

# WEBER MONTGOMERY KING



**vive**<sup>™</sup>  
DEVELOPMENT

**MHBC** PLANNING  
URBAN DESIGN  
& LANDSCAPE  
ARCHITECTURE

**815 & 825 WEBER STREET EAST  
& 1770 KING STREET EAST  
CITY OF KITCHENER**

**KING WEBER KITCHENER  
HOLDINGS INC.**

PREPARED BY: MHBC PLANNING  
(with additional graphics provided  
by Cusimano Architects)

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# PART 1

SPATIAL & CONTEXTUAL ANALYSIS

## 1.1 INTRODUCTION

MHBC has been retained by King Weber Kitchener Holdings Inc. to prepare an Urban Design Brief for a proposed development located at 815 & 825 Weber Street East and 1770 King Street East in the City of Kitchener, referred to herein as the subject lands. This Report has been prepared based on the City of Kitchener Terms of Reference for Urban Design Reports.

The subject lands are located along King Street and Weber Street and within the King Street East Secondary Plan Area and are a short distance from the entry/exit to Highway 8. The site is currently the location of a commercial plaza which is intending to be demolished.

The purpose of this Report is to ensure that a comprehensive urban design plan will be implemented to promote an attractive development that is appropriate for, and well integrated with, the surrounding community. This Report has been prepared in support of an Official Plan Amendment and Zoning By-law Amendment required for the development of the subject lands.

## 1.2 CONTEXTUAL ANALYSIS & SITE DESCRIPTION

The subject lands are located within the King Street East Secondary Plan Area, and the subject lands form an L-shaped lot on the northerly side of King Street East and southerly side of Weber Street East at the intersection of Weber and Montgomery Road. Both King Street and Weber Street are Regional Roads and planned transit corridors. The subject lands are located between Montgomery Road (a major collector street) and Jackson Avenue (a local street). The subject lands comprise a large parcel of land 0.638 hectares (1.58 acres ) in size, available for an infill opportunity to create a multiple residential development on an underutilized piece of property.

Uses that immediately surround the subject lands include the following:

**NORTH:** Immediately to the north of the subject lands is Weber Street East are a number of commercial uses including a fitness facility and car dealership. Further west along the north side of Weber Street is Eastwood Collegiate Institute.

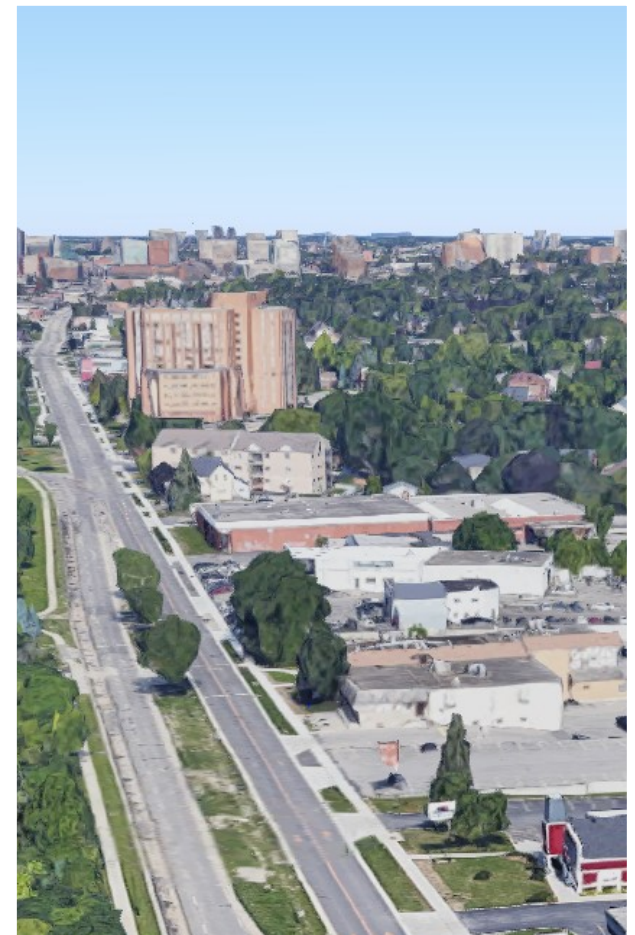
**EAST:** To the east of the subject lands at the intersection of King Street East and Montgomery Street is an existing commercial plaza. All lots to the west of the subject lands to Montgomery Road are zoned Mixed Use High Intensity Three (MU-3) but currently operate as commercial/ service uses. These lots could be developed with similar mixed uses as proposed on the subject lands.

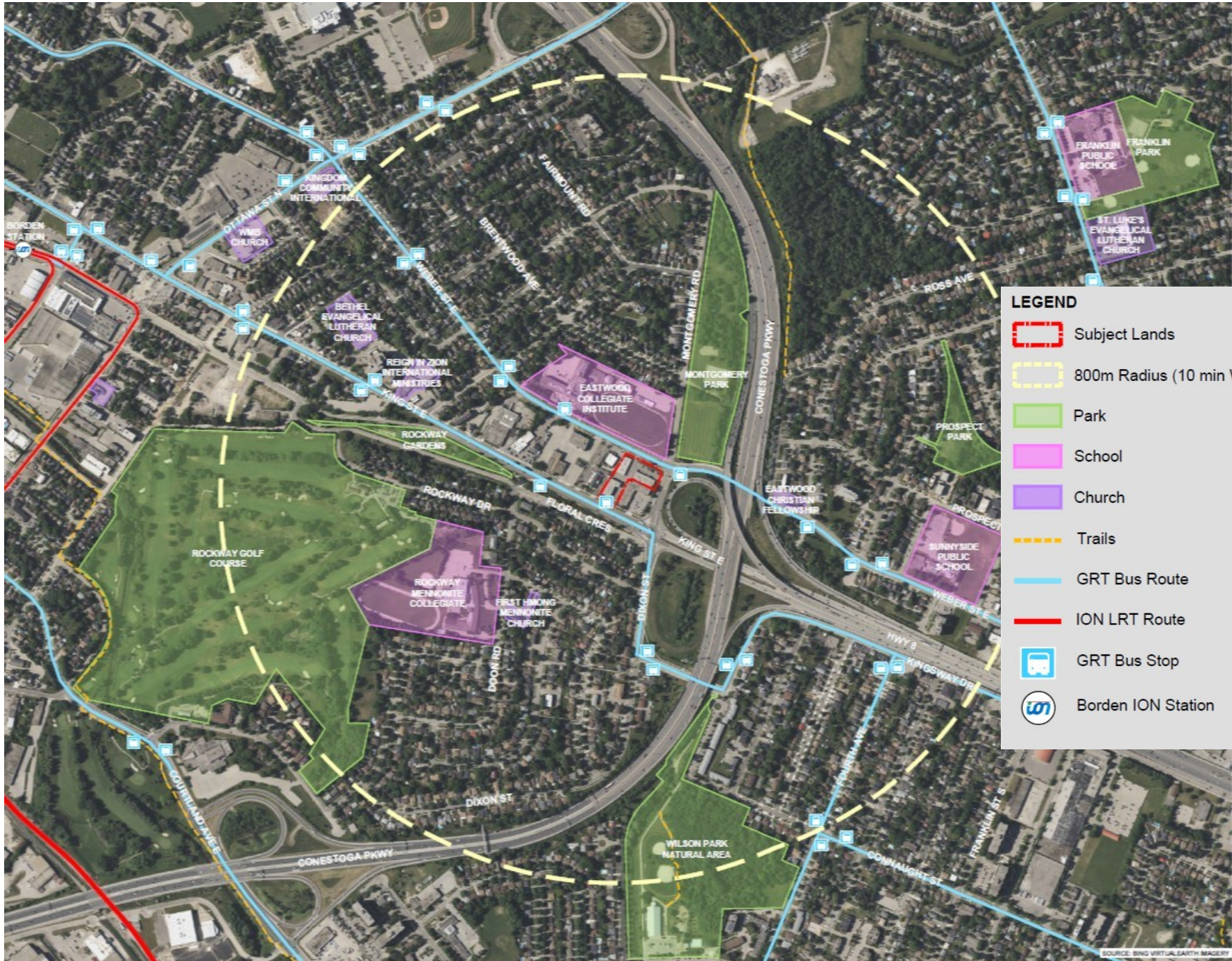


**SOUTH:** Immediately to the south of the subject lands is King Street East. This part of King Street East (at the intersection of King Street East and Montgomery Road) is where King Street connects with Highway 8. King Street East is a four lane roadway with a wide boulevard. On the other side of King Street East is a vegetated buffer area which extends from Rockway Gardens. This buffer separates the low rise residential further south from King Street East. King Street East is an existing transit corridor and has direct access to GRT Route 7.











**WEST:** Immediately to the west along King and Weber Streets are commercial uses however the lands are also zoned Mixed Use High Intensity Three (MU-3) and could be redeveloped with a mixed use development.

The below images illustrate the subject lands and immediate surroundings. The context plan graphic illustrates the broader surrounding context including; nearby cultural facilities, parks, recreation, and employment uses; amenities within a 5 minute walking distance from the subject lands; and the location of transit stops in relation to the subject lands.





**LEGEND**

-  Subject Lands
-  800m Radius (10 min Walking Dist.)
-  Park
-  School
-  Church
-  Trails
-  GRT Bus Route
-  ION LRT Route
-  GRT Bus Stop
-  Borden ION Station

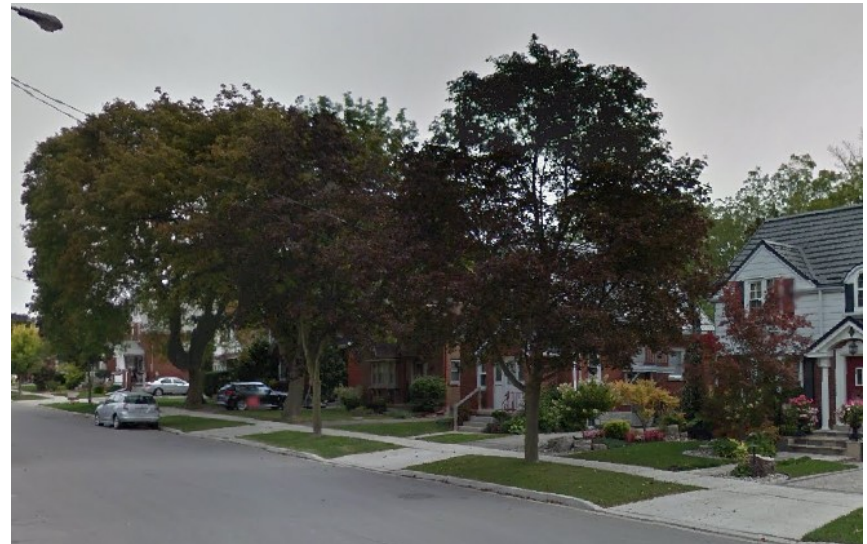


## 1.3 KING STREET EAST NEIGHBOURHOOD

The subject lands are located within the King Street East Neighbourhood Secondary Plan Area. The King Street East Secondary Plan is located in the central area of Kitchener and extends from the southerly side of Montgomery Road to the northerly side of Cedar Street and from the westerly side of Charles Street East to the easterly side of Weber Street East. The neighbourhood is adjacent to the City's Urban Growth Centre (Downtown) located immediately to the north. It straddles both sides of King Street East and is the entrance to the City and Downtown from the Conestoga Parkway. This area is home to established residential uses which enjoy the amenities of an urban neighbourhood in close proximity to several retail and food stores along Weber Street East, the downtown, the Kitchener Market, and Borden Station ION stop.

Unlike the interior of the neighbourhood and the Downtown, the portions of King Street East and Weber Street East near the subject lands have a variety of built forms, setbacks and building heights recognizing the change and redevelopment that has occurred over time.

The subject lands represent an underutilized property in the King Street East Neighbourhood and are designated as Mixed Use Corridor, allowing for multiple residential and non-residential uses with a maximum Floor Space Ratio (FSR) of 4.0. The Secondary Plan policies balance the protection of existing lower density residential enclaves with redevelopment opportunities along King Street East through the introduction of the Mixed Use Corridor which serves as the focus for higher density redevelopment. The subject lands are located adjacent two Regional roads and are sufficiently separated from the interior of the neighbourhood and established residential land uses.



IN CONTRAST WITH KING STREET EAST, THE INTERIOR PORTIONS OF THE KING STREET EAST NEIGHBOURHOOD CONTAIN NARROWER ROAD RIGHT-OF-WAYS AND ATTRACTIVE AND CONSISTENT STREETSCAPES LINKED BY MATURE TREES AND GRASSED BOULEVARDS.





THE KING STREET CORRIDOR HAS EVOLVED OVER TIME AND HAS A STREETScape THAT DIFFERS SUBSTANTIALLY FROM THE STREETScapeS WITHIN THE RESIDENTIAL ENCLAVE.



## 1.4 URBAN PATTERN

The current urban fabric of the subject lands and surrounding area is, for the most part lots and blocks laid out within a modified grid pattern of streets which run north/south and east/west.

The subject lands represent a underutilized parcel between two Regional Roads. The existing public streetscapes on King Street East and Weber Street East are not conducive to walkability and providing a safe and comfortable pedestrian environment. As such, the subject lands have tremendous redevelopment opportunity and are well positioned within an urban corridor with access to the existing sidewalk system, connecting the lands to the surrounding neighbourhood and other open space uses.

The existing urban pattern promotes walkability and provides easy and convenient walking routes to transit and nearby amenities. No new streets or lanes are proposed as part of the development that would alter the existing urban pattern. The proposed development would enhance the public streetscapes and encourage pedestrian activity along King Street East and Weber Street East.



### FIGURE GROUND

The visual relationship between built and unbuilt space



### FINE GRAIN

A pattern of street blocks and building footprints that characterize an urban environment



### URBAN FABRIC

The pattern of lots and blocks in a place

Concepts that are considered when analyzing the existing urban pattern.

## 1.5 ACTIVE TRANSPORTATION AND TRANSIT

The subject lands are located on two east/west Regional Roads. Generally, the function of Regional Roads is to provide safe, direct, accessible and multi-modal transportation links for moving people and goods throughout Waterloo Region, and to adjacent municipalities . Existing sidewalks are located on both sides of the street, providing direct access for pedestrians to north/south streets. The subject lands are located proximate to existing and planned cycling routes.

There are several Grand River Transit bus routes in proximity to the subject lands. Six existing transit stops are located along Weber Street East between Jackson Avenue and Montgomery Road. Four existing transit stops are located along King Street East between Dixon Street and the entrance to the Rockway Centre. All of the aforementioned transit stops are within 500 metres of the subject lands and provide transit connections to existing ION stops. The subject lands are within a fifteen minute walk of the Borden ION stop.

The proposed development has been designed to prioritize active and public transit. The buildings are located with the principle drive entrances oriented towards the King Street East and Weber Street East transit corridors, encouraging future residents to walk to and from nearby residential, commercial, office and retail uses, services and public amenities. Safe and comfortable pedestrian connections through the site to existing public sidewalks, and on-site cycling storage areas are supportive of existing/planned regional cycling routes.

The proposed development supports active transportation and transit investment in the Region by providing a density supportive of higher order public transportation and alternative transit modes.

# PART 2

DESIGN VISION & OBJECTIVES

## 2.1 VISION & DESIGN OBJECTIVES

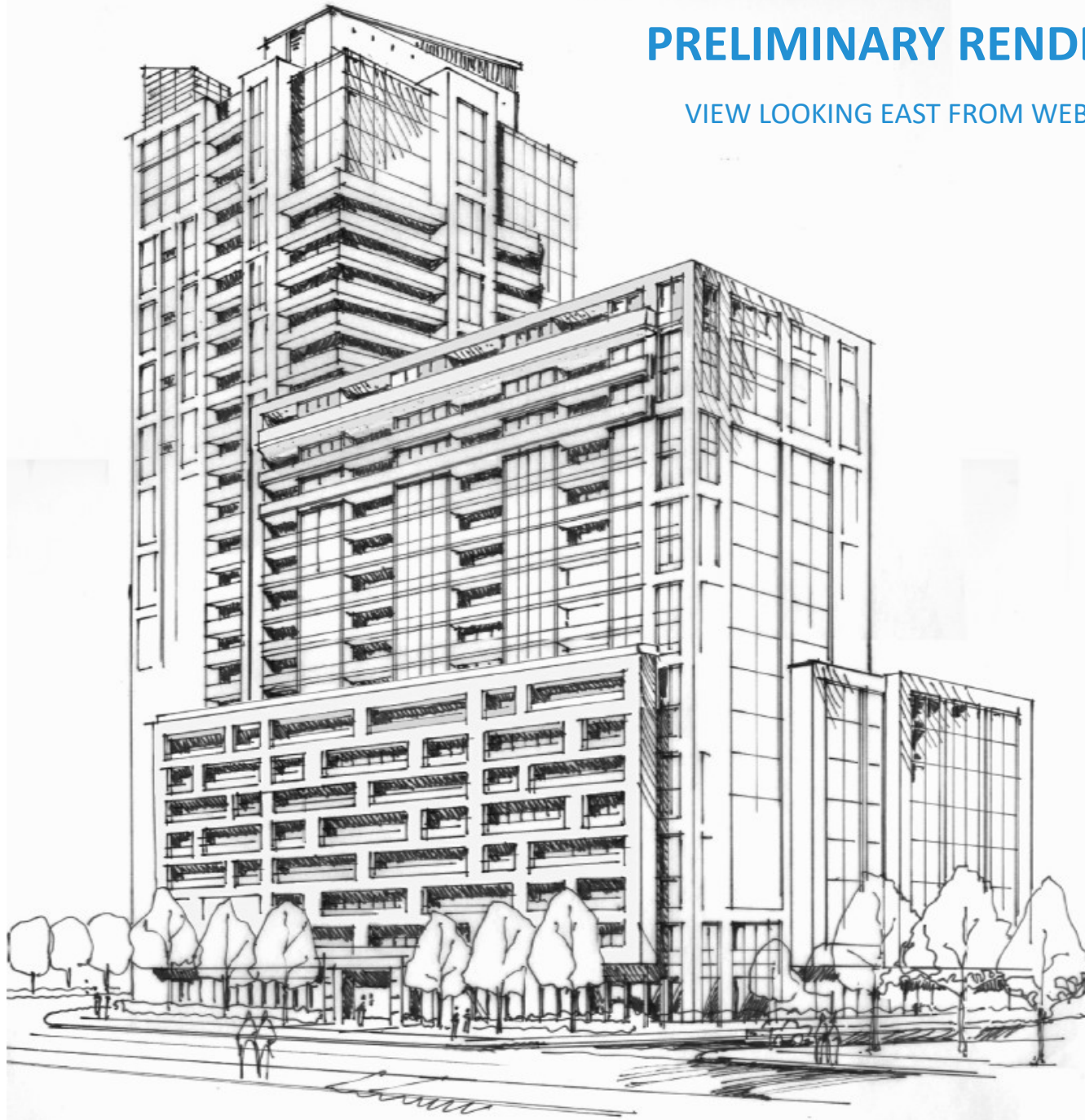
**The project team envisions the redevelopment of the subject lands as an architecturally unique multiple residential development achieving a transit supportive density and urban form. The vision for the development is to create a contemporary expression through architectural design that provides a gateway to the King Street East corridor and new transit focused neighbourhood planned. The project vision and proposed redevelopment of the subject lands inspire to influence future redevelopment in the area.**

The following goals and objectives have been identified for the purposes of achieving the vision for the redevelopment:

- 1.** Create a strong visually appealing street edge along King Street East and Weber Street East that will improve the streetscape and encourage active transportation modes in this location. This includes the provision of a building, which addresses the street in terms of architectural detailing, having direct access to the public sidewalk, and enhanced landscaping along both public street frontages.
- 2.** Provide for development that will be supportive of transit investment in the Region and alternative transit modes, and will encourage future residents to walk to and from nearby residential, commercial, office and retail uses, services and public amenities.
- 3.** Introduce additional building height within lands designated urban corridor and adjacent designated transit corridors in a manner that is sympathetic to surrounding uses.
- 4.** Achieve a high-quality of architectural design and construction that is innovative and timeless, contributing positively to the area and Kitchener's identity. Encourage contemporary architecture that complements rather than competes with the surrounding development.
- 5.** Provide a development that, through the combination of massing, orientation, enhanced landscape design, pedestrian entrances, architectural elements, detailing, and material selection, will result in a positive pedestrian experience along the adjacent street frontage, between buildings, and within the planned open spaces.
- 6.** Design a high quality pedestrian realm focused around the connections to the open space network.
- 7.** Create a development which incorporates sustainable design principles and techniques.

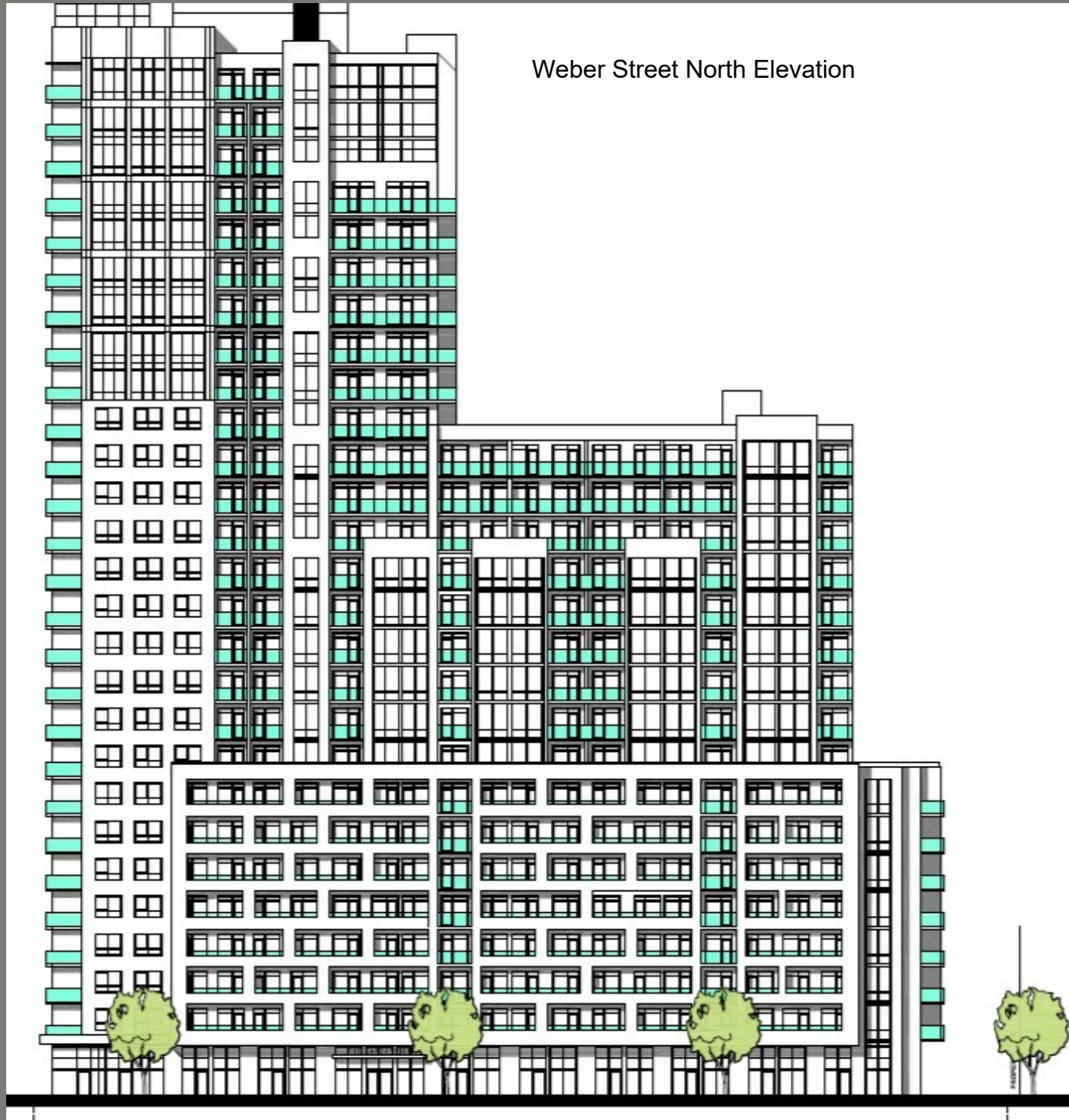
# PRELIMINARY RENDERING

VIEW LOOKING EAST FROM WEBER STREET



# PRELIMINARY ELEVATIONS

Weber Street North Elevation



# PART 3

PROPOSED DEVELOPMENT



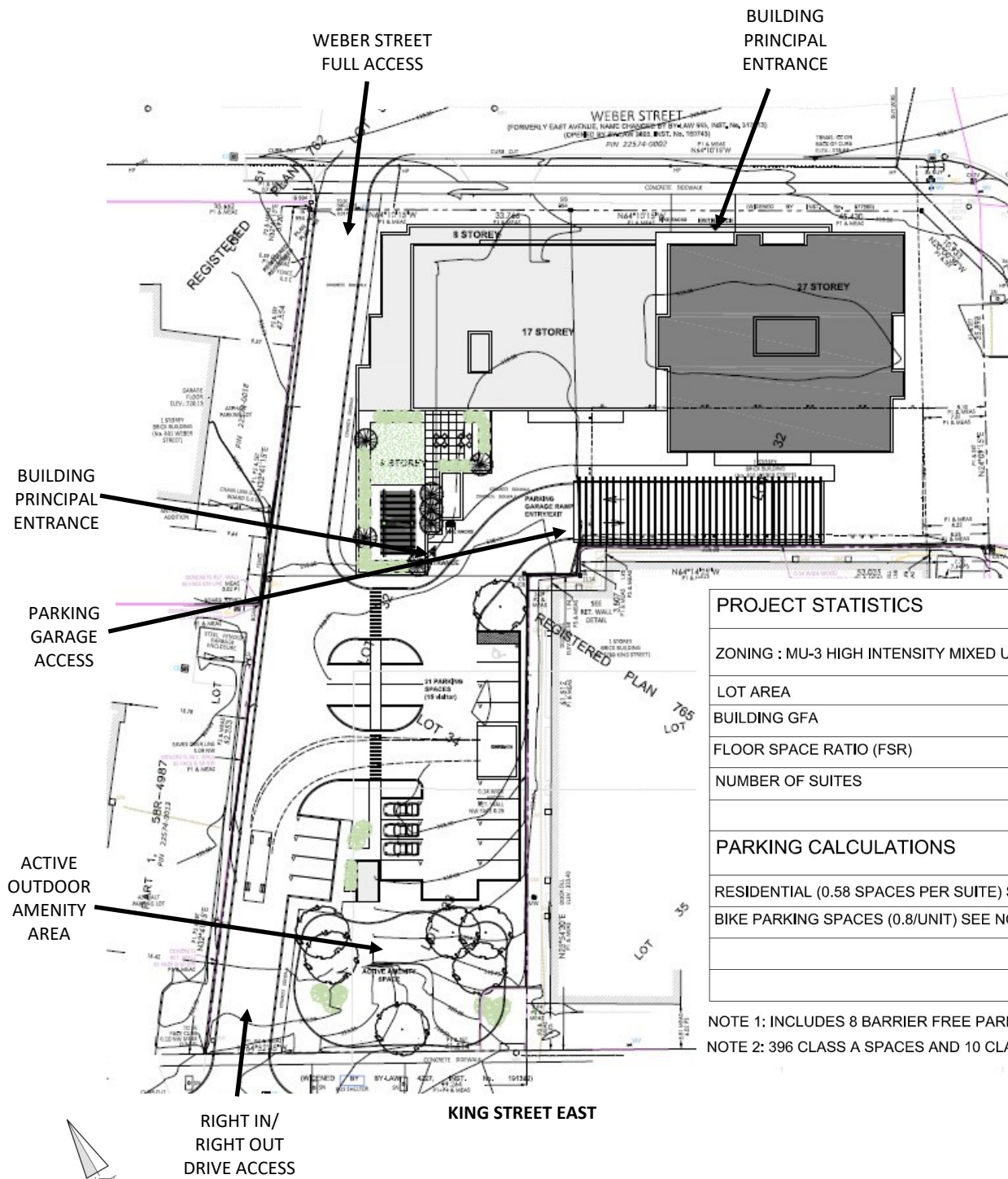
## 3.1 CONCEPTUAL DESIGN

The proposed development for the site is a high quality multiple-residential development that will provide new residential units near the entry to downtown and within an Urban Corridor. The current proposed development integrates the following principle elements:

- A 27 storey and a 17 storey multiple residential building with 8 storey base and 2 storey underground shared parking facility.
- 503 residential units proposed in the form of purpose built rental units to assist in the provision of attainable housing forms.
- Active amenity space proposed at grade along the King Street East frontage.
- Ground floor building height of 4.5 metres to accommodate additional non-residential uses in the future.
- 291 parking spaces proposed in the form of a two level underground parking 406 secure indoor bicycle parking spaces.
- One right in right out vehicular access point from King Street East providing direct access to the visitor parking and underground parking facility.
- Retention of the existing all-way access from Weber Street East to provide direct access to the building structure and underground parking facility and for garbage and servicing purposes.
- Direct pedestrian connections from the public sidewalk along King Street East and Weber Street East to the proposed building entrances.
- Well defined building base and prominent building entrances will provide for an attractive streetscape along Weber Street East.
- Balconies for the majority of units.
- Large windows to provide eyes on the street.
- A mix of building materials and colours.
- The gross floor area of the combined buildings is 37,965 square metres, with a proposed Floor Space Ratio of 6.0.

The Owner's primary objective is to develop the site with an attractive and cost-efficient building to provide for housing at a more attainable price point within a Urban Corridor with direct access to the Downtown and Highway 7/8 and within close proximity to the ION LRT Borden Transit Station

# CONCEPT SITE PLAN



PROJECT STATISTICS	
ZONING : MU-3 HIGH INTENSITY MIXED USE CORRIDOR ZONE	
LOT AREA	6,384M2
BUILDING GFA	37,965M2
FLOOR SPACE RATIO (FSR)	5.95
NUMBER OF SUITES	503
PARKING CALCULATIONS	
RESIDENTIAL (0.58 SPACES PER SUITE) SEE NOTE 1	291
BIKE PARKING SPACES (0.8/UNIT) SEE NOTE 2	406

NOTE 1: INCLUDES 8 BARRIER FREE PARKING SPACES AND 15 VISITOR SPACES  
 NOTE 2: 396 CLASS A SPACES AND 10 CLASS B SPACES



Conceptual rendering of Weber Street East frontage.

The site will be accessed from the King Street East and Weber Street East frontages. Access to and from the parking area on King Street East will be strictly a right in/right out movement, due to the center median on King Street East. Natural weather mitigation strategies have been incorporated including covered building entrances. With the exception of a few visitor and loading spaces, all proposed parking is accommodated within the 2 storey underground parking garage within the building thus reducing heat island effect and providing shaded areas for parking.

The main access to the proposed mixed use and residential buildings will connect directly to the surrounding public sidewalk system. The building lobbies will be accessible to pedestrians from the public sidewalk system and the parking area. Indoor amenity areas are provided on the third level of each building. A shared outdoor amenity area on the top of the podium level will be detailed through the site plan design.

## **Built Form, Massing and Articulation**

The massing of the proposed building will be broken up using a number of techniques including changes in building materials/colours; projections; recessions; and varying window sizes. The 27 and 17 storey towers with 8 storey podium will be designed with a clearly defined base, middle and top. The point tower footprint of Building B is proposed to minimize shadows and overlook to adjacent lands to the west. The massing of Building B is minimized from the public realm through the provision of setbacks above the eighth storey and again above the seventeenth storey facing the Weber Street frontage.

Building A is planned to be 27 storeys in height. Building B is integrated with Building A but transitions to a height of 17 storeys along the Weber Street East frontage of the property. An 8 storey base will envelope the towers providing a transition to adjacent lands. A total of 503 residential units are proposed within the 3 integrated buildings. Stepbacks above the building base adjacent to Weber Street East help to ensure a human scale of development. Projections above the base provide visual interest within the tower portion of the buildings. The Active amenity area along the King Street frontage will provide an attractive public realm and screen the surface visitor parking area from pedestrian views along King Street East.

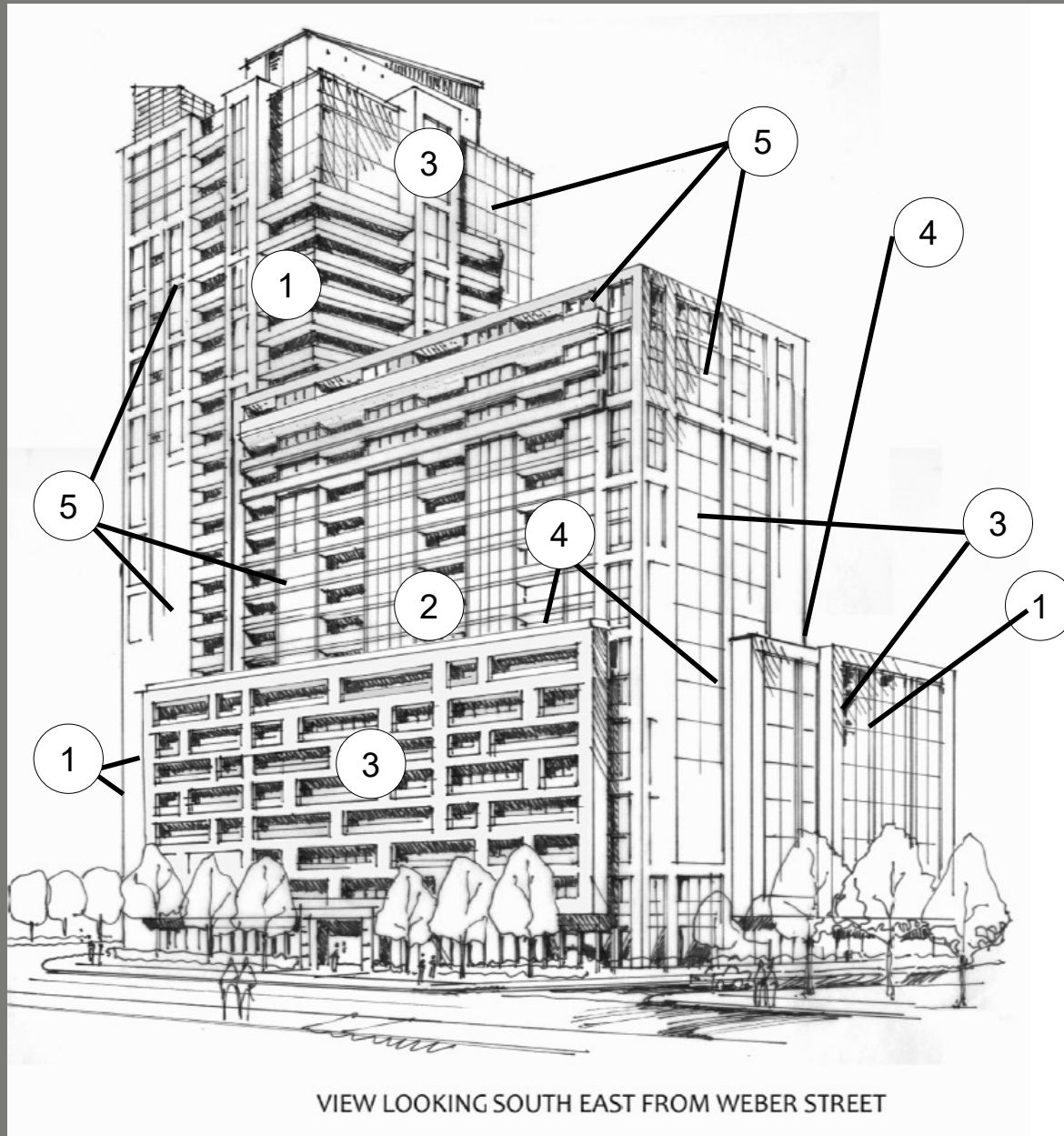
The proposed development will be designed with consideration for the existing and planned built form context, including high rise permissions associated with the urban corridor and proximity to downtown, as well as the established low-rise residential areas south of King Street East and north of the subject lands on Jackson Avenue and Brentwood Avenue. The subject lands, combined with the two Regional road corridors and adjacent commercial and institutional use areas provide for an appropriate height transition between the proposed development and residential uses in the neighborhood.

## **Character and Architectural Treatment**

The proposed development will assist in the continued intensification and development of an urban corridor, identified as a gateway to major transit station areas and the downtown through the addition of mixed use buildings along two Regional Roads. The building design demonstrates a contemporary architectural expression. The development will be constructed of high quality materials and provides an attractive design that will be reasonably priced.

A well defined 8 store base with roof top amenity area, selective use of building materials, colours and the incorporation of architectural articulation all add to the visual interest of the development and will result in an attractive streetscape. The front building entrances will be well defined and highly visible from Weber Street East while an additional entrance interior to the site is also proposed. High quality materials including a large amount of glass will be incorporated into the facades, resulting in an attractive design. Repetition of lines and windows through both vertical and horizontal articulations will help to break up the building mass.

# MASSING TECHNIQUES



- 1 PROJECTION
- 2 RECESSION
- 3 CHANGES IN BUILDING MATERIALS
- 4 STEPBACK
- 5 VARYING BALCONY AND WINDOW SIZES

## 3.2 TRANSIT SUPPORTIVE DESIGN

The proposed development has been designed to prioritize active and public transit. The buildings are located with the principle entrances oriented towards the King Street East and Weber Street East transit corridors, encouraging future residents to walk to and from nearby residential, commercial, office and retail uses, services and public amenities. The development is within a fifteen minute walk of the Borden ION stop. Existing GRT bus stops are located on King Street East and Weber Street East directly adjacent the subject lands. The subject lands are also well connected to the City and Region's arterial road network.

The development will be designed to encourage active transit through safe and comfortable pedestrian connections through the site to existing public sidewalks, and on-site cycling storage areas supportive of existing/planned regional cycling routes.

The application plans to implement Transportation Demand Management measures to educate the occupants on alternative forms of transportation and active transportation, unbundling parking, providing bicycle storage facilities in excess of the minimum requirements, subsidized transit passes, and car share facilities. The proposed development supports active transportation and transit investment in the Region by providing a density supportive of higher order public transportation and alternative transit modes.

## 3.3 SUSTAINABLE DESIGN

As a general planning and design principle, higher density development in proximity to the amenities associated with downtowns and in support of higher-order transit is considered to be sustainable development.

Future occupants wishing to seek alternative forms of transportation will have options for walking, biking, or public transit available. This will be facilitated by the provision of indoor bicycle parking, as well as the provision of future pedestrian connections to both the existing sidewalk system and surrounding uses. The proposed development is located in close proximity to a number of transit stops, making public transit a viable option. The provision of reduced parking minimizes land consumption.

Energy efficient construction practices, building technologies, and mechanical systems will be encouraged in the development of the subject lands. A sustainability statement will be submitted in support of a future Site Plan application and will summarize sustainable building design elements as required by Official Plan policies.

Detailed landscape plans prepared in support of the future Site Plan application will consider the incorporation of hard landscape elements and drought resistant landscaping to reduce water consumption (where appropriate). Salt tolerant landscaping in key locations will also be encouraged. Increased topsoil depths in landscaped areas are encouraged to reduce runoff volumes.

# PART 4

RESPONSE TO CITY POLICIES & GUIDELINES & DESIGN ANALYSIS

# 4.1 DESIGN RESPONSE TO CITY OF KITCHENER POLICIES AND GUIDELINES

## CITY OF KITCHENER OFFICIAL PLAN (2014)

The subject lands are located within the King Street East Secondary Plan Area in the City of Kitchener. The subject lands are currently designated Mixed Use Corridor. The subject lands are located within an Urban Corridor and adjacent to existing and planned transit corridors. Lands designated urban corridors and adjacent to transit corridors are planned to support primary intensification within the urban boundaries.

**Section 11** of the City of Kitchener Official Plan contains Urban Design Policies. It is intended that the Urban Design Policies will provide guidance and direction as the City grows, develops and evolves. The following is a summary of how the proposal meets the relevant policies from Section 11 (Urban Design) of the current Official Plan:

**11.C.1.11 Streetscape:** The City will support the character of streets through the coordination of site, building and landscape design on and between individual sites with the design of the street.

**Design Response:** *The proposed buildings and the primary building entrance will be oriented to the street. The proposed development will have direct access to the public sidewalk system. The proposed building façades includes a defined building base which further enhances the streetscapes.*

**11.C.1.13, 14 & 15 Safety:** The City will apply Crime Prevention through Environmental Design principles in the review of new developments, redevelopments and infrastructure projects to implement crime prevention strategies that will enhance the effective use of the space. Where feasible, and in compliance with the other policies of this Plan, the City will ensure that the efficiency of emergency medical, fire, and police services be considered in the design of communities, neighbours and individual sites. Development applications will be reviewed to ensure that they are designed to accommodate fire prevention and timely emergency response.

**Design Response:** *General CPTED considerations are analyzed in this Brief. The subject lands are located in a built up area within close proximity to emergency services. Emergency services vehicles will be able to access the development from the surrounding road network and the building will be designed in compliance with the Ontario Building Code including aspects related to fire prevention suppression. The proposed development is located in a highly visible location with sufficient eyes on the property from surrounding buildings.*



**11.C.1.30 Site Design:** Policy 11.C.1.30 includes a number of factors to be considered through the Site Plan Control Process.

**Design Response:** *The various considerations included in Policy 11.C.1.30 will be addressed through the proposed design of the site. This includes: improvements to the aesthetic quality of the site from the public realm; the provision of safe, comfortable and function site circulation; and the incorporation of mitigating techniques to minimize adverse impacts onto adjacent properties.*

**11.C.1.31 - 11.C.1.33 Building Design, Massing and Scale Design:** The Official Plan contains three policies related to Building Design, Massing and Scale Design. These policies encourage redevelopment projects to create attractive streetscapes and to contribute to rich and vibrant urban places. These policies encourage attractive building forms, facades and roof designs which are compatible with surrounding buildings. For infill development, the policies encourage development which complement existing buildings and contribute to neighbourhood character, particularly if located within close proximity of a recognized cultural heritage resource. Architectural innovation and expression is also encouraged.

**Design Response:** *The proposed development will provide a unique built form in the neighbourhood. The buildings are proposed to be contemporary in style using traditional materials and will be a positive addition to an area that has a wide range of building forms and architectural styles. The proposed development will improve the streetscape and will also enhance the surrounding public realm. The proposed development has been designed to complement existing buildings while still providing an intensification of the site. The massing of the buildings will be designed with well defined base that helps to promote a human scale along the street.*

# CITY OF KITCHENER URBAN DESIGN MANUAL

In September 2019 Council for the City of Kitchener approved a new Urban Design Manual which contains City-wide design guidelines as well as more specific guidelines that apply to various types of development and/or various locations within the City. These guidelines are to be reviewed and evaluated with all planning processes and approvals. The purpose of the Guidelines is to ensure that new development is consistent with the City's Vision for urban design. For the purpose of this Brief we have reviewed the most relevant sections of the Design Manual: City-wide Design; Nodes & Corridors; and Design for Tall Buildings.

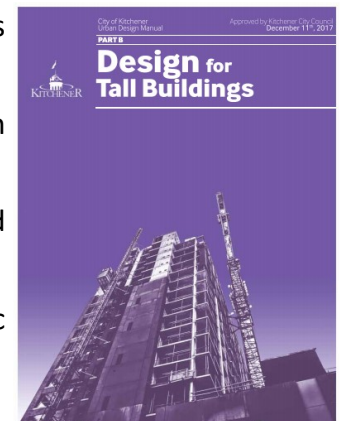
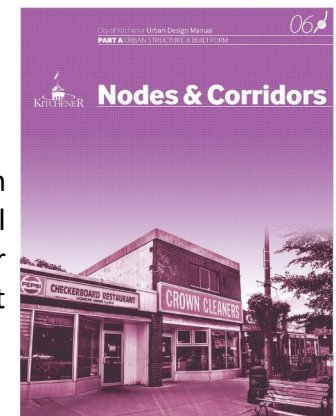
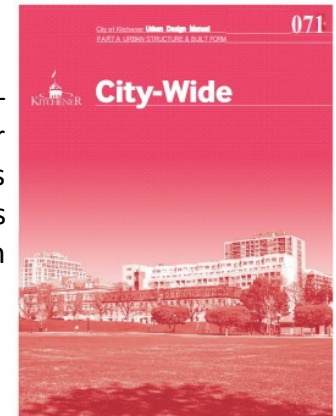
*Section 9: Design for Tall Buildings* is most applicable to the proposed development and the guidelines are reviewed in their entirety below. *Section 1: City-wide Guidelines* and *Section 6: Nodes & Corridors* are also applicable, however, there are a number of overlapping directives and guidelines from *Section 9: Design for Tall Buildings*.

## City-Wide Design Guidelines

The purpose of the City-Wide Design section of the Urban Design Manual is to set forth the universal design expectations which apply to all of Kitchener. This Section includes urban design objectives that are relevant to all geographies and building typologies and is divided into two sections: Community Design and Site Design. For the purpose of this brief we have focused on the Site Design guidelines which includes guidelines related to Built Form, Shared Spaces and Site Function with sub-categories within each of these two sections.

The proposed development has appropriately considered the City-Wide guidelines as follows:

- The proposed development focuses height and mass where it provides the best public realm opportunities while minimizing impacts on surrounding lands.
- Massing techniques are incorporated into the building design including projections, recesses, variation in colour, materials and texture, all of which help to reduce and diversify the massing of the building.
- The buildings are designed with a defined podium to enhance the public realm along King Street East and Weber Street East.
- The primary building entrances are designed to be visible from and directly accessible from the public street.



- All building elevations will be designed to provide transparency, architectural continuity and visual interest. No blank walls are proposed. As a result of proposed windows and balconies there will be sufficient natural surveillance onto the surrounding public street.
- The proposed buildings will have a contemporary design, meaning the buildings will be designed with a present-day building style, with varied architectural details, materials, colours and textures.
- The design of the building provides for pedestrian weather protection including covered building entrances.
- Lighting will be designed according to City standards and will be designed to minimize glare and light spilling onto surrounding areas.
- Energy-efficient lamps will be used and over lighting will be avoided.
- The site has been designed with reductions in parking to reduce the demand of private automobiles.
- Driveway access to the proposed development is located off of King Street East and Weber Street East. Both site entrances provide direct access from the street to the indoor parking area providing screening from view of the public realm and streetscape.

Other sections of the City-Wide guidelines including Servicing and Utilities, Waste and Recycling and Snow Storage will be considered through the detailed site plan review process and prior to final site plan approval.

## **Design for Tall Buildings**

Kitchener City Council approved the Design for Tall Buildings guidelines on December 11, 2017. The guidelines apply to all development proposals that are nine or more storeys in height. The following is a general assessment of the proposal relative to the various sections within the Tall Building Guidelines.

- The proposed development includes a tall building with a 27 storey component that steps back to 17 storeys and an 8 storey podium each with a well defined building base. The building base will be designed to prioritize pedestrian utility, comfort and safety.
- The bases of the proposed buildings will be designed to engage pedestrians and contribute to an active experience, including large windows along Weber Street East and Montgomery Road. The ground floor height of both buildings will be designed such that it could support the inclusion of additional non-residential uses in the future.
- Visual variety will be provided through well-articulated massing and high quality materials.
- Based on the criteria established in the Tall Building Guidelines– the proposed tower A would be classified as a compact slab tower and proposed tower B would be classified as a compact point tower.

- Building mass will be broken up through vertical and horizontal articulation, changes in materials, and architectural features.
- Balconies are provided for residential units along street-facing elevations allowing for natural surveillance.
- There are no neighbouring towers surrounding the proposed development to achieve relative height with.

## **PHYSICAL SEPARATION**

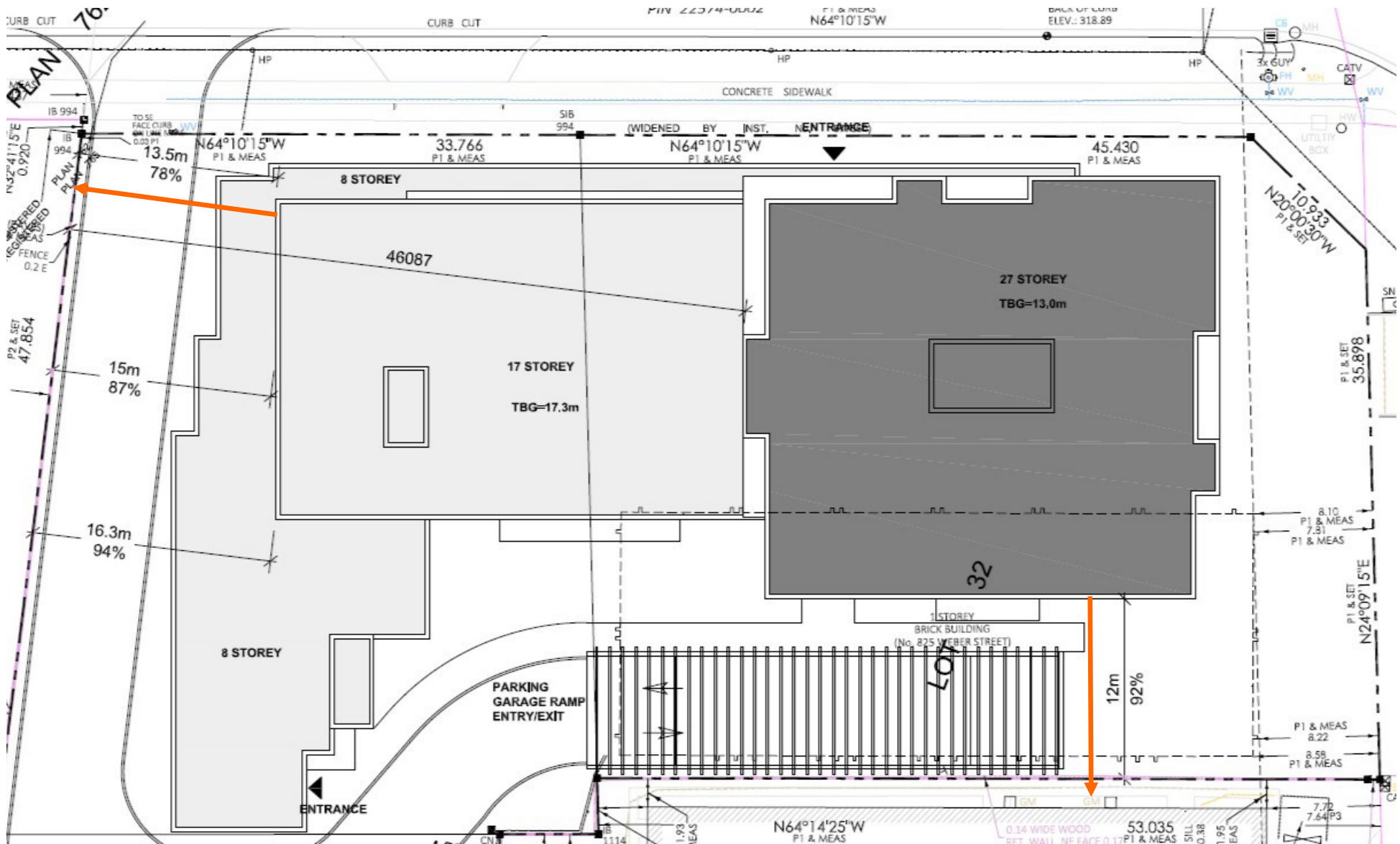
The City's guidelines include formulas for calculating physical separation between towers. Physical Separation is the measured setback in metres from a tall building tower's faces to its side and rear property lines. For the proposed development physical separation for the proposal (based on the City's formula) is calculated to be 13.0 metres for Building A and 17.3 metres for Building B.

The physical separation guidelines are, in part, intended to ensure that one tall building does not restrict the ability for an abutting property owner to also construct a tall building on their property. Rather than prescribe a fixed number for physical separation, the City recognizes that tall buildings come in all shapes and sizes, and that a dynamic, scalable approach to separation is key to providing towers that are responsive to their specific contexts.

Physical separation of 17.3 metres as recommended for the 17 storey tower portion of the building is maintained for the north, south and west facing building facades. The eastern facing tower setback of 13.5 metres to 16.3 metres adjacent the neighbouring property containing an existing one storey building used for commercial uses and surface parking, is proposed below the recommended separation.

Physical separation of 13 metres as recommended for the 27 storey portion of Building A is maintained for the north, east and west facing building facades. The south facing building facade is setback 12.0 metres from the adjacent property containing a one storey commercial plaza and surface parking.

In all instances where the proposed separation distance is below the recommended distance, the intent of the urban design guidelines will be maintained through the provision of privacy and/or wind screening, landscape design, and architectural detailing to be determined during the detailed design stage. The mitigation measures contemplated such as balcony placement, window sizing and room layouts will address any negative impacts of a slightly reduced physical separation. Furthermore, as a result of the proposed orientation and siting of the proposed development, and existing configuration and width of adjacent parcels, the adjacent lands will not be precluded from future development due to the height, setbacks, or design of the proposed development.



PROVIDED PHYSICAL SEPERATION

## 4.2 COMPATIBILITY ANALYSIS

The subject lands are located within the King Street East Secondary Plan and identified Mixed Use Corridor. The Mixed Use Corridors are linear in form and recognize the evolution of uses along the major corridors in the inner City. Mixed Use Corridors are planned to provide residential redevelopment opportunities together with appropriate commercial and institutional uses that primarily serve adjacent residential neighbourhoods.

The subject lands are located at the end of a block identified as Mixed Use Corridor, bound by King Street East, Montgomery Avenue, Weber Street East and Jackson Avenue. Properties within this block are generally underutilized and planned for a mix of uses which include High Intensity Mixed Use Development and Medium Intensity Mixed Use Development.

The subject lands location provides for redevelopment that will have minimal impacts in terms of height, shadow and traffic on neighbouring land uses (such as Eastwood Collegiate Institute to the north and the low density residential neighbourhood to the south on Floral Crescent – approximately 80 metres away). This low density neighbourhood is setback from King Street East and separate from the Mixed Use Corridor Block.

The subject lands are permitted to develop with a maximum Floor Space Ratio (FSR) of 4.0. There is no maximum height specified in the Secondary Plan or Zoning By-law. Notwithstanding, additional analysis has been completed to ensure minimal impacts on adjacent and nearby land uses, in particular areas designated Low Rise Residential and consideration for redevelopment of adjacent properties.

The proposed development has been designed with consideration of the following:

- The proposal is for multiple residential buildings, which is a use currently permitted by the Secondary Plan and Zoning By-law;
- The proposed development is located on a site with no maximum height restriction;
- Shadow studies have been completed which demonstrate that the proposed building height will not result in unacceptable shadow impacts on properties within the Low Rise Residential areas; and
- Pedestrian level wind studies have been completed to demonstrate the proposed development will not result in undesirable pedestrian environments and provides mitigation strategies for the same.

The 2014 City of Kitchener Official Plan contains general policies related to compatible development. Where a special zoning regulation or minor variance is requested, proposed or required to facilitate residential intensification or a redevelopment of lands, Policy 4.C.1.8 of the 2014 City of Kitchener Official Plan directs that the overall impact of the special zoning regulation or minor variance will be reviewed, to ensure a number of compatibility criteria are satisfied. It is noted that Policy 4.C.1.8 applies in large part to development within

established neighbourhoods. The subject lands are located along two Regional Roads, are located outside of the Low Rise Residential area that forms the established neighbourhood, and are designated and zoned for high density development. Notwithstanding, the following is a response to the applicable criteria set forth in 4.C.1.8:

- a) Any new buildings and any additions and/or modifications to existing buildings are appropriate in massing and scale and are compatible with the built form and the community character of the established neighbourhood.

Design Response: The proposed development provides for an appropriate massing and scale with respect to the Official Plan Designation (Urban Corridor and Mixed Use Corridor). The Official Plan provides policy for the future development for the subject lands and surrounding sites with respect to uses as densities. The subject lands and immediately adjacent land uses are planned for intensification that provides for a mix of residential and commercial units with increased densities which differs from what currently exists today. Currently, the subject lands and adjacent land uses are all low rise commercial/service uses. The proposed development and site specific requests align with the Urban Corridor and Mixed Use Corridor policy which provides direction for future intensification on the subject lands and adjacent properties. Given the location of the subject lands the increase in the Floor Space Ratio is appropriate as it is located within a priority area for intensification and not located near sensitive uses.

- d) *New buildings, additions, modifications and conversions are sensitive to the exterior areas of adjacent properties and that the appropriate screening and/or buffering is provided to mitigate any adverse impacts, particularly with respect to privacy.*

Design Response: The buildings have been oriented on site so that the majority of the views are onto the public right of way or internal to the site. Where views overlook onto adjacent properties the tower of the building has been setback from the side lot line to provide distance between adjacent lots where future mixed use development may occur.

- e) *The lands can function appropriately and not create unacceptable adverse impacts for adjacent properties by providing both an appropriate number of parking spaces and an appropriate landscaped/amenity area on the site.*

Design Response: The proposed development provides adequate parking to serve the residential uses proposed on site. The application plans to implement Transportation Demand Management measures to educate the occupants on alternative forms of transportation and active transportation, unbundling parking, providing bicycle storage facilities in excess of the minimum requirements, subsidized transit passes, and car share facilities. In addition, direct connection to Grand River Transit services are available on both King Street East and Weber Street East.

Private and shared amenity spaces are also provided within the building. The majority of the units will have a private patio off of their units, while an indoor amenity room is provided for the buildings in addition to a large shared rooftop outdoor amenity space on top of the podium that serves all the residents.

- f) *The impact of each special zoning regulation or variance will be reviewed prior to formulating a recommendation to ensure that a deficiency in the one zoning requirement does not compromise the site in achieving objectives of compatible and appropriate site and neighbourhood design and does not create further zoning deficiencies.*

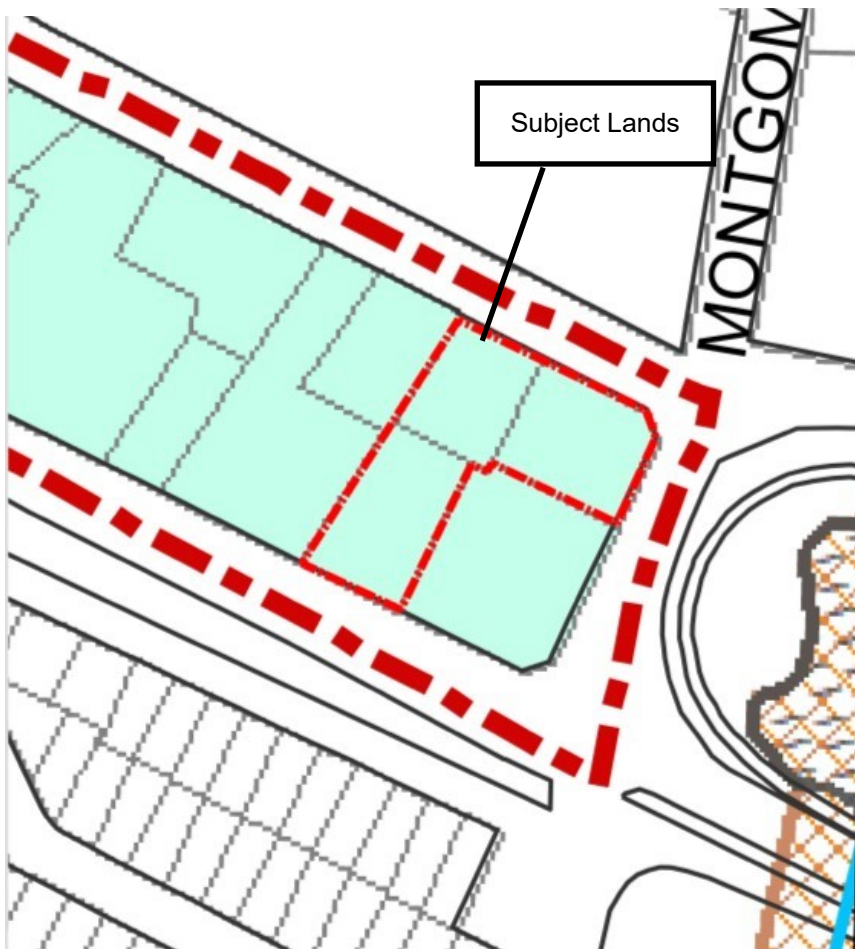
Design Response: The proposed zone change application will be reviewed by Planning staff prior to approval. It is our opinion that the proposed zoning will result in a development that achieves appropriate site design.

When considering compatibility, it must be weighted against other planning objectives. The subject lands are located within a Urban Corridor which are key intensification areas within the Region and City. The planned function for Mixed Use Corridors is to provide residential redevelopment opportunities together with appropriate commercial and institutional uses that primarily serve adjacent residential neighbourhoods. The subject lands are an underutilized parcel within the King Street East Neighbourhood representing a unique development opportunity. The lands immediately surrounding the site are also designated either High Intensity Mixed Use Development or Medium Intensity Mixed Use Development.

When reviewing the land use plan for the King Street East Neighbourhood it is clear that King Street East and Weber Street East are intended to be developed at a higher intensity than the areas outside of the secondary plan boundary to the north and south. The proposed development represents an opportunity to develop the site in a manner which is compatible with the area. A shadow analysis has been completed for the proposed development (**Appendix A**) to analyze the potential impact of the proposed development on surrounding properties. As confirmed in Section 4.3 of this Brief, the shadow analysis demonstrates that the height and location of the buildings will not generate unacceptable amounts of shadows over low rise residential uses in proximity to the subject lands.



# King Street East Land Use Plan



## Legend

- Low Rise Residential Preservation
- Low Rise Multiple Residential
- Low Density Multiple Residential
- Medium Density Multiple Residential
- High Density Multiple Residential
- Office Residential Conversion
- Medium Density Commercial Residential
- High Density Commercial Residential
- Community Institutional
- Mixed Use Corridor
- Neighbourhood Park
- Boundary of Secondary Plan
- Special Policy Area
- Primary Arterial Road
- Secondary Arterial Road
- Major Collector Road
- Minor Collector Road

## 4.3 ANALYSIS OF MICROCLIMATE IMPACTS

### SHADOW STUDY

A shadow impact analysis was requested to allow staff to better understand the net impact the proposed massing will have on adjacent properties. The shadow study diagrams are included as **Appendix A**. The following is a short summary of the shadow study findings:

**March/September 21:** During the Spring /Fall time periods shadows fall, for the most part, within the subject lands and within non-residential properties. The adjacent institutional use lands will experience partial shadows along the Weber Street East frontage in the early afternoon. Partial shadows are anticipated to fall on the existing sports field in the late afternoon time periods.

**June 21:** During the summer time periods the shadows fall within the site or within surrounding non-residential properties and associated parking areas. Existing residential homes are not impacted by the proposed development, nor are residential properties directly abutting the subject lands. The adjacent institutional use lands will not experience shadows during the summer months.

**December 21:** Residential properties near the intersection of Weber Street east and Jackson Avenue will experience partial shadows from the proposed development during the morning time periods on December 21. Generally winter shadows are considered more acceptable as people are less likely to use their backyards during this time of year, and shadows from existing dwellings likely already impact these areas.

The shadow study diagrams demonstrate that the height and location of the building will not generate unacceptable amounts of shadows on adjacent lands, and on lands designated Low-Rise Residential.

### PEDESTRIAN WIND STUDY

A pedestrian wind study has been completed by The Boundary Layer Wind Tunnel Laboratory (BLWTL). The purpose of this study was to conduct a qualitative street-level, wind environment assessment for the proposed development. The study, attached as **Appendix B**, concludes that the proposed project is not expected to have significant impacts on the existing wind conditions off-site. No exceedances of the wind safety criterion are anticipated.

## 4.4 CPTED CONSIDERATIONS

The proposed development has been designed with consideration of the basic concepts of Crime Prevention Through Environmental Design (CPTED).



### 1 Access Control

#### ACCESS CONTROL

The principle of access control is directed at decreasing crime opportunity. The overall goal with this CPTED principle is not necessarily to keep intruders out, but to direct the flow of people while decreasing the opportunity for crime. The proposed development achieves access control by:

- Providing clearly identifiable, point(s) of entry into each building.
- Defining public, semi-public, and private amenity areas through the use of hardscape and landscape planting design.
- Creating well-defined site entrances for vehicular access from both King Street East and Weber Street.
- Consideration will be given to providing passcode protected garage entry doors.

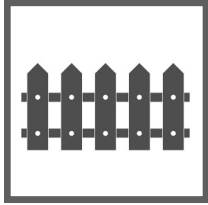


### 2 Natural Surveillance

#### NATURAL SURVEILLANCE

Natural surveillance occurs by designing the placement of physical features, activities and people in such a way as to maximize visibility and foster positive social interaction among legitimate users of private and public space. It is directed at keeping intruders under observation based on the theory that a person inclined to engage in criminality will be less likely to act on their impulse if he or she can be seen. The proposed development achieves natural surveillance by:

- Maximizing the number of "eyes" watching the site by creating a visual connection and maintaining unobstructed views from within the building to the exterior, as well as, between the street, the sidewalk, and the building.
- Proposing spaces and uses that are capable of generating activity (at-grade lobby/amenity areas and commercial uses).
- Placing windows along all sides of the building that overlook public sidewalk and parking areas.
- Designing lighting plans that avoid creating blind spots and ensuring potential problem



**3**

### **Territorial Reinforcement**

areas are well lit (pedestrian walkways, stairs, entrances/exits, parking areas, recycling areas, etc.).

#### **TERRITORIAL REINFORCEMENT**

Territorial Reinforcement is the intentional design of the site to create a “border” between private and public property. These measures are not meant to prevent anyone from physically entering, but to create a feeling of territoriality and send a message to offenders that the property belongs to someone. The proposed development achieves the principle of territorial reinforcement by:

- Clearly delineating private from public property via: pavement treatments, entry treatments, landscaping, fencing, signage, etc.
- Delineating desired pedestrian and vehicular circulation.



**4**

### **Maintenance**

#### **MAINTENANCE**

The other key aspect of CPTED is property maintenance; on the premise that good maintenance practices and upkeep send the message that the property is cared for on a regular basis. Following construction of the development, property management and/or management by a condominium corporation will ensure that the buildings interiors and exteriors are well maintained.

The proposed development will be also be subject to site plan approval including requirements to maintain the property for the life of the development.

## 4.5 CONCLUSION

The proposed development presented in this Urban Design Brief will contribute positively to the City of Kitchener's Official Plan policies and urban design objectives as well as the site specific goals and objectives identified herein. Overall, the proposed redevelopment represents a significant investment in Kitchener and will create new residential units in a high-quality development, all of which contribute positively to the King Street East neighbourhood. In summary, the proposed development will:

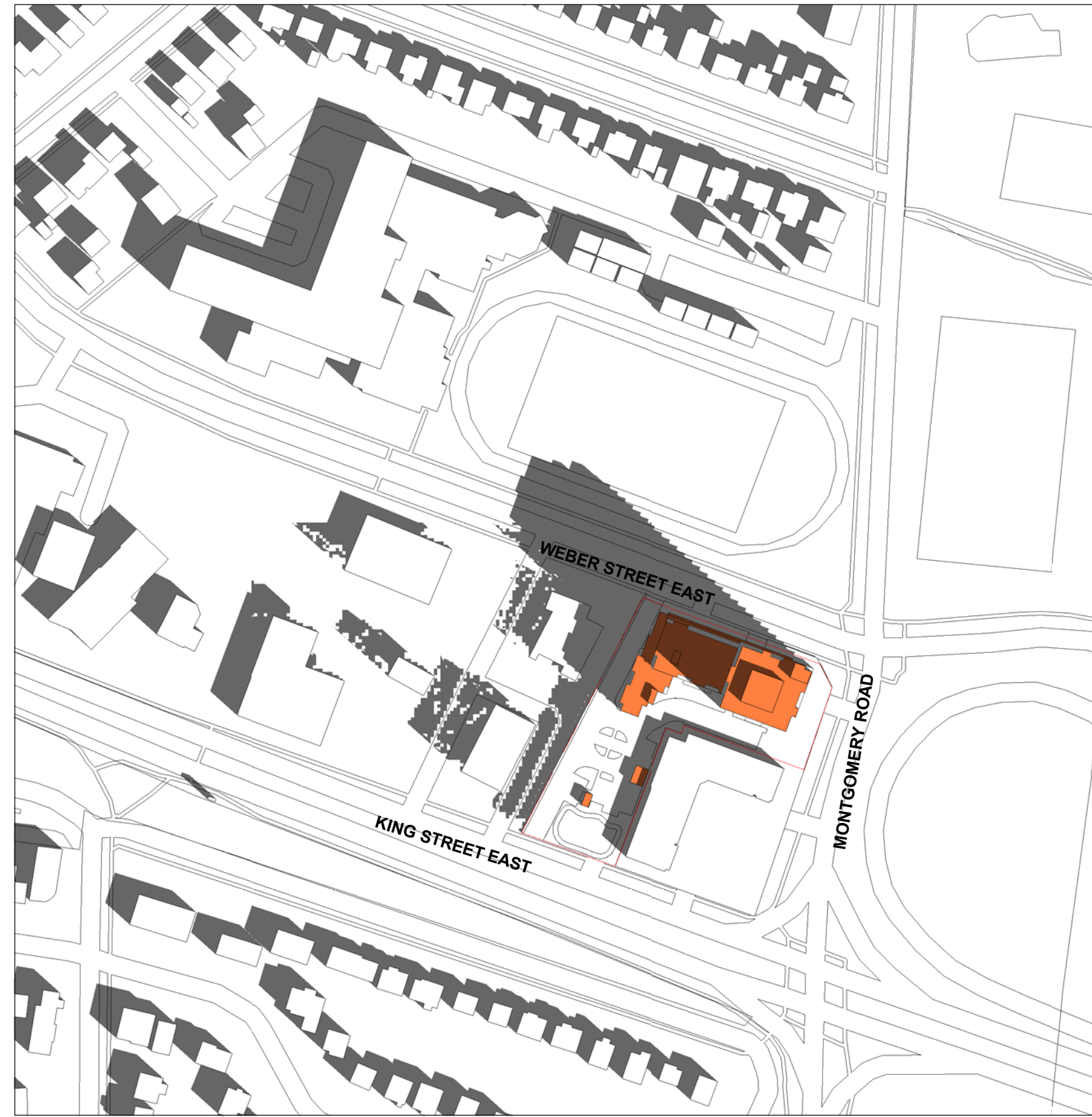
- Capitalize on the existing location of the subject lands in proximity to Downtown and within a Urban Corridor;
- Provide for intensification that is sensitive to the existing and planned surrounding context;
- Result in a pedestrian friendly development that supports active transportation while supporting existing and planned transit services, thereby minimizing future occupants' reliance on the automobile;
- Create strong visually appealing street edges;
- Result in a more efficient and sustainable use of the property;
- Increase the variety of unit types within the King Street East Neighbourhood by offering smaller multiple residential units at an attainable price point; and
- Define the King Street East and Weber Street East street edges by incorporating high quality architectural detailing.

The proposed redevelopment is appropriate for this location and will contribute positively to the character and built form of the King Street East corridor. The proposal additionally supports the vision to provide a gateway to Downtown Kitchener through redevelopment in the Urban Corridor and new transit focused neighbourhood planned.



# APPENDIX A

SHADOW STUDY DIAGRAM



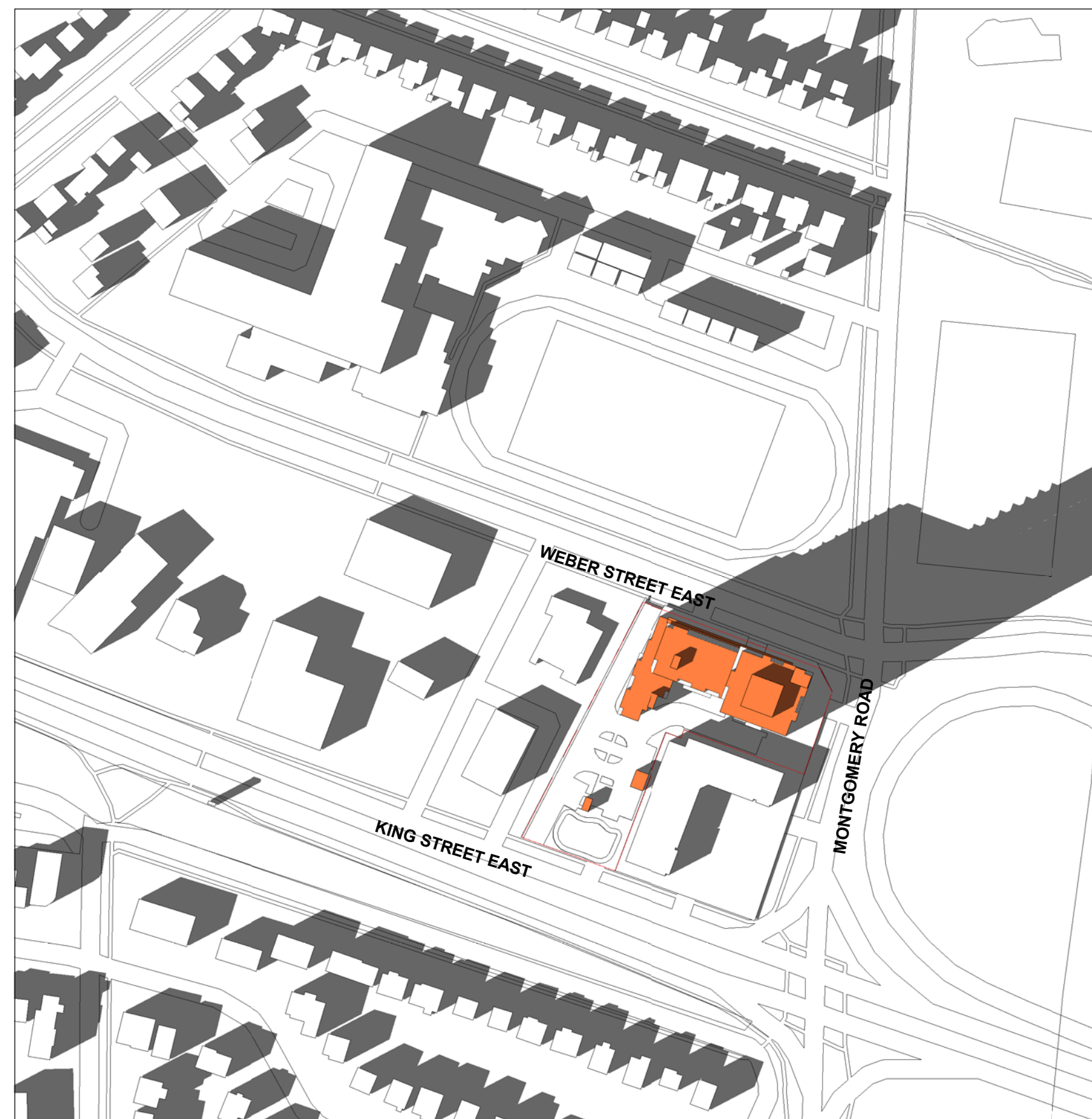
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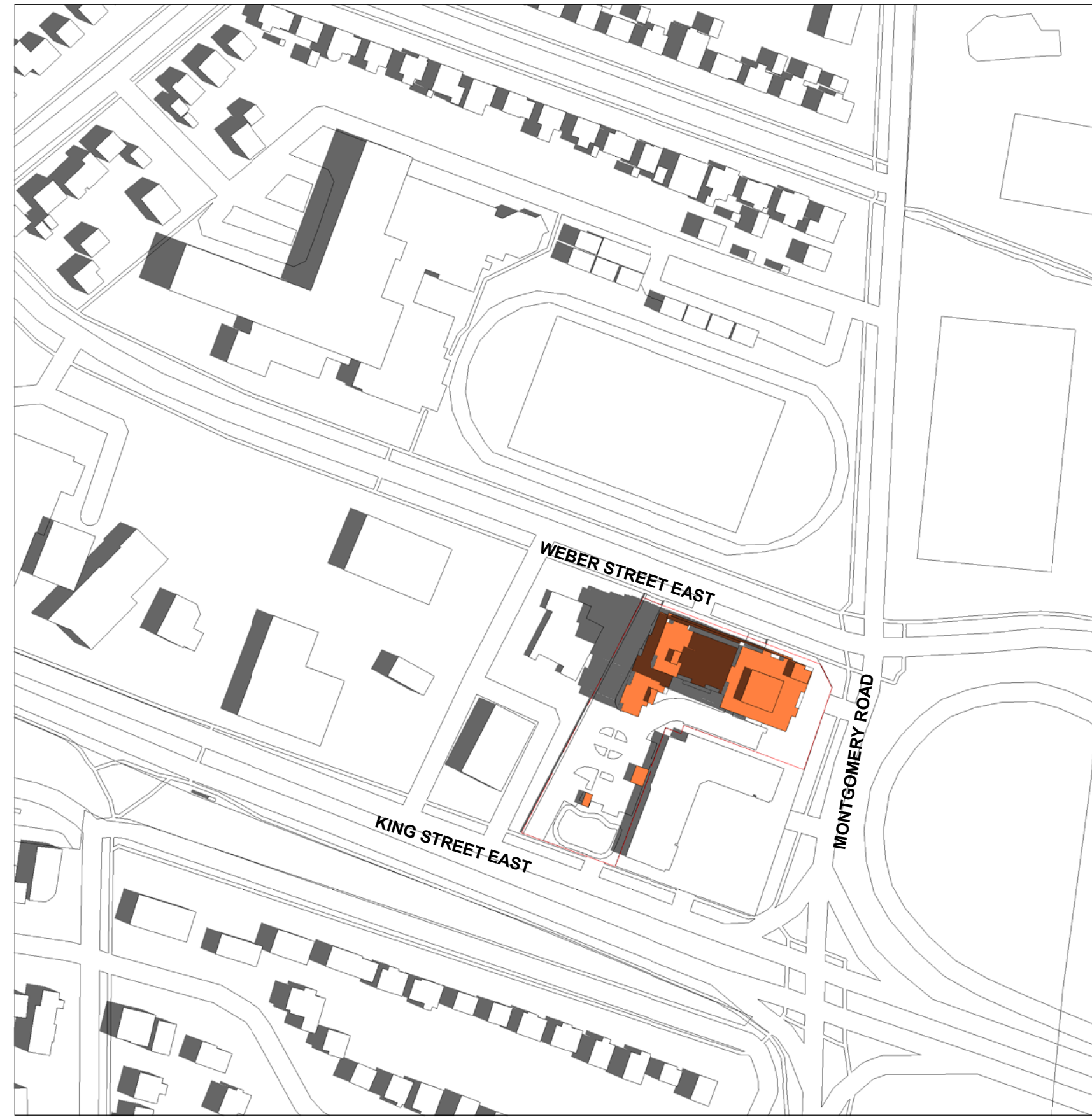
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KITCHENER, ONTARIO

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Issue Date	Author	Checker

**SHADOW STUDY**  
**SPRING EQUINOX**

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Project number	0001	





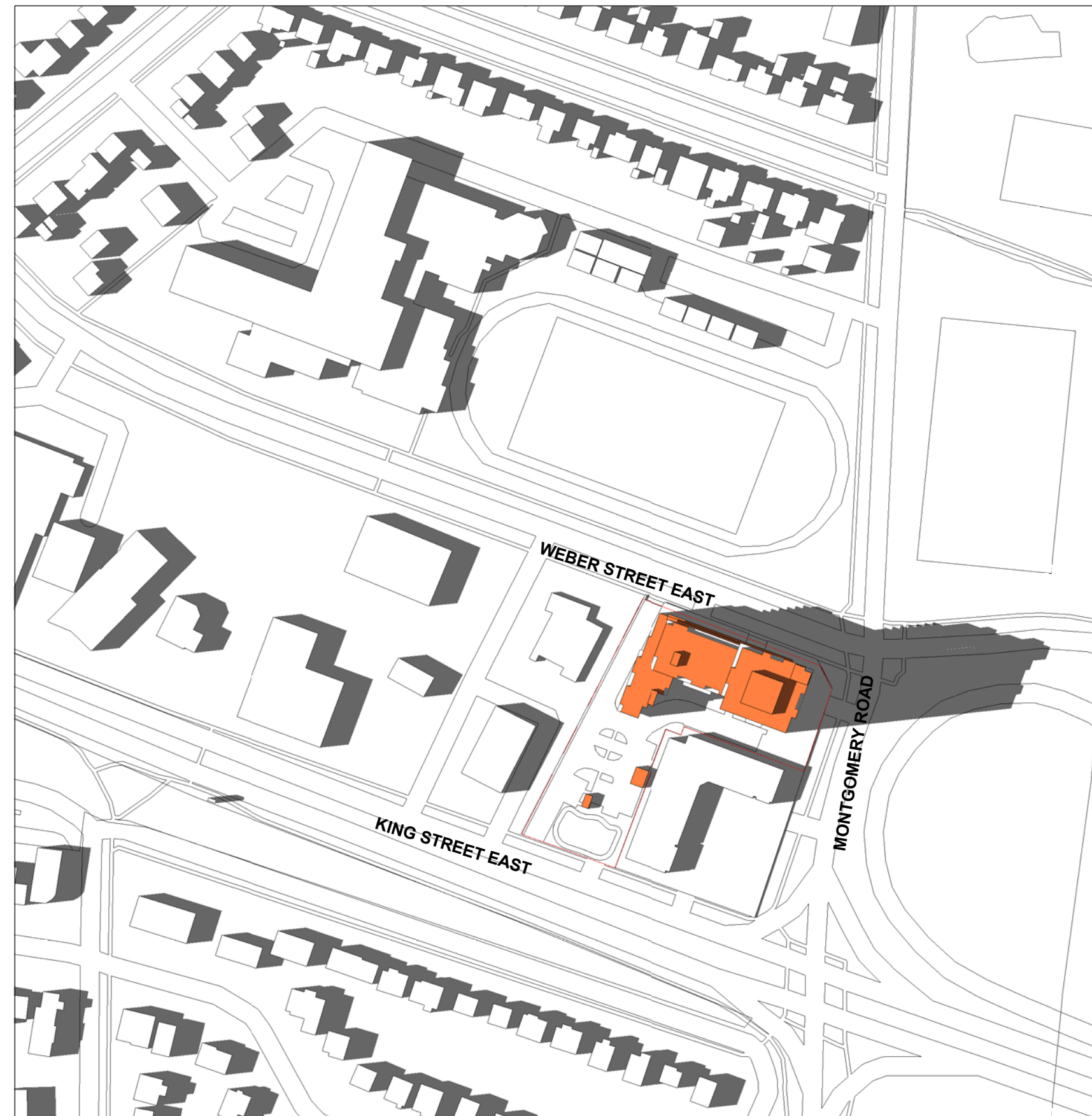
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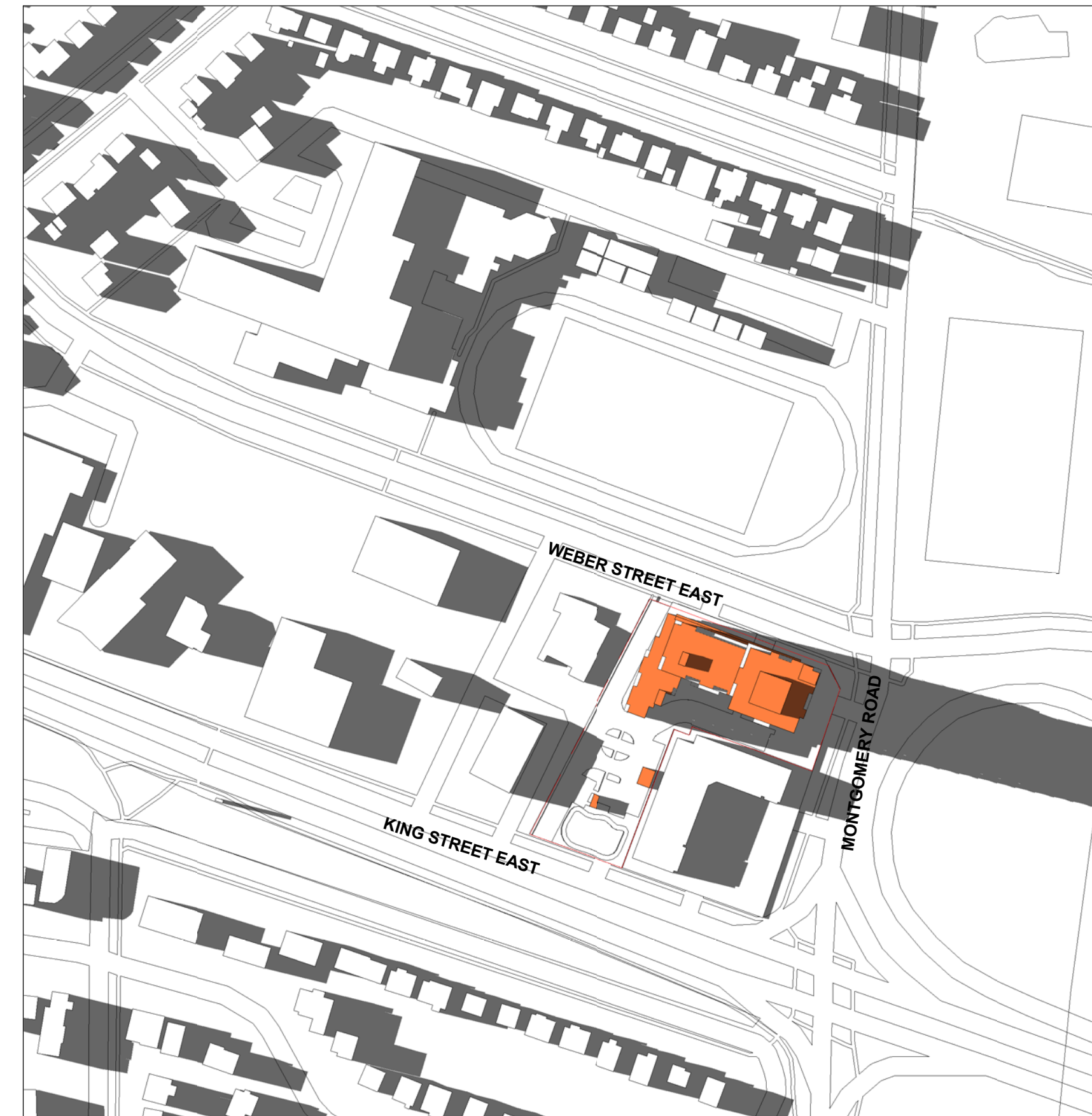
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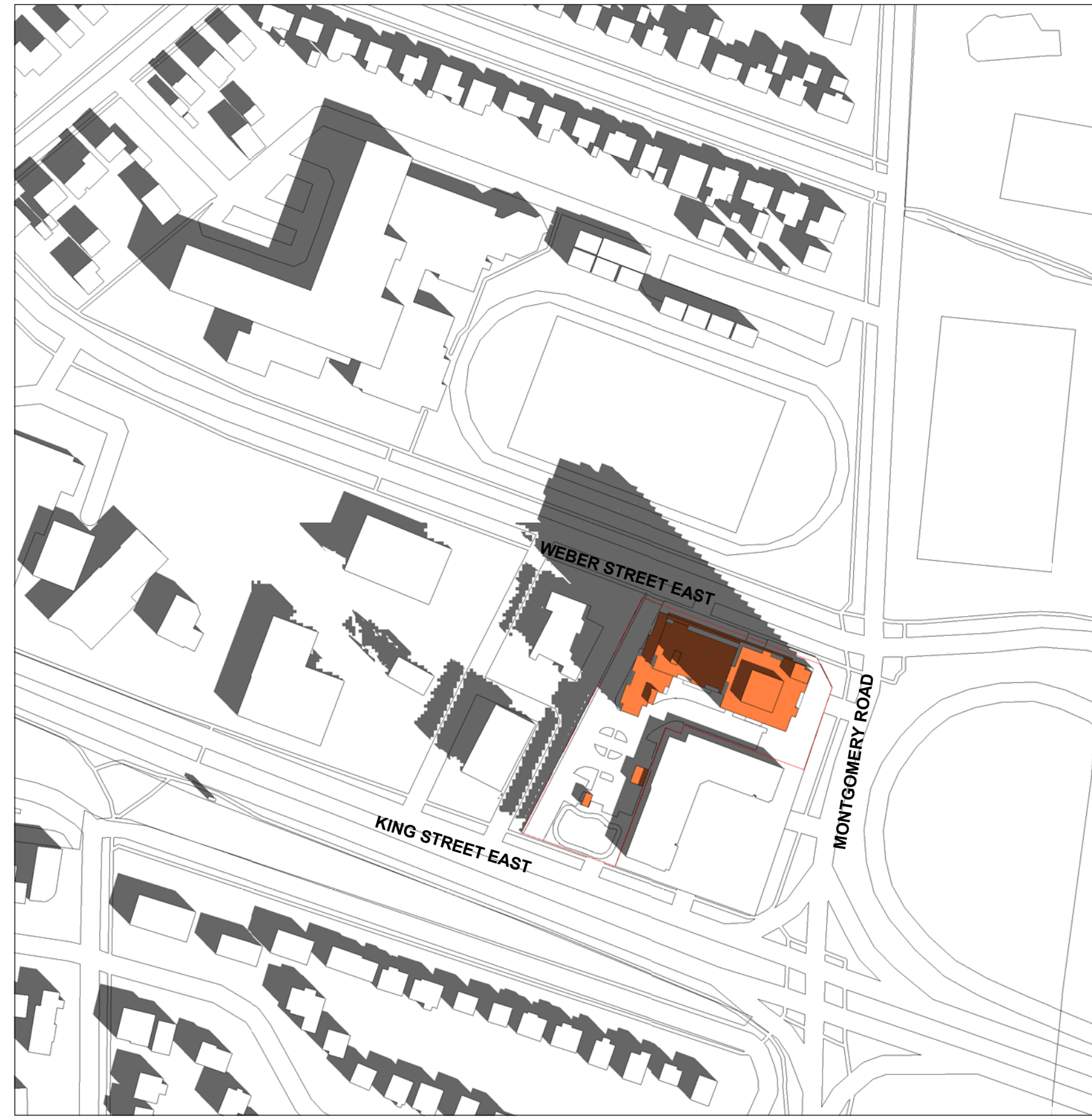
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KITCHENER, ONTARIO

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**SHADOW STUDY**  
**SUMMER SOLSTICE**

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Project number 0001 **A204**



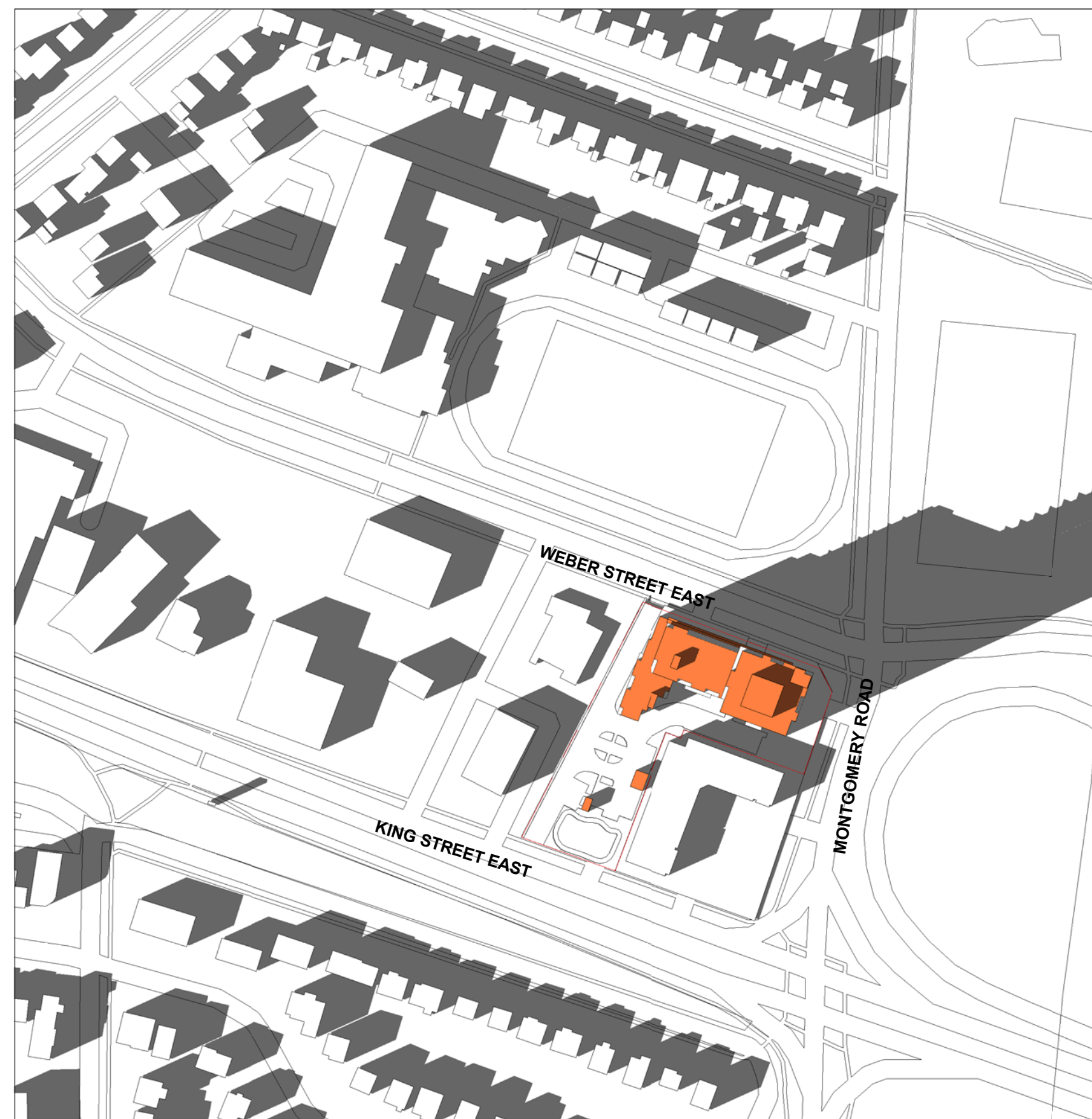
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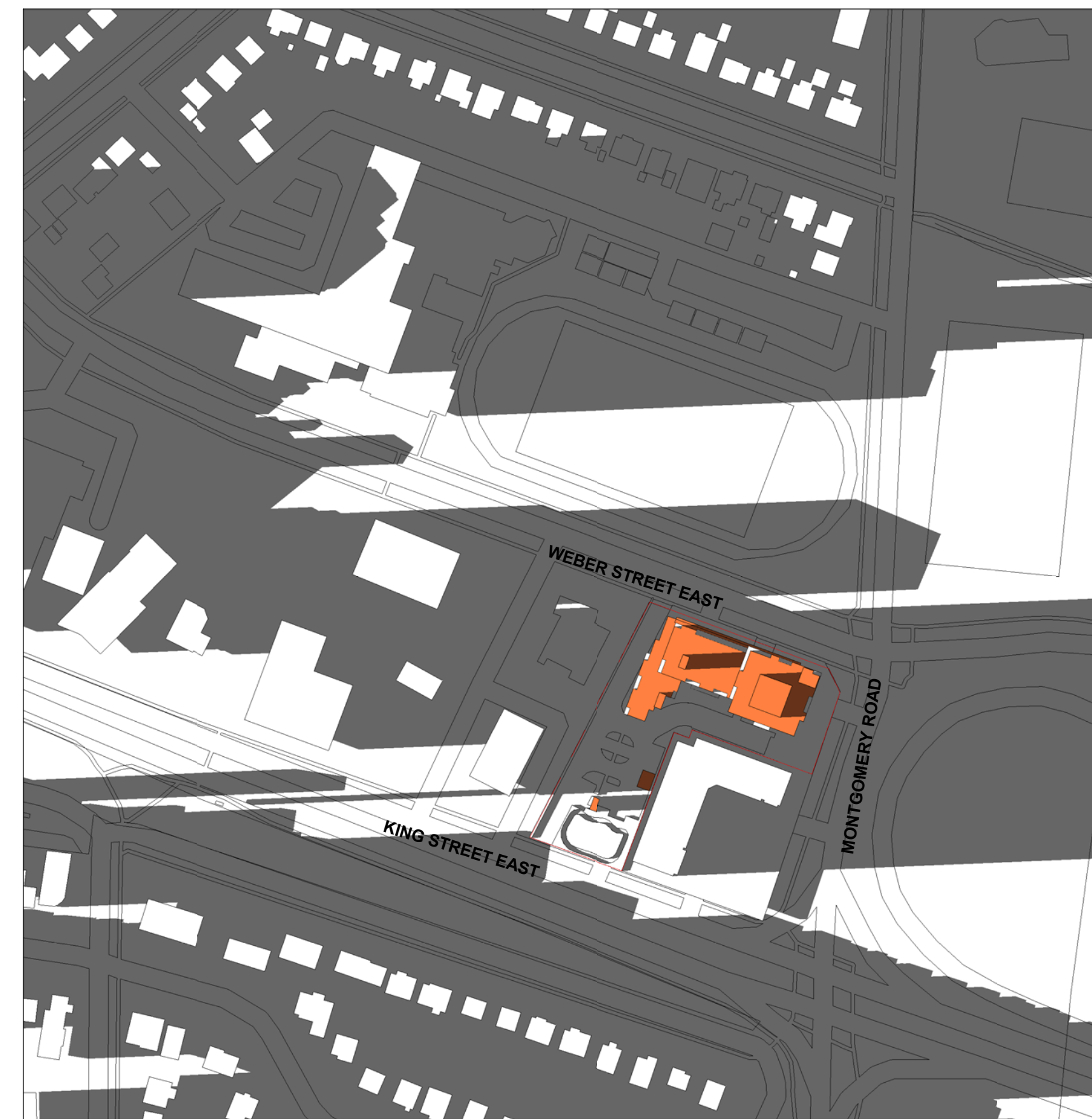
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KITCHENER, ONTARIO

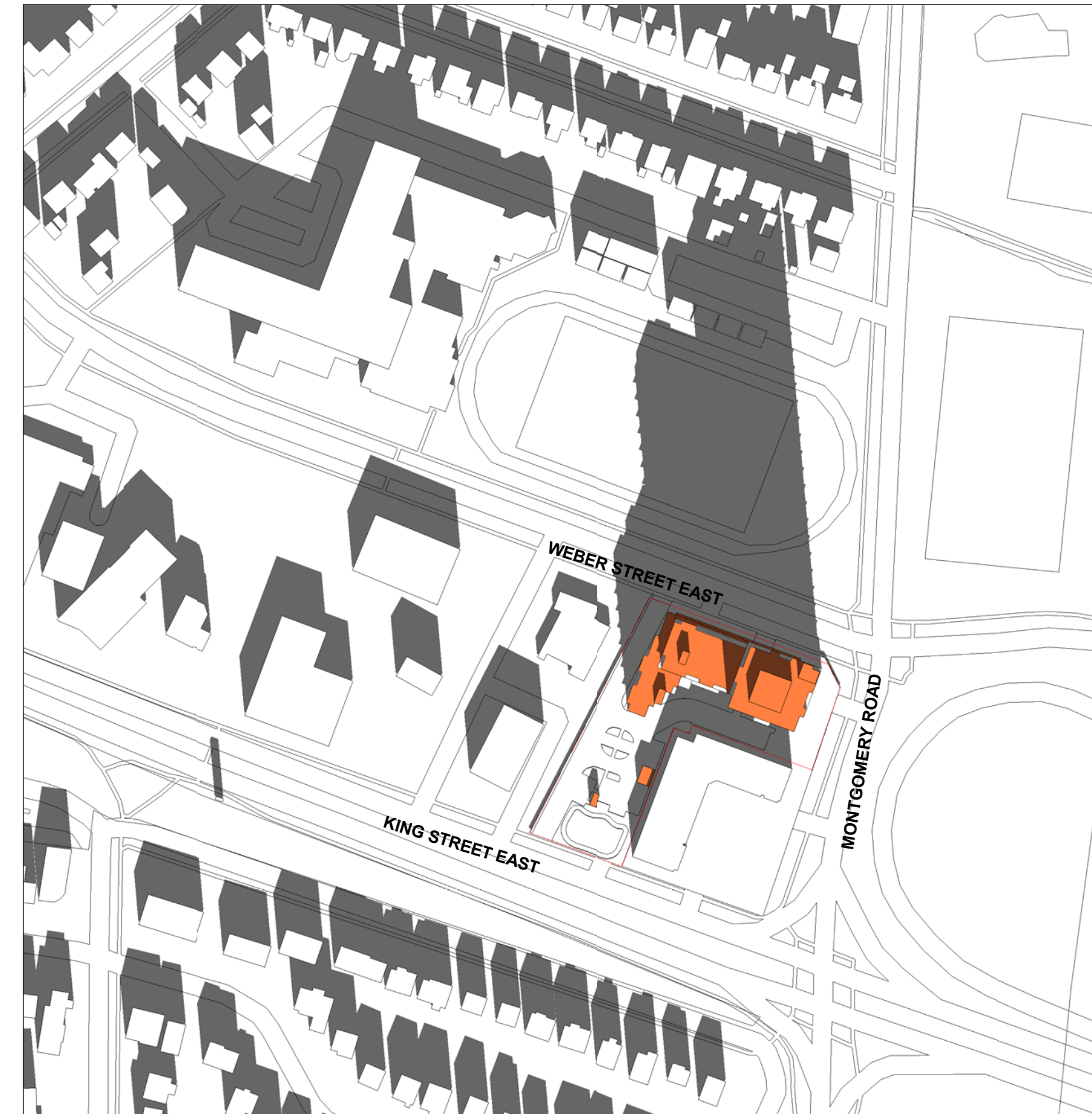
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**WEBER MONTGOMERY**  
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**SHADOW STUDY  
WINTER SOLSTICE**

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# APPENDIX B

PEDESTRIAN WIND STUDY



**Boundary Layer Wind Tunnel Laboratory**

**Pedestrian Level Wind  
Preliminary Impact Assessment  
Weber-Montgomery-King  
Kitchener, Ontario**

**February 3, 2023**  
BLWT-W117-IR1-2023

BLWTL Project No. 21W117

Submitted To:

King Weber Kitchener Holdings Inc.  
C/O Vive Development Corporation  
200-242 Main St E  
Hamilton, Ontario, L8N 1H5 Canada

Submitted By:

The Boundary Layer Wind Tunnel Laboratory  
The University of Western Ontario  
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# 1 REPORT OVERVIEW

The Boundary Layer Wind Tunnel Laboratory (BLWTL) was retained by King Weber Kitchener Holdings Inc. to perform a preliminary qualitative wind assessment for the Weber-Montgomery-King development located at 815 and 825 Weber Street East and 1770 King Street East in Kitchener, ON. The building is a 27/17 storey tower with an 8-storey podium (see Figure 1). The site is located Weber Street E to its north and King Street E to its south, on the west side of Montgomery Rd in Kitchener, Ontario.

Specifically, the BLWTL was engaged to carry out an initial high-level assessment of the expected pedestrian winds around the Weber-Montgomery-King development site in Kitchener, and the impact of the proposed development to comfort conditions. This qualitative, opinion-based approach provides a description of potential wind conditions related to pedestrian comfort, identifies areas of accelerated flows, and presents conceptual mitigation strategies. This assessment is based on drawings received by BLWTL on December 19, 2022.

The proposed development site is L-shaped with overall dimensions of about 80m x 100m; a site plan is shown in the Figure 2.

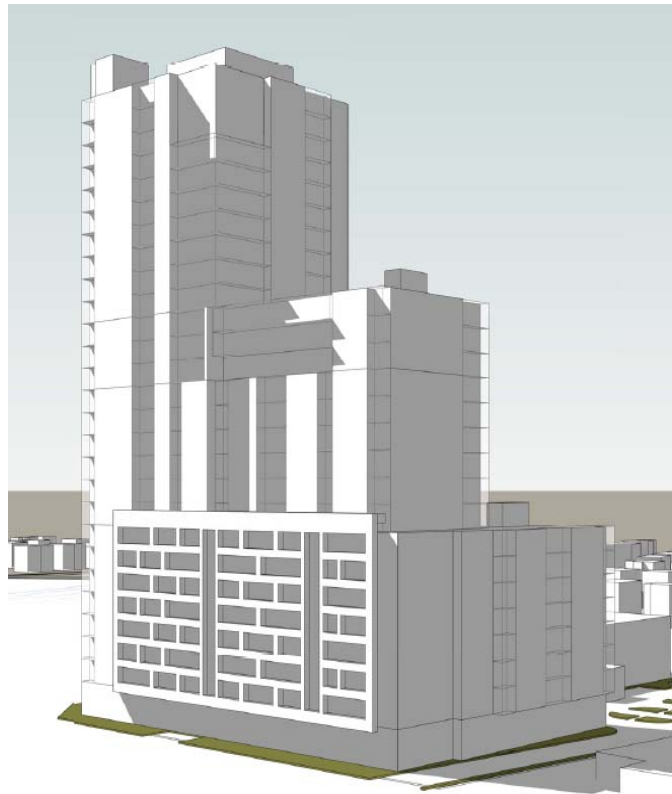


Figure 1: Isometric view of the tower (from southwest)

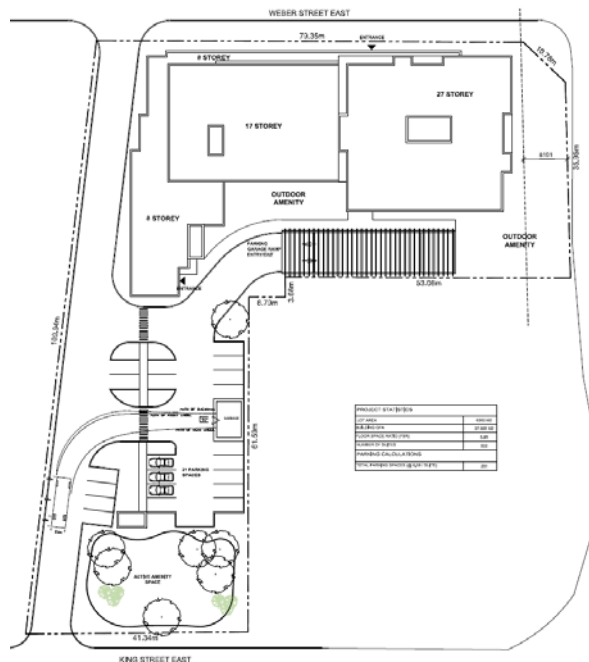


Figure 2 Development Site Plan: Weber-Montgomery-King

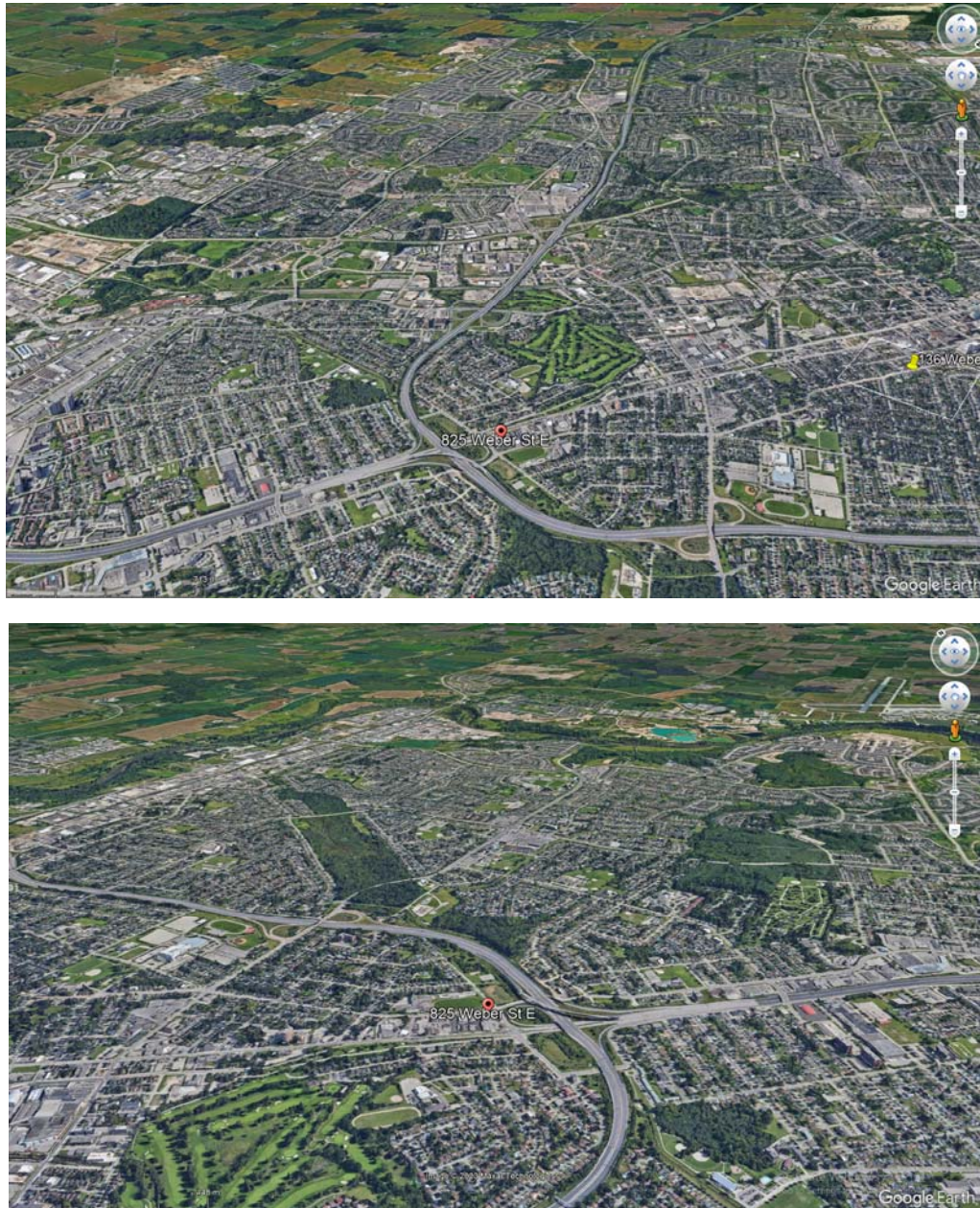
This report provides a qualitative street-level, wind environment assessment with a focus on pedestrian comfort. Discussion of the Level 9 roof amenity spaces is also included. For this qualitative assessment, the local wind climate is examined in relation to the building's location, and draws upon experience obtained from related microclimate analyses. Together, this provides the basis to carry out this desktop analysis that is intended to provide a summary of the pedestrian level comfort conditions anticipated around the proposed development.

The introduction of a high-rise building development in a relatively suburban environment will invariably create local wind speed-ups for some wind directions. With that expectation, the focus is to identify and develop strategies to make wind conditions suitable for the intended usage for the affected area. For example, entry areas should have a comfort category consistent with standing activities, while sidewalks should meet the condition of being comfortable for walking.

## 2 Site Specific Information

The site is sandwiched between Weber Street E to its north and King Street E to its south, directly to the west of Montgomery Rd in Kitchener, Ontario. The existing L-shaped site consists of three 1 storey plaza buildings with parking lots.

The site is situated in typical suburban environment which extends for a minimum of about 5km in all directions. Immediately to the north (across Weber St E) is an open sports field. A golf course is located about 1km away to the southeast of the site. 200m to the east of the site Highway 7 runs north-south. Figure 3 shows aerial views looking over the site location.



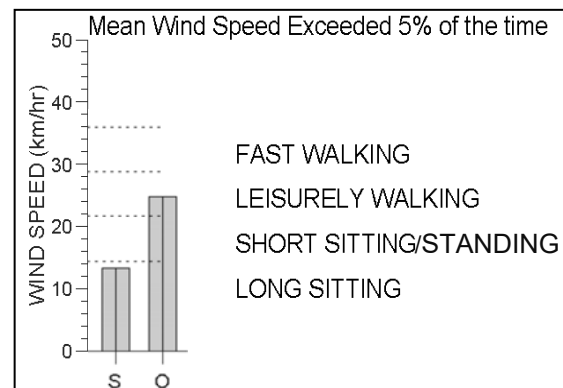
**Figure 3:** Aerial views looking southwest over site (top) and northeast over site (bottom) (images courtesy of GoogleEarth™)

### 3 Assessment of Wind Conditions

#### 3.1 General

The criteria used at the BLWTL for the assessment of pedestrian comfort are categorized by typical types of activity (walking, standing, sitting). In general, wind conditions suitable for walking are appropriate for sidewalks and parking areas. At entrances, lower wind speeds that are comfortable for standing are preferred. For amenity spaces, including public terraces, it is often desirable to have lesser winds suitable for sitting or long-term standing, depending on the intended use. If the criterion for walking is not satisfied, then a sidewalk area would be classified as uncomfortable for the intended usage. These criteria are more fully described in Appendix A, along with some other general details relevant to a pedestrian wind speed assessment, including a description of directional winds by season for the Kitchener-Waterloo area.

The adjacent insert shows the predicted wind speeds exceeded 5% of the time on an annual basis for typical suburban and open country locations in K-W. These are compared to the different comfort categories (further described in Appendix A). In terms of comfort, winds expected in a typical suburban (S) environment are expected to be suitable for long sitting and therefore suitable for most activities regardless of duration. In a typical open country (O) environment, the winds can be expected to be somewhat more intense and suited for standing or leisurely walking. In summer, predicted winds can be expected to be lower than the annual winds shown, while in winter months higher winds speeds can be expected.



Note that local winds will be influenced by their immediate surroundings. For example, a broad building will undoubtedly cause downwash winds, creating local wind speed-ups at ground level particularly at building corners. Appendix B shows images of some typical wind patterns around midrise and tall buildings.

#### 3.2 Existing Wind Conditions

The site for the proposed Weber-Montgomery-King development at 815 and 825 Weber Street East and 1770 King Street East in Kitchener, ON is currently the site of three 1-storey plaza buildings with parking lots. The site is situated in typical suburban environment which extends for about 5km in all directions. Local open areas include the sports field to the north, and the space between the site and Highway 7 to the east. Collectively, it can be expected that winds are consistent with a suburban environment, or marginally greater. Existing wind conditions on the site property and at adjacent properties are expected to be comfortable for standing in the summer, and for walking in the winter in most areas, including sidewalks.



### 3.3 Predicted Wind Conditions: Weber-Montgomery-King Development

#### 3.3.1 General

Entries/exits to the development are indicated in Figure 4. The main lobby entry is off Weber along the north side of the development. A secondary entry is at the southwest area of the building. Outdoor amenity spaces are also identified.

Detailed landscape plans are not developed at the time of this reporting. Strategic landscaping can be instrumental in achieving desired comfort levels. Trees and planters can disrupt the effects of downwash winds at street level, as well as the wind patterns around building corners and on terraces. For some phenomena, windscreens, canopies, or overhead trellises can be effective.

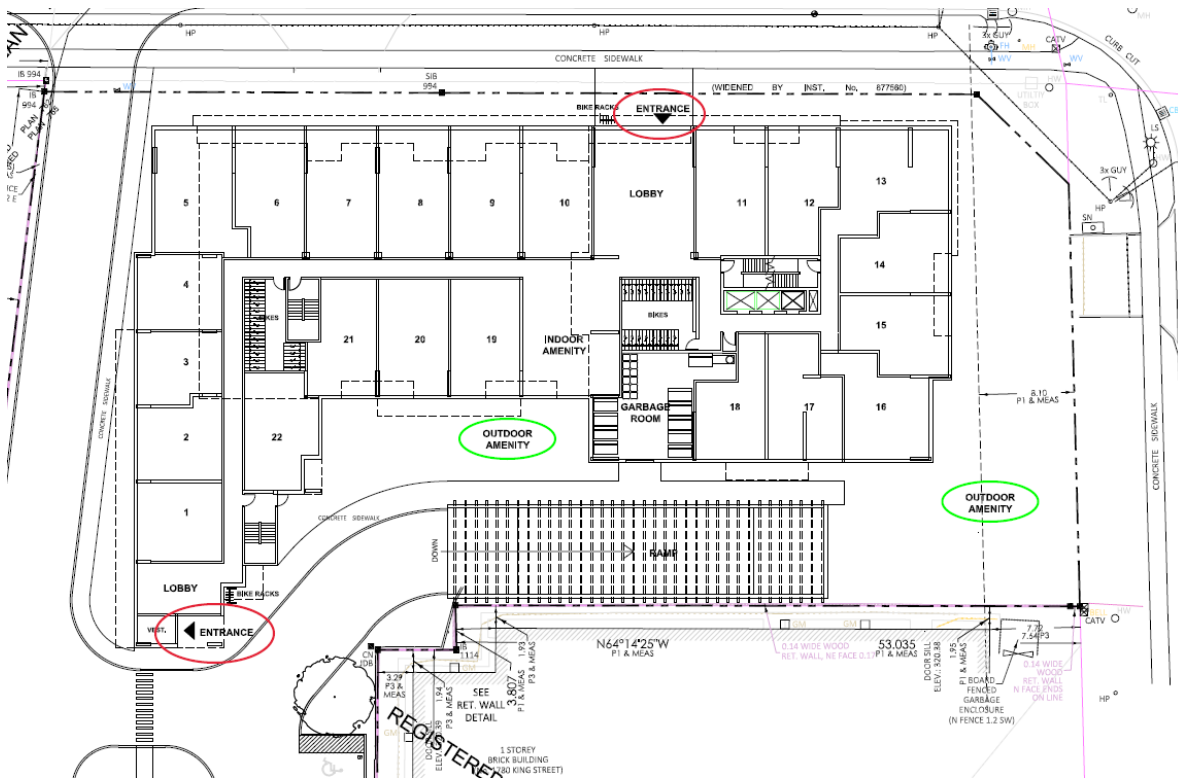


Figure 4: Plan indicating ground level and outdoor amenity locations of main entries/exits.

Throughout the site of a high-rise development flow patterns can be complex. Appendix B demonstrates some typical wind patterns around a tall structure. Appendix C further demonstrates some flow patterns and describes some of the associated problems which can lead to locally accelerated wind flow at ground and terrace levels. Figure 5 demonstrates some typical horizontal wind patterns expected around the Weber-Montgomery-King development site that can be relevant to the current assessment; many of these patterns can be affected by the westerly wind directions.

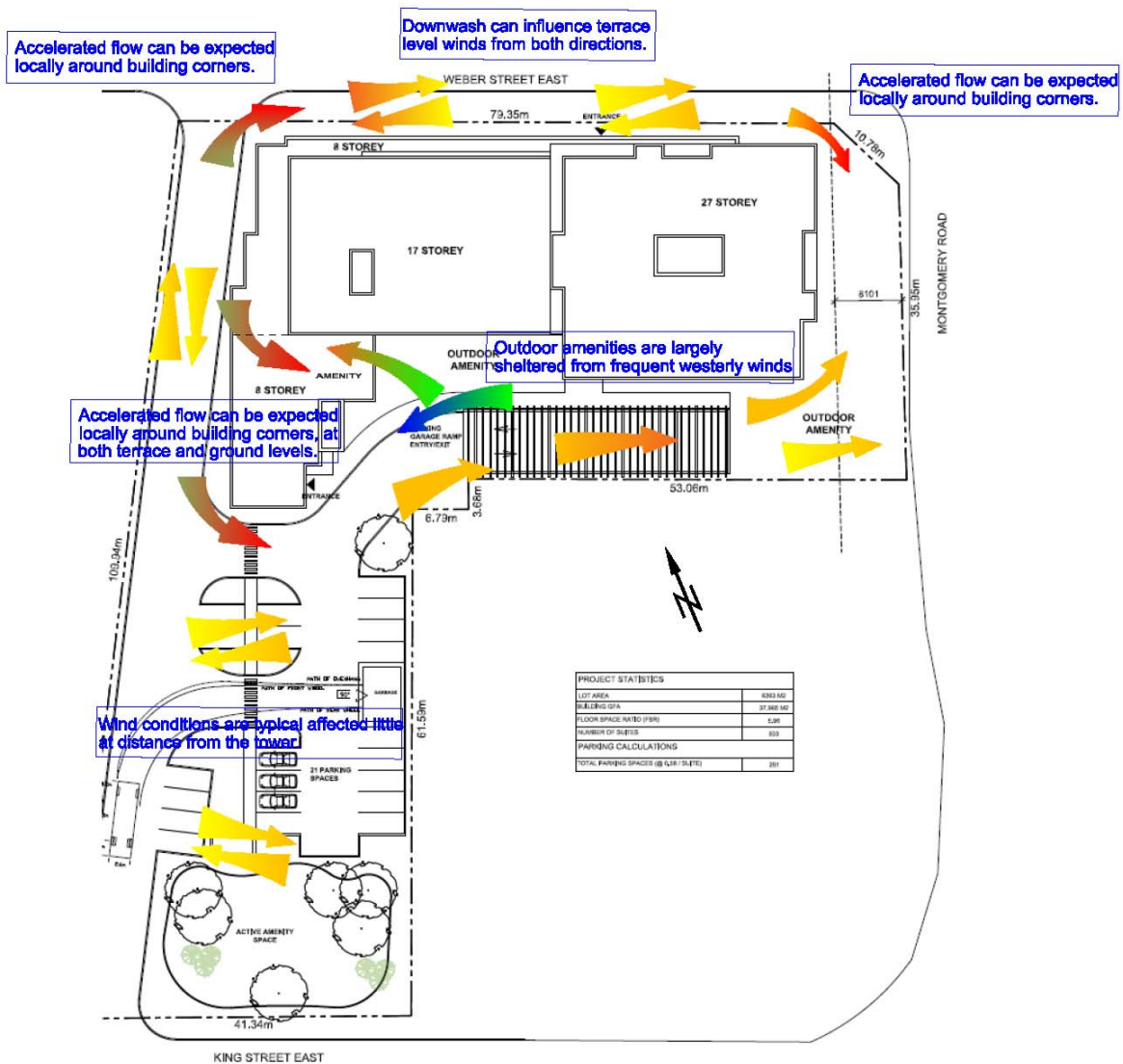
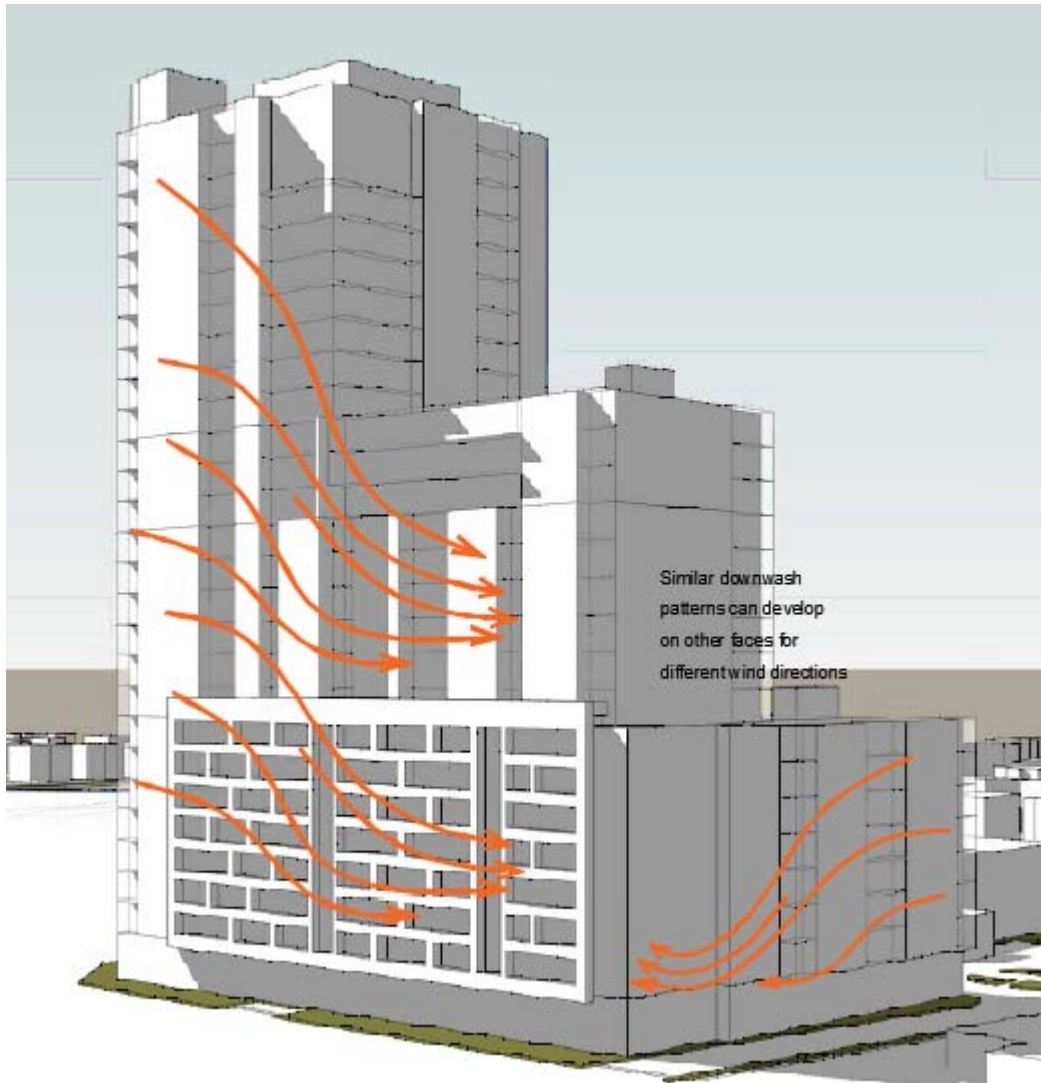


Figure 5: Illustration of select flow patterns that can develop around site/building.

In addition to the general flow patterns, downwash effects can be expected for frequent southwesterly wind directions and northwesterly wind directions. Downwash effects as illustrated in Figure 6, can also be expected for other wind directions and across all faces of the building. Downwash effects will be most intense across the broader faces of the building. These effects can therefore be expected to influence areas along the north and west of the building.



**Figure 6** Illustration of downwash on north and west building faces.

### 3.3.2 Discussion of Expected Comfort Conditions

A basic landscape plan has been provided but is not considered in the general flow patterns. It is considered when addressing general mitigation strategy, as landscaping is often beneficial to the local wind environment.

The wind conditions at many adjacent properties are not expected to be greatly impacted by the introduction of the proposed Weber-Montgomery-King development, and sidewalk areas around neighbouring properties are expected to be appropriate for the intended usage (walking) year-round. This considers that there are no properties downwind of the site for the prevailing westerly wind directions. Some modest channelled flow could be experienced between the site building and the northwest corner of the low-rise L-shaped plaza building directly southeast of the site. As this adjacent building area does not have public entries in this region, the winds are expected to be consistent with the intended usage.

Other areas directly adjacent to the development are expected to experience some local wind acceleration. However, in general these are consistent with the intended usages of the respective areas.

The following provides a discussion of specific areas of interest and highlight some mitigation strategies where appropriate:

1. Sidewalks along Weber St., Montgomery Rd., and King St.:

Though the property borders King St. E, the structure is somewhat removed from King. Consequently, winds along King St. E sidewalks are not expected to be affected by the development.

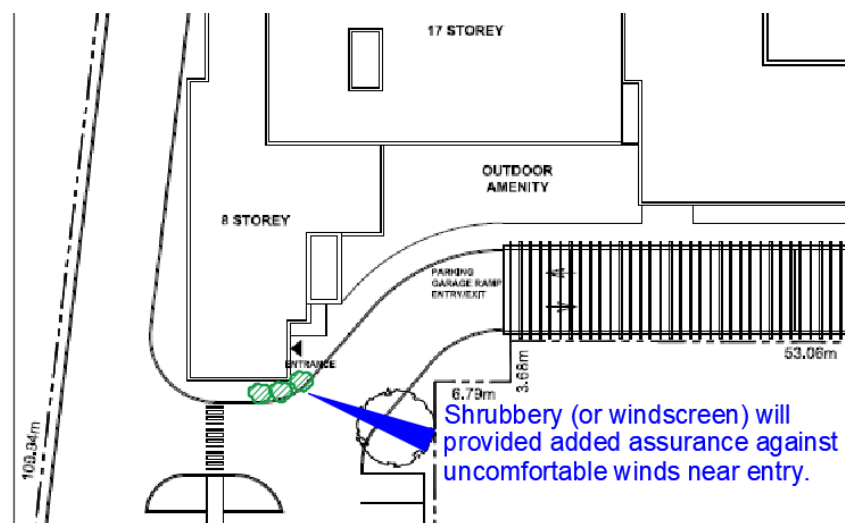
Locally along Weber St. E acceleration around the NW and NE building corners can be expected, as well as some downwash effects. Downwash will be somewhat inhibited by the setback (~3m) of the tower from the 8-storey podium. In any case, winds at this sidewalk are expected to be suited for walking in winter and spring, and for standing during summer and autumn seasons. This is appropriate for the general sidewalk usage.

Along the Montgomery Rd. sidewalk many areas will be sheltered from frequent westerly winds. During northwesterly to northerly wind events, downwash and speed up around the NE building corner can be expected particularly for northwesterly to northerly winds approaching from over the open sports field. In winter and spring seasons, this area can be expected to be comfortable for walking activities. During summer and spring this area would be suited for standing. This is deemed appropriate for general sidewalk usage. Some gusts may be experienced at the nearby crosswalk.

2. Main entries and secondary entries at Street levels: The primary ground level entry is located near the middle of the Weber St. E side of the building. A secondary entry is located near the SE corner 8-storey podium. These entries are identified in Figure 4.

The main Weber St. E entry is positioned away from the building corners and is somewhat set back from the tower above and with a canopy overhead. These conditions and strategies are beneficial. As such, it is expected that this area will be suited for standing or better year-round, appropriate for entrances.

The secondary entry at the SE corner of the 8-storey podium is near a corner and may be susceptible to local wind acceleration for westerly and southwesterly winds. Flanking the south side of this area with shrubbery or windscreens will offer necessary protection, as illustrated below in Figure 7.



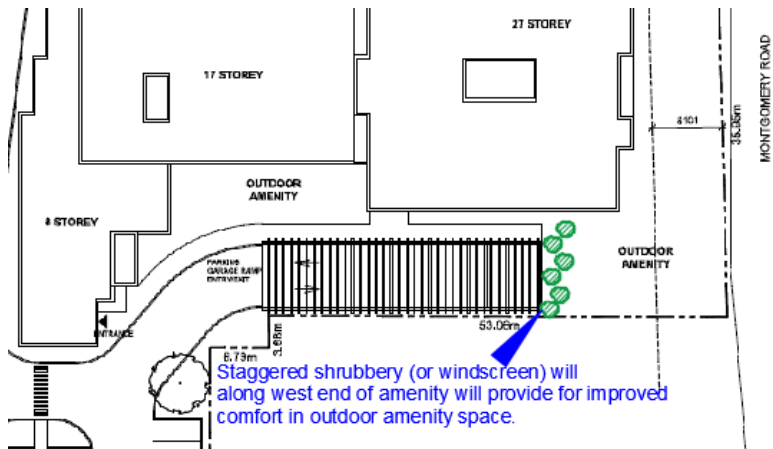
**Figure 7:** Coniferous plantings (5-6' tall) or equivalent windscreens would be beneficial to protecting entry from uncomfortable winds.

### 3. Ground Level Outdoor Amenity Spaces:

There are two ground-level outdoor amenity spaces adjacent to building as identified in Figure 4. There is an active amenity space or parkette at the south end of the site which is somewhat removed from the influence of the building structure (see Figure 2).

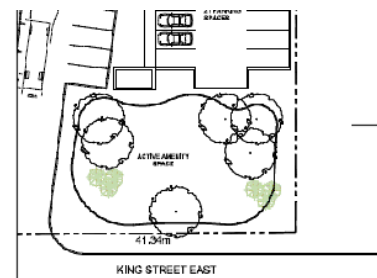
The outdoor amenity space directly south of the 17-storey tower will be sheltered for many wind directions. It is expected to be comfortable for sitting activities during summer and autumn, and for standing during winter and spring seasons.

The outdoor amenity space at the SE corner of the 27-storey tower will be sheltered by the towers for frequent westerly to northwesterly wind directions. For southwest to westerly winds some modest funneling through the area can be expected. This space is expected to be comfortable for sitting activities during summer, and for standing during autumn, winter, and spring seasons. Landscaping, in the form of planters or high shrubbery, along the west edge of this space (see Figure 8 below) would be beneficial to offer greater protection from SW winds, and extend seasonal usage.



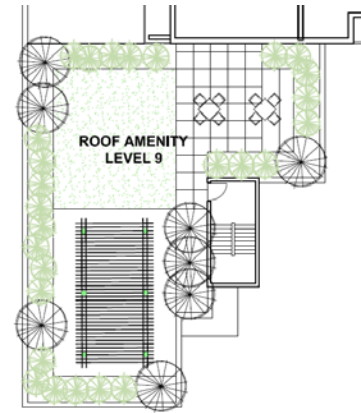
**Figure 8:** Staggered plantings (5-6' tall) or equivalent windscreens would extend comfort into autumn. Coniferous plantings are preferential if winter/spring usage is desired.

The active amenity space at the south end of the site is not expected to be influenced by the structure. This space is expected to be suited for standing from spring through autumn seasons, and walking during the winter as it will have some exposure to northwesterly winds channeled along King St. These comfort levels are expected to be suitable for this area being designated as an 'active' space. The planned landscaping for this space, as shown in the inset to the right, will further improve upon comfort in this area.

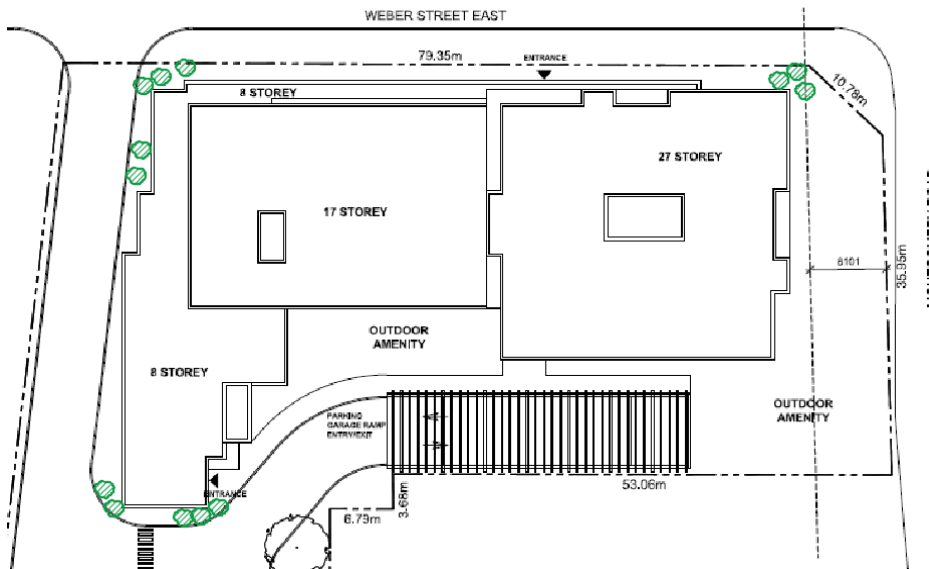


4. 9<sup>th</sup> Level Amenity Terrace: An outdoor amenity terrace is planned atop the 8-storey podium and located over the south projection of the development. This space is susceptible to downwash effects of the 17-storey tower for frequent westerly winds, with accelerated flow around the SW corner of the 17-storey tower. Downwash for southerly winds could also affect this area.

Initial landscape plans indicate that this area will have plantings around the perimeter of this space with an overhead trellis (see inset to the right). These features will be effective at mitigating the winds at the amenity roof space, making the area suited for sitting during the late spring through to autumn months, and suited for standing the remainder of the year.

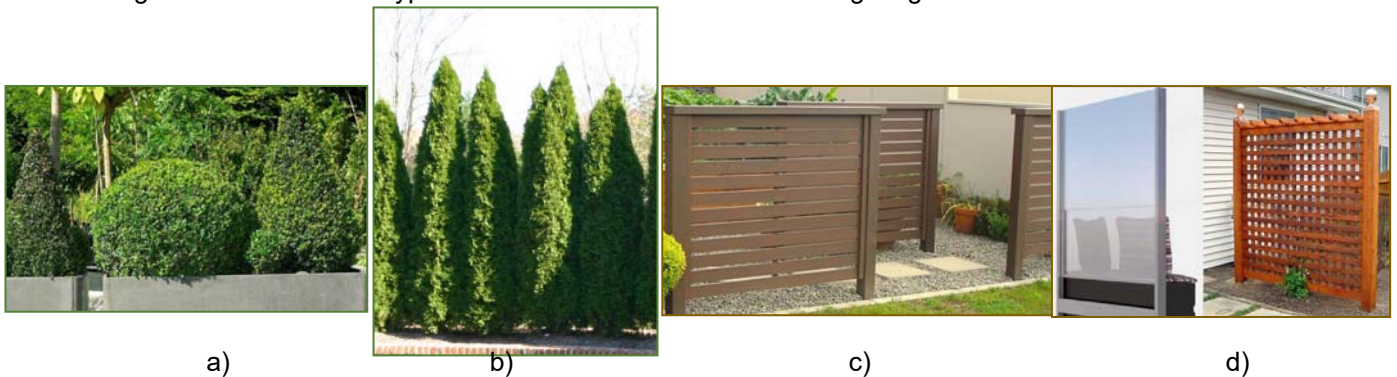


5. Building Corners: In general, all building corners can be expected to experience increased winds. Placement of evergreen shrubbery and planters can be effective at softening these effects, as well as act to keep pedestrian traffic away from potential windy areas. Figures 9 illustrates general placement ideas at corners that would provide added assurance of comfort near building corners.



**Figure 9:** Suggested mitigation for amenity spaces can include shrubbery, windscreens, increased railing, and canopy(s).

Figure 10 shows some typical features that are effective at mitigating local wind effects.



**Figure 10:** Sample landscape/hardscape features to mitigate local winds a) 3-5' planters with evergreen shrubbery, b) 6-10' evergreens in rows, c) and d) 6' (min) windscreens staggered or continuous.

6. Adjacent Properties: The development is not expected to have a significant influence on winds at neighbouring properties, i.e. the comfort categorization of adjacent properties is expected to remain similar to that for the existing configuration. Modestly increased winds can be expected to the east of the site for north-easterly wind directions. This is not expected to impact comfort levels at adjacent buildings or entries.

## 4 SUMMARY

The BLWTL was engaged to provide an initial high-level assessment of the expected pedestrian winds around the proposed Weber-Montgomery-King development in Kitchener, and the impact of the proposed development to comfort conditions. This qualitative approach provides a high-level description of potential wind conditions related to pedestrian comfort, identifies areas of accelerated flows, and presents conceptual mitigation strategies.

The development is not expected to have a significant influence on winds at neighbouring properties, i.e. the comfort categorization of adjacent properties is expected to remain similar to that for the existing configuration or remain suited for the intended usage.

The main north entry is expected to be comfortable for standing or better year-round. The secondary entry at the southeast corner of the 8-storey podium will benefit from local mitigation to make those areas more suitable for entrance usage (i.e. standing category or better). Local evergreen plantings or windscreens are expected to be beneficial in this respect.

Conceptual mitigation has been provided to further improve upon expected wind conditions in specific areas. Evergreen trees at corners of the development would be beneficial to mitigate downwash effects and local speed-ups, thereby adding assurance to comfort near these areas. High shrubbery or wind screens along the west side of the ground level amenity space, located at the SE corner of the 27-storey tower, will help extend the seasonal usage of this outdoor amenity.

The proposed landscaping for the 9<sup>th</sup> level amenity space indicates perimeter plantings and an overhead trellis. These features will make that space comfortable for the intended sitting usage through late spring, summer, and into autumn months.

For the amenity space at the south side of the property (adjacent to King St.), moderately higher winds are expected to be tolerated as it is identified as an 'active' space. This space is expected to be suited for standing from spring through autumn seasons, and walking during the winter as it will have some exposure to westerly winds channeled along King St. This is largely reflective of the existing wind conditions in this area.

## 5 Applicability of Results

The assessments and recommendations in this report are based on the understanding of the proposed development as per site plans provided to the BLWTL on December 19, 2022. The qualitative assessment is made in context of the proposed building configuration in relationship with existing surroundings and the proposed site building. This information cannot and should not be used for analysing building façade pressures, door pressures, exhaust re-entrainment, etc.

In the event of changes to the proposed development or proposed buildings around the development, the assessment made herein may be influenced. In the event of such changes, the BLWTL should be contacted to make an appropriate reassessment.

These qualitative results are not to replace a detailed quantitative study(s) required for future planning stages of the development. Wind characteristics around buildings can be complex and proper quantification achieved only through appropriate test methods. Given the expected wind conditions, the proposed mitigation should be developed and evaluated using quantifiable wind tunnel testing.

# APPENDIX A

## GENERAL DETAILS PERTAINING TO THE ASSESSMENT OF PEDESTRIAN LEVEL WINDS AND COMFORT

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### A.1 Meteorological Data

Wind climate data are based upon wind records taken at the Region of Waterloo International Airport (ISD Station 713680) between 1976 - 2017. Figure A-1 shows the distributions of wind speed frequency by direction for the four seasons. For the spring and summer seasons westerly to north-westerly winds are predominant. During the autumn season and especially the winter season the winds from the south-westerly to westerly directions become relatively more predominant. The winds presented in the windrose data are measured at 10m. Representative ground level winds might then be expected to be somewhat lower than those indicated on the windrose in a uniform terrain. The wind climate at the site is dependent on wind direction and will be influenced by and dependent upon the terrain type over which it travels.

Figure A-1 shows the wind directionality for ranges of wind speeds. Stronger winds are indicated in the outermost contours. Winds over 40 km/hr are shown as the outermost colour zone in the contour plots. During the autumn, spring, and winter months winds over 40 km/hr are expected to occur about 3%, 4%, and 5% of the time, respectively. During summer months, a wind speed of 40 km/hr is expected to occur less than 1% of the time.

### A.2 Criteria for Comfort Assessment

The criteria used at BLWTL for the assessment of pedestrian comfort are categorized by the following types of activity.

- **Standing, Sitting for long exposure (< 14 km/hr):** Wind felt on faces, leaves rustle slightly. Suitable for promenades, outdoor restaurants, or park benches where people may linger for long periods to eat, relax, or read a newspaper.
- **Standing, Sitting for short exposure (< 22 km/hr):** Leaves and small twigs in constant motion; wind extends light flags. These winds are comfortable for building entrances or bus stops where people are likely to linger for a short time.
- **Leisurely Walking (< 29 km/hr):** Raises dust and loose paper; small branches are moved. Wind speeds experienced are appropriate for activities which involve slow walking such as a leisurely stroll or window shopping.
- **Fast Walking (< 36 km/hr) :** Small trees in leaf begin to sway; can cause movement to hair and loose clothing. Areas experiencing these winds would be appropriate for sidewalks, parks, or playing fields where people are active with little notice of moderate wind activity and unlikely to be in one location very long.

Wind conditions are considered suitable for the corresponding activity if the wind speeds are expected to last 95% of the time. A designation as uncomfortable would exist for winds that fall outside these criteria.

Safety is also considered on the basis that winds, if sufficiently large, will affect a person's balance. If such wind events occur more frequently than suggested then the wind conditions would be considered unsafe. Where such conditions exist, mitigating or remedial measures would typically be required to improve conditions to acceptable levels.





### **A.3 Pedestrian Wind Speed Assessment - General Comments**

In the assessment of winds particular to a site there are many variables that must be considered in predicting the wind speed and occurrence rates. These include, but are not limited to: the aforementioned wind climate; the surrounding upstream terrain conditions; the juxtaposition and orientation of neighbouring buildings; and the geometry of the proposed buildings themselves. For a qualitative analysis, past analyses carried out for a number of buildings in various locations have afforded a good experience base which allows a knowledgeable assessment of wind conditions at and around the proposed development.

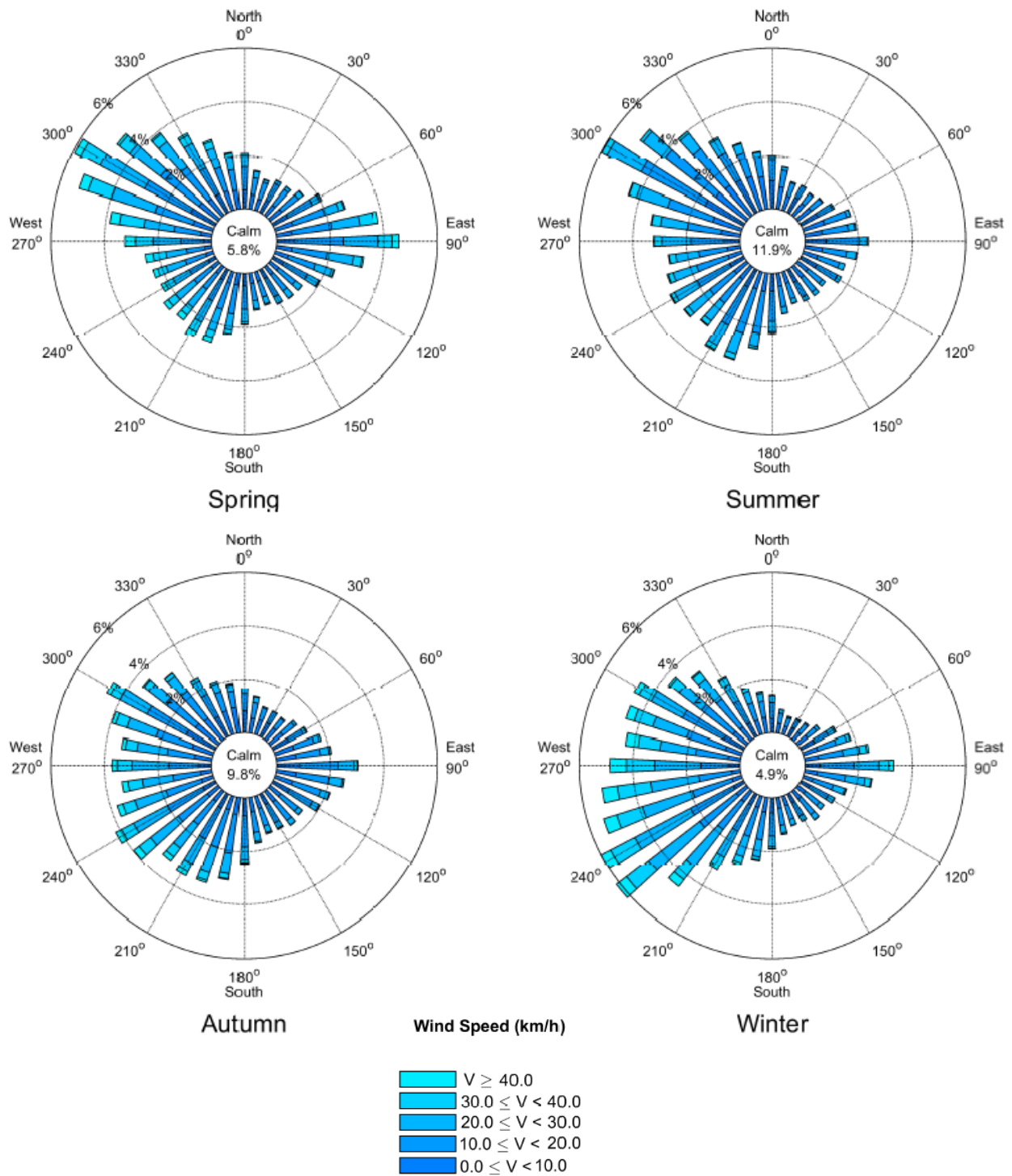
In general, suburban settings provide surface roughness that can moderate wind conditions downstream, while more open expanses allow the oncoming wind to travel unobstructed. Winds also have a tendency to accelerate up sloped or hilly terrain, the magnitude of which also depends on the level of vegetation on and around the embankment.

On a more local level, flow around an individual building is influenced by the building's orientation to the wind as well as the building height. Winds tend to accelerate locally around building corners as the wind tries to find a way around the obstruction. Buildings in close proximity and oriented at 90° to each other can 'funnel' local approach winds, thus accelerating the flow between the buildings. For mid-rise buildings, some wind can be redirected downward over the face of the building, accelerating around corners as it reaches the ground levels. However, strategically located canopies or podiums can be beneficial in deflecting these 'downwash' winds before reaching ground level, thereby improving pedestrian comfort.

With respect to wind, it can be expected that conditions will be calm directly in the lee of a building. It should be realized that in areas that may be exposed to the direct sun, particularly in the summer months, some breeze can be favourable to the overall area comfort. Furthermore, some gentle breezes in any area do afford an exchange of air, preventing heavy stale air to accumulate as might be the case in wind-quiet or dead zones.

The inclusion of any new development can be expected to ultimately alter the wind conditions at a site for specific wind directions and wind speeds as compared to the pre-development conditions. However, it is not practical to attempt to quantify the wind speeds in an area, given the number of variables involved, without an appropriate quantitative analysis.





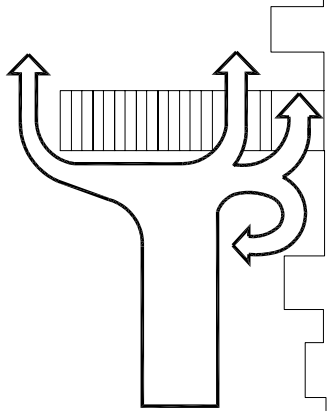
**Figure A-1:** Windroses showing directional distribution of seasonal wind (centered on a 10° sector): Based on data from Waterloo International Airport.

## **APPENDIX B**

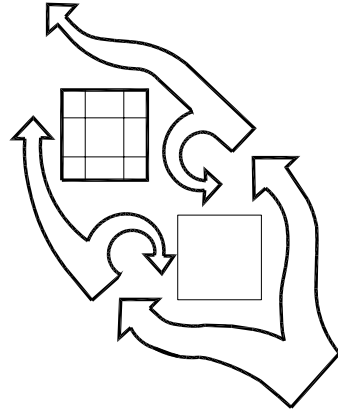
# **EXAMPLES OF WIND EFFECTS AROUND MIDRISE AND TALL BUILDINGS**

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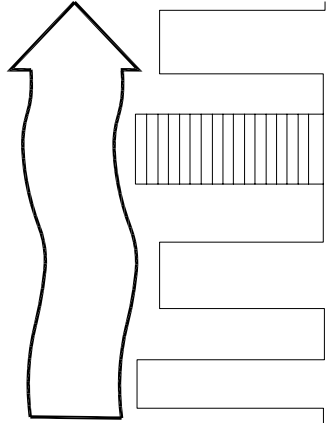




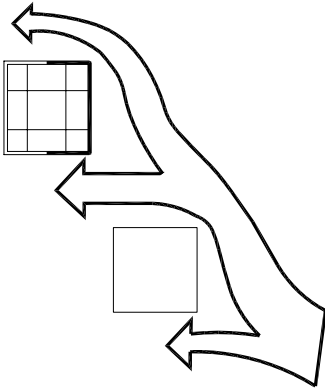
A BUILDING SIGNIFICANTLY TALLER THAN ITS SURROUNDINGS CAN EXPERIENCE HIGH WIND LOADS AND CONCENTRATE PEDESTRIAN LEVEL WINDS.



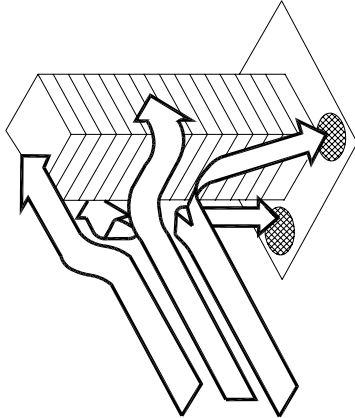
ADJACENT BUILDING PLACEMENT MAY PROTECT FROM HIGH WINDS REDUCING WIND LOADS AND PEDESTRIAN LEVEL WINDS.



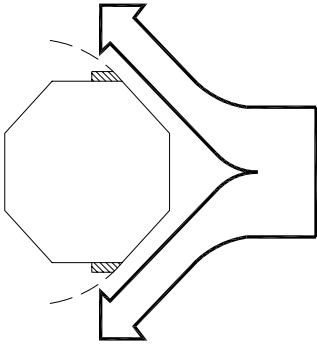
A BUILDING OF SIMILAR HEIGHT TO ITS SURROUNDINGS MAY BE PROTECTED FROM LARGE WIND LOADS AND CONCENTRATED PEDESTRIAN WINDS.



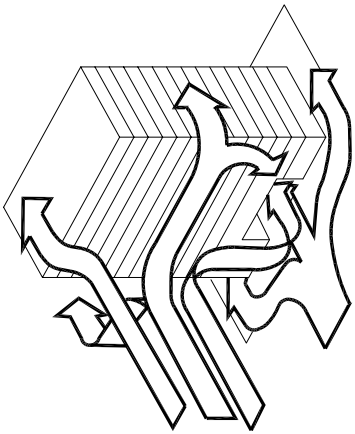
ADJACENT BUILDING PLACEMENT MAY DEFLECT WIND RESULTING IN HIGHER WIND LOADS AND PEDESTRIAN LEVEL WINDS



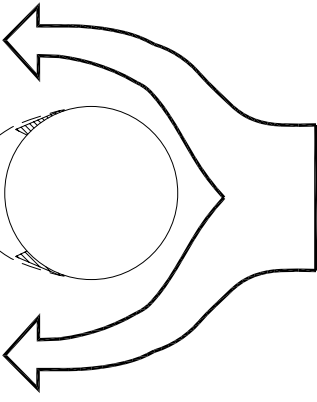
A TALL BUILDING CONCENTRATES WIND AT ITS BASE



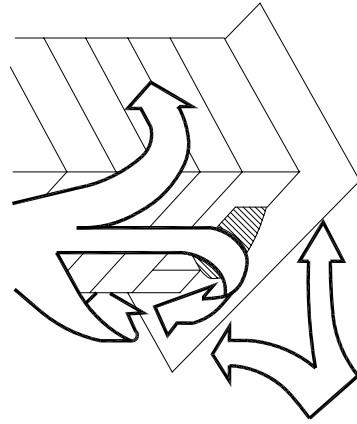
MULTI-SIDED BUILDINGS MAY NOT PERMIT FULL DEVELOPMENT OF LOCAL PRESSURES, FRAME LOADS, OR PEDESTRIAN LEVEL WINDS.



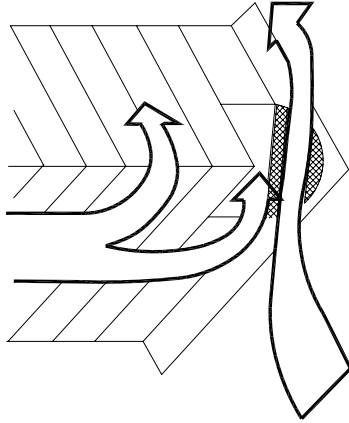
OPENINGS THROUGH A BUILDING AT THE BASE MAY INDUCE HIGH VELOCITIES IN THE OPENING.



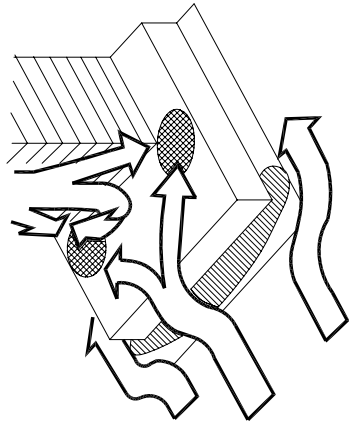
CIRCULAR BUILDINGS MAY REDUCE FRAME LOADS AND PEDESTRIAN LEVEL WINDS BUT INCREASE LOCAL CLADED LOADS AT THE POINT WHERE THE WIND SEPARATES FROM THE BUILDING.



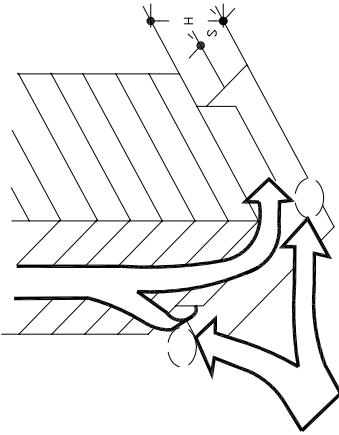
RECESSED ENTRY PROVIDES LOW WINDS AT DOOR LOCATIONS



CORNER ENTRY MAY ACCENTUATE WIND CONCENTRATION AT BUILDING CORNER



A LOW PEDESTAL BUILDING CONCENTRATES WIND ON THE ROOF NOT AT THE BASE



SETBACK ALL AROUND THE BUILDING MAY IMPROVE OR WORSEN WIND CONCENTRATION DEPENDING UPON S AND H



ALAN G. DAVENPORT WIND ENGINEERING GROUP  
THE BOUNDARY LAYER WIND TUNNEL LABORATORY  
THE UNIVERSITY OF WESTERN ONTARIO



WIND EFFECTS ON TALL BUILDINGS

DRAWN BY:	DATE:	SCALE:	No.	ISSUE	CHK	DATE
PQ	July, 2004	NTS	A	REVISION A	EH	10/06
CHECKED BY:	DWG NO:	PROJECT NO:	B			
TE	01	N000	C			

NOTES:

Source: Progressive Architecture

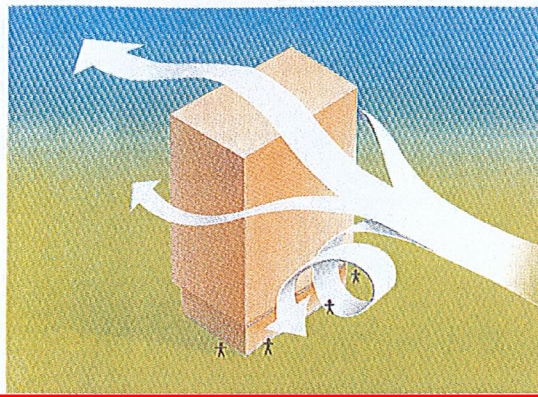
## APPENDIX C

# ILLUSTRATION OF SOME PROBLEMS AND SOLUTIONS TO WIND EFFECTS AROUND BUILDINGS

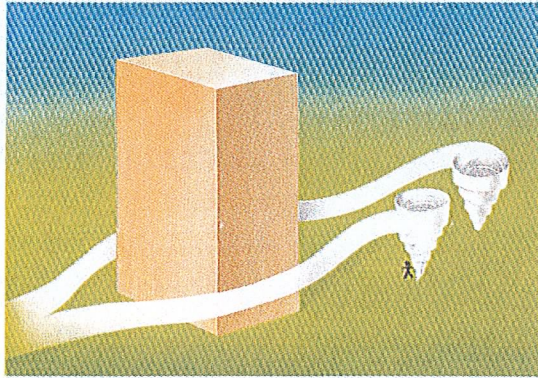
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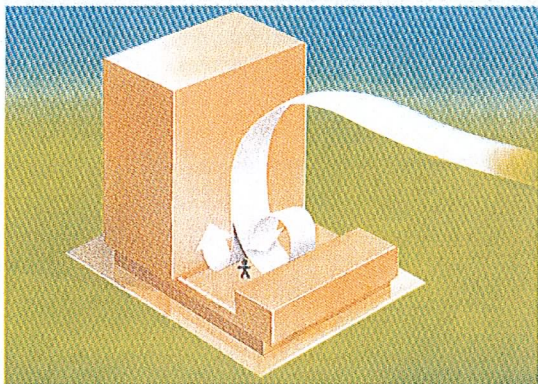
## Problems



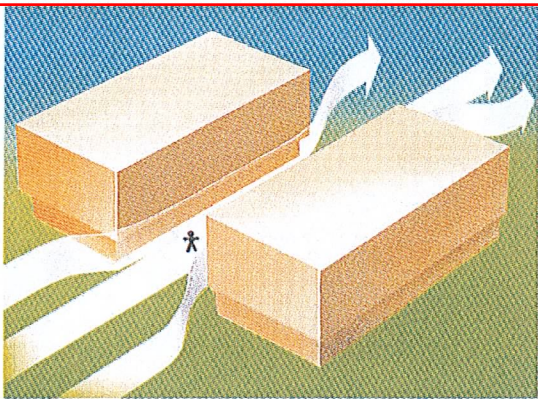
*Downwash effect: wind is deflected to street level.*



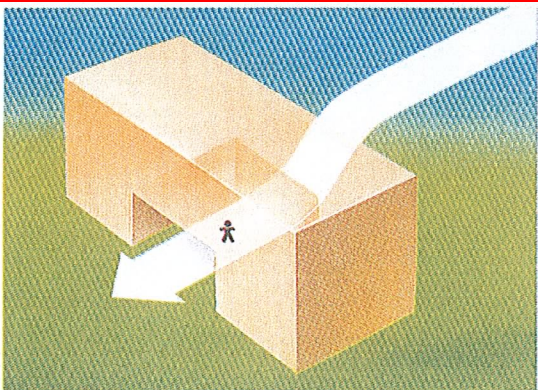
*Karman vortex street: wind swirls after dividing around a building.*



*Confined horseshoe vortex: downwash curls upward on an adjacent building.*



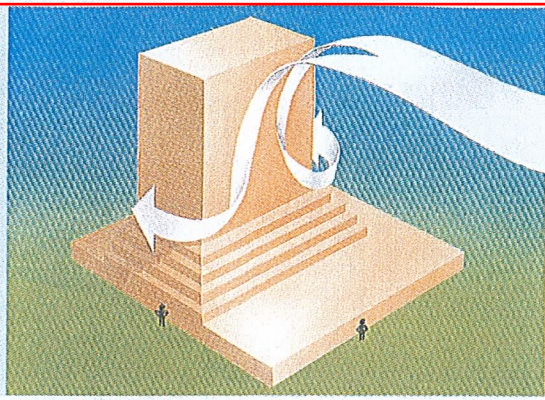
*Venturi effect: wind accelerates to get through narrow openings.*



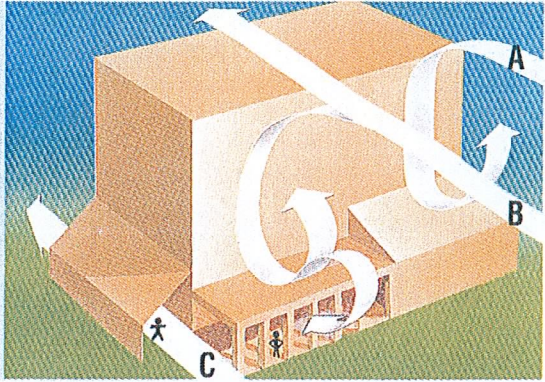
*Passageway effect: wind accelerates to get through passages.*

# Solutions

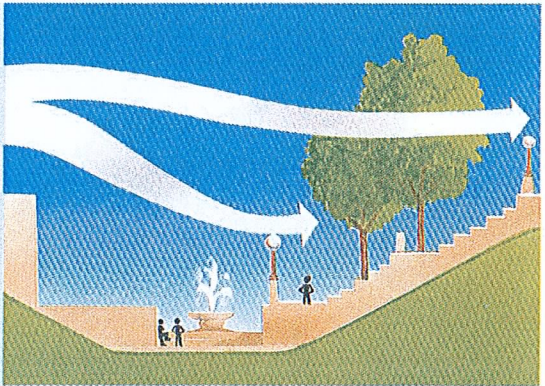
*Stepped pedestal: downwash is prevented from reaching street level.*



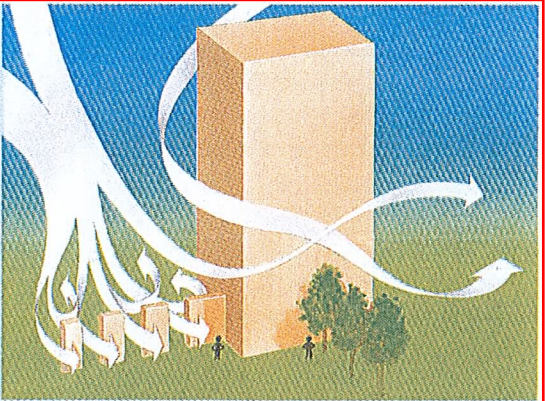
*Covered walkways: (a) enclosed canopy deflects downwash; (b) open sides provide some breeze under the canopy; (c) canopy open at both ends is only a partial solution: if the wind direction is such that it blows right through, a venturi effect is created.*



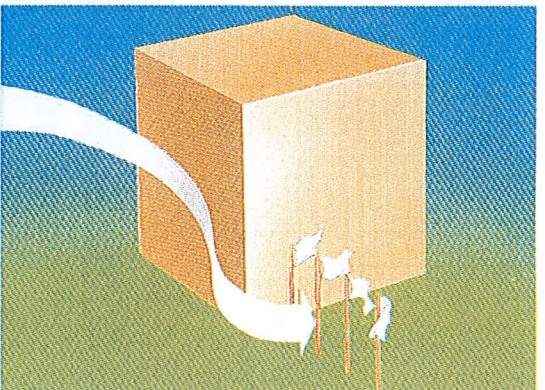
*Recessed plaza: wind passes over lowered area.*



*Windscreens and landscaping: wind is broken up and pedestrians are introduced gradually to windy areas.*



*Public indicators: flags provide warning of unavoidable high-wind areas.*



# APPENDIX C

BUILDING ELEVATIONS









