

**Added Value: Pursuing Architecture that Promotes Social  
Prosperity & Encourages Economic Interest**

by

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To Guelph, the most royal city

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## **ABSTRACT**

Architects are arguably the most qualified to shape our cities and communities since they study and design our built environments. However, many of their ideas will never be proposed because clients, who are the real drivers of urban development, tend to accept only conventional building schemes in order to mitigate financial risk and prevent long and costly design timelines. This is often to the detriment of cities, people, architects and the profession, and is also counter-productive for property investors.

Architects must ask whether they can take command in shaping our cities and add value to our urban experience by accepting that the almighty dollar is integral to the creative process. By identifying an undervalued site in Guelph, Ontario, and using case studies of good urban fabric, this thesis will propose how architects can unlock urban and financial potential in order to help our cities prosper and ultimately empower people.

## ACKNOWLEDGEMENTS

There are a number of people without whom this thesis would have been difficult to complete. I would like to take a few lines here to formally thank those who helped me throughout this past year.

My supervisor, Richard Kroeker, was my biggest champion, and his enthusiasm for my thesis topic helped to propel me forward. In the face of striking opposition, the value of his encouragement cannot be overstated.

Cristina Verissimo, my advisor, was always ready to offer constructive criticism and insightful questions. Her cheerfulness never failed to brighten my day—even during the dark and dreary Maritime winter season.

Through their friendship during the past year, Deborah Montgomery and Olena Chorny, among other fellow students, provided indispensable assistance. Most of the time their help was in the form of tea breaks, long talks and moral support. None, however, was more generous with her time and talents than Gloria Song, who not only dedicated much of her summer to helping me, but who also completed every task with the care and attention often reserved for one's own work.

Throughout my life there have been several people who have supported me in all my endeavors and ultimately provided the means to pursue them. The sacrifices made by my parents, Don and Nada Marcellus, and grandparents, Editta and Ivan Japuncic, will not be forgotten. They, along with my confidant, Nigel Smith, were with me before I started architecture school, and they will continue to be there long after the glow of thesis completion fades. Their confidence in my ability to succeed is infinite, and knowing this makes it a little easier to take risks and pursue future opportunities.

Lastly, I would like to thank Hendrix for enduring my long absences with grace.

## CHAPTER 1: INTRODUCTION

### 1.1 Thesis Question

The world's populations are moving in ever greater numbers to urban centers, and as they do, our cities must accommodate their needs for living, working and entertainment. Unfortunately, many cities have witnessed considerable urban sprawl and urban alienation. This is arguably attributable to the fact that our cities are shaped by those who seek to maximize profit on the varying valuation of urban land, often to the detriment of a larger vision for the city's urban welfare.

With the help of planners, municipalities often create master plans and establish bylaws to set up a framework for informed urban development. However, it is easy for exceptions to be made. Plans are often compromised in order to accommodate the needs and desires of those who invest and profit from developing our cities: when development is needed, it can be challenging for cities to deny requests that lead to much-needed investment.

It is for these investors and developers for whom architects work, sometimes making choices between what clients want and what is best for society and the urban environment. But can architects take back some control and serve society and its built environment in the way they were professionally trained to do?

These ideas have led to the underlying question of this thesis: How can architects take command in shaping our cities and add value to our urban experience while working in an environment in which the bottom line is paramount?

## 1.2 Architect's Urban Responsibility

The architect's most essential task: to make environments for transformative urban experiences, to create public space as a forum for social, cultural, and commercial exchange.<sup>1</sup>

Since architects study and design our built environments, it follows that they should be the ones to propose and develop our future urban landscapes. As succinctly put by Thomas Fisher, architects may be singular in having the “ability to think simultaneously at many different scales and to assess the value of alternatives that do not yet exist.”<sup>2</sup> Since urban challenges are intrinsically tied to building challenges, crossing a multitude of scales, who is better equipped to meet society's urban challenges?

Architects profess to shape cities, but more often than not, buildings are built piecemeal. As a consequence, architects often do not have the opportunity to effect more change because they must operate within the parameters and objectives of one client and one building. Their designs do ultimately affect the urban landscape cumulatively over decades, but the immediate design efforts are spent towards the solitary building and its image, rather than towards the urban landscape.

However, this does not mean that architects ignore the larger context. In fact, they often envision larger developments when they design single projects for their clients, and can be frustrated by their inability to complete a grander scheme. John Brown expressed this frustrating situation well: “When you design a building you place it in an idealized setting—often not



what actually exists—but why can't we actually propose and build that idealized part?"<sup>3</sup>

Beyond designing one project for one client, architects can better serve society by understanding the underlying dynamics that shape urban form and being the driving force behind an urban blueprint that empowers the whole community:

We do not belong to Form Givers. We have no desire to create new fashions in architecture. There is little value in the building of buildings alone. The only thing that really matters is taking the whole area and creating an environment, comfortable and convenient for the people who live there, work there, or shop there. It is environmental architecture that really calls for imagination today.<sup>4</sup>

### **1.3 Limiting Business Model**

The typical architecture business model for the design and development of new buildings is based on the premise that there is a client: a client engages an architect to provide services; the architect agrees to provide specified services; services are provided to the client; and the architect is remunerated for services rendered, usually at predetermined project milestones.

This business model reveals two problems. Firstly, in the words of John Brown, "our practice today gives architects no power."<sup>5</sup> More specifically, architects have a difficult time controlling their economic success because they must rely on others to create a need for design services. Furthermore, the pool of architecture clients today is only made up of about 2% of the population,<sup>6</sup> and this creates an aggressive architectural services industry—one that only becomes more acute with a slowing economy.

Secondly, architects serve client desire.<sup>7</sup> Since only about 2% of the population use architectural services—mostly wealthy individuals, and public and private institutions—the desire that architects serve does not always align with the needs and interests of the remaining 98%. This causes a scenario in which the agendas of a privileged minority can be prioritized over the needs and wants of the majority. This can be troublesome because the lasting consequences—both positive and negative—of the completed project affect 100% of people by virtue of being physical and existing in the public realm.

As described earlier, many of the building projects seen today are those whose investors seek to maximize profit on the varying value of urban land. In other words, many of the projects today are driven by the potential for financial gain, and therefore, the design emphasis is on providing financial value for investors, often trumping design efforts to provide other forms of value that can enrich the lives of urban inhabitants and visitors.

Because many architects maintain this limited idea of practice, the business model persists despite the obvious shortcomings.<sup>8</sup> However, it is estimated that all careers will change in the next ten years,<sup>9</sup> and as such, architects will likely have to change their perceptions of how their practice will function. Instead of waiting for others to bring work to the office, perhaps architects will have to be more proactive and “see the need for something”<sup>10</sup> to create work for themselves.

By creating their own work, the two problems of the traditional business model are mitigated: architects would have more power to steer the economic and

design direction of their firms, and they would not need to design solely for client desire because there would not be a client—at least not in the traditional sense.

Because of the firm's own need to produce profits, this model of business would not eliminate the need to design proposals that create financial value. It would, however, give architects more freedom to pursue designs that add urban and social values in addition to financial value. Ultimately, a firm with this business model would assume much more risk,<sup>11</sup> but along with the risk would come more control and more potential for personal and financial reward.<sup>12</sup>

#### **1.4 Great Design, Good Financial Sense**

As discussed, it is often because of a client's financial motives that architects are limited in their ability to design projects that will sustainably enhance the urban experience. However, making financially gainful choices does not have to limit a design, especially if the architect, by working for him/herself, has more freedom to experiment with different ideas.

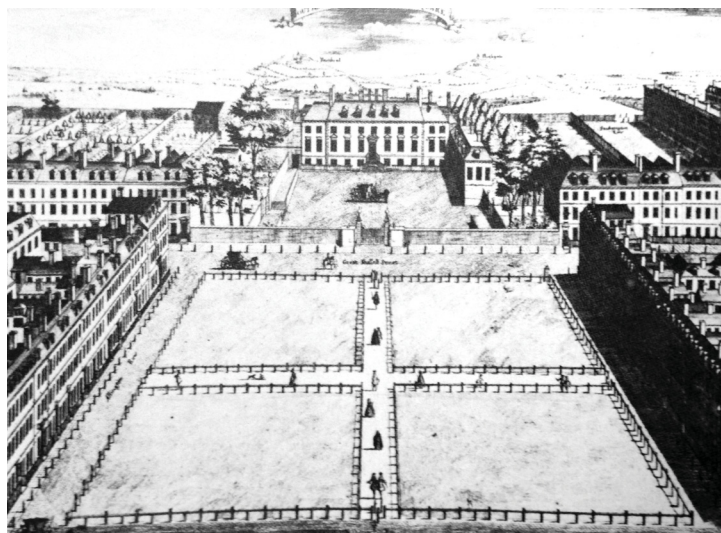
Some of the best examples of urban fabric were designed and built by speculators with the express objective of making profit. London, often considered one of the world's best cities, showcases this point: the city's urban environment is rich, the envy of many, and yet "close to 99 percent of all its houses built in the nineteenth-century were built speculatively."<sup>13</sup>

In the eighteenth century, London was the major city in the UK, and social life—more particularly, court life—centered there.<sup>14</sup> Aristocratic families wanted to have

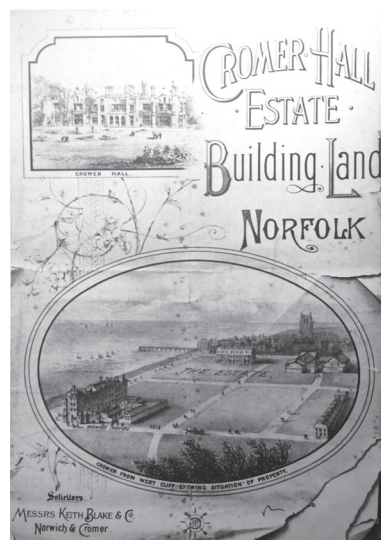
estates close to the city, but preferred the country life where they could enjoy not only sweeping grounds and gardens, but also closer proximity to court, which was not located in central London. Consequently, almost all the land around the original London core was owned by a selection of elite families, mostly Earls and Dukes, and it was they who would set the pattern of London's future urban design.<sup>15</sup>

Along with these estates came servants, merchants and artisans—all of whom had their own families—to support the lives of the nobility. Populations grew.

Eventually, the estate owners saw the opportunity to build homes on parts of their lands to profit from sales and rents. However, since these new developments were going to be near their own estates, Earls and Dukes made certain that their design, planning and execution were done well.



They wanted to ensure that the built areas soon to be surrounding them would be dignified and that the neighbours they gained would be of a certain class.<sup>16</sup> Therefore, while these speculators primarily sought to



Advertisement for land development opportunity in the early 1890s, posted by a property owner looking for a surveyor to assist in development; from Muthesius, *The English Terraced House*

View of Bloomsbury Square with Bedford House in the distance during the mid-eighteenth century; from Muthesius, *The English Terraced House*

earn profits from developing their land, they were also interested in good design.

The designs have stood the test of time because they are they are shaped by natural daylight, natural ventilation, and easy access to green space and commercial amenities. It is also notable that many of the land-owning families continue to profit from these developments today.<sup>17</sup>



Northern view of Bloomsbury Square around 1960; from *The English Terraced House*

It is helpful to keep this in mind as architects seek to design projects. It demonstrates that financially sensible developments can also lead to great urban fabric and culture, especially when there is a vested interest in both. Financial sensibility and good design are not mutually exclusive.

### **1.5 Creating Value**

By creating their own projects that are both financially and socially invested, architects would not only be able to add value to existing urban environments, but they would also be able to seek out opportunities to create value where none existed before.

A good example of value-creation is that of the *Adelphi* development. In 1768 the Adam brothers, three architects and a banker, purchased a 99 year land lease on Durham Yard, a piece of land just south of the Strand in London. The land had no inherent value and hosted only small, dilapidated houses. The brothers eventually transformed it into a one of the most popular areas in London with the grand building enterprise, the *Adelphi*.<sup>18</sup>

This enterprise is very characteristic of England. It shows us a grand speculation with enormous profit in view, but also enormous risk. It is quite different from...[others that] are generally mere speculations in a rise of ground value. This is speculation in fictitious values, attempts to profit from the varying valuation of the ground, independent of its use. The English enterprise is an attempt to convey to a ground—which in itself is not worth much—new and real value through the buildings erected on it and then take the profit of what has been produced. It is a purely productive enterprise.<sup>19</sup>



View of the Adelphi from the Thames; from Rasmussen, *London: The Unique City*

The brothers were in a unique position to pursue this type of value-creation. The architects were able to envision options that many others probably would have failed to imagine on an undervalued site, and they had a banker on their team who could help to ensure that

good economic design decisions were being made. While not all architects find themselves in such fortuitous circumstances, it does not preclude them from pursuing these kinds of projects.

By identifying an undervalued site, determining opportunities for urban and social value, and uncovering the possibilities for financial gain, architects can create their own work. And ultimately, by creating their own projects, architects are empowered to take command in shaping our cities: it is possible for architects to add value to the urban experience while working in an environment that requires profit.

## **1.6 Focus on Downtown Guelph**

It is certain that there are many areas in any one city that require value-creation, but downtowns are of particular importance because they are the lifeblood of cities, and therefore, are a public good:

The downtown is the only part of the city that belongs to everybody. It doesn't matter where you may find your home; the downtown is yours too. Investing in the downtown of a city is the only place-based way to benefit all of its citizens at once.... Every relocation decision, be it a college graduate's or a corporation's, is made with an image of place in mind. That image is palpable and it is powerful. It is resolutely physical.... And, with rare exception, that image is downtown.... If the downtown doesn't look good, the city doesn't look good.<sup>20</sup>

Unfortunately, many North American downtowns have deteriorated with an exodus to the suburbs. The explosive population growth that occurred after the Second World War resulted in a high demand for consumer goods, most notably, housing. The heavy government investment in

highway construction made it possible and attractive for land on the periphery to be developed for housing and commercial centers.<sup>21</sup> As a consequence, many people were able to migrate to the suburbs in their search for new construction, larger homes, and private gardens. The suburban migration starved urban centers of investment and, more importantly, people. This phenomenon is most associated with the American experience, but it also occurred in Canada: “Whether American or Canadian, the inner cities with less regional highway investment fared better than those with more.”<sup>22</sup>

Unlike so many other North American cities, Guelph, Ontario, still maintains a small, vibrant urban center. It also boasts an engaged community with residents who are invested in the city’s prosperity and culture. There are, however, still many opportunities for improvement.

Guelph’s supportive environment is key for predicting whether a viable market exists and estimating the likelihood of a successful project. In other words, the context of the city decreases the amount of risk that would be assumed in pursuing a project, making Guelph a good test case for adding value in a downtown core.



## CHAPTER 2: SITE & CONTEXT

### 2.1 Guelph as a City

Guelph is a medium-sized city with a population of roughly 120,000. In the last 20 years, the city has grown more than 37%,<sup>23</sup> and this population growth has directly contributed to the rapid suburban expansion in the city's south end during the same time.

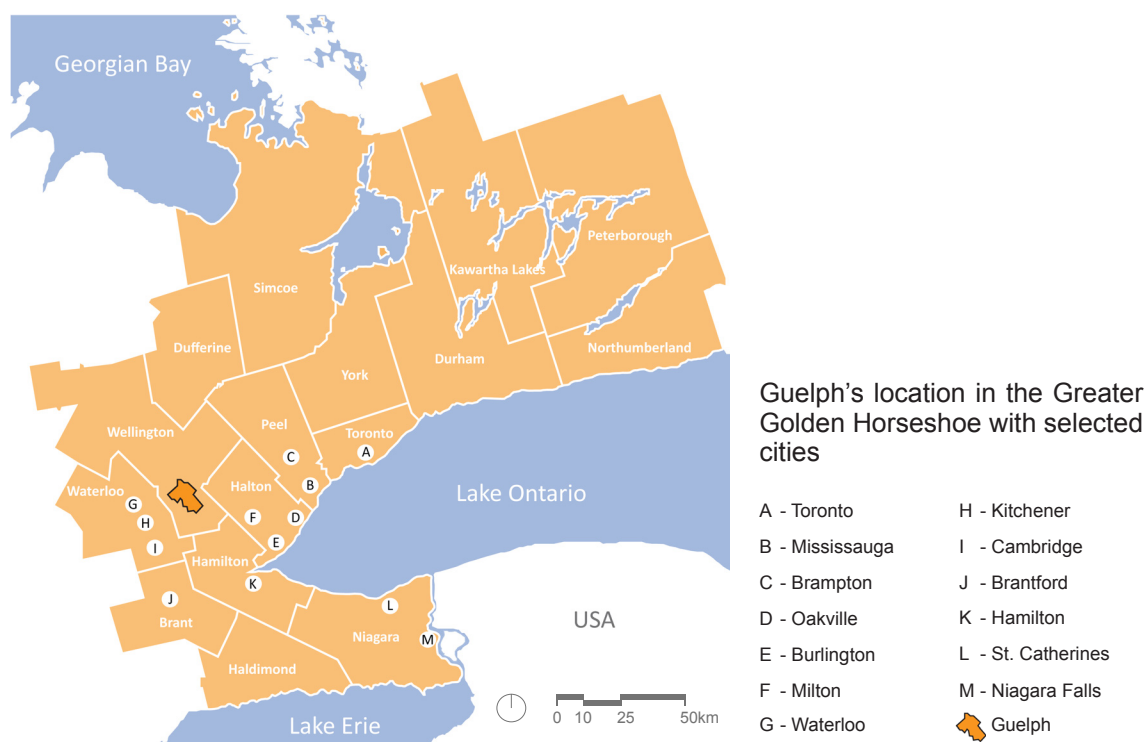
The city of Guelph is a popular choice for individuals and families for several reasons, not least of which is location. The city is geographically located within the Greater Golden Horseshoe in southern Ontario.



The Greater Golden Horseshoe in Southern Ontario indicated in orange

The Greater Golden Horseshoe is an area of the province that has a large collection of sizable cities that are located relatively close to one another. Living in the Golden Horseshoe, many people often work and live in different cities, and they often travel to neighboring cities

during their leisure time to see family and friends, shop, explore and participate in local events. These cities are tied more closely together than other cities in the province or country because of distance, transportation routes, economies and families.



In particular, Guelph is approximately 100km west of Toronto, and is within a half-hour drive to other major urban cores such as Kitchener, Waterloo, Hamilton and Oakville, among others.<sup>24</sup> With four major highways serving the city—MacDonald-Cartier Freeway, and Highways #6, 7 and 124—as well as VIA and Go rail service, the city is well connected. It is also within a forty-minute drive to two international airports—located in Toronto and Hamilton. In short, Guelph is sited within 800km of, and has access to, over 60% of Canadians and 40% of Americans.<sup>25</sup>

Although being highly connected to other urban centers, Guelph has its own identity. Beyond major industries such as manufacturing, Guelph is perhaps best known for institutions—particularly the University of Guelph with its research park—that focus on agriculture, food and life sciences. Other notable industries include information technology, environmental enterprise and other service sector industries.<sup>26</sup> All in all, despite world economic slowdowns, earnings in Guelph “have continued to trend higher and wage growth above four percent is expected”<sup>27</sup> going forward.

Guelph has a rich heritage that dates back to the early 1800s.<sup>28</sup> This sense of history has likely contributed to the city’s strong sense of community. Guelph boasts being one of the safest cities in Canada, five years running,<sup>29</sup> and it hosts many cultural institutions and events including the very popular summer Hillside music festival. There are numerous parks throughout the city



University of Guelph Arboretum; from Ontario Trails



Guelph Lake; from GregMercer



Hillside Festival; photograph by Iwanyshyn, *Guelph Mercury*



Potter's Market in downtown Guelph; photograph by Wei Wong, *Cycling + Photography*

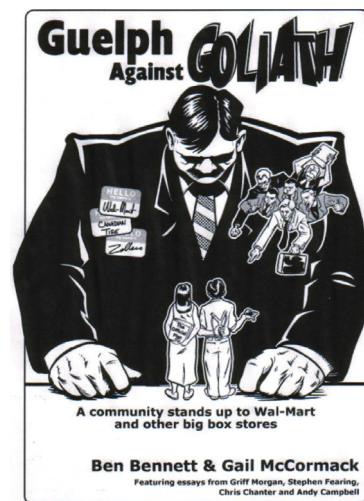


Ribfest at Riverside Park; photograph by Wei Wong, *Cycling + Photography*

including many neighbourhood parks, a large trailed dog park, a lake conservation area, and the University of Guelph's expansive Arboretum.

Residents are particularly involved and committed to preserving the feel and culture of their city. For example, many Guelphites fought to keep Wal-Mart and other box stores out of the city.

In fact, a book was published, *Guelph Against Goliath*, to record the public's struggle to safeguard Guelph's unique culture and stop the infiltration, and subsequent proliferation, of retail companies. Eventually, and to the chagrin of many, Wal-Mart and others did win permits to build within city limits. The battle lasted ten years and cost the city close to one million dollars in legal and counselling fees.<sup>30</sup>



*Guelph Against Goliath* book cover; from Bennett and McCormack, *Guelph Against Goliath*



This illustration of Guelph's fight against big-box-stores exemplifies the Guelphite's negative perception of retail giants; from Bennett and McCormack, *Guelph Against Goliath*

## 2.2 Guelph's Downtown: The Good

One of the reasons why many Guelphites valiantly fought to keep Wal-Mart from opening a store in the city was to protect small, independently-owned businesses in the downtown. There are a substantial number of people in Guelph who are concerned with the continued existence of a vibrant urban center. This strong sense of community compels many to go out of their way to support local businesses to ensure that the energy of the downtown does not disappear.

Because of this support, Guelph still maintains a lively and engaged downtown. This has led some to say that it has a slight European feel. This feeling is likely bolstered by the downtown's somewhat radial plan, which was designed by Scottish novelist John Galt in 1827.<sup>31</sup>

The original design included a grand "market ground" at the downtown's center, but this design element was not maintained because the CN railway was built through the "market ground" to service the downtown core.



Portrait of John Galt in 1839; from Dictionary of Canadian Biography



John Galt's plan for Guelph in 1827 with a central "market ground" marked in orange; from City of Guelph, *Story Behind the Square*



Downtown Guelph in 2014 has a commuter railway that passes through the center of the area that was originally designed by John Galt to be the “market ground,” which is noted in orange

The downtown has about 500 shops and restaurants to serve the 2000 residents and 6000 employees who live and work there.<sup>32</sup> The job mix in the downtown is varied, but the largest employers are the city and county, the insurance company *The Co-Operators*, retailers and restaurants.<sup>33</sup> There are also a significant number of small and mid-sized professional firms, non-profit organizations and information technology businesses.<sup>34</sup>



Carden Street in front of City Hall and Market Square in downtown Guelph; photograph by Wei Wong, *Cycling + Photography*



Quebec Street in downtown Guelph; from Riverhouse Condominiums



Wyndham Street, North of the railway corridor in downtown Guelph; from Riverhouse Condominiums



Market Square festivities on John Galt Day in front of City Hall in downtown Guelph; from Exchange Magazine



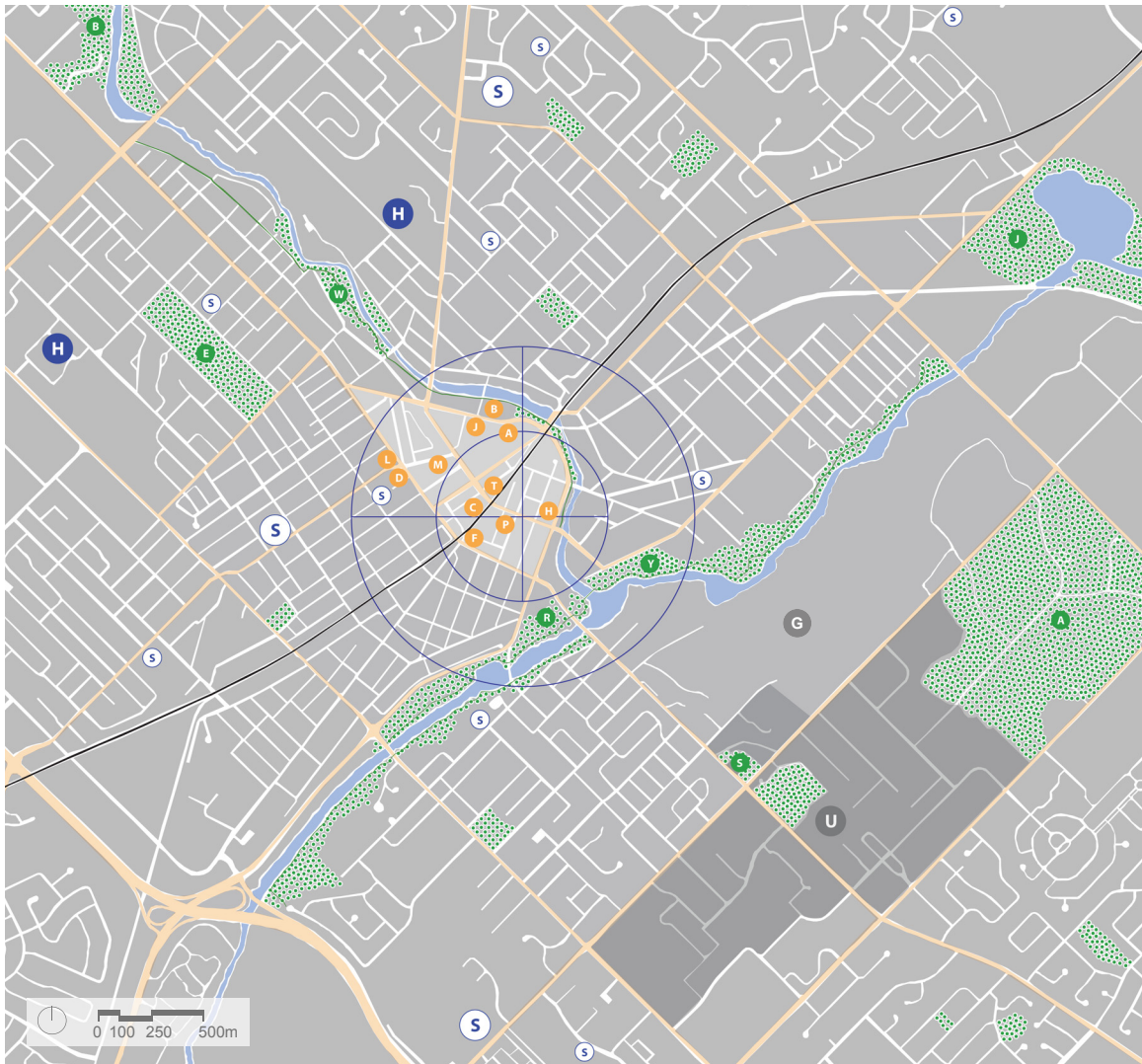
North-West corner of St. George's Square in downtown Guelph



McCabe's patio on Wyndahm Street in downtown Guelph; photograph by Wei Wong, *Cycling + Photography*

Beyond shops and restaurants, the area is also well-served with facilities such as City Hall, a public library, train and bus stations, court house, museum, emergency services, arena, theatre center and schools. Almost everything within the downtown can be accessed within a five or ten minute walk. The Guelph General Hospital and the University of Guelph are also located nearby.





The facilities in and around Guelph's downtown

**Downtown**

- A** Sleeman Centre arena
- B** River Run Arts Center
- C** City Hall
- D** grocery store
- F** farmer's market
- T** train station
- H** fire station
- J** courthouse
- L** public library
- M** cinema
- P** police station





**Parks**

- A** Arboretum
- B** Riverside Park
- E** Exhibition Park
- J** Royal City Jacee Park
- P** Royal City Park
- S** Sculpture Park
- W** Joseph Wolfon Park
- Y** York Road Park

**Outside Downtown**

- G** private golf club
- U** University of Guelph
- S** secondary school
- S** elementary school
- H** hospital

**Context**

-  5 & 10 min. walk from centre
-  major roads
-  commuter railway
-  walking trails

### Facilities within Guelph's downtown

- |  |                       |  |                    |
|--|-----------------------|--|--------------------|
|  | Baker St. parking lot |  | Train station      |
|  | Public library        |  | Greyhound station  |
|  | Grocery store         |  | Farmer's market    |
|  | Elementary school     |  | Armoury            |
|  | Cinema                |  | Fire hall          |
|  | St. George's Square   |  | Police station     |
|  | Sleeman Centre Arena  |  | St. Patrick's Ward |
|  | Courthouse            |  | Royal City Park    |
|  | River Run Arts Center |  | Strip mall         |
|  | Our Lady Immaculate   |  | York Road Park     |
|  | City Hall             |  | Lawn bowling       |
|  | Market Square         |  | Boat rental        |

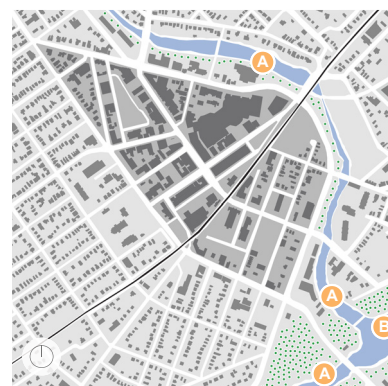


Over all of downtown presides the landmark *Church of Our Lady Immaculate*, which sits atop a hill to the south-west of downtown. The church's representational importance to the identity of Guelph's downtown is marked by a bylaw which states that no building is permitted to be taller than the church.



View of Our Lady Immaculate at the end of Macdonnel Street in downtown Guelph; from Riverhouse Condominiums

The downtown is also defined by the Speed River. Currently, certain areas of the river are not very accessible nor inviting because the buildings built along the river face away from it, while others completely block it. Many of these buildings are residential apartments, where the majority of downtown's 2000 residents are housed.<sup>35</sup> However, the most disruptive building is a strip mall located along the Speed River: the *Downtown Trail*, a pedestrian and bicycle trail that follows the edge of the Speed River around downtown, is interrupted by the strip mall and its parking lots. Nevertheless, where the Speed River splits into the Eramosa River, there are two large public parks—Royal City Park and York Road Park—complete with wooden covered bridge, baseball diamonds, soccer fields, lawn bowling, picnic areas, and boat rental facilities. The rivers, parks and trail, however imperfect, are assets to the downtown.



Speed and Eramosa Rivers

- A - Speed River
- B - Eramosa river



The Downtown Trail, noted in orange, is broken along the Speed River by a strip mall, but there are many amenities in the park system along the river

-  Royal City Park
-  Lawn bowling
-  York Road Park
-  Boat rental



Southern view of the Speed River in Royal City Park; from Riverhouse Condominiums



Covered wooden bridge that connects Royal City Park and York Road Park; from Riverhouse Condominiums

## 2.3 Guelph's Downtown: The Bad

While much of what has been described suggests a pleasant image of Guelph's downtown, there are several areas that lack this vibrancy. Many of the lackluster areas surround, or are immediately adjacent to, gaps in the urban fabric that are created by parking lots. In effect, there is a loss of consistent urban fabric which creates, what Roger Trancik calls, "lost spaces":

Generally speaking, lost spaces are the undesirable urban areas that are in need of redesign—antispace, making no positive contribution to the surroundings or users. They are ill-defined, without measurable boundaries, and fail to connect elements in a coherent way.<sup>36</sup>

The poor areas to the north of the railway corridor are relatively small and fragmented—by virtue of being centered around dispersed parking lots and structures—but to the south of the corridor the underutilized spaces are not fragmented at all. The entire area to the south of the railway corridor creates a huge pocket of anti-space. The sheer size of the space is alarming when comparing it to the overall size of the downtown: nearly half of the city's available downtown space is "lost."



The "lost" spaces in downtown Guelph are highlighted in orange. The entire area south of the railway corridor is underutilized

Although being centrally located downtown, the area to the south of the railway corridor was historically more industrial. The industrial zones of the city have since relocated to the western areas of the city limits, but until recently, zoning for the downtown had not been updated since the 1970s.<sup>37</sup>

Therefore, low height restrictions, large setbacks and program limitations have caused this area to become most attractive to uses which require large parking accommodation, and so it resembles a suburban landscape more than an urban one.

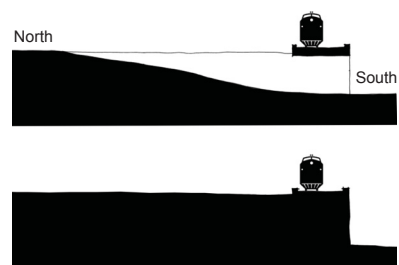


Ill-defined and lifeless spaces in Guelph's downtown area that is south of the railway corridor

Another strike against the southern side of the railway corridor is the railway itself: the whole area is separated from the northern side (which could be called the successful side) by the railway. While this barrier does not physically prohibit pedestrians from crossing from one side to the other, it certainly creates a psychological barrier. The strength of this psychological barrier is further bolstered by the fact that there is almost nothing of interest or value on the south side of the railway corridor to cause people to want to venture there.

There are only two attractions that cause people to cross the railway. The first is the farmer's market, which is just on the other side of the railway, and does not provide incentive for people to use and explore the vast majority of the southern downtown.

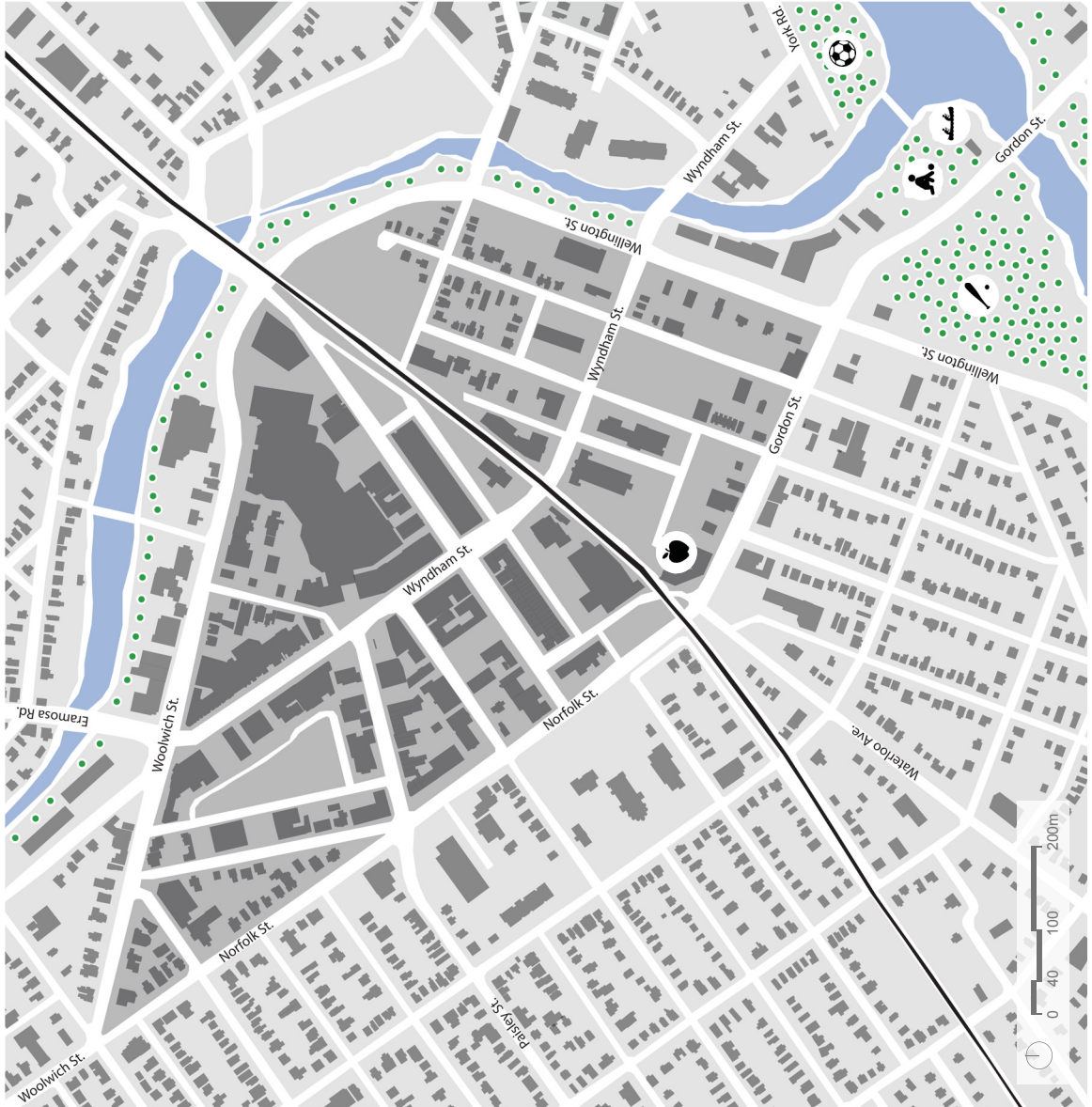
The second is the park system along the Speed and Eramosa Rivers—Royal City Park and York Road Park—which, as described before, have several facilities for outdoor recreation. However, despite these recreational attractions, the southern area creates such a gap in built form that many pedestrians are often unable to perceive a walkable link from the northern downtown to the parks. Some simply fail to venture to the parks, while others choose to visit by driving the absurdly short distance.



Sections showing two difficult railway barrier conditions that separate the two sides of Guelph's downtown

There is a marked urban density difference between the two sections of downtown Guelph. The area to the south of the railway corridor is sparsely built and has many surface parking lots. The existing attractions to the south section of the downtown are not enough to mitigate the devastating effects of poor urban fabric

- Farmer's market
- York Road Park
- Lawn bowling
- Boat rental
- Royal City Park





## 2.4 Guelph's Downtown: The Opportunity

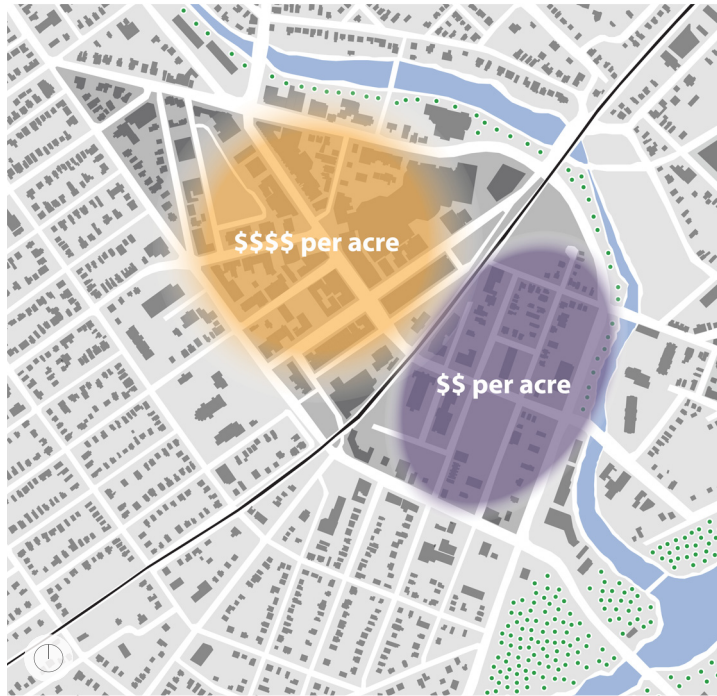
The site that offers the greatest opportunity to effect positive change and add value to Guelph's downtown is certainly the area to the south of the railway corridor. It is not only attractive because of its size, which ensures great potential for social impact, but it also has the advantage of being adjacent to Royal City Park and York Road Park, both of which host many recreational amenities along the best areas of the Speed and Eramosa Rivers—assets that the north side of downtown does not have.

While the size of the area offers the potential for great reward, along with it comes greater risk. A large part of the area, if not all of it, must be developed for it to succeed: the area's overwhelmingly desolate character means that it would be difficult to develop only selected blocks. If one block were developed, while the others remained unchanged, the remaining bleak urban landscape would likely repel most users, buyers and renters.

This happens to present an advantage: a price advantage. Since the area is so wholly unappealing, the price of land is much lower than the land to the north of the railway corridor.

The average cost per acre on the south side for a vacant lot is \$1.5 million, and a lot with a building on it is about \$2.4 million per acre.<sup>38</sup> North of the railway there are very few vacant lots, and those with buildings on them cost significantly more than those on the south side: a 2700 sq. ft. plot fronting on Wyndham Street with a typical three storey building on it has been valued at

\$900,000.<sup>39</sup> At this rate, trying to accumulate an acre of land north of the railway could cost as much as \$14.5 million. Since most of the land is built on the north side, and much of it is unbuilt on the south side, it is also true that demolition expenses would be much higher on north side plots.



The land to the south of the railway corridor is arguably undervalued compared to the land to the north: it is as centrally located as the north and has better access to the parks, but the land is much less expensive

For all these reasons, developing the south side of the railway corridor presents an excellent financial and urban opportunity.

However, identifying an advantageous site is only part of the challenge. Another is to identify a need, and to find it, one must look towards the future.

On June 15, 2006, the Province of Ontario enacted the *Places to Grow* initiative to direct the long-term growth plans of selected cities in the Golden Horseshoe.<sup>40</sup> Based on the initiative, the city's Local Growth Management Strategy, which was completed in 2009, projects a 2031

population and employment population for Guelph of approximately 175,000 and 92,000 respectively.<sup>41</sup>

Year	Population	Population Change
1971	60,087	--
1976	67,540	7,453
1981	71,207	3,667
1986	78,235	7,028
1991	88,444	10,209
1996	95,821	7,377
2001	106,170	10,390
2006	114,943	8,773
2011	125,770	10,057
2016	137,000	12,000
2021	148,000	11,000
2026	158,000	10,000
2031	169,000	11,000

Guelph population growth and growth projections; data from Economic Development, Finance & Enterprise Services, *City of Guelph 2013 Community Profile*

These population increases will increase the demand for residential development. As noted earlier, Guelph has seen significant suburban development in the last twenty years, with 90 percent of building permits being for greenfields—undeveloped parcels of land in rural areas.<sup>42</sup> However, in order to reduce the urban sprawl, the Local Growth Management Strategy has mandated that by 2015, 40 percent of all residential permits will have to be issued to developments within the city's built boundary.<sup>43</sup> It was also decided that Guelph would not be expanding its city borders before 2031.<sup>44</sup>

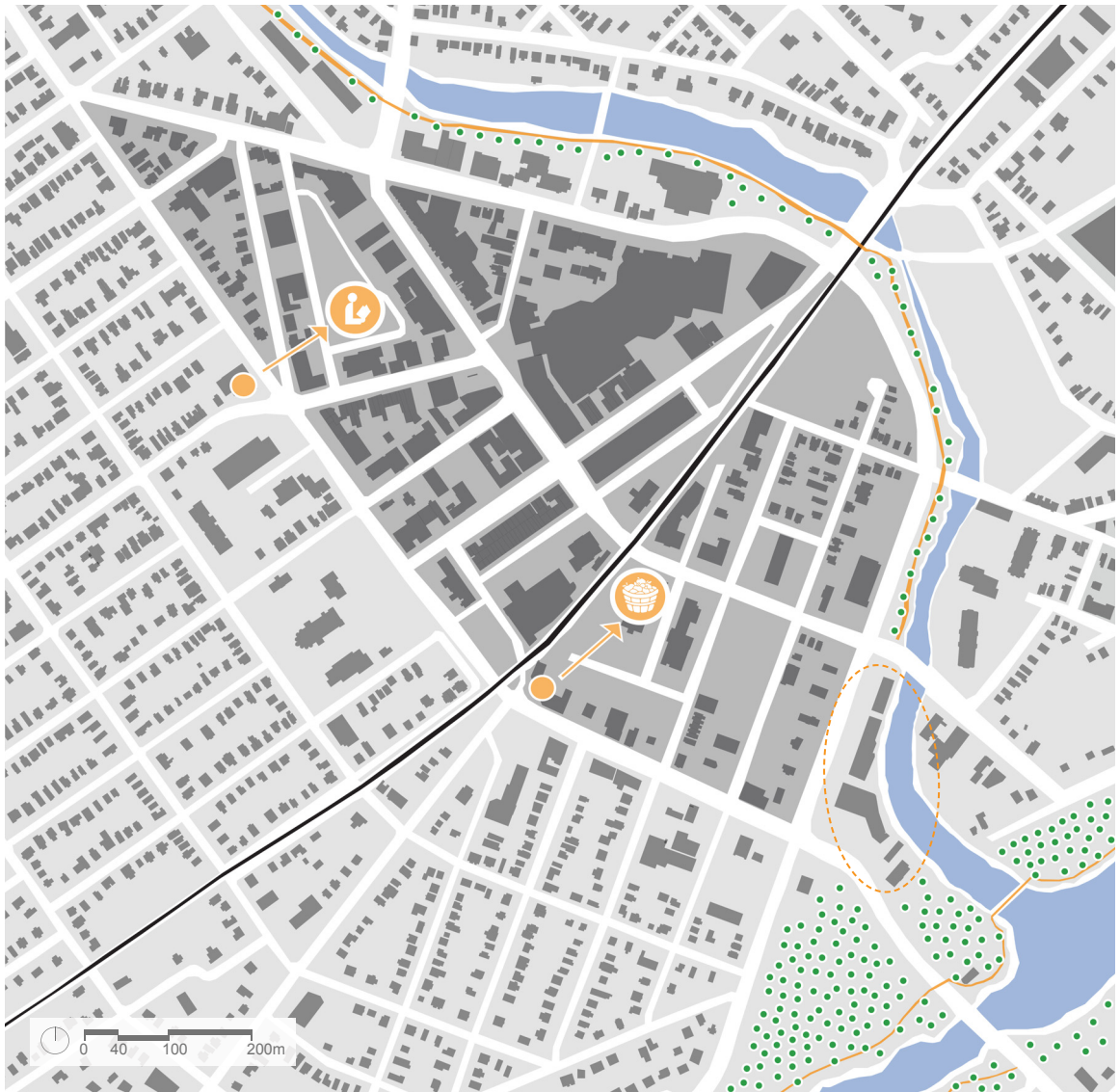
Consequently, it is anticipated that downtown will see 6,500 more residents, or approximately 2000 more housing units; it is also anticipated that there will be an additional 1,500 people working in the downtown core.<sup>45</sup> With this new growth the city aims to build on the

its agricultural roots, reputation for fine dining and strong arts community to become a dining, retail, office, cultural and entertainment destination not only within Guelph, but also within the Greater Golden Horseshoe.<sup>46</sup>


Because of the scarcity of land, the majority of the housing stock will have to be in the form of apartments and condominiums to accommodate all the residential demand. In addition, development fees for single and semi-detached houses have increased by 12.6 percent.<sup>47</sup> With fewer builds and higher expenses, it will be much more difficult for developers to provide single and semi-detached homes at reasonable prices for the vast majority of new buyers.<sup>48</sup> This will certainly affect families who have traditionally preferred these types of housing options to apartment and condominium units. Consequently, in order to appeal to families, apartment and condominium living will have to be rethought.

In addition to the changes the Local Growth Management Strategy will bring, the city has made some other decisions that will affect the downtown. First, a new public library will be built on the Baker Street parking lot, and it has been suggested that the farmer's market should relocate to the Armoury so that it would be able to expand and double as a cultural center.<sup>49</sup>

Second, the low-rise strip mall that currently blocks access to the river will be expropriated and demolished by the city to allow Royal City Park to expand and connect with the trail on the south side of Wellington Street.<sup>50</sup> These changes, especially the latter, will help to make the development of the site south of the railway corridor more attractive to buyers and renters.



 Public library

 Farmer's market

 Trail

 Strip mall

Both the library and farmer's market are scheduled to move locations, and the strip mall found along the water is to be demolished



The park and trail are to be extended to create an unbroken green space along the water

The site south of the railway is well-positioned to accommodate the needs of the growing downtown. It not only has the space to build the square footage needed to satisfy housing, office and retail demands, but it is also well-serviced by the existing facilities by nature of being centrally located.

The last part of the challenge is to design a profitable development proposal that will add value to the downtown, and enrich the lives of those who live, work and visit it.

## CHAPTER 3: PODIUM-TOWER TYPOLOGY

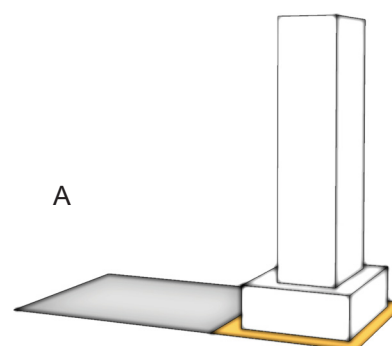
### 3.1 Popularity

The podium-tower is a building typology that has a podium at its base and a tower above. The tower is usually reserved for residential units, but it is not uncommon to also offer hotel space on several of the floors. The podium, on the other hand, usually houses commercial programming such as office and retail.

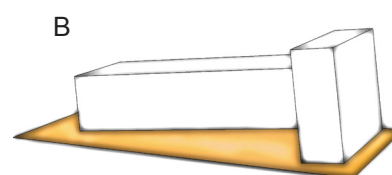
The tower typology appeared at the beginning of the twentieth century and was celebrated for its economic advantages over the value of land.<sup>51</sup> The tower was originally used for office rather than residential space, but soon it became clear that the tower could be used to house a high density of people—a great benefit in urban areas.<sup>52</sup>

The tower has a small footprint, and thus requires a smaller parcel of land. By virtue of being tall, there is a large amount of leasable or sellable floor area in proportion to the cost of the land: the cost of land is distributed over many built square feet. Taking the same amount of built space, but spreading it over a larger parcel of land, it is clear that the cost of land for a tower on a small plot is much more efficient.

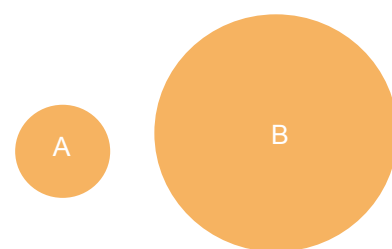
At some point, this efficiency deteriorates due to expenses associated with more expensive structural and mechanical systems and a loss of leasable floor area to service cores; it is often thought that the upper limit of economic efficiency of a tower is between 50 and 60 storeys.<sup>53</sup>



The tower has a small footprint, and requires only a small plot of land



The same amount of built space in lower buildings requires a larger plot of land



Cost of land per unit of built space is significantly lower for a tower (A) than for lower-rise buildings that offer the same gross built area (B)

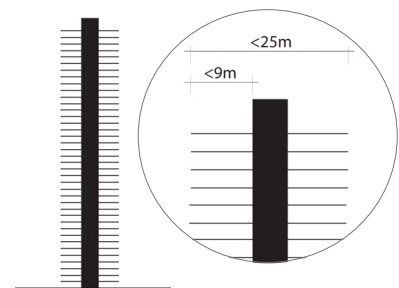
The podium typology has its roots in the shopping malls that proliferated in the American suburbs during the automobile age from the 1960s to 1970s.<sup>54</sup> In the shopping mall, commercial programming was concentrated in deep interior spaces, and the exterior was largely disengaged from its surroundings. These inward-focused shopping spaces provided two advantages. First, they protected shoppers from the unsightly—but necessary—parking lots that surrounded the shopping mall.



Aerial view of Frisco, Texas, illustrating the importance of protecting shoppers from large parking lots ; photograph by Alan Berger, from Ben-Joseph, *Rethinking a Lot*

Second, they provided climate-controlled environments in which people could shop at their leisure. The success of the shopping mall proved that deep, inward-facing shopping spaces worked.

Unlike shopping, residential spaces have a threshold of maximum spatial depth. Surpassing this threshold would create too much interior space with deteriorated natural light levels to be effectively or efficiently accommodated by residential programs. This means that residential towers must be relatively narrow. At the same time,



Residential towers must be relatively narrow to prevent gross inefficiencies



most cities require that buildings of certain heights be separated by a minimum distance in order to allow enough light to reach the units and the ground. This results in a significant amount of unrealized built space at the ground level.

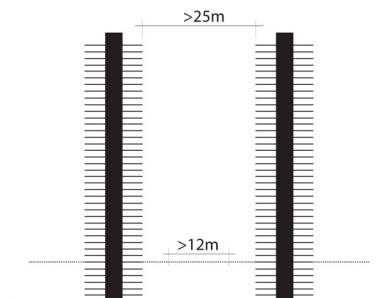
Eventually, developers realized that they could gain economic advantages by incorporating deep and lucrative commercial spaces in their developments. By adding a podium at the base of the tower, more leasable and sellable square feet could be built to further spread the land-cost burden. They were able to do this because the podium is low-rise, and therefore, is not subject to the same setback distances as the towers.

The addition of the commercial space added a mixed-use element to the development. Mixed-use works well because the concentration of people who live in the tower can help sustain the market needs of the retail and offices below.<sup>55</sup> Having a mix of programming also helps to diversify developer investment.

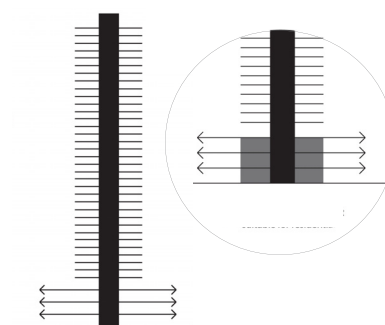
### 3.2 Disadvantages

Given the financial advantages of the podium-tower, it is clear why it is commonly used, and is a logical starting point. Filling the site with podium-towers ranging from 14 to 18 storeys, however, reveals how out of place they would be in the context of Guelph’s downtown.

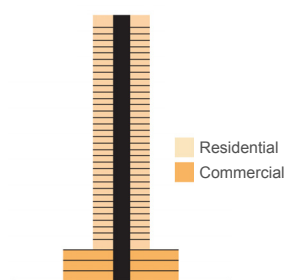
Not only do they completely overwhelm the site and cause a strict skyline divide between the north and south railway sides of the downtown, but they are also in stark contrast to the feel of Guelph’s historic downtown.



The setback requirements for tall towers are generally greater than for their podium counterparts



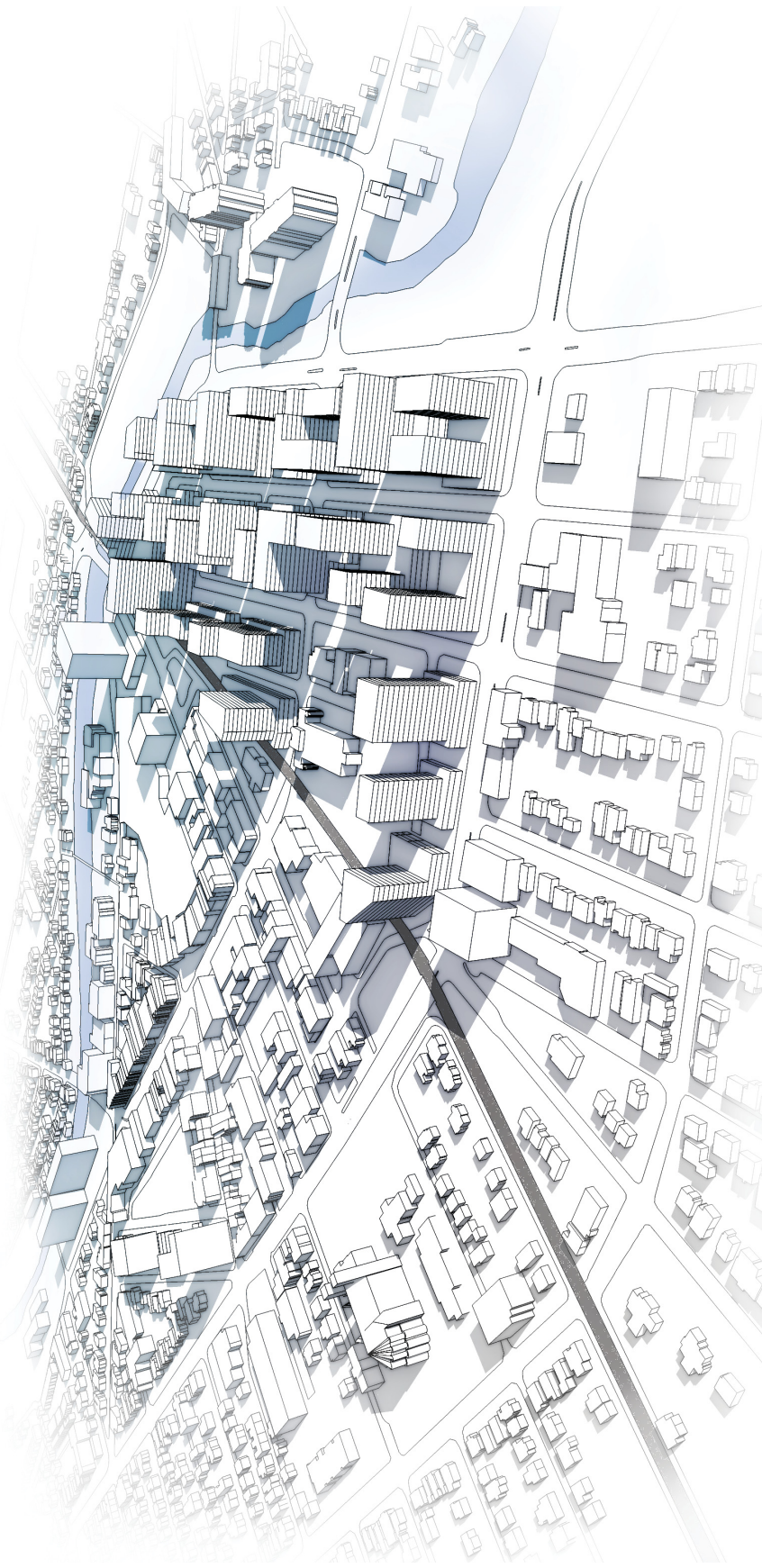
Adding a podium to the base of the tower to add leasable space creates deep spaces that are not suitable for residential uses



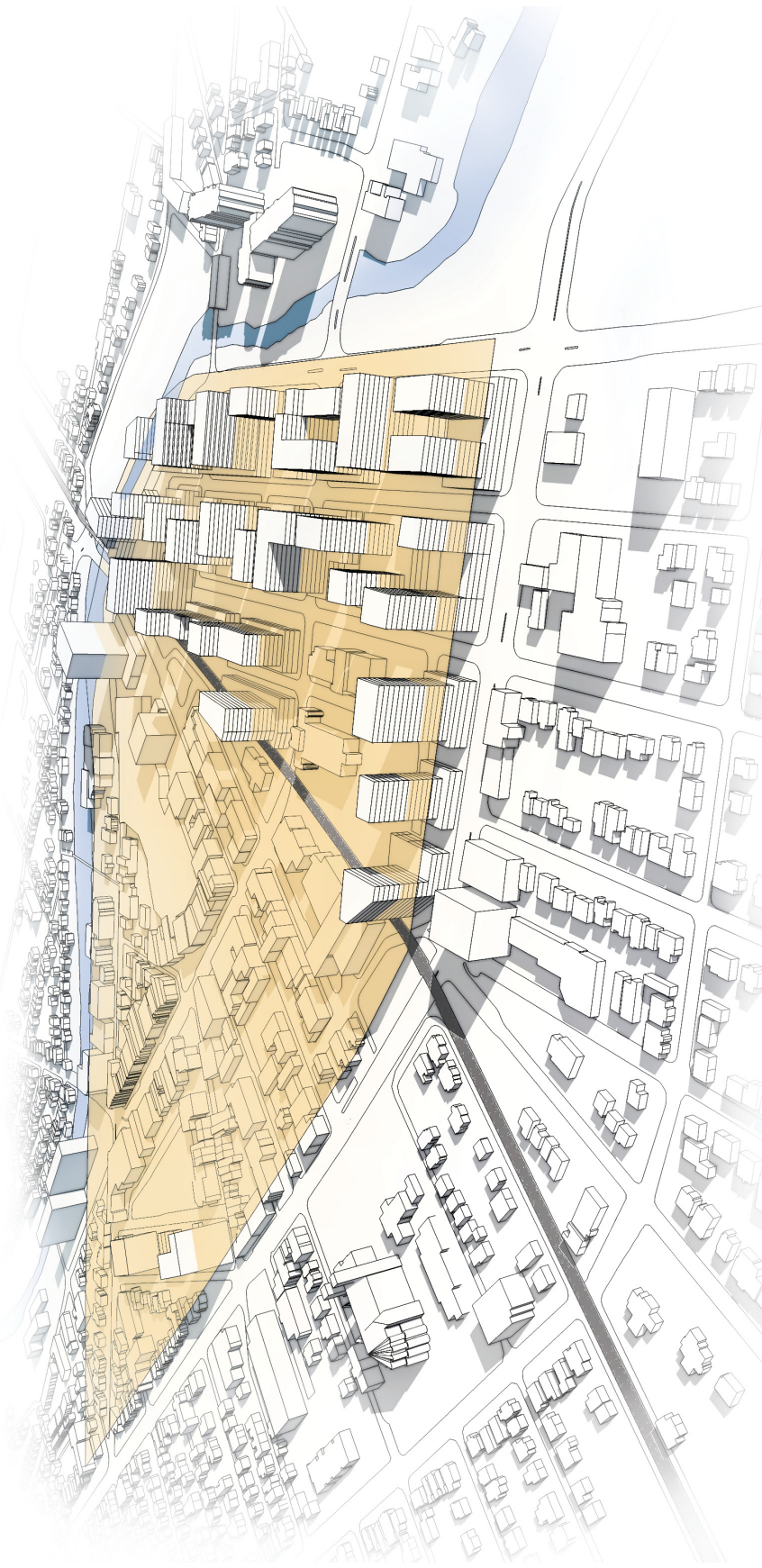
The deep leasable space can be used for commercial uses, and creates a mixed-use development



Leaseable space increases with the addition of a podium



The southern site filled with podium-towers is overwhelming and does not coexist well with the surrounding urban fabric



The orange plain accentuates the height imbalance that would result from filling the southern site with podium-towers

Furthermore, towers have proven to be vehemently loathed by many Guelphites. For instance, when the city changed the zoning for the downtown to start allowing select areas to host 18 storey buildings, many people protested at council meetings and wrote emails and letters to City Hall.<sup>56</sup> One proposal was successfully stopped due to community complaints about height allowances. Lastly, bylaws mandate that, in most areas, buildings should have a maximum height of six stories.<sup>57</sup>

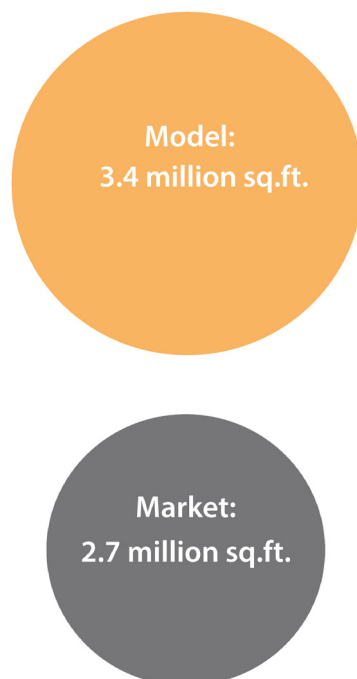
Another aspect to consider is the viability of building the amount of square footage that these podium-towers create, since it is not financially responsible to build more than can be sold or leased. At first glance, it may seem as though there is entirely too much built space, and therefore, some towers would be unnecessary and others could be much smaller.

In order to test this, one must find the average size of an apartment or condominium unit, the percentage of service space needed for that unit, and finally, the number of units needed. Using a newly built complex in Guelph, the Riverhouse built by Tricar Developments, as a guide, a standard podium-tower unit in the Guelph market must have an average size of 1565 square feet.<sup>58</sup> The average amount of service space needed for each square foot of sellable or leasable space is fifteen percent, making the total amount of square footage needed for each unit approximately 1800 square feet.

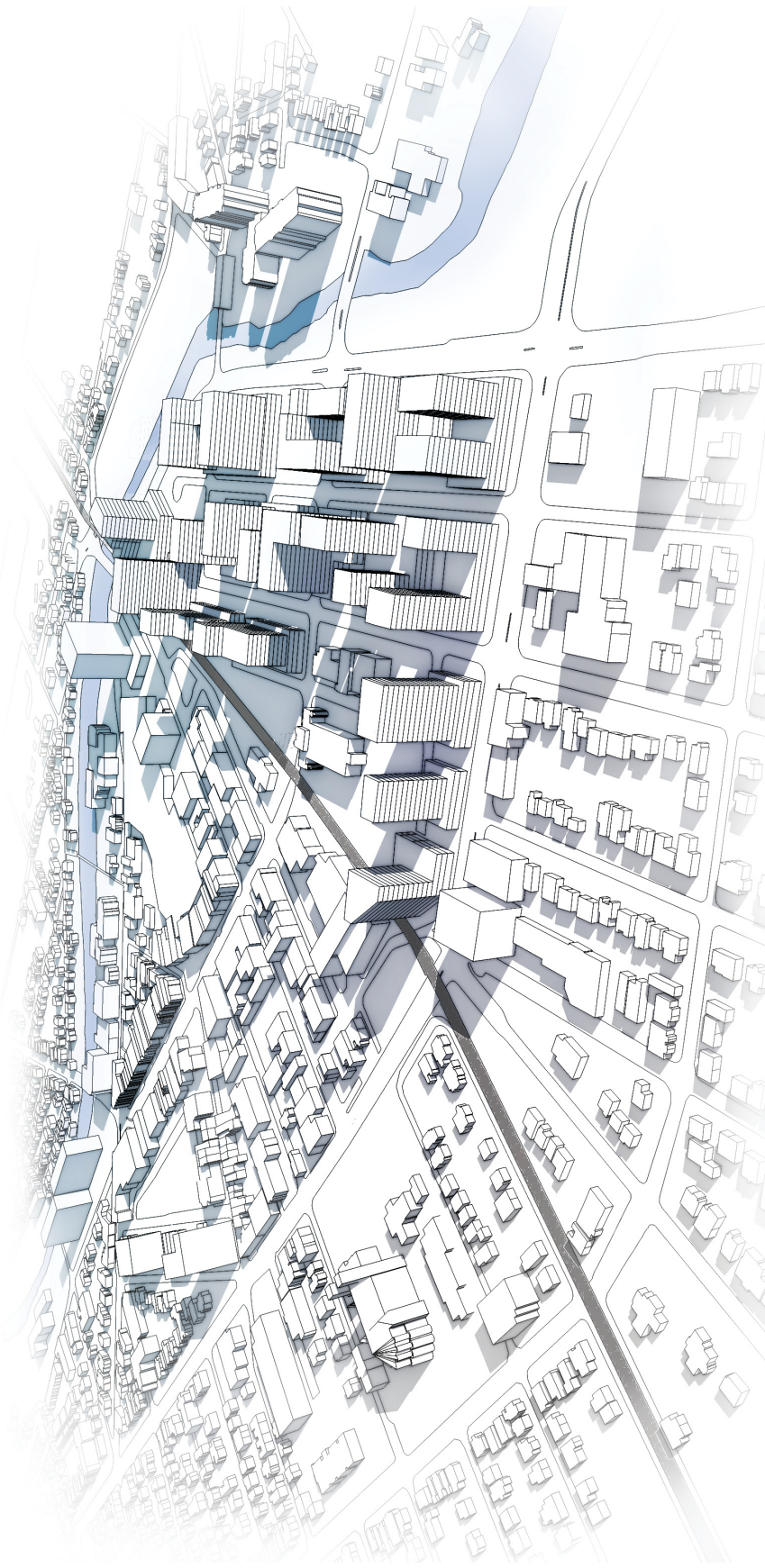
As noted, the city of Guelph anticipates a demand of approximately 2000 residential units in the downtown. However, this site does not need to accommodate all

the new housing anticipated by the city. There are other developments currently under consideration that are located on the north side of the railway corridor, and these will contribute to the overall housing need. Finally, it is better to build less than what is projected in case the projections are too optimistic. In this case, it is important to note that Guelph is currently four percent behind its projected population levels.<sup>59</sup> Therefore, a new target of 1500 residential units will be used for this site.

Overall, this results in a market need of 2.7 million square feet of residential space. The original model produced 3.4 million square feet of residential space, and therefore, the amount of built space needs to be reduced in the model. However, when the model is modified to reflect the new square footage needs, the number and size of towers does not significantly change, and the podium-towers still manage to overwhelm the site.



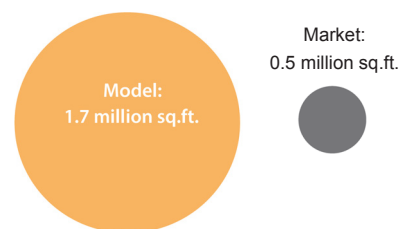
The amount of modeled residential space is more than can be absorbed by the market, and therefore, the model needs to be adjusted



The number of towers has been reduced to reflect the amount of residential space that the market can bare. The site continues to be overwhelmed by tall buildings, and it is difficult to see that the amount of space has been reduced

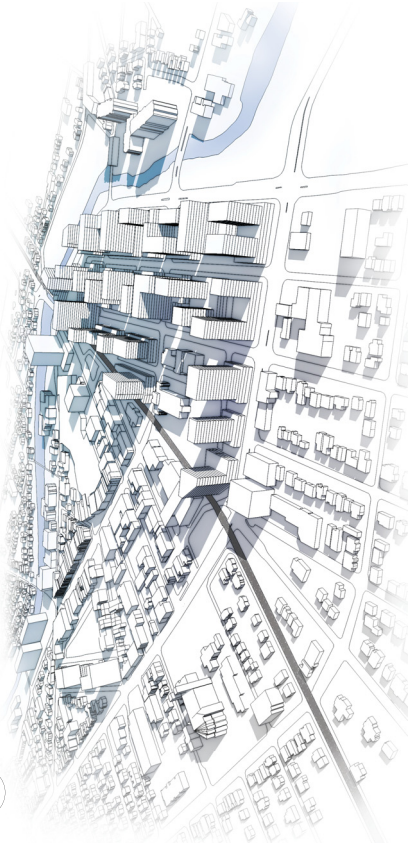
The same process needs to be followed to compare the modeled commercial space to the amount required by the market. Using the estimate that every three employees require 1000 square feet of space,<sup>60</sup> it follows that 500,000 square feet of space is needed to employ the 1500 new employees anticipated in the downtown.

The amount of space provided in the original model was 1.7 million square feet, which is more than 3 times the amount that can be absorbed by the market. Once the commercial space in the model is reduced to reflect the market needs, most of the towers lose their podiums.

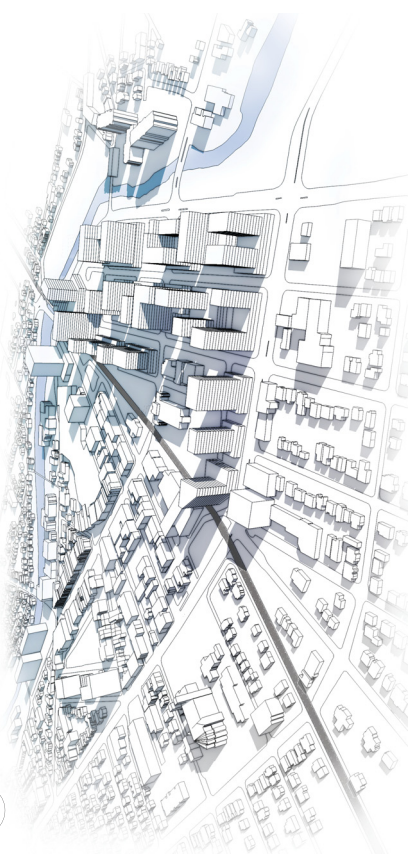


The model needs to be adjusted to reduce the amount of commercial space

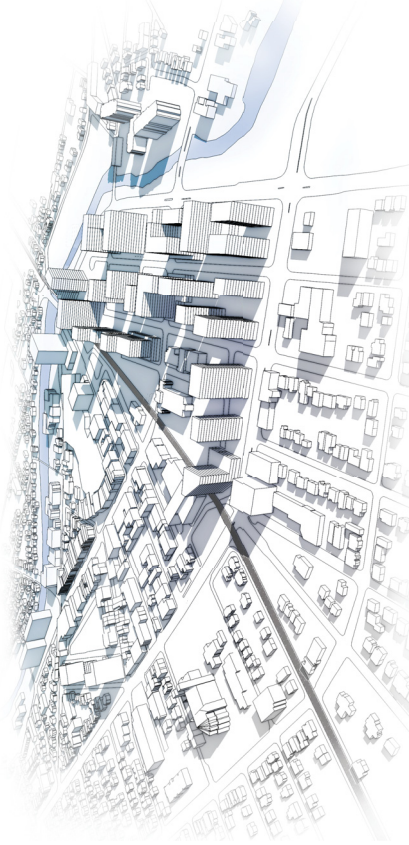
1



2



3



The first image shows the original model with 3.4 million square feet of residential space and 1.7 million square feet of commercial space.

The second image shows the model that was modified to reflect market residential needs. It has 2.7 million square feet of residential space and 1.7 million square feet of commercial space. Some of the towers have been reduced.

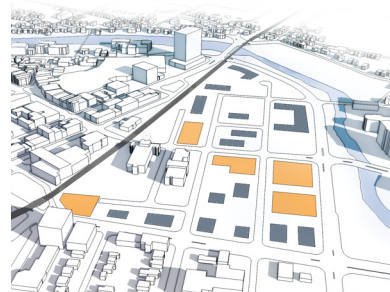
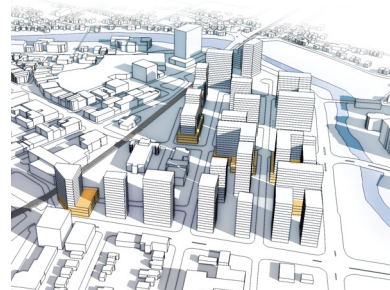
The third image shows the model that was further modified to reflect market commercial needs. It has 2.7 million square feet of residential space and 0.5 million square feet of commercial space. Most of the podiums have been eliminated.



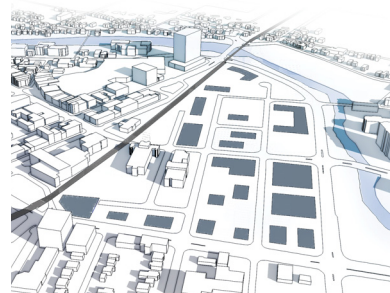
This has a few consequences. The first is that most of the buildings are no longer mixed-use and there are large areas within the downtown that only have residential spaces. This is problematic because there should be a mix of uses in order to create a constant presence of people throughout the day.<sup>61</sup> Having isolated programs in a downtown setting is even more deadly because it is the downtown that should support the most urban life. Committing most of this site to singularly residential use would short-change future residents, the downtown and the city.

The second consequence is related to the first: without the podiums at the base of the towers, there would be significant gaps in the urban fabric along the street. The spaces between the buildings would most likely turn into parking lots or green spaces. Vast amounts of parking are part of the reason why the site is currently devoid of human life. But too much green space that interrupts the urban fabric can be destructive to urban life as well: “cities need to remember that, for the typical pedestrian, the most mundane storefront is still more interesting than the most luxuriant landscape.”<sup>62</sup> Not only do the towers, and their accompanying urban gaps, run the risk of boring pedestrians, but they can also dissuade people from walking in the downtown altogether:

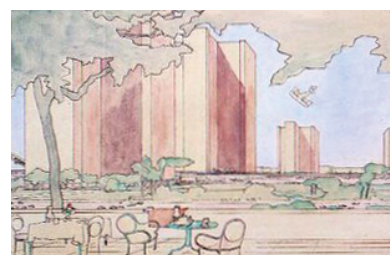
The modern movement, epitomized by Le Corbusier’s ‘City of Towers,’ built tall generously spaced tower and slab blocks in a parkland setting to ensure a healthy, better standard of living for all. A functional, efficient, logical and well-ordered environment was created, but the pattern of the street, front doors, chance encounters and sense of community was lost.<sup>63</sup>



With most podiums gone, commercial space is dispersed and isolated (noted in orange)



Without the podiums, there are many gaps in the urban fabric between the residential towers



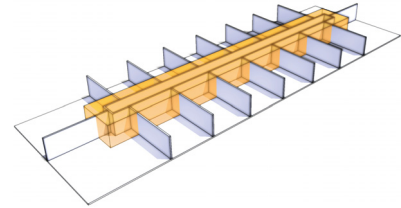
Le Corbusier’s City of Towers; from *Architecture + Morality*

The podium-tower typology can also be criticized from other standpoints. For example, while retail and office uses can accommodate deep spaces that have limited access to natural light, it is not optimal for employees to be working in environments that lack natural light.

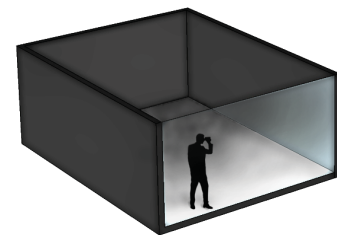
The residential towers, also tend to have units with deep spaces caused by the prevalence of double-loaded corridors in the building typology. One consequence of the double-loaded corridor is that corridor must be electrically lit twenty-four hours a day. Another is that all units, save the corner units, are single-aspect, which means that people live in homes that are closed on three of four sides. This restricts views, eliminates the possibility of cross-ventilation, and creates deep interior spaces within the unit.

Worse still, people who live in single-aspect units on upper floors will often decide against venturing into the city when they otherwise would: urban life seems too far away and people become both physically and psychologically detached from the city in which they live.<sup>64</sup>

Although many cities around the world have adopted the podium-tower typology as its main building type, it does not fit the feel, size and culture of Guelph. Instead, Guelph aims to retain its local feel and sense of community. In order to achieve this, more moderate buildings that create a strong and mixed-use urban fabric are necessary.



The nature of double-loaded corridors creates deep spaces that lack natural light, noted in orange



Double-loaded corridors create single-aspect units

## CHAPTER 4: BETTER URBAN FABRIC

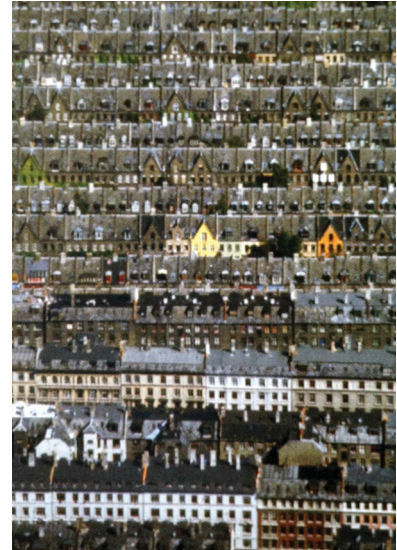
### 4.1 The Beauty of Banality

Many believe that great architecture is exemplified by a building that dazzles and amazes us. But not all buildings can be sensational, otherwise all buildings would be competing for our attention, requiring as much of us as advertising billboards.

Most buildings in a city need to be subordinate to the urban scheme. They are subtle, but that does not mean that they are not also brilliant examples of architectural design. It is these buildings upon which the fabric of the city is based. These buildings embody the city, and therefore, their design has much more influence on the quality of urban life than any one novel building.

Prioritizing urban fabric—making individual buildings subordinate to the urban scheme—creates strategies for design that encourage less specialized buildings, and therefore, more sustainable and adaptable buildings:

That we would benefit from having a wide variety of built forms is [often] presented as a given, with no supporting reasons offered, as if it were obvious that the widest range of uses can best be accommodated by using specialized building types. On the contrary, it is the less specialized buildings types that are the most adaptable and can therefore accommodate the widest range of uses, especially changing uses, over time. Furthermore, a building that can be adapted for alternate uses is inherently more sustainable than a specialized building, which is likely to become obsolete once its special use is no longer in demand, and which may need to be demolished rather than adapted for reuse.<sup>65</sup>



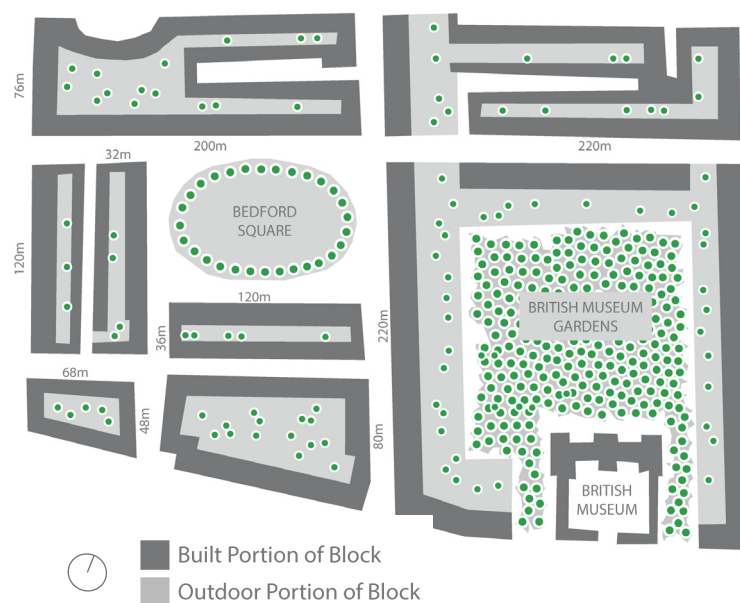
Copenhagen is often revered for having engaging and dynamic street spaces, but from above the row houses that create these streets look monotonous and repetitive; photograph by Michael Varming, from Gehl, *Cities for People*

The designs procured from this kind of design strategy can at first seem to be uninteresting and monotonous, at least from a distance or in plan. However, the engaging elements occur on the street level. People do not experience cities in plan or from a far; the urban experience is up close and personal.

The urban fabric created by these buildings provides an adaptable framework that individuals and groups can use to appropriate built spaces for themselves. London and Paris are two cities that are known for their urban fabric and the adaptability of their buildings.

## 4.2 London Town Houses

London town houses consistently line the perimeter of each city block, usually with four storeys of building, to provide solid urban fabric. There are no excessively deep spaces because the center of the block is left open. The sizes of the blocks vary, but common dimensions are 70 to 120 meters.



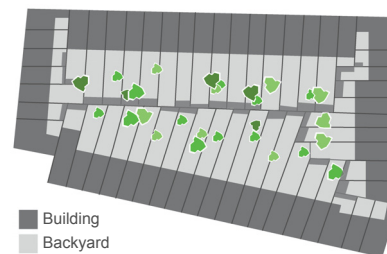
Block size diagram for Bedford Square in London; data from Muthesius, *The English Terraced House*

When the first developments were built during the 19th century, the townhouses were quite large and were targeted for a wealthier buyer. Because they were for wealthier families, each town house had a coach house to the rear that was serviced by a discreet lane that would cut through the center of the block.<sup>66</sup> A small yard separated the main house from the service buildings, but it was generally used for household chores, not leisure. Instead, residents had access to a central semi-private garden in the square in front of their homes. Blocks were arranged so that an open (but often fenced and gated) green space would be at the center of a square, defined by the residential blocks that surrounded it.

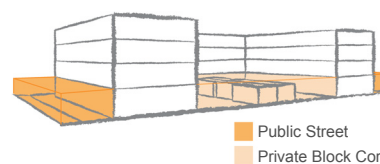
Later, the development model was modified so as to serve a wider socioeconomic audience. These town houses did not require coach houses, and as a result, the center access lane was forgone in favour of providing each town house with a private garden to the rear of the home. Residents then had a choice between using their own private garden and the semi-private one to the front of their house.<sup>67</sup>

Regardless of the socioeconomic target market of the townhouses, the interior of the block remained private. This works well for the town house model because each resident occupies all the vertical space that exists in the lateral sphere of the residential unit and the private garden. In contrast, an apartment model would make it difficult to have private garden space for each resident because multiple units occupy the same lateral space at different vertical levels.

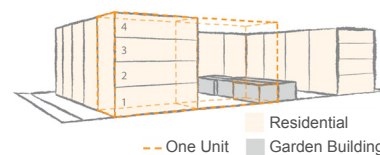
Today, town houses in London still function as



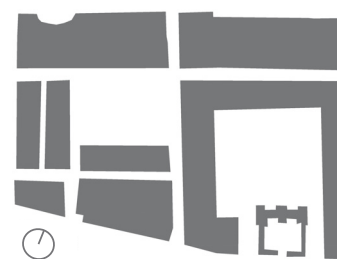
Interior block organization of town houses with private back gardens and small service buildings; data from Muthusius, *The English Terraced House*



Sectional diagram of London townhouse private and public space



Sectional diagram of London townhouse organization



Private and public diagram of Bedford square

residential space, but many have also been converted to accommodate commercial uses. The buildings are flexible to a variety of uses because of their size and depth. These buildings were not, however, originally designed for mixed use. For a case study on perimeter buildings that incorporate mixed use, one only has to look to Paris.

### 4.3 Parisian Apartments

Unlike in London, where most people preferred to live in town houses, 19th century Parisians favoured apartment-style living. Land was scarcer on the continent, making it more expensive to have detached or semi-detached homes.<sup>68</sup> Those who could afford villas or town houses in Paris often still preferred a more centrally located apartment because of convenience.<sup>69</sup>

Nevertheless, Parisian apartments are similar to London town houses in at least three ways: First, the apartment

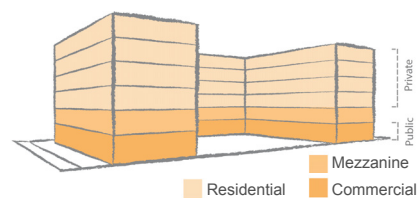


Block size diagram of typical blocks in Paris; data from Google Maps

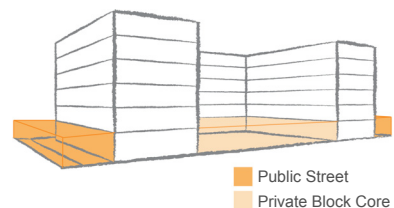
buildings provide consistent urban fabric around the block perimeter. Second, deep spaces are avoided because the center of the block is left open (albeit that in some cases subsequent development has caused building to occur within the block, and as a result, smaller interior courtyards or light wells have been created). And finally, block sizes are similar with common dimensions being between 70 and 120 meters.

However, Parisian apartments were originally designed to be mixed use: the ground floor area fronting the street was commercial space, the second floor was a mezzanine mostly used for workshops, and the four stories above were residential apartment units. Most Parisian apartment buildings were six storeys high.<sup>70</sup>

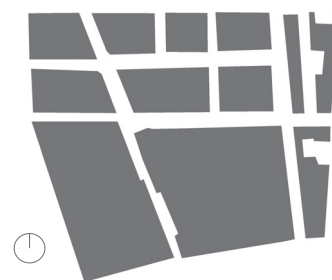
The interior courtyards of the blocks housed stables and coach houses, with access from a porte cochère or covered carriageway on the street—the only break in commercial space on the ground floor.<sup>71</sup> Today the interior space is often used for parking vehicles, but some have been converted into landscaped semi-private courtyards. Similar to the London town house, the interior of the block was designed to be private, but unlike their London counterparts, the Parisian apartment dwellers did not have private gardens within the block, nor did they have semi-private gardens in a square in front of their homes. Instead, the private area within the block was used as a private service area. This is logical because many people would avoid areas of private leisure that must be shared with commercial properties. These spaces would lack the the very thing that makes them valuable: privacy.



Sectional diagram of Parisian apartment program organization



Sectional diagram of Parisian apartment private and public space



Private and public diagram of typical Parisian blocks

## CHAPTER 5: FINDING THE BREAK-EVEN

The studies of residential urban development in London and Paris highlight strategies for creating good urban fabric and adaptable building forms at more moderate building heights. Since both typologies were built on a large scale, it follows that they were also profitable. However, one cannot assume that the Canadian contemporary economic circumstances mirror that of the European nineteenth and twentieth centuries. A preliminary way to find out whether either one of these typologies—or any building—can be pursued is to conduct a break-even analysis. (See Appendices 1 & 2)

A break-even analysis shows how many units of a product or service one must produce, and subsequently sell, in order to avoid incurring financial loss when undertaking an enterprise. Conducting a break-even analysis will reveal the level of production that will result in neither a loss nor a profit. This level of production is the enterprise's break-even point. To understand the breakeven, every produced unit must be thought of as a combination of three elements.

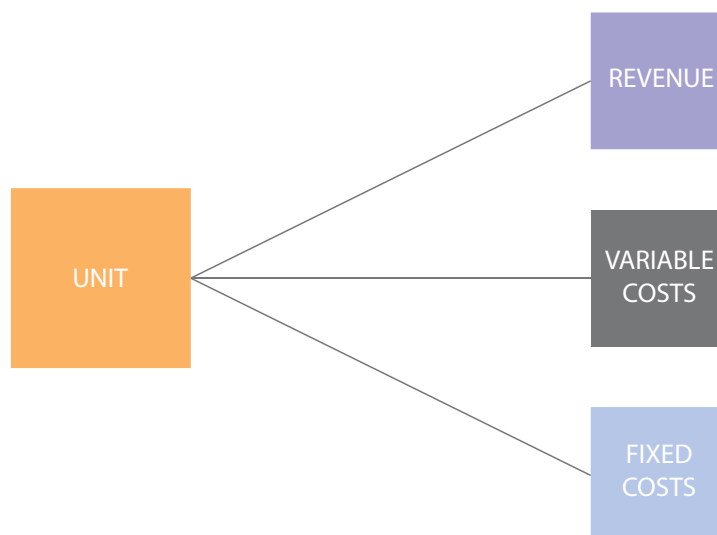
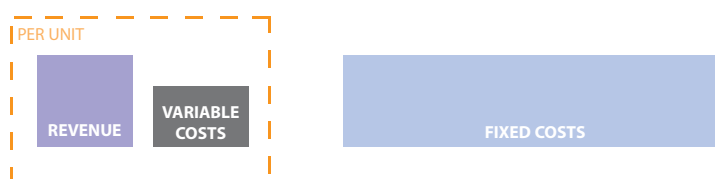


Diagram of the three components for every produced unit



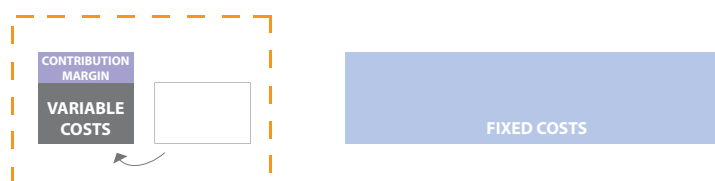
The first is variable cost, which is the total cost associated with producing that particular unit. The second is fixed cost, which is the total cost associated with undertaking the enterprise, before any production begins. Fixed costs neither increase nor decrease in relation to changes in production volumes. The third is revenue, which is the amount of money earned for each unit produced and sold. Revenue is also variable, in that it changes in relation to increases and decreases of production.



Breakeven: step 1

For example, if an individual wanted to manufacture toy balls, fixed costs would include expenses such as rent, machinery and insurance, among others. Variable costs would include the rubber used to make the balls and utility bills, among others. Revenue would be the money received from buyers.

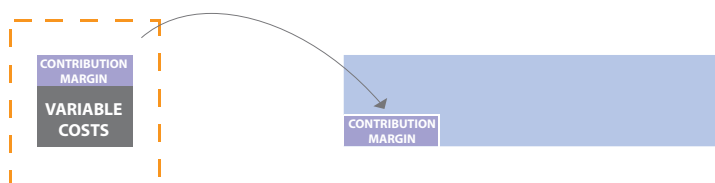
For every unit, a portion of the revenue earned pays for the variable cost. The portion of revenue that remains is called the contribution margin.



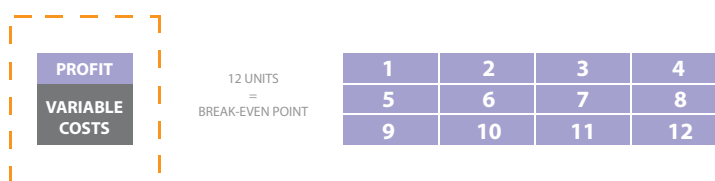
Breakeven: step 2

The contribution margin is then used to pay for the fixed costs: dividing the fixed costs by the contribution margin gives the number of units needed to fully pay for all costs, both variable and fixed. This is the minimum level

of production required in order to avoid incurring a financial loss—the break-even point. Once fixed costs have been paid in full, the contribution margin of every additionally produced and sold unit becomes profit.



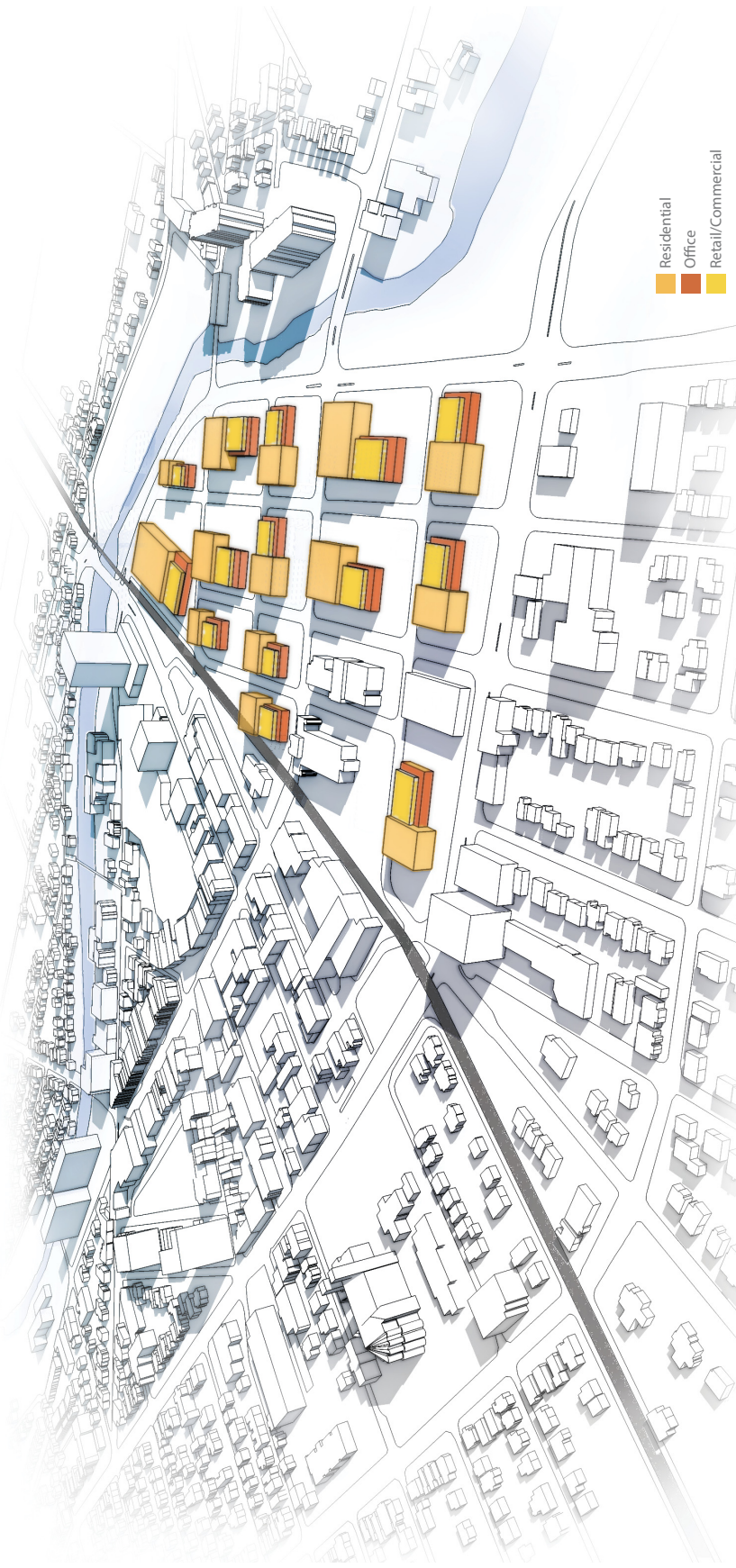
Breakeven: step 3



Breakeven: step 4

For the building industry a unit would refer to a square foot—or square meter—of sellable or leasable built space. Therefore, the break-even point reveals the minimum number of square feet needed to be constructed. The most significant fixed cost is the cost of land, whereas the most significant variable cost is the cost of construction. The cost of construction not only includes the cost of the sellable or leasable unit, but also the cost of the space constructed in order to serve that sellable or leasable unit: examples include service areas and parking facilities.

The breakeven analysis done here assumes that each block will have a mix of uses, so a break-even for each program type is done for each block. Therefore, each program carries a portion of the fixed cost burden for each block. The analysis illustrates the minimum amount of built program space needed in order to financially break-even. Any space built above and beyond these minimums will earn the development profit.



Breakeven analysis for the site to the south of the railway corridor (See Appendices 1 & 2)

## CHAPTER 6: ADDING VALUE THROUGH DESIGN

### 6.1 Urban Strategy

#### 6.1.1 Block Organization

Many of the existing blocks on the site are quite large, some being more than 200m, and there are also a number of dead-ends. Looking at the north side of downtown, it can be seen that there are no dead-end streets and that the block dimensions in the most successful parts of the downtown are much smaller once informal block breaks are considered. In fact, they are very similar to the common 70-120 metre range seen in London and Paris.

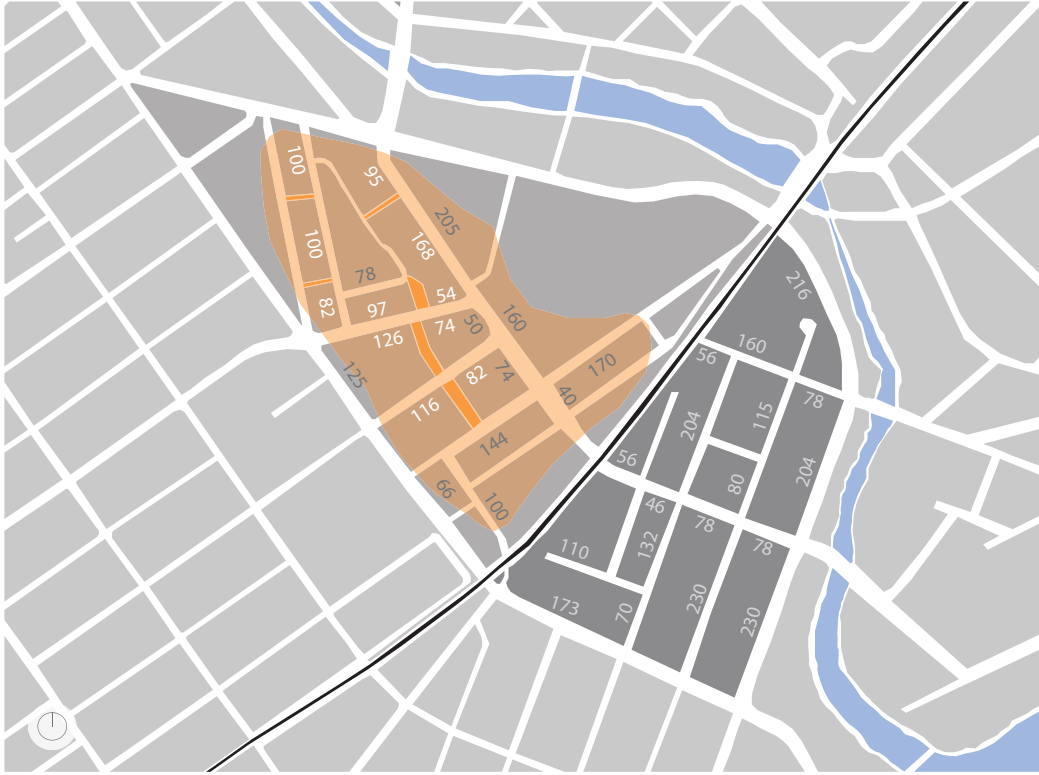


South Downtown
  Surrounding Fabric  
 North Downtown
  Railroad

Dimensions of north and south downtown blocks; data from Bartholomew, municipal CAD files

Therefore, some additional streets are proposed to reduce the size of the super blocks and to eliminate dead-ends. As championed by Jane Jacobs, creating more opportunities to turn corners allows and encourages users to explore all areas of the site, making a greater percentage of the site attractive for commercial enterprise, and thus adding to the diversity and vitality of the downtown.<sup>72</sup>

However, efforts are made to economize on the addition of streets. Since infrastructure costs are a significant financial burden, the block re-organization assumes that the basic block forms will remain the same. Furthermore, the roads have maintained their original size: the road system does not need to be extended or enlarged because the city has already determined that the proposed level of intensification of the downtown can be supported by the existing road infrastructure.<sup>73</sup>



Block Breaks Most Used Areas Informal breaks in blocks reduce the practical size of blocks; data from Bartholomew, municipal CAD files



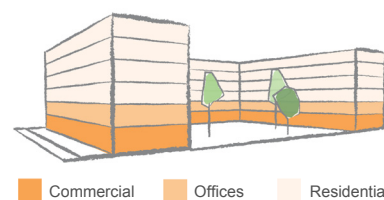
New Block Breaks New streets added to reduce the size of large blocks and eliminate dead-end conditions; data from Bartholomew, municipal CAD files

In order to have blocks that provide consistent urban fabric, it is proposed that buildings will follow the perimeter of the each block, as they do in the London and Parisian case studies. Furthermore, because it is a priority to have a good spread of users throughout the day, it is also proposed that each block should be mixed use. Therefore, the Parisian typology presents an appropriate building organization for each block. Commercial spaces that benefit from foot traffic, such as retail, should be located on the ground floor, whereas, commercial spaces that do not require foot traffic, such as offices, should be on the second floor. Finally, the floors above the second storey would be well-suited for residential units since the distance of these floors from the ground level would provide residents with privacy.

However, it is not clear that the interior of the blocks should be private spaces, as the London and Parisian typologies prescribe. It would not be possible to provide each residential unit with a private garden because the units are not organized as town houses. It would also be difficult to use the block courtyard as a communal private green space for the residents because, as discussed, it would be problematic to have private gardens on the same plane as commercial space in the courtyard.

### 6.1.2 Public vs. Private Courtyards

The current blocks in and around the downtown are structured such that the interior space—built or not—is private. Looking at the north side of downtown, the large, private blocks create a situation in which there are only three access points to the Speed River. The lack of access and visibility to the river from the downtown



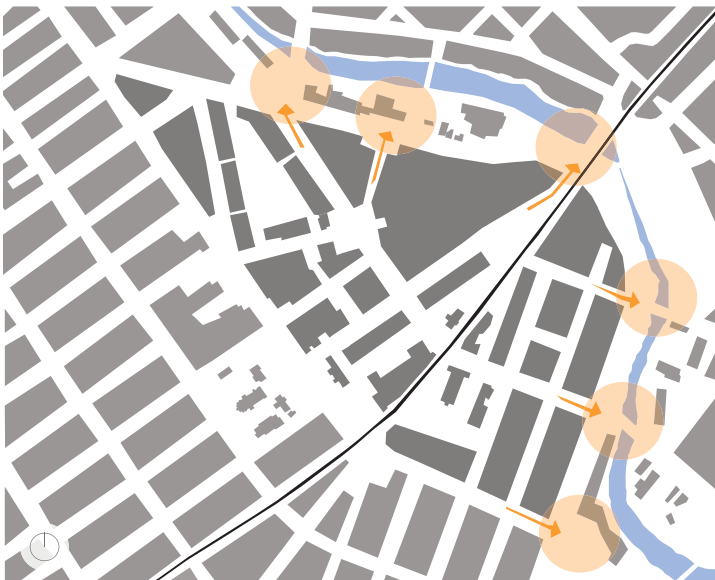
Sectional diagram of proposed program organization



Current public and private space in downtown Guelph

has certainly contributed to the underutilization of the waterfront on the north side of downtown, and repeating this condition on the south side should be avoided.

However, if the blocks in the new development were public, and had several throughway points, then there would be many pedestrian access points to the river, Royal City Park and York Road Park.



With a private block strategy, there are only 3 access routes to the river on either side of the downtown



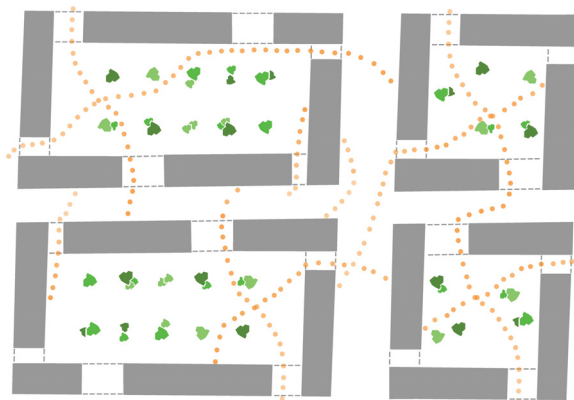
With a public block strategy on the south side of downtown there are many access routes to the river



Not only would public courtyards provide better river visibility and access, but they would also provide great variety for pedestrian travel routes and urban experiences. People could choose to walk on the streets or take shortcuts through courtyards. Pedestrians would have almost ultimate freedom of movement. As Francis Tibbalds, author of *Making People-Friendly Towns*, suggests, pedestrians need a fine network of travel paths with variety and deliberate redundancy.<sup>74</sup> However, to ensure that people use both streets and courtyards, it is proposed that entrances to courtyards are offset from block to block. This would force pedestrians who use the courtyards regularly to spend at least intermittent time on the street as well.



Sectional diagram of public street and block courtyards



People have almost complete freedom to travel through the downtown, with a plethora of shortcuts at their disposal

### 6.1.3 Recentralizing the Downtown

In this proposal, the Farmer's Market relocates to the Armoury, as suggested by the city in the *Secondary Plan* discussed in section 2.4. However, it is also proposed that the parking lots on the Armoury grounds should be converted into a market park to support the farmer's market and host community events.

The block across Wyndham Street from the Armoury (the proposed farmer's market) has been designated as a transportation hub and new Chamber of Commerce. It would be well-situated for a transportation hub because it is located directly across the railway from the VIA and GO train stations. Furthermore, the proposed hub is centrally located in the downtown, and therefore, could conveniently serve both the southern and northern sections of the downtown. The addition of a pedestrian bridge from the transportation hub to the train station would help make this connection stronger and make travel more efficient.








Together, City Hall, the train station, the Farmer's Market, the pedestrian bridge, and the transportation hub would create a great concentration of facilities and help re-establish the proper center of Downtown Guelph—as it was proposed in John Galt's original city plan. The recentralization would also help to unite the two sides of the downtown since the divisive railway would become an integral element of downtown's center rather than a disruptive one. Other efforts to reunite the downtown are made by widening Wyndham Street where it passes under the railway, and providing generous sidewalks on streets that pass under the railway.



Pedestrian bridge from the proposed transportation hub to the train station



Recentralization of downtown

- |  |   |
|--|---|
|  Market Square                            |  Train Station   |
|  City Hall                                |  Farmer's Market |
|  Pedestrian Bridge                        |  Market Park     |
|  Transportation Hub & Chamber of Commerce |   |

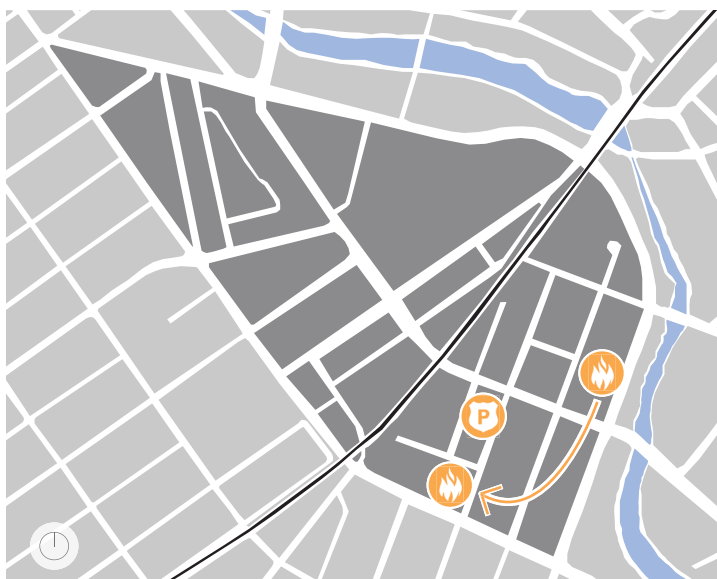
The small block east of the proposed transportation hub is ideally sized and situated for a hotel. The block is too small to create one of the mixed use buildings with a usable courtyard, but its proximity to the transportation hub and the center of downtown make this block an appropriate location for a hotel. Guelph currently lacks a reputable hotel in the downtown core, and with an increasing population, the need and economic potential for a hotel is obvious.

Finally, this proposal suggests that the location of the downtown police station should remain unchanged. There are no immediate advantages gained by relocating it, and therefore, the expense of demolishing and rebuilding elsewhere cannot be justified. It is proposed, however, that the fire hall should be relocated from Wellington Street to Norfolk Street (adjacent to the Police Station) in order to accommodate the addition of a new street through the Wellington block. This move not only allows for a reduction in block size and more profitable development on land that fronts the Speed River, but it also helps to centralize municipal emergency services.



The fire hall relocates from Wellington Street to Norfolk Street, shown with current, not proposed, block layout

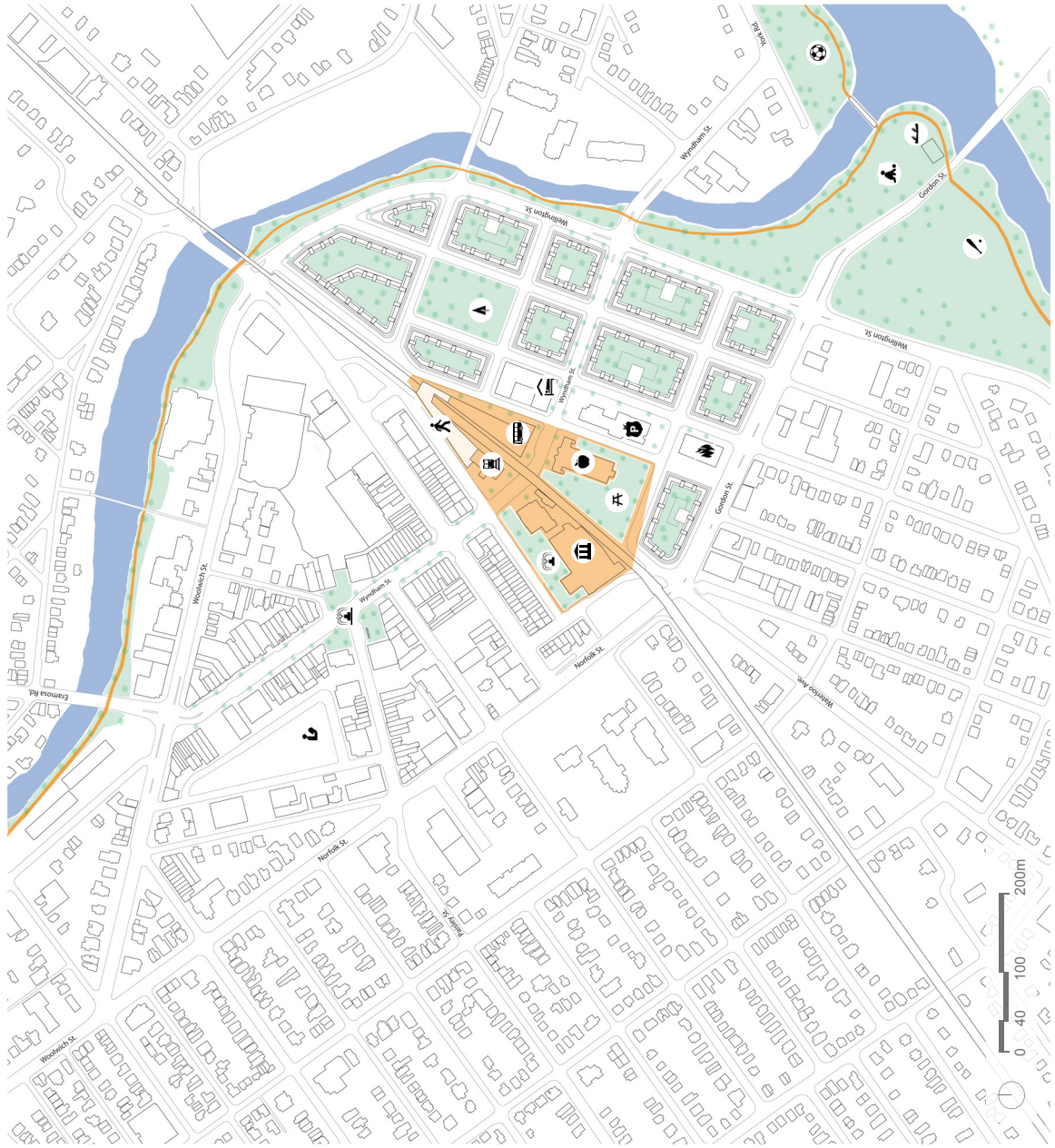
-  Hotel
-  Transportation Hub & Chamber of Commerce



The fire hall relocates from Wellington Street to Norfolk Street, shown with current, not proposed, block layout

-  Police Station
-  Fire Hall

The proposed urban plan for downtown provides many green spaces. The proposal also re-centers the downtown around John Galt's original "market ground" (indicated in orange) to try to mitigate the psychological and physical barrier of the railway that splits the downtown in two



- |                     |  |
|---------------------|--|
| <b>Existing</b>     | <b>City Proposal</b>                     |
| St. George's Square | Future Public Library                    |
| Market Square       | Farmer's Market                          |
| City Hall           | <b>Design Proposal</b>                   |
| Train Station       | Pedestrian Bridge                        |
| Police Station      | Market Park                              |
| Royal City Park     | Fire Hall                                |
| York Road Park      | Hotel                                    |
| Lawn Bowling        | Neighbourhood Park                       |
| Boat Rental         | Transportation Hub & Chamber of Commerce |

### 6.1.4 Green Spaces

In addition to the market park discussed above, this proposal suggests that one of the blocks is left unbuilt in order to become a green space in the downtown. Since the proposal has a high density of people and building, it would be beneficial to have several open spaces, as was routinely done in London. However, this space would not be designated as private to downtown residents, and would instead be public.

The location of the urban park was chosen for its central position within a collection of blocks. However, it was also chosen because it currently hosts about twenty single family homes. For an independent person or firm, these parcels of land could prove expensive to purchase and difficult to accumulate in a timely manner. Therefore, it is logical that it should remain unbuilt, and furthermore, that the city would manage its development.

As for the development of the park, the city could either expropriate the land and convert it into an urban park in one sweeping move, or it could purchase the parcels of land as they become available and allow the urban park to grow slowly over time.

Finally, this proposal supports the city's plan to expropriate and demolish the strip mall buildings along the banks of the Speed River (see section 2.4). It would be highly advantageous for the city as well as the development to extend Royal City Park and provide a completed and uninterrupted pedestrian and bicycle path along the water.



Downtown neighbourhood park



The block designated for the park currently hosts about 20 homes



Site model of the proposed design

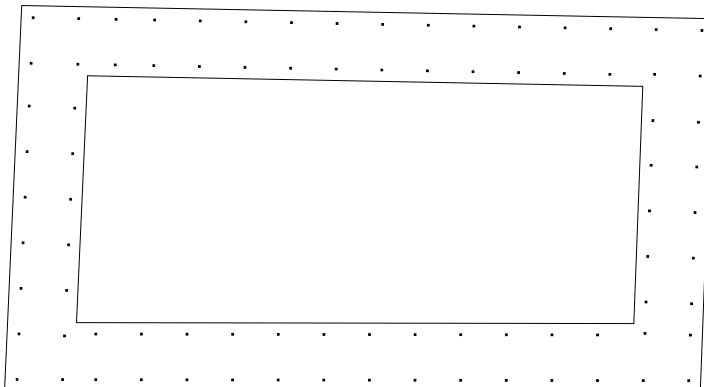
## 6.2 Prototype: Building Design

### 6.2.1 Optimizing Space

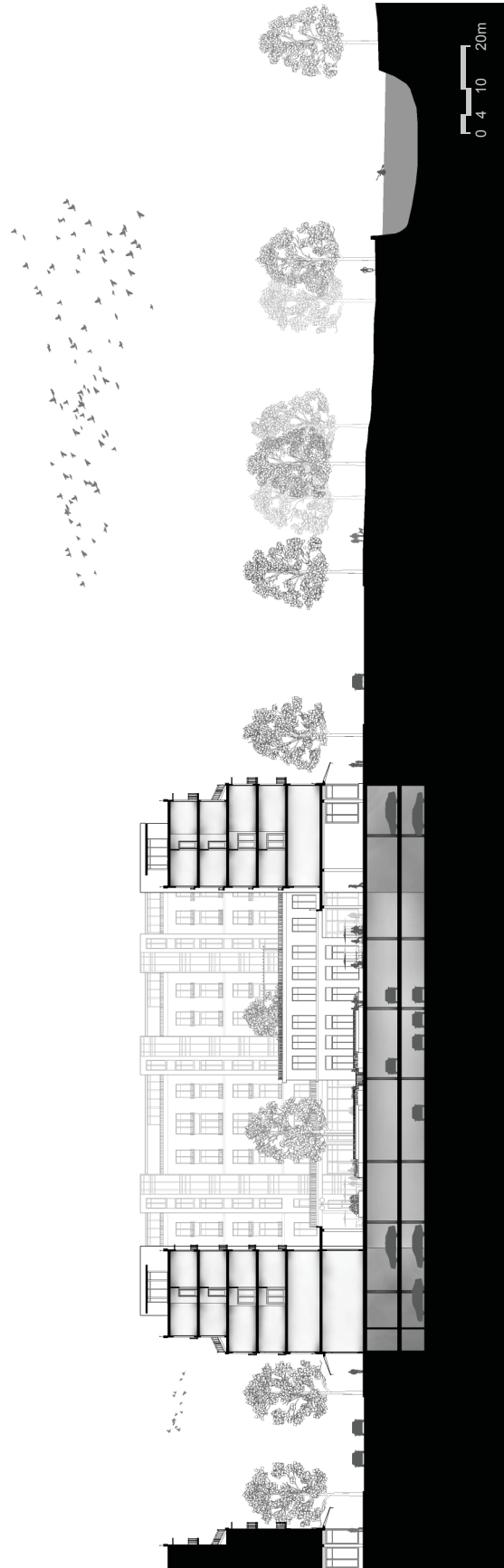
The design of the buildings tries to emphasize flexibility and adaptability of use. To that end, the prototypical building is designed on an 8 metre by 8 metre structural grid. A grid of 8 metres is an effective bay size because it works for all four program spaces in the building: residential, office, retail and parking. For the residential units, an 8 metre bay allows the unit to be two sizable rooms wide. In addition, according to Jan Gehl, 8 metre wide storefronts create friendly street environments.<sup>75</sup> Overall, 8 metre bays are large enough to accommodate many uses, but not so large that they preclude others.

The prototypical building is also proposed to have a maximum depth of 12 meters. Since the building is shallow, it is also designed without double-loaded corridors. Therefore, all units are dual-aspect, and there are no spaces—save parking—that do not have access to natural light, including circulation cores.

The resulting spaces are highly customizable, and can easily change uses over time as market needs evolve.



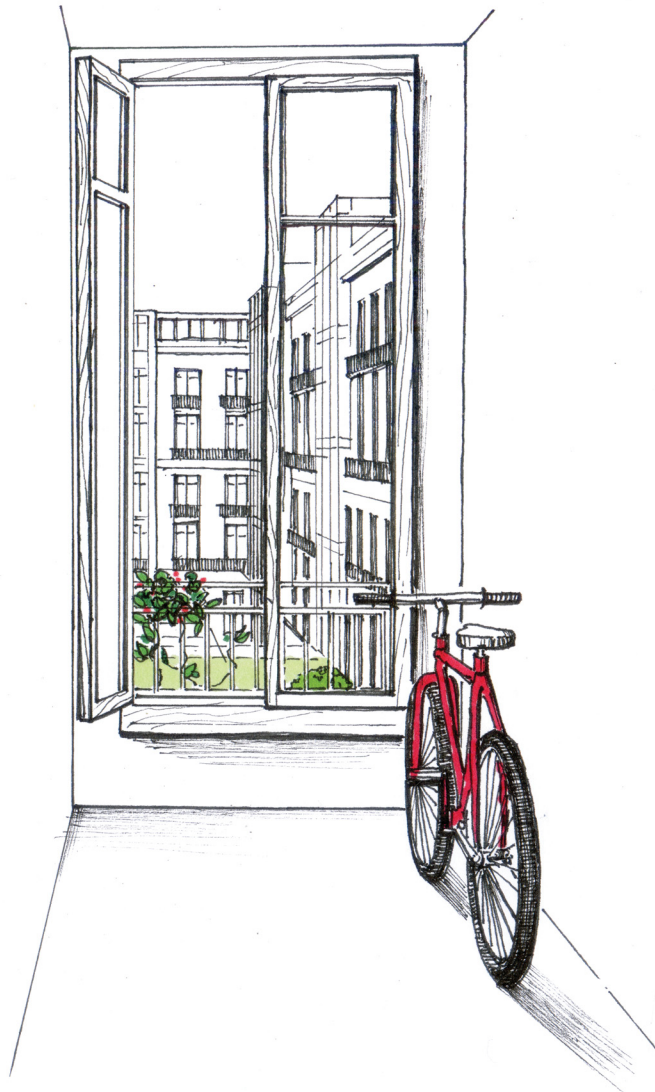
The building is 12m deep and has an 8m x 8m structural grid



Cross section through a prototypical building on Wellington Street with views to the Speed River. The maximum building depth is 12 metres, which creates dual aspect spaces. Therefore, each built space (save the underground parking) has not only access to natural light, but also two different sunlight conditions throughout the day



Without double-loaded corridors, there is one circulation core for every two units on each floor. Because of the innate privacy this environment would afford residents, the circulation cores could offer opportunities to foster neighbourly relationships between unit owners—relationships which are largely lacking in many developments that are designed with double-loaded corridors. Having an intimate, light-filled circulation space would make the area feel less like an anonymous and transient thoroughfare and more like an extension of ones' living space.

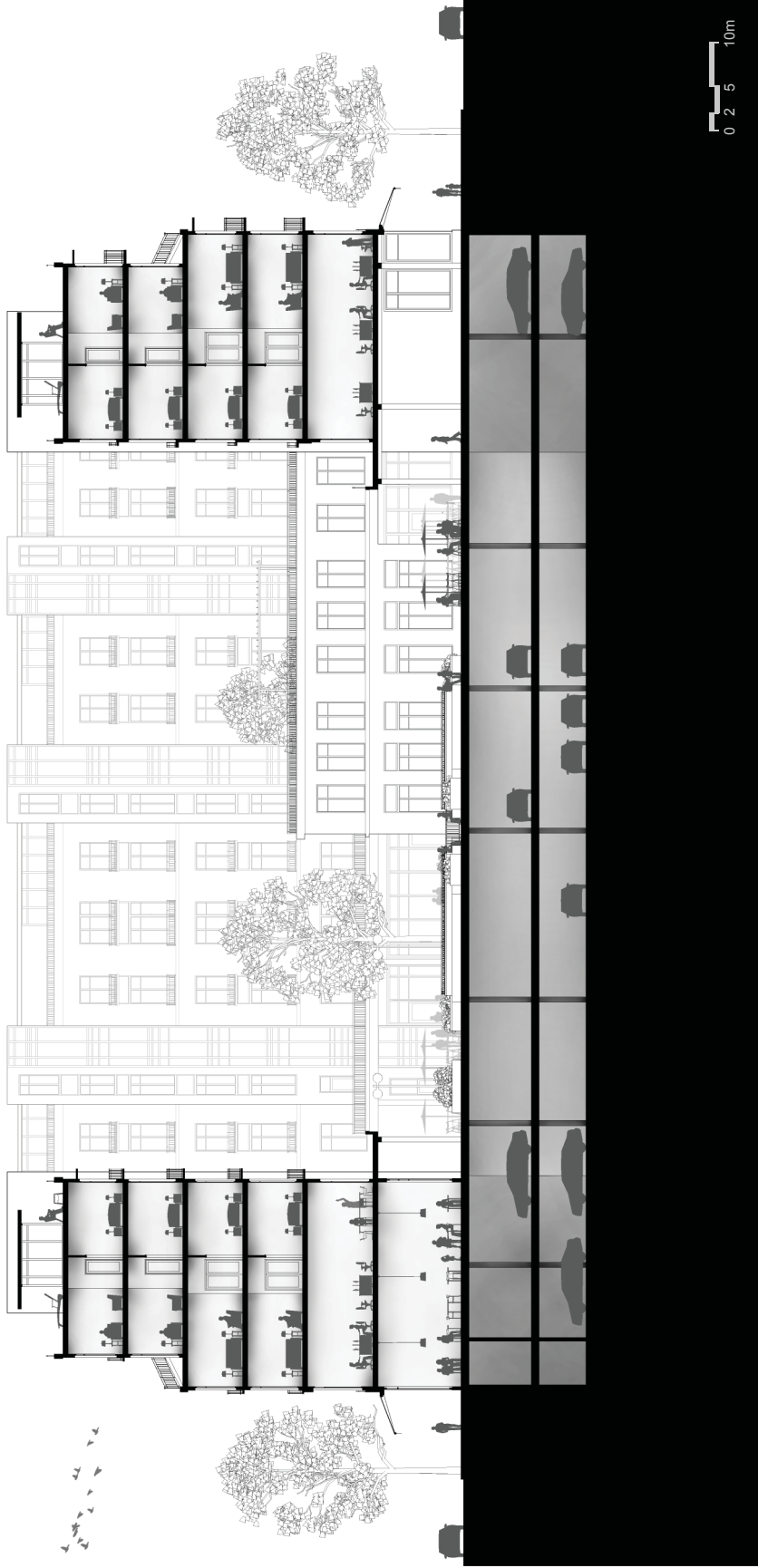


Circulation cores are naturally lit and shared between two units on each level. Compared to a typical podium-tower development that promotes anonymous side-by-side living, this would create a more neighbourly conducive environment

Beyond the obvious natural-light benefits of dual-aspect units, there are other benefits as well, particularly for the ground floor commercial spaces and the residential units.

Ground floor commercial space is priced at a premium because it is privileged with foot traffic. At first it may seem that the public courtyards would drain much of the pedestrian street traffic away from the shop fronts, but since the units are dual aspect, the businesses do not actually lose any visibility. The businesses have two frontages, one to the street and another to the courtyard. Therefore, whether or not a pedestrian chooses to walk on the street or through a courtyard, the business will have equal visibility.

The dual-aspect design also benefits residential units. With two sides, a unit feels more like a typical home because interior layouts can more closely resemble town-house plans. Dual-aspect units also enjoy the benefits of two different sunlight conditions throughout the day. While subtle, these are important design advantages. During early life people become accustomed to living in certain surroundings, and they develop and internalize fixed-feature needs.<sup>76</sup> Because many people grow up in homes that are at least dual-aspect, many people internalize a fixed-feature need of dual-aspect living environments. Therefore, it can be difficult for many people to acclimatize to the single-aspect units offered in most high-density residential developments. By providing dual-aspect units, high-density living becomes a viable option for buyers who would not normally welcome the idea of living in an apartment or condominium.



Each level is defined by its program: two levels of underground parking; commercial space at the ground floor; office space at the second floor; residential space on floors 3-6; rooftop garden for the residents above the residential space. Since the spaces are dual-aspect, commercial spaces are privileged with two frontages, and residential spaces feel more like single family homes

### 6.2.2 Urban Priority

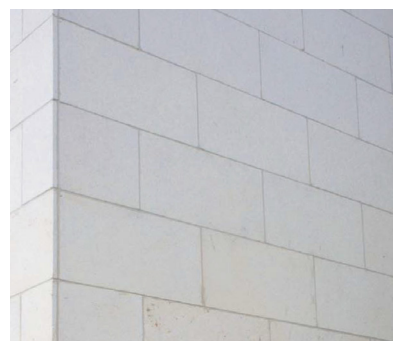
In keeping with the idea that the design of buildings should primarily support urban fabric and street life, it is proposed that the building's facades should be discreet and unassuming. The facades should not demand attention; instead, they should exist as a backdrop to city life and provide a framework for people to create urban activity. People's attention would, therefore, focus on the street life that is supported by the buildings, rather than the buildings themselves.

In order to achieve this, it is proposed that the ground floor envelope should have a high percentage of glazing to ensure clear visibility of street level activity. However, upper level stories do not benefit from this kind of visibility, and therefore, would profit from slightly more solid envelopes. Instead, it is suggested that they provide visual interest with large windows, a variety of balconies and balconets, and a wrap-around terrace at the 5th storey (to provide setback relief). The proposed rooftop garden would be largely imperceptible from the street, so privacy would not be an issue. Therefore, the design shows it as glazed to exploit the city's views.

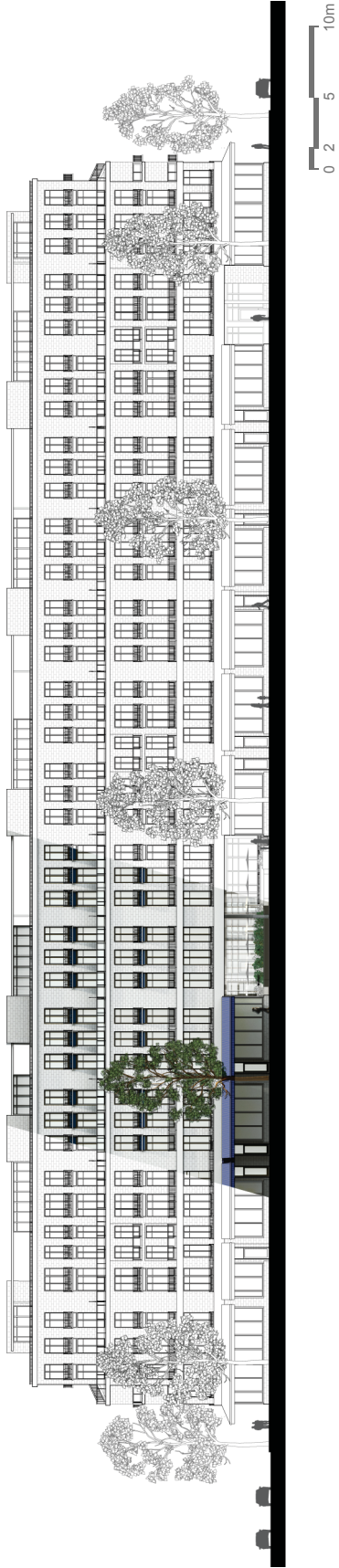
Finally, Guelph's downtown is distinguished from other Southern Ontario cities because of its principal use of limestone, rather than brick, as a building material.<sup>77</sup> In efforts to bridge the two sides of downtown, despite having distinctly different building typologies, it is proposed that the traditional limestone found in Guelph's north downtown should carry over to the south downtown. The light colour of the stone would further help the building act as a blank canvas for urban life.



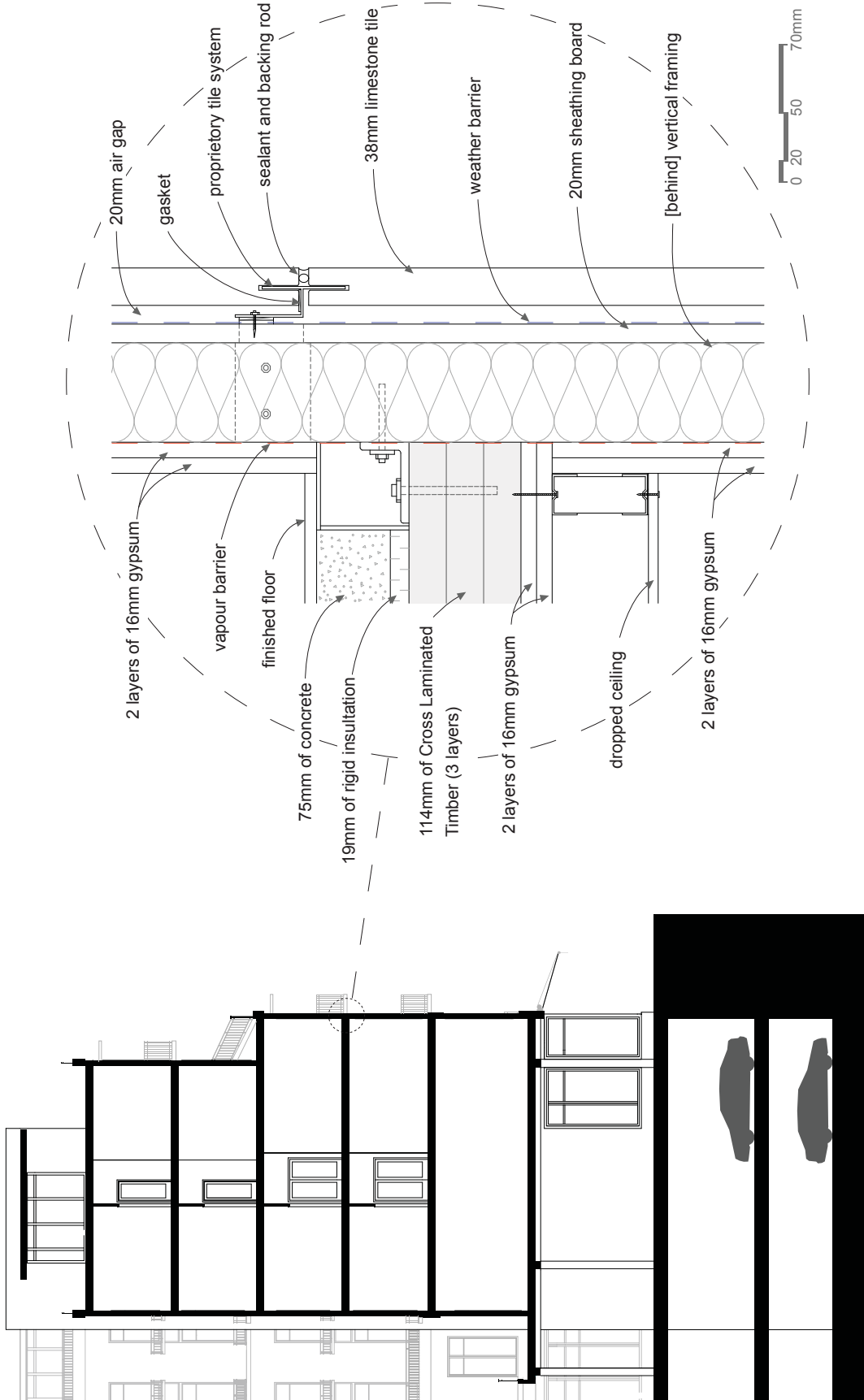
The commercial space on the ground floor should have a high degree of glazing



Proposed limestone cladding; from American Limestone Company, *ALC Solution Manual*



Western elevation of prototypical building with a rendered section



Typical assembly detail: curtain wall system with limestone tile cladding tied back to a Cross Laminated Timber structure



View of the development from street level where the focus is on street activity, not the architecture



View of the proposed development as an urban backdrop from the Speed River and new park



### 6.2.3 Welcoming Courtyards

The decision to suggest public courtyards instead of private ones was first an urban design move, as discussed in section 6.1.1. However, there are also positive consequences of this decision at the building scale. For example, if the courtyards were private, then only a small pool of people would be able to access the gardens, and thus, fewer people would be in the gardens at any one time. At first this may seem to be desirable—having a large garden space to one's self—but this is, unfortunately, a strongly held falsehood:

[The idea] that the sight of people attracts still other people, is something that city planners and city architectural designers seem to find incomprehensible. They operate on the premise that city people seek the sight of emptiness, obvious order and quiet. Nothing could be less true. People's love of watching activity and other people is constantly evident in cities everywhere.<sup>78</sup>

With several other public green space options available to residents in this proposal, it is likely that many people would actually prefer to spend leisure time in one of the public spaces because it would be populated with more people. This would leave the private courtyards with even fewer people to use them, which would further discourage others from using them.

Therefore, to ensure that people are continually using the courtyards, it is suggested that they become public spaces. However, it is not enough to make the courtyard public. The courtyard must also be designed to encourage people to use it; otherwise, it will become a neglected and unused public space that would not offer any benefits over an unused private courtyard.



This public square in Cordoba, Spain is nearly empty, and thus, does not look very inviting. If it were full of people and activity it would immediately become more interesting; photograph by Gehl Architects, from Gehl, *Cities for People*

For instance, the design proposes several large entrances to the courtyards from the street to emphasize the idea that the space is public and welcoming. It is also proposed that ground floor commercial space should be glazed with window wall systems so that whole facades could be opened in good weather to provide a strong visual connection from the street to the courtyard.

Furthermore, it is proposed that the all circulation cores should be accessed from the courtyard. Therefore, residents, office employees and clients would be required to use the courtyard. Even if their time in the courtyard were transient, people would be exposed to the courtyard; some may pause and spend some time in the courtyard, or return another time.

All of these design devices are used to bring people to the courtyard space, but design elements used to encourage people to stay in the space are also needed.

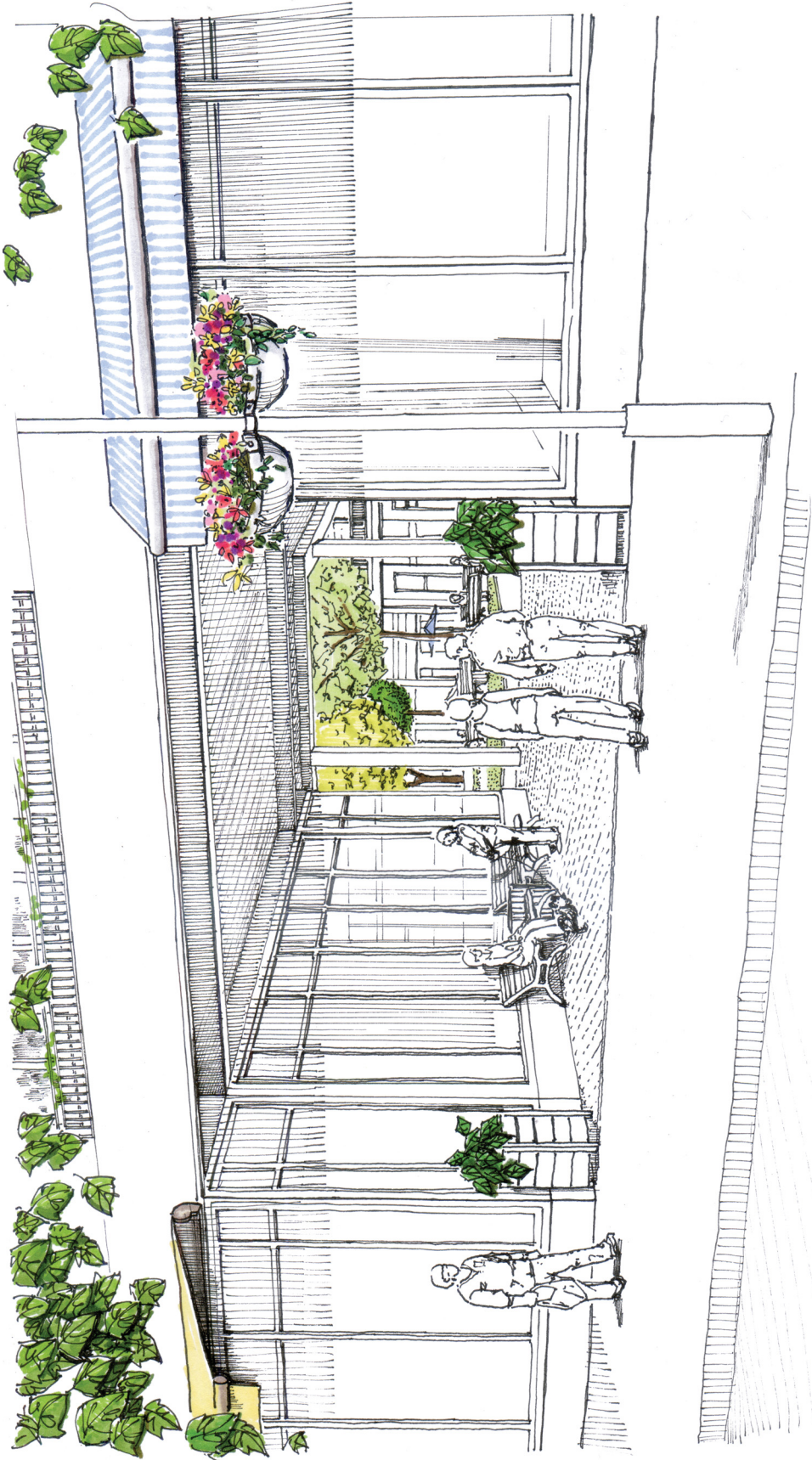
The proposed courtyard is furnished with many spaces for people to sit and relax. Furthermore, the proposed wrap around balcony on the second floor—which allows office employees and visitors easy access to units from any circulation core—would provide a covered space on the ground level. This coverage would then provide people with protection from rain and sun. Commercial establishments could also use the covered courtyard space to have outdoor patios in good weather—a real benefit for any restaurant or café.



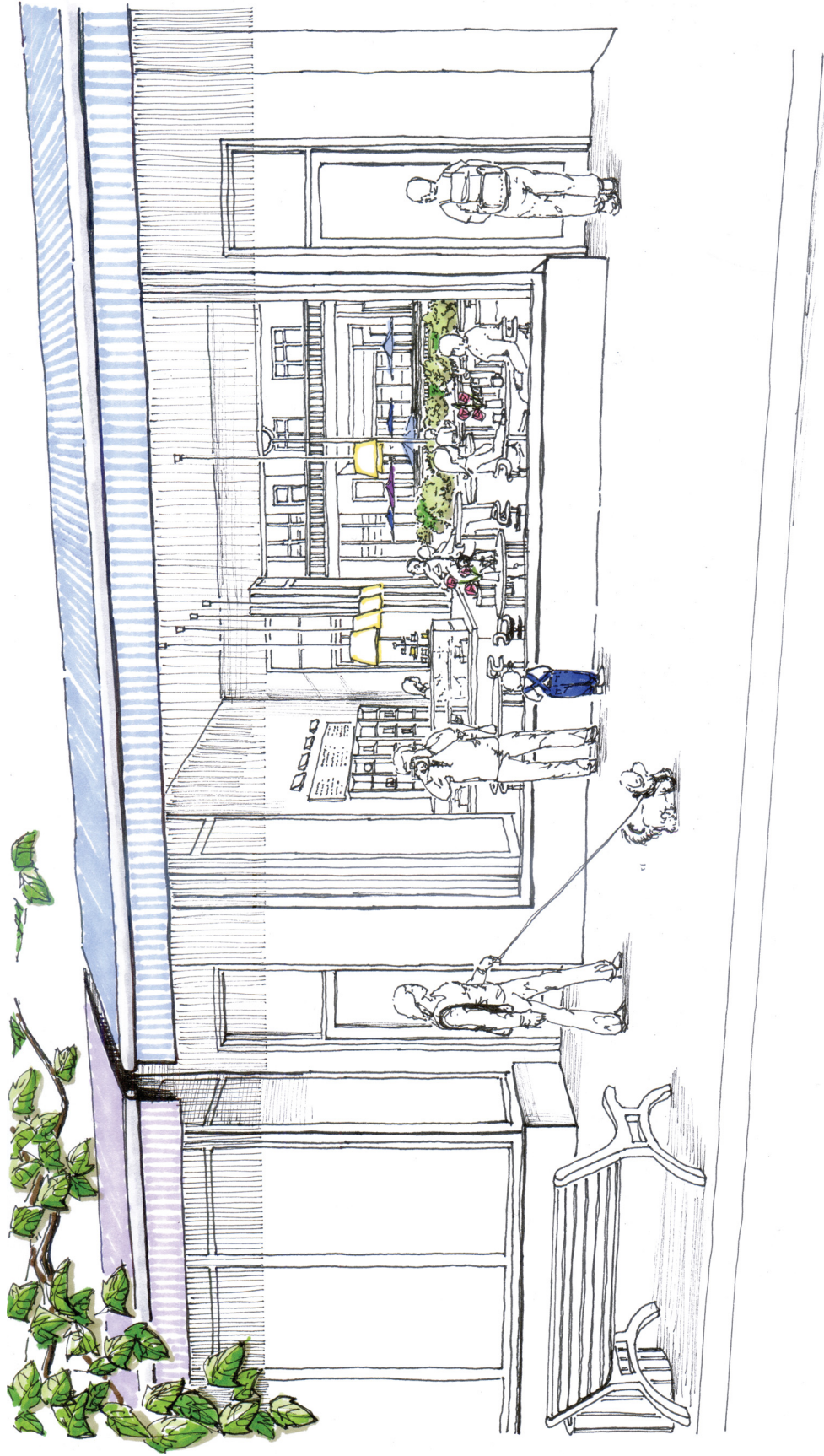
Window wall system shown while closed, semi-open, and completely open; from Magic Window Innovations



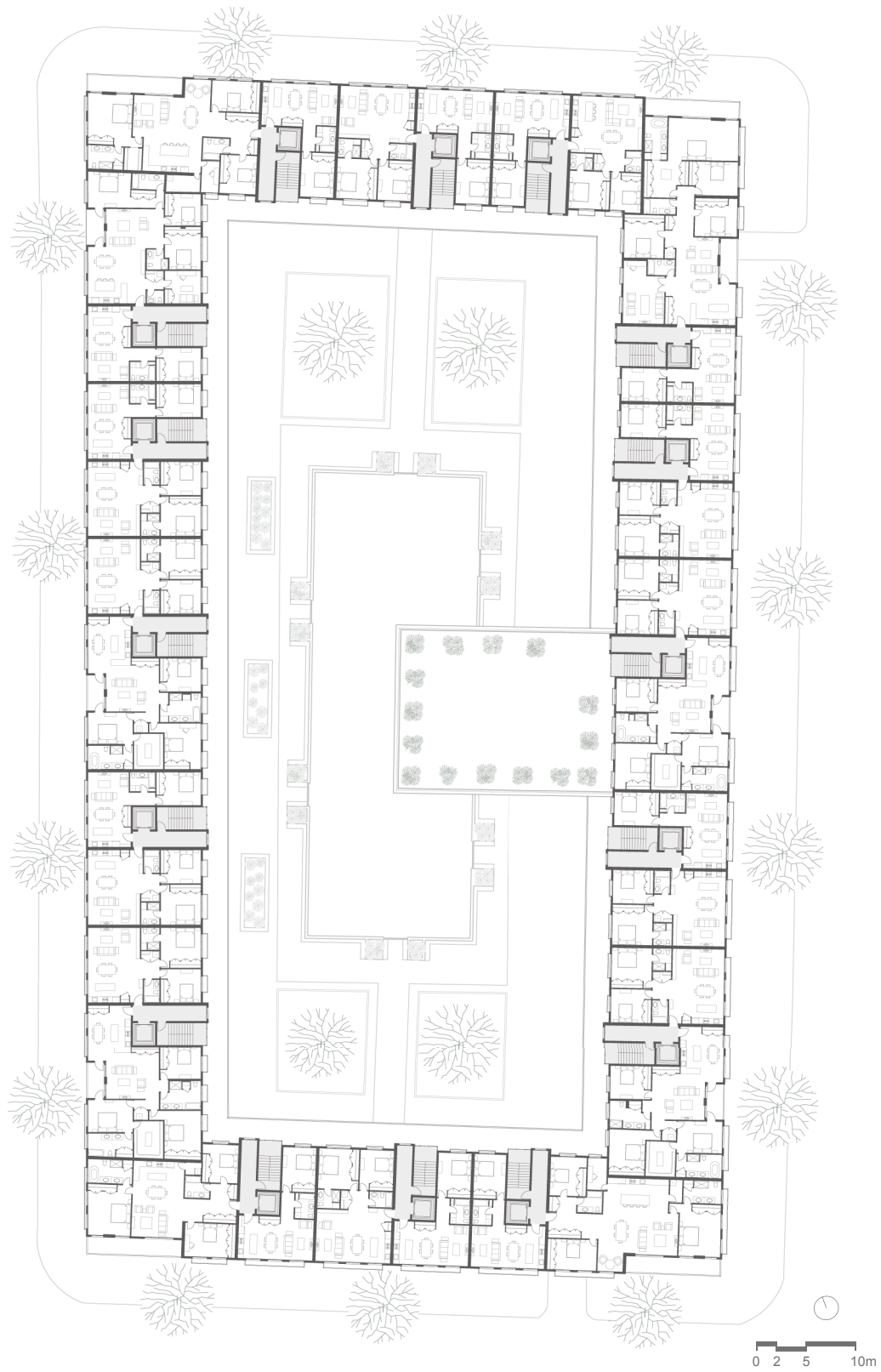
The commercial ground floor has an open and transparent envelope, allowing a strong connection between street and courtyard



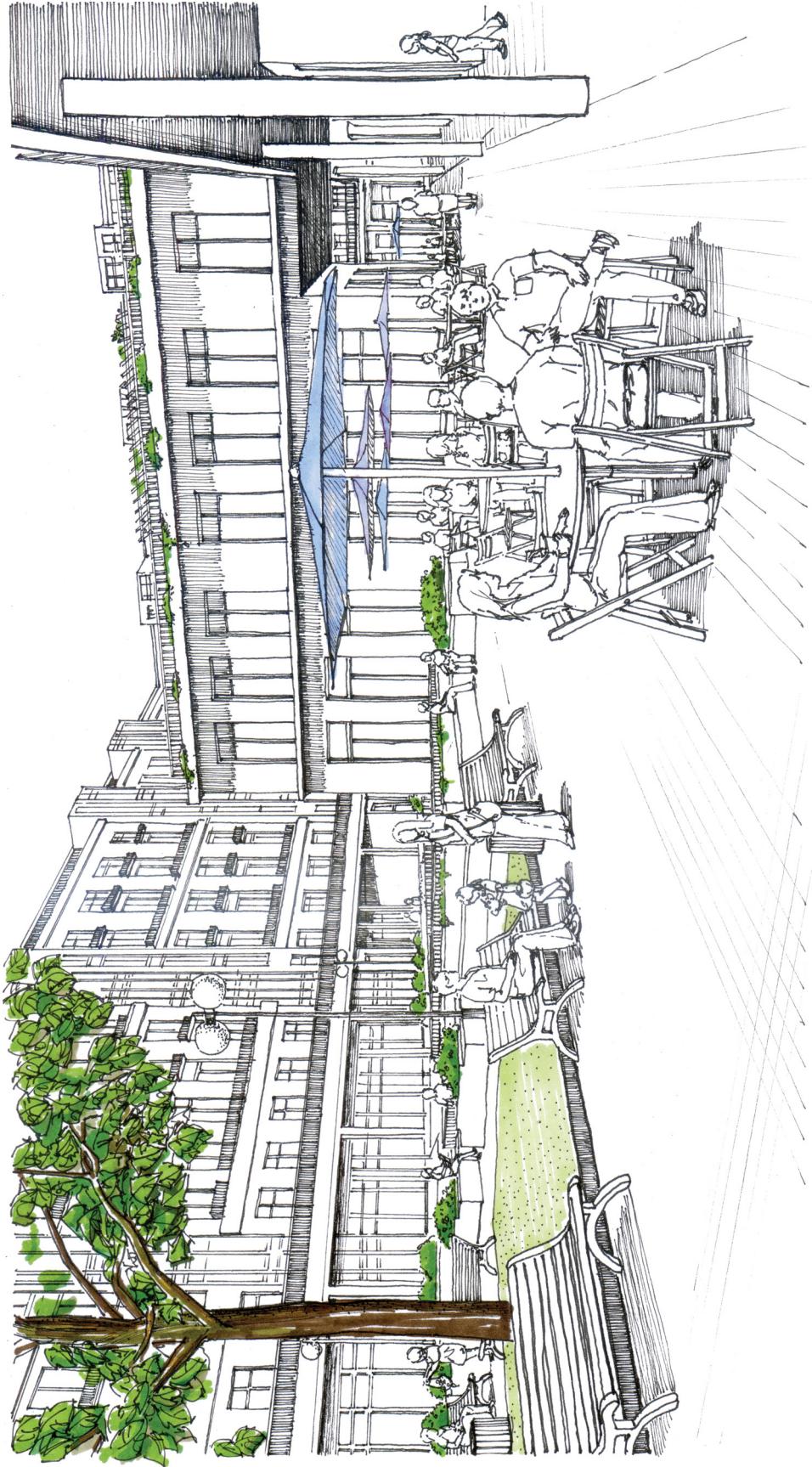
View to a public courtyard through an entrance from the street



Café during the summer season with the window wall system opened, creating a strong visual connection from the street to the public courtyard beyond



Plan of the third storey. Circulation cores (indicated in grey) open onto the public courtyard. Without traditional double-loaded corridors, all units are dual-aspect and benefit from cross-ventilation



View of a public courtyard being used as an outdoor patio space for ground floor shops. The wrap-around balcony provides a covered walkway for those passing through the courtyard in rain or sun

### 6.2.4 Amenities

It is proposed that each courtyard should have a two storey section that extends into the courtyard space. This extension would provide larger office space on the second floor, but more importantly, it would provide amenity space for the developments on the ground floor.

The amenity space in the larger courtyards has been designed with a second, sunken courtyard. The smaller courtyard would provide outdoor private-access amenity space within the larger public courtyard. Each development could have a different amenity so that all developments could share program spaces, and thus, reduce unnecessary duplication of space. Some could have day-care facilities while others could have fitness centers, or secure play areas for children. For instance, children could play in the lowered, private-access courts while parents watch from their residential units.

The amenity extensions would also provide massing benefits. They would help to break up the courtyard space to create several, more intimate spaces within the larger courtyard. The smaller spaces would be more appropriately-sized and offer slightly different experiences for visitors as they rest in or pass through the courtyard: “A lively city scene is lively largely by virtue of its enormous collection of small elements.”<sup>79</sup>

Finally, it is proposed that rooftop gardens should be accessible to residents to provide semi-private outdoor space. From the rooftop, people could enjoy the views of Guelph and its downtown.



Example of creating a more intimate and appropriately sized space within a very large and alienating space in St. Polten, Austria; photograph by Gehl Architects, from Gehl, *Cities for People*





View from a residential unit looking down into the courtyard and the secure children's play area. The extension of amenity space into the courtyard creates several intimate spaces within the larger courtyard



Rooftop patio and garden for the residents of the development. With the window-wall system, areas can be opened during the warmer months, and closed during the cooler months, allowing residents to use the spaces year-round

### 6.3 Financial Perspective

The adaptability of the design would make this proposal attractive to investors because its non-specialized design mitigates the long-term risk of the investment. However, many investors are more interested in numbers that explicitly demonstrate how the project is a good investment for the immediate future.

#### 6.3.1 Residential Economization

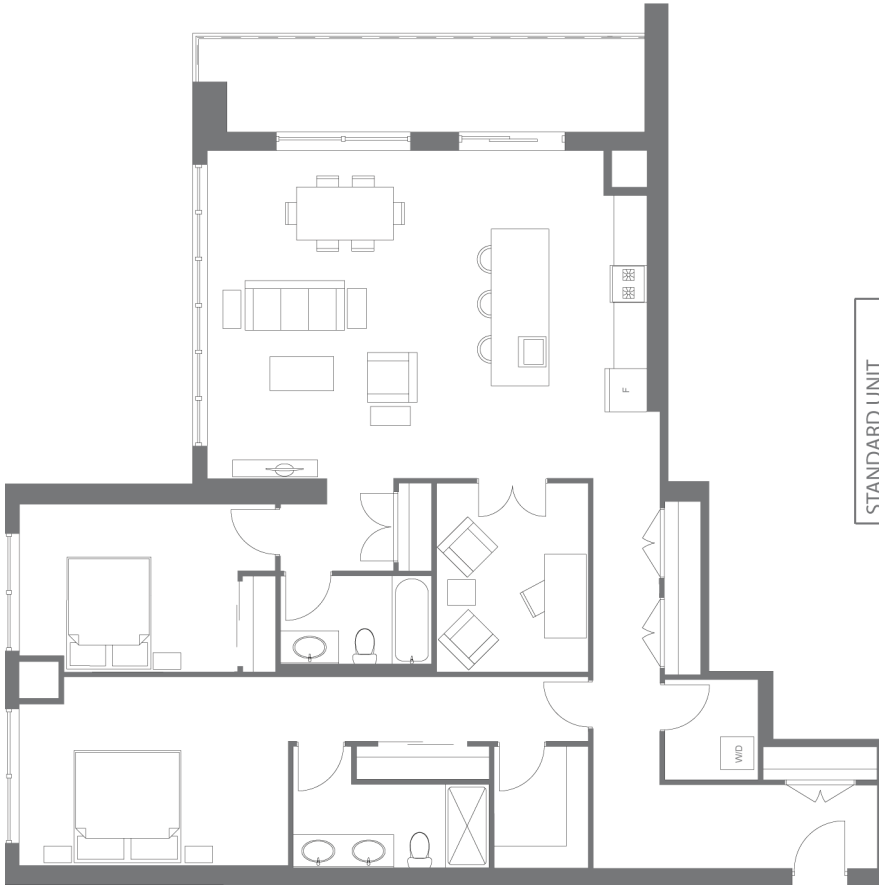
The proposal’s dual-aspect residential units provide investors with an advantage over the single-aspect and deep corner units found in standard podium-towers. The dual-aspect design ensures that more interior spaces within the unit have access to natural light. Therefore, the proposal’s units can be more efficiently designed, and square-footage economies are gained.

As noted earlier, a typical two-bedroom unit in the Guelph market is 1565 square feet. However, in this proposal, the average two-bedroom unit would be approximately 1017 square feet—a saving of 35 percent. While the overall unit is smaller, living and bedroom spaces are not compromised: they maintain the same general sizes as those found in the larger typical podium-tower unit.

Consequently, two similarly-sized units would offer buyers two different unit types, and therefore, value. For example, at approximately 1600 square feet, a podium-tower unit provides a two bedroom, two bathroom plus den unit, where the den is a windowless room. The proposal’s comparative unit would offer a three bedroom, two-and-half bath, plus office unit, where the office has a window and could actually be used as a fourth bedroom.



Comparison of unit, living and bedroom sizes between a standard and proposed 2-bedroom unit



<b>STANDARD UNIT</b>
1669 sq. ft. + Balcony
2 Bedroom + Den
2 Bath



<b>PROPOSAL UNIT</b>
1606 sq. ft. + Balcony
3 Bedroom + Office
2.5 Bath

Comparison of a standard and proposed unit that are similar in overall square footage. The proposal's unit can be organized much more efficiently because it has the advantage of being dual-aspect without the deep corner condition that is found in the standard unit. Therefore, more can be designed into the proposed unit than the standard unit

Savings in square footage offer investors flexibility in pricing strategies. Units could be priced using the same price-per-square-foot that typical podium-tower units command: in this case, similar unit mixes (number of bedrooms and bathrooms) would be significantly cheaper in the proposed development because they would require fewer square feet to produce the same unit mix. This is highly advantageous in a competitive market that requires aggressive pricing.

START WITH SAME PRICE/SQ. FT.	STANDARD UNIT	PROPOSAL UNIT	START WITH SAME UNIT PRICE	STANDARD UNIT	PROPOSAL UNIT
PRICE / SQ. FT.	\$\$\$	\$\$\$	UNIT PRICE	\$\$\$	\$\$\$
UNIT MIX	2 BED 1500 SQ. FT.	2 BED 1000 SQ. FT.	UNIT MIX	2 BED 1500 SQ. FT.	2 BED 1000 SQ. FT.
UNIT PRICE	\$\$\$\$	\$\$	PRICE / SQ. FT.	\$\$	\$\$\$\$
RESULT	can sell same unit mix for less than the competition, making it easier to sell stock and earn returns quickly		RESULT	can sell for same price as competition, but earn more per square foot than the competition	

Two pricing strategies for the residential units are available

Alternatively, units could be priced using the same average price for a particular unit mix: in this case, similar unit mixes would have the same overall price, but the units in the proposed development would earn a higher price-per-square-foot than the typical unit, and thus earn higher margins.

### 6.3.2 Amenity Economization

The proposed development would also economizes on amenity space, as discussed in section 6.2.4. Typically, each podium-tower development will have a fitness room, a party room, and a home movie theatre room among a plethora of other amenities. This causes a great duplication of amenity spaces from building to building. It is unlikely that there is enough demand within each building to justify the cost of repeatedly building the same amenity spaces for each development. This proposal avoids this unnecessary duplication by sharing amenity spaces among buildings, thereby allowing more built space to become leasable or sellable space.

### 6.3.3 Construction Time Economization

As indicated in the assembly detail in section 6.2.2, it is proposed that this project should use Cross Laminated Timber (CLT) for structural construction. CLT construction is price competitive with concrete construction, but it offers a few advantages over concrete.

<b>Project</b>	<b>12 Storey Concrete Frame</b>	<b>12 Storey CLT Frame</b>
1 Cost	\$ 17,550,800	\$17,518,000
\$/sf	\$283	\$283
2 Cost	\$ 19,832,404	\$19,269,800
\$/sf	\$320	\$311
3 Cost	\$ 18,779,356	\$ 18,393,900
\$/sf	\$303	\$297
4 Cost	\$ 17,550,800	\$ 17,518,000
\$/sf	\$283	\$283
5 Cost	\$ 18,691,602	\$ 18,393,900
\$/sf	\$302	\$297

Cost comparison of concrete and Cross Laminated Timber construction ; data from Green, *The Case for Tall Wood*

For instance, Cross Laminated Timber has a smaller carbon footprint than concrete because trees remove carbon from the atmosphere. Thus, when the timber is harvested, the carbon is sequestered in the wood. Furthermore, “steel and concrete embody 26% and 57% more energy relative to wood design, emit 24% and 47% more pollutants into the air, discharge 400% and 350% more water pollution, produce 8% and 23% more solid waste, and use 11% and 81% more resources.”<sup>80</sup>

However, in terms of construction, it is arguable that CLT’s most competitive advantage is its short construction timelines. Requiring small crews and simple equipment, CLT is a quick building system, and has shown to reduce construction timelines by 15 to 30%.<sup>81</sup> The time savings help to shorten the construction loan period, and therefore reduce the total interest accrued on the construction loan. It also reduces the amount of time that investment capital is committed to the project.

#### 6.3.4 Return on Investment

Ultimately, investors want to know what their return on investment (ROI) would be before committing to a project. Return on investment is the percentage of profit to overall investment needed to make that profit. Therefore, profits and investments need to be estimated in order to solve for ROI, and thus, a pro forma for each building in the proposed development was completed (see Appendix 3).

This proposal assumes that profits will be earned from a take-out sale at the completion of the project, which means that the entire project will be sold: the condos will

be sold to individual buyers and the rental spaces will be sold to other investors (i.e. through a pension fund) or a property management company. It is assumed that this would be the most likely path because retaining properties and collecting rents in perpetuity is usually best left to those with experienced property management departments, and it affords project investors an immediate pay-back.

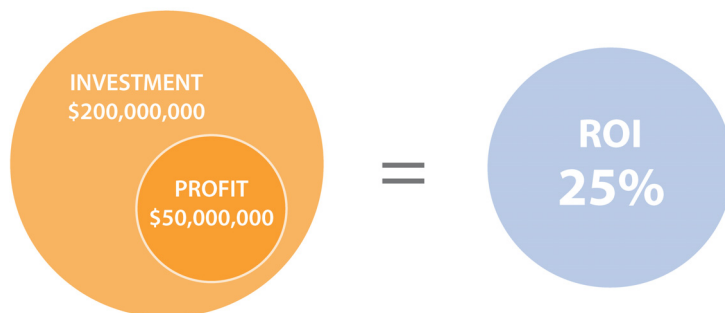
It is not difficult to assess the value of the residential units because they are being sold outright, but it can be more difficult to appraise the saleable value of the rentals since they bring in revenue year after year. There are several methods available to value rental properties, but the *income approach* has been selected here because it reflects the market's required rate of return and does not depend on cost and sale assessments of comparative projects. For instance, it would be difficult to amass enough information on comparative properties to have a suitable sample size.

The income approach uses a perpetuity discount type of model where the net income derived from a property is discounted by the market's required rate of return.<sup>82</sup> The appraised value is the result of dividing the project's net operating income (NOI) by the market capitalization rate. The market capitalization rate (often called the market cap rate), reflects the return that investors require to make an investment. Therefore, higher market capitalization rates cause investors to require higher returns, and therefore, the appraised value of the present-day project is lower. In contrast, lower capitalization rates mean that investors require lower

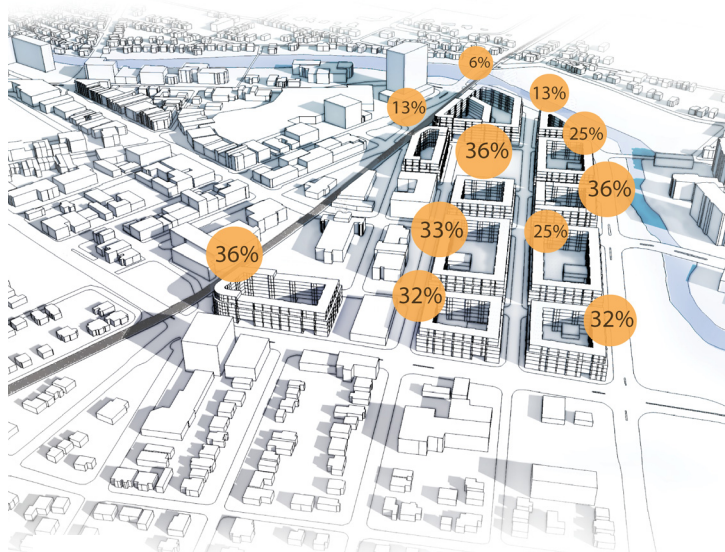


returns, and that causes the present-day valuation to be higher. For this reason, a range of market capitalization rates must be used when doing a valuation in order to properly estimate the overall value of rental properties.

Using a more conservative market capitalization rate, the overall return on investment for this proposal is 25 percent. The whole project would require about \$200 million of investment, and profits are projected at \$50 million. However, with more optimistic market capitalization rates, the ROI would reach higher—upwards of 60 percent return. (See Appendices 3 & 4)



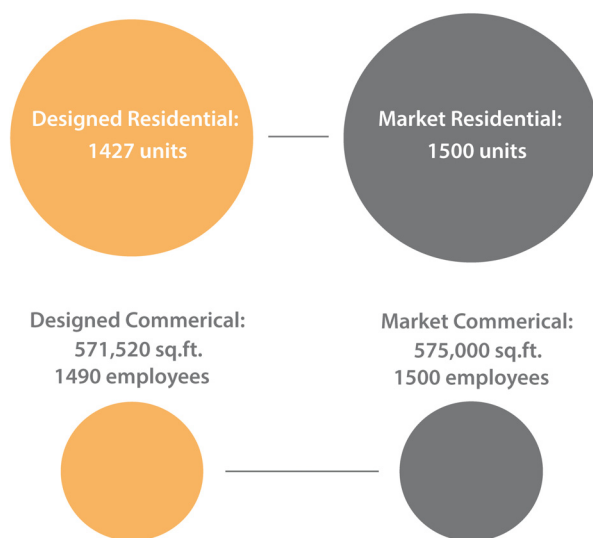
Development ROI, at 5% capitalization rate, is 25%



Break down of ROIs for each block, where the total development ROI is 25%

A project with a 25 percent return is a good investment. Most investors “require a return on equity that is 12 to 15 points higher than what they could obtain on risk-free government bonds.”<sup>83</sup> Since the current 10-year benchmark bonds have a return of 2.5 percent, most investors would require a minimum return on investment of between 14.5 and 17.5 percent.<sup>84</sup>

The overall return on investment for this development is promising and would be attractive to many investors. The city would also be satisfied because projected targets for residential and job spaces are met.



Comparison of proposal's residential and employment capacity to market needs

## CHAPTER 7: CONCLUSION

This thesis outlined how it is the architect's responsibility to provide social value through the built environment, but how it is increasingly difficult to add value to society when clients prioritize financial gain to the exclusion of other opportunities for value creation. At the same time, design proposals that do not provide adequate—or even any—financial incentive will never be built because investors require a minimum level of return in order to fund a project. Therefore, designs that concentrate only on social value, and forsake economic value, do not end up providing *any* value because no one will pay to build the project. Society cannot reap the benefits of a design that must be experienced in the physical world if it exists only as an idea on paper.

This problem presented two issues: working for clients who tend to value only economic value, and designers who often discount the necessity of economic value. This thesis set out to demonstrate that by locating a site, identifying an urban challenge, determining opportunities for urban and social value, and uncovering the possibilities for financial gain, architects can create their own work. Architects can then pursue architecture that both adds value to society by promoting urban prosperity and creates value for investors by encouraging economic interest.

### 7.1 In Practice

Pursuing a model of practice that stresses creating your own projects is not for the risk-averse. Architects who take on this kind of work inherit the risk that is usually

borne by clients, in addition to the risk that typical architectural practices must shoulder.

In North America, architects are usually given a site and program requirements by clients, and are not generally accustomed to conducting market and financial analyses. Therefore, in order to take on these new responsibilities and help make enlightened business and design decisions, it would be greatly beneficial to have market and financial analysis teams within the firm. These services could be outsourced, but as the practice grows and takes on more projects it is likely that in-house support teams would become desirable.

Perhaps the most significant difference between this model of practice and a traditional model is the way in which firms earn money. Instead of having a client pay a portion of service fees at various project milestones, the new practice does not have a client, at least not in the traditional sense. However, there are arguably two basic ways in which a firm could profit from this kind of work.

The first is to source investors in order to buy land, secure equity to qualify for a construction loan and, ultimately, become a developer. In certain cases, the firm could partner with the city to align urban goals. This could lead to partnerships where the municipality would be able to facilitate and secure financing—especially if the design proposal has direct and measurable benefits to the city's inhabitants, image, and future tax base. In this case, the firm can earn profits in two ways. The firm could sell the development to either an individual or a property management company. Alternatively, the firm could

become a property owner, maintain the development and collect rents. In the latter scenario, the firm would then have to decide if it would be more advantageous to create a property management department within the firm or outsource the work to a property management company.

For most firms, especially those without large financial resources, becoming property owners, and possibly property managers, could prove to be financially prohibitive. Selling the development, on the other hand, ensures a large and immediate pay-back that can be used to first repay loans and investors and then contribute to firm profits.

The second option available is to sell the design proposal, complete with approvals and phasing schedules (see Appendix 5). The most likely buyer would be a developer, but it is also possible that the city might be interested in a purchase agreement. This route has a great potential for financial reward at the same time as having the least amount of financial risk: investors and loans are not needed, and the firm is invested in the project for a shorter period of time. However, this route also lacks control—a disadvantage that comes with nonmonetary consequences.

This situation is exemplified by the great financial success of G. E. Travelstead, an American developer, who sold his development proposal for Canary Wharf to the Canadian developer Olympia & York. After selling the proposal, the Canadian developers made some poor choices and the original proposal was

compromised and ended with the Canadian developers filing for bankruptcy. While this would not have affected Travelstead financially, since his economic interest in the development had been already terminated, he may have had regrets about the execution of his original proposal. For architects, who would arguably be more invested in design proposals than developers, risking this regret might prove to be too untenable.

In order for the architect to maintain a level of control over the project, a relationship must continue to exist between the architect and the buyer. This could be achieved through conditions present in the contract of sale during the purchase of the proposal, stipulating that the architect remain on-board through to project completion. In a favourable position such as this, architects could have their cake and eat it too: the firm would earn immediate profits and retain some project oversight without being accountable to investors and responsible for loans and sales.

## **7.2 Proposal vs. Alternatives**

This thesis concentrates on a fairly large development, and while a large development offers greater opportunity to effect urban and social change—making it a good study for a thesis—smaller developments are also important and can provide communities with essential value. Smaller projects should not be overlooked because of their perceived lack of influence: a collection of many small components can lead to a greater whole. Smaller developments are also more feasible because of lower capital requirements, shorter timelines, less risk, and limited land availability.

Another point to consider is that the design proposal presented here is just one possibility. The design is heavily influenced by valuing both the importance of urban fabric over individual buildings and the importance of mixed use as a way to promote urban and social prosperity. However, if an architect were to use other urban principles to drive the direction of the design process, then a different design proposal would surely emerge.

The beauty of the break-even analysis is that it does not demand the architect to prescribe to any particular design principles. It indicates the economic threshold of what can and cannot be done. Therefore, it can be used universally, independent of personal, social and urban values.

The real challenge in this brave new world of architecture is not the design of the end project, for this is something with which architects are already adept, but the identification of opportunities: exposing opportunities to effect positive social and urban change, discovering opportunities for financial gain, and ultimately, exploring opportunities for creating added value.

## APPENDIX 1: RESIDENTIAL BREAKEVEN SAMPLE

### Site: South End of Downtown Guelph

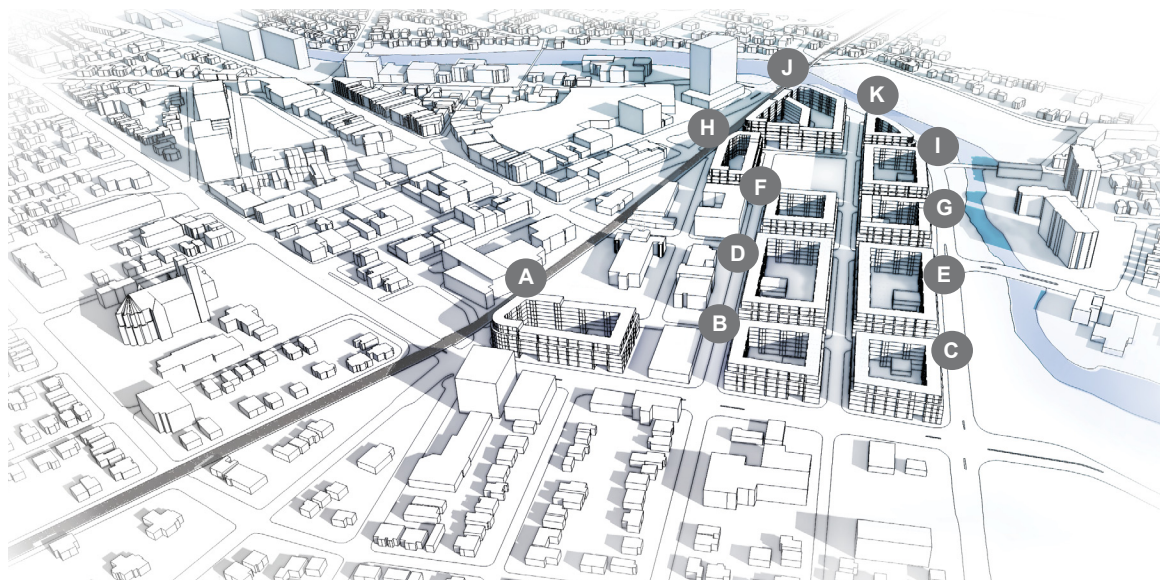
Construction: Cross Laminated Timber and Reinforced Concrete  
Location: Block A  
Lot Area: 77,180 sq. ft.

### General Assumptions

- Moderate rental rates for office & retail
- Condominium inducements unnecessary to attract buyers
- Moderate construction costs
- Moderate land costs

### Special Notes

- Although this is a breakeven sample for residential programming, it more accurately functions as a breakeven sample for any program that will be sold (i.e. not rental property)
- To see a sample breakeven of a rental program please see Appendix 2





**TOTAL AREAS**

Program	Built Areas (sq. ft.)	Leasable Areas (sq. ft.)	% of Leasable Areas
Retail	0	0	0%
Office	0	0	0%
Residential <sup>1</sup>	1.15	1	100%
Parking <sup>2</sup>	.26	0	0%
Total	1.41	1	100%

**REVENUE***Sales Revenue*

Program	Price	Area	Gross Revenue
Typical Condominium <sup>3</sup>	\$280 per sq. ft.	1 sq.ft.	\$ 280
Total			\$ 280

**FIXED COSTS***Fixed Cost Summary*

Land <sup>4</sup>	\$ 3,454,552
Deed Transfer Tax <sup>5</sup>	\$ 51,818
Legal & Closing Costs <sup>6</sup>	\$ 51,818
Environmental & Appraisal <sup>7</sup>	\$ 51,818
Total Land	\$ 3,610,007
Taxes During Construction <sup>8</sup>	\$ 20,000
Total Fixed Costs	\$ 3,630,007

*Fixed Costs Distributed Across Three Programs<sup>9</sup>*

Total Fixed Costs	\$ 3,630,007
Residential Fixed Costs	\$ 1,210,002
Retail Fixed Costs	\$ 1,210,002
Office Fixed Costs	\$ 1,210,002

**VARIABLE COSTS***Variable Cost Summary*

Hard Costs <sup>10</sup>		
Construction <sup>11</sup>	\$	211.50
Demolition & Excavation <sup>12</sup>	\$	1.50
Contingency <sup>13</sup>	\$	6.35
<b>Total Hard Costs</b>	<b>\$</b>	<b>219.34</b>
Soft Costs <sup>14</sup>		
Construction Manager <sup>15</sup>	\$	10.97
Insurance & Permits <sup>16</sup>	\$	2.19
Consultants <sup>17</sup>	\$	8.77
<b>Total Soft Costs<sup>18</sup></b>	<b>\$</b>	<b>21.93</b>
<b>Total Costs Before Financing</b>	<b>\$</b>	<b>241.27</b>
Financing Costs		
Financing Interest <sup>19</sup>	\$	8.44
Financing Fees <sup>20</sup>	\$	1.69
<b>Total Financing Costs</b>	<b>\$</b>	<b>10.13</b>
<b>Total Variable Costs</b>	<b>\$</b>	<b>251.40</b>

**RESIDENTIAL BREAKEVEN***Residential Contribution Margin*

Residential Revenue	\$	280.00
Residential Variable Costs	\$	251.40
<b>Residential Contribution Margin</b>	<b>\$</b>	<b>28.60</b>

*Residential Breakeven Point*

Residential Fixed Costs	\$	1,210,002
Contribution Margin	\$	28.60
<b>Residential Breakeven Point (sq. ft)</b>		<b>42,308</b>

## NOTES TO APPENDIX 1

- <sup>1</sup> It is assumed that one unit of leasable residential space requires 0.15 units of service space (15%). Therefore, the total amount of residential built space is 1.15 units.
- <sup>2</sup> It is assumed that one unit of leasable residential space requires 0.26 units of parking (service space, not leasable space).
- <sup>3</sup> The average unit is 1017 sq. ft. with two bedrooms. It also includes a storage unit in the underground parking. The price per sq. ft. is based on the average price per sq. ft. of comparative projects in Guelph's downtown to match revenue expectations to market price expectations.<sup>85</sup>
- <sup>4</sup> The cost of land is estimated at \$44.76 per sq. ft., which translates into \$1.95 million per acre. This is an estimate based on the land valuation prices discussed in section 2.4.
- <sup>5</sup> The deed transfer tax is assumed to be 1.5% of land cost.
- <sup>6</sup> The legal and closing costs are assumed to be 1.5% of land cost.
- <sup>7</sup> The environmental and appraisal costs are assumed to be 1.5% of land cost.
- <sup>8</sup> Taxes have been estimated at \$20,000.
- <sup>9</sup> Because it is a goal of this proposal to have mixed uses on each block, it is assumed that there will be all three programs on every block: residential, office and retail. Therefore, the fixed costs are divided equally into three portions. This ensures that when the breakeven points for each program for a given block are reviewed, the fixed costs are not counted (or "paid for") three times. However, this does not mean that the fixed costs must be divided *equally* among the three programs when designing. In fact, the profitability analysis of a given block will divide the fixed costs based on the percentage of built programmed space to overall built space. The fixed costs are divided equally in the breakeven analysis so as not to presume that any one program will outweigh another.
- <sup>10</sup> Hard costs are the direct costs associated with construction.
- <sup>11</sup> Cost per sq. ft. is estimated at \$150, and includes mechanical, circulation space, and landscaping expenses, among others.
- <sup>12</sup> The cost of demolition and excavation is estimated at \$6.50 per sq. ft.
- <sup>13</sup> Contingency is calculated at 3% of construction cost.
- <sup>14</sup> Soft costs are not directly associated with construction, but are also necessary for execution.
- <sup>15</sup> The construction manager expense is assumed to be 5% of construction cost.
- <sup>16</sup> Insurance and permits are assumed to be 1% of construction cost.
- <sup>17</sup> Consultants are assumed to be 4% of construction cost.
- <sup>18</sup> Soft costs also include financing costs, but for clarity, financing costs have been listed separately.
- <sup>19</sup> Financing is assumed to be 70% of the cost of the project because it is assumed that the required equity to receive financing is 30%. Therefore, the financing received is \$169. The loan is assumed to have a 5% annual interest rate, where the monthly interest rate is 0.42%. The loan period is optimistically estimated to be 1 year because Cross Laminated Timber construction is used (see section 6.3.3).
- <sup>20</sup> Financing fees are assumed to be 1% of financing received. See note 19 for financing received.

## APPENDIX 2: RETAIL BREAKEVEN SAMPLE

### Site: South End of Downtown Guelph

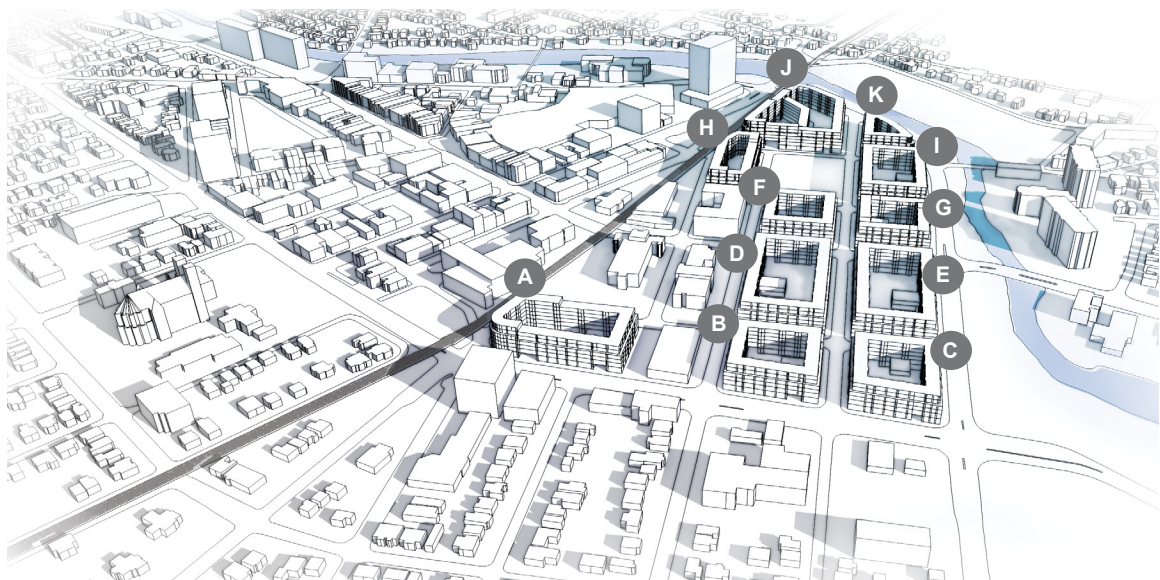
Construction: Cross Laminated Timber and Reinforced Concrete  
Location: Block A  
Lot Area: 77,180 sq. ft.

### General Assumptions

- Moderate rental rates for office & retail
- Moderate construction costs
- Moderate land costs

### Special Notes

- Although this is a breakeven sample for retail programming, it more accurately functions as a breakeven sample for rental programming in general. Therefore, this sample could be used to do a breakeven for the office programming as well.
- In order to exemplify this, the changes that would need to be made for an office breakeven sample are included in the notes section of this appendix. A separate office breakeven sample is not included because it would repeat very closely the information found in the retail breakeven sample.
- To see a breakeven of non-rental programming please see Appendix 1



**TOTAL AREAS**

Program	Built Areas (sq. ft.)	Leasable Areas (sq. ft.)	% of Leasable Areas
Retail <sup>1</sup>	1.14	1	100%
Office	0	0	0%
Residential	0	0	0%
Parking <sup>2</sup>	.31	0	0%
Total	1.45	1	100%

**REVENUE***Rental Revenue*

Program	Annual Rent	Area	Gross Revenue
Retail <sup>3</sup>	\$24 per sq. ft.	1 sq.ft.	\$ 24
Total			\$ 24

*Revenue Summary*

Rental Revenue	\$	24
Less Vacancy <sup>4</sup>	\$	(0.48)
Less Landlord Misc. Expenses <sup>5</sup>	\$	(0.48)
Net Rental Revenue	\$	23.04

**FIXED COSTS***Fixed Cost Summary*

Land <sup>6</sup>	\$	3,454,552	
Deed Transfer Tax <sup>7</sup>	\$	51,818	
Legal & Closing Costs <sup>8</sup>	\$	51,818	
Environmental & Appraisal <sup>9</sup>	\$	51,818	
Total Land			\$ 3,610,007
Taxes During Construction <sup>10</sup>	\$	20,000	
Total Fixed Costs			\$ 3,630,007

*Fixed Costs Distributed Across Three Programs<sup>11</sup>*

Total Fixed Costs	\$	3,630,007	
Residential Fixed Costs			\$ 1,210,002
Retail Fixed Costs			\$ 1,210,002
Office Fixed Costs			\$ 1,210,002

**VARIABLE COSTS***Variable Cost Summary*

Hard Costs <sup>12</sup>			
Construction <sup>13</sup>	\$	217.50	
Demolition & Excavation <sup>14</sup>	\$	1.82	
Retail Inducements <sup>15</sup>	\$	15.00	
Contingency <sup>16</sup>	\$	6.35	
Total Hard Costs			\$ 240.67
Soft Costs <sup>17</sup>			
Construction Manager <sup>18</sup>	\$	12.04	
Insurance & Permits <sup>19</sup>	\$	2.14	
Consultants <sup>20</sup>	\$	9.63	
Total Soft Costs <sup>21</sup>			\$ 23.81
Total Costs Before Financing			\$ 264.48
Financing Costs			
Financing Interest <sup>22</sup>	\$	9.27	
Financing Fees <sup>23</sup>	\$	1.85	
Total Financing Costs			\$ 11.12
Total Variable Costs			\$ 275.60

**RESIDENTIAL BREAKEVEN***Take-out Sale Valuation: Rental ROI*

Capitalization Rate <sup>24</sup>	4%	4.5%	5%
Value of Rentals <sup>25</sup>	\$ 576.00	\$ 512.00	\$ 460.80

*Retail Contribution Margin*

Retail Revenue @ 5% cap rate	\$ 460.80
Retail Variable Costs	\$ 275.60
Retail Contribution Margin	\$ 185.20

*Retail Breakeven Point*

Retail Fixed Costs	\$ 1,210,002
Contribution Margin	\$ 185.20
Retail Breakeven Point (sq. ft)	6,533

## NOTES TO APPENDIX 2

- <sup>1</sup> It is assumed that one unit of leasable retail space requires 0.14 units of service space (14%). Therefore, the total amount of retail built space is 1.15 units. The same is assumed for office space.
- <sup>2</sup> It is assumed that one unit of leasable retail space requires 0.31 units of parking (service space, not leasable space). The estimate for office space is 0.28 units of parking.
- <sup>3</sup> Retail rents at \$24 per sq. ft. are in line with the rents that higher-end retail spaces command in Guelph's downtown.<sup>86</sup> These are considered moderate rents because the development will be new construction and will also significantly increase the captive audience of the businesses in the downtown. It is expected that the presence of the development will increase demand for retail space, and thus overall rents will increase and these rents will be considered moderate. Annual office rents are estimated at \$18 per sq. ft. for the same reasons noted above.
- <sup>4</sup> The vacancy rate for retail is estimated at 2% of revenue. It is estimated at 10% for office.
- <sup>5</sup> Land lord expenses are estimated at 2% of revenue. This figure does not include maintenance and taxes, which is covered by the TMI (taxes, maintenance, insurance) that renters pay in addition to their rent.
- <sup>6</sup> The cost of land is estimated at \$44.76 per sq. ft., which translates into \$1.95 million per acre. This is an estimate based on the land valuation prices discussed in section 2.4.
- <sup>7</sup> The deed transfer tax is assumed to be 1.5% of land cost.
- <sup>8</sup> The legal and closing costs are assumed to be 1.5% of land cost.
- <sup>9</sup> The environmental and appraisal costs are assumed to be 1.5% of land cost.
- <sup>10</sup> Taxes have been estimated at \$20,000.
- <sup>11</sup> Because it is a goal of this proposal to have mixed uses on each block, it is assumed that there will be all three programs on every block: residential, office and retail. Therefore, the fixed costs are divided equally into three portions. This ensures that when the breakeven points for each program for a given block are reviewed, the fixed costs are not counted (or "paid for") three times. However, this does not mean that the fixed costs must be divided *equally* among the three programs when designing. In fact, the profitability analysis of a given block will divide the fixed costs based on the percentage of built programmed space to overall built space. The fixed costs are divided equally in the breakeven analysis so as not to presume that any one program will outweigh another.
- <sup>12</sup> Hard costs are the direct costs associated with construction.
- <sup>13</sup> Cost per sq. ft. is estimated at \$150, and includes mechanical, circulation space, and landscaping expenses, among others.
- <sup>14</sup> The cost of demolition and excavation is estimated at \$6.50 per sq. ft.
- <sup>15</sup> Inducements are estimated at \$15 per sq. ft. for retail and \$20 per sq. ft. for office.
- <sup>16</sup> Contingency is calculated at 3% of construction cost.
- <sup>17</sup> Soft costs are not directly associated with construction, but are also necessary for execution.
- <sup>18</sup> The construction manager expense is assumed to be 5% of construction cost.
- <sup>19</sup> Insurance and permits are assumed to be 1% of construction cost.
- <sup>20</sup> Consultants are assumed to be 4% of construction cost.



- <sup>21</sup> Soft costs also include financing costs, but for clarity, financing costs have been listed separately.
- <sup>22</sup> Financing is assumed to be 70% of the cost of the project because it is assumed that the required equity to receive financing is 30%. Therefore, the financing received is \$185. The loan is assumed to have a 5% annual interest rate, where the monthly interest rate is 0.42%. The loan period is optimistically estimated to be 1 year because Cross Laminated Timber construction is used (see section 6.3.3).
- <sup>23</sup> Financing fees are assumed to be 1% of financing received. See note 22 for financing received.
- <sup>24</sup> For an explanation of capitalization rate please see section 6.3.4.
- <sup>25</sup> The value of rentals is calculated by dividing the net rental revenue by the capitalization rate.

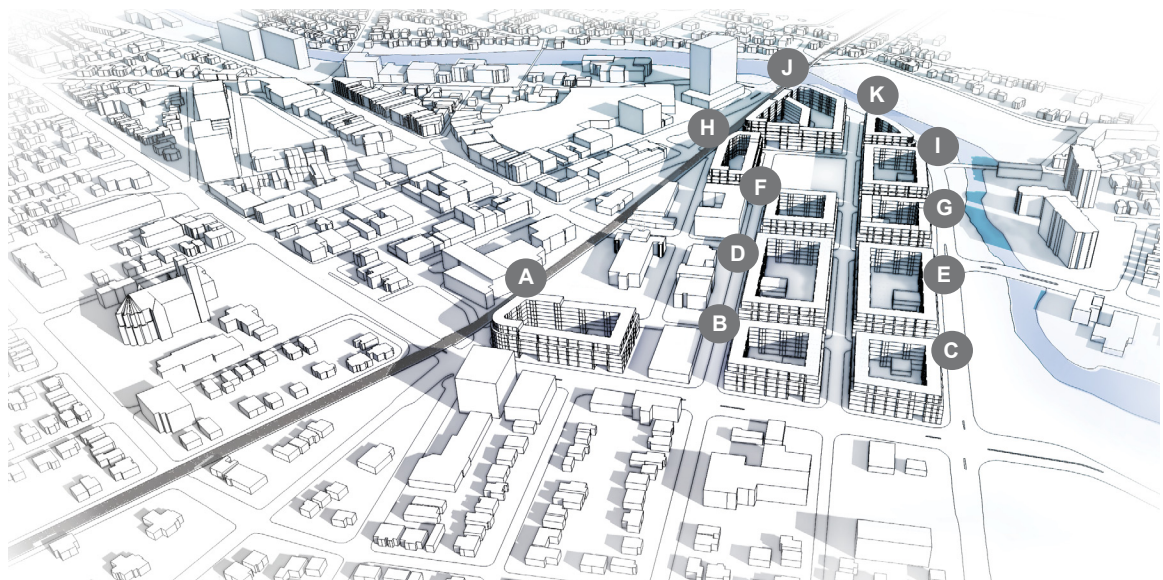
## APPENDIX 3: PROFITABILITY ( PRO FORMA) SAMPLE

### Site: South End of Downtown Guelph

Number of Floors: 6  
Construction: Cross Laminated Timber and Reinforced Concrete  
Location: Block A  
Lot Area: 77,180 sq. ft.

### General Assumptions

- Moderate rental rates for office & retail
- Condominium inducements unnecessary to attract buyers
- Moderate construction costs
- Moderate land costs



**TOTAL AREAS**

Program	Built Areas (sq. ft.)	Leasable Areas (sq. ft.)	% of Leasable Areas
Retail	30,980	26,500	12%
Office	38,535	33,445	15%
Residential	135,619	114,714	51%
Parking <sup>1</sup>	112,636	49,750	22%
Total	317,770	224,409	100%

**REVENUE***Sales Revenue*

Program	Price	# of Units or Area	Gross Revenue
Underground Parking <sup>2</sup>	\$40,000 per unit	122 units	\$ 4,880,000
Typical Condominium <sup>3</sup>	\$280 per sq. ft.	114,714 sq.ft.	\$ 32,119,908
Total			\$ 36,999,908

*Rental Revenue*

Program	Annual Rent	# of Units or Area	Gross Revenue
Retail <sup>4</sup>	\$24 per sq. ft.	26,500 sq. ft.	\$ 636,002
Offices <sup>5</sup>	\$18 per sq. ft.	33,445 sq.ft.	\$ 602,008
Underground Parking <sup>6</sup>	\$2,400 per unit	143 units	\$ 343,200
Underground Storage	\$1,200 per unit	70 units	\$ 84,000
Total			\$ 1,665,210

*Revenue Summary*

Rental Revenue	\$ 1,665,210
Less Vacancy <sup>7</sup>	\$ (78,261)
Less Landlord Misc. Expenses <sup>8</sup>	\$ (33,304)
Net Rental Revenue	\$ 1,553,645
Sales Revenue	\$ 36,999,908
Net Revenue	\$ 38,553,553

**COSTS***Cost Summary*

Land <sup>9</sup>	\$ 3,454,552	
Deed Transfer Tax <sup>10</sup>	\$ 51,818	
Legal & Closing Costs <sup>11</sup>	\$ 51,818	
Environmental & Appraisal <sup>12</sup>	\$ 51,818	
<b>Total Land</b>		<b>\$ 3,610,007</b>
Hard Costs <sup>13</sup>		
Construction <sup>14</sup>	\$ 47,665,491	
Demolition & Excavation <sup>15</sup>	\$ 405,169	
Retail Inducements <sup>16</sup>	\$ 397,501	
Office Inducements <sup>17</sup>	\$ 668,898	
Contingency <sup>18</sup>	\$ 1,429,965	
<b>Total Hard Costs</b>		<b>\$ 50,567,024</b>
Soft Costs <sup>19</sup>		
Construction Manager <sup>20</sup>	\$ 2,528,351	
Taxes During Construction <sup>21</sup>	\$ 20,000	
Insurance & Permits <sup>22</sup>	\$ 505,670	
Consultants <sup>23</sup>	\$ 2,022,681	
<b>Total Soft Costs<sup>24</sup></b>		<b>\$ 5,076,702</b>
<b>Total Costs Before Financing</b>		<b>\$ 59,253,733</b>
Financing Costs		
Financing Interest <sup>25</sup>	\$ 2,073,881	
Finance Fees <sup>26</sup>	\$ 414,776	
<b>Total Financing Costs</b>		<b>\$ 2,488,657</b>
<b>Total Costs</b>		<b>\$ 61,742,390</b>

*Investment & Financing*

Total Costs Before Financing	\$ 59,253,733	
Investment <sup>27</sup>		\$ 17,776,120
Financing Required		\$ 41,477,613
<b>Total Capital</b>	<b>\$ 59,253,733</b>	<b>\$ 59,253,733</b>

## RETURN ON INVESTMENT

### *Breaking Down the Cost of Rentals & Condos*

Cost of Rentals <sup>28</sup>	\$ 27,443,160
Cost of Condos <sup>29</sup>	\$ 34,299,230
Total Costs	\$ 61,742,390

### *Take-out Sale Valuation: Rental ROI<sup>30</sup>*

Capitalization Rate <sup>31</sup>	4%	4.5%	5%
Value of Rentals <sup>32</sup>	\$ 38,841,118	\$ 34,525,438	\$ 31,072,894
Cost of Rentals	\$ 27,443,160	\$ 27,443,160	\$ 27,443,160
Profit of Rentals	\$ 11,397,958	\$ 7,082,278	\$ 3,629,734
Investment in Rentals <sup>33</sup>	\$ 7,901,102	\$ 7,901,102	\$ 7,901,102
Rental ROI <sup>34</sup>	144%	90%	46%

### *Sale of Condominiums ROI*

Revenue of Condos	\$ 38,841,118
Cost of Condos	\$ 27,443,160
Profit of Rentals	\$ 2,700,678
Investment in Condos <sup>35</sup>	\$ 9,875,018
Condo ROI	27%

### *Overall ROI*

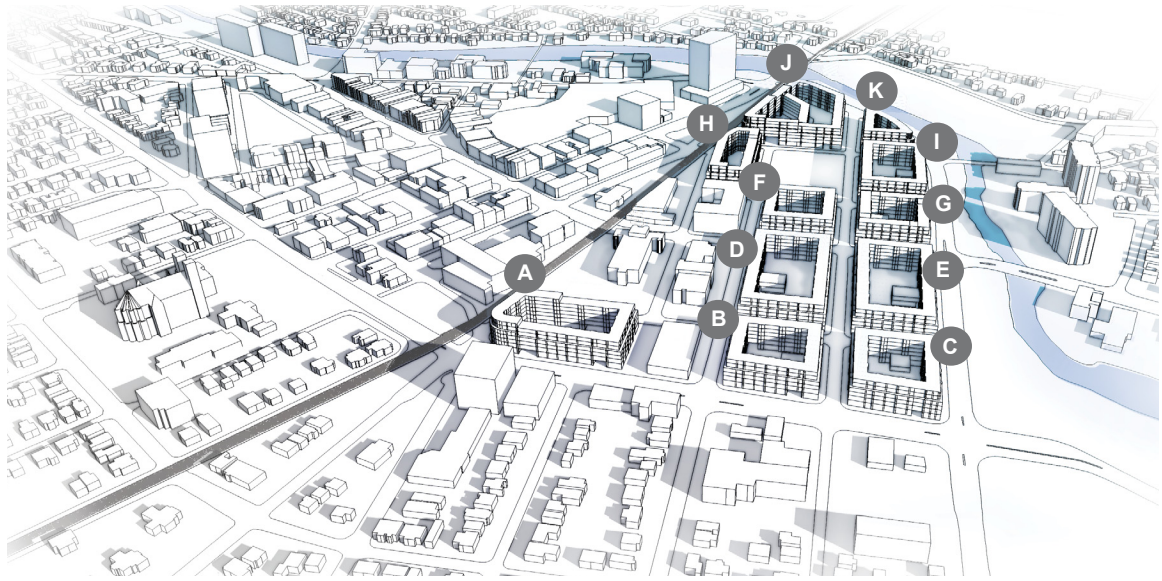
Capitalization Rate	4%	4.5%	5%
Profit of Rentals	\$ 11,397,958	\$ 7,082,278	\$ 3,629,734
Profit of Condos	\$ 2,700,678	\$ 2,700,678	\$ 2,700,678
Total Profit	\$ 14,098,636	\$ 9,782,956	\$ 6,330,412
Total Investment	\$ 17,776,102	\$ 17,776,102	\$ 17,776,102
Overall ROI	79%	55%	36%

## NOTES TO APPENDIX 3

- <sup>1</sup> It is expected that 2 levels of underground parking would be necessary to meet parking demand. However, parking is very expensive to build and detailed studies should be conducted to examine the true parking demand. It can be financially devastating to a development to build either too little or too much parking (see Appendix 6).
- <sup>2</sup> Parking is sold separately from the residential units to create maximum flexibility for buyers and to encourage buyers to reevaluate the need for parking. The total cost to the buyer of purchasing one parking unit and one residential unit is comparable to the cost of purchasing a residential unit that includes a parking unit in a competitor's development.<sup>87</sup>
- <sup>3</sup> The average unit is 1017 sq. ft. with two bedrooms. It also includes a storage unit in the underground parking. The price per sq. ft. is based on the average price per sq. ft. of comparative projects in Guelph's downtown to match revenue expectations to market price expectations.<sup>88</sup>
- <sup>4</sup> Retail rents are in line with the rents that higher-end retail spaces command in Guelph's downtown.<sup>89</sup> These are considered moderate rents because the development will be new construction and will also significantly increase the captive audience of the businesses in the downtown. It is expected that the presence of the development will increase demand for retail space, and thus overall rents will increase and these rents will be considered moderate.
- <sup>5</sup> See explanation in note 4.
- <sup>6</sup> This figure is an approximation. It considers the rents earned from parking spaces that are contracted on a month-to-month basis as well as those that are rented on an hourly basis.
- <sup>7</sup> Retail and office spaces are expected to have vacancy rates of 2% and 10% respectively.
- <sup>8</sup> Land lord costs are estimated at 2% of revenue. This figure does not include maintenance and taxes, which is covered by the TMI (taxes, maintenance, insurance) that renters pay in addition to their rent.
- <sup>9</sup> The cost of land is estimated at \$44.76 per sq. ft., which translates into \$1.95 million per acre. This is an estimate based on the land valuation prices discussed in section 2.4.
- <sup>10</sup> The deed transfer tax is assumed to be 1.5% of land cost.
- <sup>11</sup> The legal and closing costs are assumed to be 1.5% of land cost.
- <sup>12</sup> The environmental and appraisal costs are assumed to be 1.5% of land cost.
- <sup>13</sup> Hard costs are the direct costs associated with construction.
- <sup>14</sup> Cost per sq. ft. is estimated at \$150. The total built area is 317,770 sq. ft. and includes mechanical, circulation space, and landscaping expenses, among others.
- <sup>15</sup> The cost of demolition and excavation is estimated at \$6.50 per sq. ft. The footprint of the building is 62,334 sq. ft.
- <sup>16</sup> Retail inducements have been set to \$15 per sq. ft. The leasable retail area (the retail area that would be eligible for inducements) is 26,500 sq. ft.
- <sup>17</sup> Office inducements have been set to \$20 per sq. ft. The leasable office area is 33,445 sq. ft.
- <sup>18</sup> Contingency is calculated at 3% of construction cost.
- <sup>19</sup> Soft costs are not directly associated with construction, but are also necessary for execution.
- <sup>20</sup> The construction manager expense is assumed to be 5% of construction cost.

- <sup>21</sup> Taxes have been estimated at \$20,000
- <sup>22</sup> Insurance and permits are assumed to be 1% of construction cost.
- <sup>23</sup> Consultants are assumed to be 4% of construction cost.
- <sup>24</sup> Soft costs also include financing costs, but for clarity, financing costs have been listed separately.
- <sup>25</sup> The financing interest is based on the loan (financing required) of \$41, 477,613. The loan is estimated to have a 5% annual interest rate, where the monthly interest rate is 0.42%. The loan period is optimistically estimated to be 1 year because Cross Laminated Timber construction is used (see section 6.3.3)
- <sup>26</sup> Financing fees are assumed to be 1% of financing received. See note 25 for financing received.
- <sup>27</sup> The required equity is assumed to be 30%
- <sup>28</sup> The percentage cost of rentals is calculated at 44.45% of total cost. This includes the total area of office and retail space and 80% of underground parking and storage.
- <sup>29</sup> The percentage cost of the condominiums is calculated at 55.55% of total cost. This includes the total area of residential space and 20% of underground parking and storage.
- <sup>30</sup> For an explanation of take-out sale please see section 6.3.4.
- <sup>31</sup> For an explanation of capitalization rate please see section 6.3.4.
- <sup>32</sup> The value of rentals is calculated by dividing the net rental revenue by the capitalization rate.
- <sup>33</sup> The percentage of investment attributed to rentals is the same as the percentage of the total cost of the project attributed to the rentals. See notes 28 & 29.
- <sup>34</sup> Return on Investment (ROI) is calculated by dividing profit by investment.
- <sup>35</sup> The percentage of investment attributed to the condos is the same as the percentage of the total cost of the project attributed to the condos. See notes 28 & 29.

## APPENDIX 4: ROI & CAPITALIZATION RANGE



### 5% Capitalization Rate

Block	Investment	Profit	Return on Investment
A	\$ 17,777,637	\$ 6,325,143	36%
B	\$ 14,546,550	\$ 4,602,414	32%
C	\$ 14,926,876	\$ 4,720,088	32%
D	\$ 23,704,117	\$ 7,812,085	33%
E	\$ 22,810,100	\$ 5,636,611	25%
F	\$ 15,027,550	\$ 5,467,512	36%
G	\$ 15,098,623	\$ 5,407,794	36%
H	\$ 14,559,647	\$ 1,831,620	13%
I	\$ 19,858,094	\$ 5,003,910	25%
J	\$ 32,816,338	\$ 2,045,856	6%
K	\$ 10,988,597	\$ 1,467,639	13%
Total	\$ 202,114,129	\$ 50,320,671	25%



*4.5% Capitalization Rate*

Block	Investment	Profit	Return on Investment
A	\$ 17,777,637	\$ 9,777,687	55%
B	\$ 14,546,550	\$ 7,516,081	52%
C	\$ 14,926,876	\$ 7,725,729	52%
D	\$ 23,704,117	\$ 12,678,913	53%
E	\$ 22,810,100	\$ 10,240,371	45%
F	\$ 15,027,550	\$ 8,503,367	57%
G	\$ 15,098,623	\$ 8,486,112	56%
H	\$ 14,559,647	\$ 2,560,740	18%
I	\$ 19,858,094	\$ 8,880,998	45%
J	\$ 32,816,338	\$ 3,914,389	12%
K	\$ 10,988,597	\$ 2,013,825	18%
Total	\$ 202,114,129	\$ 82,298,213	41%

*4% Capitalization Rate*

Block	Investment	Profit	Return on Investment
A	\$ 17,777,637	\$ 14,093,367	79%
B	\$ 14,546,550	\$ 11,158,164	77%
C	\$ 14,926,876	\$ 11,482,781	77%
D	\$ 23,704,117	\$ 18,762,447	79%
E	\$ 22,810,100	\$ 15,995,070	70%
F	\$ 15,027,550	\$ 12,298,186	82%
G	\$ 15,098,623	\$ 12,334,010	82%
H	\$ 14,559,647	\$ 3,472,140	24%
I	\$ 19,858,094	\$ 13,727,359	69%
J	\$ 32,816,338	\$ 6,250,056	19%
K	\$ 10,988,597	\$ 2,696,559	25%
Total	\$ 202,114,129	\$ 122,270,139	60%

## APPENDIX 5: DEVELOPMENT PHASING



- 1 The farmer's market would relocate in the first phase to allow the corner block to be built right away. This first block is important because the farmer's market is currently situated on this block, which means that there is an easy link to the north side of downtown and people are already accustomed to crossing the railway at this point. The construction of the transportation hub and pedestrian bridge should also begin during this phase to ensure a strong link between the two sides of downtown for subsequent development phases.
- 2 The second phase should see the relocation of the fire hall and two more mixed use blocks on the southern end of the site, moving towards the river.
- 3 Next, the hotel and the mixed use block across Wyndham Street should be developed to keep the development growth from creating gaps in urban fabric. It is estimated that there would be enough development at this point to support the hotel.
- 4 The mixed use blocks developed in this phase would likely be considered premium because of their proximity and views to the rivers and parks. Buyers and tenants looking for premium units would likely want to see an area of established development before paying premium prices; therefore, it is advantageous that these blocks are executed in phase 4.
- 5 These blocks are similar to those in phase 4, except that they are further away from the main park system. Phase 5 would likely reap the benefits of the lingering excitement over phase 4 construction, earning the attention of those who missed opportunities to buy and rent earlier.
- 6 These blocks are furthest from the park system and the downtown's centre; they are also on the northern end of the development site, making them the least desirable for development (currently, these blocks have the lowest ROIs—see section 6.3.4). However, with time, financial projections may change, so it is fitting that these blocks should be developed in the final stages of the development.

## APPENDIX 6: COST OF PARKING

### *2 Levels of Underground Parking*

Capitalization Rate	Investment	Profit	Return on Investment
5 %	\$ 202,114,129	\$ 50,320,671	25%
4.5 %	\$ 202,114,129	\$ 82,298,213	41%
4 %	\$ 202,114,129	\$ 122,270,139	60%

[approx. 1 parking space for every 616 sq. ft. of leasable/salable space]

### *1 Level of Underground Parking*

Capitalization Rate	Investment	Profit	Return on Investment
5 %	\$ 167,830,357	\$ 100,285,079	60%
4.5 %	\$ 167,830,357	\$ 125,571,419	75%
4 %	\$ 167,830,357	\$ 161,812,574	96%

[approx. 1 parking space for every 1234 sq. ft. of leasable/salable space]

### *No Underground Parking*

Capitalization Rate	Investment	Profit	Return on Investment
5 %	\$ 132,720,713	\$ 133,408,256	101%
4.5 %	\$ 132,720,713	\$ 154,294,811	116%
4 %	\$ 132,720,713	\$ 180,403,004	136%

[no parking is provided by the development; street parking must accommodate all parking needs]

It is remarkably expensive to provide parking. The combined revenues gained from selling and renting parking spaces often does not meet the cost of building it. Parking is not a profit centre for a development; instead, it decreases profits. However, parking is needed in order to provide access to the development. Without parking, many potential buyers and renters would simply disregard the development as a feasible option for living and business. Therefore, most developments need to provide parking in order to attract buyers and renters.

The proposal suggests 2 levels of parking to accommodate the increased population and activity in the downtown. However, if the city and province were to provide more extensive transportation systems—to other Greater Golden Horseshow cities in addition to improvements within the city of Guelph—then it might be more feasible to build only 1 level of underground parking, or perhaps none, for some parts of the development. While it has been stated that the cities within the Greater Golden Horseshoe are well-connected, for most travel needs this connection is by highway, which requires people to have access to, and use of, personal vehicles.

## NOTES

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