Garden Suburbs

In the early 1900s, Ebeneezer Howard proposed what he believed would be a solution to the problems of housing. Howard creatively combined numerous concepts circulating among the free thinkers of the time and encapsulated them in the Garden City. The Garden City would house large numbers of individuals in humane conditions, without overcrowding and at the same time avoiding isolation by organizing the city around a rail line.

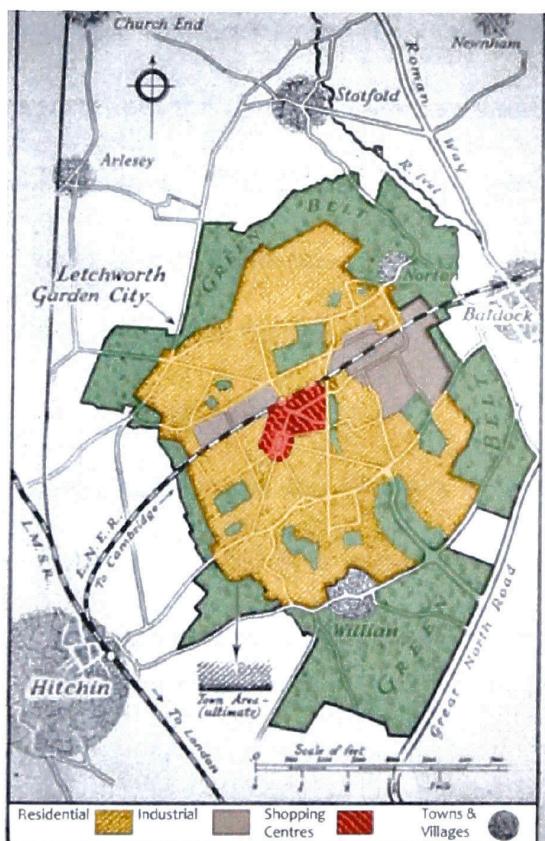


Figure 2: Plan of Letchworth Garden City

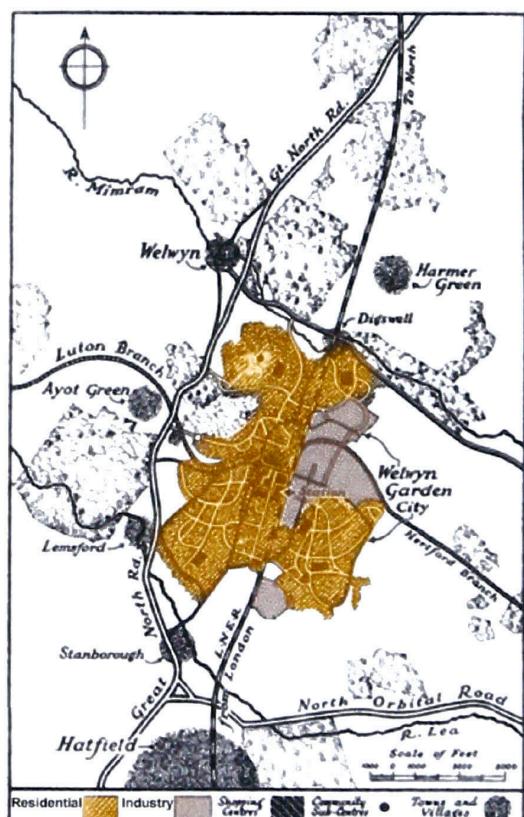


Figure 3: Plan of Welwyn Garden City

A common misconception about Howard's garden cities is that he championed low density development and sprawl. Instead, Howard envisioned the garden city's residential

density to be similar to residential densities of inner London⁵. One reason Howard was able to achieve comparable densities to inner London is that a number of laws, going as far back as Elizabethan London, ensured a relatively low density within greater London in order to manage the numerous outbreaks⁶. Howard believed these satellite towns should be constructed to house the excess people flocking to industrial centers. He envisioned the garden city as self sufficient, surrounded by a green belt and connected to a much larger metropolis via a short train ride. To achieve self sufficiency, it was important that these new towns include commercial and institutional space, community centers, schools and industry. The design of the Garden City also ensured everyone in town had access to mass transportation: the train was therefore within a short ride of a larger metropolis.

As mentioned previously, the driving force was to improve the living conditions of the working class both rural and urban. To make this feasible, he borrowed an idea from another progressive thinker, Thomas Spence, of purchasing land for the construction of the town at near agricultural values⁷. Only two towns fully reflect Howard's garden city principles: Letchworth and Welwyn, both within a short train ride of London. The towns were built and funded by wealthy and socially minded individuals and not the government, and were ultimately to be turned over to their inhabitants.

⁵ Ibid., 88.

⁶ A. E. J. Morris. *History of Urban Form*. (China: Longman, 1994) 249-50.

⁷ Hall, 90.



Figure 4: Letchworth Garden City, 1915

The rail stations at Letchworth and Welwyn (see town plans in Figure 2 and Figure 3) were centrally located, as was industry. Hence for many, employment was within a short walk. Communal park space was scattered throughout both cities, allowing residents to benefit from numerous open recreation spaces. Likewise, the commercial area was also centrally located.

The oppressive conditions associated with industrial tenement housing, was eliminated in the garden city and garden suburb. Instead, designers and planners alike, embraced the ‘back to the land’ movement which sought inspiration in the landscape and ideals of simplicity, integrity and rusticity: “clean streets with free countryside all around; a belt of fine gardens and orchards, so that from every point in the city one [could] reach the pure air, the grass and the distant horizons”⁸.

Although the Garden City homes tended to be either low rise attached housing around open park-like spaces, or single detached homes with landscaped front gardens (see Figure 4), the designers were able to achieve much higher densities than previous *laissez-faire* exurban development. Not only were soot filled air, grime covered stone, dark, narrow and

⁸ William J. Curtis. *Modern Architecture since 1900*. (Singapore: Phaidon Press, 1996) 185.

pungent streets replaced with pastoral scenery, well tended gardens and a generally more open environment, but also the cooperative principals behind Howard's vision gave residents a direct stake in the success of the city and an opportunity to accumulate wealth, something previously unimagined among the working class.

Again, garden cities were master planned, self contained towns that contained housing, industry, commerce and were intended to be surrounded by an agricultural green belt and within a short commuting distance from a larger metropolis. The garden city population was expected to reach a maximum of around 30,000 residents, at which point another garden city would be constructed nearby. Garden suburbs, on the other hand, were created "on similar principles, for the immediate relief of existing towns"⁹. They were envisioned to be part of a city and not as separate entities, hence were not designed to be self-sufficient. Garden suburbs were not seen as inferior to the garden city and were in fact deemed deserving of support by the town planners of the day¹⁰.

At around the same time as work commenced on the first garden city, Sir Raymond Unwin, a British engineer and planner, along with Barry Parker, an interior decorator, designed and built the first garden suburbs of Brentham, and a few years later the much more famous Hampstead Garden Suburb¹¹. The Great Western Railway expansion into the country allowed for the construction of residential districts. These suburbs were meant to provide immediate relief to the overcrowding in cities such as London. What is unique about Unwin's designs is that he proposed the relatively new and radical idea of providing more space for each residence without using any more land than the minimum zoning standard allowed in conventional town and suburb planning. He believed that by devoting

⁹ Hall, 108.

¹⁰ Denis Hardy. *From Garden Cities to New Towns*. (London: Chapman and Hall, 1991) 61.

¹¹ Hall, 103.

less land to roads, more could be allotted to the individual¹². This could be accomplished because it was assumed the inhabitants would rely on mass transportation as opposed to personal means of conveyance.

Unlike the garden city, the garden suburbs did not include industry and commuters relied on the adjacent rail station¹³. Although initially, the land purchased for construction of these suburbs was bought at a low cost, land speculation eventually drove up land prices such that the working class could not afford the homes in these enclaves.

¹² Ibid., 108.

¹³ Ibid., 105.

2.2 France: Le Cité Jardin

On the other side of the English Chanel, Paris was struggling to house large populations of workers during the latter part of nineteenth century. Baron George Haussmann was commissioned with the task of making Paris more efficient and mobile. His design “cut wide boulevards through old fabric...to render...the city more efficient by liberating circulation; [his designs] celebrate[d] the monuments and glory of empires past and present by linking focal points with vistas; to let in light, air and greenery for the bourgeoisie, but push the poor elsewhere”¹⁴. Unlike cities elsewhere in Europe and North America where the wealthiest retreated to the country, Haussmann’s design ensured that the middle class would remain in the centre of Paris¹⁵. Since the centre of Paris commanded higher rents, the working classes were relegated to the outskirts of the city. Likewise, the relatively inexpensive and already well developed public transportation at the turn of the 20th century, meant that the working class could afford to own property on the outskirts of Paris and still be within short commuting distance of work and the city. Shortly after WWI, property ownership among the working class rose substantially due to the reasons mentioned above. The majority of the working class could only afford to build homes themselves from readily available materials; hence these suburban developments lacked some of the most rudimentary of services already available in centre of Paris. By the 1920s these neighbourhoods were labeled as slums and shanty towns.

To deal with shanty town developments, the French borrowed ideas from Howard’s garden city and created the *Cités Jardins* movement. Unlike Letchworth or Wellwyn Garden Cities, however, the French *Cités Jardins*, was more a garden suburb, than a garden city. *Cités*

¹⁴ Curtis, 34.

¹⁵ Norma Evenson. "Living in the Paris suburbs." *Journal of the Society of Architectural Historians*. 34.4 (1975): 317.

Jardins were never whole towns a short commute from a larger metropolis, but rather they were districts within a larger metropolitan fabric tied back to the core through rail links.

The French government, too, purchased land at low agricultural prices. Between 1916 and 1939 sixteen new districts were designed at relatively low densities, in park like settings and with some social services¹⁶. As land prices, construction costs and population rose and with the modernist movement underway, French planners and designers had to make modifications to the original *Cités Jardins* to include mid-rise apartments at ever greater densities¹⁷.

¹⁶ Hall, 119.

¹⁷ Ibid., 119.

2.3 North America

2.3.1 Nineteenth Century Railroad Suburbs

By the middle of the 19th century, decades before the garden city and garden suburb movements in England, a number of suburbs were built around railway lines in the United States. These included Llewellyn Park in West Orange, New Jersey (1853), Chestnut Hill in Philadelphia (1854), Lake Forest, Illinois (1856) and Riverside, Illinois (1869)¹⁸. However, unlike the future garden cities of England, these communities were not entirely reliant on mass transportation. Although the rail line aided in the conception of these suburbs, the private carriage and later automobile were also extremely important. Hence, in many ways, the aforementioned communities were not only less compact, catering to upscale residents but also less self-sufficient; residents relied on personal modes of conveyance and public transportation for obtaining the essentials and for access to employment.

¹⁸ Ibid., 61.



Figure 5: Map of Llewellyn Park and the Ramble with Haskell advertising '750 Acres of land divided into Villa Sites from 1 to 10 Acres each with a Ramble of 50 Acres reserved for the owners of the sites'.

Llewellyn Park was developed by Llewellyn Solomon Haskell—a businessman—and architect Alexander Jackson Davis¹⁹. Over a span of two decades beginning in the early 1850s, Haskell purchased over 750 acres of picturesque land and built upscale homes near an existing rail line 13 kilometres from New York City²⁰. Decades before Howard's socially progressive and innovative Garden City movement, Haskell was not concerned with

¹⁹ Leland M. Roth. *A Concise History of American Architecture*. (Boulder: Westview Press, 1980) 105.

²⁰ *Llewellyn Park*. November 13, 2008. <<http://www.llewellynpark.com/History-of-Llewellyn-Park~101499~13266.htm>>

improving the living situations of the masses, but rather the elite few who enjoyed upper class standing.

Homes were built on one to ten acre sites, allowing the residents to live in a pastoral landscape, yet still within a short commute to work and amenities of the big city. This is the beginning of the exurban middle class community and a continuation of a previously established tradition of separating work from home. The railroad allowed the residential-only community to be even further out. In his planned community, Haskell integrated a large open common space known as *The Ramble* which included open gathering spaces, numerous ponds and a forest that eventually became the centerpiece of the community. Haskell was an entrepreneur and he recognized an opportunity for a profitable venture by creating a retreat to the country for the wealthy, following the extension of a rail line.

Instead of delighting in being among the first developer/architect partnerships in envisioning a community around something as critical as a public transportation hub, Llewellyn Park prides itself at being the first gated community in the United States²¹. The railroad service, which was critical to its inception, has since ceased to operate and current residents rely on express busses and a rail link from a neighbouring South Orange for their trips into Manhattan²².

Llewellyn Park was always a suburb, never self-sufficient; it was and still is essentially a bedroom community and its residents seek work, entertainment, restaurants and shops elsewhere.

²¹ Most Expensive Gated Communities 2005. January 10, 2009.

<http://www.forbes.com/realestate/2005/11/17/expensive-gated-communities-cx_sc_1118home_ls.html>

²² New York Times. January 12, 2008.

<<http://www.nytimes.com/2008/12/14/realestate/14living.html?pagewanted=1>>

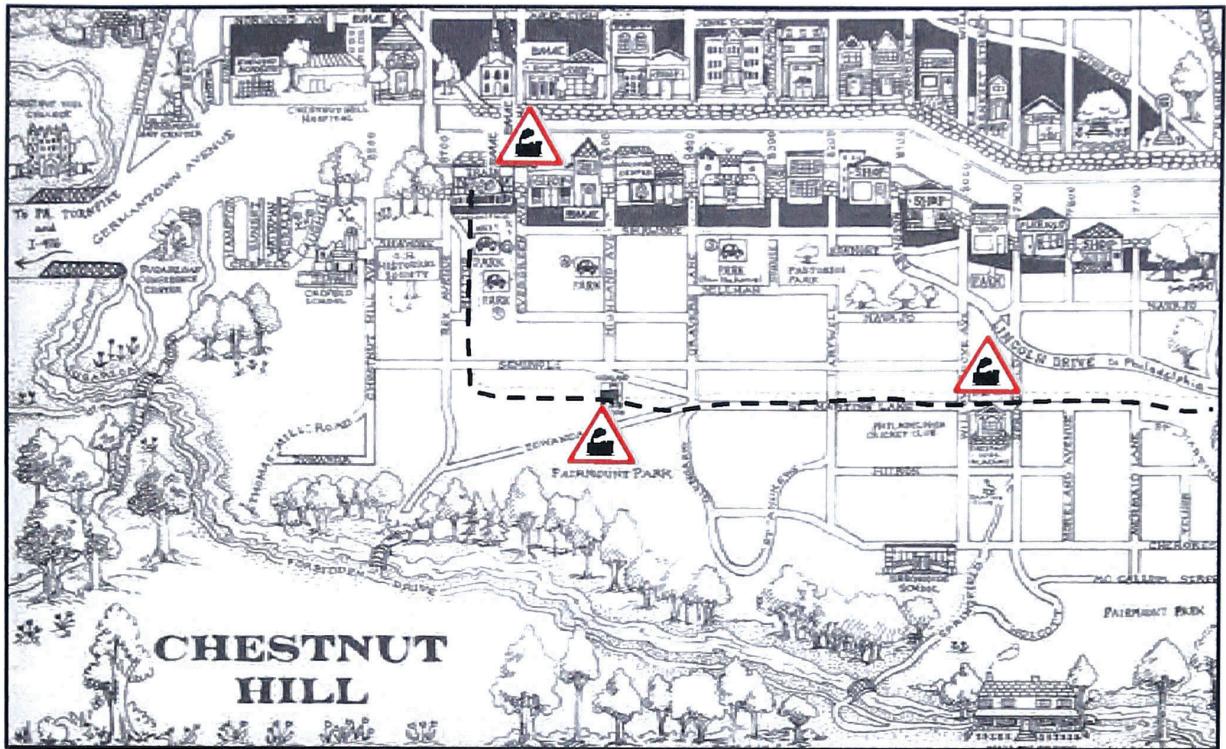


Figure 6: Map of Chestnut Hill showing rail line (dashed)

Unlike Llewellyn Park, which was located outside of city limits, Chestnut Hill was located on a rail line within the city limits of Philadelphia, only 16 kilometers from city center²³. Chestnut Hill is the direct result of a wealthy entrepreneur extending two rail lines to an existing village upon the village's annexation by the city proper.

Due to its altitude, Chestnut Hill became a logical vacationing spot for affluent Philadelphians searching for a respite from the abominable summer heat in the 19th century. The rail line allowed wealthy families to establish permanent residences in this newly amalgamated suburb, away from the increasingly dense and heterogeneous city.

Unlike Llewellyn Park, which was essentially started from scratch, Chestnut Hill built upon a pre-existing village. The demographics of Chestnut Hill thus were more diverse than

²³ David R. Contosta. *Suburb in the City: Chestnut Hill, Philadelphia 1850 - 1990*. (Columbus: Ohio State University Press, 1992) 1.

Llewellyn Park and included craftsmen, trades people, labourers and, of course, upper middle-class commuters. Although many of the farmers and artisans in Chestnut Hill would bring their goods to be sold at the “great store”, Chestnut Hill was far from self-sufficient²⁴. By the turn of the 20th century a trolley line was also extended into Chestnut Hill (see Figure 7).

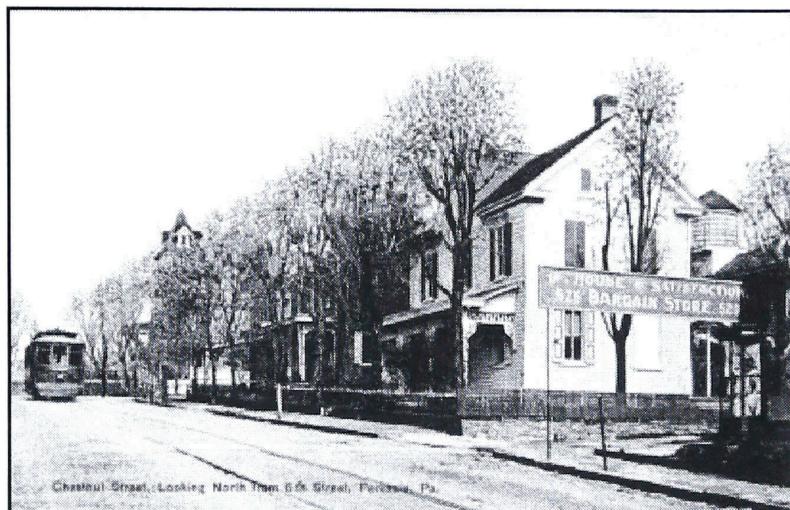


Figure 7: Trolley in Chestnut Hill (circa 1900)

Lake Forest and Riverside, Illinois were developed as upper-middle-class enclaves linked by rail lines to Chicago. Both areas offered quintessential romanticized village life within a short train ride of the city. Like Llewellyn Park, Lake Forest and Riverside were greenfield developments, with Fredric Law Olmstead at the helm at Riverside and lesser known Almerin Hotchkiss working on Lake Forest²⁵.

Llewellyn Park, Chestnut Hill, Lake Forest and Riverside were the products of entrepreneurs who realized the market potential for a great number of well-to-do citizens looking to relocate to pastoral settings but still be within an easy commute of a major metropolitan area.

²⁴ Contosta, 19.

²⁵ *Encyclopedia of Chicago*. January 5, 2009. <<http://www.encyclopedia.chicagohistory.org/pages/709.html>>

2.3.2 North America in the early 20th Century

In the lead up to the roaring ‘20s, an ever larger rural population moved into metropolitan areas, exacerbating housing shortages and fueling the need to expand the urbanized boundary.

Its price having fallen during the 1920s, the automobile quickly gained popularity for leisurely travel on weekend—the Sunday drive in the country. This contributed to the evolution of a different kind of planned community. Although these ‘new towns’ were influenced by town planning advancement in Europe, especially the garden city and garden suburbs movement, in part due to the large automobile ownership in the United States, obvious modifications were made. Unlike their European counterparts, American city planners and architects were beginning to consider the impact of the automobile on community design. This is especially evident in the design of Radburn, New Jersey, where despite the presence of a commuter rail line, the importance of the automobile to American society was already starting to be realized. Clarence Stein and Henry Wright, the planners of Radburn, creatively separated vehicular and pedestrian traffic. A resident of Radburn could walk the greater part of the neighbourhood without having to cross a street (see Figure 8); this was a town for the automobile age, a town of the future! Although the idea of separating pedestrians from automobiles may seem cutting edge, other architects and planners had already experimented with similar ideas. Le Corbusier had advocated separating motorized traffic from pedestrians in his designs for *Ville contemporaine pour trois millions d'habitants* in 1922²⁶.

²⁶ Curtis, 247.

Not only was Radburn innovative in its separation of pedestrian and automobile traffic, but also for the use of cul-de-sacs and superblocks, in the centre of which were large open spaces. The superblock was a new phenomena and it was much larger than a typical city block. Each superblock was surrounded by a major traffic artery penetrated by plated boulevards off of which residential cul-de-sacs pushed into the communal park spaces mid block²⁷. Segregating vehicles and pedestrians was seen as benefiting both the pedestrian and the motorist. Motorists could enjoy fluid movement while pedestrians were kept safe, especially children, who could walk to school without crossing major roads. Likewise, Radburn was innovative in the way that rooms within a home were organized in relation to the city. For instance living rooms and bedrooms faced the park-like spaces at the center of the block while service rooms faced access roads²⁸.

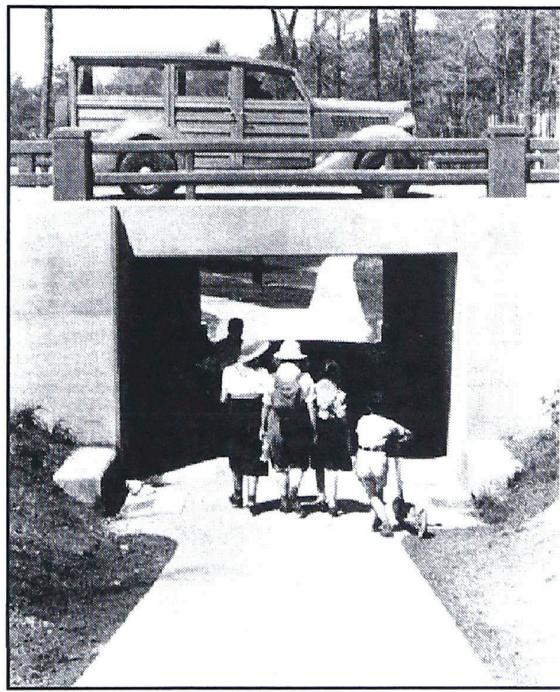


Figure 8: Radburn, New Jersey

²⁷ Leland Roth. *American Architecture: A history*. (Boulder: Westview Press) 398

²⁸ Nicolaides and Wiese, 176.

As was the case with some European towns, Radburn was envisioned as a semi-autonomous community that included educational facilities and some services²⁹. By 1931, the population of Radburn reached 1,000, and like Letchworth, the goal was to reach a population of 25,000 to 30,000 people³⁰. However, in part due to the Depression of the 1930s and the politics of the City Housing Corporation, Radburn never exceeded 5,000 residents. Also, Radburn never achieved social diversity; more than half of Radburn residents were at least middle executives and there were no blue collar workers³¹.

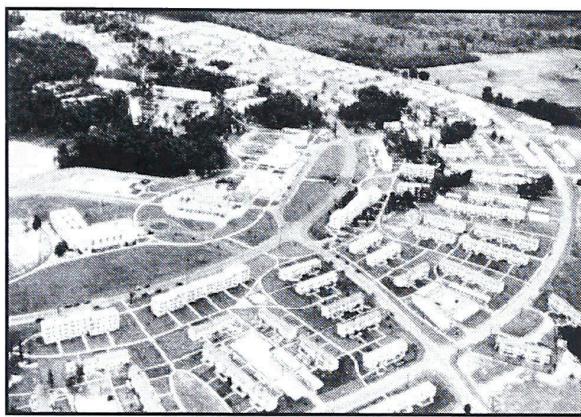


Figure 9: Greenbelt, Maryland

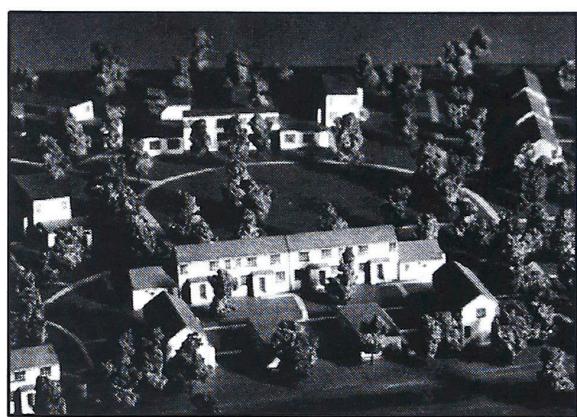


Figure 10: Architect's Model of Greenbelt

Greenbelt, Maryland is another example of a self-sufficient, planned community linked by rail to a major metropolis. It was located along the oldest rail line in the US, linking Ohio, Baltimore and Washington³². However, Greenbelt was a government initiative designed to house federal government workers near Washington DC. It was designed in 1935 by the head of the US Resettlement Administration, Rexford Guy Tugwell with the

²⁹ Roth, 398.

³⁰ *Fair Lawn News*. January 10, 2009. <<http://www.fairlawnnews.com/2004/Summer/radburn-history-Part-3.htm>>

³¹ Hall, 127.

³² Washington Branch of the Baltimore and Ohio Rail Road. November 25, 2008.

<http://www.absoluteastronomy.com/topics/Washington_Branch_of_the_Baltimore_and_Ohio_Rail_Road>

help of Eleanor Roosevelt, the wife of then US President Franklin D. Roosevelt³³. Because land used for the development of Greenbelt was overworked farm land, the government was able to purchase it inexpensively. Tugwell was inspired by Clarence Stein's design for Radburn, specifically the organization of housing in relation to green space and the separation of pedestrians and motorists³⁴.

³³ Cathy D. Knepper. *Greenbelt, Maryland: A Living Legacy of the New Deal*. (Baltimore: John Hopkins University Press., 2001), 14.

³⁴ Knepper, 16.

3.0 Towns and suburbs after World War II

3.1 Introduction

During World War II, most goods production was war related. With millions of people involved in the war effort, urban renewal was brought to an almost complete standstill in most of Europe and North America. As the war came to an end, veterans returned home and governments on both sides of the Atlantic had to contend with housing shortfalls. In much of Europe, the shortage of housing was compounded by damage stemming from the war.

Returning veterans, the post-war baby boom, and consumer demand fueled an economic boom unheard of since the 1920s. Numerous communities were planned and built in response to this demand. The car played an increasingly important role in the average North American's daily life. In Europe mass transportation continued to play an important role in town and suburb planning since car ownership was significantly lower than in North America. Hence, the design of North American new towns increasingly focused on the automobile and the infrastructure associated with the car. In Europe, pedestrian needs continued to dominate.

3.2 Sweden: The Satellites of Stockholm

Like the United States and Canada, Sweden did not sustain any damage during WWII. That said, the Swedish approach to town planning was very different from its North American counterparts. The Swedish government—with great foresight—began buying up land in the vicinity of Stockholm at the turn of the 20th century in anticipation that the city would need to expand. To accommodate soldiers returning from the war and population

shifts from the country to the city, the government planned semi-autonomous towns within commuting distance from downtown Stockholm along the rail line called ‘the tunnelbana’. Sven Markelius, a prominent Swedish architect, was charged with the task of designing the new town of Vällingby, thirteen kilometers from downtown Stockholm.

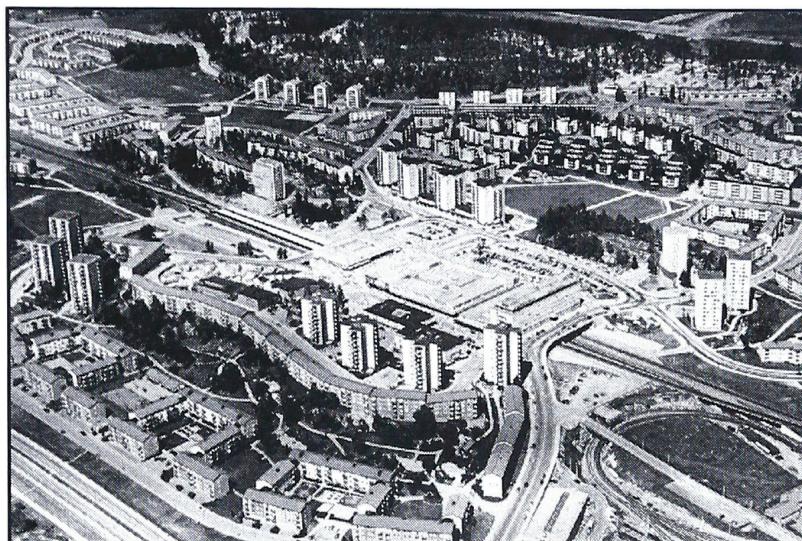


Figure 11: Vällingby Centrum, 1960

Markelius envisioned the new inhabitants as Stockholmers and not as dwellers of separate towns³⁵. He wanted to ensure that all inhabitants were within a short walk of the transit station, hence most of the dwellings were multifamily units. Reminiscent of Radburn, Markelius separated vehicular traffic from pedestrian pathways, such that one could walk halfway through town without having to cross a street. The rail station is located below grade in the heart of the town known as the ‘Centrum’. A large open public square lined with shops, restaurants and childcare centers is located above the rail station.

³⁵David Popenoe. *The Suburban Environment: Sweden and the United States*. (Chicago: The University of Chicago Press, 1977) 49.

The density in Vällingby is highest near the ‘Centrum’—with a concentration of high rise buildings (refer to Figure 11) followed by low rises and further out attached and detached homes. Markelius devoted significant attention to the design of the landscape and to the numerous parks. The vast park-like setting of Vällingby, especially after the vegetation had matured, greatly compensates for the relatively high residential density.

A number of other satellite towns were constructed around Stockholm based on the same principles as Vällingby (1950-54). These include Farsta (1953-61), which is 22 kilometers from downtown Stockholm, and Skärholmen (1961-68), which is 14 kilometers from downtown³⁶.

Unlike in North America, the Swedish government opted to build up, rather than out, and was able to do so without too much opposition because of the high demand for homes and because, up until the 1970s, the Swedish government subsidized almost 90 percent of all dwellings constructed. Also, early in the 20th century, the somewhat difficult topography in and around Stockholm impeded road construction, making public transportation more economically feasible. Swedish planners understood that to make public transportation work, the city needed to expand as a series of high-density nodes.

³⁶ Robert Cervero. *The Transit Metropolis*. (Washington D.C.: Island Press, 1998) 112, 118.

3.3 United Kingdom: New Towns

The British, too, built a number of new towns to deal with the return of World War II veterans and impact of the baby boom. Thirteen new towns, were planned for Great Britain, eight of them for the London area.

In 1945, the Village of Stevenage was declared the first of the post-war towns to be developed into a garden city. It was located approximately halfway between Letchworth Garden City and Welwyn Garden City and was linked by a rail line to London³⁷. Together, Letchworth, Welwyn, Stevenage and the new town of Hatfield “constitute Howard’s Social City on the Ground”³⁸.

At the end of the war the population of the pre-existing village of Stevenage was barely over 6,000; the new town was planned to accommodate 60,000. One of the key differences from the previous generation of Garden Cities is that these post war new towns were funded by the government under the Town and Country Planning Act of 1947. The Act “nationalized the right to develop land”³⁹. This was done in part as a way to fund the development of newly designated towns and in part to curb sprawl by giving power to local authorities to designate green belts⁴⁰.

Prior to its designation as a New Town, Stevenage already boasted a sizeable manufacturing sector, therefore aiding in the city’s self sufficiency⁴¹. The new town centre and industry were designed to straddle the railway track and the residential areas were grouped into six pods that radiated around the town centre (see Figure 12). The residential

³⁷ Boris Ford. *Modern Britannia*. Cambridge: Cambridge University Press, 1992., 154.

³⁸ “New New Towns.” *Blueprint Magazine Online Weblog*. 2008. Blueprint Magazine Online. 2 April 2009.
<http://www.wdis.co.uk/blueprint/blueblog.htm>

³⁹ Hall, 422.

⁴⁰ Ibid., 139, 331.

⁴¹ Bob Mullan. *Stevenage, Ltd.* (London: Routledge & Kegan Paul, 1980.) 44.

districts of Stevenage were all within walking distance of work, shopping/entertainment and transportation. Likewise, they were within half hour commute of London, Letchworth, Welwyn and another new town of Harlow. Although Stevenage, Letchworth and Welwyn are part of London's commuter belt, the towns are self-sufficient and therefore the majority of residents are employed locally⁴². Like the earlier Garden Cities, Stevenage was surrounded by a very distinct greenbelt.



Figure 12: Concept Plan at left and Original Master Plan on right for Stevenage

Many of the elements first attempted across the ocean at Radburn, New Jersey were fully realized at Stevenage such as “closely clustered warm brick houses, intricate pathways, imaginative planting and a safe and sensible rapprochement with the car’s importance in

⁴² “New New Towns.” *Blueprint Magazine Online Weblog*. 2008.

modern life”⁴³. The town centre was also unique for its time, being the first large scale pedestrian town centre in Europe.

During the early 1960s, additional areas in the United Kingdom were designated as new towns to deal with the rampant population growth primarily on London’s periphery⁴⁴. Towards the end of the 1960s, a third wave of new towns was designated. These towns were further north than the previous crop and included places like Milton Keynes, which was designated a new town in 1967. It was the largest new town to be planned and to this day it remains the most populous⁴⁵. Unlike other English new towns, Milton Keynes was seen as a modernist city of the future; unlike previous European new towns, it completely embraced the automobile. Its grid-like street pattern and wider streets resembled more the North American suburbs than the English new towns. The city was to be organized into unique 1 kilometer village squares interconnected by highways. This was Britain’s first attempt at dealing with an ever growing car population. It was seen as progressive, embracing the technology rather than suppressing it, and a decision to build a monorail and a compact development was staunchly suppressed⁴⁶. Milton Keynes is therefore more sprawling than the other new towns, including pre World War II Garden Cities.

An even more recent design for a new town, Lightmoor at Telford, won the TIMES/RIBA National Community Enterprise Award in 1987⁴⁷. The new garden city, known as The Third Garden City “[should] reflect the ideas and preferences of the people who join it; as far as possible it should be self-contained, embracing a combination of homes, home-based enterprises and community facilities; and the community as a whole

⁴³ Ford, 154.

⁴⁴ Mary Aldridge. *The British New Towns: A Program Without Policy*. (Taylor & Francis, 1979) 62.

⁴⁵ Mark Clapson and J. Rooker. *A Social History of Milton Keynes*. (London: Routledge, 2004) 2.

⁴⁶ *Milton Keynes*. Building Design. January 25, 2009.

<<http://www.bdonline.co.uk/story.asp?storycode=3092485>>

⁴⁷ Hall, 293.

should benefit from any improvement in the value of land which results from the development of the scheme.”⁴⁸

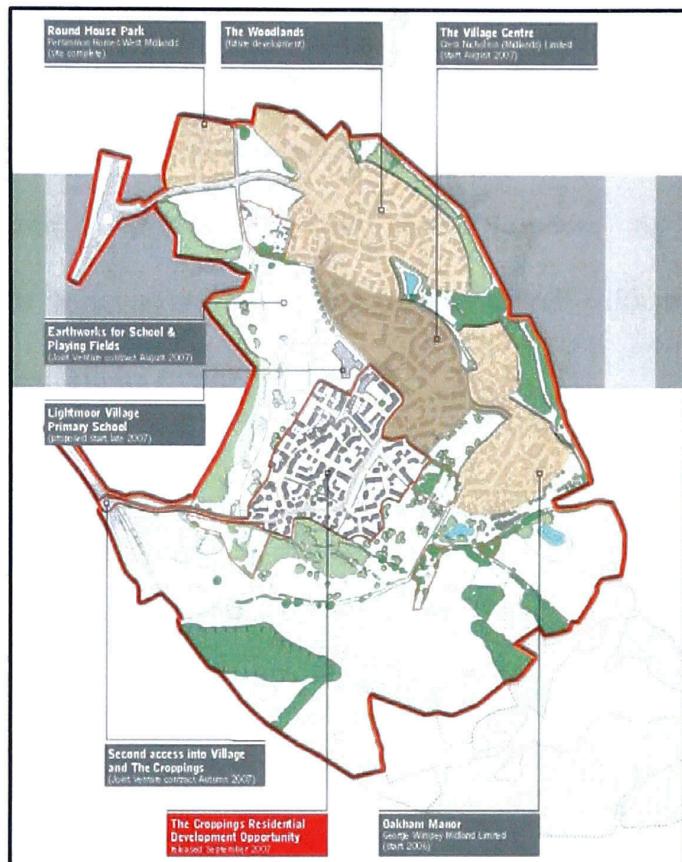


Figure 13: Lightmoor Master Plan

As with the original garden cities, the land was purchased at low agricultural prices. Key to the development of Lightmoor is the creation of a sense of community and self-sufficiency thus avoiding the creation of a simple residential or a bedroom community. Lightmoor’s main industry is brick making⁴⁹. The village of Lightmoor incorporates shops, retail units, restaurant-style pub, offices, parking, formal open spaces and residences. Like the early garden cities and Stevenage, then, it should be able to attain a moderate degree of self-containment. Lightmoor is only in its infancy, and its planners acknowledge that its

⁴⁸ Hardy, 183.

⁴⁹ Micheal Raven. *A Guide to Shropshire*. (England: Micheal Raven Publishing, 2005) 110.

success depends on many factors including the development of reliable public transportation.

Recently the UK government announced plans to construct up to twenty new sustainable towns. The government is planning to follow the main rail corridor north and east of London between 70 and 130 kilometers from the capital, which, with today's high speed trains, will be only a short distance from central London. As with previous new towns, the government hopes to achieve a high degree of self-sufficiency so that a large portion of the population will be employed locally⁵⁰.

⁵⁰ "New New Towns." *Blueprint Magazine Online Weblog*. 2008.

3.4 France: Villes Nouvelles

As the population of Paris grew after World War II, it became apparent that the pre-war plans of *Les Cités Jardins* would not be able to accommodate the new and much higher population. The designs for the original *Cités Jardins* were modified to include many high rise complexes. By the 1950s, these apartment complexes became known as the *grands ensembles*. Several *grands ensembles* were constructed between 1950 and 1970, among them Sarcelles. One of the largest apartment complexes in a northern Parisian suburb, Sarcelles became the epitome of “the emptiness and depersonalization of modern life”⁵¹.



Figure 14: *Grand Ensemble* at Sarcelles

The French government decided to build *villes nouvelles* similar to those built outside of Stockholm but on a grander scale. It was projected that these new satellites would need to house between 300,000 and 1,000,000 people each, versus the 80,000 to 100,000 in Stockholm’s satellite towns⁵². As with their Swedish counterparts, the five *villes nouvelles*, were connected to central Paris via a regional commuter rail system, the RER. The RER was a

⁵¹ Evenson, 318.

⁵² Hall, 345.

high speed train system unlike anything else in Europe and therefore could move large volumes of people great distances in a minimal amount of time.

By 1970, the majority of the homes constructed in the *villes nouvelles*, were single detached homes⁵³. However by the latter half of the 1970s, the French government attempted to densify these communities through the construction of high-density nodes near transit stops. However, low rise and mid-rise apartments continued to be built well into the 1990s.

Today, unlike the Swedish new towns, the *villes nouvelles* are almost entirely undistinguishable from the surrounding fabric: one large spread out megalopolis. By the turn of the 21st century, less than a quarter of all Parisians lived in Paris, the majority resided in the suburbs⁵⁴.

As stated previously, the French *villes nouvelles*, like the satellite suburbs of Stockholm and the British new towns, were linked together and to the metropolitan centre by an extensive public transportation network. This was important as automobile ownership in Europe was much lower than in North America.

The British new towns were generally comprised of single detached homes, row houses and low rise apartment buildings, therefore they tended to be more spread out than the Swedish satellite towns. The Swedish satellite towns tended to be more compact and had more mid and high rise dwellings. As stated previously, this was due in part to the topography around Stockholm. The French designers and planners, in part due to an ever greater housing demand and the social and political issues of the time, took the mid and high-rise complexes to the extreme in their *Grands Ensembles*. The English and the Swedes

⁵³ Hall, 347.

⁵⁴ Robert Bruegmann. *Sprawl: A Compact History*. (Chicago: The University of Chicago Press, 2005) 74.

included ample green space in their designs; the overall effect was housing amid park-like settings. Although there was a great amount of open space in the *Grands Ensembles*, it was not finessed to the same degree as in England or Sweden.

3.5 North America

Ex-urban development in North America took on a different form than European new towns for various reasons. As stated previously, automobile ownership in North America rose substantially after World War II, hence many architects and urban planners responded by devising ways to integrate the car into their design.

Also, although both continents experienced similar population growth, there was far more land available in North America. It has been “calculated that to house the entire population of the United States at a low suburban density of one family per acre would require an area smaller than the state of Oregon”⁵⁵. Lastly, a whole new wave of private investors, entrepreneurs and socially minded individuals emerged with their solutions to the housing shortages, including William Levitt.

Just a year after the war ended, William Levitt began construction of Levittown, New York; in 1952 work commenced on Levittown, Pennsylvania. While Levittown, Pennsylvania is unlike any of the previous examples discussed above, it deserves a modest mention simply because of its impact on the North American landscape. Levittown is perhaps the most famous of suburbs. It is neither a city, nor a town, nor does it aspire to be either, it is merely an amalgamation of thousands of single detached homes, on modestly sized lots, surrounding a few public schools and some community pools. Like Markelius at Vällingby, Levitt invested heavily in landscaping. Whereas the Markelius’ plan called for public parks and spaces, Levitt was more interested in the streetscape and front lawns, and

⁵⁵Witold Rybczynski. *Last Harvest*. (New York: Scribner, 2007) 82.

most importantly home ownership. His desire to create a park-like setting by juxtaposing owned and maintained front lawns along winding streets is evident.

**Value, Beauty, and Charm
FOUR BEDROOMS, TWO BATHS
\$11,990; \$87 a Month!**

► In Raymond Park at Levittown, New Jersey, we're building the young houses pictured above. In the five communities that we've been creating suburban enclaves, never have we produced anything as attractive as these houses.

► Everydweller there's a spacious living room, a large-paneled kitchen, four bedrooms, a complete bathroom, a charming dining room, and an one-car garage.

► Upstairs there are two more bedrooms, double-swinging bathtubs, and some really large showers.

► But, honest, folks, that's only part of the story. Look inside our bath rooms. It's like those rooms are arranged. And they're decorated, what's better and appropriate than that. And how fine for sleeping rooms, what the community is like.

► All of these things bear weekly renter.

► Come on over and learn about our brand new schools, our advertising goals, our newest shopping center, our numerous subdivisions Philadelphia (just an easy 30 minutes), our rapid transportation facilities.

► Well, everything, this house sells for \$11,990 plus a down-payment of \$250 for all maintenance charges. That's all, just a \$100 down payment. For that you get the whole house, the plot of 65 by 100, completely landscaped, a General Electric refrigerator, range, and washer. Total cash required is \$100—yes, just four hundred dollars—and carrying charges are \$87 a month!

► Now, forget about it. You'll need \$100 with your application, and occupancy is available later if you wish.

Our Exhibit Building and six exhibit houses—priced from \$11,990 to \$11,600—are open seven days a week until 8 P. M. Drive over and take a look. You're always welcome.

Levitt & Sons
Builders of Quality Residential Communities

Route 100 • Levittown, New Jersey • Phone: Orange 7-4100

Figure 15: Add for a Levittown home in the Philadelphia Inquirer

While Levitt never intended to bring jobs or industry to these suburban enclaves, as an astute businessman he knew his new communities had to be located near centers of work. Also he never intended for these communities to be serviced by public transportation on the same scale as European new towns or pre World War II North American communities. What is fascinating about William Levitt and his Levittowns, is that he managed to

manufacture a great number of houses in a short period of time by applying assembly line techniques to house construction.

Levitt provided family homes at a time when there was a severe family housing shortage due to “an almost complete moratorium on new construction – save for essential war-related building – between 1941 and 1945”⁵⁶. Also, the popularity and success of Levittown coincided with the Housing Act of 1949, which increased the Federal Housing Authority’s lending power⁵⁷. Hence an unprecedented number of people qualified for mortgages (see Figure 15). Furthermore, during the post war economic boom, Levitt sold a little piece of the ‘American Dream’ to hundreds of thousands of working and middle-class families in the form of home ownership: a small house in the ‘country’ with a manicured lawn, away from the poverty and cultural clashes of inner cities.

Canada took a similar approach to constructing planned communities in the 1950s. Canada’s suburban enclaves were not necessarily located on passenger rail lines. By the 1950s, the automobile’s presence in the middle class family was well established. The prevalence of the automobile, the significantly lower population and a much vaster landscape, all contributed to the suburban design being auto-centric. For instance, Don Mills, a new town designed and constructed in the 1950s is only twenty minutes from downtown Toronto via the Don Valley Parkway which was built after Don Mills. It contains schools, libraries, recreational facilities, churches, shopping, a town centre and industry all connected by a ring road⁵⁸. The original design called for a very distinct greenbelt and open space, however within a decade, industrial parks and residential

⁵⁶ Ibid., 319.

⁵⁷ Hall, 319.

⁵⁸ Albert Warson. “New Towns, and old.” *Planning*. 61.3 (Mar. 1995): 18. EBSCO. Carleton University, Ottawa, Ontario. 4 April 2009 <<http://search.ebscohost.com.proxy.library.carleton.ca>>

development started in the greenbelt⁵⁹. It wasn't until 2002 that Don Mills was linked with Toronto by the Sheppard subway line⁶⁰. Other new towns, including Erin Mills, now completely engulfed by Mississauga, also catered more to the automobile than to pedestrian and public transportation.

In the United States a number of other planned new towns were built after World War II including Reston, Virginia. These new towns were built in reaction to previous suburbanization and tried to demonstrate a new way forward. Like their Canadian and European counterparts they aspired to improve the situation of the middle class by integrating the work and the living environment and to avoid the haphazard suburban developments going on in most parts of the country. However, unlike European new towns of the 1950s and 1960s, the North American models were designed for the automobile, often with softly curving streets and cul-de-sacs. Reston was conceived in 1964 as a self sufficient community containing green space, housing, industry and commercial endeavors at its core.

As stated above, after World War II, North American suburban community design strongly reflected the presence of the automobile and since the size of the middle class expanded, the number of people who could afford vehicles grew. Starting in and around the 1970s, the middle class became more diverse for a number of reasons. Birth control allowed many couples and singles to remain childless longer, the divorce rate increased therefore resulting in a greater number of single-parent households, and lastly the average lifespan increased substantially. This new, much more diverse, middle class had different housing needs than previous generations. Around the same time the condominium designation

⁵⁹ Albert Warson. "New Towns, and old."

⁶⁰ "TTC Milestones" Toronto Transit Commission. 2009. TTC History Online. 4 April 2009
<http://www3.ttc.ca/About_the_TTC/History/Milestones.jsp>

emerged to respond to the needs of this new demographic. The middle class generally preferred ownership to renting, and the condominium, whether apartment or row house style, allowed the new middle class to own but without the maintenance hassles that come with home ownership. All this had an impact on the community and city fabric as planners had to accommodate the needs of an increasingly diverse population.

Over the last century and a half, we have been able to observe and react to the various proposals that have been implemented over the years. Many architects and planners agree that we cannot continue planning cities and communities that are strictly designed around the car because they are resource, time and energy intensive and automatically assume that one must own a vehicle. Over the years we've observed that even if the new towns contained a range of amenities and uses, the distances between services increased as they were based on automobile travel. With the rise in fuel prices, concern about global warming and sustainability issues, there is an ever increasing reason to try to integrate transportation centers and hubs into communities and see if they can inform how the neighbouring community should grow and develop. As stated previously, many major transit centers are nothing more than parking lots where commuters park their cars and continue their commute on mass transit. Returning to their cars in the evening, parking lots remain empty until the following morning. Not only is there no reason for people to visit the transit centre apart from their morning and evening commutes, but also these hubs do not include amenities that might serve the adjacent community. In essence, the transit centre stopped being an extension of a community. The community and the transit centre ceased their supportive and symbiotic relationship.

3.6 Today...

City form and fabric have changed dramatically over the last century and a half, reflecting advancements in knowledge and technology. Cities and communities evolved from tenement housing around factories to largely self-contained, planned social cities and communities along rail lines like beads on a necklace.

After World War II, North American new towns began to take on an increasingly different form than European towns as the automobile became more common. Other technological innovations were also enablers of change as the city transformed into a post-industrial multinucleated city. For instance, communication technologies allowed people to instantly communicate with one another over great distances. Technological innovations like the automobile and the telephone changed the concept of “local relationships” as the middle and working classes became more mobile and were able to maintain familial and working relationship over greater distances⁶¹. The human dimension of the city changed. The city became more complex, nucleated into regions such as business districts, separate residential districts for each socio-economic class, and manufacturing areas⁶². At a larger scale, the whole city acted as a nucleus in relation to nearby cities. In essence, the single, often well-defined centre was replaced by numerous small and often more ambiguous centers.

In the latter half of the 20th century, Ontario’s cities and communities generally evolved into sprawling communities with multiple but less distinct centers. Therefore, the larger metropolitan pattern is inefficient with respect to public transportation. Not only is efficient public transportation lacking in many smaller cities and towns, but often there is no mass transit link connecting communities together. This results in road congestion as the

⁶¹ David C. Goodman and C. Chant. *European Cities and Technology*. (London: Routledge, 2000) 284.

⁶² Bruegmann, 49.

majority of population relies on the automobile for transportation. Communities that cater exclusively to the automobile make life more difficult for individuals who do not possess a driver's license, including some elderly, handicapped and teenagers. Also, many of the new suburban communities have been planned such that a large number of children are either bussed or driven by parents to school.

Starting in the 1970s, the Ontario provincial government attempted to intervene in the development of metropolitan Toronto, Ontario's largest urbanized area. It proposed a two-tier urban community development running parallel to Lake Ontario, flanked on the east by Oshawa, to the west by Hamilton and on the north by what is today Highway 401. The land north of the highway was to remain largely rural. The idea was to encourage compact communities and to "facilitate and maintain a pattern of identifiable communities"⁶³. Local politicians and builders saw this as interference by the provincial government in what was considered by many to be essentially local affairs. Accordingly, the plan did not proceed as envisioned. By 1980s, it was evident that something had to be done to make public transportation feasible and economical. The Metro Toronto Transportation Plan Review suggested decentralization or multi-nodal development with regional sub-centers or downtowns in the suburbs. These new sub-centers were envisioned as more than shopping malls, i.e., as mixed-use pedestrian-oriented areas in which to work, live, shop and entertain⁶⁴. However, in many instances development continued as before by segregating uses therefore keeping the density low and causing many to have to rely on the private vehicle to get around. A vicious circle ensued in which some promoted road construction, while others fought to curtail further expressway developments.

⁶³ John Sewell. *The Shape of the City*. (Toronto: University of Toronto Press, 1993) 211.

⁶⁴ Ibid., 217.

Many now agree that more roads are only a temporary solution to resolving traffic congestion since studies have shown that road construction leads to more congestion⁶⁵. While congestion may never be entirely eliminated, we may be able to better control congestion by providing a reliable alternative such as mass transportation. The success of mass transportation may be improved through the design of sustainable transportation centers and hubs. A successful transportation centre may not only elevate the experience of the commuter, but it also may influence the type of environment that develops around it.

Ironically at the turn of the 20th century, in Europe and North America, a greater proportion of individuals relied on public modes of conveyance. In Europe this trend continued for numerous reasons including, but not exclusive to, higher densities, topography and general expense of the automobile.

Since the dawn of the automobile, we have been aware of the inefficiency and potential harm associated with the individual/personal modes of conveyance. Beginning in the latter half of the 19th century, architects, designers and planners have tried to reconcile transportation's place within community planning. As seen above, some saw public transportation only as a mechanism for the birth of a residential community or a way of escaping the city, while others found ingenious ways of reconciling the pedestrian, public transportation and the automobile.

The European examples, specifically Howard's Letchworth and Welwyn Garden Cities, the French *Cités Jardins*, and the Swedish satellite towns, brought public transportation to the heart of their respective communities. Although each of the projects may have shortfalls, their overall contribution to the definition of what constitutes a successful community cannot be entirely discounted.

⁶⁵ Andres Duany. *Suburban Nation*. (New York: North Point Press, 2000) 88.

There have been numerous attempts by designers, planners and developers in both United States and Canada to create transit-oriented communities that promote compact design, ample public space and neighbourhoods that foster a strong sense of community. However, when the infrastructure necessary for public transportation is not developed and integrated into the design, the neighbourhood or town becomes yet another suburban enclave for which the automobile is the primary source of transportation.

Also, modern suburbs often lack public space. Aside from a few scattered schools and community centers, recreation is left generally up to the individual and restricted to ‘the back yard or the rec. room’. When there exists more than one choice of transportation, communities are built with the pedestrian and public transportation in mind⁶⁶.

Cities across North America have collectively experienced the congestion and economic woes associated with over reliance on the automobile. Adapting European ideas will not necessarily resolve the problem—in great part because the car is more integral in the day to day activities of the average North American and our cities and lives are organized differently. Any successful approach to designing public transportation hubs or train stations must acknowledge the importance of the automobile.

A transportation centre can become a wonderful public space, while at the same time accommodate things such as the car. Many of the European approaches discussed above originally did not need to provide parking for large number of vehicles at the rail station because the development was compact and residents generally used the car only in the evenings or weekends. The same may be true for other European cities and even some of the larger metropolitan areas in North America. Unfortunately, smaller cities and towns in

⁶⁶ Roberta Brandes Gratz and Norman Mintz. *Cities: Back From the Edge, New Life for Downtown*. (New York: John Wiley & Sons, Inc., 1988) 90.

North America lack reliable and well developed public transportation. Also they rarely have efficient public transportation links with larger metropolitan centers. As seen previously, many of the mid-19th century planned communities were viable because they were linked by train with larger cities such as New York or Chicago. Ironically, at the turn of the 20th century people embraced the car with open arms because they foresaw the possibility of complete independence associated with car ownership. Yet today, the unintended consequence of such great reliance on the car is that many people are enslaved by it; unless one lives in the city's core, one needs a car to obtain basic necessities such as groceries or to participate in many extracurricular activities.

Some may argue that people should choose to live at higher densities in cities, yet one must not forget the problems associated with high densities at the height of the industrial revolution and the resulting exodus from the city. Furthermore, the middle class has never embraced high density living. Although many European cities continue to be dense enough to sustain public transportation, most of the cities have much lower densities than in the past⁶⁷. Therefore in North America, we must re-imagine the transportation centre to make it viable.

Unlike the many current GO Stations in and around Toronto that have large parking lots, but contribute little or nothing to the community of which they are a part, creating public transportation hubs/centers that double as public spaces or community centers may enhance their success.

⁶⁷ Bruegmann, 18.

4.0 The Region

4.1 History of the Region

Kitchener is a modest size town in South Western Ontario with just over 200,000 inhabitants. The city is approximately 100 kilometres south-west of Toronto. Together with her adjacent sister city, Waterloo, the region is often referred to as K-W or Kitchener-Waterloo. With the nearby city of Cambridge, the region is home to just under 450,000 people.

Kitchener is a relatively young city whose history begins with early Mennonite settlers from Pennsylvania. Unlike other towns in Ontario it was not planned by crown surveyors; it was settled by pioneers searching for a better life for themselves and their descendants. The rail line came to town only after it had reached a certain population and after it was deemed financially feasible to expand service westward from Toronto. As in many of the towns described previously, the rail line contributed to the town's progress and development. Without many of the other elements already present in the community, the rail line would have been a futile attempt at furthering the progress of the community. Kitchener's history illustrates the complexity of the sociological and physical process of community building.

The topography of the region varies from sandy hills, to swamps intercepted by brooks and streams which proved propitious for saw and grist mills. The town was first named Sand Hills, but a lot of the original sandy hills were leveled with subsequent construction.

Towards the end of the 18th century the British government deeded over 640,000 acres to the Six Nation Natives to acknowledge their loyalty to the British Empire during the American War of Independence. Over time the Six Nations petitioned the

government to sell tracks of this land and eventually the government sanctioned this transaction. Colonel Richard Beasley, a loyalist whose last name lives on in the region to this day, purchased over 92,000 acres. Beasley sold portions of this tract to German Mennonites from Pennsylvania looking for sanctuary from religious persecution and exemption from military service. The Mennonites represented the first non-native settlement in the area. Their journey from Pennsylvania to the new settlement was a long and arduous one, especially through the land now known as Ontario, as many roads were very primitive or nearly nonexistent in this new virgin land. Unlike other British towns, Kitchener's streets are not based on a grid since the settlers arrived prior to the surveyors. The region steadily grew as more Pennsylvania Mennonites relocated over the next 30 years. By 1827, European Catholics began to arrive and settle in the region.

Because the majority of the early settlers were of German decent, the village of Sand Hills was renamed Berlin in 1833. By 1839, Berlin held a monthly market. By the 1870s, the market became a weekly occurrence⁶⁸. Berlin was a working town comprised of farmers, weavers, wagonmakers, shoemakers, carpenters, potters, button makers, etc. At the dawn of industrialization, the town already had four factories manufacturing world renowned buttons⁶⁹. The town prospered and by the mid 1840s the population exceeded 400 and remained predominantly German speaking⁷⁰. A larger population also meant that public conveyance could be sustained. The first public transportation was the stage coach in the mid 1830s. It connected Berlin with Waterloo and Preston (now Cambridge). Ironically, it was not until 2000 that an inner city transportation link was re-established between Kitchener and Cambridge even though one existed more than 150 years earlier.

⁶⁸ Ibid., 189.

⁶⁹ Ibid., 171.

⁷⁰ Ibid., 71.



BERLIN IN 1856

Figure 16: Image of Berlin and its rail line



Figure 17: Downtown Kitchener in 1910

By 1851, Berlin was declared a town and the centre of Waterloo County. Several years later the first rail line was extended from Toronto to Berlin by the Grand Trunk Railway and thanks to a generous land donation, the first station was constructed. Many of the Irish rail workers chose to make Berlin their home. The railway, in turn, served as a stimulus for the construction of better roads since improved surface travel meant easier access to the train. In 1856, there were twice-daily passenger trains heading east and west⁷¹. Within a year, a secondary rail line connected Berlin with Preston (now Cambridge).

Despite its four factories, Berlin remained largely a farming community and unlike larger North American and European cities/towns, Berlin did not industrialize until the 1890s⁷². With industrialization came the need to convey individuals between work and home and the first rail street car connecting Berlin with Waterloo opened. Over the next few decades, as other European groups settled in Berlin, the town's early German identity began to fade. After WWI, the town petitioned to be renamed to Kitchener. Lord Herbert Kitchener was a hero in Boer War and died tragically after his ship was sunk by a German U-Boat in 1916. Since then the population of Kitchener has grown steadily as the town

⁷¹ Ibid., 101.

⁷² Ibid., 110.

intentionally advertised its appeal to new immigrants. Land was inexpensive, work was plentiful in many of its factories, and the region boasted many unique services such as providing English language instruction to new immigrants.

4.2 The Context: Metropolitan Toronto

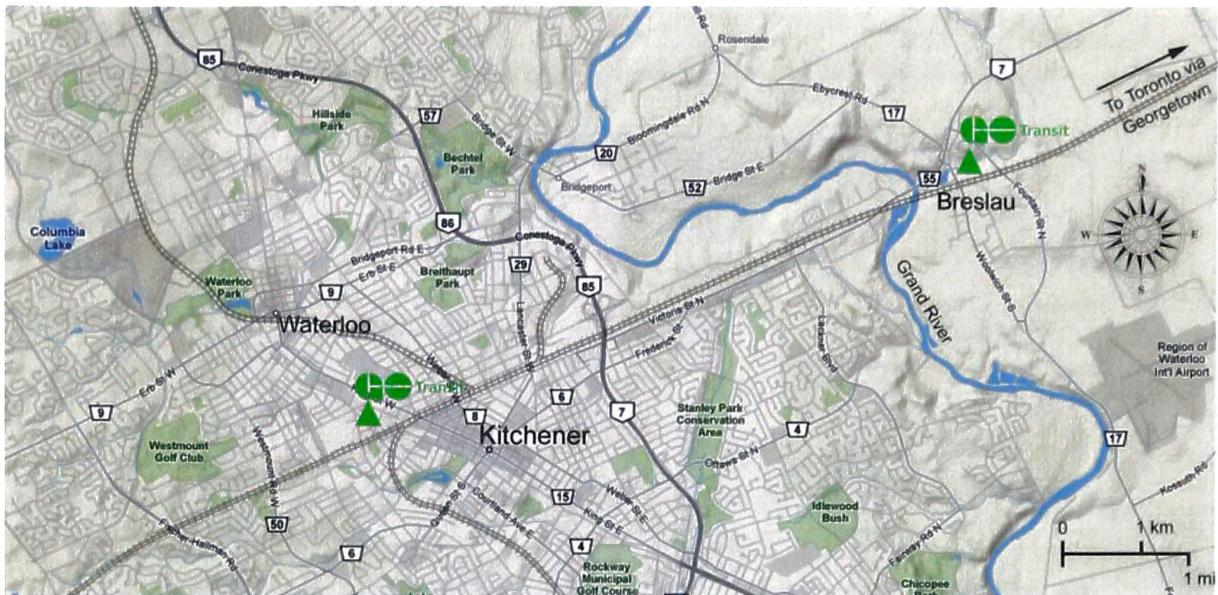


Figure 18: Map Kitchener and Breslau GO Station Locations

To this day, together with Waterloo and Cambridge, Kitchener remains an important manufacturing, educational, research and economic area in south western Ontario. However, like in many cities around the world, a significant portion of the population commutes elsewhere to work. In 2006, more than ten thousand individuals commuted daily between the Waterloo Region and Toronto, another twelve thousand headed east to adjacent Wellington County, and just under ten thousand Wellington County residents headed west to Waterloo County for work⁷³. The vast majority commute by car along the highway 401 corridor. Beginning at Milton (55 kilometres west of downtown Toronto), the traffic on the 401 slows down to a snail's pace and is bumper to bumper during the rush hour. Cities closer to Toronto, such as Milton, Oakville, Markham, Pickering, etc. (see Figure 19 for

⁷³ Kevin Swayze. "GO Wants Trains to Kitchener by 2011." 9 Sept 2008. [The Record](#).

existing GO Station locations and proposed expansion route) are serviced by a commuter train system known as the ‘GO’, but outlying areas such as Kitchener rely solely on the infrequent Via Rail or Greyhound Bus system or more commonly the automobile.

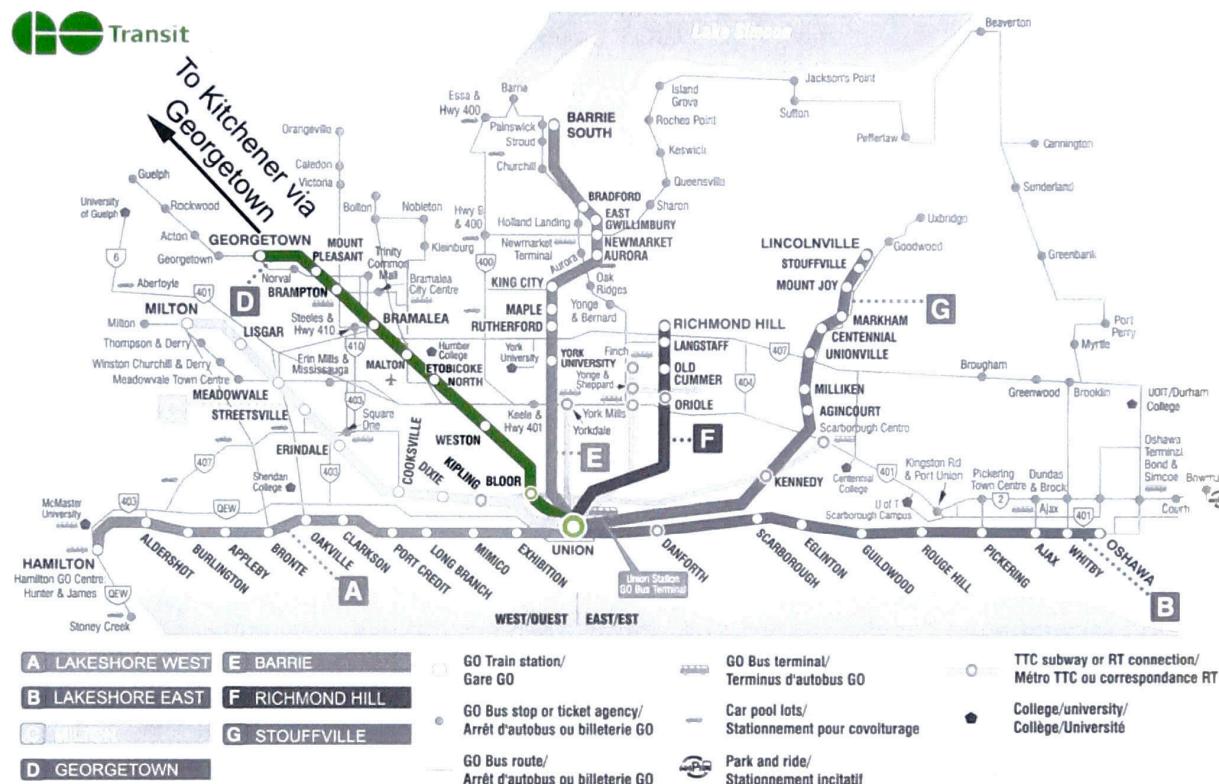


Figure 19: Schematic Map Showing Existing GO Stations and Proposed Expansion Route

For the last fifteen years or so, there has been rumour and speculation regarding the expansion of the GO train to Kitchener. For financial reasons and/or lack of data pertaining to commuter origins and destinations, however, plans never materialized. In the summer of 2008, when gas prices reached a record high, and the environment and global warming were on most people’s minds, GO announced that it was looking to expand its service westward. Armed with statistics, GO transit announced that it would like to bring four trains daily through Kitchener by 2011 to take approximately 2,500 passengers to

Toronto and bring another 2,400 to Waterloo region. Eventually GO trains would run every 20 minutes, 7 days a week, at peak hours and hourly the rest of the time.

GO anticipates the need for three stations in Kitchener; two for passengers and the most westerly one for re-fuelling and storage. The downtown station would serve core residents and residents who use regional transit to reach the GO Station as it would not accommodate parking. The station at Breslau (see Figure 18), by contrast, would have a large parking area for commuters who rely largely on personal vehicles to reach the station, although talks with the Region have suggested that the Region would like to integrate the Breslau GO Station with its local mass transit.

4.3 The Site

The Village of Breslau is located just east of downtown Kitchener on the other side of the Grand River (see Figure 18). Breslau, like Kitchener, was settled by the same group of Mennonite farmers from Pennsylvania.

The site is 3.5 kilometers north of the Region of Waterloo International Airport. It is straddled by a highway on an overpass to the east (Fountain Street North), a regional road (Woolwich Road South) that runs through the village of Breslau to the west, train track to the south and a ravine with a creek to the north. On the other side of the ravine is a recent residential housing development with walking paths that lead to Woolwich Road. Currently access to the site exists only via Woolwich Road South(see Figure 20).

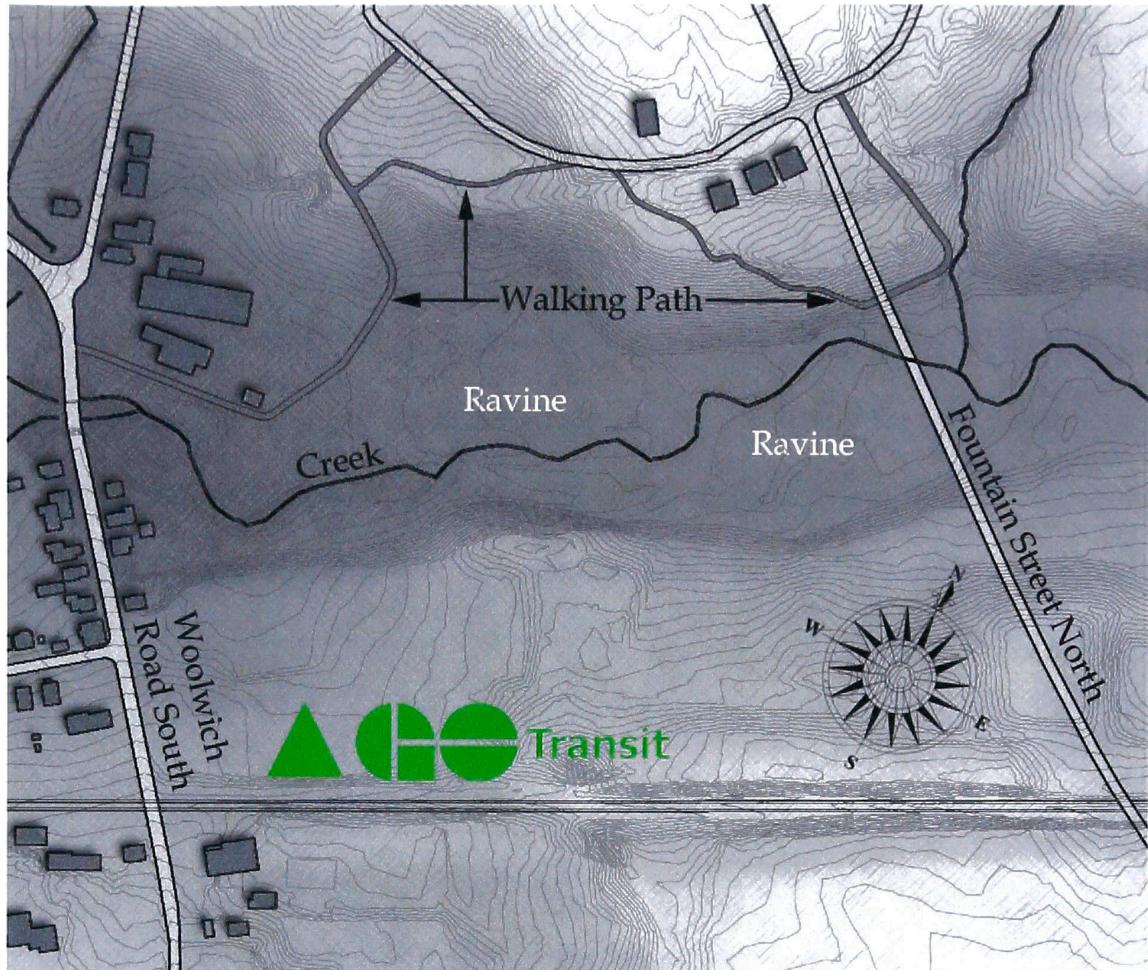


Figure 20: Proposed Location for GO Transit

The eastern Breslau site is typical of the types of sites ‘GO’ Transit generally prefers to develop. It is relatively flat therefore allowing large surface parking lots. The site is just on the village periphery and separated from Kitchener’s industrial area by the Grand River.

Over the last three to five years, the boom in the housing market has caused Kitchener to encroach on the village of Breslau. This creates a unique opportunity to create a ‘town centre’ at the train station and perhaps further inform as to the type of development that should continue in the area. Unlike the downtown transportation centre, this is an exurban/suburban location. It has the potential to be well within walking distance of the village and the recent housing developments, but aside from the proposed community centre/transportation hub, not many other services exist. In fact, the current residents must

get in their car and drive elsewhere. The Breslau location has a definite potential of becoming a new town centre for this rapidly expanding community. In order to avoid the creation of a large vacant parking lot, as has been the case in many communities around Toronto where the GO Train service is provided, a different approach must be taken so that it does not become a blight on the landscape in such a small community as Breslau. The ‘Breslau Transportation Center’ could potentially become a blueprint for future expansion of public transportation hubs such that they are wholly integrated into the community they occupy and at the same time bring other necessary services so that it becomes a town centre.

5.0 The Transportation Centre Prototype

The transportation centre is a gateway into the city and the region. Although the site is currently on the edge of the city, over the next several years it will likely end up being part of it. The idea is to create something that will be able to direct and inform the development and its vicinity, but also, to ensure that the transportation centre/hub for the first few years is more than just a vast parking lot adjacent to a rail line. Initially the commuter population will be able to sustain the basic services provided at the Transportation Centre, and eventually they will be further supported by the expanded neighbourhood.

Since the location is exurban in character it is expected to have upwards of 1,000 parking spaces, as well as a 'kiss 'n' ride' drop off and bus stop(s). The transportation centre will contain ticket kiosks for the train and rapid transit bus service, transportation offices, public and employee washrooms as well as interior and exterior waiting areas for the GO Train and Rapid Transit Bus. Also I am proposing to integrate into the new transportation centre additional services, which I believe will be well suited to the location:

- Coffee shop/breakfast bar
- Daycare facility
- Corner store/Newsstand
- Drycleaners
- LCBO
- Florist

5.1 Design Parameters for Transit Hubs and Transit Oriented Suburban/Exurban Development

Among the principles that I believe must be taken into consideration when designing and developing transit centers and transit-oriented communities are the following:

- Transit hubs should be integrated into the community
- Multi-use amenities and services should be integrated within or adjacent to the transit centre
- Wherever possible, transit stations should reinforce and make more pedestrian-friendly existing ‘Main Street,’ and should, themselves, be organized along the ‘Main Street’. Main Street being the central retail and business district within a neighbourhood or a community.
- Prominent sidewalks and walkways should be provided to encourage/enhance social interaction
- Buildings must accommodate automobiles but should be scaled to the pedestrian
- Natural and urban landscaping should form a fundamental part of the design.
- To the extent that transit stations operate as gateways to and from the communities they serve, they should include prominent front entrances

Furthermore, the above are compatible with the *Growth Plan for the Greater Golden Horseshoe* set out by Ontario’s Ministry of Public Infrastructure Renewal, which focuses on

creating intensification corridors and guiding the development of transit station areas⁷⁴. The Region of Waterloo is part of the Greater Golden Horseshoe.

Many of the historical precedents described earlier offer sound ideas and guiding principles for the design of transit-oriented suburban developments and transit hubs. While many of these principles sound like nothing more than common sense, applying them in the real world has not been easy. Not only have walkable, transit-oriented communities met with significant resistance and criticism, some critics suggest that most of the post World War II examples are nothing more than prettified suburbs. These critics fail to take into account that some of the most memorable places take time to come into their own⁷⁵. A town, or more importantly a community, cannot be built overnight; many communities take years to consolidate, and decades are required for people to develop living patterns and for businesses to become established. Moreover, despite tried-and-true precedents, transit-oriented suburban development must be modified to be valid for the 21st century. We can only hope that the lessons learned and the conclusions drawn from our study of precedents will still be valid in the future.

Integrated and well-established public transportation is one of the key elements of a vital city or community. With the significant exception of post-war suburbanization in North America, mass transportation has long been integral to the birth of communities in both Europe and North America; it continues to play an important role in the inception of communities in Europe. In fact, until the middle of the 20th century, mass transportation was the primary mode of transportation as automobiles were used primarily for leisure and

⁷⁴ “Growth Plan for the Greater Golden Horseshoe.” *Ministry of Energy and Infrastructure*. Government of Ontario Online. 5 October 2008.

<http://www.mei.gov.on.ca/english/pdf/infrastructure/growthplan_ggh.pdf>

⁷⁵ Brandes Gratz, 327.

on weekends. Only in the latter half of the 20th century did North American communities depend on the automobile more than mass transportation.

In recent decades people have again begun to acknowledge mass transportation as a viable alternative to the automobile. Over the last several years Ontarians have been grappling with rising fuel prices and concerns over the environment, especially air quality. Among the many environmental concerns at play in metropolitan Toronto is the increase in the number of smog advisory days, with their attendant health and economic repercussions⁷⁶. Smog is most often linked to car emissions.

If properly integrated into a neighbourhood or in this case if care and attention is paid to its design, the transit centre may improve not only the existing neighbourhood but also future development. Park-'n'-ride facilities have the potential to be more than just endless expanses of asphalt; they can become lively public spaces. Coffee shops and well-planned waiting rooms can function as meeting places for the locals as well as commuters⁷⁷. When adjacent neighbourhoods are developed, increased pedestrian traffic may make additional businesses viable.

The concept of a lively, pedestrian-friendly 'Main Street' is important both to the transit hub and the nearby neighbourhood. Integrating the transit centre into 'Main Street' will help the transit hub to function as an incubator for pedestrian-friendly businesses and, as a result, extend the public realm. Making 'Main Street' pedestrian friendly means providing comfortable, wide sidewalks that retailers to 'spill out' into the street on special occasions and during the warm summer months. A coffee shop fronting onto a wide sidewalk will

⁷⁶ "Air Quality Ontario." 2009. *Ministry of the Environment*. 4 April 2009.
<http://www.airqualityontario.com/press/smog_advisories.cfm>

⁷⁷ Brandes Gratz, 116.

allow patrons to sit and socialize outside. Also important is a properly scaled and prominent street entry to the station; an underground or garage is no substitute for a front entrance⁷⁸.

Buildings scaled to the pedestrian are also key both to transit centers and community design. Up to the middle of the 20th century people walked through the city on a regular basis. Only in the latter half of the 20th century was walking replaced with driving in North America. It is important to note, however, that although many North Americans may express their desire for a society less dependent on the automobile, most are not ready to abandon the car entirely. Our regional transportation hub will attempt to bridge this. It will provide adequate parking for the thousands of commuters who use its facilities and eventually for shoppers who may frequent the area, but at the same time provide a safe and desirable pedestrian realm.

As stated above, the proposed transportation centre is intended as an alternative to the many desolate commuter parking lots that are scattered in and around the Greater Toronto Area (GTA). Most of the existing exurban GO Stations are mere parking lots used for eight or nine hours on weekdays and sitting vacant the rest of the time. The proposed transportation centre, by contrast, will engage existing neighbourhoods and provide a template for future development. It has been designed to remain vital for more hours of the day and days of the week.

⁷⁸ Ibid., 327.

5.2 Design Approach

The proposed design responds to requirements described in Chapter 5.0 above. It seeks to accommodate and integrate the various functions in fluid and interesting ways with relation to the ‘Main Street’ on Woolwich Street (Regional Road 17) and in relation to the rail line.

5.2.1 The Station

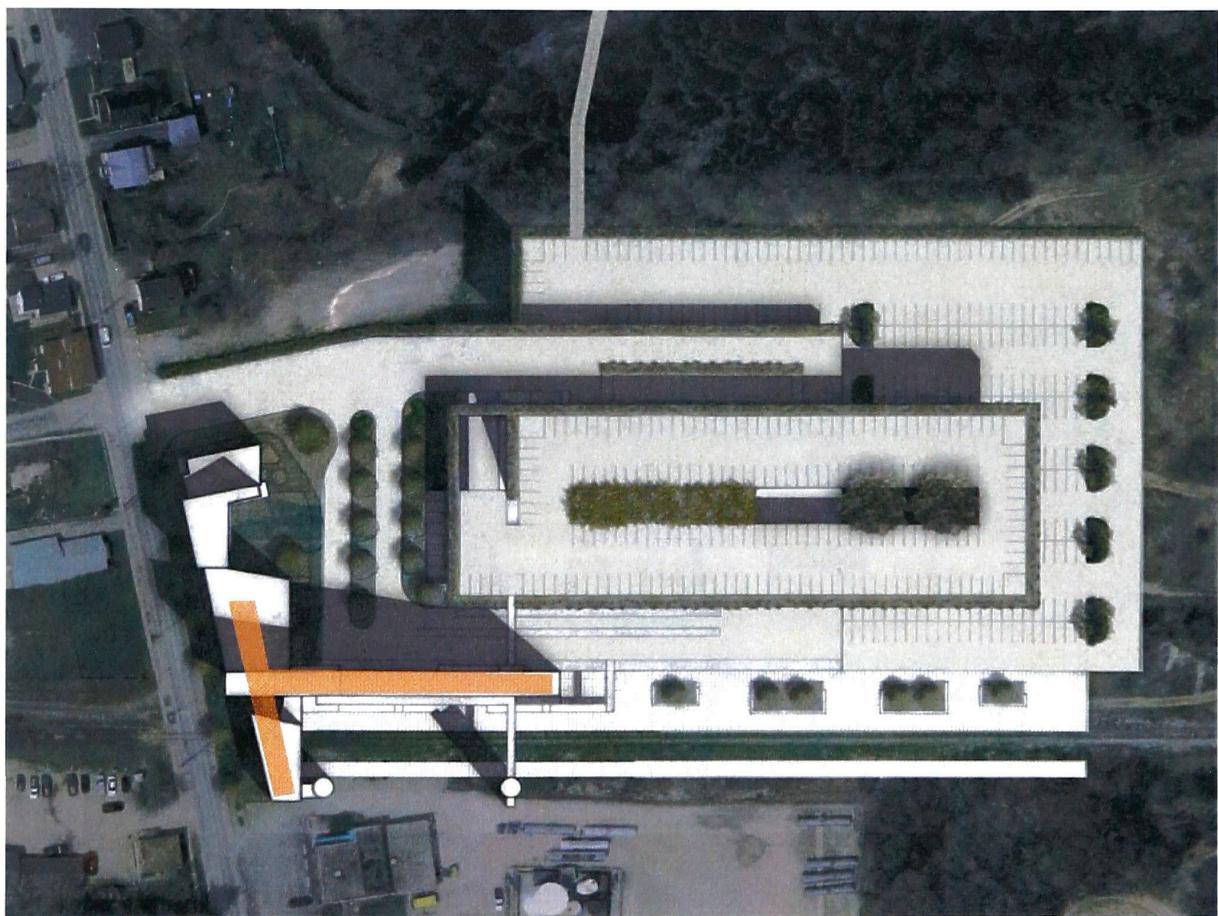


Figure 21: Site Plan Highlighting the ‘T’ Shape Design

The idea was to design a Transit Centre that had not only a presence on Woolwich Street but would also create a lively pedestrian zone to the rear, accessible from the parking

terrace, since most individuals would arrive at the Transit Centre by car or by the local transit bus system known as the Grand River Transit. Accordingly businesses along Woolwich St. would be double-sided. The 'T' shape design of the complex allows for a street frontage for the transit hub and for the few businesses that will also share its facilities.

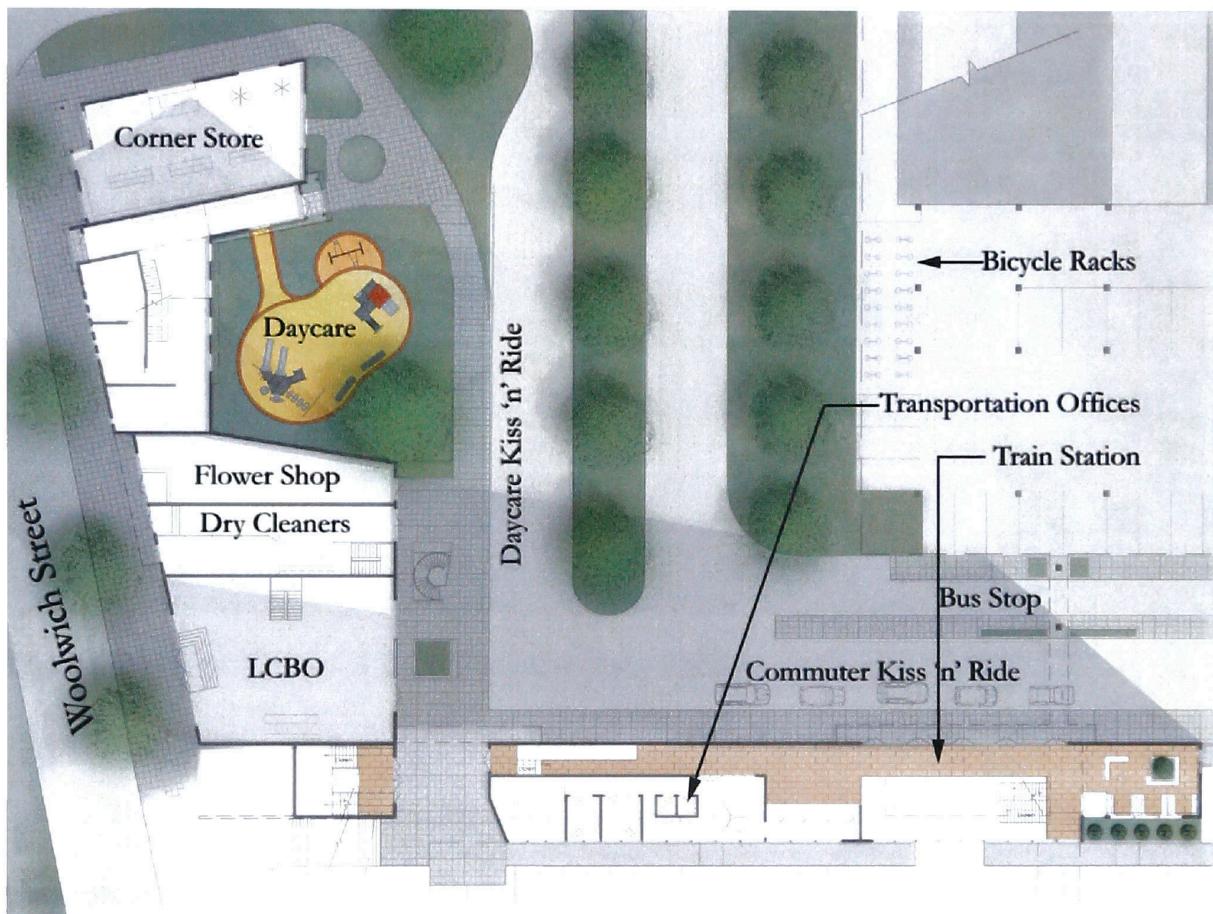


Figure 22: Main Floor Plan

Given the steep grade of the proposed site related, in part to the fact that the tracks must be low enough for trains to pass beneath Woolwich St., the building is sectionally integrated with the parking terraces. Access to the transit station is provided into the transit centre at all three levels of the parking terrace and continues through the building and onto the train platform. The building takes advantage of the slope by incorporating clerestory windows to bring natural light into the building and the waiting area.

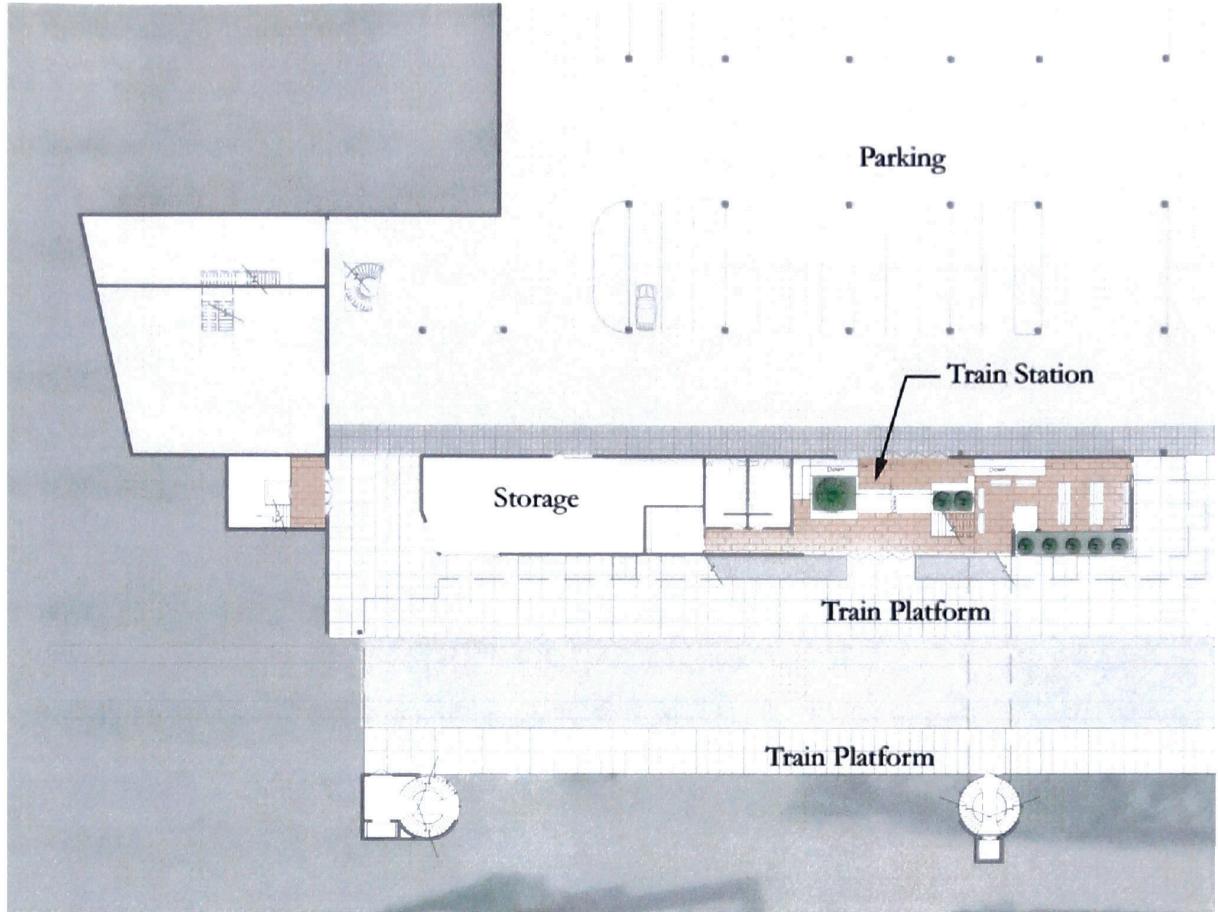


Figure 23: Below Grade/at Train Platform Floor Plan

The building designed is to allow direct access from Woolwich Street to the train platform so that residents who live within walking distance can access the train platforms directly. The rail line passes below Woolwich Street to create a pedestrian-friendly, grade separated crossing. Bicycle racks (Figure 22) are provided for individuals who choose to bike to the station.

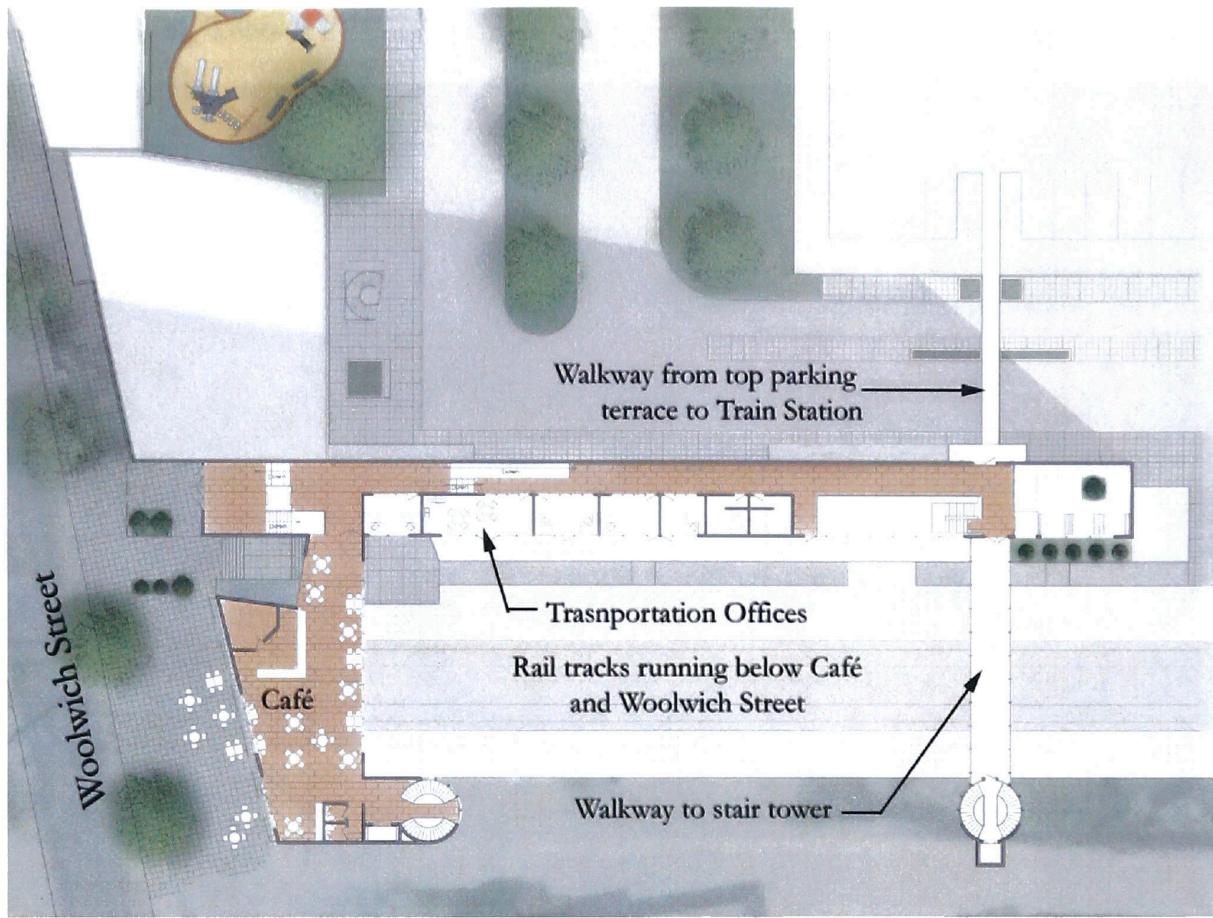


Figure 24: Top Floor Plan

5.2.2 Parking Terrace

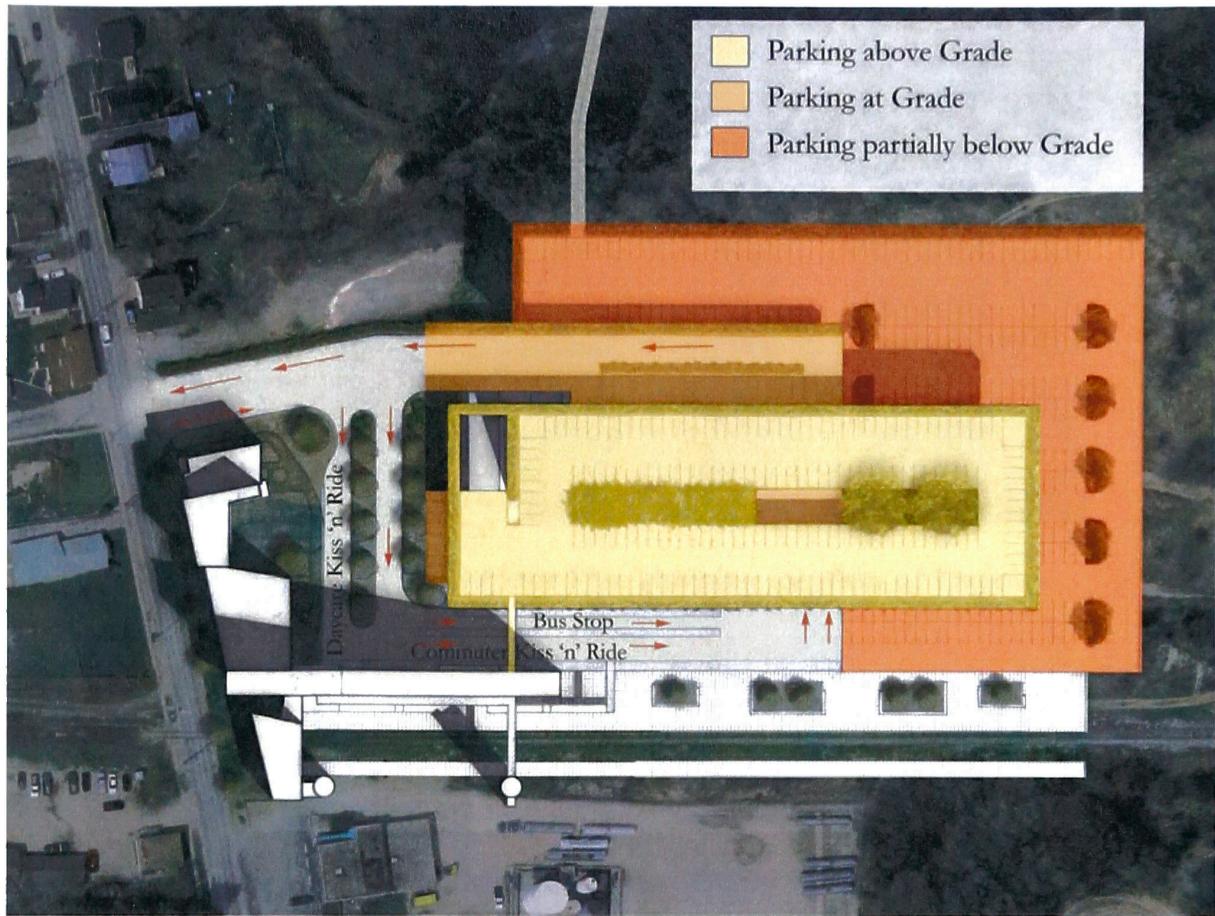


Figure 25: Site Plan showing location of Parking Terraces

Entering the facility Park-'n'-ride patrons have the choice of using ramps to access the upper and lower parking levels. The middle terrace also contains parking spots, a 'kiss 'n' ride' dropoff area, and separate dropoffs for the daycare facility and bus stop(s). Given the significant number of parking spots required, I have divided the parking between three levels, each of which is integrated with the natural and urban landscape. By staggering and puncturing the terraces natural light can penetrate and vegetation can grow on and through the various levels.

5.2.3 Daycare

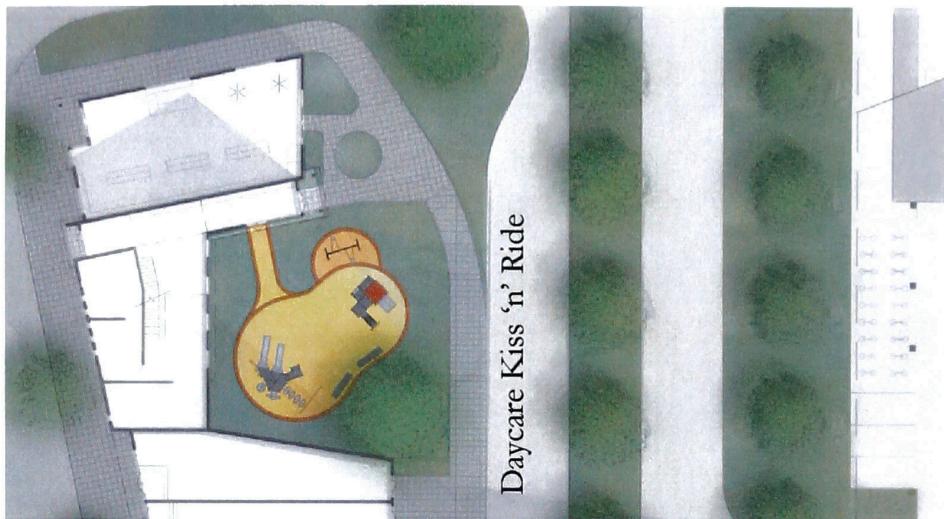


Figure 26: Partial Floor Plan showing location of Daycare

A partial enclosure around the daycare facility creates a safe courtyard for outdoor play. This play area is intentionally kept away from the 'Main Street' and at a safe distance from the train tracks. The dropoff for the daycare facility is adjacent to the courtyard play area.

A dedicated dropoff is provided because parents who are bringing their children to daycare may require more time to stop than other commuters. This dropoff also provides convenient access to the secure courtyard. It is designed to be convenient for the parent or caretaker who has to drop off a toddler and/or a rambunctious preschooler, prior to parking the car and continuing to their place of work.

5.2.4 Café

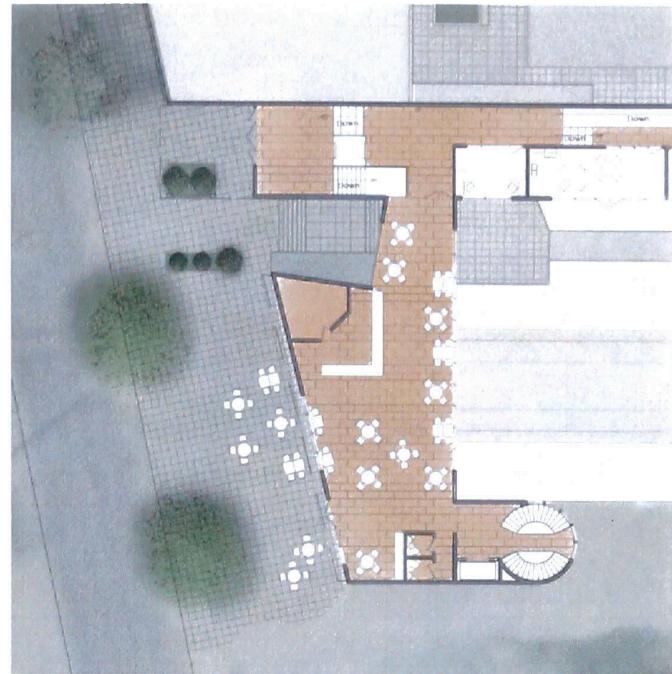


Figure 27: Partial floor plan showing location of Café

The Café is located directly above the rail line. On the Woolwich Street side the café fronts onto a wide sidewalk to allow the café patrons to sit outside during the warmer months. The rear of the café offers generous views of arriving and departing trains. Those meeting persons arriving by train can sip their drinks while monitoring train traffic.

5.2.5 Other Services and Amenities



Figure 28: Partial floor plan showing location of other amenities

Currently, the closest grocery store or convenience store is several kilometers away, on the opposite side of Grand River. A convenience store within walking distance of the adjacent housing development — as well as the village of Breslau — is important to the vision of the transit centre as an extension of the community. It will also benefit the tired commuter who must pick up a few items prior to collecting their child at the daycare and heading home.

Among the other amenities found in the Transit Hub complex are a dry cleaners, a liquor store, and a florist. The goal is to provide services that individuals would benefit from

on a regular basis, such as being able to pick up or drop off clothes, or pick up flowers for a special someone.

6.0 Conclusion

The proposed station represents an attempt at integrating regional transit centers into suburban/exurban communities and at providing an alternative framework for development of transit centers. In order for the transit centre to become part of a community (and become a template for future development), it must be more than just a vast parking lot.

Ideally, the nodes that comprise metropolitan Toronto will evolve to become both more dense and pedestrian oriented. As this, however, is likely to take decades, this project is intended as an intermediate step that accommodates and integrates the vehicle. It is understood that for mass transit to be successful, we have to diversify and densify much of the current suburban fabric and ensure that new development is built at densities that can sustain and be effectively serviced by mass transit.

In the age of global economy, the concept of a self-sufficient or self-reliant city is likely unattainable. Work will continue to be outside of the home and personal mobility will continue to be highly valued. Commuting times have been steadily increasing over the last few years. A 2006 Statistics Canada survey found that Canadians spend twelve full days a year commuting between work and home⁷⁹. The automobile is very inefficient, it leads to congestion, which, in turn is associated with many other ills. Mass transit is an efficient way to move large number of people. Because the vast majority of the middle class are not prepared to part with their vehicles, however, transit centers/hubs must find a way accommodate the automobile without becoming a blight on our landscape. If diverse services and amenities are available, the transit centre has the potential to appeal to more

⁷⁹“General Social Survey: Commuting Times.” 12 July 2006. Statistics Canada Online. 10 April, 2009
<http://www.statcan.gc.ca/daily-quotidien/060712/dq060712b-eng.htm>

people and draw more crowds. Pedestrian activity has the potential to make transit centers more lively and convivial. In return this increased activity has the potential to draw more business and more diversity.

For over a century, rail lines served as a catalyst for town and community design and development. Decades after the inception of many of cities and towns discussed earlier, we are in an excellent position to observe and learn from them. This project is an attempt to look back to move forward, in order to place the transit center back in the community.

Further investigation is warranted. The next step would be to analyze successful and viable transit centers to understand how they are used on a daily basis and perhaps take inventory of things that could work in a North American suburban/exurban context, especially given that the majority of North Americans reside in a suburban enclaves. Ideally, visits to several of the precedents I've cited would be the next step. Personal observation and direct experience is invaluable and could provide great insight.

It would also be important to consider ideas for the temporary transformation of the parking terrace. The nearby community, for instance, could benefit from weekend farmers' markets set up on one of the levels of the parking terrace. Designed as it is, the parking terrace is both open to the elements and vehicle-friendly but has the potential to provide shelter from rain, snow or even sun during the hottest days of the year. Similarly, the community might benefit from transformations of use; the bottom terrace, for example, might be used as a skateboard park on weekends or during the summer months when commuters are more likely to walk, bike or take regional transit to the station.

Lastly further consideration should be given to the ways in which the community in and around the transit centre might grow symbiotically, how the design of one can inform the other to the benefit of both. However, as mentioned previously, towns, communities

and cities take years to come into their own; the assessment of the success of such an endeavor must be left to the future.

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Project Panels, Drawings and Images

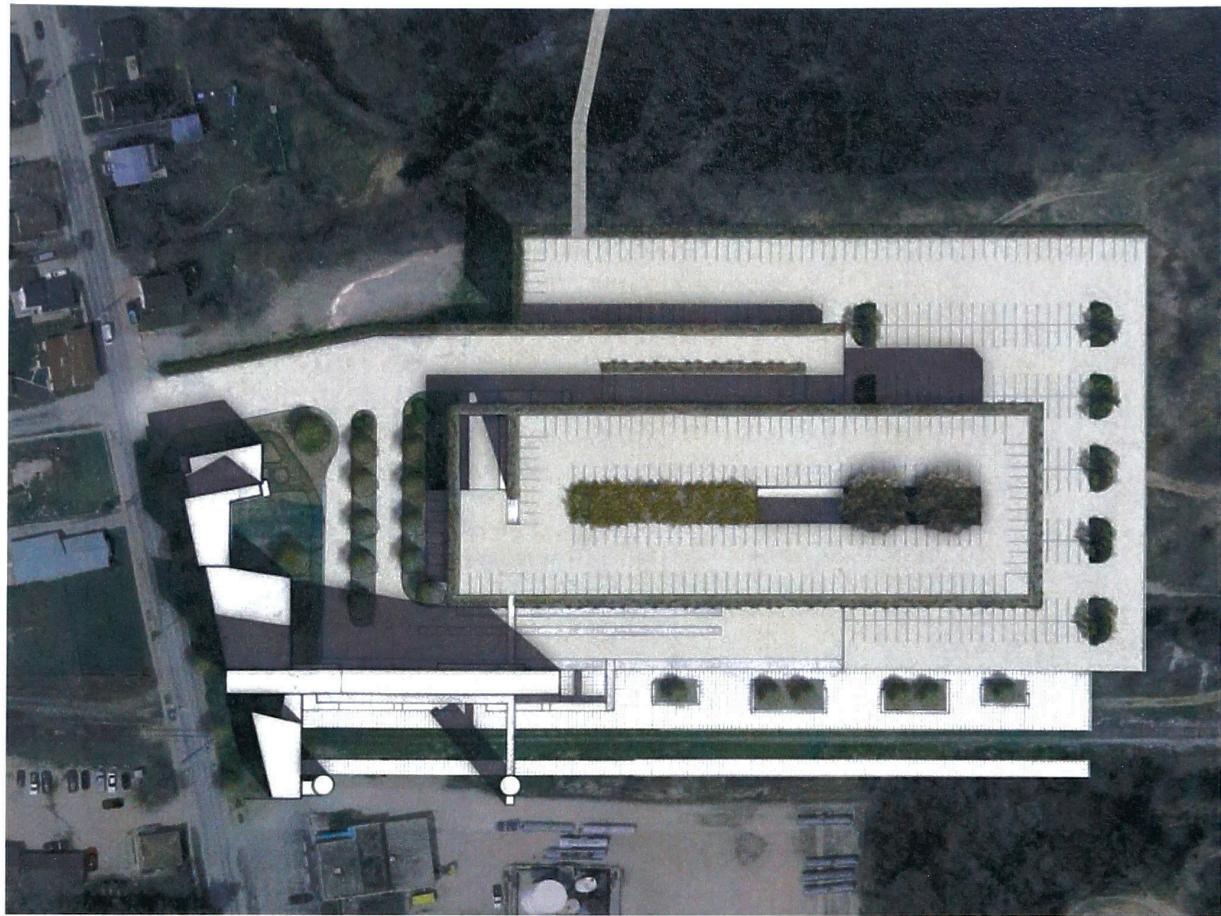


Figure 29: Breslau GO Station Site Plan

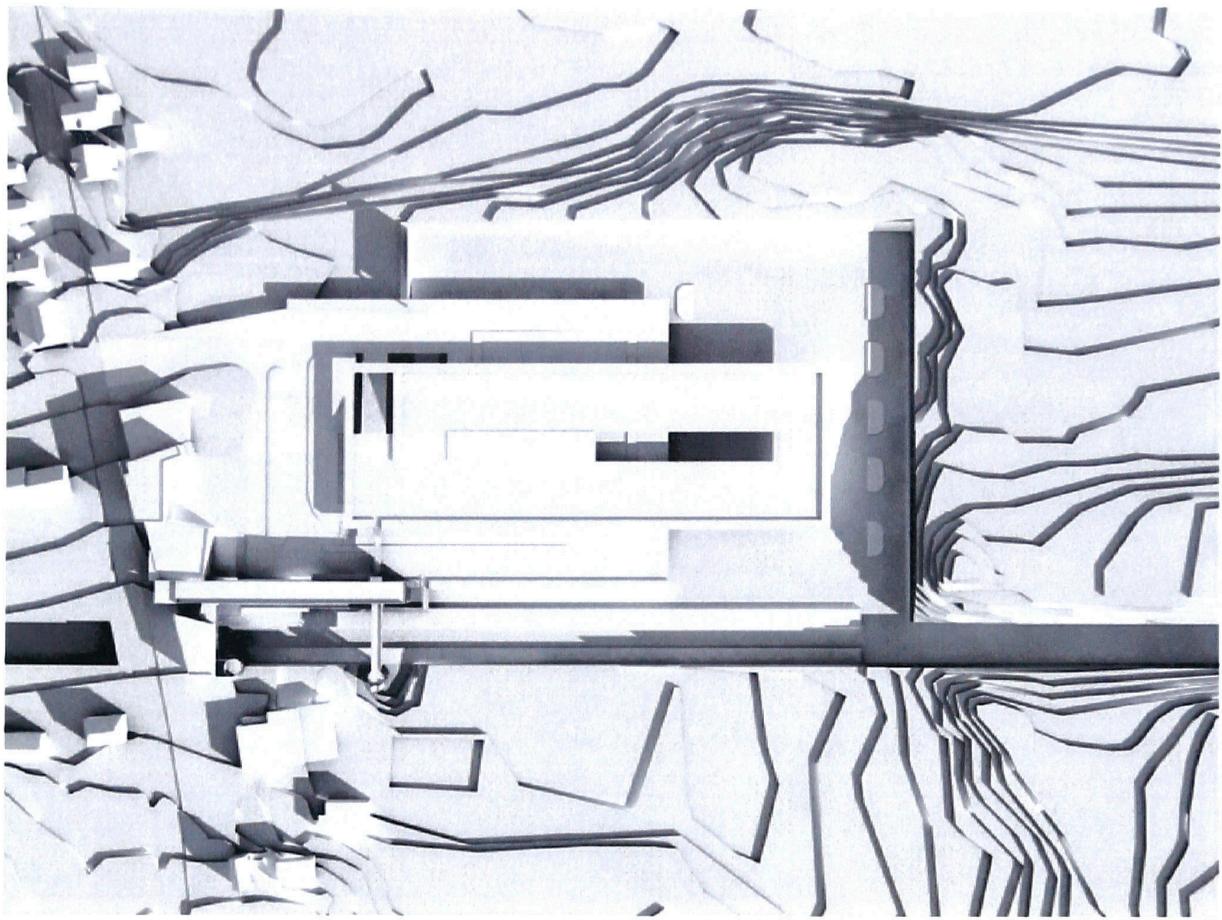


Figure 30: Computer Model of Breslau Train Station

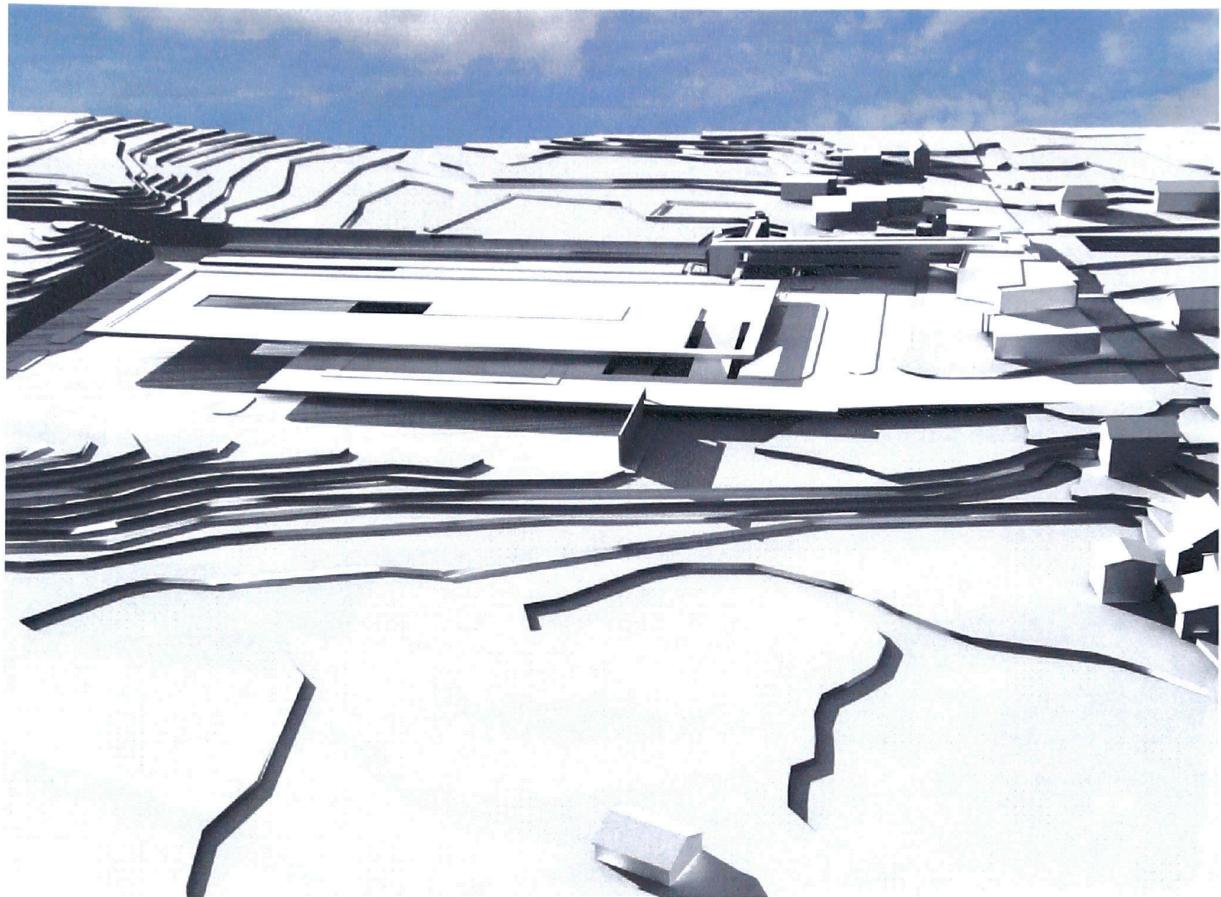


Figure 31: Computer Model Aerial of Breslau Train Station

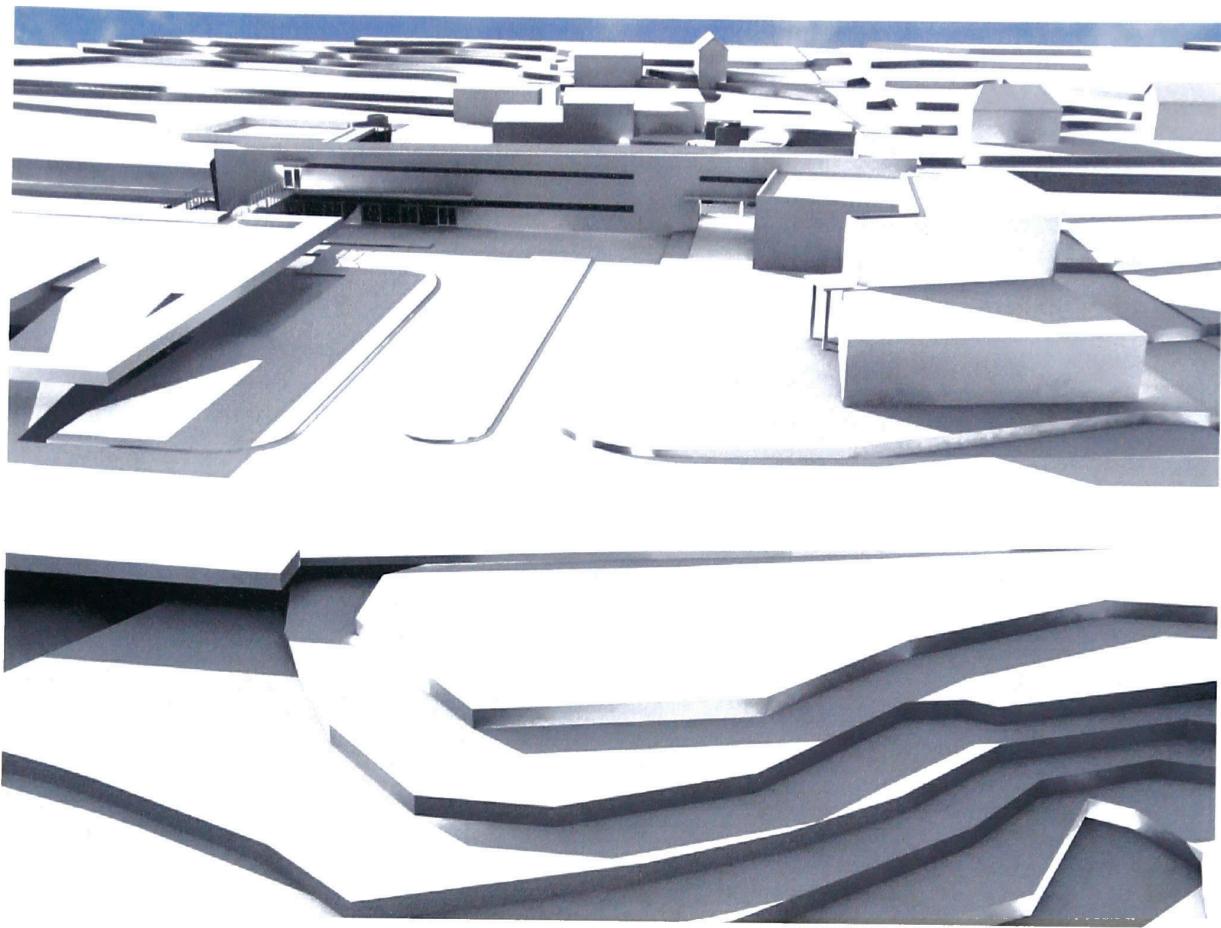


Figure 32: Computer Model, Aerial of Breslau Train Station

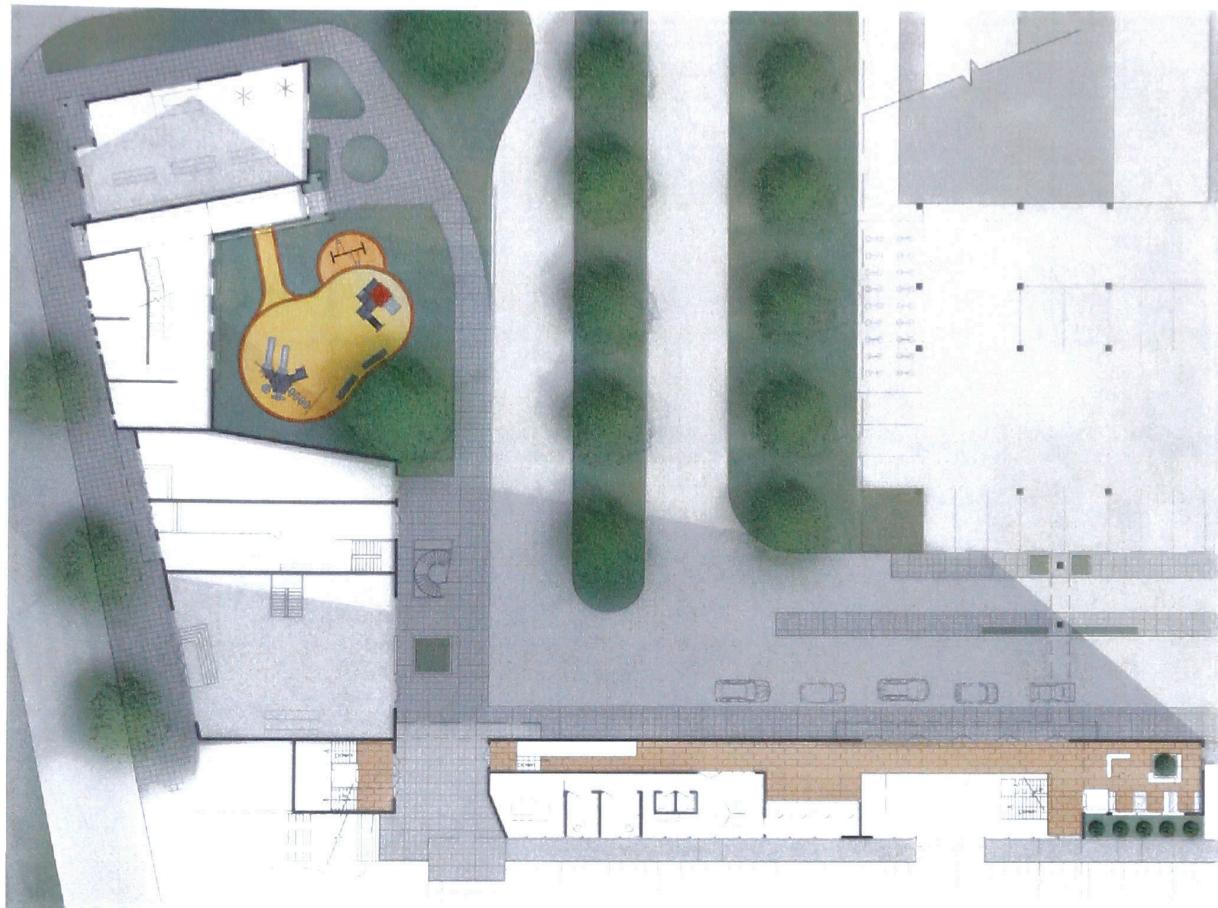


Figure 33: Ground Floor Plan

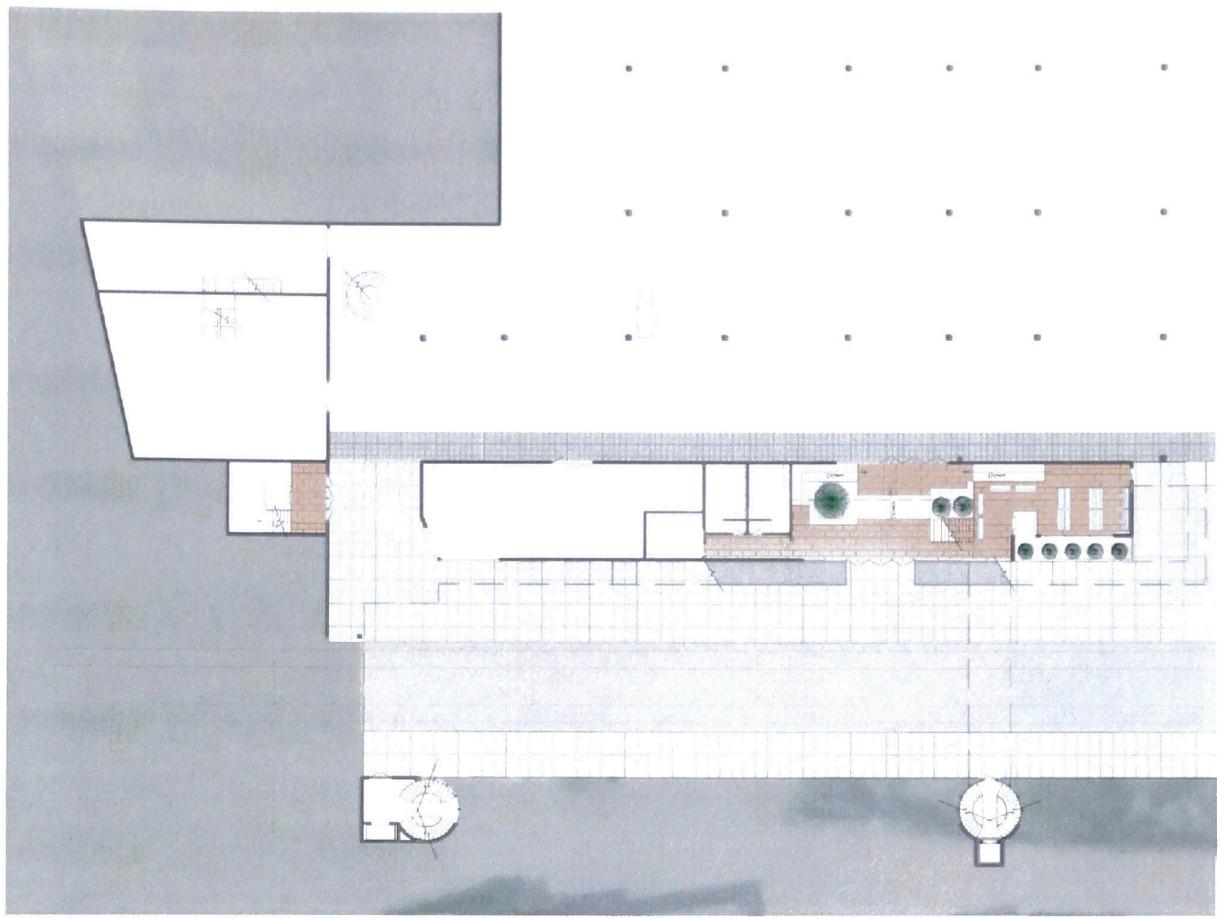


Figure 34: Below Grade Floor Plan

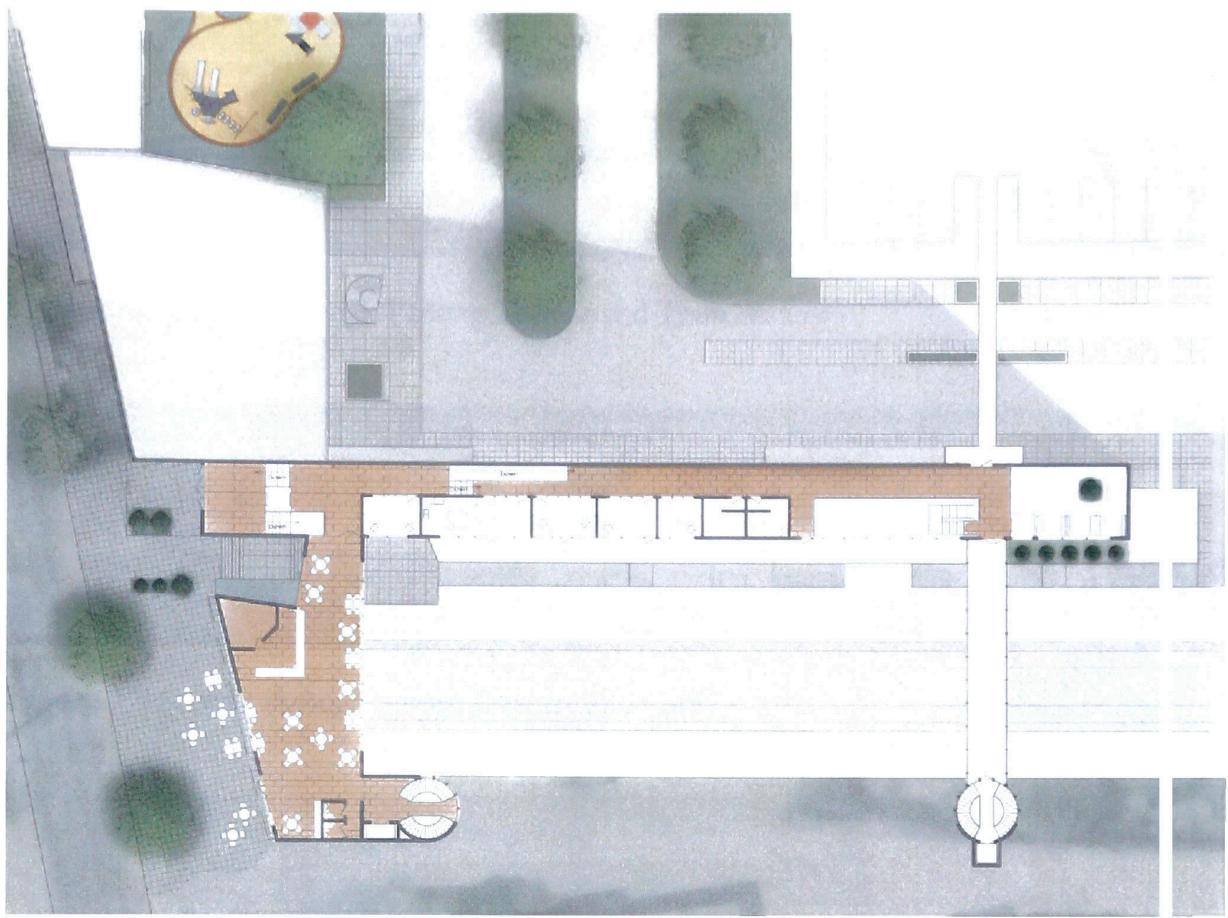


Figure 35: Top Floor Plan



Figure 36: Section Through Parking Terrace and Train Station

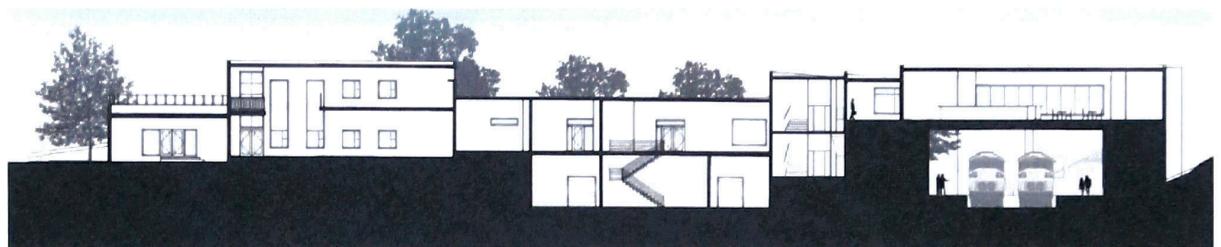


Figure 37: Section through Stores, Daycare and Café

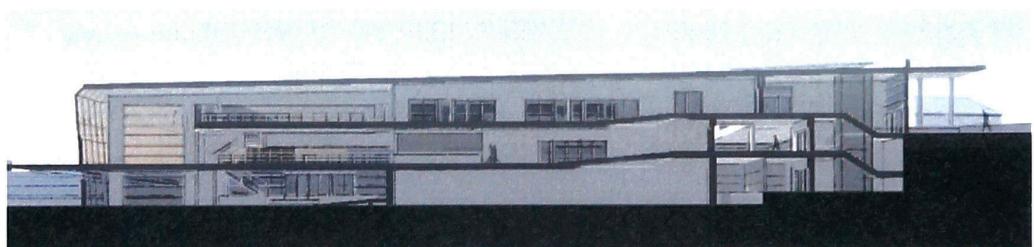


Figure 38: Section Through Train Station



Figure 39: Elevation at Woolwich Street



Figure 40: Elevation at Train Platform

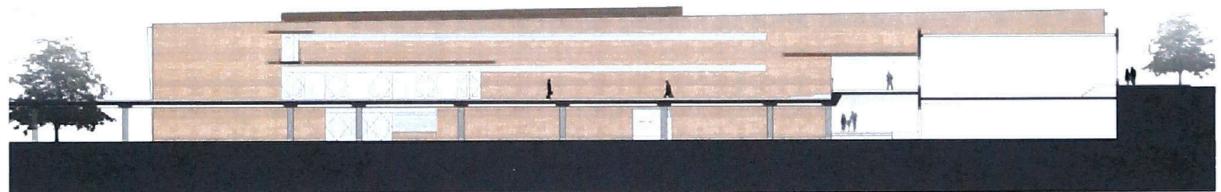


Figure 41: Elevation at Parking Terraces



Figure 42: Model Showing Entrance to Station at Kiss 'n' Ride

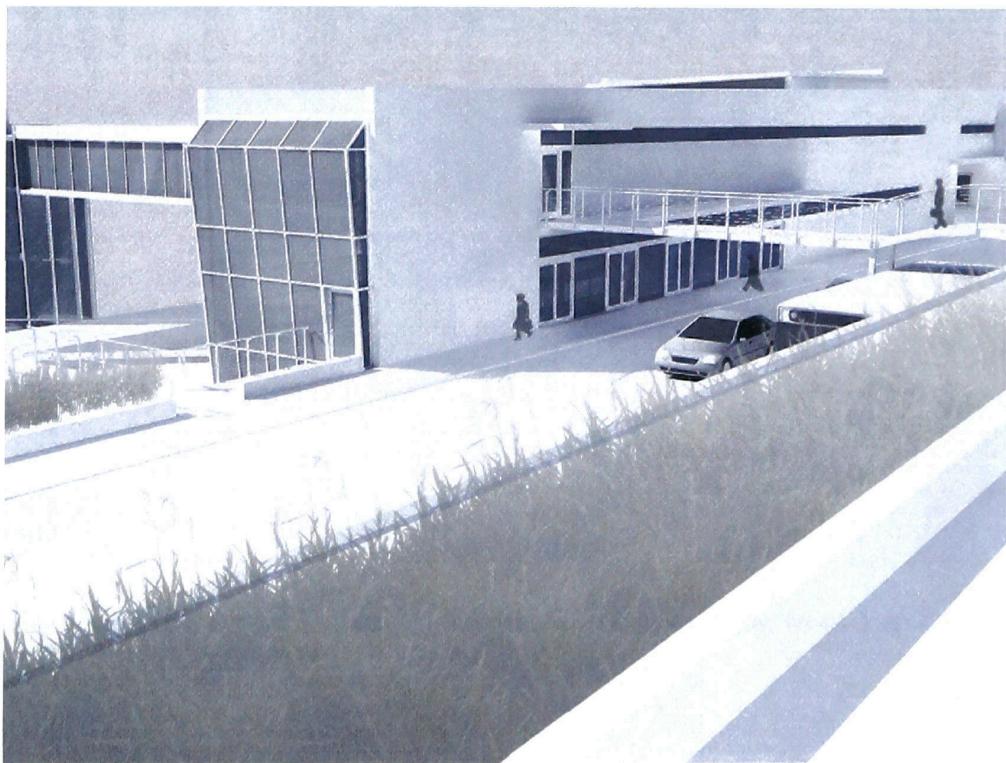


Figure 43: Model Showing Walkway From Top Parking Terrace to Station

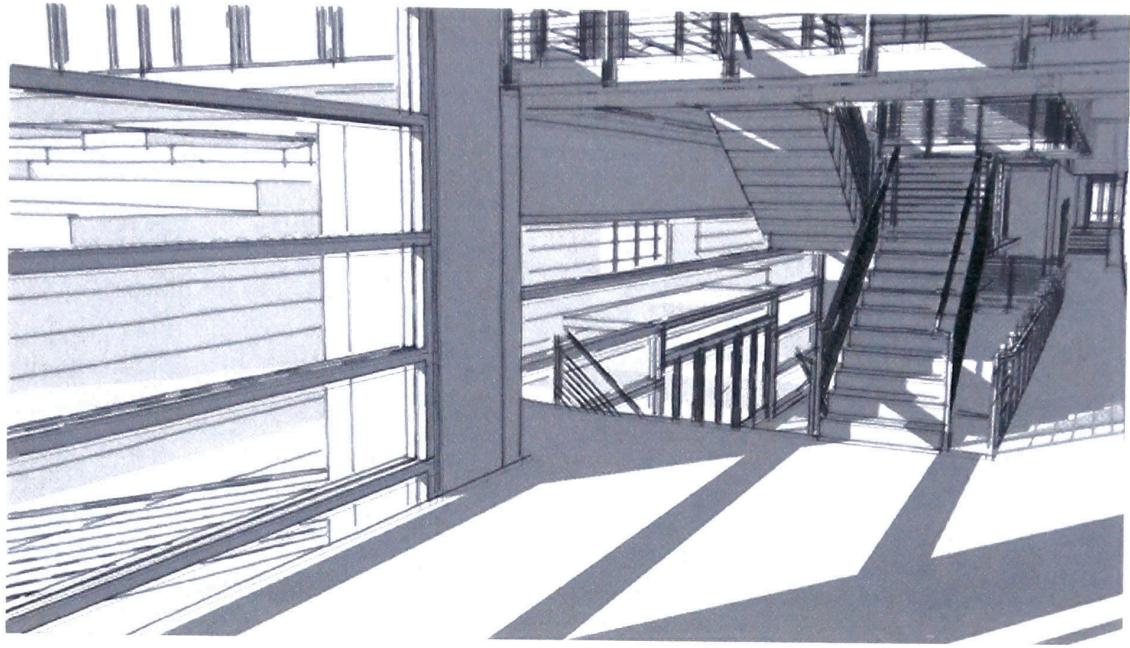


Figure 44: Interior of Station

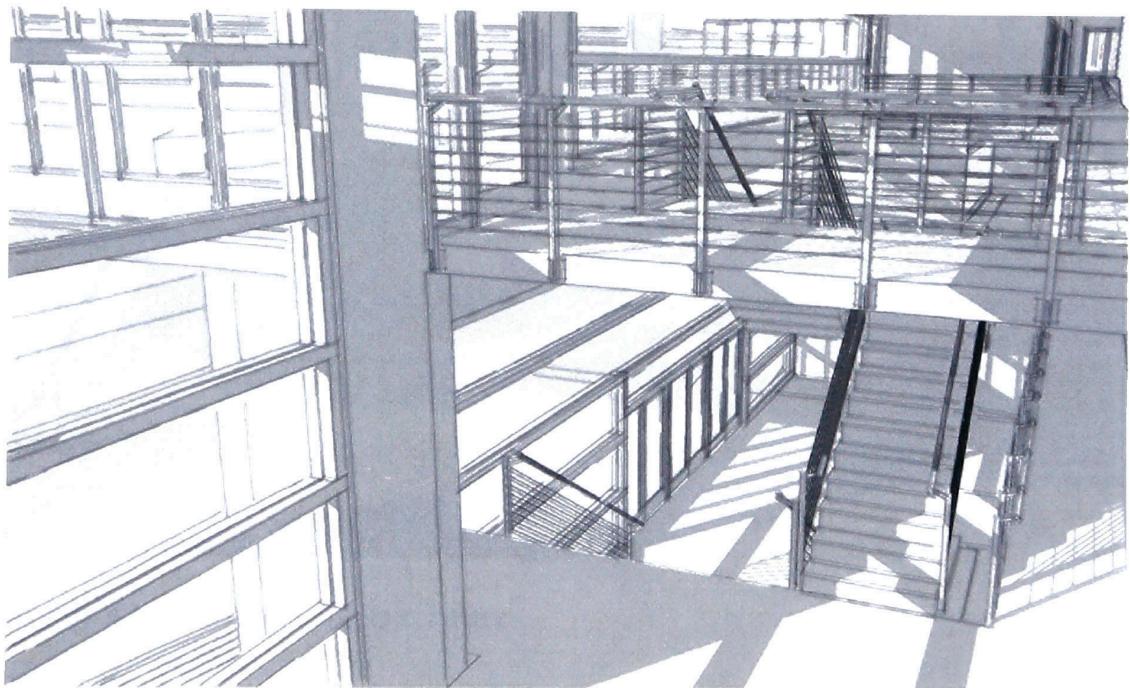


Figure 45: Interior of Station Looking at Walkway Leading from Top Parking Terrace to Stair Tower

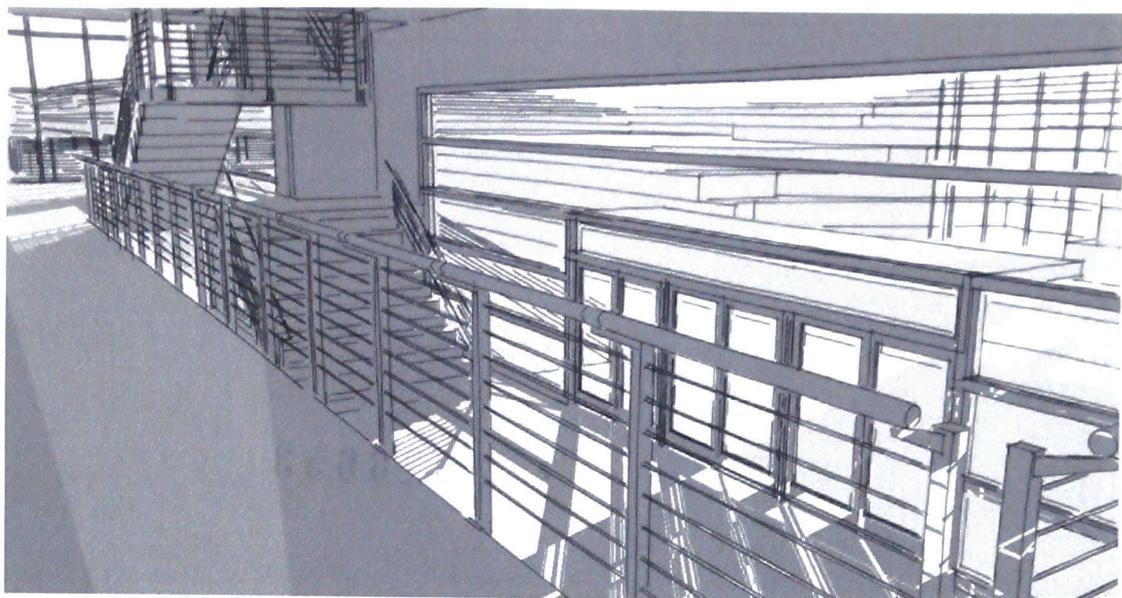


Figure 46: Interior of Station Looking Towards Stairs

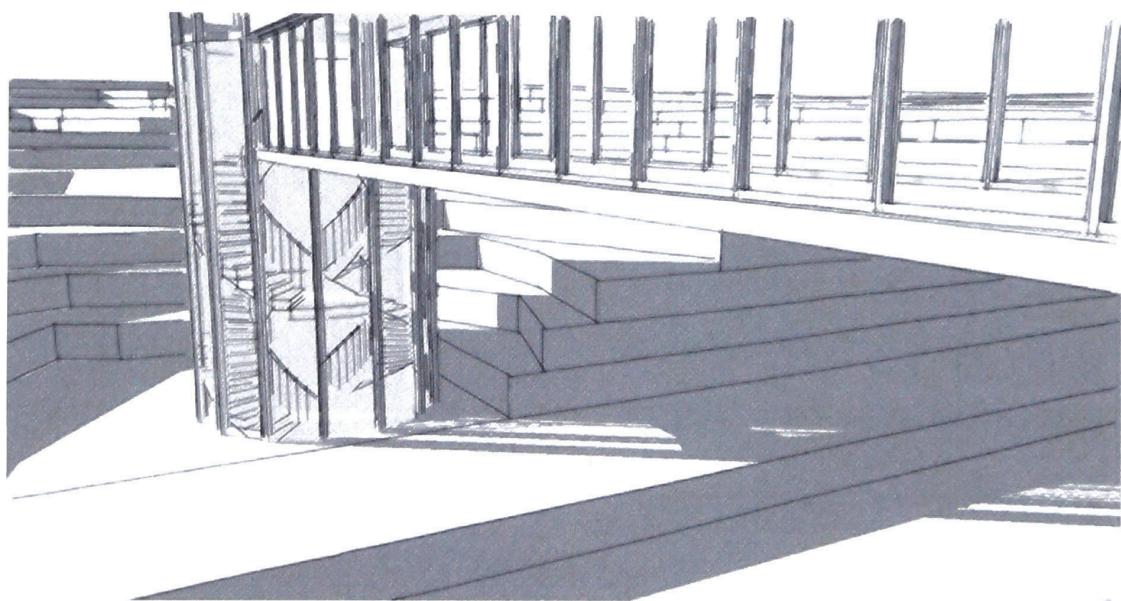


Figure 47: View Towards Stair Tower