

**Urban Design and Development of a Public Space at the
City of Kitchener's Intermodal Transit Hub**

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

This thesis uses a case study design approach for the proposed Transit Hub for the City of Kitchener. It focuses on opportunities for a high quality public space or square to better integrate a new urban LRT line and a new regional GO/VIA rail station into the surrounding city. The conceptual framework of this thesis seeks to create a public space at a new transit hub in the city centre of Kitchener and to transform that space into a new place where people can experience a fulfilling public urban life. This design proposal seeks to create an intimate relationship between public life, infrastructure and people. This proposal also envisions a series of diagrams drawn from Edward T. Hall's proxemics strategy, a non-contact communication that experiments with the adequacy of all defined social spaces.

Within the City of Kitchener, much has already been done to establish the presence of urban design at the human scale, to integrate contemporary ideas into the design of buildings, and to enhance historic natural retreats like Victoria Park. Little has been done, however, to integrate the expanded opportunities for the new design of work and living opportunities in the city center, with the proposal of a new intermodal transit hub in the heart of that growing downtown core.

The design case study and its combination of both of those aspects will seek to create a healthy, people-oriented public environment, one that will also transfer people from one mode of transit to another. With the new surrounding mixed-use developments, and the heritage architecture of Kitchener's industrial past, the case study demonstrates the typical situation facing most urban centres undertaking LRT and BRT transit expansion in Ontario.

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Dedicated to my family and my husband

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Introduction

This thesis seeks, in its broadpurpose, to develop strategies for incorporating nature with urban systems and integrating them with people-focused urbanism. Urbanism, in this thesis, means creating or revitalizing a valuable and essential public space for human living in an urban setting. Public spaces can be implemented in our Canadian cities in a variety of ways to improve urban life, especially when they are integrated into larger ongoing projects to improve transit infrastructure, like the ION LRT project in Waterloo Region. This thesis seeks to work in parallel to the ION initiative to develop strategies for incorporating multifunctional public spaces into the more functional spaces created by such infrastructure improvement, and the consequent intensification of urban densities and lifestyles.¹

In order to experience the relaxing and fulfilling daily life that is the ambition of this thesis, there should be a balance between three major factors. Ray Oldenburg, Professor Emeritus in the Department of Sociology and Anthropology at the University of West Florida, identifies these factors in his book, “The Great Good Place” , as the domestic, the productive, and the social. Oldenburg calls the social factor the “third place,” which is an informal public life where people congregate other than work or home.²

A third place is where everyone can go without any penalty, where there is no host, conversation is the main activity, and it is accessible to everyone at any time. According to Oldenburg, an overall vision for the third place establishes a place where people can escape and gain relief from stress at home and work. It is a place where everyone can gather, from the neighborhood and beyond. It is where people can interact with one another and make their own community that provides psychological contentment to each person.³ When people, outside of their homes or work places, have a third place like an innovatively designed public square in which they can interact and build social relationships, it indicates the greater urbanity and quality of public life of that city.⁴ The broad objective of the research that comprises this thesis is to develop innovative forms of lively public spaces that are people oriented and have a larger social purpose beyond just moving people between transit modes.

Many proposals for new transit systems in Ontario's municipalities have been put forward as the extensive build-out of regional-second projects, like the transportation plan of the Big Move in the Greater Toronto and Hamilton Area (GTHA), gain traction.⁵ An integrated, green urban design and development study for Kitchener's new transit hub that will be tied in this thesis to that next generation of

urban transit infrastructure would offer lessons for similar public space strategies in Ontario's mid-sized towns and cities. Waterloo Region's ION LRT is a leader among new transit infrastructure for such cities in the Province.⁶ The Region of Waterloo is moving ahead with transit implementation as other regions waver in their commitments, and the new transit strategies are intended to integrate, intensify, and mix various urban uses providing new opportunities for energized urbanization.⁷

If there is an absence of new ideas in the above regional work, it is in the conception and implementation of state-of-the-art, greener, ecosystem-based solutions for the public spaces associated with the new transit systems. Given the early build-out of the ION system, an example of Waterloo Region's new, transit-based public spaces would resonate as precedents for the Province's other mid-sized cities undertaking such new works. The integration of various means of urban and inter-urban transportation is more significant than just a question of transit vehicle types, statistics of population density and commercial activity, and defining workable corridor routes.⁸ The urban intensification associated with these transit improvements creates the opportunity for increased human interaction that enhances creativity and innovation and feeds into increased economic output

as is evidenced by the location of google's new centre next to the anticipated transit hub in Kitchener's downtown area. Thus, any study or plan for urban intensification has the imperative and duty to integrate the elements of human factors with urbanism as well as allowing economic means of supporting this environment.⁹

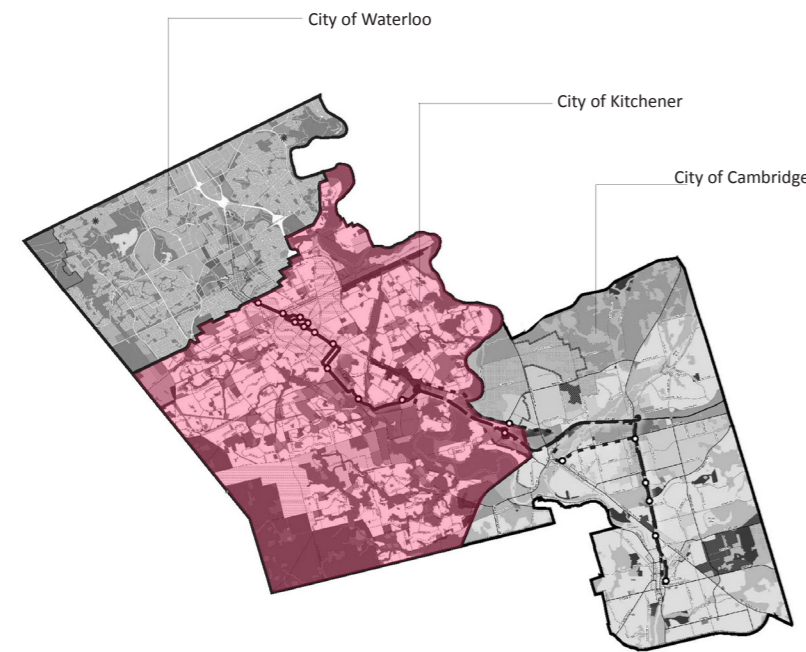
One such prominent example of a re-built and re-vitalized urban public square is Nathan Phillips Square in Toronto which provide safe, generous and wide public space in two levels with a barrier free access ramp for passengers to walk and communicate. The goal of this thesis project is to provide such an integrated public space in Kitchener and create a healthy environment and lifestyle for people as part of a broaden system of Kitchener's re-vitalized public spaces.¹⁰

There have been growing numbers of architectural and urban projects in the design literature that address the desirability of such an urbanism. These projects try to recapture the benefits to both daily life and the functioning of city spaces that have seemingly been lost with the passing of traditional urbanism . The new initiatives are trying to provide a space which is healthy, livable, and safe. They are also trying to establish a proper balance between people and buildings, and not just densify the area with new construction. Transbay Transit Centre in San Francisco¹¹ and Rotterdam Centraal Station¹², for example, are models for how a transit hub can be designed to house many different

and synergistic programs that support a broaden-based sustainable public space. Urban projects of this kind intensify the area and provide energizing surroundings with various other selected public spaces including shops, cafes, wide public squares at main entrances where people can interact with each other and have direct access to the transit centre, and at the same time bring natural light into indoor public spaces.¹³

One of the important ways for designing an urban public space system is considering amenity rather than utility and urbanism rather than infrastructure, this all along with the need for designing efficient circulation for the project that defines the public spaces necessary for everyday urban life.¹⁴

The way in which cities are being newly urbanized today, through intensification and integration of land uses and a commitment to large-scale transportation solutions, is attractive but it is not necessarily a complete model when challenged by other emerging issues involving human wellbeing and the livability of urban public spaces. The need for healthy environments to sustain public wellbeing is undeniable. Not only does well-designed urban public space affect people's health, it also creates safe, clean, and enjoyable places to live, work and play while greatly reducing energy use.¹⁵



0.1 Map of Waterloo region

Kitchener-Cambridge-Waterloo , also known as the Tri-Cities, creates Waterloo Region, one of the largest metropolitan area in south-central Ontario. Kitchener is centrally located within Waterloo Region and locating the intermodal transit hub there creates a significant link between Waterloo, Kitchener and Cambridge, and to the wide Province. Kitchener is the largest municipality in Waterloo Region and has a population of 233,700 according to the 2013 census.¹⁶

There is presently, and in the future, intensification of the city's urban fabric associated with the new intermodal transit node, which is expected to integrate the intersection of the new ION LRT, the present VIA and GO intercity rail service, and a local bus transfer station. The LRT will link not only Kitchener to the City of Waterloo, but also to the City of Cambridge to the south first by a Bus Rapid Transit and then the LRT. Heritage buildings from Kitchener's industrial past surround the transit node site as well, many of which have undergone or are undergoing renewal. To date, however, very little has been considered in terms of the public spaces which will link and accommodate all of the new activities and residents in the Region resulting from the construction of that intermodal transit hub.¹⁷

Research Objectives

The first objective of the research work builds on the new opportunities offered by the broad scale upgrading of urban transportation infrastructure throughout Ontario with the arrival of LRT lines and expanded rail service with its ION LRT, the downtown of the City of Kitchener, like many of Ontario's cities, needs a new concept for its related public spaces, a new type of urban square in that part of the city; a new place for people to gather in which they can meet, walk, shop, and simply relax as they transfer between different modes of urban and regional transit. Added to this traditional set of desirable qualities of urban public space design, a new, set of green systems strategies will be examined for the open areas and activity centres in Kitchener's intermodal transit hub.

The second objective of this research is exploring the type, form, and extents of mixed-use intensification that can co-exist in a transportation-focused urban centre. The new urban public spaces of this anticipated development will have the spatial design roots of traditional public squares where people in the past could develop their own friendly community. This objective is achieved in this design proposal by creating outdoor and indoor multi-level broad public spaces that will integrate transit-based urban intensification with

green initiatives, bringing urban nature into the city centre while it provides an intimate relationship between public life, infrastructure and people.

Ultimately, the overall objectives of this research are to explore the means to achieve a healthy urban public environment that can support and be supported by the intensification targets so that our cities will be better, healthier, places for people. Fig 0-2 demonstrates a very welcoming environment in which people can experience a valuable and essential public life and perform their normal daily activities, at an enjoyable pace. All the public spaces in this design proposal have also been designed based on Edward T. Hall's proxemics, which is a theory of non-verbal communication that identifies people's social distance depending on their situation. The diagrams of Hall's Proxemics in chapter four provide a standard scale to represent the adequate space that each person occupies.¹⁹

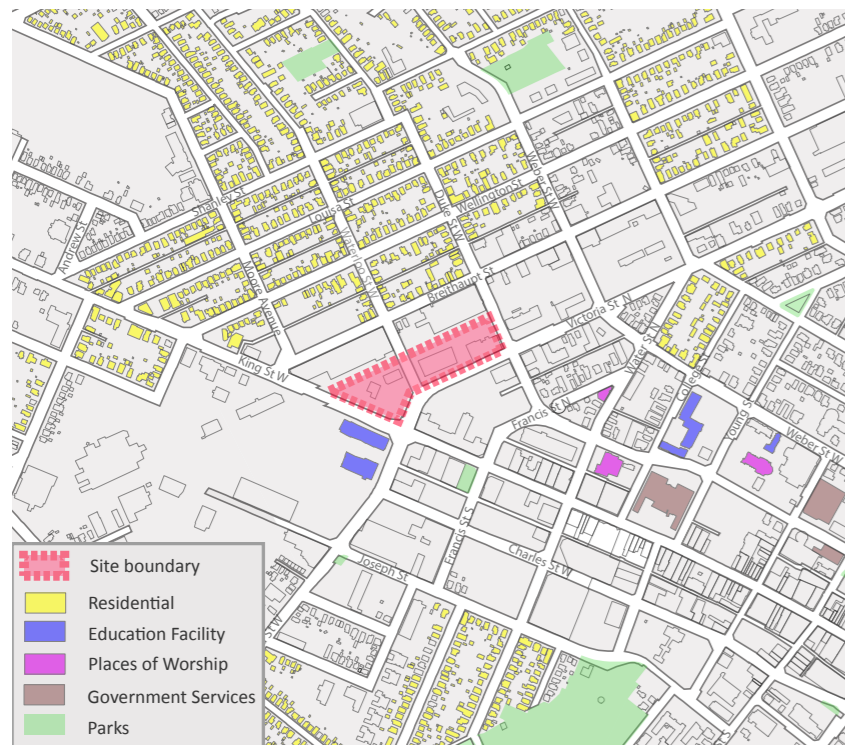


0.2 Vignette of the future view of 510 King Street demonstrates a very welcoming environment in which people can experience a valuable and essential public life and perform their normal daily activities, at an enjoyable pace.

The thesis proposal is comprised of four chapters. The first chapter explores the site context and the area around it, which gives the opportunity to understand the present conditions of the site and Downtown Kitchener. The second chapter establishes a framework for the design by going through relevant policies and regulations from provincial, regional and local planning documents.

The third chapter represents the precedents that provide some design strategies for the Kitchener Transit Hub public space. The fourth chapter indicates an overall scheme for the Kitchener Transit Hub public space and contains the design drawings to visualize and test the public space.

01 Kitchener Transit Hub and its Neighbourhood



1.1 Subject Site & Its Neighborhood

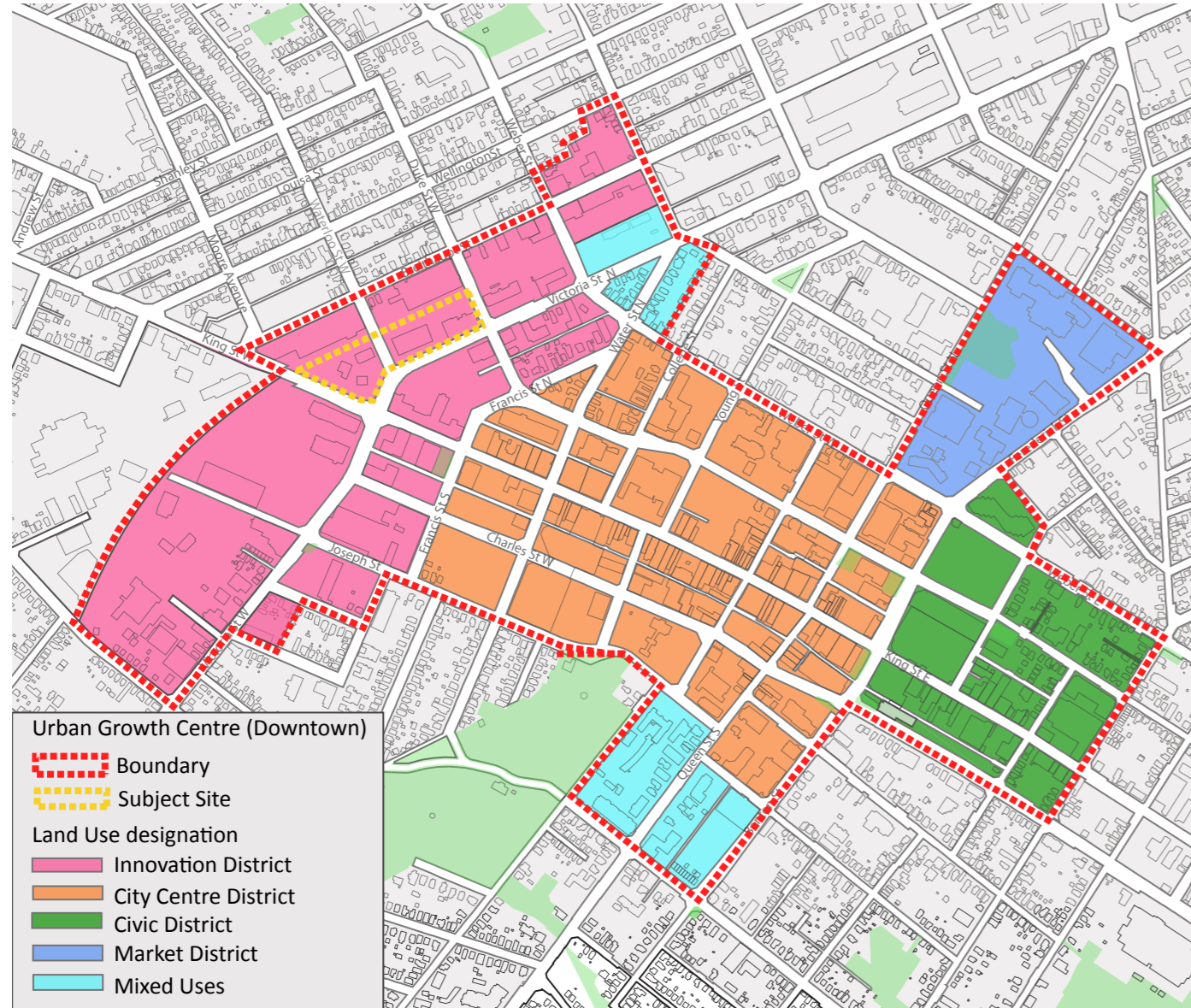
1.1 Community Context

The site is located within the Kitchener Urban Growth Centre and its proximity to the dense neighbourhoods. The subject site is known as 16, 56 and 60 Victoria Street North and 490, 510 and 520 King Street West. The proposed transit hub is a multi-modal station where all means of transportation, both local and regional, will converge. The mix of transportation modes and users will include pedestrians, cyclists, drivers, local and intercity buses, light rail trains, taxis, and regional and long-distance trains (GO and VIA). It will be a mixed-use context supported by employment centres, recreation and services.¹

The subject site has two great opportunities for future growth and development. The first is that the site is surrounded by an integration of various modes of public transportation and the second is the close distance between the site and a number of central neighborhoods within an 800-meter walking distance (10 minute walk).²

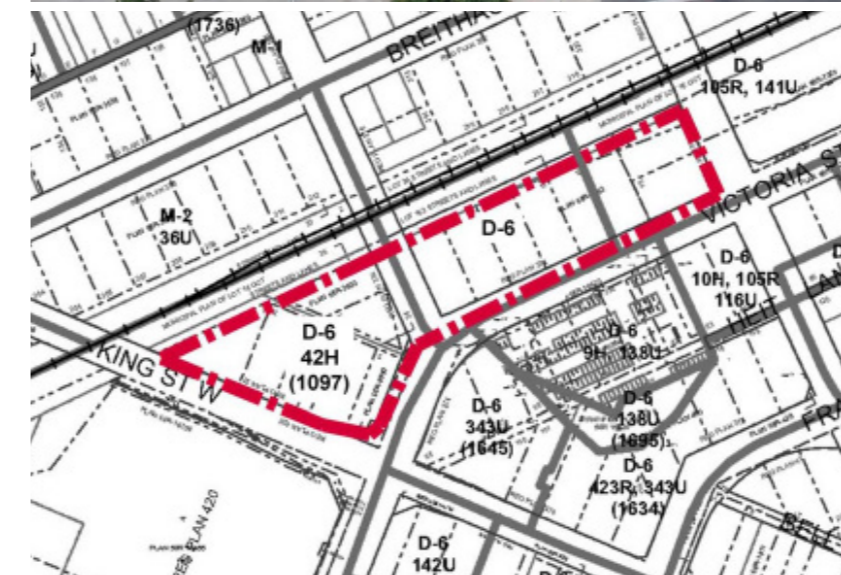
Figure 1.2 demonstrates the zoning map of Downtown Kitchener provided by City of Kitchener Official Plan. This Plan divides the downtown into four districts; the Warehouse District, City Centre District, Civic District, and Market District.³

The subject site is situated on the edge of the downtown within the Warehouse Innovation District, where municipal policy is based on the historic industrial area of “Busy Berlin”. (Berlin was the original name of Kitchener from 1912 to 1916, when it was changed to Kitchener after Lord Kitchener, Britain’s Minister of War and first commander of British forces in World War I. This name change was to appease and forestall the anger felt at Kitchener’s predominately german citizens as a result of the World War which began in 1914.) The new developments for the Warehouse District are intended to preserve and adaptively reuse heritage buildings on the site and add new contemporary buildings and urban features that complement the existing architecture rather than replicate it.⁴



1.2 Downtown Kitchener Zoning Map. The subject site is located in the Innovation District in Downtown Kitchener.

1.3 Aerial view from west side of the site

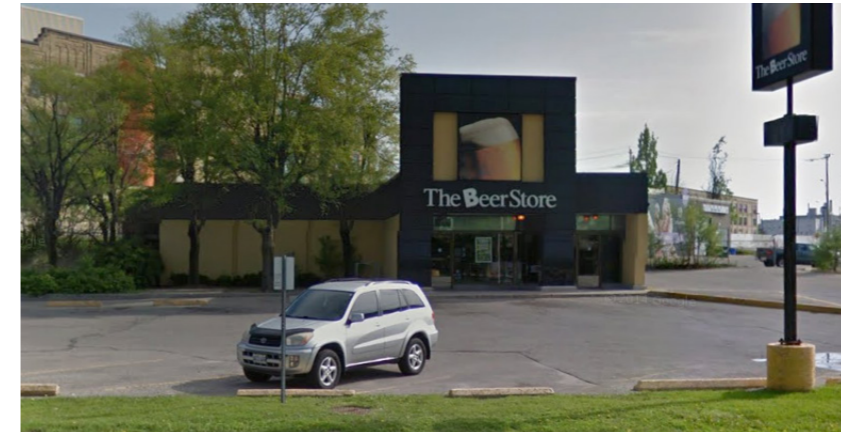


1.4 Site location in City of Kitchener Zoning By-law plan

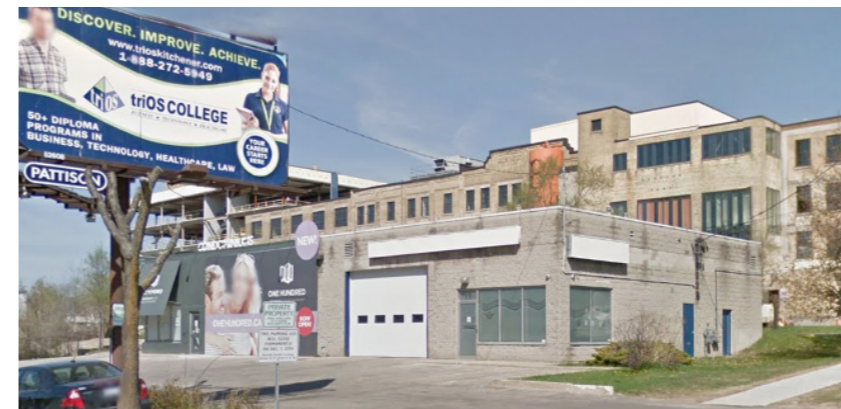
1.2 Site Context

The subject site, which is situated in the northeast of Downtown Kitchener within an Urban Growth Centre, is surrounded by the rail corridor to the north, Duke Street to the east, Victoria Street North to the south, and King Street West to the west. King Street is the main street for transportation, offices and a retail in the downtown area, which makes the site a gateway to central Kitchener. Waterloo Street a residential street, divides the site into two separate blocks. In the following page figure 1.5 represents the four existing buildings in the site. Page 19 and 20 demonstrate figures 1.6 to 1.10 where the picture of each building and their functionality will be described.⁵

1.5 Map of site context



1.6. 490 to 520 King Street West used to be a one-storey commercial building (The Beer Store). It has been demolished recently.⁶



1.7. 16 Victoria Street North is a one-storey commercial building.⁷



1.8. 510 King Street west which was a one-storey commercial building which was recently demolished.⁸



● **1.9.** 50 Victoria Street North is a one-storey commercial building ⁹



● **1.10.** 60 Victoria Street North is a three-storey former industrial building (Rumpel Felt), which is currently unoccupied. It is considered a heritage building that the Region would like to see preserved and adaptively reused. ¹⁰

The vegetation and green spaces on the site are minimal and limited to a small pocket of trees on the 490 to 520 King Street property and low-lying vegetation along the rail corridor. Mostly, the site consists of hard surfaces. The function of the spaces in the subject site is either building or parking areas. ¹¹

Figure 1.11 visualizes the site topography which slopes upwards from Victoria Street towards the rail corridor on the site's northern boundary. The corridor is approximately two meters higher in elevation than Victoria Street.

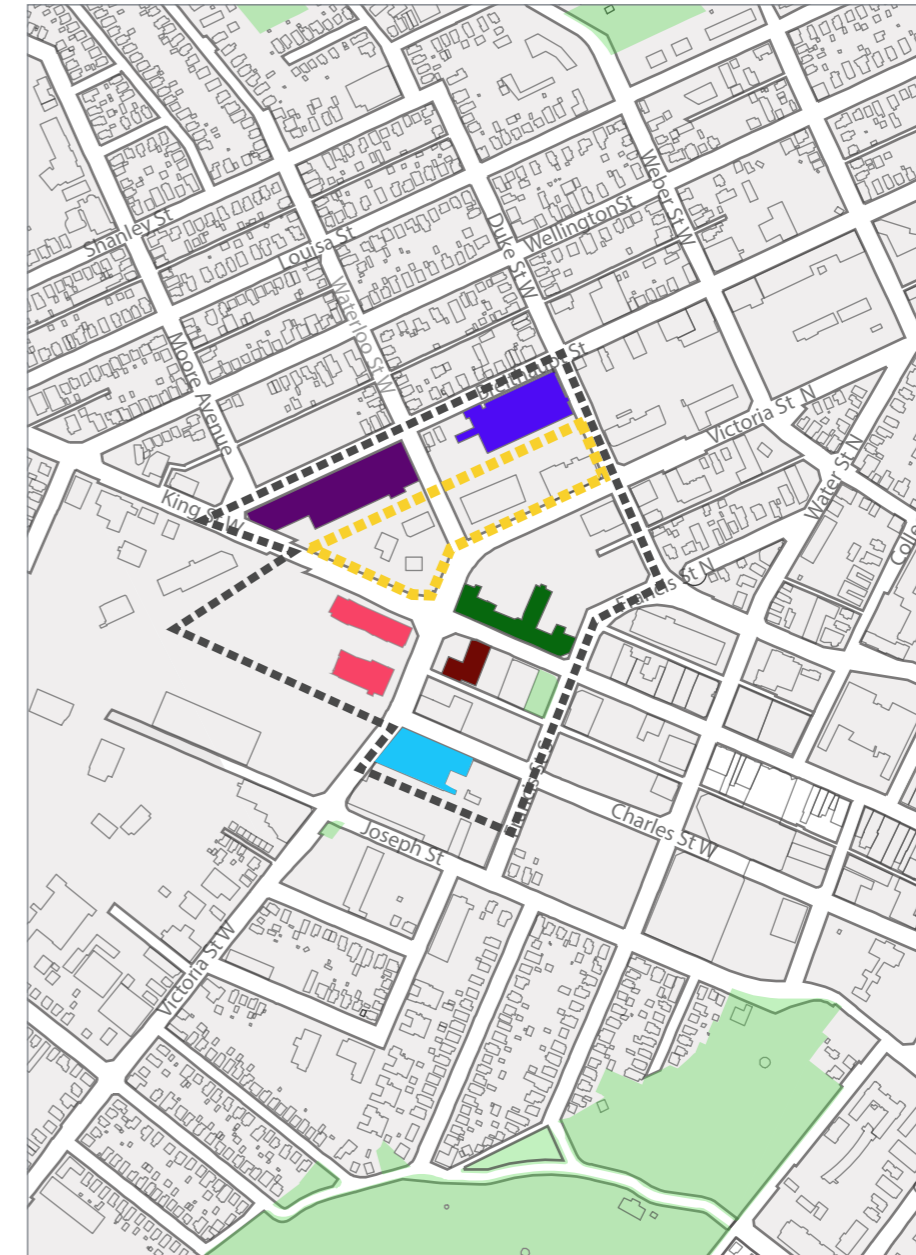


1.11 Section showing the site topography

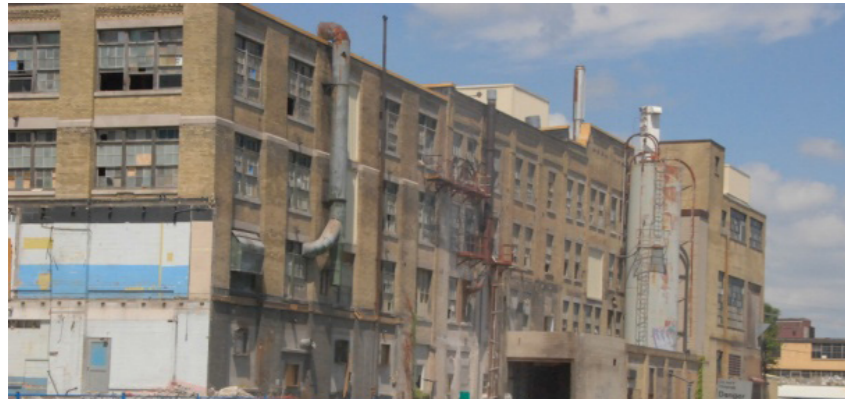
■ 1.3 Site Neighbourhood

Figure 1.12 shows the buildings in the site's neighbourhood. Most of them will be preserved and adaptively reused to accommodate 175,000 square feet of commercial and office space. The site and its neighbourhood are within Kitchener's Urban Growth Area, and the City has identified that area as an "Innovation District" because of the potential that the area has for adaptive changes and for an economic focus on tech-based industries.¹²

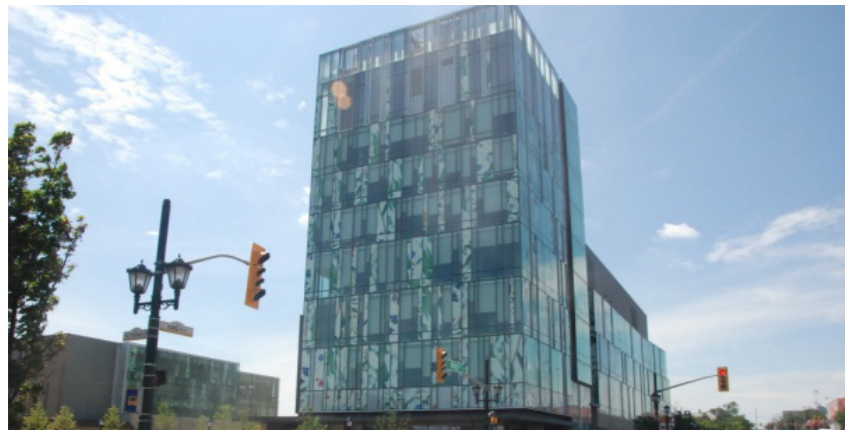
Figures 1.13 to 1.18 demonstrate the buildings from the site neighbourhood map (fig 1.12) individually and explain their usages. The map is layered by colors.



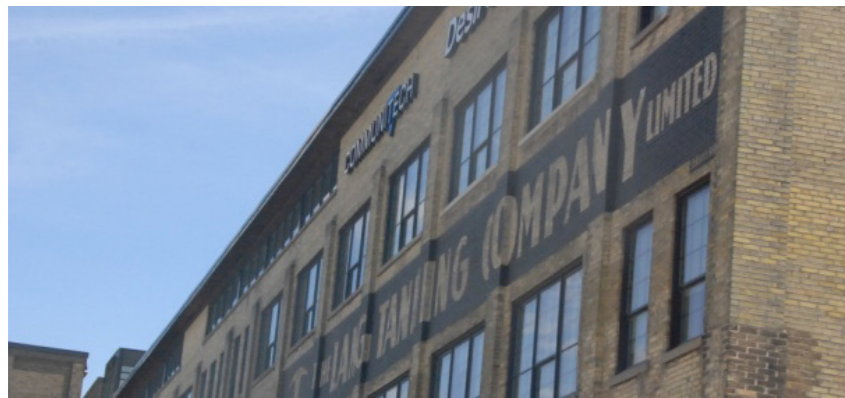
1.12 Map of the Site neighbourhood



● **1.13.** Breithaupt Block, which is also listed as a heritage building in Downtown Kitchener, is located at the north side of the site. This building is now being completed as the google centre. ¹³



● **1.14.** The University of Waterloo Health Sciences Campus has two new buildings west of the site formerly occupied by a tire factory. These provide facilities for more than 600 students, faculty and staff. ¹⁴



● **1.15.** 151 Charles Street West is located further to the west of the southwest corner of the site and is an adaptive reuse of the former Lang Tannery building. It contains 350,000 square feet of innovation office space and the ground floor is used as retail space. ¹⁵



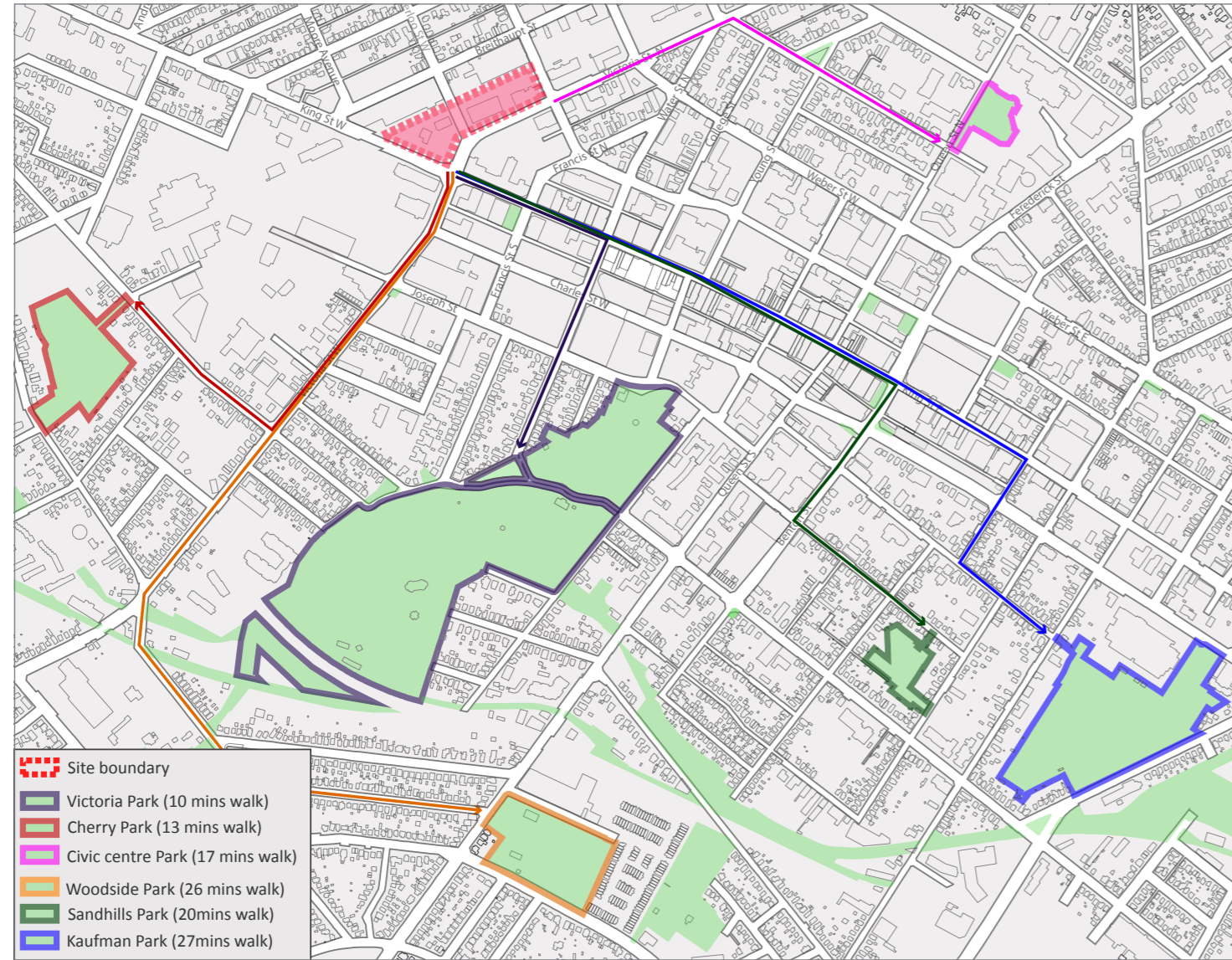
● **1.16.** To the northeast of the site is the old Boehmer Box Factory, founded in 1874; the company is still located here, but ceased their manufacturing activity in 2005. ¹⁶



● **1.17.** 410 King Street West is situated at the southeast of the site and is a six-storey building which formerly housed the Kaufman Footwear Co., but is now the Kaufman Lofts. The City adaptively reused it and changed it to the residential building with approximately 250 units. According to Ontario Heritage Act Kaufman lofts is a heritage building. ¹⁷



● **1.18.** 445 King Street West is located at the southwest of the site which is a one-storey contemporary commercial building. ¹⁸



1.19 Map of the parks of the downtown neighbourhood and their distances to the site

1.20 Cherry Park



1.21 Victoria Park

1.22 Sandhills Park

1.23 Civic Centre Park



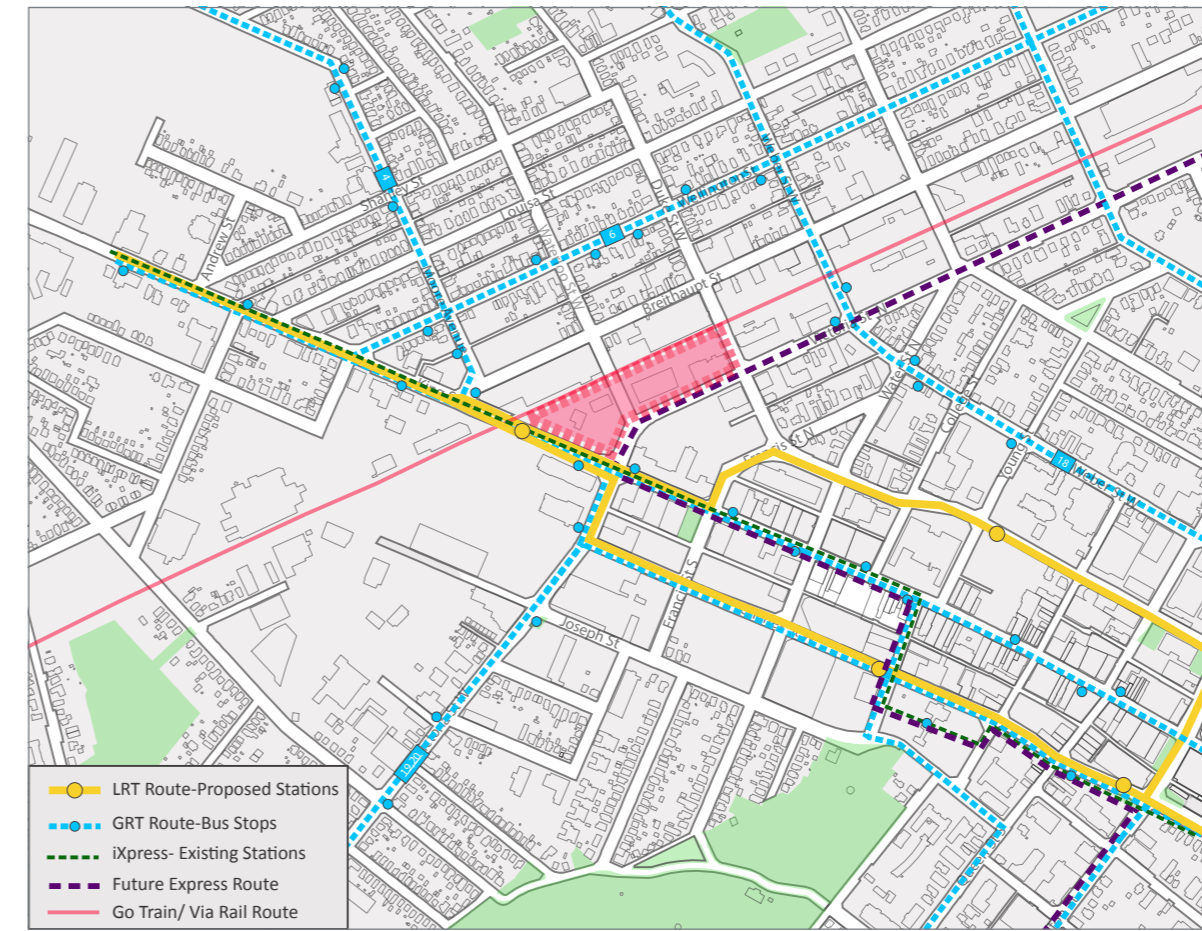
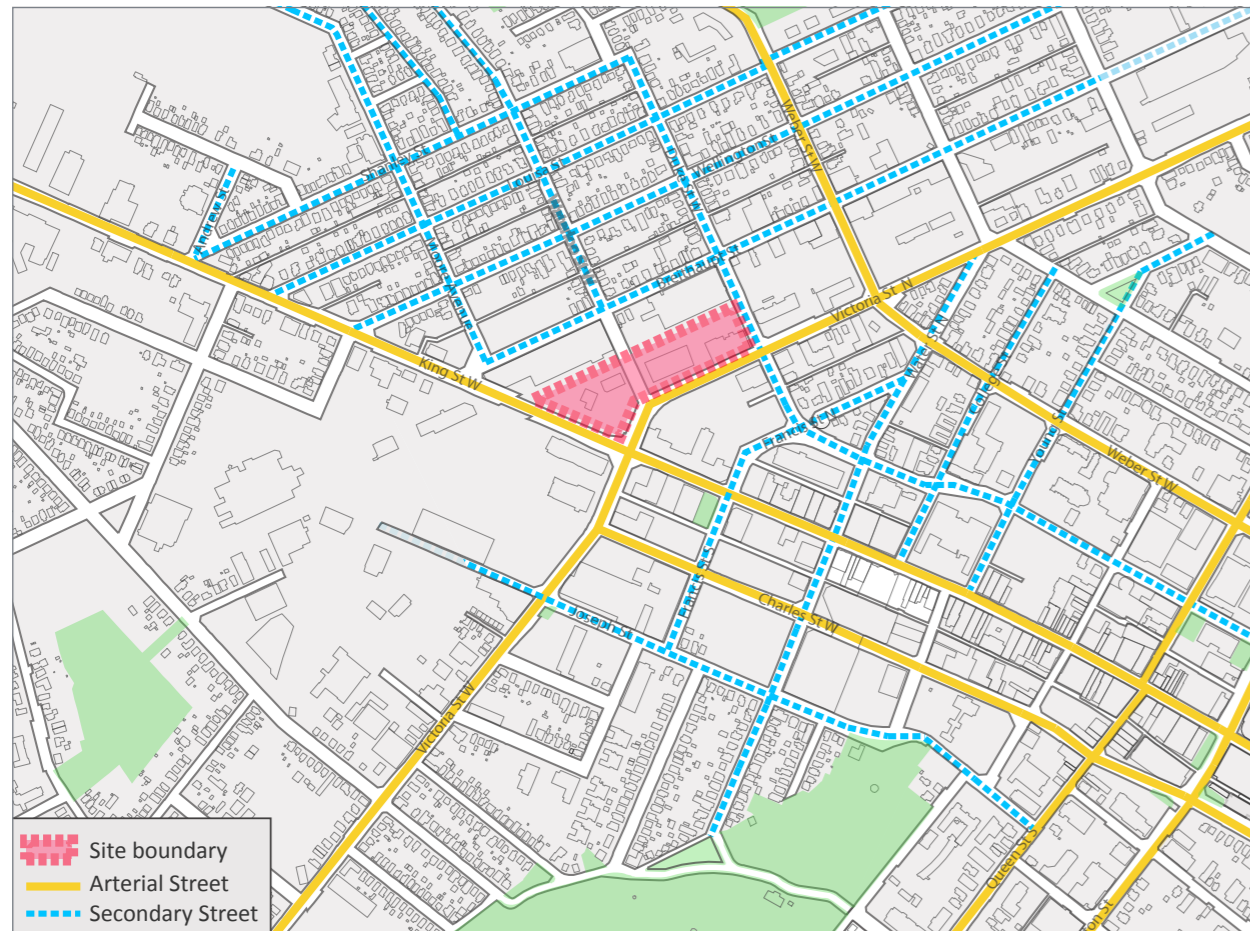
Figure 1.19 represents the location of parks in Kitchener. The closest and largest park in the downtown area is Victoria Park, 900 metres away from the Kitchener Transit Hub .¹⁹ New proposal in order to provide a closer, green and nature-integrated, space in downtown Kitchener, the transit hub could provide a public plaza for all users. The public plaza would have all the features of a park including trees, vegetation, and sitting areas.



1.24 Panorama view of the site from King Street

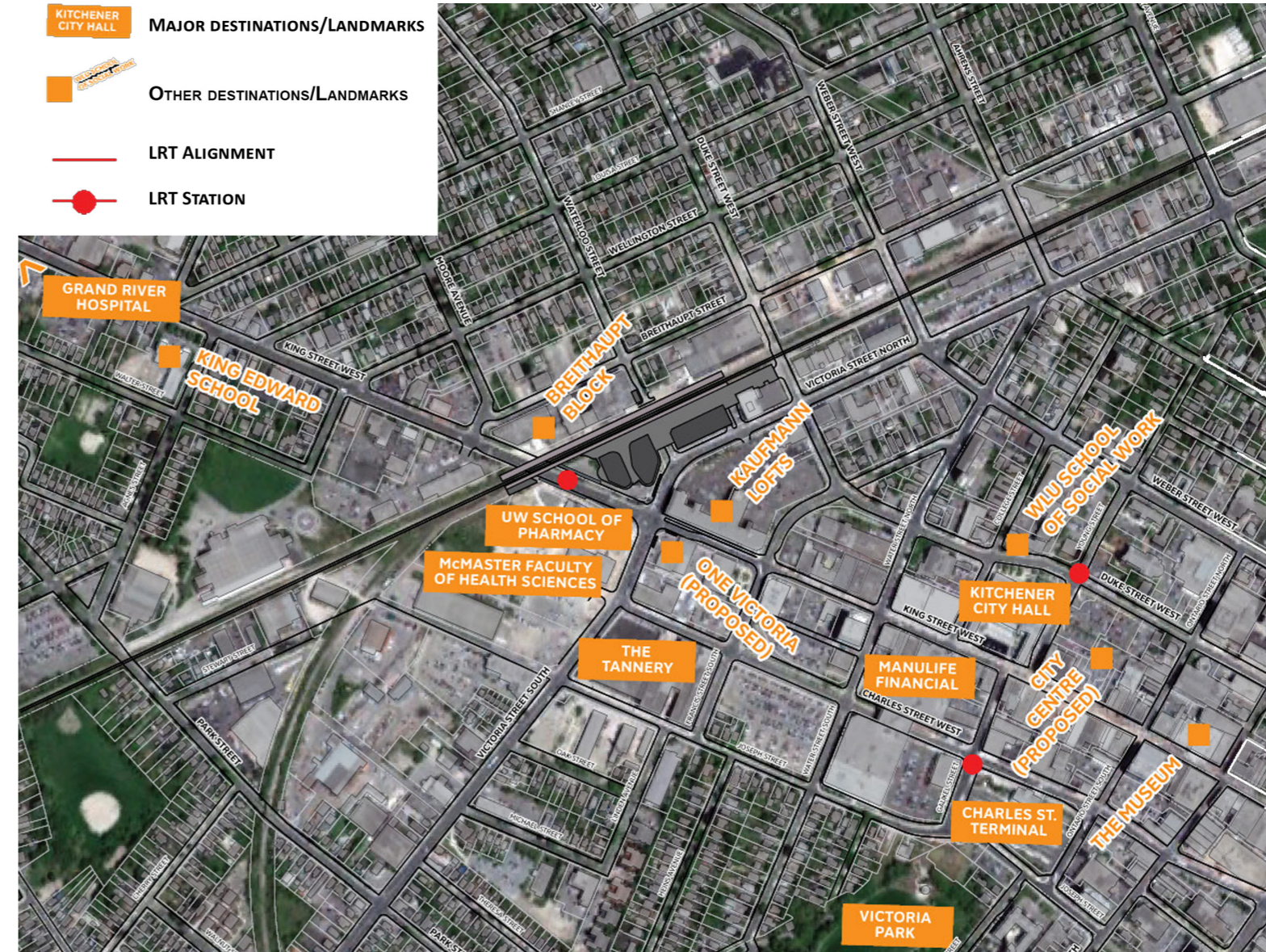


1.26 Panorama of Charles Street Terminal

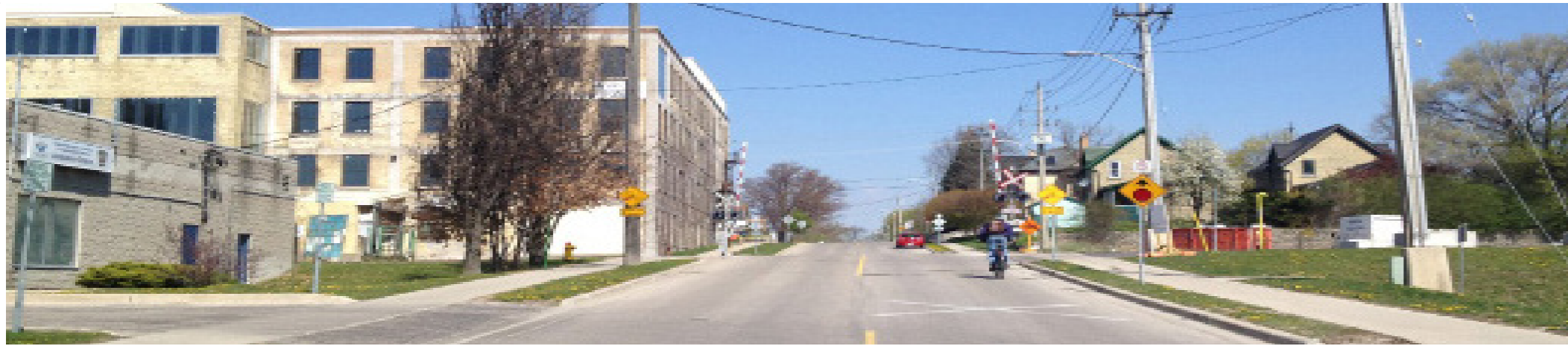


Adding a Light Rail Transit (LRT) station right at the west side of the site on King Street would help to draw more people to the area. Having more people in the area will provide the opportunity to create broad sidewalks and a dynamic space for their interactions.

Figure 1.28 demonstrates the density of the landmarks and their consequent potential for bringing people to the area.



1.28 LRT destinations and landmarks



1.29 Duke Street



1.31 Panorama view of the site from King and Victoria intersection

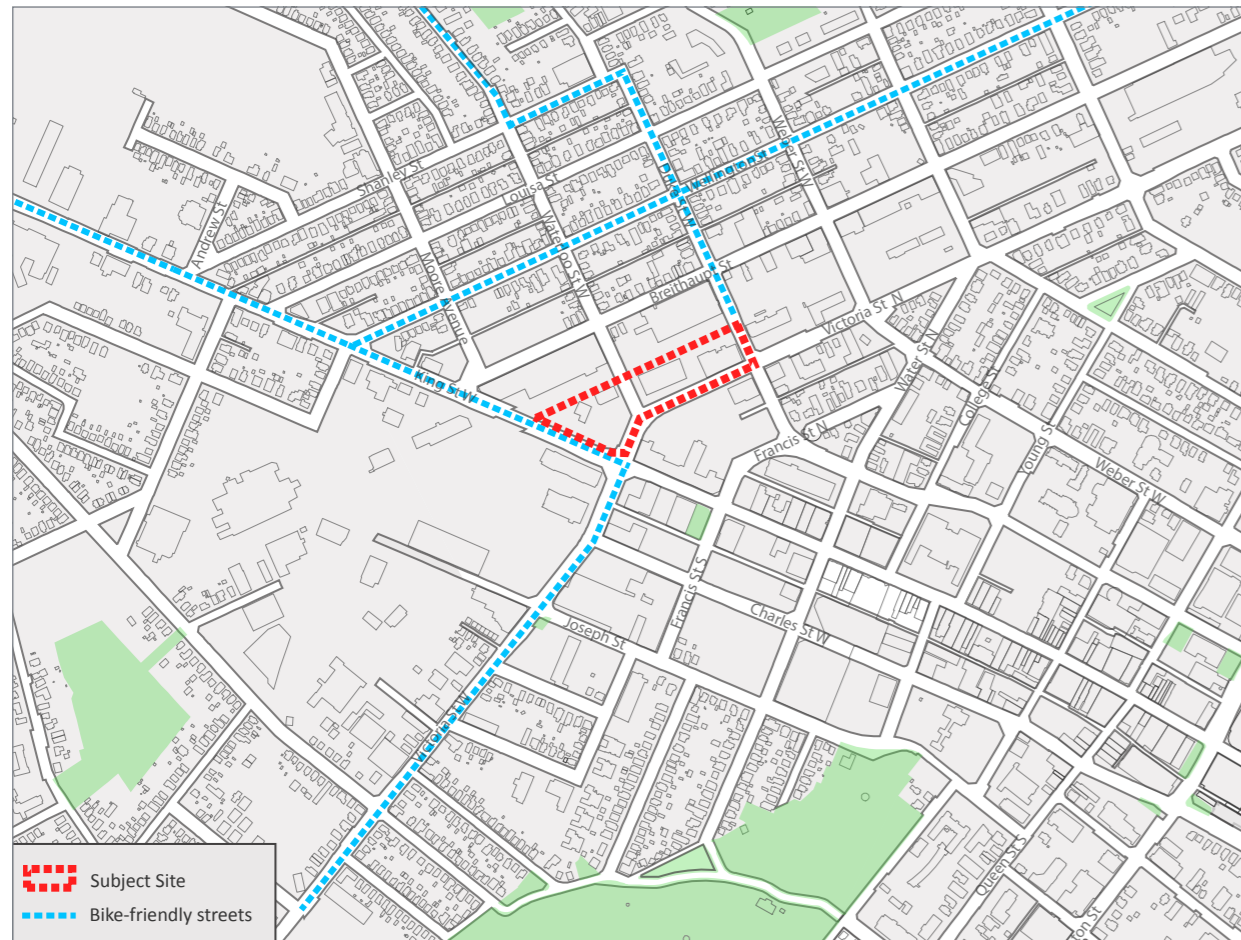


Figure 1.30 represents the map of Downtown Kitchener Bike Lanes

This map shows the bike-friendly streets through Kitchener. In 2010, Kitchener's Cycling Master Plan was completed. The Region of Waterloo tries to develop cycling in the Region by increasing safe cycling routes. Cycling is one of the major features that can help Kitchener to be sustainable while providing an enjoyable activity for people.²²

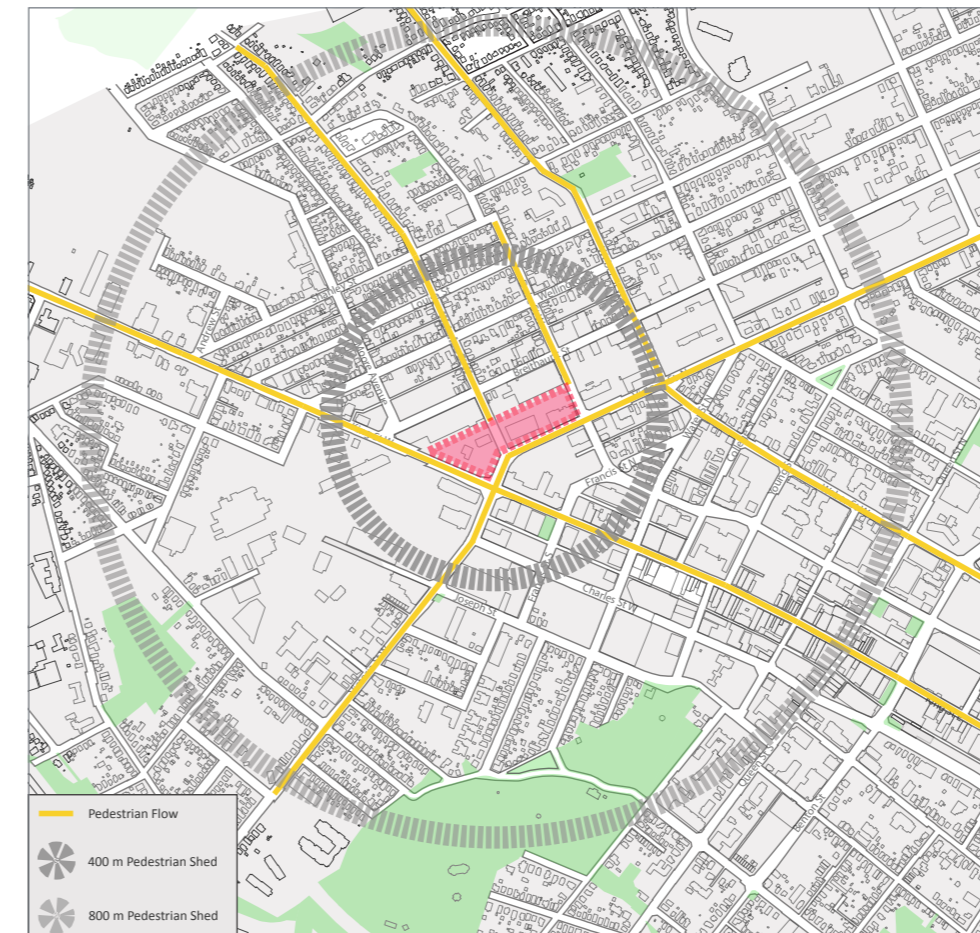


Figure 1.32 demonstrates the map of Downtown Kitchener Pedestrian Access

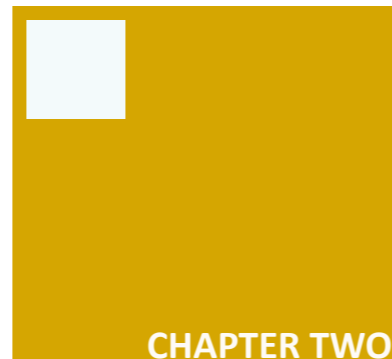
The map indicates that King Street is a major pedestrian corridor in Downtown Kitchener. The existing retail stores along King Street make the environment safe and people friendly, whereas Victoria Street, which is a major vehicular corridor, is not pedestrian friendly although it has sidewalks on both sides of the street. There is limited space for pedestrians on Victoria Street because of auto-related plazas with their parking setbacks from the sidewalk and high traffic flow. ²³

400 m = 5 mins walk
800 m = 10 mins walk

This chapter has analyzed the site location and its neighbourhood in Downtown Kitchener. The site is situated at Kitchener Urban Growth Centre and it will be considered as a high density environment which will be supported by employment centres, recreation and services.

Integration of various modes of public transportation in addition to close walking distance to its neighbourhood provides a great opportunity for the proposed public space to become a focal point in Downtown Kitchener. The situation of the subject site is a valuable and essential factor to consider as it attracts transit and non-transit users to the Transit centre.

02 Design Framework



Design Framework

This chapter highlights the relevant policies and regulations from provincial, regional and local planning documents that help guide the creation of the Kitchener Transit Hub as a high-value urban public place.

An overall vision for the Kitchener Transit Hub will be its establishment as a landmark within the City of Kitchener. This vision includes the integration of a new light rail transit line and enlargement of GO Transit rail service to nearby municipalities with the existing means of transportation such as Grand River Transit, intercity buses and rail, pedestrians, and cyclists in downtown Kitchener. Furthermore, Waterloo Region needs a key anchor with an opportunity to merge transit station functions with a mixed-use destination. The integration of these different modes of transportation is more significant than just a question of vehicles, density and routes. The area lacks the focus on quality of people-oriented spaces and buildings. The planning regulations in this chapter provide a valuable foundation for the design of the proposed development as a series of vibrant, interconnected spaces.¹

■ 2.1 Provincial Policy Statement

The Provincial Policy Statement of 2014 considers significant objectives such as the long-term prosperity and social wellbeing of Ontario. To achieve that goal, a great plan for strong, delightful, and resilient communities for people should be provided in this design proposal.²

Figure 2.1 demonstrates that Ontario's Provincial Policy focuses on the growth and development of healthy, liveable, and safe communities within urban and rural settlement areas.

There should be an appropriate provision of public service facilities in community hubs to promote active transportation and minimize vehicular dependence. In order to maximize the use of public transportation, safe, accessible and efficient transportation systems should be created within cities.³

According to Ontario Provincial Policy Statement, this design proposal promotes a healthy and attractive, people-oriented public realm by being accessible to its neighbourhood, creating an intimate relationship between the infrastructure and public life, and also using an efficient land-use pattern.

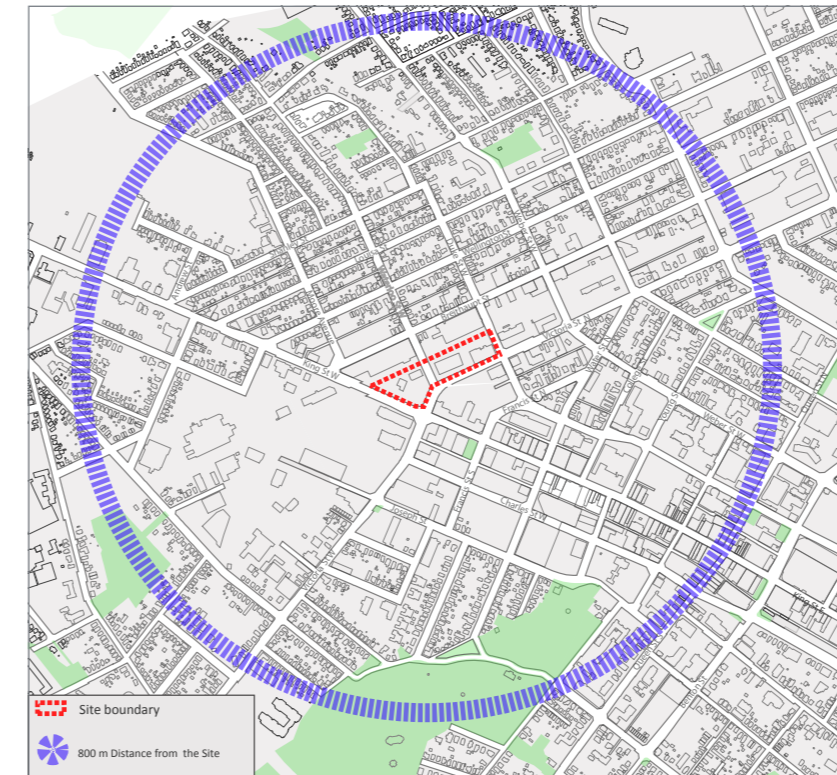


2.1 Diagram of Ontario's provincial policy

■ 2.2 Growth Plan for the Greater Golden Horseshoe

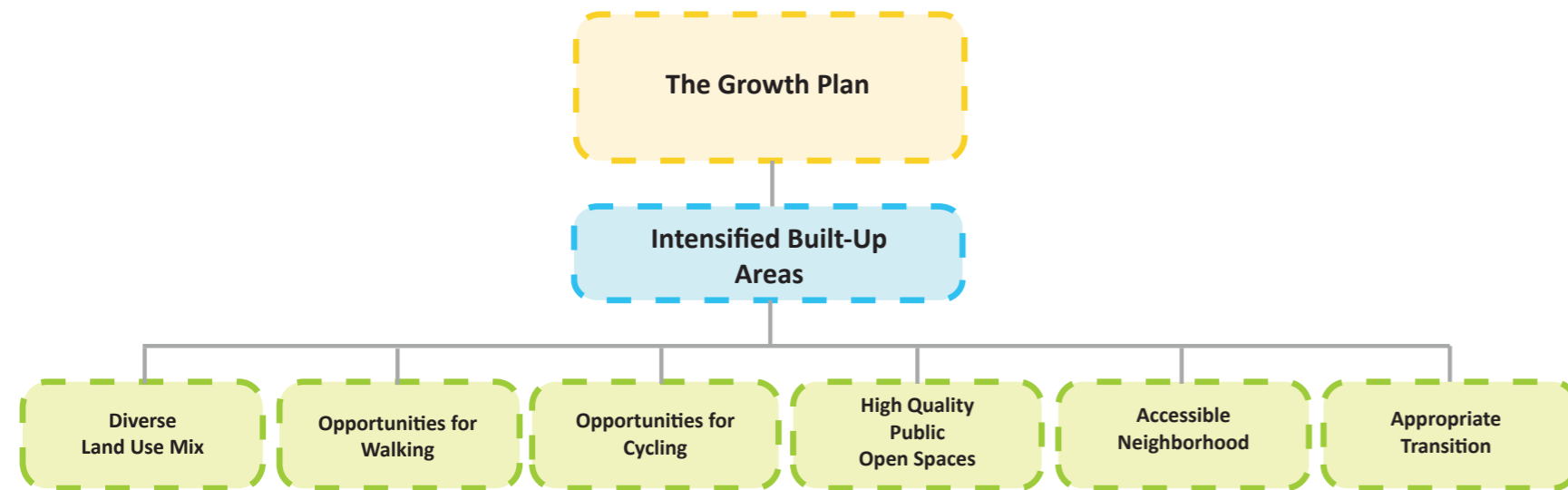
The Government of Ontario provided the Greater Golden Horseshoe Growth Plan to identify a framework to recognize possibilities for improving well-maintained infrastructure in cities over the long term. The subject site in Downtown Kitchener is within the “built-up area” of the Growth Plan for the Greater Golden Horseshoe. ⁴

Figure 2.3 represents the goals of the Province’s Growth Plan. This plan strives to create complete communities with appropriate mixes of different land-use types; high-quality, people-oriented public spaces; choice in sustainable transportation; and integrated pedestrian and cyclist routes. By 2015, the intensification target set in the Growth Plan is a minimum of 40% of total residential units to be built within the built-up area. In addition, by 2031, the minimum intensification target is 200 residents and jobs (combined) per hectare for Downtown Kitchener. ⁵



According to the Growth Plan, the proposed design in this thesis creates a diverse mix of housing options and residential, commercial, office, and community uses at the major transit station area and within 800 meters, which constitutes a 10-minute walk (represented in figure 2.2), to intensify the area for existing and planned transit service and also to accommodate access from various transportation modes. ⁶

2.2 Map shows 10 minutes walking distance from the subject site



2.3 Diagram of Growth Plan for the Greater Golden Horseshoe

2.3 Regional Official Policies Plan

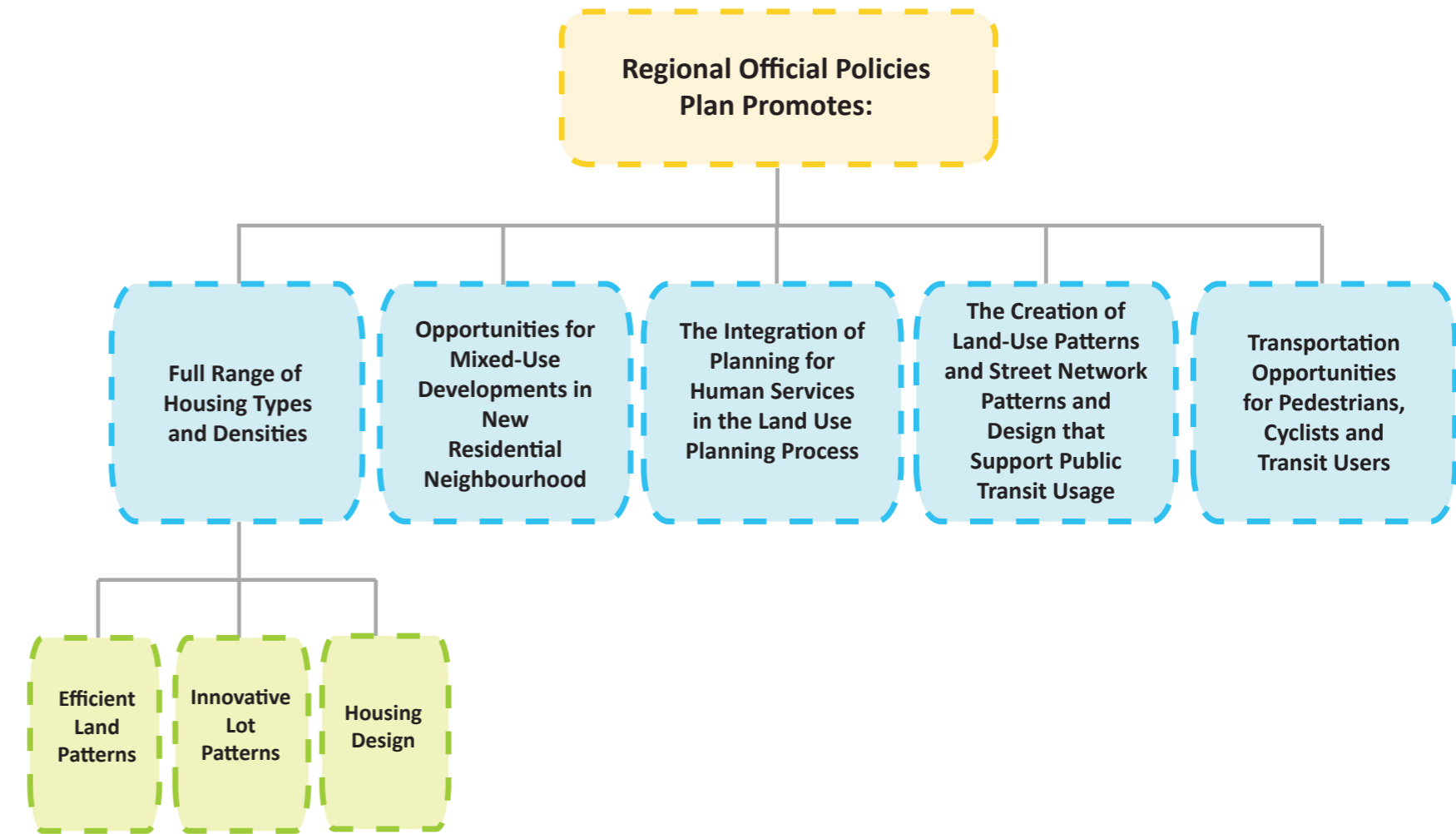
The subject site has been designated as a “City Urban Area” in the current Regional Official Policies Plan. According to figure 2.4 , the Official Policies Plan, a variety of urban land uses, such as residential, institutional, employment, recreational, open space, and commercial, are allowed to be implemented within the mixed-use City Urban Area.⁷ The site in this design proposal is located at the intersection of King and Victoria Street. King Street which is situated at the west side of the site, and Victoria Street which is situated at east side the site, play a significant role in defining the City Urban Area as they are both designated as Regional Roads. ⁸

The Regional Official Policies plan promotes the creation of street network and improvement of transportation opportunities for pedestrians and cyclists and transit users.

The site location provides the opportunity of street network and creation of people-friendly streets to promote walking, cycling and using public transportation through the whole Waterloo Region. ⁹

Figure 2.4 demonstrates the Regional Official Policies regulation that supports opportunities for mixed-use developments within the site's neighbourhood.

Moreover, revitalizing King Street gives it the potential to become a Central Corridor while, currently, Victoria Street has been identified as an existing Major Transit Corridor. This thesis design proposal supports the transformation of King Street into a Central Corridor as it provides a wide, people-oriented public space along King Street for interaction among people and street-level events.¹⁰



2.4 Diagram of regional official policies plan

■ 2.4 Kitchener Municipal Plan

It has been mentioned earlier that the City of Kitchener has four Districts (Warehouse District, City Centre District, Civic District, and Market District) and that the subject site is located within the Warehouse District.¹¹

According to the City of Kitchener's Municipal Plan, the Warehouse District is a historic industrial area and the City's goal is to retain its heritage aspects. In order to achieve that goal, the City is planning to adaptively reuse the existing buildings as commercial spaces such as boutiques, restaurants and theatres to create a distinct shopping environment. However, providing retail is not allowed on those lots fronting directly onto King Street. In order to adhere to this regulation of Kitchener's Municipal Plan, the proposed design in this thesis provides a public plaza between King Street and the indoor retail stores.¹²

■ 2.5 Kitchener Zoning By-law Amendment

According to Kitchener's Zoning By-law, the subject site is located in the Warehouse District Zone, which is identified as Zone-D in the Zoning By-law.¹³

In order to make the area around the multi-modal transit hub a high-density and mixed-use area, the City of Kitchener proposed a Zoning By-law Amendment that promotes increasing the range of permitted uses and facilitates future development.¹⁴

In the Special Use Provision section of the By-law, it is mentioned that commercial buildings or retail stores will be permitted on the site, but only if they are like convenience stores. The reason that the commercial buildings should be like convenience stores is that the City wants people to have access to their day-to-day needs, for instance a bakery, a small grocery store, a drugstore, etc. By having this Regulation, the City tries to make things more accessible.¹⁵

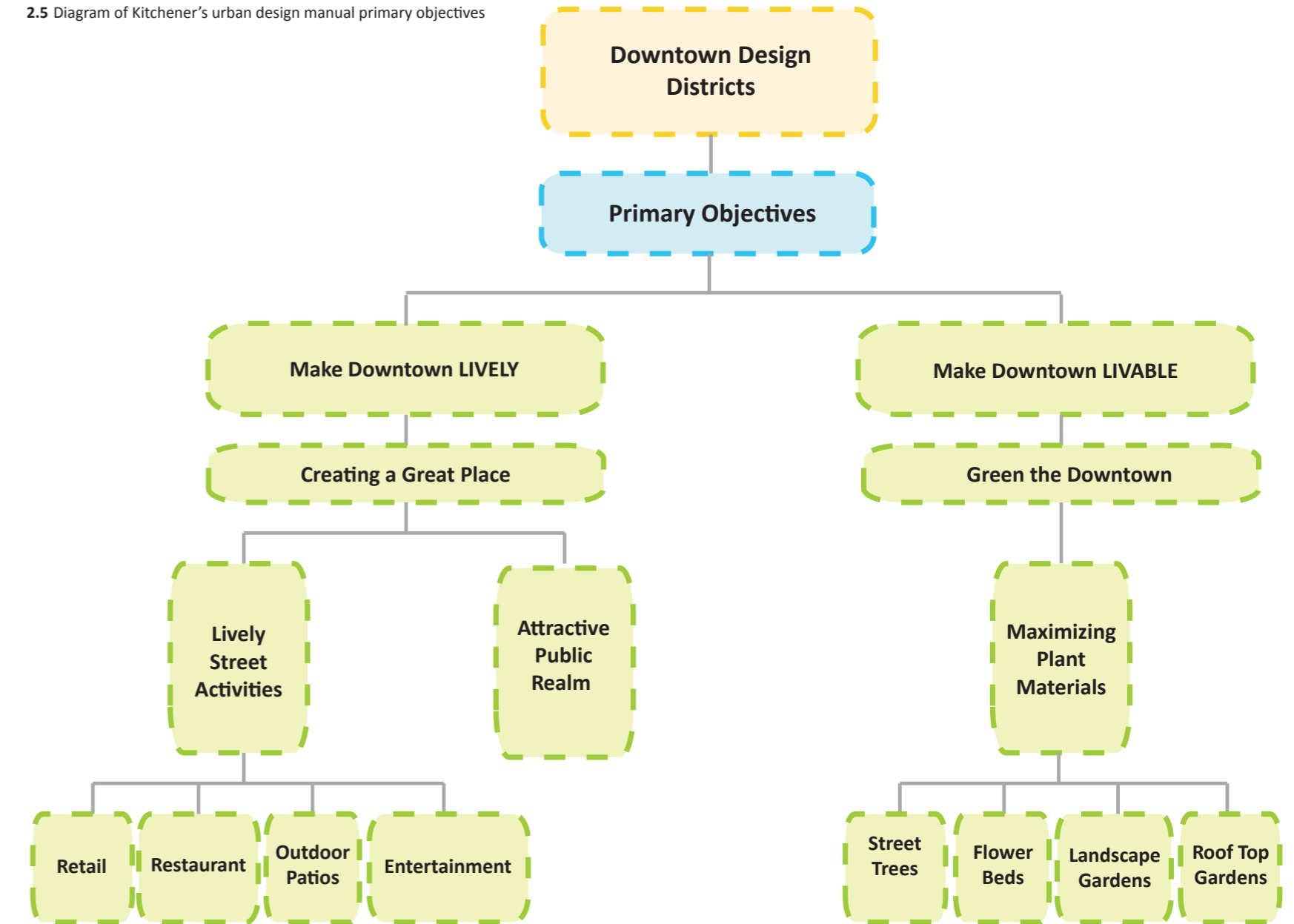
2.6 Kitchener Urban Design Manual

According to the Urban Design Manual for Kitchener, Downtown Kitchener has been the focal point of the Region. People used to have access to entertainment in downtown Kitchener and also it has been a great centre for the arts and supporting diverse cultures.¹⁶

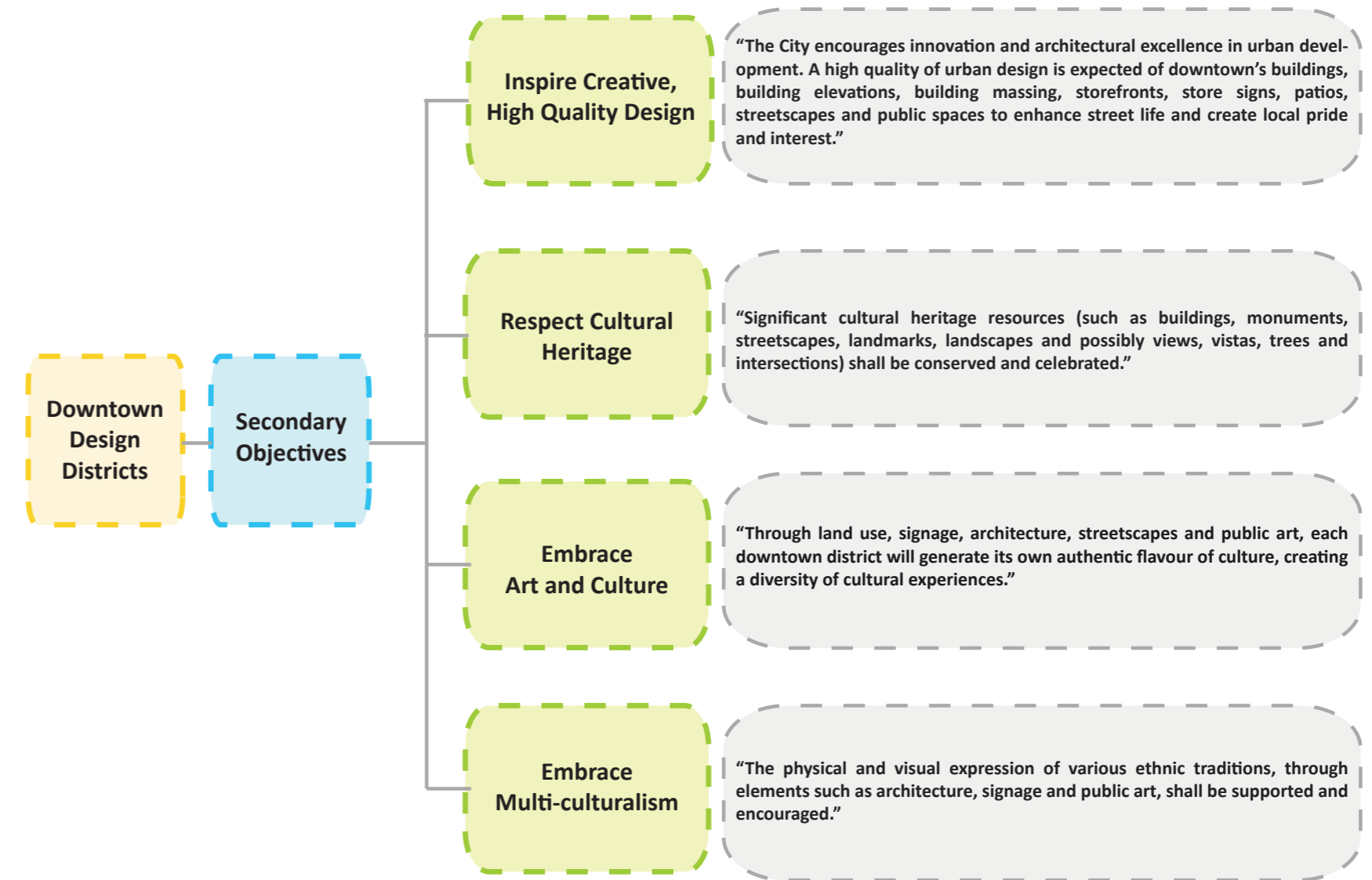
To recreate the downtown area as the vibrant place it used to be, there are two important goals, the first being to make downtown Kitchener a pleasant place for people. In order to achieve the first goal, streets need to be lively and attractive. Having various retail stores, restaurants, outdoor spaces, outdoor events, lots of housing options, and great public spaces can create lively streets for people to walk, interact and build up their relationships with each other. New proposal's second goal is to make downtown livable and green. Planting more trees, vegetation, landscape gardens and flower beds along streets, pedestrian pathways and all over public spaces will help to make the area more nature-integrated and delightful. Figure 2.5 represents the primary objectives of the Kitchener Urban Design Manual.¹⁷

The public space proposed in this thesis design proposal features wide and generous sidewalks, planter beds of trees and vegetation that define dynamic spaces within the larger space for people to sit and gather.

2.5 Diagram of Kitchener's urban design manual primary objectives



In order to develop downtown Kitchener, everything that will happen there such as construction, renovations, adaptive reuse, facade improvements, streetscape improvements and public space improvements, must substantiate a rational contribution to the secondary objectives that are required by the City, summarized in Figure 2.6. This design proposal uses the recommendations in the Kitchener Urban Design Manual to create a people-oriented public space in downtown Kitchener.¹⁸



2.6 Diagram of Kitchener's urban design manual secondary objectives

An overall vision for the design framework establishes the guideline for the design and development of the Kitchener transit hub. According to the plans and regulations described above, the Kitchener Transit Hub will be an integrated, mixed-use transit centre, providing indoor and outdoor public space, offices, residential and commercial spaces for commuters and non-transit users. The transit hub will be a landmark within the downtown area and the city of Kitchener. The transit node provides appropriate infrastructure and public facilities within short walking distances to make the centre accessible to all people.

The transit complex in this thesis proposal is an environmentally sustainable development as it would have green roofs and other natural elements. Following the design framework outlined above would shape the design of a transit hub as an active and vibrant gathering space while it maintains its important function as a transit node.

03 Precedents

This chapter analyzes five case studies relevant to the design of an outdoor public space for the Kitchener Transit Hub. Each project has a unique character that has an influence on this thesis design proposal. The new proposal's first case study is the preliminary design proposal for Kitchener Transit Hub. The IBI Group has already proposed a preliminary design for this site that in the context of this thesis is considered as a base framework for the design proposal. ¹ This chapter highlights the underdeveloped parts of IBI's proposal and envisions design solutions to create a substantial design proposal for this thesis.

The second precedent is the Transbay Transit Center in San Francisco, a successful project that consists of various facilities such as a roof-top park, urban amenities, and different concourse spaces for pedestrian circulation surrounded by retail stores. The main important feature of this project that influences the thesis design proposal is the circulation space surrounded by retail stores that has been provided within the indoor public space to bring both transit and non-transit users into the terminal. ²

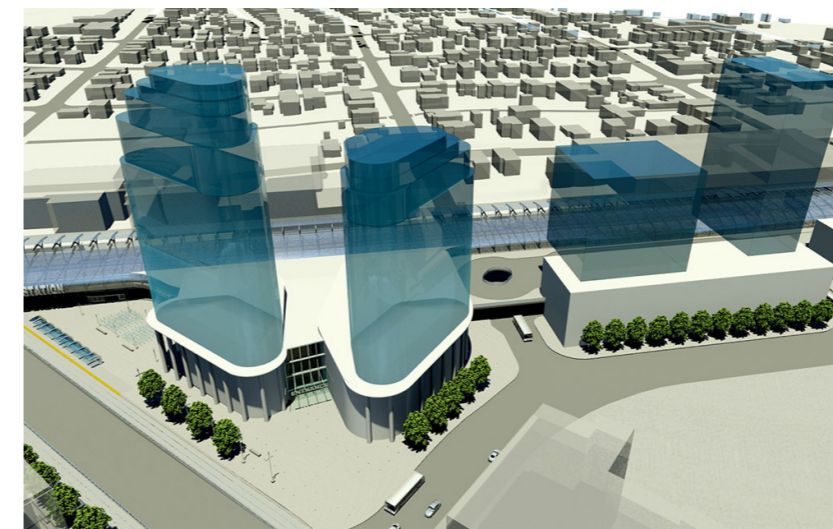
The third project is Nathan Phillips Square in Toronto, which has two levels of public space. In the recent revitalization of the square, a concrete roof has been replaced by a green roof to provide a better environment for people and improve the building's energy efficiency.



A large ramp connects the two levels of public space and provides barrier-free accessibility.³

The fourth project is the Rotterdam Centraal Station in the Netherlands, which provides a pleasant indoor train platform hall for commuters, with a fully glazed roof to bring natural light into the space and make the space more bright and vibrant.⁴

The fifth project is the Assen transit terminal, also in the Netherlands, which has provided a wide public space integrated with nature. In this project, planter beds have been installed in the public plaza to help the space become more dynamic while delineating a distinct, pleasant space within the larger project.⁵

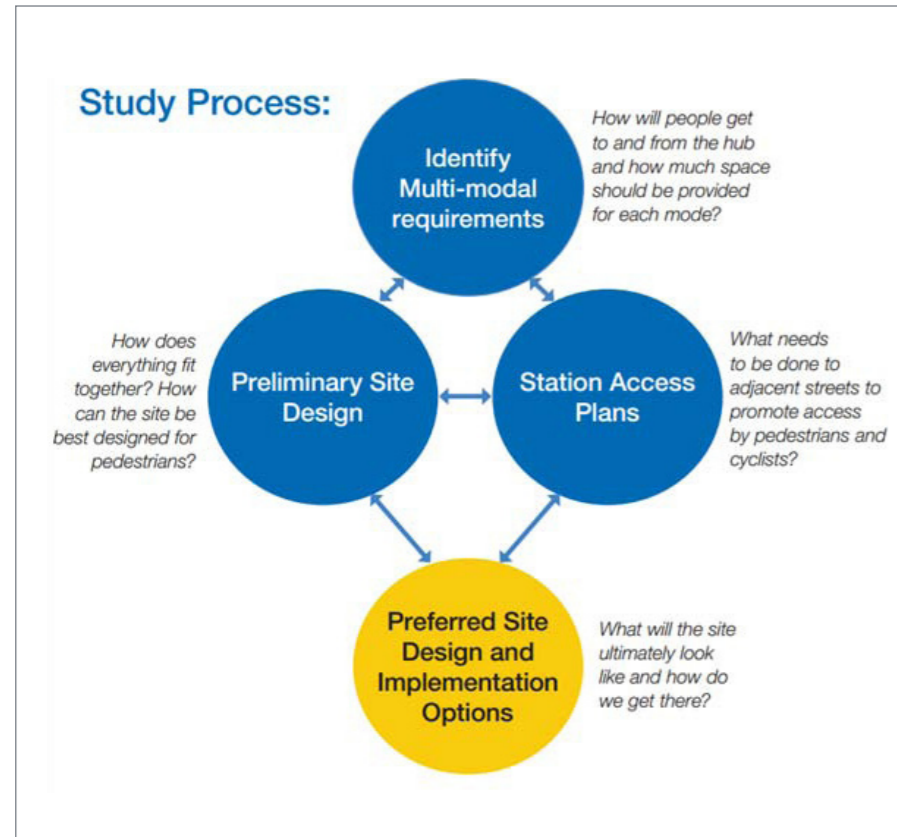


3.1 IBI's Primary design proposal for Kitchener's Transit Hub

■ 3.1 IBI'S Preliminary Design Proposal for Kitchener Transit hub

IBI Group was hired to do the preliminary site design and station area access study in March 2012 for a multi-modal transit hub at the intersection of King and Victoria Streets.⁶

In King/Victoria Transit Hub Projects Overview established on September 27, 2012 GSP group and IBI group declared their vision for designing the Transit hub which is "The King/Victoria Transit Hub will not only be a focal point for transportation in Waterloo Region, but also an attractive urban space that is both an iconic destination and a catalyst for future development in the area."⁷



3.2 IBI's design approval and studies diagram

In their preliminary design, IBI group provides a concept proposal for a building group of four with offices and residential buildings that will be built on the site, and also establishes guiding principles for detailed design and construction of the transit hub components.⁸

According to IBI's Environmental Assessment (EA) study, the site will feature a set of public mobility-related infrastructure components like transit platforms, pedestrian accesses and pathways, cycling accesses and pathways, public space and parking for bicycles and vehicles.⁹

They also believe that the design of mobility-related infrastructure cannot be done by itself because several functional and structural components of the site are integrated or shared between land developments.¹⁰

In addition, IBI group establishes the following key design principles In King/Victoria Transit Hub Projects Overview established on September 27, 2012 :

1. Having convenient connections between different means of transportation such as LRT, GRT buses, GO transit and VIA rail, intercity buses, and providing convenient access to the transit hub for vehicles, cyclists and pedestrians.
2. Providing adequate and safe pedestrian amenities and pathways in order to have a convenient connection to the public spaces on site.
3. Creating a convenient space for passengers to pick up and drop off, park and ride and also adequate parking space for car share.
4. Providing favorable routes and amenities for cyclists.
5. Creating a liveable place and various amenities for people such as ground floor retail and suitable street furniture (e.g. trees, benches, lighting, shelters and planters).¹¹

Transit Hub Mobility-related Infrastructure Element Concepts-Transit Hub Facilities

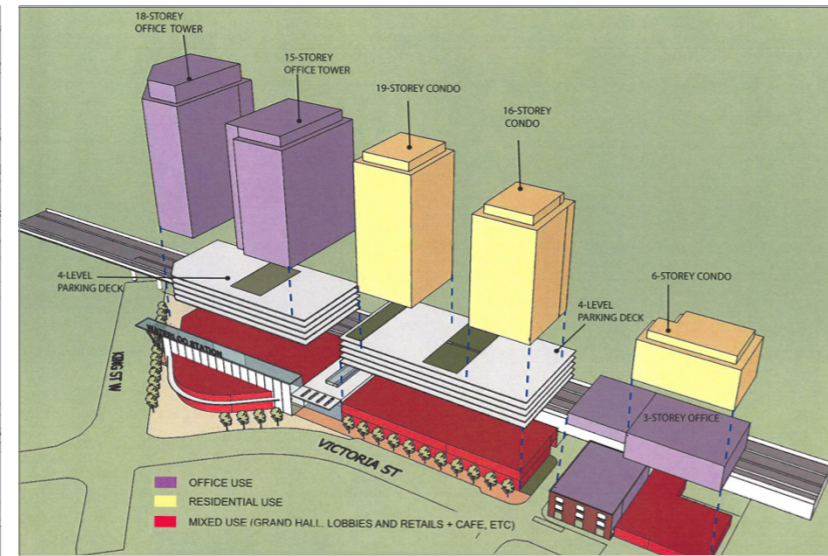
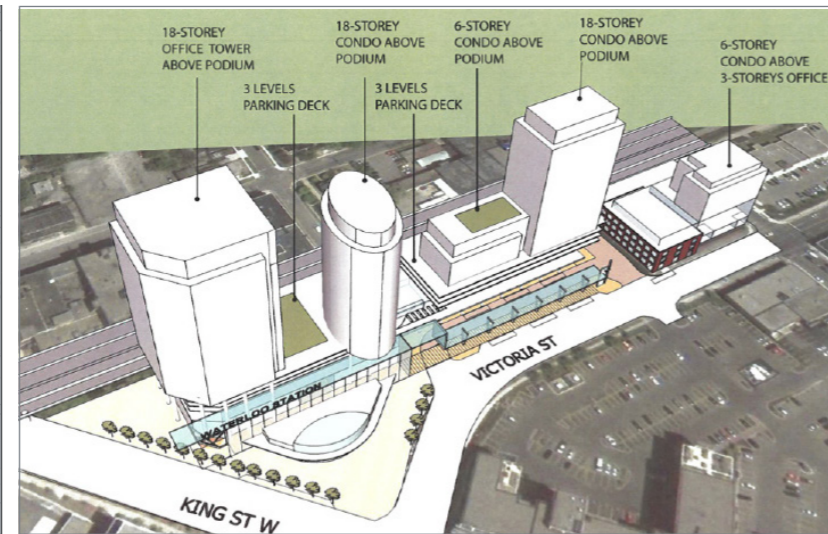
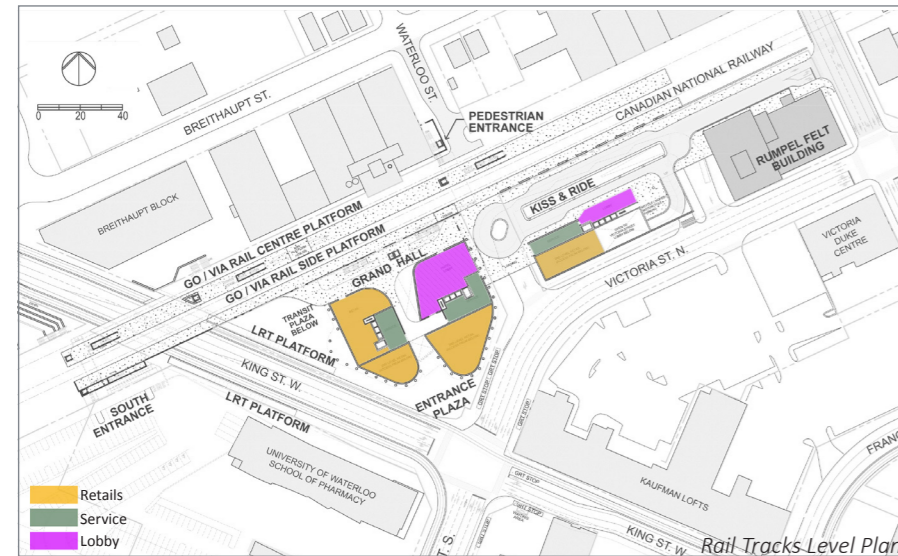
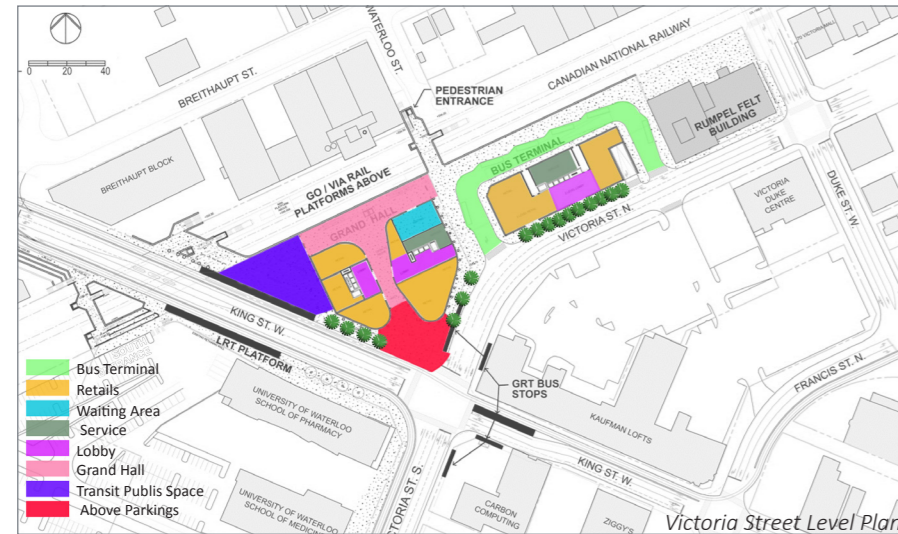
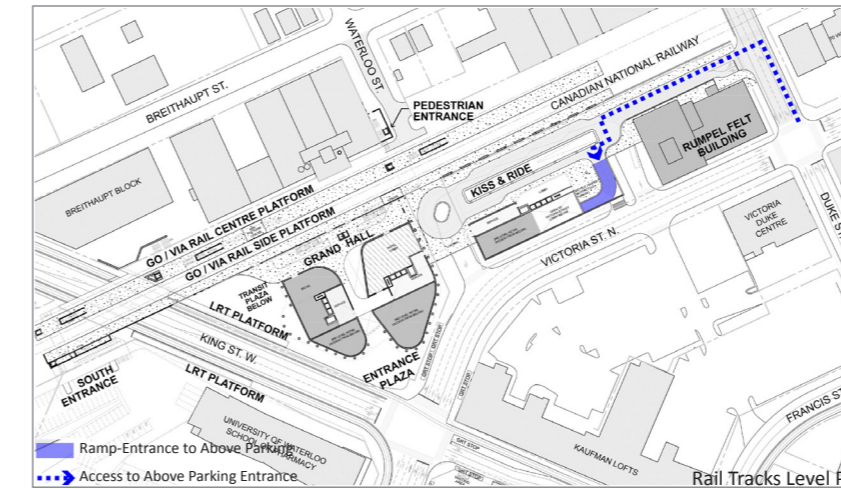


Image on top 3.4 IBI'S Transit Hub design concept 1

Image at the bottom 3.5 IBI'S Transit Hub design concept 2

Transit Hub Mobility-related Infrastructure Element Concepts-Above Parking

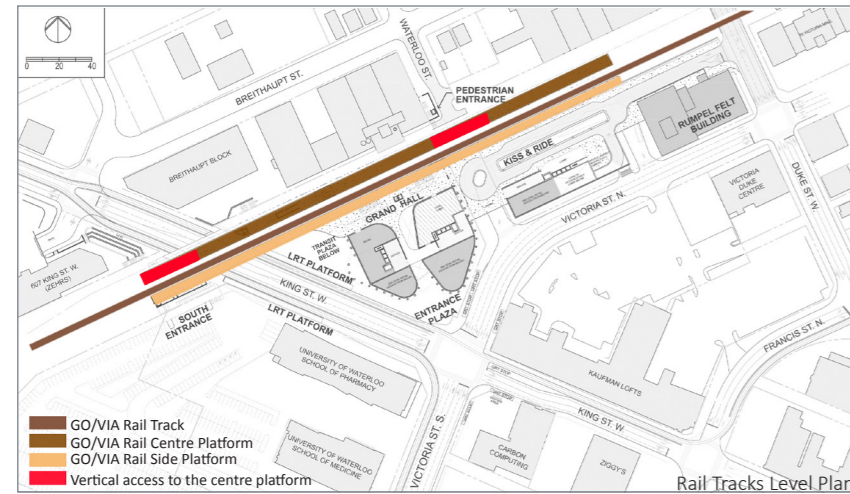


A major problem with the IBI design proposal is that they have provided above-ground parking instead of providing a bigger parking area underground. The entrance to the above-grade parking space is another issue as it shares the same entrance for cars or taxis to the pickup and drop off area at the rail track level, which will create traffic congestion.¹²

Critically speaking, above-ground parking can be replaced by an indoor public space, which can be a gathering and waiting area for all users of the upper residential or office buildings.

3.6 Plan view showing above parking's entrance designed by IBI

3.7 Plan of GO/VIA transit rail designed by IBI



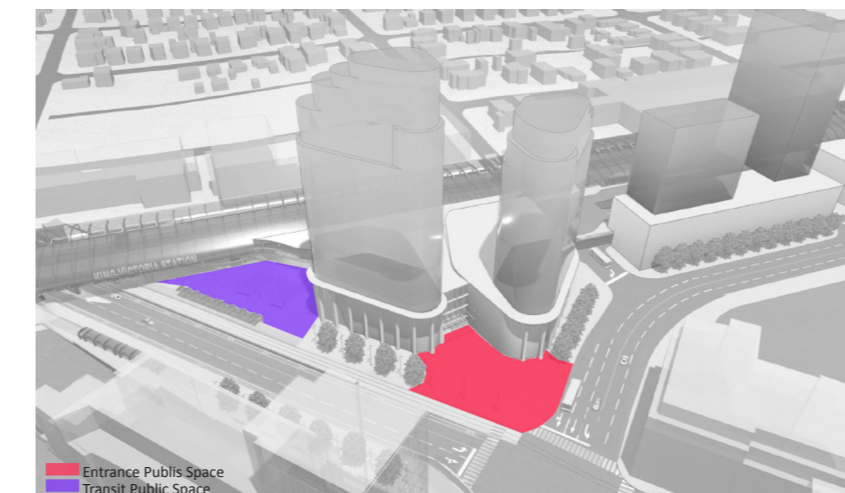
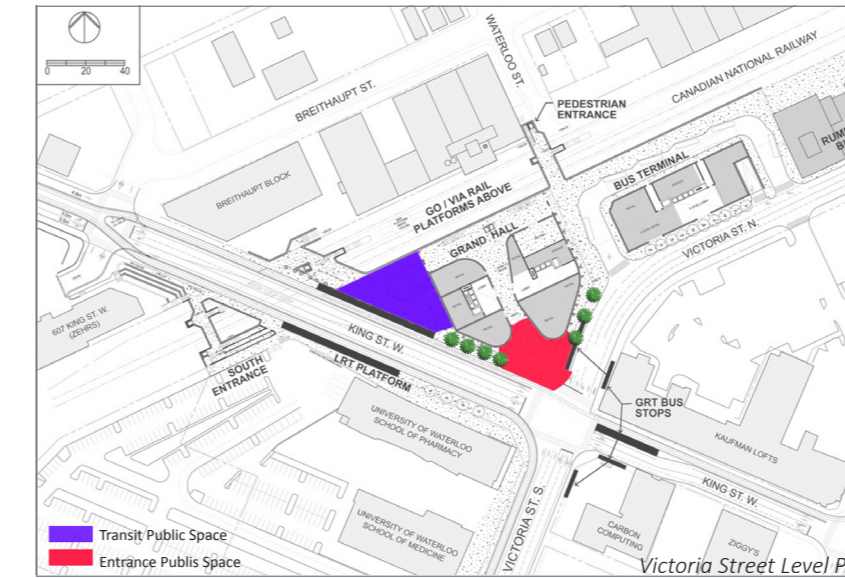
3.8 Image of GO/VIA transit rail location designed by IBI

VIA & GO Transit Rail

There are CN rail tracks at the northern side of the site used by GEXR Train (for freight), and GO Transit and VIA Rail Canada trains (for passengers). During the day, four GEXR trains and GO transit trains and eight VIA Rail trains run on this CN track. The existing CN rail crosses King Street, the major arterial street in downtown Kitchener and the street on which LRT, cars, buses, bicycles and pedestrians are travelling every day. In order to avoid heavy traffic during the day, there is an alternative to put the CN rail at the upper level to avoid any interference with King Street while the trains also function regularly. 13

The problem that people will face in this case is that they cannot access the central platform from the grand hall at Victoria Street, being forced to go either to the Waterloo entrance or the vertical access across King Street. This circulation will cause frustration for pedestrians when they are in rush.

3.9 Plan of the public plazas' location designed by IBI



3.10 Location of the public spaces in IBI's design proposal

The Public Plaza

The main problem with IBI's design proposal that conflicts with their design principles is the public plaza, which is supposed to be a liveable place for people. In their design it is a fragmented public space split into two areas. One of the two public spaces is associated with the building entrance and the other one is associated with the LRT station. 14

The public plaza associated with the building entrance is located at the corner of King Street and Victoria Street where the main entrance to the site is situated. The public space associated with the LRT station is located at the Northbound LRT platform on King Street. These public spaces are for pedestrians' circulation, gathering and participation in various street-level activities and events. 15

Each public space in the IBI's proposal is separate and too small for public life and also lacks identity and integration. The two public spaces link together by a narrow corridor and the intention to create those public spaces was to have places that could accommodate street-level events and festivals and act as a recreational space. In the IBI proposal, the public spaces that have been proposed are transitions rather than destinations. They are places for people to pass through but not stay and interact with one another. There is no stimulation in the IBI design for people, travelers or locals, to stay there longer. In addition, there is no combination of natural elements like trees or planting so that people can find a place of rest.

Jane Jacob in *“The Importance of Death and Life of Great American Cities (1961)”* mentions that people like to spend time in public spaces where lots of events and activities take place. In addition, people are willing to spend lots of time in a public space where they can sit somewhere comfortably and weather protected.¹⁷

Creating a public space at the focal point of downtown Kitchener through which people pass everyday should not be just a transition place. It should have stimulation and a degree of comfort where people would tend to stay longer.



3.11 Images of proposed design of Kitchener Transit Hub by IBI

3.12 Bus Entering Muni Plaza at Beale St.



3.2 Transbay Transit Center in San Francisco

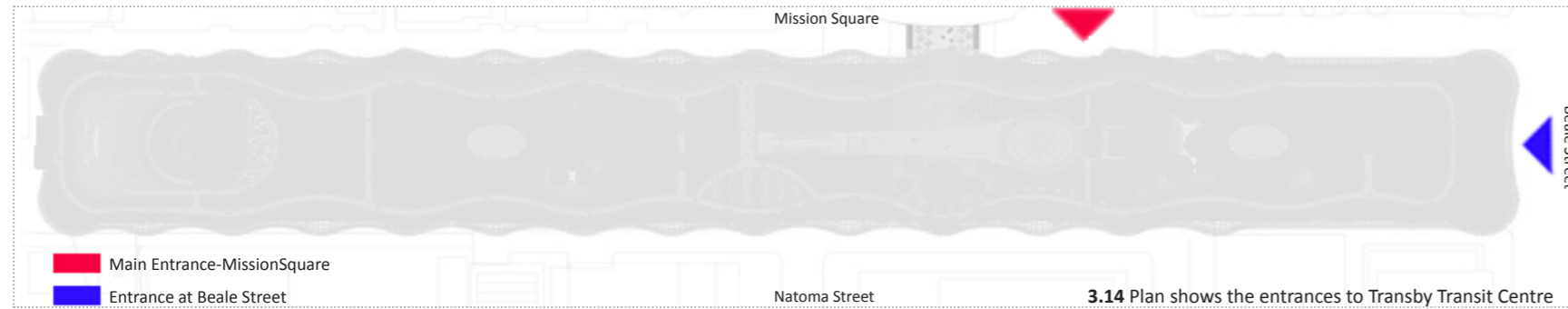
The Transbay Transit Center, designed by Pelli Clarke Pelli Architects, will open in 2017. The transit center is a sustainable, multi-modal transit hub in downtown San Francisco that will enhance regional and national connections to transit for the area's residents, workers, and visitors.¹⁸

The intention of the Transbay Transit Center is to create a transit hub within a transit-friendly neighbourhood that brings economic and environmental benefits to the city, a goal that aligns with the intention of this thesis proposal.¹⁹

The development consists of various facilities such as a 5.4 acre Rooftop Park, urban amenities, and a concourse level as the main circulation space surrounded by different retail stores. Moreover, a new transit centre and intensification of downtown San Francisco creates a new environment for people with more than 6 million square feet of office space, lots of units of new residential space, new hotels, and a convenient environment for pedestrians and cyclists.²⁰

3.13 Cross Section View of the new Transbay Transit Centre ~ The Multi Modal Transit Hub has five levels and connects eleven transit systems with different functions for passengers.





3.15 Entrance to the Transbay Transit Centre from Mission Square

The Grand level is the primary circulation space for the indoor public space. The Transit Center has two entrances at the ground level. The entrance at Mission Square is the main entrance of the building where a public information centre, ticket kiosks, and automated ticketing booths are located. ²¹



3.16 Entrance to the Transbay Transit Centre from Beale Street

This level features the central public space and the Grand Hall. Using the main escalator and elevator, which are situated at the Grand Hall, people can access all areas of the transit facility. This level is surrounded by different retail stores to make the space accessible to everyone, not just commuters, while creating additional economic opportunities. ²²



3.17 Concourse space at train mezzanine

The other indoor public space is located at the train mezzanine, which connects passengers to the ground floor and train station platforms. Retail stores, ticketing and bike storage is located along the concourse hall. ²³

The design proposal in this thesis creates a similar indoor public space to enable a vibrant public life for users.

3.18 Concourse space at train mezzanine



3.18 Nathan Phillips Square top view shows different parts of the square

3.3 Nathan Phillips Square

Nathan Phillips Square is a rectangular public space which is located in front of Toronto City Hall. It is a considerable tourist attraction that 1.5 million people visit yearly. Since 1991, Nathan Phillips Square has been considered a heritage building by the Ontario Heritage Act.²⁴

The Square has been created as a public space for people to interact with one another and participate in various activities including art displays, festivals, and a farmers' market.²⁵

Nathan Phillips Square revitalization was commenced in 2008 and completed in 2014. PLANT Architect Inc. and Shore Tilbe Irwin + Partners had won the competition for revitalizing the Nathan Phillips Square. Through the revitalization, the architects tried to make the square more sustainable and people friendly by changing the low concrete roof over the building's podium into a public garden, increasing the number of trees and green spaces, providing more facilities for cyclists, providing a better environment for pedestrians, and energy efficient design.²⁶

3.19 Nathan Philip Square different programs



3.20 Urban Forest



3.21 Peace Garden

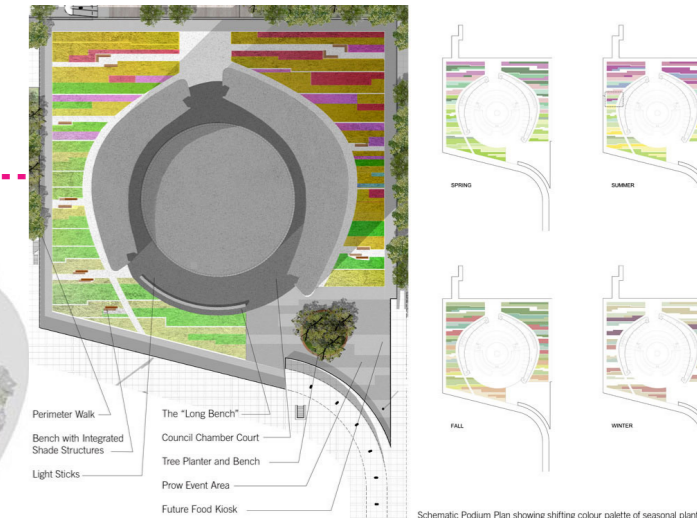
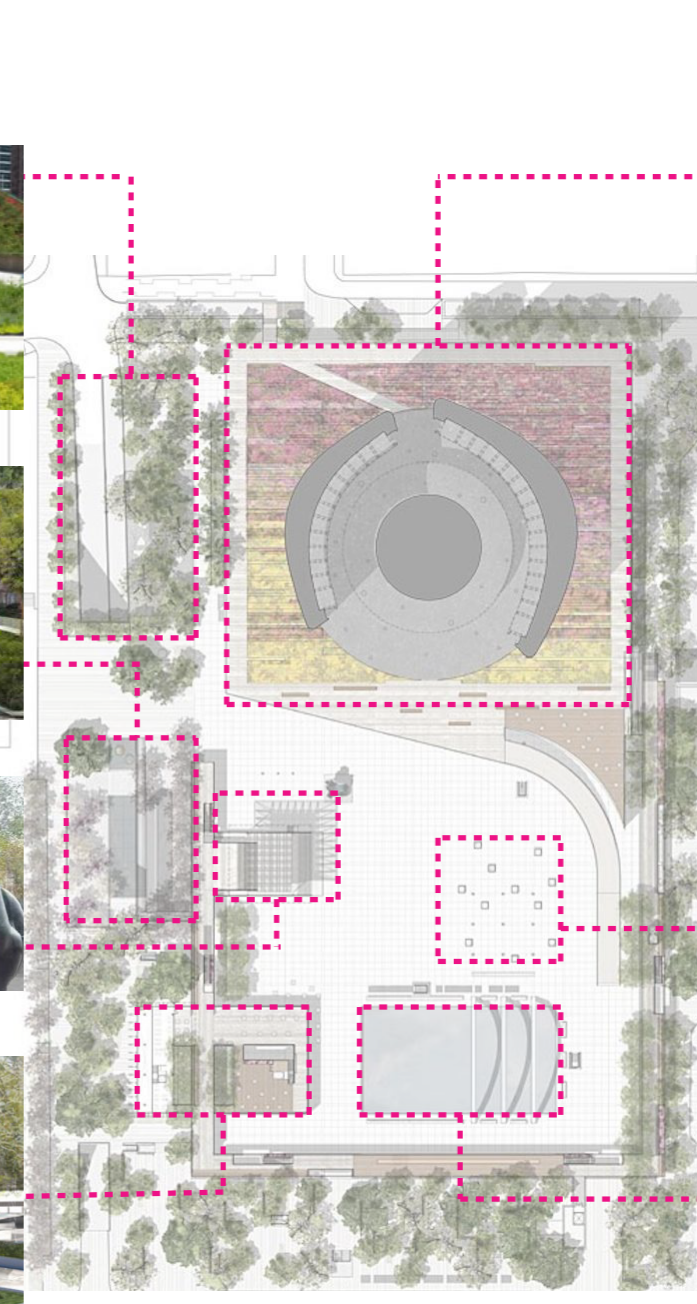


3.22 Theatre Stage

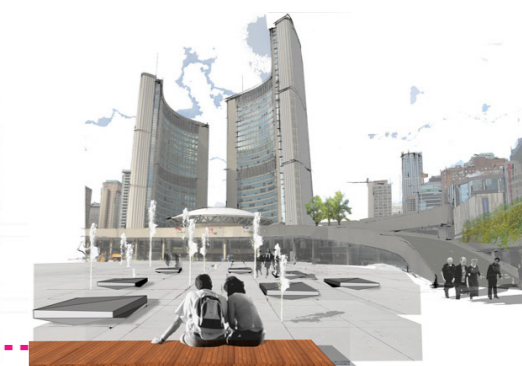


3.23 Restaurant

Figures 3.19 to 3.26 demonstrate different programs and facilities provided in Nathan Phillips Squares.



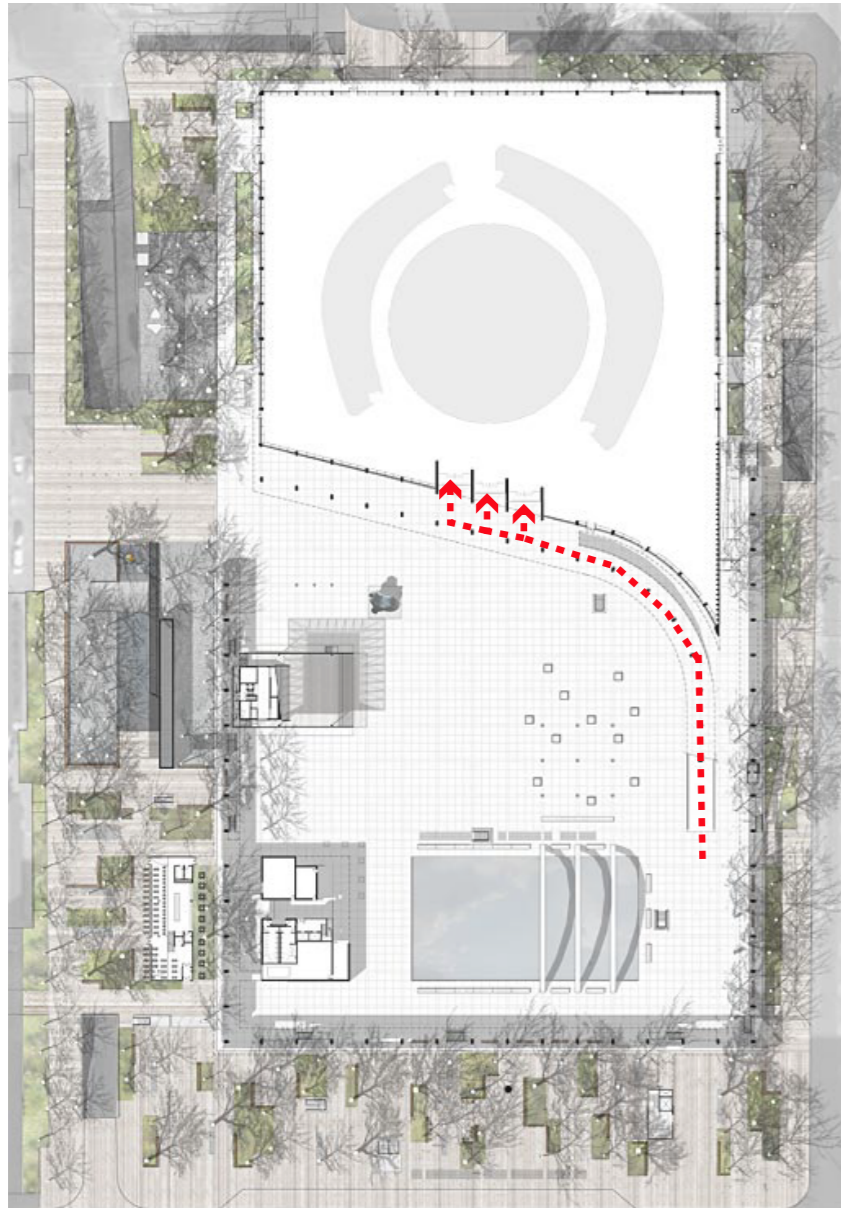
3.24 Podium Green Roof



3.25 Water Feature



3.26 Skate Pavilion



3.27 Plan shows the barrier free access ramp to the roof top

Nathan Phillips Square is an entertaining place for people as it has various places with different activities and a fluent circulation and provided barrier free access points gives the opportunity to everyone to access each activity easily especially the podium roof. ²⁷

The significant factor that differentiates the public space in Nathan Phillips Squares from the public space in IBI's proposed design is its connected multi-level public square while it supports various facilities and activities. Therefore, this thesis design proposal provides indoor and outdoor multi-level public spaces with a barrier free access points.



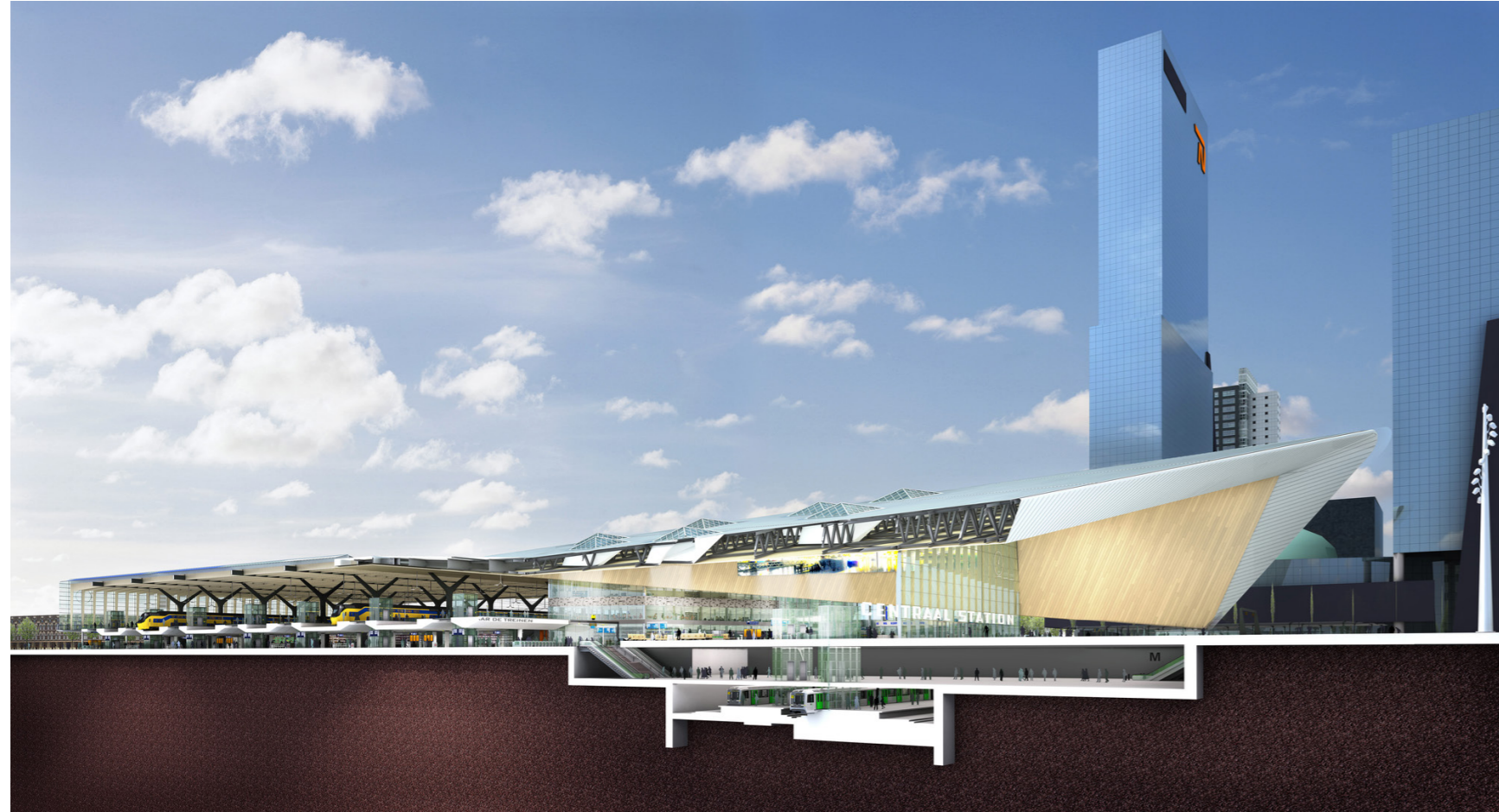
3.28 Top view of Rotterdam Centraal Station

3.4 Rotterdam Centraal Station

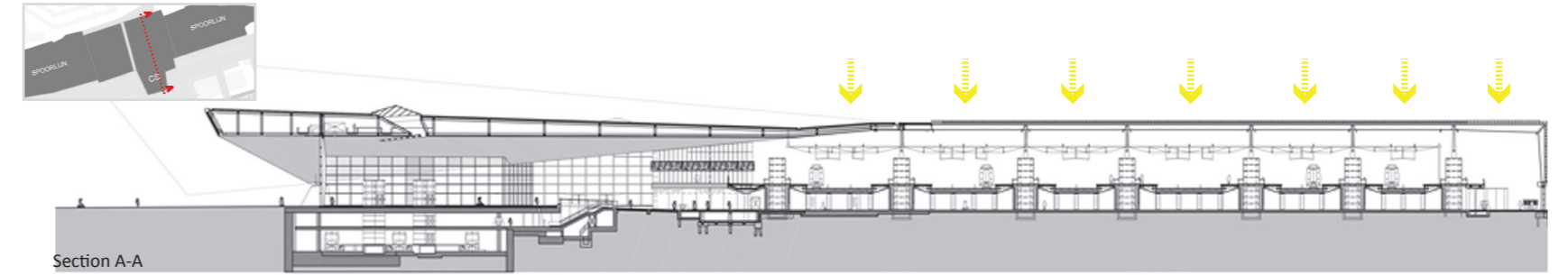
Rotterdam Cantraal Station is located in the Netherlands and it was designed by Jan Benthem, Adriaan Geuze, Jeroen van Schooten, Marcel Blom. The transit station opened at 2014 and it is situated in the middle of Europe and it is one of the important transit hubs on the continent. The transit hub has 110,000 passengers a day but it has been anticipated that by having High Speed Train (HST) and Light Rail System the number of passengers will increase to 323,000 by 2025. ²⁸

Rotterdam Centraal is a Multi-Modal Transit Hub that integrates various means of transportation in one place such as High Speed Train (HST), Light Rail Transit System (RandstadRail), tram, bus, subway, taxis, cars, bicycles, and pedestrians. ²⁹

In addition, the transit hub is a mixed-use building that includes commercial space, a lounge, restaurant, offices and parking for cars and bicycles.



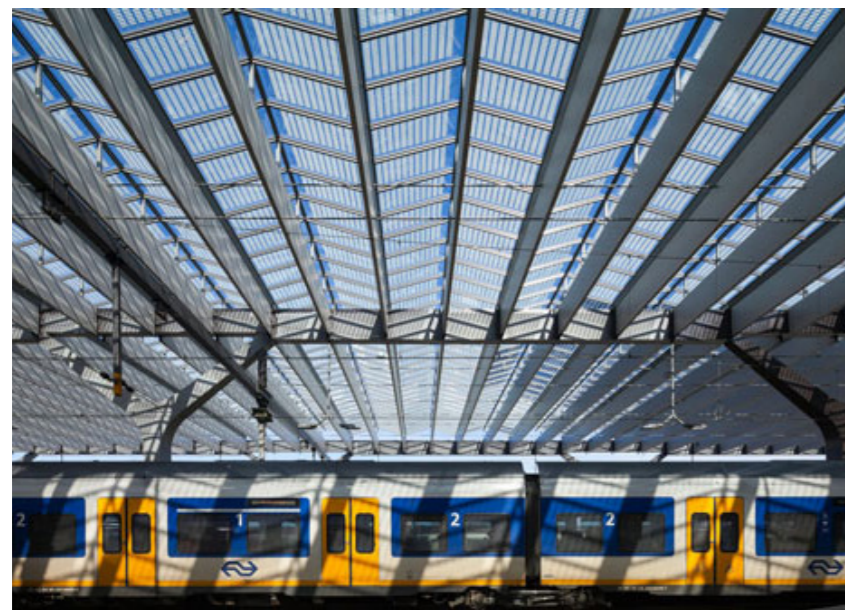
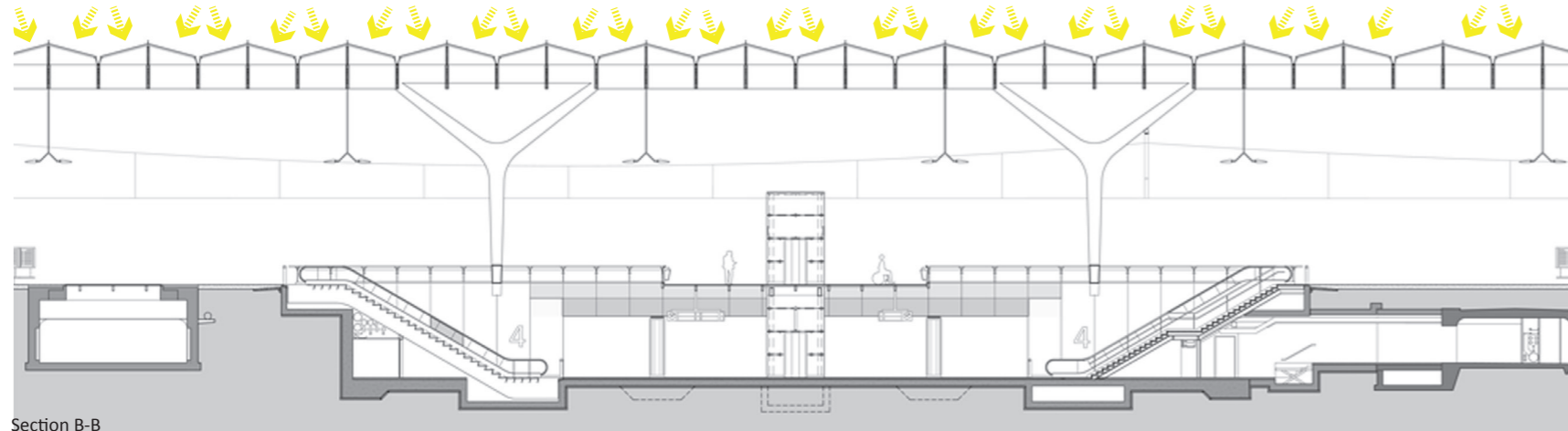
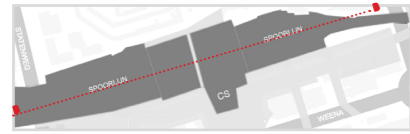
3.29 Section projection of Rotterdam Centraal Station



Rotterdam Centraal Station has a fluent interior circulation. Natural light is a significant factor at the station to guide people through the space. When passengers enter the station, they can see the train while the natural light from transparent roof leads them towards the platform. Passengers can access the subway and shops at the lower levels through the stairs, elevators and escalators.³⁰

3.30 Section through the Rotterdam Centraal Station

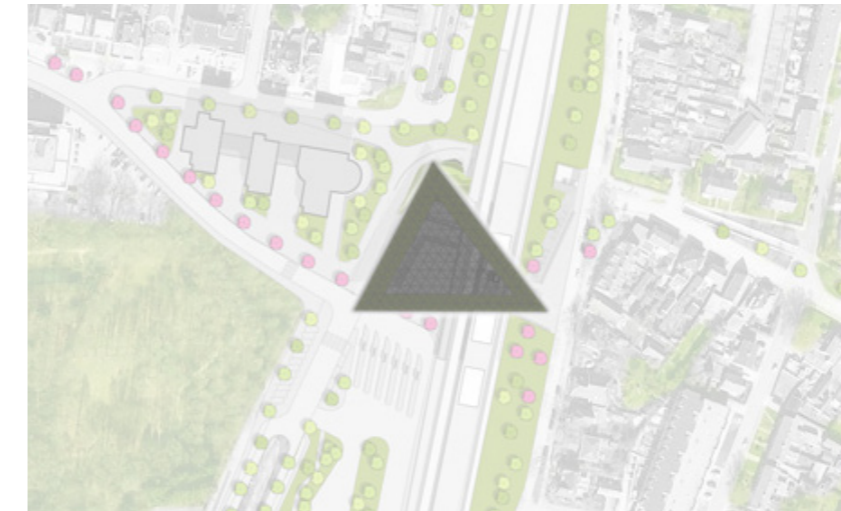
3.31 Image shows the vertical access to the train station with glazed roof



The roof of the platform hall , where people access the trains, is fully clad with a glazed wall envelope. The transparency of the glazed wall makes the interior space bright and full of daylight while helping with energy efficiency. The most significant advantage of the glazed wall is to allow daylight into the building while providing weather protection.³¹

This design proposal provides glazed ceiling at the train station to transform the space into a new interface that can be experienced as a vibrant place.

3.32 Section through the Rotterdam Centraal Station shows the glazed roof of the train station
3.33 Image shows the natural light from the glazed roof

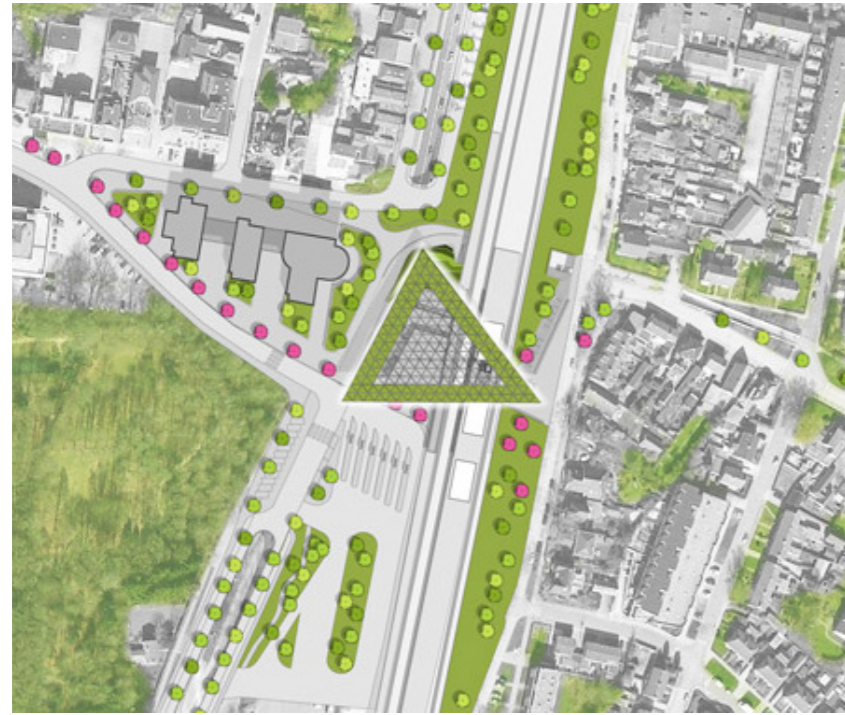


3.5 Assen Station

Assen Station is situated in Assen in the north-east of The Netherlands. Two groups of architects, Powerhouse Company and De Zwarte Hond, redesigned the station to link the east and west sides of the Dutch city through different means of transportation. The Assen Transit hub is shaped like a triangle, with each corner representing a different entrance.³²

The project will be complete in 2019. The transit hub includes a large concourse area at the west side of its site with a convenience store, floral shop, and staff room. In addition, the transit hub has three rail platforms, a bus station, underground parking for bicycles and a subterranean tunnel for pedestrian access.³³

3.34 Site plan shows the location of Assen Station



3.35 Site plan shows Assen Station and its public plaza

Redesigning the Assen station reestablishes a wider public space that is nature incorporated for pedestrians and cyclists to pass through everyday. To have substantial space dedicated to a public place, the architects designed planting beds to create a pleasant place for people. These planting beds provide dynamic spaces within the larger space for people to rest, gather, and interact with each other.³⁴

The planting beds provide a strong visual impact to people and they will enjoy spending time in the space. Figure 3.36 represents the planter beds in the public space.

3.36 Pedestrian friendly public plaza of Assen Station



Integrating the public space with nature would create a pedestrian-friendly environment, which helps the transit hub as people would like to walk, cycle or use the public transportation rather than driving their own vehicle in order to use the public space.



3.37 Assen station's nature integrated public plaza

04 The Thesis Proposal: A Public Space for the City of Kitchener's Intermodal Transit Hub



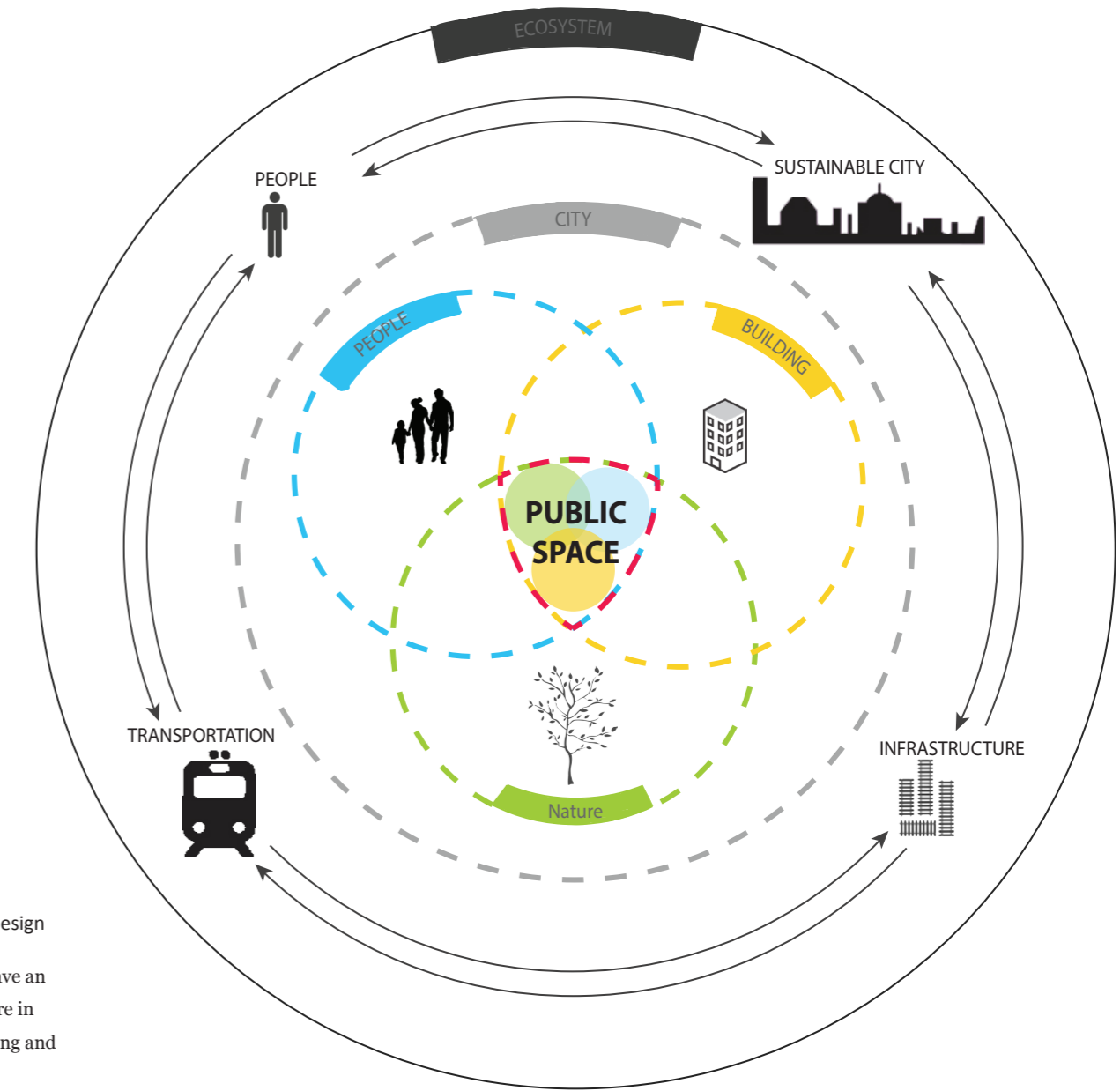
4.1 Thesis Design Proposal

The purpose of this thesis design is to create a public space at the Kitchener Transit Hub. Starting with the buildings program and developed by IBI Group, the design will transform the space at the corner of King and Victoria Streets into a new interface where people can experience a valuable urban life and where people enjoy spending time there. It seeks to create an intimate relationship among public life, infrastructure, and the people using the space. Kitchener's Intermodal Transit Hub will be a multifunctional space, and will enhance local and regional transportation while it create a broaden transit-oriented re-urbanization in downtown Kitchener.

The thesis design proposes a new downtown neighbourhood with public plaza, retail, and urban amenities which will be people's third place in between home and work. People will pause and engage with a public space that does not currently exist in downtown Kitchener. Successful well designed generously scaled public spaces increase people's participation in such communal places.¹

The transit hub in the thesis proposal has active social places both inside and outside the building. The public square, which is an open space outside the building, has been designed utilizing the site topography to better integrate the urban context with people moving from inside and outside of the building as they change transit modes.

The Transit Hub provides a simple and uncluttered public space for pedestrians to move around easily and have access to all the facilities. It is also a place for people to hang out and socialize.

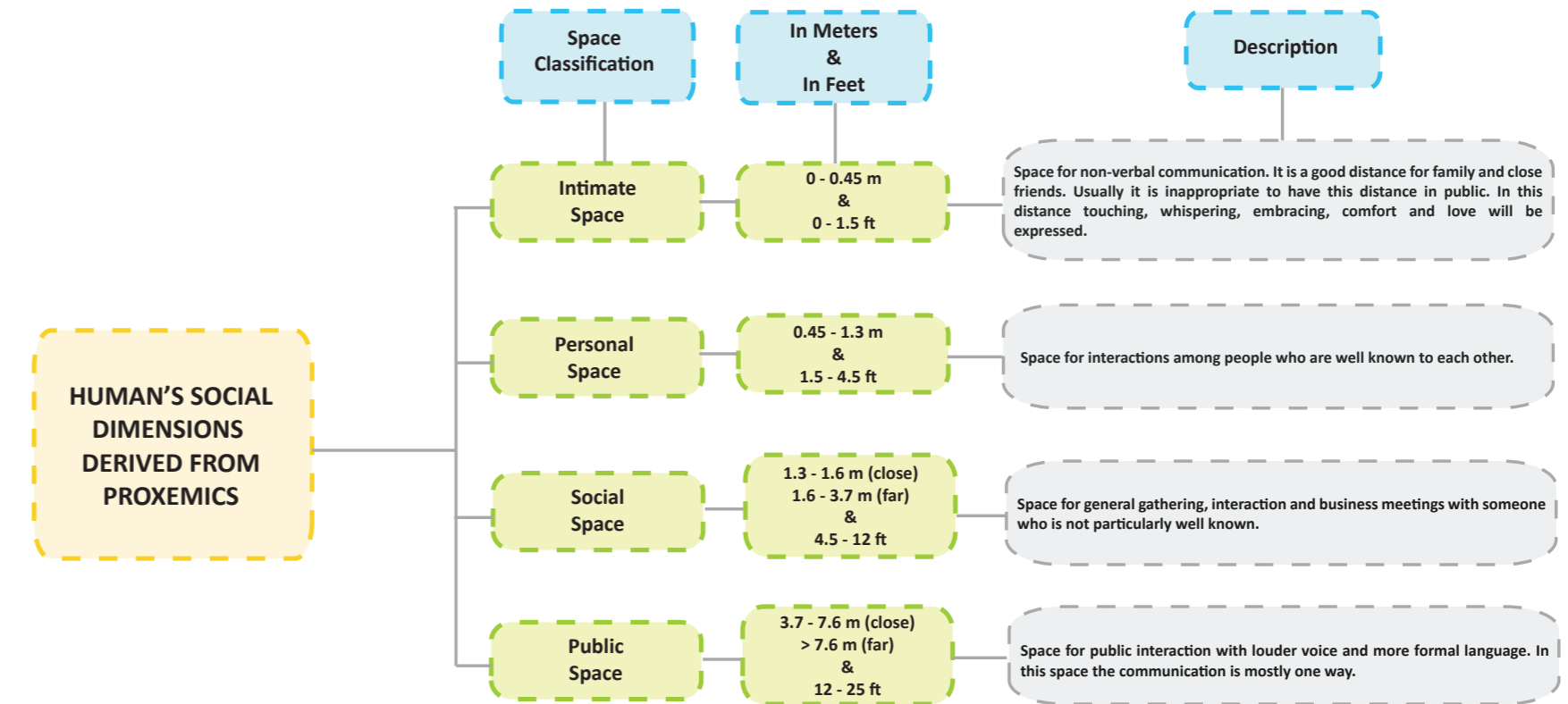


4.1 Design concept diagram of the proposed design

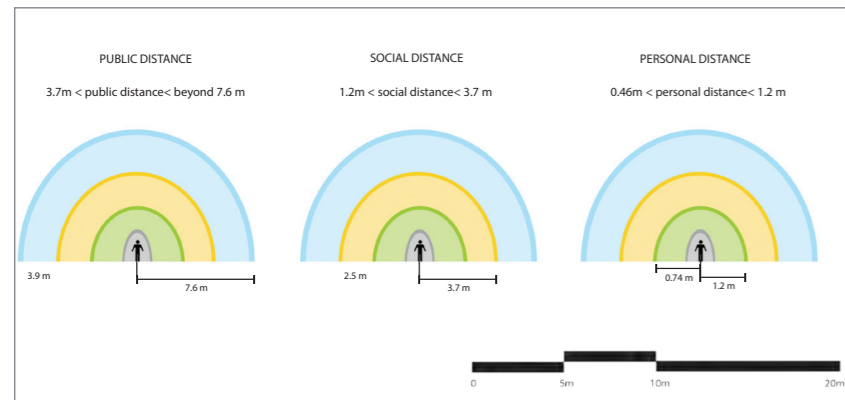
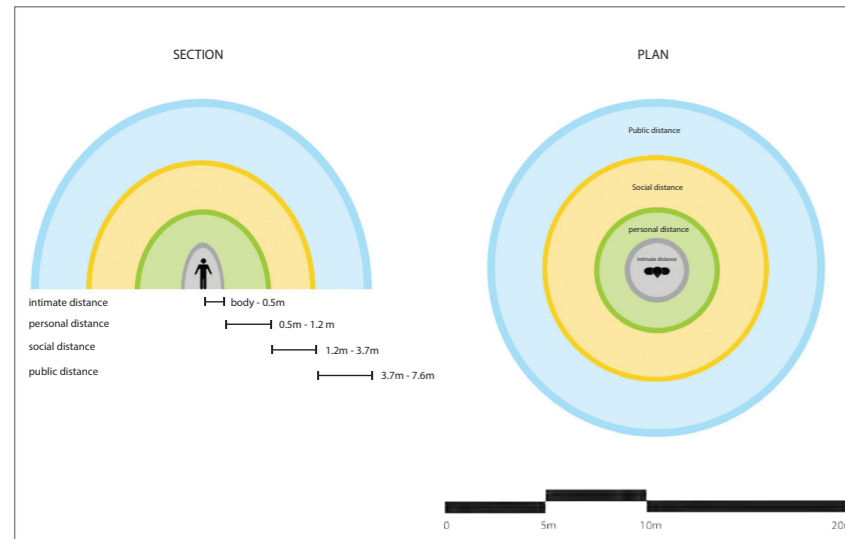
A humanistic and people-friendly city should have an accessible transportation and right infrastructure in order to create a balance between people, building and nature.

All the public spaces at the Kitchener Transit Hub are designed based on “proxemics”. Edward T. Hall, an American anthropologist, introduced a theory of non-verbal communication that explains people’s situational personalities (other than their different personality types) in how they use their public.² Hall’s theory emerged mostly from observing people and their understanding of space. He believed that proxemics could explain the organization of towns and living spaces street furniture, walls, streets, buildings and fences, for Hall, are arranged in various ways to represent one’s territory and communicate social access.³ Ultimately, Hall categorizes the distances between people in four groups: Intimate Space (0-0.45 m), Personal Space (0.45-1.3 m), Social Space (1.3-1.6 m) and public space (3.7-7.6 m) with the average standing height of 1720 mm.⁴

To realistically implement Hall’s theory in this design proposal for a transit hub, it must be accounted for that the distances between people may vary in different spaces. Most of the transit spaces, especially at peak times, and those closest to the actual vehicles, are more condensed than the other spaces at the transit hub. In congested spaces such as those where line ups form, the distance between people would be as close as Hall’s notion of personal space (0.50-1.3 m). On the other hand, at the plaza and the public spaces where people want to spread out, the essential space would increase to social distance (1.3-1.6 m) or public distance (3.7-7.6 m). Ultimately Hall’s theory is best used as a test of the scale and sustainability of the new public spaces to actually function effectively over this time variable.



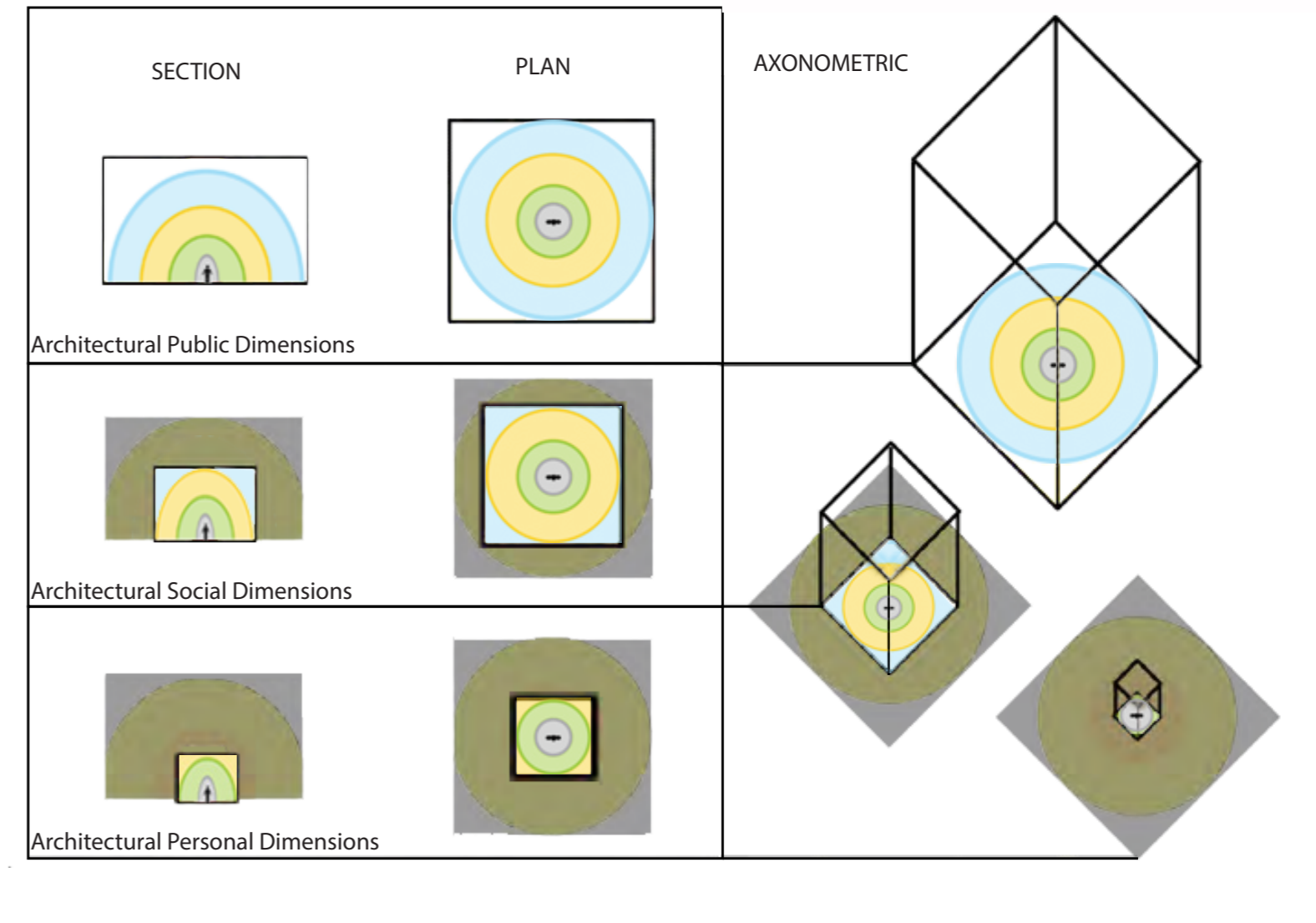
4.2 Diagram of Hall’s human social dimensions derived from Proxemics.



In order to visualize an architectural scale of Hall's proxemics, Fig. 4.3 and 4.4 have been provided. Fig 4.3 diagram of Hall's proxemics and space classification represents the proxemics distance classification in both section and plan. These diagrams provide a standard scale to represent the space that people occupy. The distance between people depends on their situation and their social interaction at the space.

Fig 4.4 diagram of Hall's distance classification represents sections of Hall's proxemics that could help describe the scale of created space while it represents the appropriate distance between people in that particular zone.

VISUALIZATION OF HALL'S DIMENTION IN ARCHITECTURAL DIMENSION



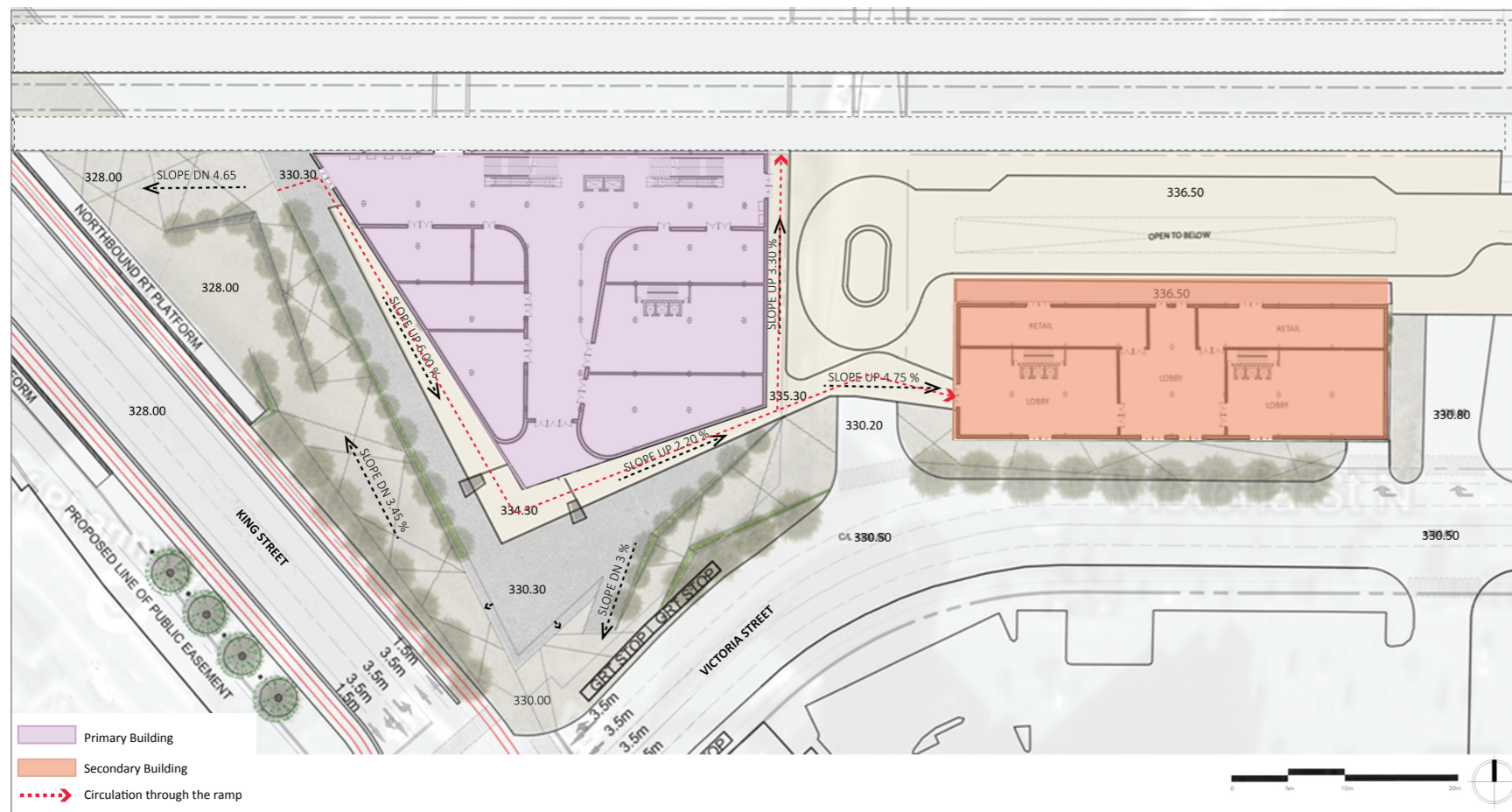
4.5 Visualization of Hall's dimension in architectural dimension describes the scale of created space for personal, social and pulic interactions.

The proposed design in this thesis for Kitchener Transit Hub complex contains different features. Each feature functions differently but all the features are also well connected to one another to make an environmentally sustainable urban infrastructure. The Transit Hub consists of a continuous outdoor public square, which starts at the corner of King and Victoria Streets and continues to the roof of the primary and secondary buildings. People can access the roof top by a barrier-free access ramp like the one at Nathan Phillips Square. Indoor public spaces located at the podium of the primary and the secondary buildings, train tracks (GO/VIA rails) and platforms situated at the second level as well as the pickup and drop-off area are also accessible in diverse ways using the sites level changes.

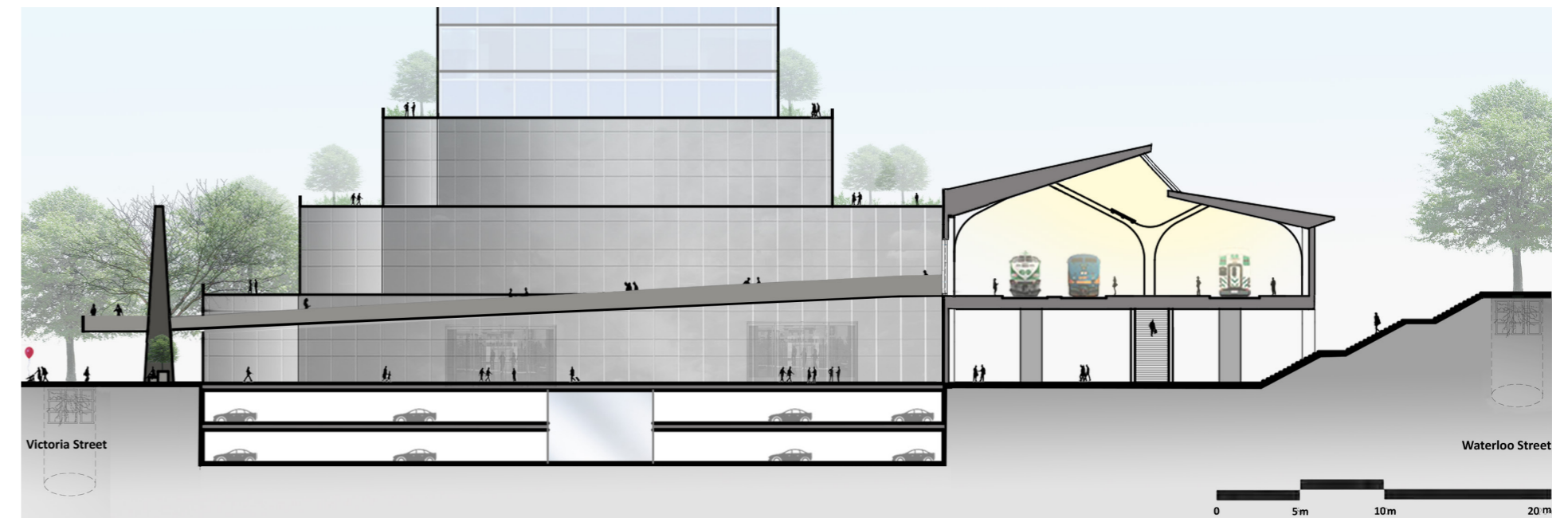
The new bus terminal is under the pickup and drop off commuter area and the LRT platforms are located at the west side of the site along King Street. Underground parking has been provided for people to park their vehicles and the parking has vertical access to the platforms. All of this on-location multiple access is facilitated by smart card terminals and digital ticket purchases as people arrive for their transit.

The Kitchener Transit Hub is intended to be an intensified, exemplary mixed-use development; in order to meet that intention, four various buildings with different usages such as office, residential and commercial have been included.

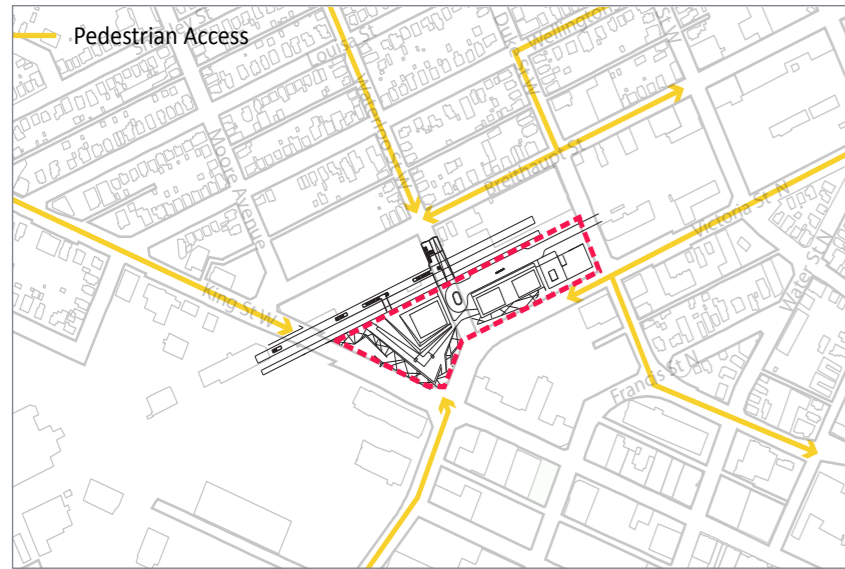




4.7 Diagram shows the barrier-free access ramp to the roof top and rail track platform of the proposed design. The ramp provide a barrier free access to the secondary building roof top and also to the rail track platform while it connects the primary and secondary building. People can access the primary building roof top through the first, second and third concourse levels.

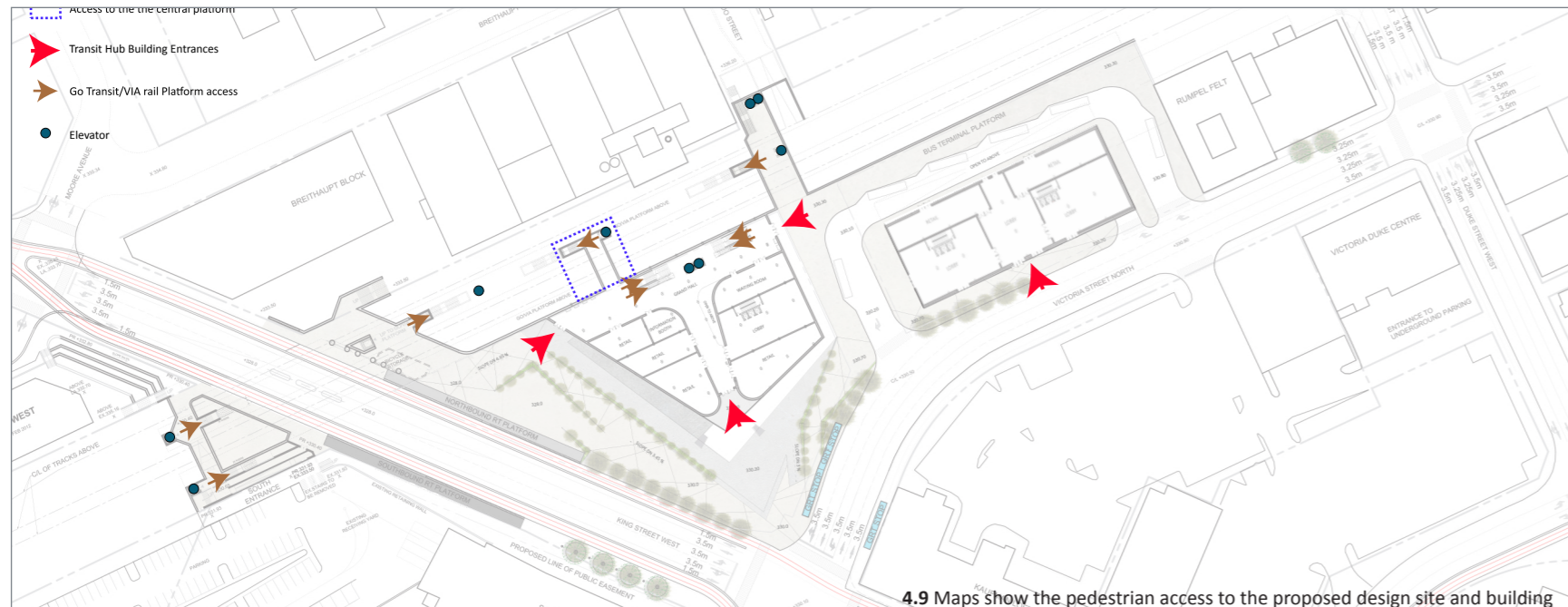


4.8 Section B-B shows connection and accessibility of the proposed design from Victoria Street to Waterloo Street

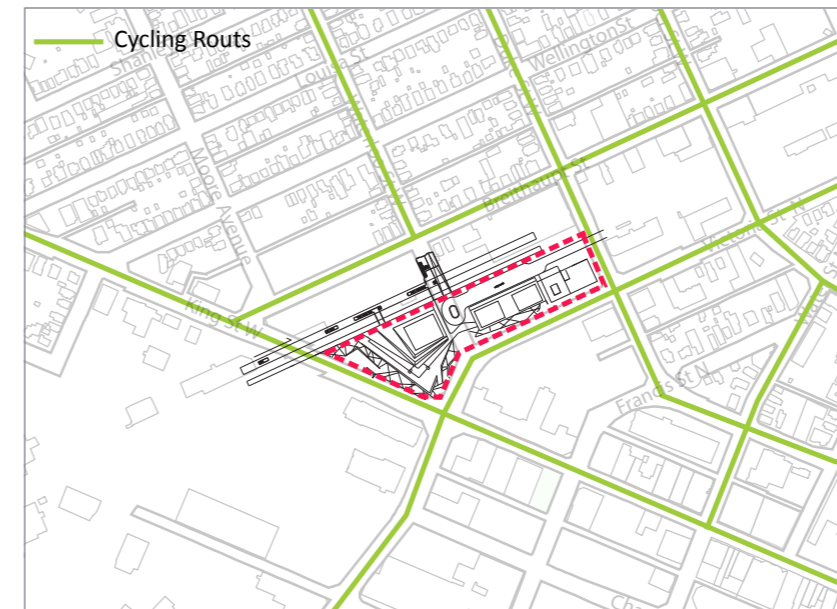


The first map on top shows the pedestrian access routes. Some areas around the site need to be improved and have more suitable streetscape for pedestrians' safety. In the second map, red arrows show the entrances to the transit hub building, brown arrows show the access points to the GO transit and VIA Rail platforms, and the blue circles show the location of elevators.

All the entrances and access points are barrier-free and accessible for everyone.



4.9 Maps show the pedestrian access to the proposed design site and building



By proposing this bicycle-friendly design proposal bicycle will be one of the significant modes of transportation in downtown Kitchener. According to Regional Official Policies Plan to densify the downtown area, there will be residential, commercial and office buildings with short and bikeable distances so people can use bicycles for short-distance transit.

The provided short-term and long-term bike storage create a convenient environment for cyclists and also encourage commuters to do more physical activity and use healthy modes of transportation. In addition, using bicycles increases the usage of the transit hub as people can park their bike and get to their destination by other modes.

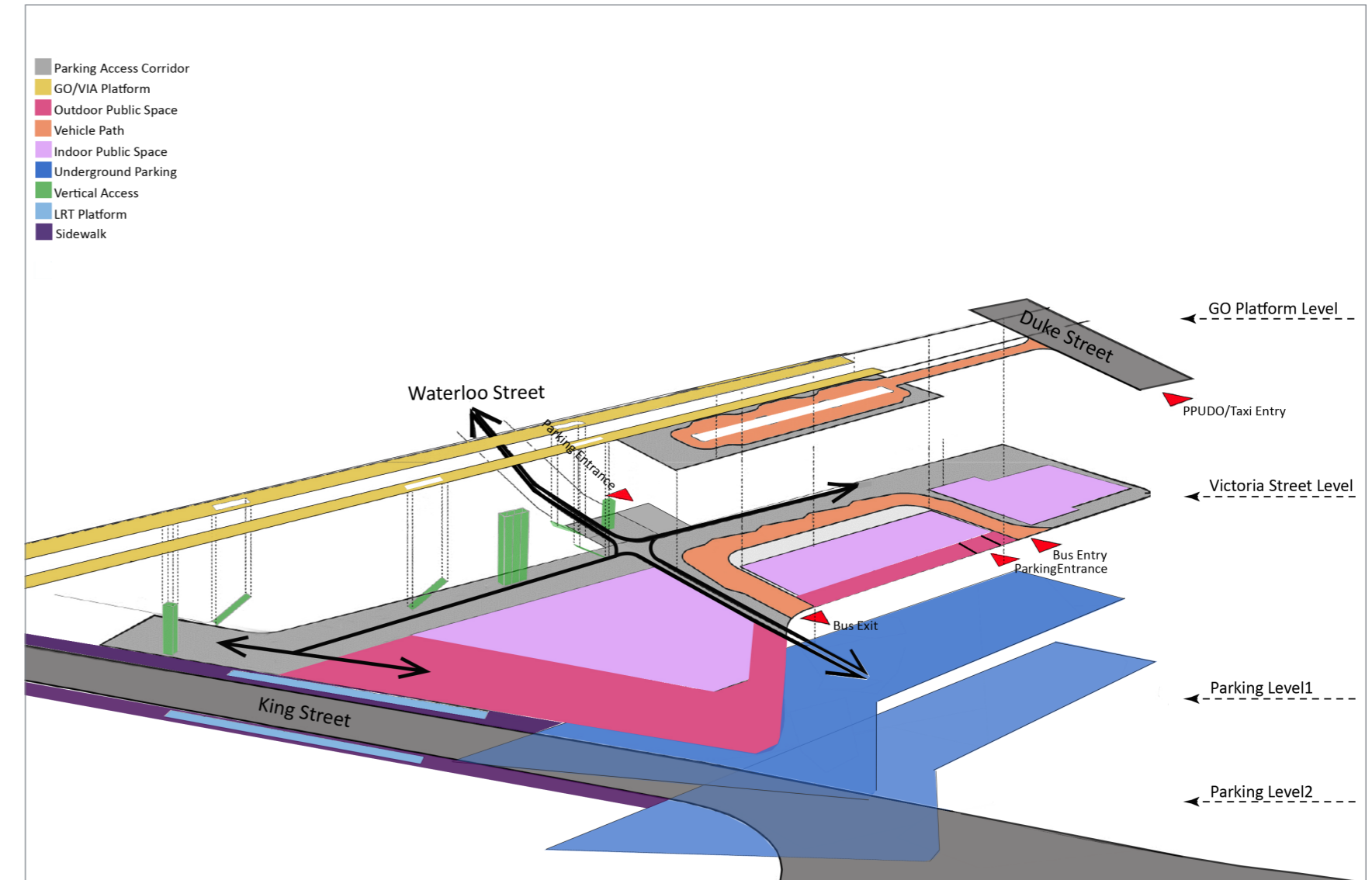


4.10 Maps show the cycling routes and bike storages of the proposed design

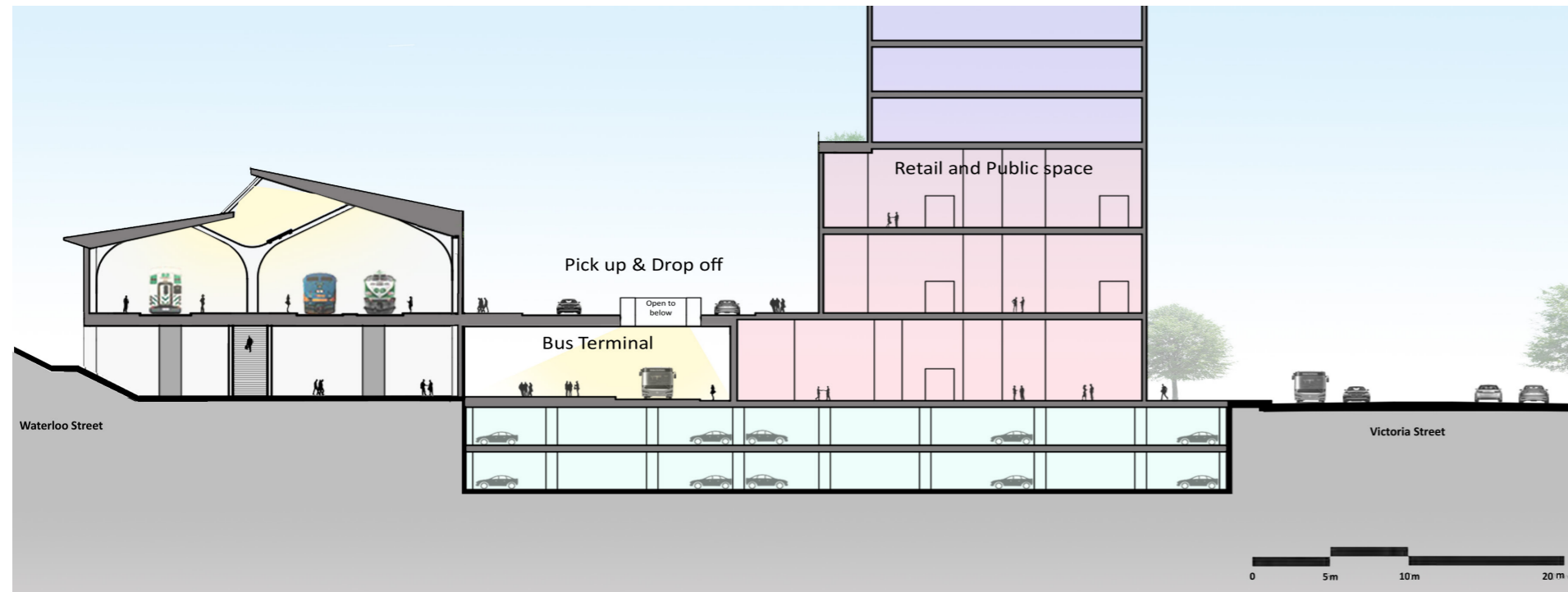
The location of the site allows the Transit Hub to be accessible from different parts of the surrounding site area. The King Street and Victoria Street intersection is the main entrance and the most convenient and direct access for commuters to the site. There will be another access for pedestrians to the whole complex and for vehicles to the parking from Waterloo Street.

LRT platforms and buses are accessible through the outdoor public plaza. Rail track platforms that are situated above grade, are accessible both through the primary building and the public square. In addition, to broaden the public square and create more area for people to move, parking is provided underground.

The secondary building, which is located between Waterloo Street and Duke Street, supports buses, taxis, and a pick-up and drop-off area. The main entrance for this building would be accessible from Victoria Street. In addition, vehicles can access the parking area from Victoria Street through this complex. Having access from different directions would ensure proper integration with the neighbourhood.



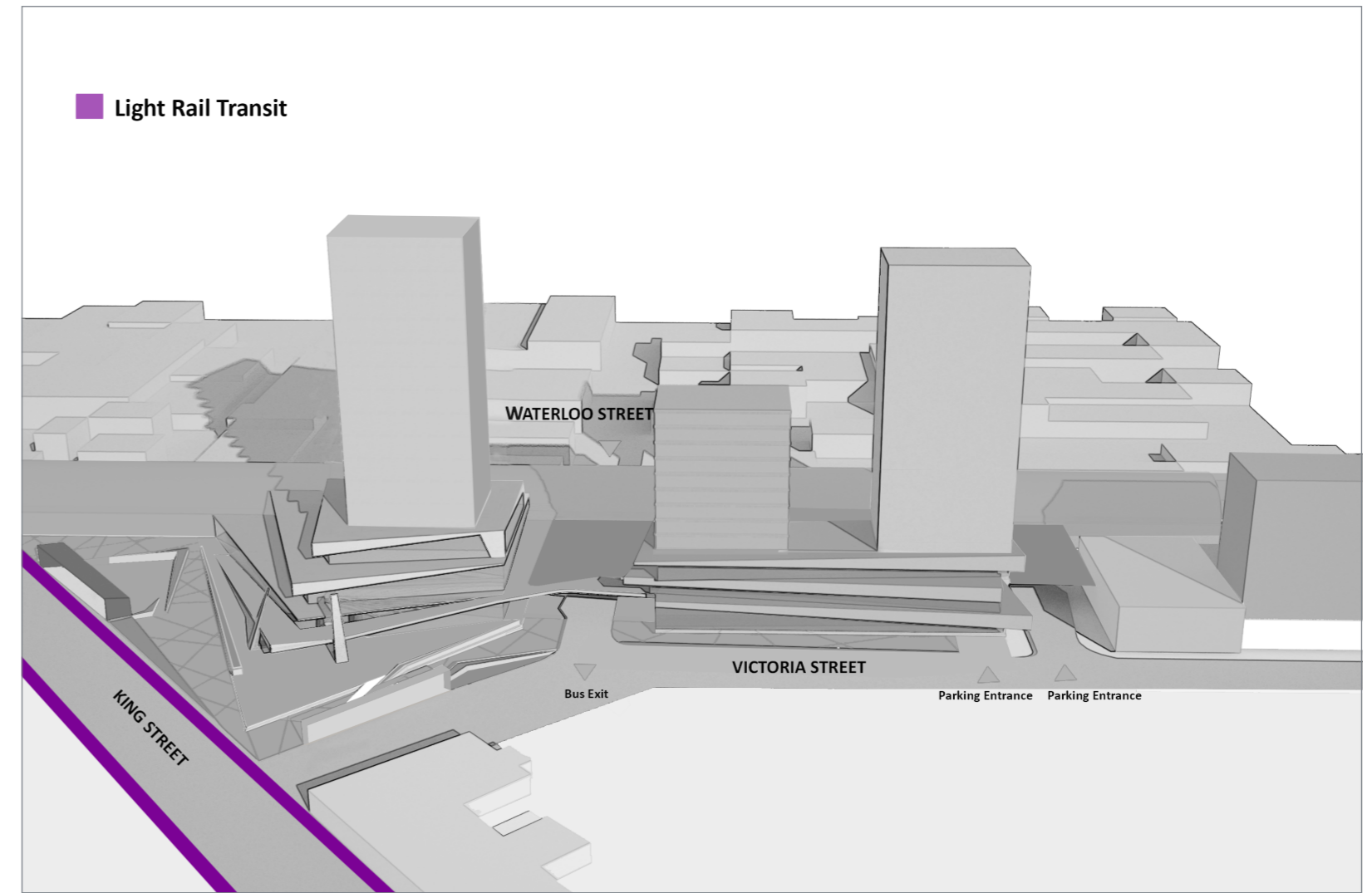
4.11 Axonometric view of the proposed design infrastructure shows the circulation and the relation between spaces.



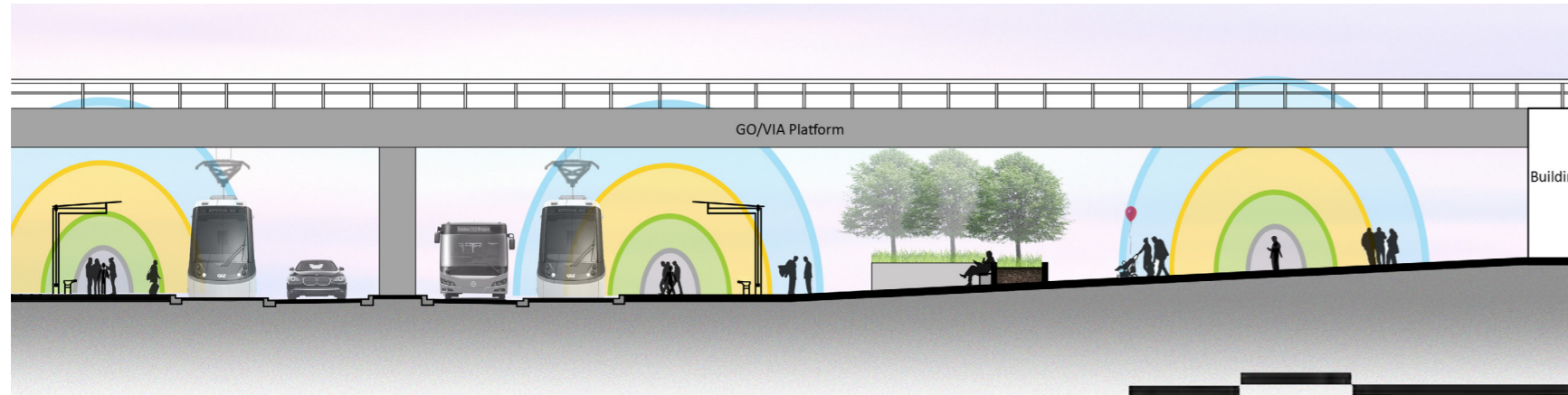
4.12 Section A-A shows different levels of the proposed design and their accessibility to each other



4.13 Site Plan with site neighbourhood of the proposed design



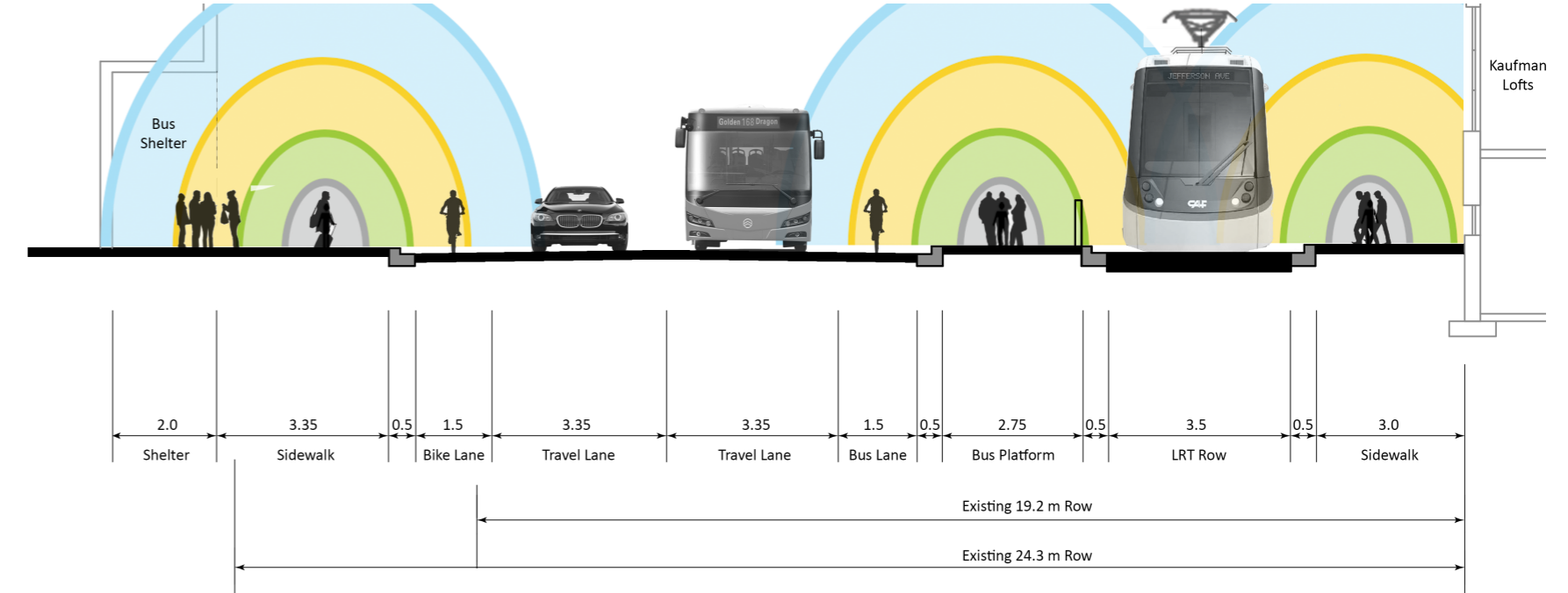
4.14 Axonometric view shows the location of the LRT lines at the proposed design



Light Rail Transit

LRT (light rail transit) is a new transit mode in Kitchener, which will operate on King Street at grade beginning in early 2017.⁵ Currently, cars, buses, bicycles and trains travel on and across King Street; therefore, adding LRT will create a lot of traffic and chaos. In order to avoid traffic and increase safety, the GO/VIA railway corridor will operate above King Street.⁶ King Street passes underneath the rail corridor, with sidewalks on both sides of the street. There will be two LRT platforms at the northwest of the public square. The platform on the east side of King Street would be the platform for northbound LRT and the one on west side of the street will be the platform for westbound LRT.⁷ When people get off the LRT at the northbound platform, they go through the transit plaza, which is a transition space between King Street and the primary building, to access the primary building.

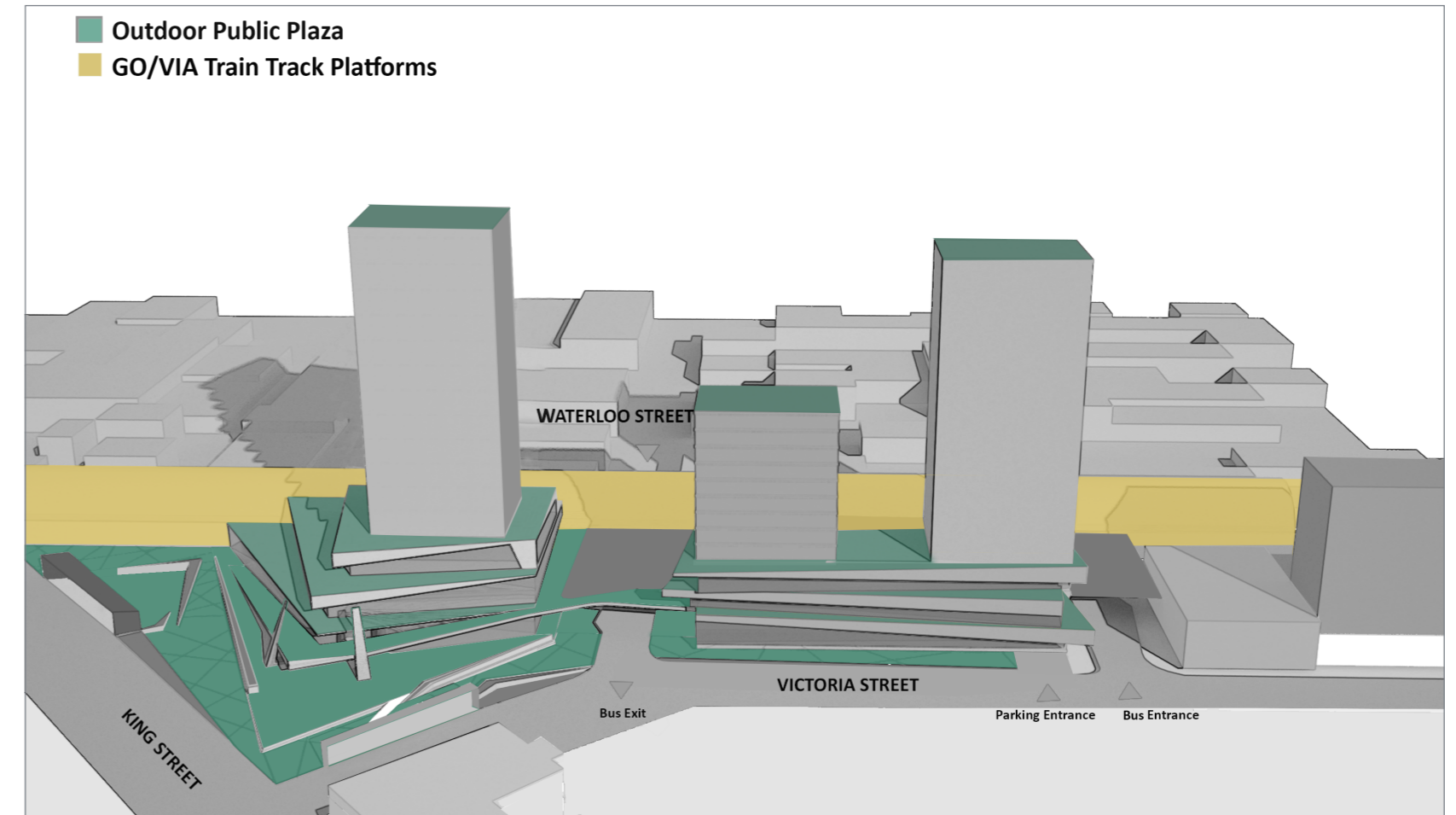
4.15 Section D-D shows King Street underpath concept with proxemics



Adding LRT on King Street would develop the street as the LRT platform would require a wide sidewalk and that helps the environment to be more pedestrian friendly.

On King Street between Victoria Street and Francis Street there will be bus, bike in both directions, and also a wide sidewalk on the west side of King Street.⁸

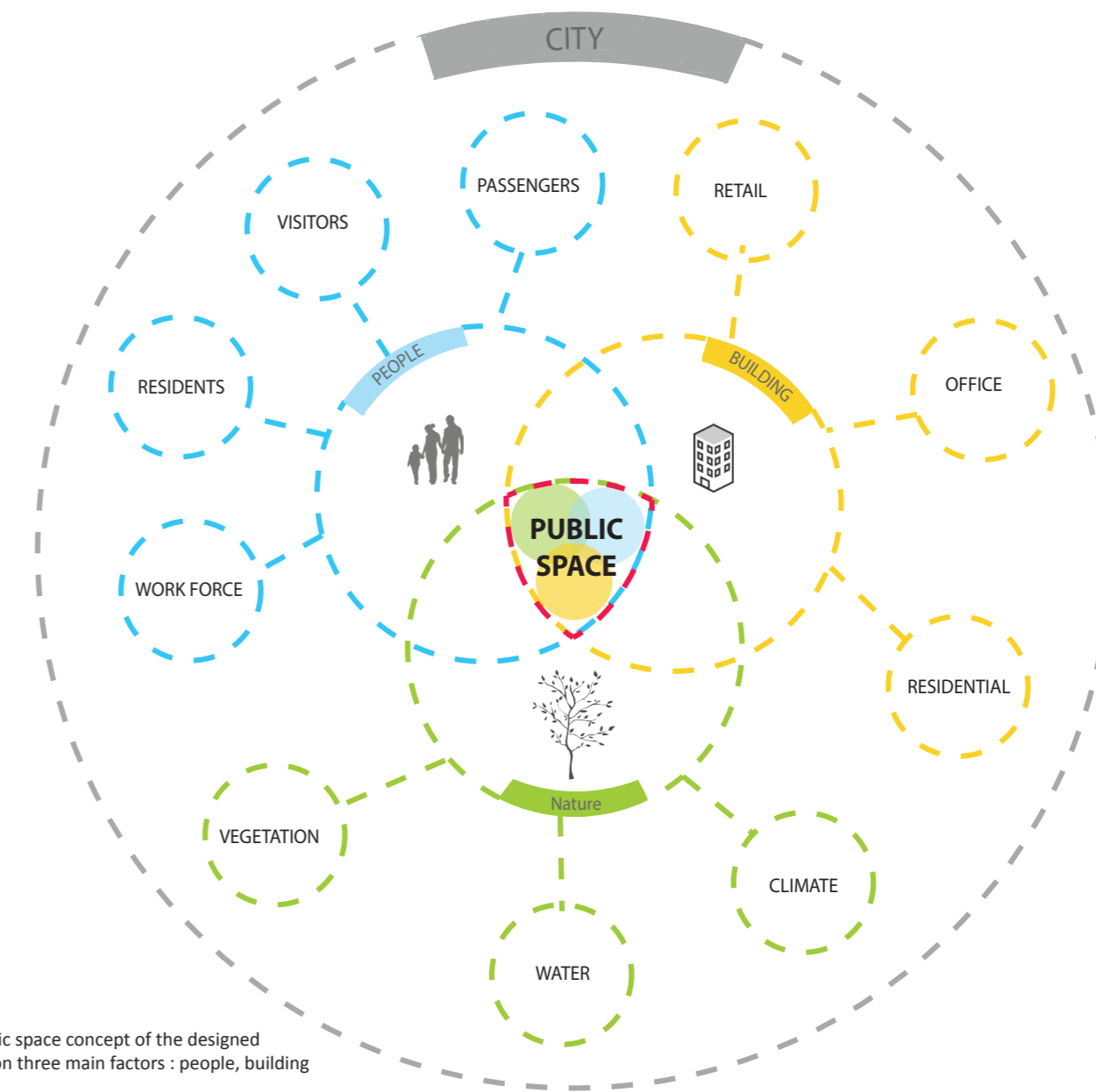
4.16 Section shows King Street between Victoria Street and Francis Street with proxemics



4.17 Axonometric view of the outdoor public plaza of the proposed design

The Public Realms

The Kitchener Transit Hub features two public realms, a green public square and an indoor public space. The public spaces are connected to each other and the relationship between them plays an important role in the whole transit complex. Figure 4.18 indicates that the design of the two public spaces is based on considering three key elements: people, building, and nature. The hub will be a catalyst for creating a balance between these three elements in downtown Kitchener.

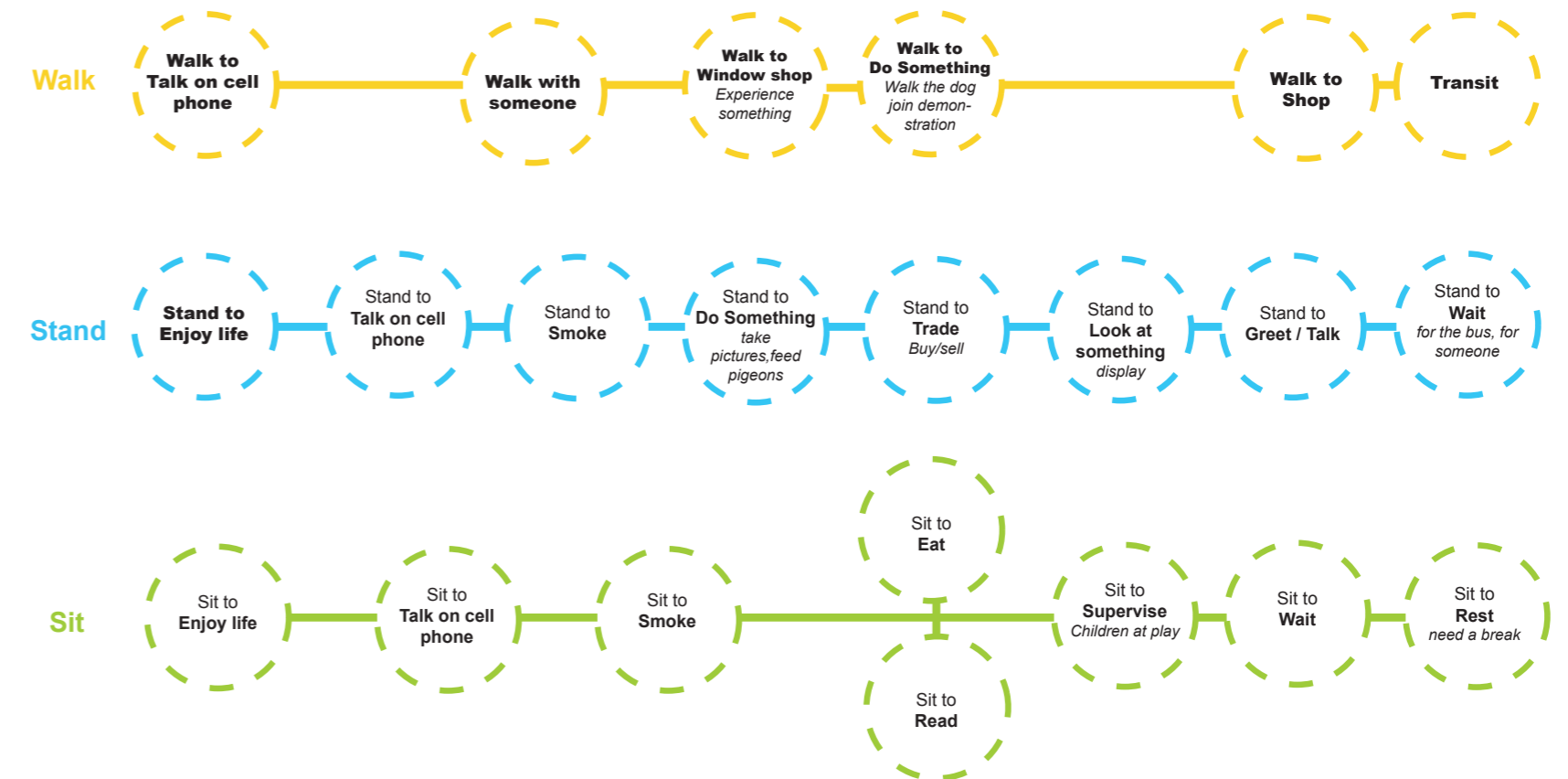


4.18 Diagram shows public space concept of the designed proposal which is based on three main factors : people, building and nature.

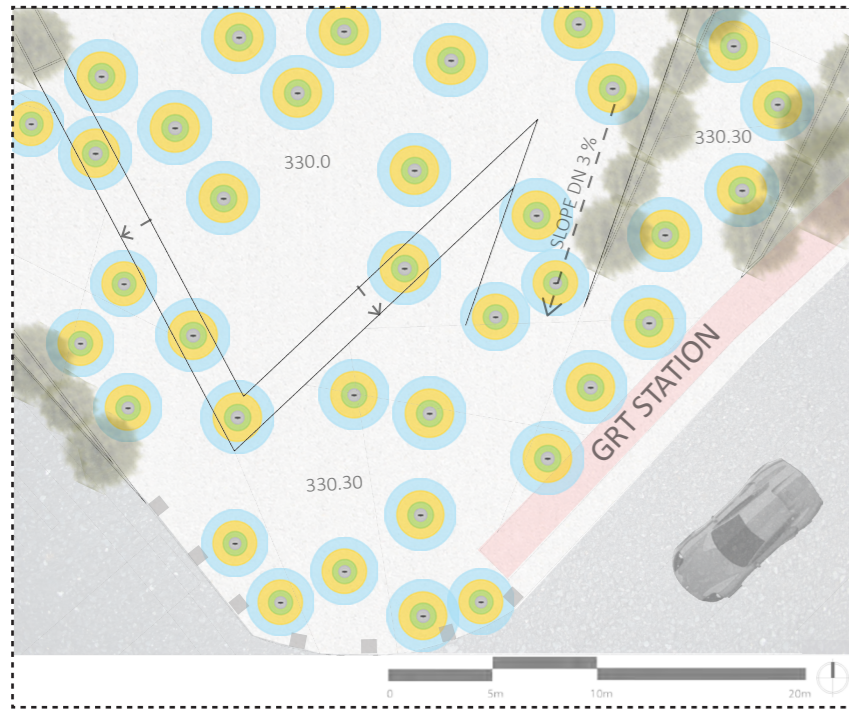
The Transit Hub Public Square

The public square starts from the level of the King and Victoria Streets intersection and continues to the office buildings' roof top and onto the second podium at the bus terminal. The public square accommodates different connected parts such as the main entry plaza and the Transit Plaza. All the features work together in order to make a vibrant public open square for commuters to use. The public plaza was designed based on peoples' basic public activities: to Walk, Stand or Sit. 9 The difference between the public square proposed in this design and IBI's design is that the thesis design public squares are very wide and well connected to each other accommodating all the transit and non-transit users.

Optional activities ———— **Necessary activities**
Increasing degree of external necessity *Take place under all conditions*



4.19 Diagram shows three important factors that happen in public plaza according to peoples' need



4.20 Entrance plaza plan with proxemics to show the adequacy of the proposed design entrance space. Provided bollards at the edge of King and Victoria intersection create right at the entrance to the plaza create a safe pedestrian-friendly area.



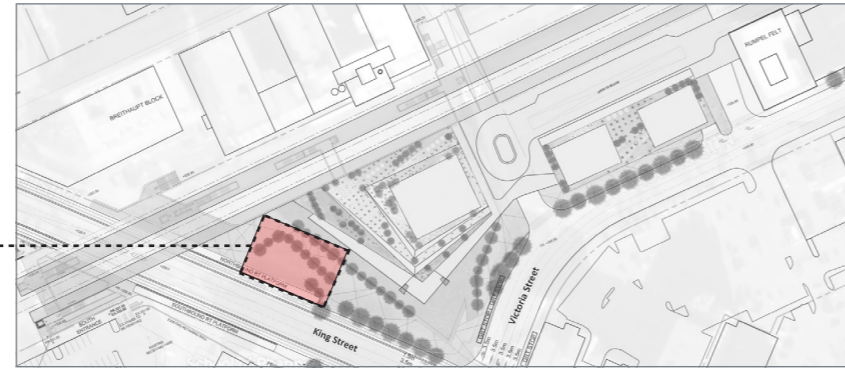
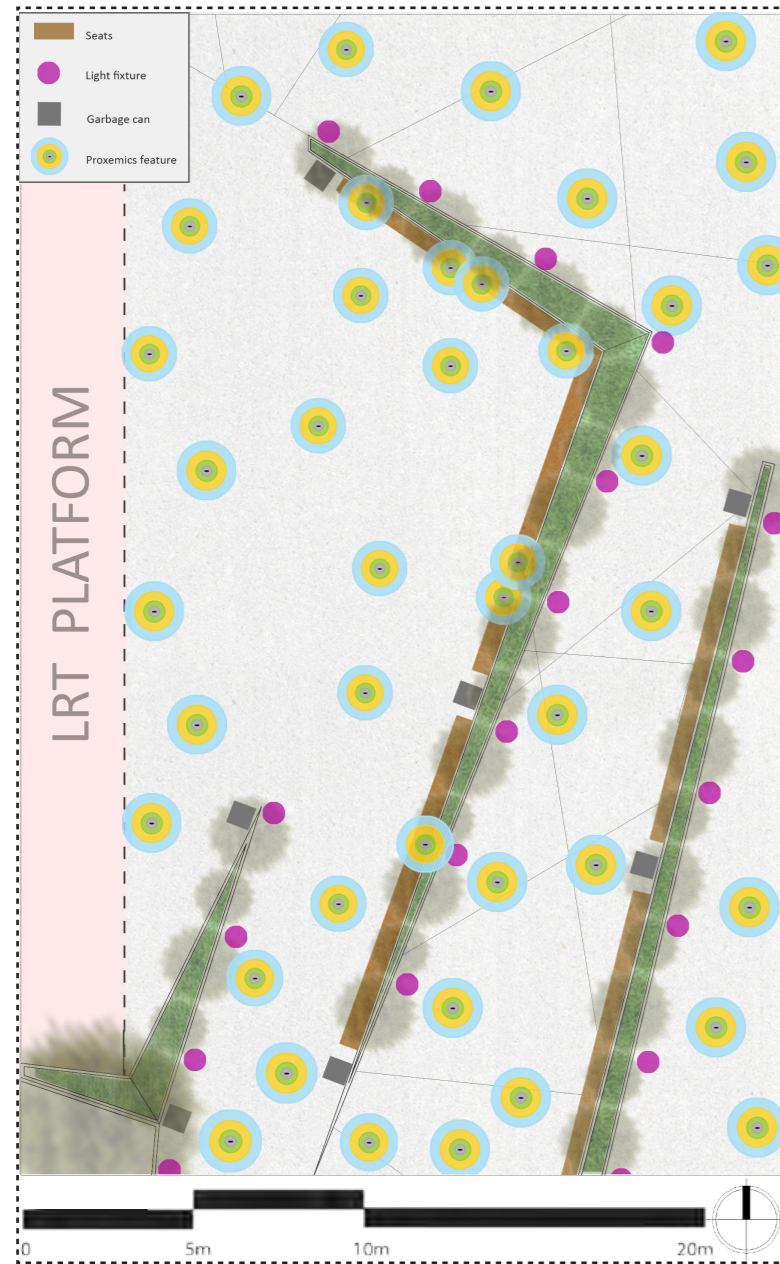
Entrance Plaza

The main entry square is situated at the corner of King Street and Victoria Streets and is a hard-surfaced space which provides direct access to all buildings, public spaces and their activities. The entry to the terminal is a wide space without any obstacle for commuters to access their needs and to allow the traffic to flow easily. The stairs and ramp at the main entry ensure everyone's accessibility to the mixed-use building. The main entrance is of a public scale and its purpose is to provide a choice to commuters or non-transit users between the outdoor space and indoor space. The left side of the entrance plaza gives people the opportunity to get access to the northbound LRT platform, transit plaza and the ramp which, inturn, will take them to the train platform.

4.21 Plan shows the location of entrance plaza at the proposed design



4.22 Main entry plaza of the proposed design located at the corner of King and Victoria Streets where people enter the site.



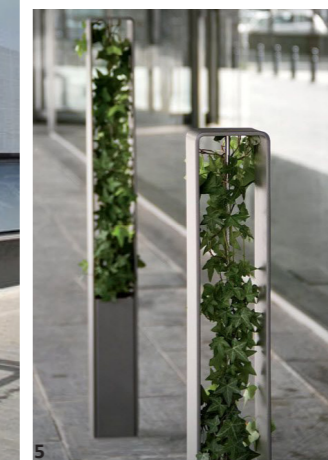
Transit Plaza

The transit plaza is next to the LRT northbound platform. It is a transition space for people between King Street and the Transit Hub when they walk to the site from the LRT platform. They have to walk through the transit plaza to get to the secondary entrance and then they can access the first concourse level.

The plaza's level is two metres lower than the entrance plaza and the ramp will be a connection between two different levels. The plaza is surrounded by trees and various plants in order to create a cool and vibrant place for people to walk, sit, and gather.

Plan on left 4.23 Transit plaza plan with proxemics to show the essential space for people when they are moving from LRT platform to the primary building or the public plaza.

Plan on right 4.24 Plan shows the location of the transit plaza at the proposed design



1. Figure 4.25 is an example to demonstrate the place for people to seat and a place for everyday activities.
2. Figure 4.26 is an example to represent the light fixtures that will be used at the public space.
3. Figure 4.27 is an example to show the garbage cans at the site.
4. Figure 4.28 is an example to demonstrate the way finding signage at the site.
5. Figure 4.29 is an example to represent the bollard at the site to provide a clear barrier and boundary for drivers in order to create a safe pedestrian-friendly environment. The bollard will be used at the entrances to the site especially at the secondary building entrance where the parking entrance is also located.



The overall vision for the Kitchener transit hub establishes that it should be not just a public transit centre, but a convenient public space that functions differently in various seasons.

Figure 4.30 to 4.32 from different projects visualize the opportunities that the public space in this design proposal supports for formal and informal events and activities. The transit plaza facilitates activity with positive features like places to walk, stand and sit; space for cultural events like a farmers market and outdoor patios in summer; and facilities for street-level festivals, turning the Transit Hub into a powerful third place for people to create their own community and to gather and interact with one another other away from home and work.

In addition, the proposal provides a broad and wide, nature-integrated, and accessible plaza for people to flow easily.

First image on left 4.30 Example of the daily activity of people at the public plaza
Second image on left 4.31 Example of the outdoor patios at the public plaza in summer
Third image on left 4.32 Example of the farmers market at the public plaza in summer

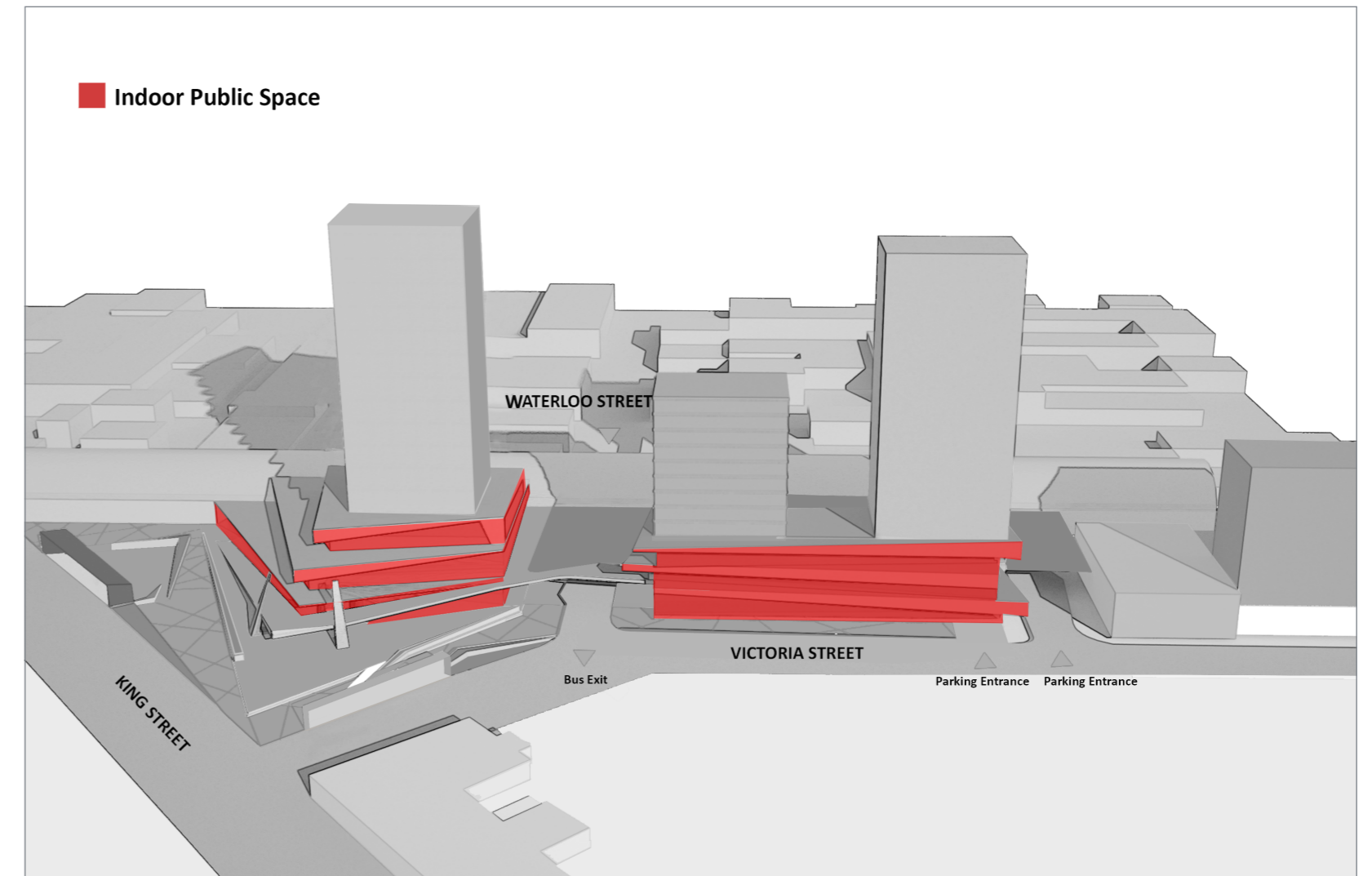


4.33 Render shows the transit plaza when people transferring from the LRT platform to the primary building of the proposed design



After walking through the transit plaza to get to the secondary entrance, people can go to the first concourse level. The first thing that people can see when they enter is vertical circulation. There will be various options to access the train platforms from that level such as stairs, escalators, and elevators to go to the second concourse level and then access the train platforms. The natural light from the skylight at the exposed part of the roof to the sun makes a vibrant indoor public space.

4.34 Image of the first concourse level and the vertical access to the second concourse level of the proposed design

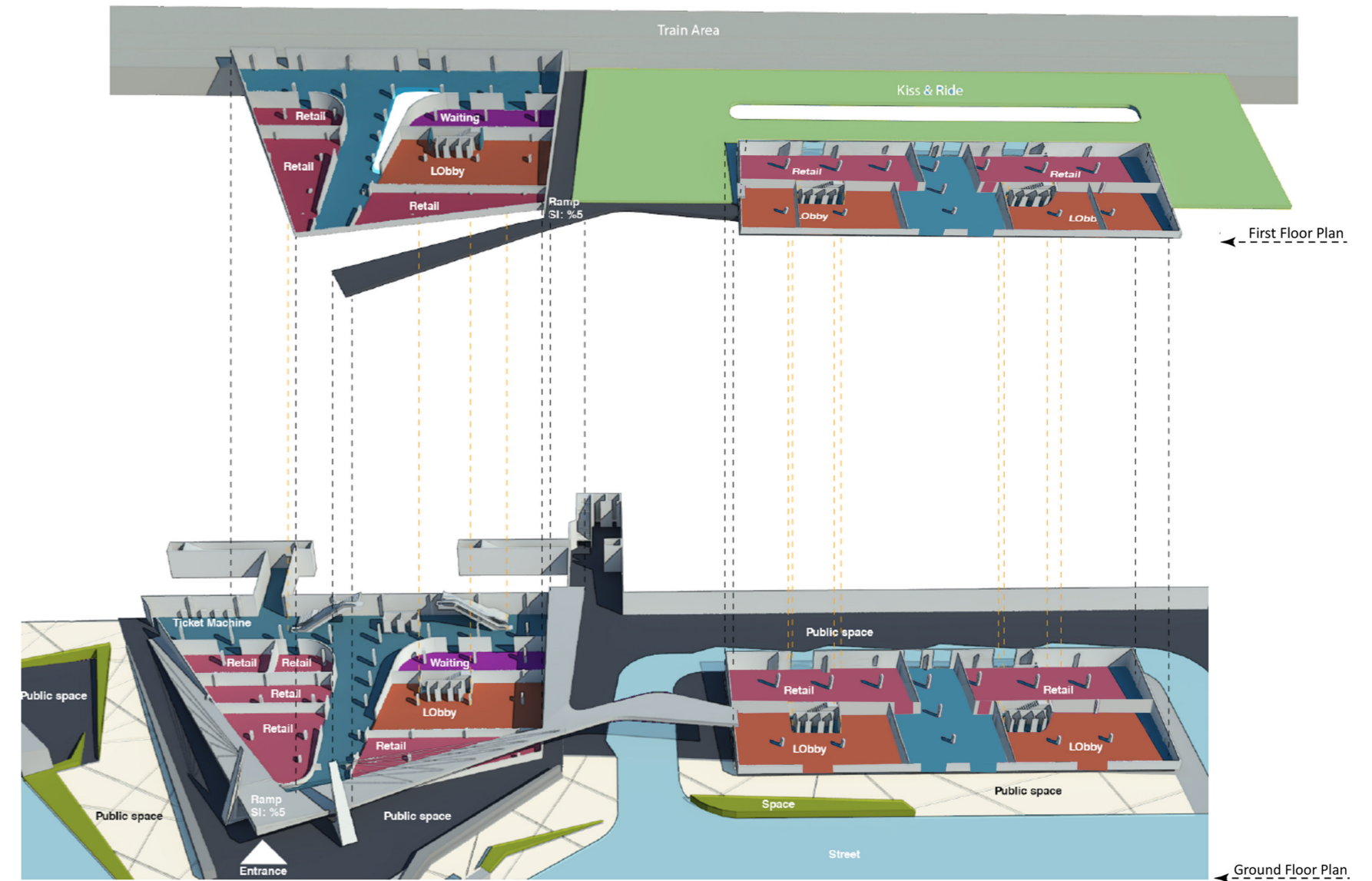


4.35 Axonometric view shows the location of the indoor public space of the proposed design

Indoor Public Space

Integrating commercial spaces into transit stations provides opportunities to improve the urban design of the mixed-use development and the neighborhood. Retail space is a kind of commercial space that attracts potential customers and also draws in non-transit customers to the station. Combining retail and transit provides a significant experience for travelers while they are waiting for any means of transportation. In addition, in-station retail would influence the revenue significantly.

Retail spaces are spread throughout the ground floor and second floor in order to create a pleasant experience for travelers while they are passing through the corridor to get to the train platforms. In addition, providing retail spaces fronting the outdoor public plaza connects people from outside to inside the building.



4.36 Axonometric view of indoor public spaces of the proposed design shows the circulation and different parts of the indoor public spaces.



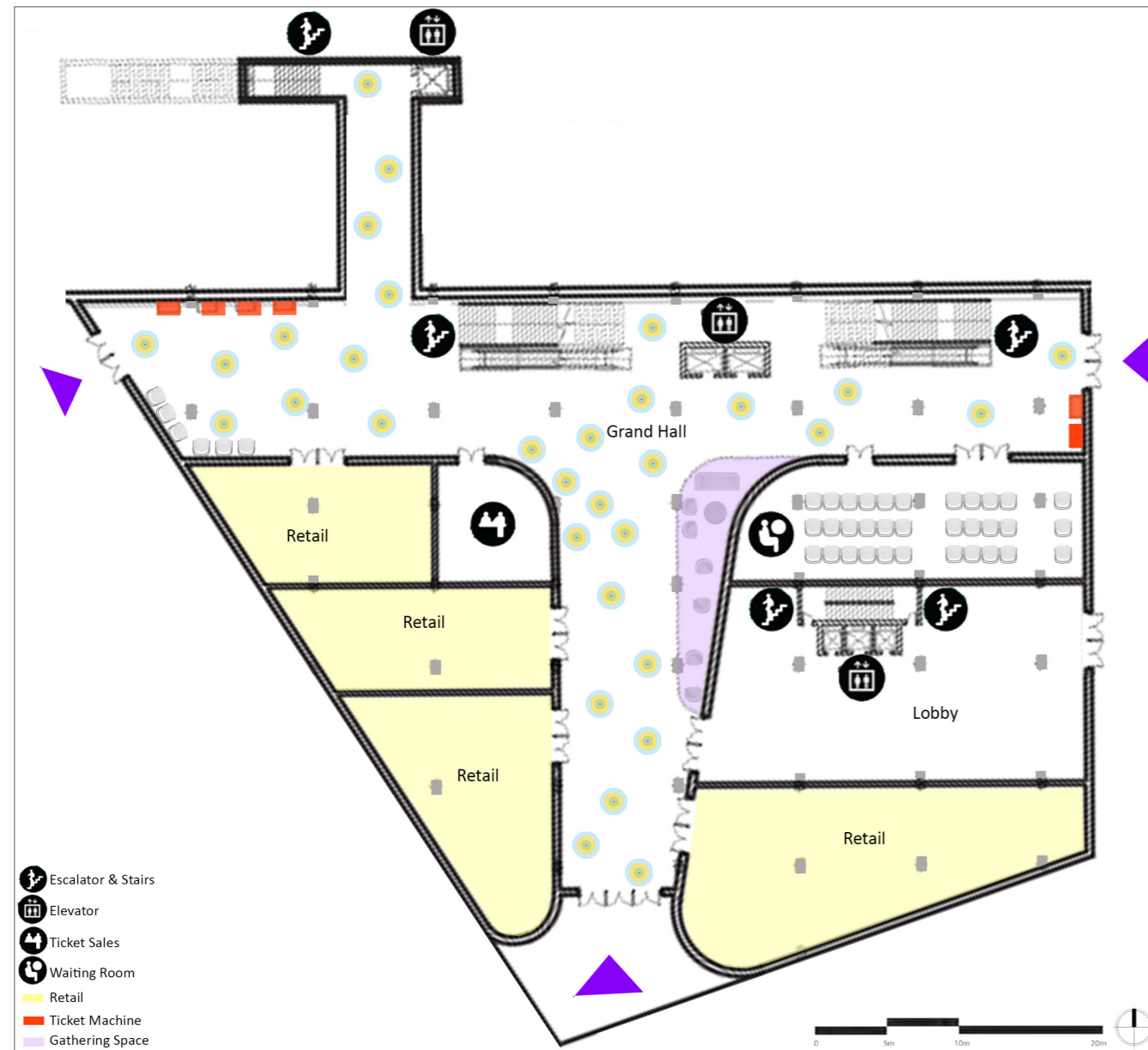
The First Level Concourse is a path for transit riders to the Grand Hall, where the stairs and elevators are located to access the GO/VIA platforms. In addition, in order to improve pedestrian circulation, a tunnel has been provided at this level that gives people an opportunity to access the central rail track platform from the first concourse level. The proposed concourse level would allocate commercial spaces, waiting room, and Grand Hall. People would wait in Concourse level, meet others and shop before experiencing the first floor where they can transfer to GO/VIA trains. At this level, which is at the same level as Victoria Street, people have access to the public plaza, bus terminal, and LRT platforms.

4.37 Plan of Concourse level 1 (Ground Floor) of the proposed design

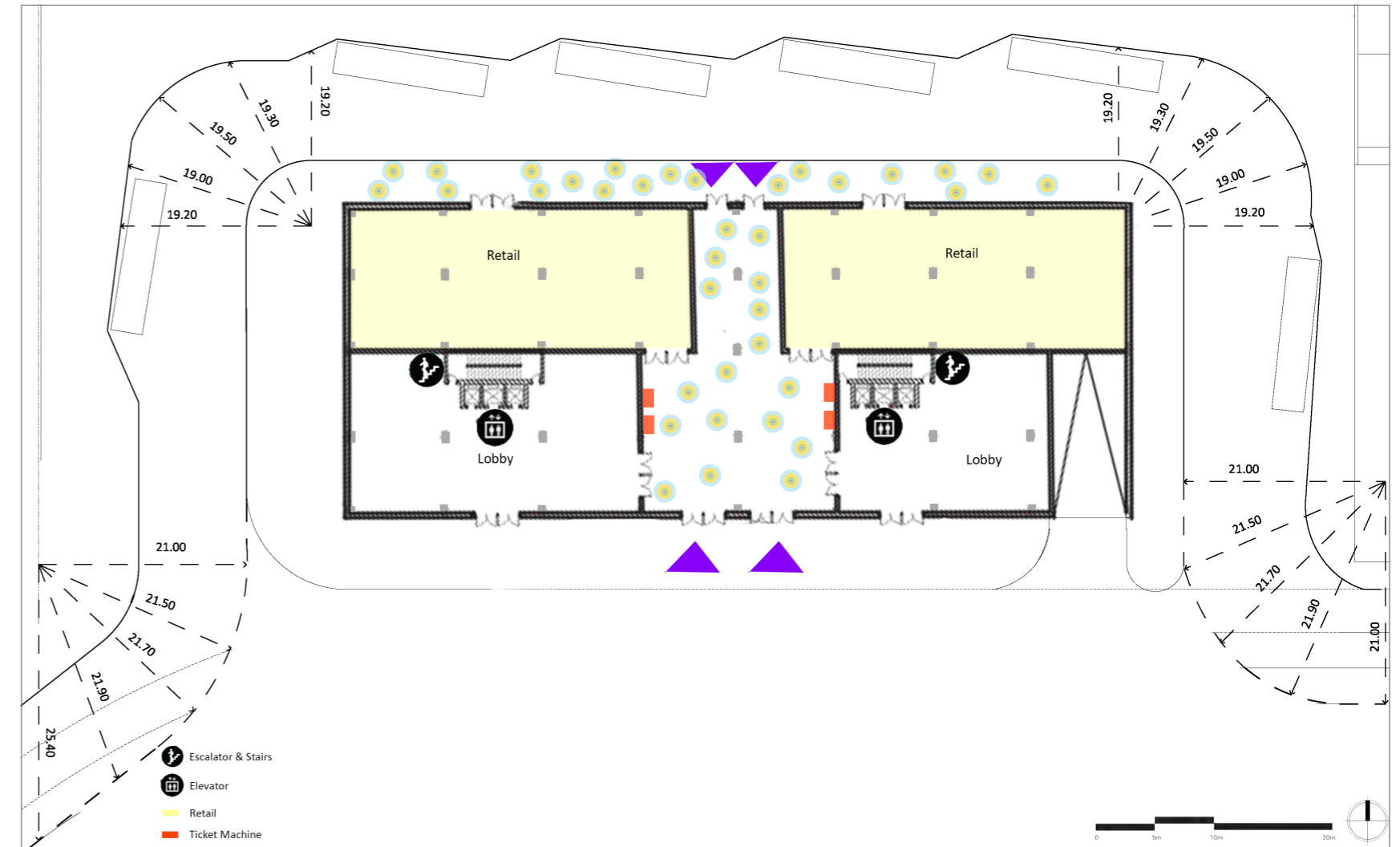
4.38 Detailed plan of the proposed design public space at King and Victoria Street intersection

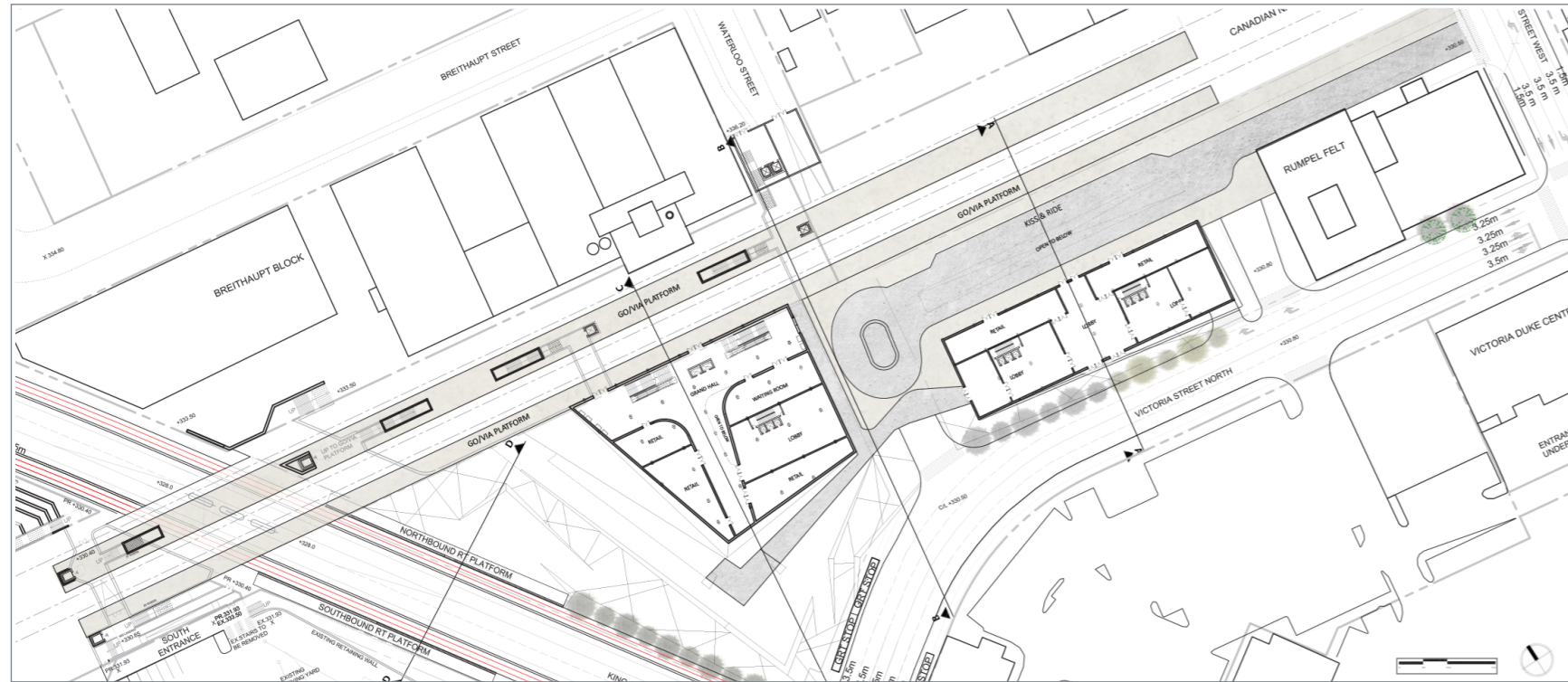


4.39 Detailed plan of concourse level one of the proposed design at King and Victoria intersection with proxemics and service locations to show the concourse space



4.40 Detailed plan of concourse level one of the proposed design at Victoria Street with proxemics to show the concourse space

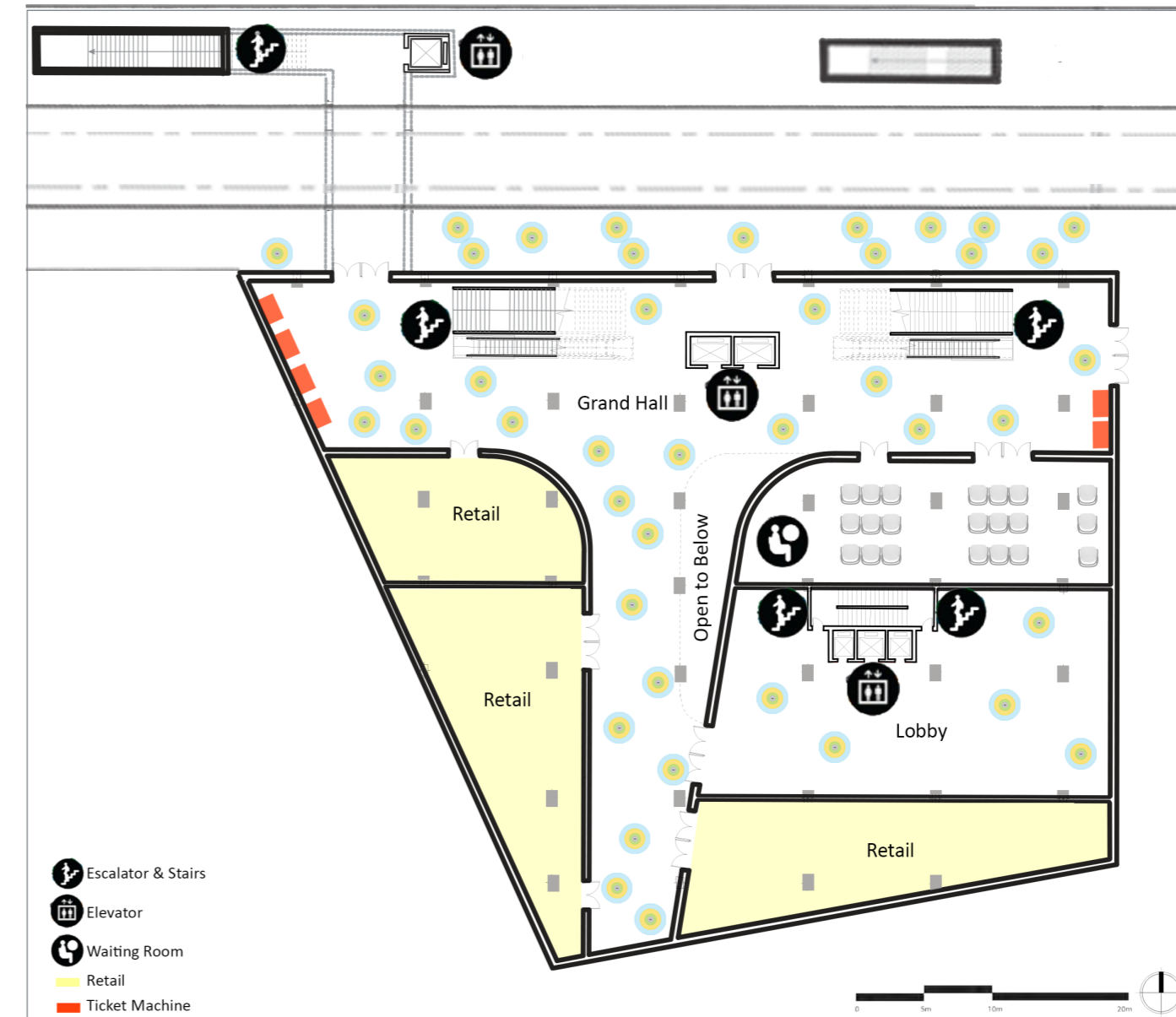




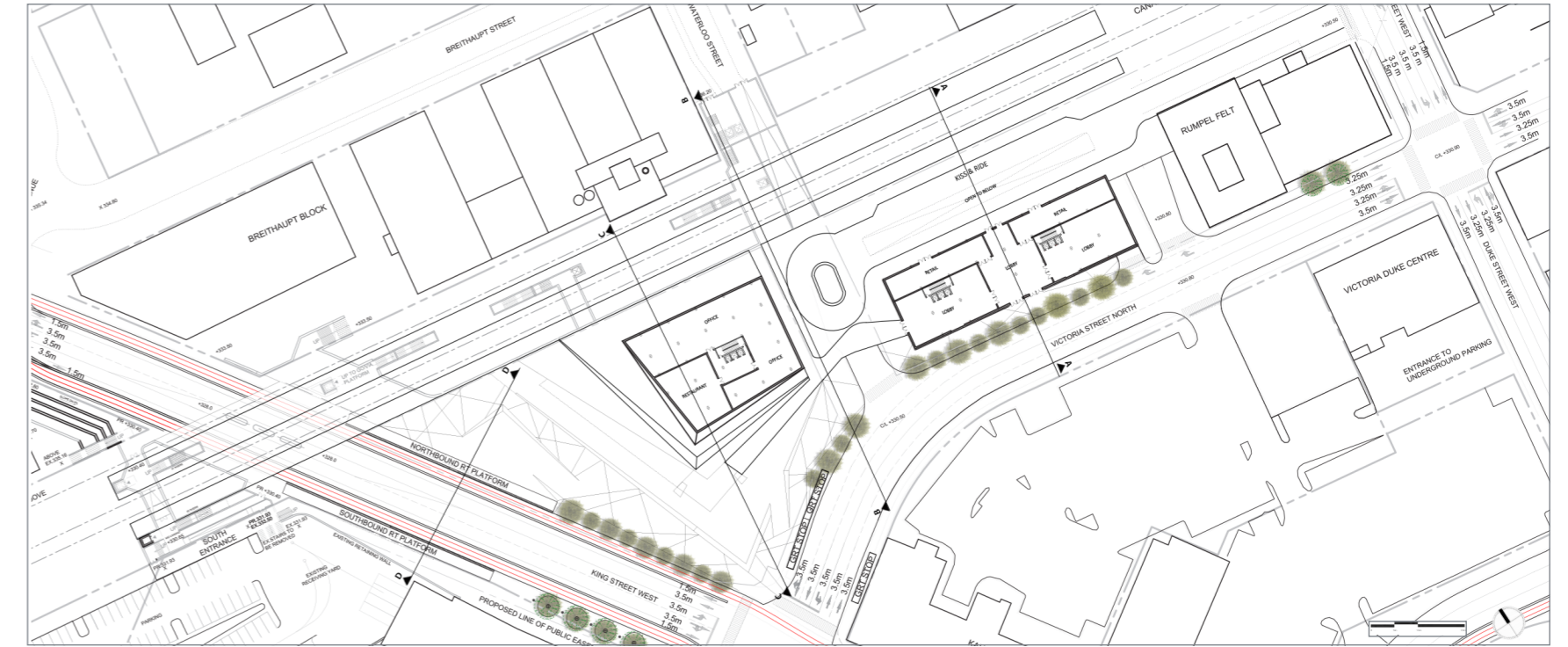
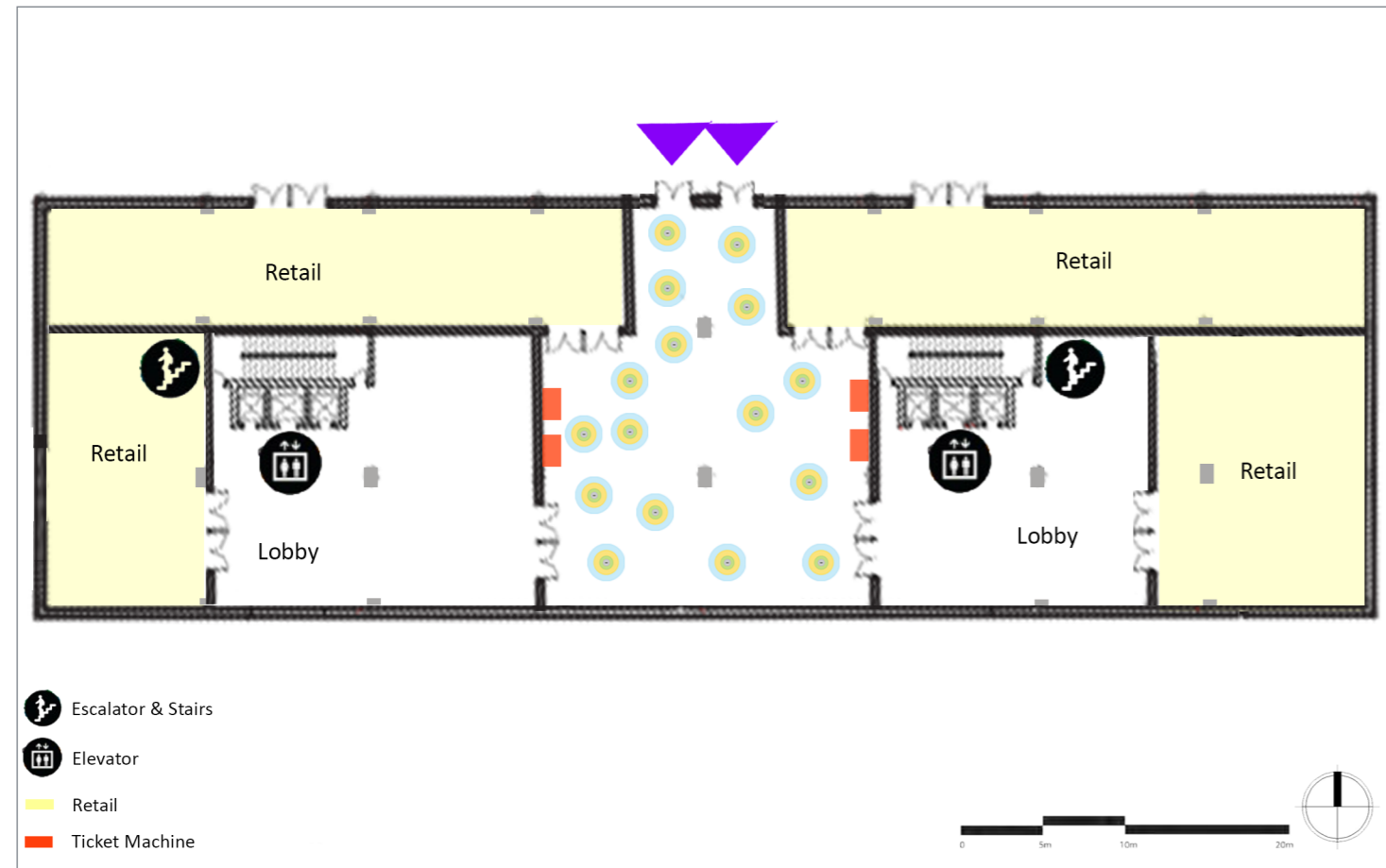
The Second level Concourse is situated at 6.70 metres above the first concourse level. The second concourse level is smaller than the first, but their functionality is the same. Here, people can have their public life, for instance shop, meet others, sit and talk to each other while they are waiting for any modes of transportation. At this level, travellers can access GO/VIA trains, taxi and the car pick-up and drop-off area. The concourse levels can easily draw in non-transit customers and provide a node that attracts people in downtown Kitchener.

4.41 Plan of Concourse Level two (First floor level) of the proposed design

4.42 Detailed plan of concourse level two of the proposed design at King and Victoria intersection with proxemics and service locations to show the concourse space

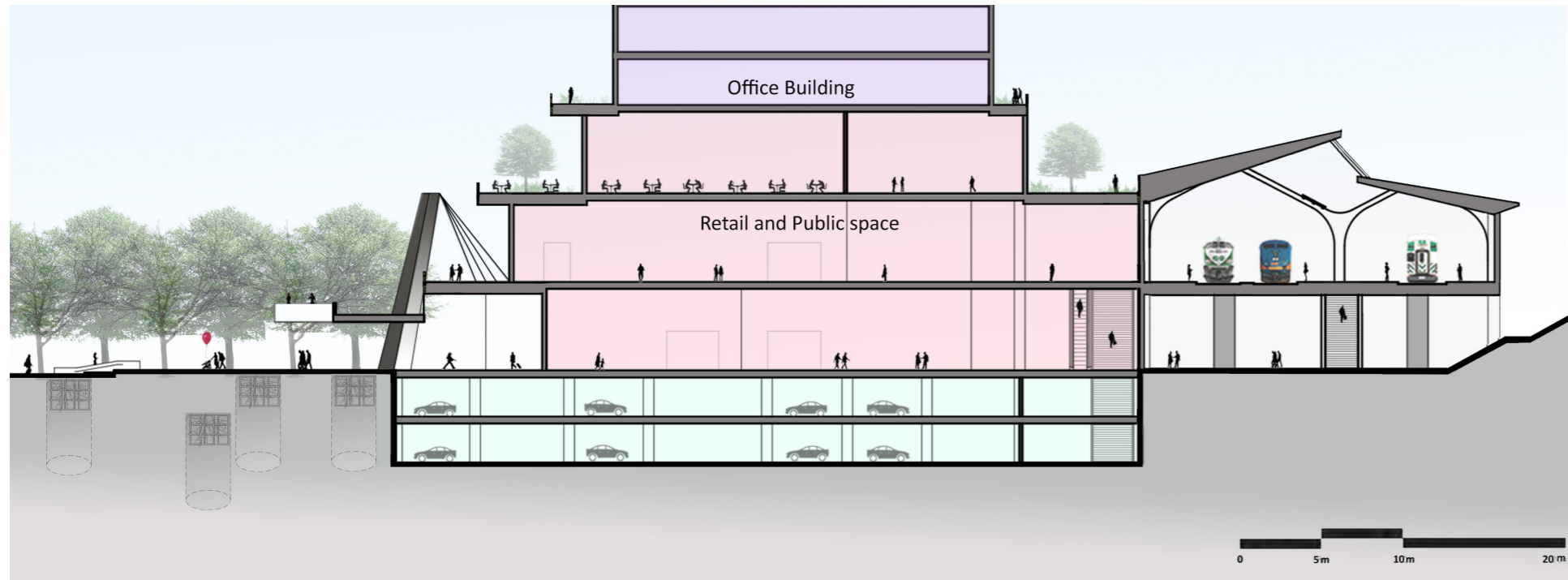


4.43 Detailed plan of concourse level two of the proposed design at Victoria Street with proxemics to show the concourse space



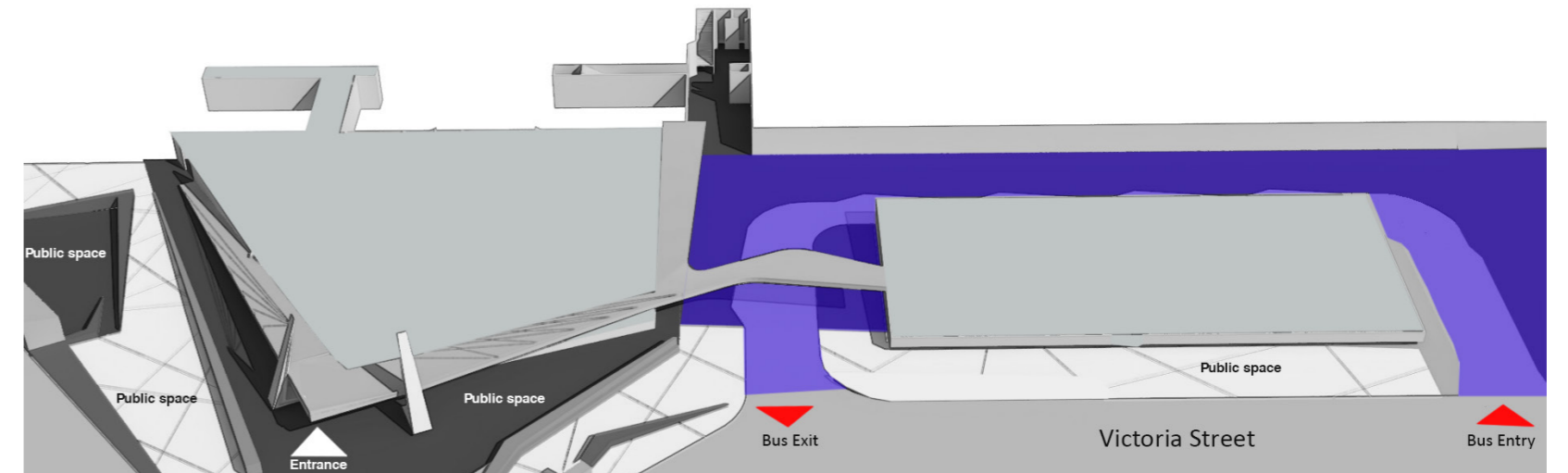
This plan is semi-public and it contains restaurant and office space. People at the office tower would mostly use this level. Through the core, people can access the second and first concourse levels and use the transportation modes.

4.44 Plan of Second Floor of the proposed design

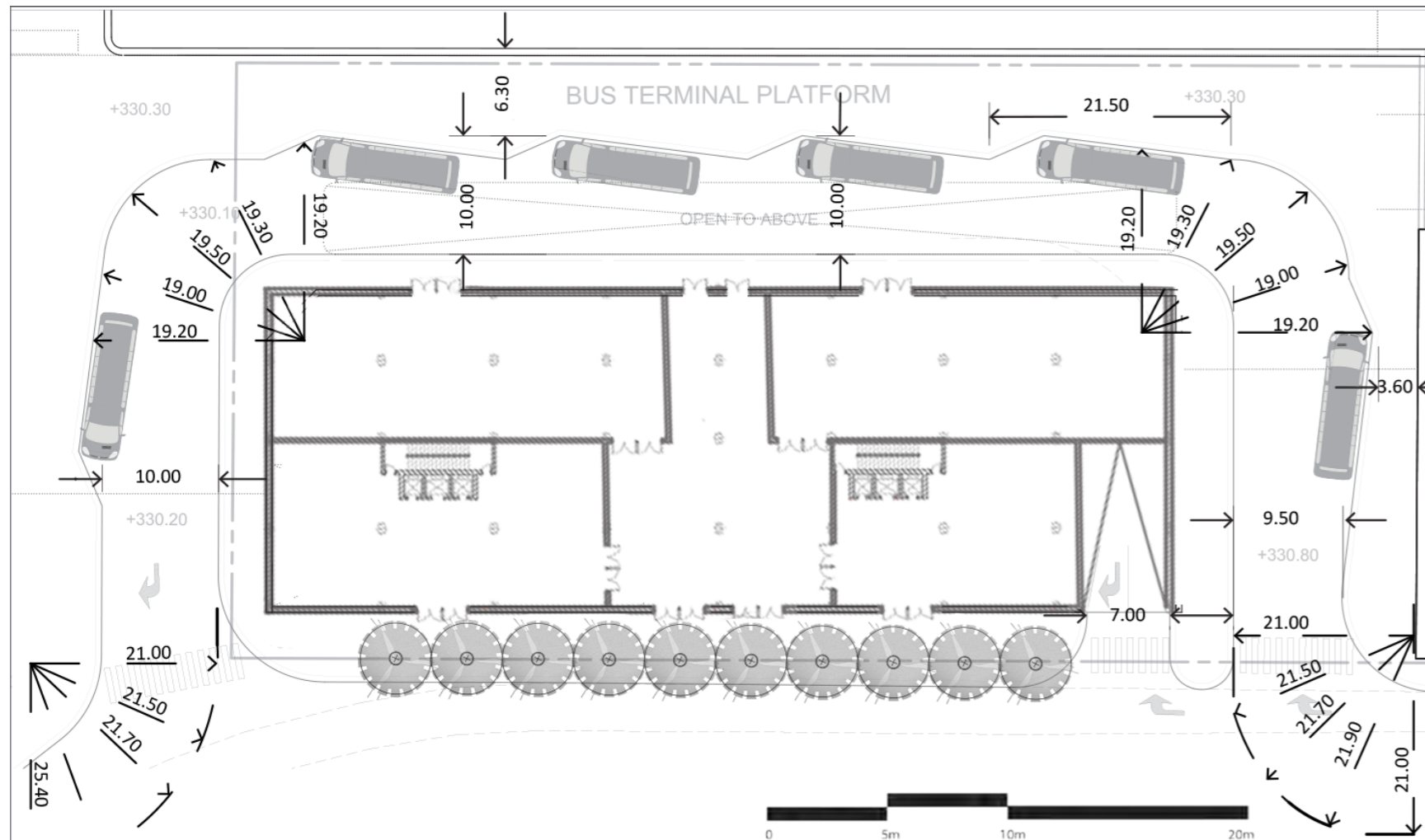


4.45 Section C-C shows the spaces of the proposed design parti as public, semi public and private (office building). In order to have a public space away from traffic and street noise the proposed transit hub has elevated indoor and outdoor public plaza.

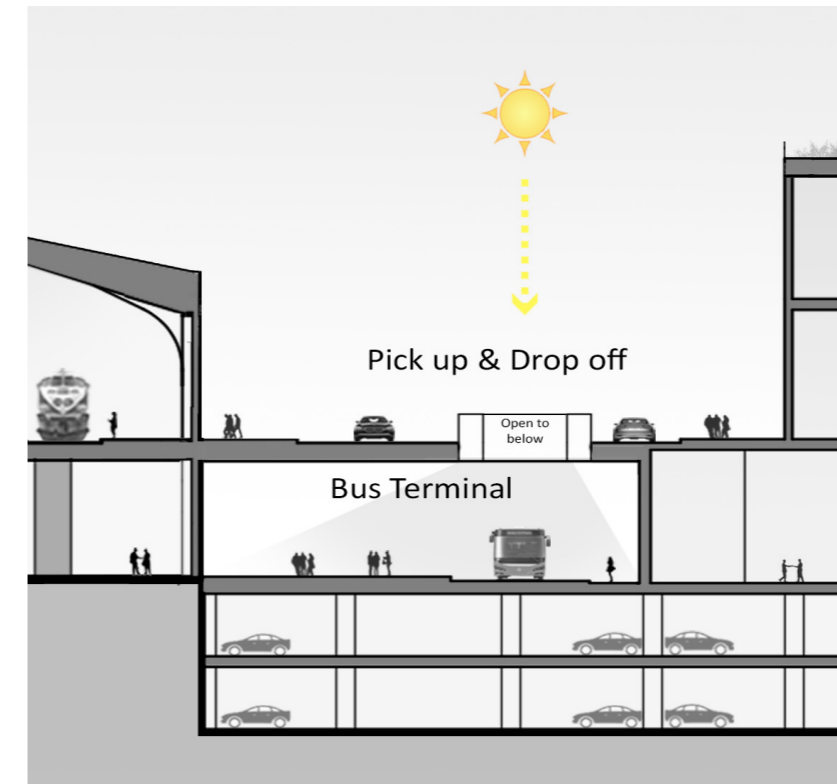
Off-Street Bus Terminal



4.46 Image shows the location of the bus station at the peoposed design



4.47 Detailed plan of the bus station of the proposed design shows the number of buses and also the their radius adequacy for their turning.



4.48 Image visualizes the separation area which brings natural light at bus terminal.

Off-Street Bus Terminal

The bus terminal is located at Victoria Street level below the Pick-up and Drop-off area. The proposed bus terminal is a light-filled and dynamic public space because of the skylight on its roof.

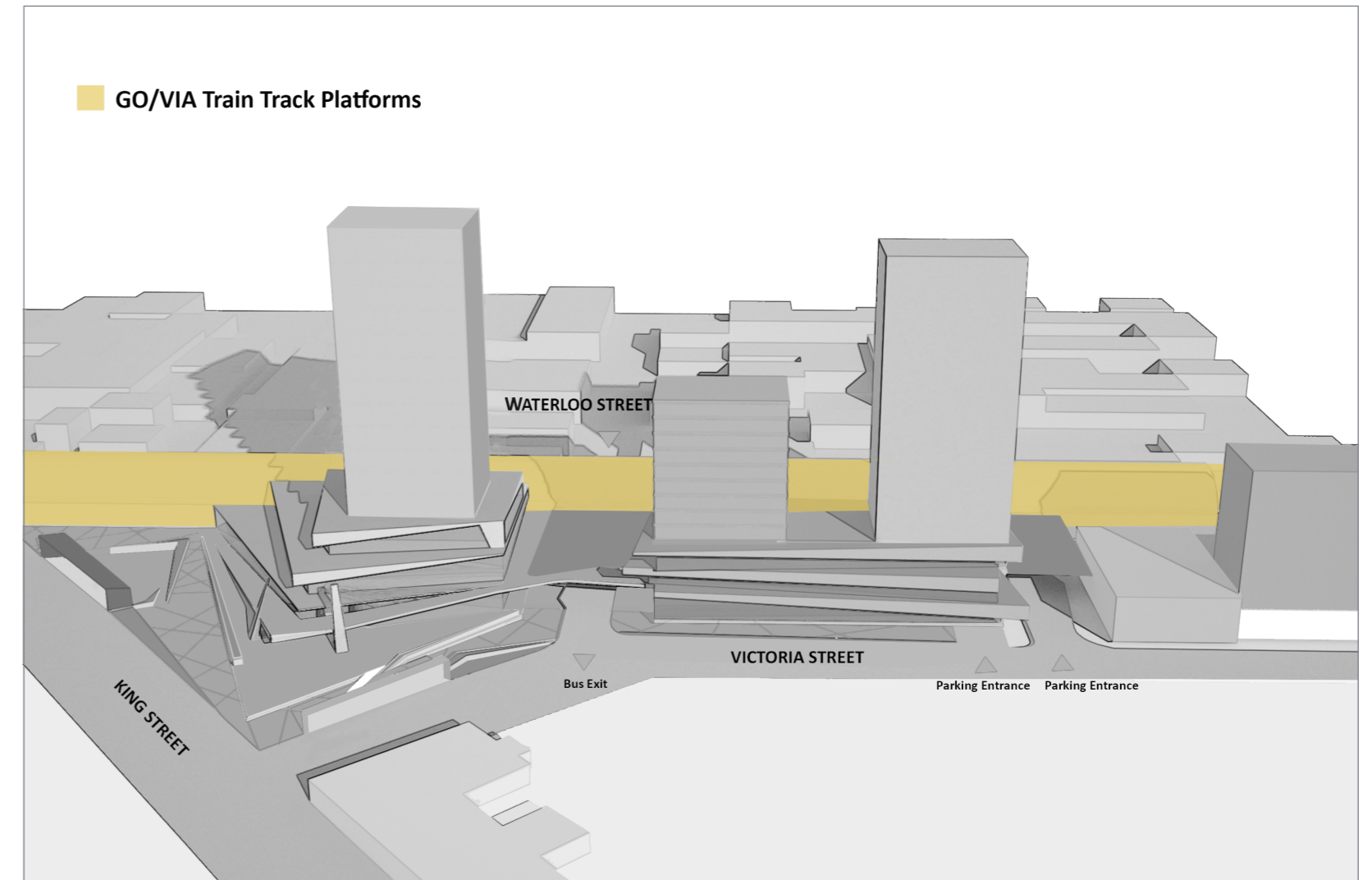
The expressive skylight at the bus station brings sunshine into the space. The skylight is located at the Pick-up and Drop-off area and provides a separation space between people and cars. The separation space brings safety to the environment and also avoids traffic while it is a significant natural light source for the bus station.



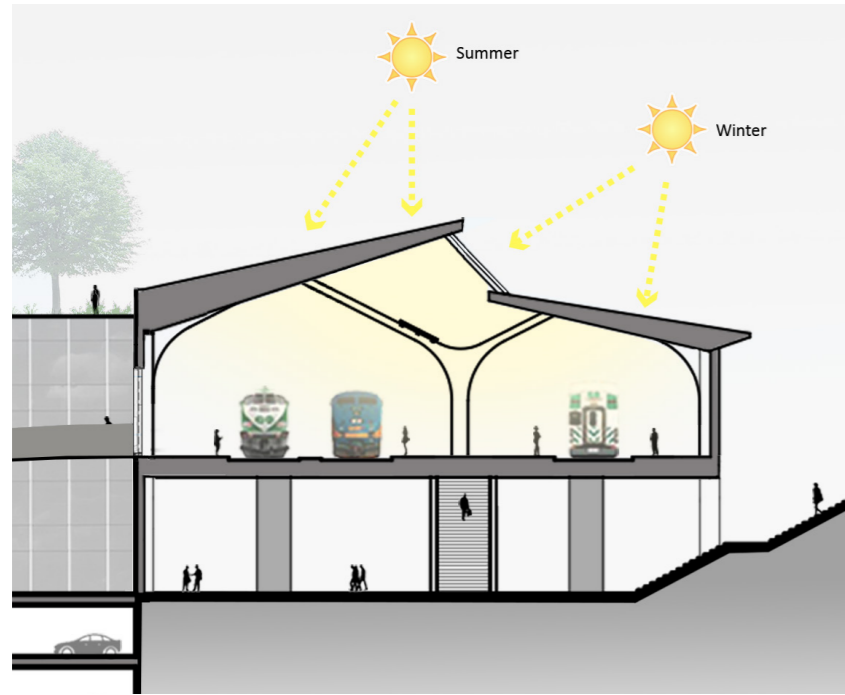
4.49 Image shows the view to the bus station from first concourse level of the secondary building



4.50 Image shows the bus station of the proposed design with skylight which allows natural light deep into the space.



4.51 Axonometric view of the GO/VIA train track platforms of the proposed design



4.52 Diagram shows the glazed ceiling bringing natural light to the train platforms

GO/VIA Train Track Platforms

In order to increase inter-regional transit, GO/VIA rail service will be running beyond Georgetown to Guelph and the Kitchener-Waterloo areas during 2015-2016. The existing location of rail service is on King Street at grade; therefore, by adding LRT on King Street there will be an increase in traffic. ¹⁰

A solution for this is relocating GO/VIA rail service and situating it above King Street, as IBI proposed which would be a great help for all other modes of transportation to run properly on King Street at grade. Train platforms are also considered as a public space as people spend most of their time there waiting for the train. ¹¹

In order to make the space more pleasant for people, a glazed roof has been used for the ceiling, which provides daylight for the building while it protects the building from outside weather.

Figure 4.52 visualizes the affect of the sunlight to the building and figure 4.53 represents the dynamic train platform with natural lights.



4.53 Render shows GO/VIA Train platforms with glazed roof which allows natural light into the space.

Conclusion

The Kitchener Transit Hub located at the intersection of King Street and Victoria Streets, will be one of the main urban focal points of downtown Kitchener. According to the existing situation of the city, little has been done to integrate the expanded opportunities for new design of work and living opportunities in the city center with the proposal of a new intermodal transit hub to be built in the heart of the fast growing downtown core. ¹

The main focus of this thesis design proposal is to establish the presence of urban design at the human scale, to integrate contemporary ideas like creating a place which will be a third place for people within their home and work into the design of the public spaces and the buildings. ² The proposed design combines both of those aspects and create a people-oriented environment that will also facilitate the transfer of people from one mode of transit to another.

The proposed mixed-use development would provide a variety of urban land uses such as commercial, residential, open space, employment, and community uses based on Regional policies plan regulation. ³

IBI's preliminary design proposal for the intermodal hub has been the framework for this thesis design proposal. Analyzing IBI's design proposal provided the opportunity to recognize the undeveloped

and problematic parts of their project. The main weak point of IBI's design proposal was the fragmented proposed public space broken into two small areas instead of creating a connected green public space allowing for a vibrant civic city. ⁴

Transbay Transit Center in San Francisco was considered as a as it was designed to house outdoor and indoor public spaces for people circulation. ⁵ Nathan Phillips Square in Toronto, also a care study, is an example of a public square with a two-level, safe, generous, and wide public space for people. ⁶ The Rotterdam Centraal Station in Netherland is an example of a vibrant transit space which provides natural light to the indoor space. ⁷ Assen Station was considered because of its nature incorporated public space and provided planter beds to define dynamic spaces within a larger space. ⁸

As well, the public spaces of this design proposal have been designed based on Edward T. Hall's proxemics theory to visualize the adequate space for each user in order to use the space situationally. ⁹ The proposed Kitchener intermodal transit hub in the thesis design features a multifunctional vertical public square while it enhances local and regional transportation links to make a comprehensive transit-oriented development in downtown Kitchener.

The provided public square and its vertical extensions feature a public plaza, retail space and urban amenities in order to be the third place in between home and work for commuters. The design promotes access cores elevator and stair to be accessible and barrier free for everyone to use. The Square that is accessible from the main entrance is a great place for people to do their necessary activities such as walking, standing and sitting.

Inside the transit hub, the public space consists of commercial areas, which provide a great opportunity to draw in non-transit customers to the station. Moreover, combining retail and transit uses provides a more varied and rich experience for travelers while they are waiting for transitions.

Integration of such different modes of transit, and maximizing the use of land and having a livable public space at the Kitchener Transit Hub, would bring a continued evolution to the City of Kitchener and will make the hub an anchor landmark in the Downtown.

A vision of future development of these organized green public spaces establishes a strategy promoting the public aspect in a way that it would provide various facilities around appropriate infrastructure. Having public spaces of this kind would make a vital neighborhood where people like to go to get away from stress at work and home.¹⁰ When people have a place to gather and interact with each other without any penalty or host, the public space becomes a world of its own and users like to spend their time there and build up their civic connection to each other. ¹¹ Such public spaces help the city to be vital and full of life where people feel active and involved. ¹² A city full of high-quality public spaces will be a successful city that provides psychological comfort and support to all people. ¹³



4.54 Existing urban life in King Street



4.55 Proposed Future urban life in King Street

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Conclusion

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