



City of Brockville
Planning and Development Committee -
Public Planning Meeting
Agenda
6:00 PM - Tuesday, July 7, 2026
City Hall, Council Chambers

Page

Land Acknowledgement Statement

Purpose of a Public Meeting

Public Meeting Reports

- 2 - 27 1. 2026-95
Proposed Amendment to Zoning By-law 050-2014
46-48 Pearl Street West

THAT Report 2026-95 be received.
[2026-95](#)

- 28 - 2. 2026-103
266 Proposed Amendments to the Official Plan and Zoning By-law
5 Home Street

THAT Report 2026-103 be received.
[2026-103](#)

Adjournment

THAT the Public meeting of the Planning and Development Committee adjourn until the next meeting.



Staff Report

Report To: Planning and Development Committee - Public Planning Meeting

Meeting Date: July 7, 2026

Prepared By: Nicholas Carter, Planner

Report Number: 2026-95

Subject: Proposed Amendment to Zoning By-law 050-2014
46-48 Pearl Street West

Recommendation

THAT Report 2026-95 be received.

Background

David Annable of Annable Designs Co. Ltd., acting on behalf of the owner of the subject lands, has submitted an application for an amendment to Zoning By-law 050-2014, with respect to lands described as Plan 67, Block 38, Part Lots 2 & 3, RPlan 28R11280, Parts 1 to 14, City of Brockville, municipally known at 46-48 Pearl Street West.

The application, if approved, would permit the property to be rezoned from a "R4 - General Residential" Zone, subject to Source Water Protection considerations, to a "R5- Multiple Residential Special Exception" Zone, subject to Source Water Protection considerations. The proposed amendments are to permit a two-storey, 5-unit, multi-residential building to be developed on the property.

A map showing the location of the subject property is Attachment 1 to this report. A proposed site plan prepared by Annable Designs Co. Ltd., is Attachment 2 to this report and a planning rationale in support of the proposal submitted by Annable Designs Co. Ltd. is Attachment 3 to this report.

Analysis

Zoning and Official Plan Information:

Official Plan Designation:	"Neighborhood Area, within the "Mixed Use Corridor" and subject to "Source Water Protection" considerations. No change to the existing designation has been requested.
Existing Zoning:	"R4 - General Residential" Zone, subject to "Source Water Protection" considerations.
Requested	"R5 - Multiple Residential Special Exception" Zone, subject to

Zoning:	<p>"Source Water Protection" considerations.</p> <p>The Special Exceptions requested are:</p> <ol style="list-style-type: none"> 1. A reduction to the minimum lot frontage from 25.0m to 15.24m. 2. A reduction to the minimum lot area from 1000.0m² to 712.96m² 3. A reduction to the minimum required interior side yard from 5.0m to 2.68m on the east side 4. A reduction to parking requirements from 1.25 spaces per unit to 1 space per unit. 5. A reduction in the required minimum driveway width from 6.0m to 5.0m 6. A reduction to the planting strip requirements from 3.0m to 0.5m adjacent to the proposed parking area
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Site Characteristics:

Lot Area (approx.):	712.96m ²
Frontage:	15.4 m
Depth (approx.):	30.48m

A site visit was conducted by staff on June 4, 2026. The property is currently vacant as a result of a fire that occurred in 2025, resulting in the demolition of the previous dwelling. Photos taken of the property from 46-48 Pearl Street West are Attachment 4 to this report.

Surrounding Land Use:

North	Lands to the North are designated "Neighbourhood Area" and "Corridor Commercial Area", zoned "C2 - General Commercial" Zone, and are occupied by multiple commercial establishments.
South	Lands to the South are designated "Neighbourhood Area", zoned "R4 - General Residential" Zone, and are occupied by single detached residential dwellings.
West	Lands to the West are designated "Neighbourhood Area", zoned "R2 - Single Detached Residential" Zone, and are occupied by single detached residential dwellings.
East	Lands to the West are designated "Corridor Commercial Area", zoned "C2 General Commercial" Zone, and are occupied by a gas station and convenience store.

All properties listed above are subject to "Source Water Protection" considerations.

Internal Comments

1. Building Department:

No comments.

2. Engineering Department:

The Engineering and Infrastructure Department is not opposed to the proposed re-zoning. It will be the owners responsibility to ensure the water, wastewater and storm sewer services are designed to accommodate the proposed development. Should new services be required, all costs for the new services will be the responsibility of the owners.

3. Fire Department

No objection.

4. Operations Department

Assuming the proposed development complies with required planning criteria for example terms of adequate onsite parking, snow storage and garbage, I see no immediate issues with this application.

5. Cataraqui Region Conservation Authority

No concerns.

6. Enbridge

Enbridge Gas does not object to the proposed application(s) however, we reserve the right to amend or remove development conditions.

7. MTO

No comments.

8. CN Rail

The Owner shall engage a consultant to undertake an analysis of noise and implement measures recommended by an approved Noise Consultant.

The Owner shall be required to grant CN an environmental easement for operational noise emissions, registered against the subject property in favor of CN.

“Warning: Canadian National Railway Company or its assigns or successors in interest has or have a rights-of-way within 300 meters from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CNR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way.”

9. CPKC Rail

CPKC recommends that the below conditions be inserted in all property and tenancy agreements or future offers of purchase and sale for all dwelling units in the proposed building(s):

“CPKC and/or its assigns or successors in interest has or have a railway right-of-way and/or yard located adjacent to the subject land hereof with operations conducted 24 hours a day, 7 days a week, including the shunting of trains and the idling of locomotives. There may be alterations to, or expansions of, the railway facilities and/or operations in the future, which alterations or expansions may affect the living environment of the residents in the vicinity. Notwithstanding the inclusion of any noise and/or vibration attenuating measures in the design of the development and individual dwellings, CPKC will not be responsible for complaints or claims arising from the use of its facilities and/or its operations on, over, or under the aforesaid right-of-way and/or yard.”

Public Comments

1. Neighbour

In support of developing the property but believe the proposal could result in an overdevelopment of the lot. Concerns detailed in the comments include the extent of zoning relief in which the applicant is proposing, site constraints and possible compatibility issues with the surrounding neighborhood, the reduction in open space as a result of the rezoning, the reduction in parking and driveway requirements, and insufficient information regarding stormwater management, drainage, and municipal servicing. The comments respectfully request that the committee deny the proposed R-5 Zoning By-law Amendment, and request that the applicant resubmit a new proposal for a duplex or semi-detached structure that aligns with existing R4 zoning. The full written comments can be seen in Attachment 5 of this report.

The notices were sent in accordance with the requirements of the Planning Act and Regulations thereto.

Alternatives

A complete application for an amendment to Zoning By-law 050-2014 has been received, including all applicable fees. The applicant is responsible for all additional financial requirements associated with or after the application.

Policy Alignment

The contents of this report are provided for information purposes for the Public Meeting. Following the Public Meeting, staff will prepare a report which will include review and consideration of policies that are relevant to the requested amendment.

Conclusion

A report on this matter, including a detailed analysis of the proposed amendments, review and consideration of the issues raised at the Public Meeting and a recommendation from Planning Staff, will be prepared for consideration of the Planning and Development Committee at a future meeting.

Approved by:
Andrew McGinnis, Chief Planning Officer
Sandra MacDonald, City Manager

Status:
Approved - 19 Jun 2026
Approved - 29 Jun 2026

Attachments:

- [Attachment 1](#)
- [Attachment 2](#)
- [Attachment 3](#)
- [Attachment 4](#)
- [Attachment 5](#)

Attachment 1



ATTACHMENT 3

THE ORIGINAL CO.

Annable Designs

RESIDENTIAL DESIGN - CONSULTING - PLANNING



EST. 2012



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PLANNING JUSTIFICATION REPORT

46-48 PEARL ST.W. PROJECT Brockville, Ontario



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April 2026

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 - 5.6 Planting Strip / Buffer Reduction
 - 5.7 Affordable & Sustainable Housing
- 6.0 - Conclusion

1.0 INTRODUCTION

This Planning Justification Report has been prepared by Annable Designs Co. Ltd. in support of a Zoning By-law Amendment application for the redevelopment of the lands municipally known as 46–48 Pearl Street West, Brockville, Ontario.

The subject lands were previously occupied by a two-storey multi-unit residential building which was significantly damaged by fire in December 2025 and subsequently demolished. The lands are now vacant and represent an opportunity for sensitive residential infill development within an established serviced neighbourhood.



1.0a: Subject Lands Looking East *Source: Google Maps* **1.0b:** Subject Lands Looking West

The purpose of this report is to demonstrate that the proposed redevelopment and requested zoning amendment:

- Are consistent with the Provincial Planning Statement (PPS, 2024)
- Conform with the City of Brockville Official Plan
- Maintain compatibility with the existing neighbourhood character
- Represent appropriate intensification within an established urban area

The proposed development includes a five-unit residential building consisting of:

- Three (3) two-bedroom units
- Two (2) one-bedroom units

The development has been designed to reflect the scale, form, and architectural character of surrounding residential properties, while providing additional housing supply in a fully serviced urban area.

Correspondence from City of Brockville staff identified the requirements for zoning by-law amendment application. The following documents are submitted in support of the zoning by-law amendment application:

- Conceptual Site Plan
- Conceptual Elevations
- This Planning Justification Report.

The purpose of this report is to assess the appropriateness of the proposed zoning by-law amendment in the context of the surrounding neighbourhood, City Zoning By-laws as well as its conformity with the policy and regulatory framework applicable to the site.

A zoning by-law amendment is required to rezone the site to a new site-specific Residential Zone 5 (R5) zone to facilitate the development of a five-unit residential building on the subject lands.

2.0 SITE CONTEXT & EXISTING CONDITIONS

2.1 Subject Lands

The subject property is located on the north side of Pearl Street West within the City of Brockville. The property is currently zoned Residential Fourth Density (R4) and is proposed to be rezoned to a site-specific Residential Fifth Density (R5) zone.

Key characteristics of the subject lands include:

- Established residential street context
- Fully serviced with municipal water and sanitary sewer
- Previously developed with a two-storey multi-unit dwelling
- Limited vehicle access via a 2.68 metre wide driveway along the easterly property line

The redevelopment proposal represents a logical and efficient reuse of an existing residential property within the urban boundary.

2.2 Surrounding Area & Site Context

The lot has an area of **712.96m²** and a frontage of **15.24m**, both of which require minor reductions from the standard R5 zoning requirements. The development site is well-serviced by existing infrastructure and is in close proximity to public transit, commercial services, and community amenities, making it an ideal location for infill housing.

The site is surrounded primarily by residential and commercial uses. Residential uses are active to the West and South (across the street), with mixed commercial uses to the east and north of the site. The site is in an older developed residential zone of the city. Close to one of the primary arterial road network, and is in close proximity of the downtown core.

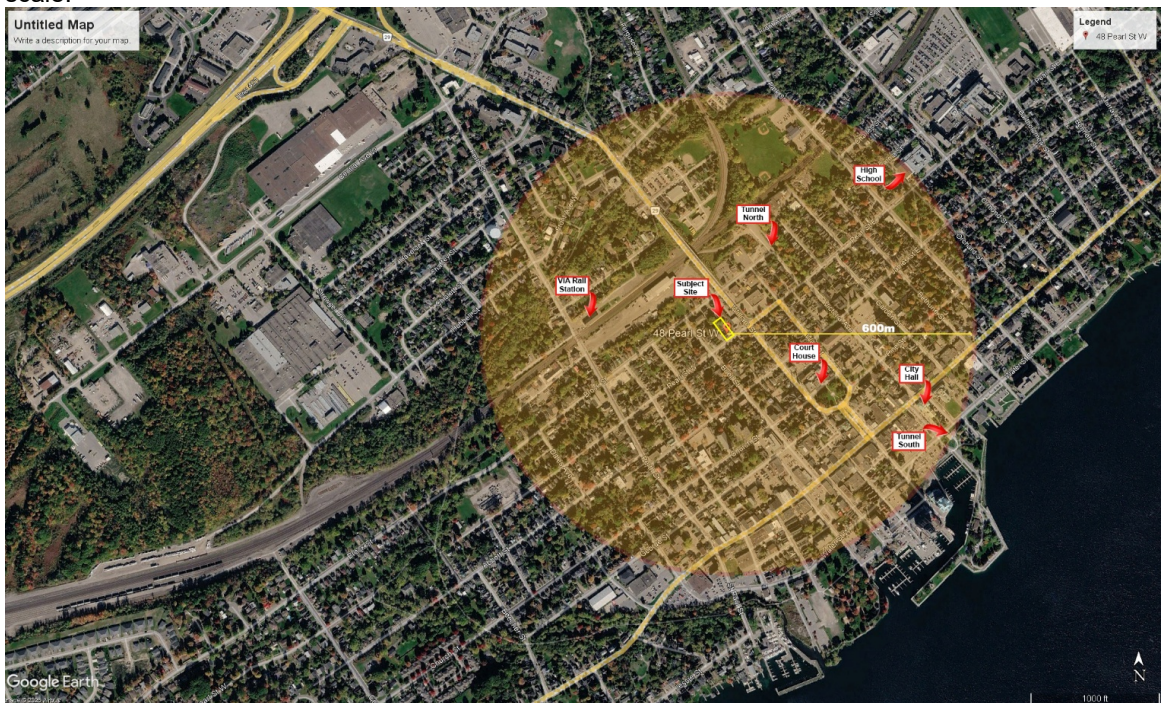
The site is accessible to city bus routes, on Pearl Street West. Pedestrian access to the site is provided from an existing municipal sidewalk in all directions. In addition to an existing asphalt entrance to the property that is the current access to the apartment dwelling to the west of the site.

The following uses are immediately adjacent to the subject lands:

- North:** Two-storey commercial building with rear parking lot
- East:** One-storey Commercial building and gas station
- South:** Pearl Street West and residential properties beyond
- West:** Two-storey residential dwelling

The neighbourhood generally consists of one and a half and two-storey buildings, primarily to residential uses to the direct south and west and commercial directly to the east of the subject lands.

The proposed development has been carefully designed to respect this existing built form and scale.



Source: Google Maps

2.2 Site Proposal

The subject property is located at 46-48 Pearl Street West in at the edge of an established mixed use neighborhood in Brockville. The site is currently designated for residential use under the City's Official Plan and zoned **Residential Fourth Density (R4) Zone**. The proposal requires a rezoning to **Residential Fifth Density (R5) Zone** to permit a five-unit building.

The proposal includes a five-unit residential building. The development will consist of 2 one-bedroom and 3 two-bedroom residential units. The main building entrance will be on the western side of the building facing the proposed access lane. The design characteristics of the building will be in line with the neighborhood's existing single family dwellings.

A total of 5 on-site parking spaces, including one (1) accessible parking spaces will be provided onsite. The development proposes an improved vehicle access to act as a buffer between the proposal and the westerly neighbour. In addition, a proposed bike storage rack will be provided for the residents' use.

3.0 PROPOSED DEVELOPMENT

The proposed development consists of a **five-unit apartment building, with One unit (20% of the total unit count) designated as affordable housing**. The building will exceed Ontario's energy efficiency standards by **40%** beyond the Ontario Building Code requirements. The proposal aligns with provincial initiatives to encourage sustainable, high-density residential infill development.

The proposal requires the following Zoning By-law amendments:

- **Lot Frontage:** Reduction from **25.0m** to **15.24m**
- **Lot Area:** Reduction from **1000.0m²** to **712.96m²**
- **Interior Side Yard Setbacks:** Reduction from **5.0m** to **2.68m** (East P/L)
- **Parking Requirements:** Reduction from **1.4 spaces/unit** to **1.0 space/unit**
- **Access / Egress Width Reduction:** **6.0m** required, **5.0m** proposed
- **Planting Strip Reduction:** **3.0m** required, **0.5m** proposed

This proposal represents **appropriate residential intensification within an established urban area while maintaining neighbourhood compatibility**.



Source: City of Brockville Zoning Map(s)

4.0 POLICY JUSTIFICATION

4.1 Provincial Planning Statement (PPS, 2024)

The **Provincial Planning Statement (PPS, 2024)** provides policy direction on matters of provincial interest related to land use planning and development in Ontario. Decisions affecting planning matters must be **consistent with the PPS**. The proposed redevelopment of the subject lands at **46–48 Pearl Street West** represents appropriate residential intensification within an established urban settlement area and is consistent with the PPS policy framework.

Key PPS policies supporting the proposal include:

Efficient Development

The PPS directs municipalities to promote efficient development patterns that optimize land use and infrastructure. The proposed development represents:

- Residential infill on a previously developed urban lot
- Efficient use of existing municipal services
- Appropriate redevelopment within an established settlement area

Housing Supply and Affordability

The PPS encourages municipalities to increase the supply and range of housing options. The proposal contributes to this objective by:

- Introducing five new housing units
- Providing one affordable housing unit
- Offering smaller one-bedroom units suited to diverse housing needs

Sustainable Development

The proposal exceeds Ontario Building Code energy efficiency requirements by approximately 40%, contributing to sustainable development and reduced energy consumption.

- **Section 1.1.1:** Promotes efficient development patterns that sustain the financial well-being of municipalities and make efficient use of land and infrastructure.
The proposed development supports these objectives by:
 - Redeveloping an underutilized infill property within the urban area
 - Utilizing existing municipal water, sewer, and transportation infrastructure
 - Supporting the efficient use of serviced land within the City of Brockville
 The proposal represents an appropriate form of urban redevelopment following the demolition of the previous fire-damaged residential building.
- **Section 1.1.3.1:** states that settlement areas shall be the focus of growth and development and that their vitality and regeneration shall be promoted.
The subject lands are located within the built boundary of the City of Brockville and are surrounded by residential and commercial development. The redevelopment of the site supports the continued vitality of the surrounding neighbourhood.
- **Section 1.1.3.3:** Encourages intensification and redevelopment within settlement areas where infrastructure and public service facilities are already available.
The proposed five-unit residential building represents appropriate intensification through infill development, making efficient use of existing infrastructure and contributing to the City's housing supply.
The proposal also introduces a mix of unit types, including one-bedroom and two-bedroom units, supporting diverse housing needs.

- **Section 1.2.6.1:** promotes compatibility between land uses while allowing for efficient development patterns. The proposed development has been designed to be compatible with surrounding uses by:
 - Maintaining a two-storey built form similar to surrounding residential buildings
 - Designing the building to reflect residential architectural characteristics
 - Reducing overall site intensity through the revised five-unit design

The development integrates well within the surrounding neighbourhood while providing additional residential units.
- **Section 1.4.3:** Requires municipalities to provide for an appropriate range and mix of housing options to meet projected market-based and affordable housing needs. The proposal supports this policy direction by:
 - Introducing five new residential units within an established neighbourhood
 - Including one unit designated as affordable housing, representing 20% of total units
 - Providing smaller unit types that support affordability and diverse household needs.
- **Section 1.6.6.2:** Directs development to areas with existing municipal services to ensure cost-effective land use and limit urban sprawl.
 - The subject property is located within a built-up neighbourhood within the City of Brockville, where municipal water, wastewater, and stormwater systems are already in place and can adequately support the proposed development. By leveraging existing infrastructure, this project avoids the need for costly service extensions, ensuring financial sustainability for the municipality and aligning with the PPS directive to prioritize efficient land use. The site has safe and direct access to existing road networks, ensuring that no additional transportation infrastructure is required.
 - The development contributes to intensification and infill housing, making optimal use of an underutilized lot within an established residential neighborhood. By accommodating five residential units on a single lot, the project enhances density without requiring additional greenfield development, which helps preserve agricultural lands and natural heritage areas outside of the urban boundary. The location's proximity to public transit, and commercial amenities reduces car dependency, further supporting cost-effective growth patterns and minimizing long-term infrastructure maintenance costs.
 - The proposal supports Ontario's broader strategy to address the housing crisis through streamlined infill development, ensuring that new housing options are delivered in areas where infrastructure already exists.

By directing medium-density residential development to a serviced urban area, this project optimizes municipal resources, promotes responsible growth, and mitigates urban sprawl, fully supporting the objectives of PPS 2024 Section 1.6.6.2.

PPS Planning Conclusion:

Based on the policies outlined above, the proposed development is **consistent with the Provincial Planning Statement (2024)** as it promotes:

- Efficient use of land and infrastructure
- Residential intensification within a settlement area
- Increased housing supply and affordability
- Sustainable building practices

4.2 City of Brockville Official Plan & Zoning By-Law

The City of Brockville's Official Plan encourages residential intensification, particularly in existing serviced areas.

The subject lands are currently zoned R4 – Residential Fourth Density Zone. The proposal requires a site-specific R5 Residential Fifth Density zoning designation to permit the five-unit residential development. This proposed site-specific R5 zoning designation implements the residential intensification objectives of the Official Plan while maintaining compatibility with the surrounding neighbourhood.

Apartment dwellings are permitted within the R5 residential zone, subject to the applicable development standards.

The R5 zone also establishes a maximum density of 75 units per hectare.

The proposed development has a calculated density of approximately 70.1 units per hectare, which falls within the permitted density range.

Section 6.4.12.3 requires a Planning Justification Report for zoning amendments, demonstrating the proposal's compliance with:

- **Section 3.2.1:** Encourages a variety of housing types to support affordability and demand. As previously highlighted in our Summary of PPS 2024 Section 1.4.3;
 - The development introduces apartment dwelling units, a medium-density housing type that provides an alternative to traditional single-family and low-rise housing. This housing form optimizes land use efficiency while ensuring compatibility with the surrounding neighborhood, addressing the growing need for diverse residential options in Brockville. The proposal aligns with the Official Plan's objective to create a balanced housing supply that meets the needs of different demographics, including young professionals and families.
 - 20% of the units within the development will be designated as affordable housing, directly addressing Brockville's housing affordability targets and responding to increasing local demand for attainable rental housing. The inclusion of affordable units ensures that individuals and families with varying income levels have access to safe and high-quality housing, aligning with the City's commitment to inclusive and sustainable communities.
 - Brockville, like many Ontario municipalities, is experiencing increased housing demand, particularly for affordable and multi-unit residential developments. By integrating modern, energy-efficient, and affordable units, this project reflects best practices in urban housing development, aligning with the City's long-term vision for sustainable residential growth.
- **Section 3.3.2:** Supports intensification and infill development within the existing built-up area.
 - This proposal represents a strategic intensification project, making efficient use of a now vacant lot within an established residential neighborhood. By introducing five residential units on a single parcel, the development maximizes land use efficiency while maintaining compatibility with surrounding residential properties. The City's Official Plan prioritizes growth within the existing urban boundary, and this project directly contributes to densification without expanding municipal services or infrastructure costs.

- The subject property is located within a built-up area of the City of Brockville, where municipal water, wastewater, stormwater, and transportation networks are already in place. The proposal minimizes the need for new infrastructure investments, ensuring cost-effective growth that aligns with the City's sustainable land-use planning goals.
- **Section 3.4.2:** Promotes energy-efficient building design and sustainable development.
 - The proposed building will be built to exceed the Ontario Building Code energy efficiency requirements by 40%, demonstrating a commitment to sustainable construction and reduced energy consumption.
 - The design shall incorporate modern insulation, high-efficiency heating and cooling systems, and advanced building materials to minimize energy waste and optimize operational efficiency. These energy-saving features reduce long-term costs for residents, supporting both affordability and environmental sustainability.
 - The development promotes compact urban growth, aligning with Brockville's sustainability objectives by maximizing land use efficiency and reducing urban sprawl. The site is located within an existing serviced area, which eliminates the need for new municipal infrastructure investments, ensuring a cost-effective and low-impact development.
 - The building's location encourages walkability and active transportation, with proximity to transit, amenities, and community services, further reducing reliance on private vehicles and lowering greenhouse gas emissions. By aligning with Brockville's Official Plan objectives, this project sets a precedent for responsible, forward-thinking residential development that prioritizes both energy efficiency and community well-being.

City of Brockville Official Plan & Zoning By-Law Conclusion:

Based on the above analysis, the proposed development is consistent with and conforms to the City of Brockville Official Plan by:

- Supporting residential intensification within the urban area
- Making efficient use of existing municipal infrastructure
- Providing additional housing supply and housing diversity
- Maintaining compatibility with the surrounding residential neighbourhood

As such, the proposed zoning by-law amendment is considered appropriate and consistent with the planning objectives of the City of Brockville Official Plan.

5.0 REQUEST FOR ZONING RELIEF & TECHNICAL CONSIDERATIONS

5.1 Lot Frontage Reduction

The proposed development requests a reduction to the minimum lot frontage requirement from 25.0 metres to 15.24 metres. The reduced lot frontage reflects the existing lot configuration and established parcel fabric within this portion of the City.

The reduced frontage does not negatively impact the functionality of the proposed development, access arrangements, building design, or compatibility with the surrounding neighbourhood. The proposal maintains appropriate site circulation, parking access, landscaping opportunities, and building setbacks while supporting appropriate residential intensification within the existing urban boundary.

Accordingly, the requested lot frontage reduction is considered appropriate and consistent with sound planning principles.

5.2 Lot Area Reduction

The proposed development requests a reduction to the minimum lot area requirement from 1000.0 square metres to 712.96 square metres. The reduced lot area reflects the existing size and configuration of the subject property within an established urban neighbourhood.

Despite the reduced lot area, the proposal continues to provide:

- Appropriate building setbacks
- Functional parking layout
- Landscaped open space
- Amenity area
- Compatible building massing and scale

The proposed development remains below the maximum permitted density within the R5 Zone. The requested reduction supports efficient land use and appropriate urban intensification while maintaining compatibility with surrounding development.

Accordingly, the requested lot area reduction is considered appropriate and represents good planning.

5.3 Interior Side Yard Reductions

The proposed development requests a reduction to the interior side yard setback from 5.0 metres to 2.68 metres along the easterly property line. This relief reflects the constrained nature of the existing urban infill lot and the historical development pattern of the surrounding neighbourhood.

Historically, the former two-storey residential building on the subject lands existed in significantly closer proximity to both side property lines than the proposed redevelopment. The former structure maintained a zero and partially encroaching setback condition along portions of the easterly property line, adjacent to the existing commercial use. Along the westerly side yard, the former building maintained an existing setback of approximately 2.86 metres.

The proposed redevelopment improves the overall site condition and spatial relationship between adjacent properties by establishing improved setbacks and a more organized site layout compared to the former development condition.

The proposed 2.68 metre easterly side yard setback therefore represents a substantial improvement from the historical condition of the site while still recognizing the physical constraints associated with the existing lot configuration.

The reduced setback maintains adequate separation between buildings while allowing efficient site layout and appropriate residential intensification.

The requested relief:

- Maintains compatibility with the surrounding built form
- Reflects the established historical development pattern within the neighbourhood
- Improves the previous setback relationship on the site
- Represents efficient use of land within a serviced urban area

The proposed redevelopment therefore represents an overall improvement to the historical site condition while supporting appropriate urban infill development consistent with Provincial and Municipal planning objectives.

Accordingly, the requested interior side yard reduction is considered appropriate and consistent with sound planning principles.

5.4 Parking Requirement Reduction

The proposed development requests a reduction to the parking requirement from 1.25 spaces per unit (7 spaces total) to 1.0 space per unit (5 spaces total).

The proposed parking supply is considered appropriate given:

- The small unit sizes (one and two bedroom units)
- The location within an established urban neighbourhood
- Proximity to commercial services and community amenities
- Access to existing public transit routes

Contemporary planning practices increasingly recognize that smaller urban residential developments often generate reduced parking demand.

Providing five on-site parking spaces ensures that adequate parking is available for residents while avoiding unnecessary overdevelopment of the site with surface parking areas.

The proposed parking supply therefore represents a balanced and appropriate approach to parking provision in an urban infill context.

5.5 Access / Egress Width Reduction

The proposed development requests a reduction to the minimum combined ingress and egress driveway width from 6.0 metres to 5.0 metres. The requested reduction reflects the constrained nature of the existing urban infill lot while still maintaining safe and functional vehicular access to the site.

Historically, the former two-storey multi-unit residential building on the subject lands functioned with an existing access approximately 2.8 metres in width, with little to no separation or buffering from the adjacent westerly residential property.

The proposed redevelopment significantly improves the existing site condition by providing:

- A widened and more functional access arrangement
- Improved vehicle maneuverability
- Enhanced separation from the adjacent westerly neighbour
- Opportunities for landscaping and buffering not previously present on the site

The proposed driveway configuration will continue to safely accommodate passenger vehicle access while minimizing excessive hard surface coverage on the property. The reduced driveway width also assists in preserving landscaped open space and reducing the visual impact of paved surfaces within the neighbourhood streetscape.

Given the modest scale of the development and limited traffic generation associated with five residential units, the proposed access width is considered appropriate and compatible with the surrounding urban context.

The proposal therefore represents a substantial improvement over the historical access condition of the site while recognizing the physical constraints associated with redevelopment of an established urban infill property.

Accordingly, the requested access width reduction is considered minor in nature and appropriate for the proposed development.

5.6 Planting Strip / Buffer Reduction

The proposed development requests a reduction to the required planting strip width adjacent to the proposed parking area where applicable. The requested reduction reflects the constrained nature of the existing urban infill lot while continuing to maintain opportunities for landscaping, buffering, and visual screening between the parking area and adjacent properties.

Historically, the former two-storey multi-unit residential building on the subject lands functioned with a significantly more constrained site layout. The existing access to the property was approximately 2.8 metres in width, with little to no separation or buffering from the adjacent westerly residential property.

In addition, the former building maintained a zero and partially encroaching setback condition along portions of the easterly property line, adjacent to the existing commercial property, while the westerly side yard setback was approximately 2.86 metres. The proposed redevelopment improves the overall site condition by:

- Providing improved building setbacks and spatial separation
- Introducing organized landscaping opportunities not previously present on the site
- Creating improved buffering between adjacent land uses
- Reducing the visual impact of parking and access areas
- Establishing a more coordinated and contemporary site layout

While the proposal requests a reduction from the required 1.0 metre planting strip width adjacent to portions of the parking area, the development proposes approximately 0.5 metres of landscaped buffer space wherever physically feasible around the parking area. Although this represents an approximate 50% reduction from the standard requirement, the proposed reduction is not anticipated to negatively impact surrounding properties or neighbourhood compatibility given the existing surrounding context. Specifically:

- The lands to the north and east primarily abut existing commercial parking and access areas
- The proposal improves the historical setback and buffering conditions along the westerly residential property line
- The redevelopment introduces landscaping and separation opportunities that did not previously exist on the site

Despite the requested reduction, the proposal continues to provide landscaped open space areas and site design features intended to soften the visual impact of the parking area and maintain compatibility with the surrounding neighbourhood.

The proposed redevelopment therefore represents a substantial improvement over the historical development condition of the property while balancing the practical constraints associated with urban infill redevelopment on an established lot.

Accordingly, the requested planting strip reduction is considered appropriate and consistent with sound planning principles.

5.7 Affordable & Sustainable Housing

- **One unit (20% of the total unit count)** will be designated as **affordable housing**, aligning with local and provincial affordability objectives.
 - The building will be **40% more energy-efficient than Ontario Building Code standards**, supporting provincial climate and sustainability goals.
-

6.0 CONCLUSION

In our professional opinion, the proposed redevelopment at 46–48 Pearl Street West represents appropriate and desirable residential intensification within the City of Brockville.

The proposal:

- Is consistent with the Provincial Planning Statement (2024)
- Supports housing supply and affordability objectives
- Utilizes existing municipal infrastructure efficiently
- Maintains compatibility with the surrounding neighbourhood
- Responds directly to City Planning Staff pre-consultation & follow-up comments
- Requires minor and appropriate zoning relief

The proposed development will replace a previously existing residential building with a well-designed and efficient infill development, contributing positively to the neighbourhood and the City's housing supply.

The requested zoning relief is minor in nature and reflects the physical characteristics of the site and the established development pattern of the surrounding area. The proposed development represents good planning and contributes positively to the City's housing supply.

For these reasons, it is our firm's professional opinion that the requested **Zoning By-law Amendment should be supported and approved.**

If you have any questions, please contact us directly. Thank you.

Sincerely;



David T. Annable
President / Lead Consultant
info@annabledesigns.ca

ATTACHMENT 4





Andrew McGinnis

Subject: FW: Proposed Zoning By-law Amendment (R4 to Site-Specific R5) – 46-48 Pearl Street West (D14-104)

From: John Marshall [REDACTED]
Sent: June 9, 2026 5:52 PM
To: Circulations <circulations@brockville.com>
Cc: Planning <planning@brockville.com> [REDACTED]
Subject: Re: Proposed Zoning By-law Amendment (R4 to Site-Specific R5) – 46-48 Pearl Street West (D14-104)

Some people who received this message don't often get email from [REDACTED] [Learn why this is important](#)

To: Supervisor of Planning and the Planning and Development Committee

We are the owners and residents of [REDACTED], [REDACTED]
[REDACTED].

At the outset, we wish to emphasize that we support the redevelopment of this property. Following the December 2025 fire, we welcome investment in the site and the creation of new housing within our community. Our objection is not to redevelopment or residential intensification itself, but rather to the scale and form of development proposed for this particular property.

After reviewing the application materials, we believe the proposed site-specific R5 zoning would result in an overdevelopment of the lot and would require the removal or reduction of numerous planning standards intended to protect neighbouring properties and ensure functional site design.

Our concerns are outlined below.

1. The Proposal Requires Extensive Relief from Core R5 Standards

The proposed development does not appear to meet several fundamental standards of the R5 zone, including minimum lot area, lot frontage, interior side yard setbacks, parking requirements, access width requirements, and landscape buffering provisions.

The need for multiple significant reductions is not merely a technical issue. These standards exist to ensure that higher-density residential developments remain compatible with surrounding properties, provide adequate access and parking, maintain sufficient separation between buildings, and accommodate landscaping and drainage features.

The cumulative number of requested reductions suggests that the site is being developed beyond its practical capacity rather than being naturally suited to the form of development proposed.

2. Site Constraints Result in Reduced Compatibility with Adjacent Residential Properties

The proposed apartment building occupies a substantial portion of a relatively narrow lot and extends approximately 89 feet into the site.

As a result, neighbouring residential properties are left with reduced separation, limited buffering, and little opportunity for meaningful landscaping between uses.

While increased residential density can be appropriate in many locations, compatibility with adjacent properties remains an important planning consideration. In this case, the proposed development relies upon reduced setbacks and reduced landscape areas that would otherwise help mitigate impacts on neighbouring homes.

The report repeatedly highlights that one single unit (20% of the project) will be designated as "affordable housing" to meet city housing targets. While we strongly support affordable housing, a single unit should not be used as a bargaining chip to bypass six fundamental zoning rules that protect neighborhood safety. If the committee considers this proposal based on this unit, would a legally binding Community Improvement Plan (CIP) or Section 37 Agreement be registered on the property title? The city should secure enforceable guarantees: How long is this unit guaranteed to remain affordable? Is it tied to 30% of Brockville's median income for a 20-to-30-year period, or will it convert to market rates in a few years after the zoning favors have already been permanently granted?

3. Loss of Landscaping and Open Space

The site plan appears to dedicate a significant portion of the property to building footprint, parking, and vehicle access.

This raises concerns regarding:

- The limited amount of usable landscaped open space remaining on the site;
- The reduction of tree planting opportunities and urban canopy;
- The absence of meaningful buffering between the development and adjacent residential properties; and
- The long-term visual impact of a site dominated by built form and pavement.

The requested reductions to landscape requirements appear directly related to the challenge of accommodating the proposed intensity on a constrained parcel.

4. Functional Concerns Created by Site Overdevelopment

The proposal appears to rely on a reduced driveway width and reduced parking standards in order to fit the development onto the property.

While each individual reduction may appear minor when viewed independently, together they raise questions regarding the long-term functionality of the site, particularly during winter conditions when snow storage, vehicle maneuvering, visitor parking, waste collection, and emergency access all compete for limited space.

A development should be capable of functioning comfortably throughout the year without relying on minimal compliance standards or assumptions regarding ideal conditions.

5. Insufficient Technical Information Regarding Drainage and Servicing

The application materials do not appear to include a stormwater management analysis demonstrating how runoff from the increased hard-surfaced area will be managed without adversely affecting neighbouring properties.

Given the substantial amount of proposed building and paved surface coverage, we believe additional information should be provided to demonstrate that drainage impacts have been fully considered.

Similarly, we believe that appropriate servicing information should be provided to confirm that municipal infrastructure can adequately support the proposed development intensity.

Conclusion

We support redevelopment of 46-48 Pearl Street West and welcome new housing on the site. However, in our opinion, the proposed apartment building can only be accommodated through numerous reductions to the very standards intended to ensure compatibility, functionality, landscaping, and buffering. It can, however, beautifully accommodate a modern duplex or semi-detached structure.

The issue is not that additional housing is being proposed. Rather, the issue is that the scale and intensity of development proposed for this lot exceed what the site can reasonably accommodate without significant compromises to established planning standards. Therefore, we respectfully request that the committee:

1. Deny the requested R5 Zoning By-law Amendments as currently submitted.
2. Direct the applicant to submit a revised proposal for a duplex or semi-detached structure that aligns with the intent and setback protections of the existing Residential Fourth Density (R4) zone.

We also request that our names remain on the list of interested parties and that we receive notice of all future meetings, reports, and decisions related to this application.

Respectfully submitted,

John Marshall & Julie Marshall

████████████████████

Brockville, Ontario



Staff Report

Report To: Planning and Development Committee - Public Planning Meeting

Meeting Date: July 7, 2026

Prepared By: Andrew McGinnis, Chief Planning Officer

Report Number: 2026-103

Subject: Proposed Amendments to the Official Plan and Zoning By-law 5 Home Street

Recommendation

THAT Report 2026-103 be received.

Background

Jack Billen of Lion Trade Ltd., acting on behalf of the property owners has submitted complete applications for amendment to both the City of Brockville Official Plan and Zoning By-law 050-2014, for lands municipally known as 5 Home Street.

The applications were seeking approval to develop a 7-storey mixed use building, containing approximately 725.0 square metres of leasable commercial space, 84 residential rental apartments and 103 covered and uncovered parking spaces accessed from Apple Street and Ernie Fox Quay. A request was received on June 15, 2026 to amend the application to permit an additional 10 residential rental apartments (total 94), one additional covered and uncovered parking space (total 104) which would add access from Water Street, in additional to the original requests from Apple Street and Ernie Fox Quay (total of three access points).

Attachment 1 to this report is the Planning Rationale that was submitted with the applications. Attachment 2 is the proposed (updated) site plan and updated design drawings. Attachment 3 is the shadow analysis results and Attachment 4 are renderings of the proposed building.

Analysis

Official Plan Designation:

Existing	"Downtown and Central Waterfront Area", within the "Mixed-Use Node", subject to "Skyline Development Area (8 Storey)" policies, "Intermittent Street frontage" policies, "Main Street Area" policies, "Waterfront Development Area" policies, is listed as a "Potential Intensification Site", and is subject to "Cataraqui Region
----------	--

	Conservation Authority Screening Area” policies, “Flood Hazard” Policies and “Source Water Protection” considerations.
Proposed	“Downtown and Central Waterfront Site Specific Policy Area” to permit encroachment into the angular plane 5.2 metres on Apple Street and 4.2 metres on Water Street, and to amend minimum building heights at the street edge as well as a reduction to the minimum ground floor height from 4.5 metres to 3.0 metres.

Zoning By-law

Existing	“MW-2-Mixed Use Waterfront Special Exception Zone”, subject to “Intermittent Street frontage” provisions, “Minimum Ground Floor Height (2 Storey)” provisions, “Maximum Building Height (4 story)” provisions, “CRCA Screening Area” Policies, “St. Lawrence River - 1:100-year flood plain plus wave uprush factor” policies, and “Source Water Protection” considerations.		
Proposed	“MW-Mixed Use Waterfront Special Exception Zone”, subject to, “CRCA Screening Area” Policies, “St. Lawrence River - 1:100-year flood plain plus wave uprush factor” policies, and “Source Water Protection” considerations.		
	The special exceptions being requested are:		
		<u>Current Requirement</u>	<u>Proposed</u>
	Intermittent Street Frontage	1.2m	3.0m
	Maximum Front Yard (Water Street) (Apple Street) (Ernie Fox Quay)	3.0m 3.0m 3.0m	4.8m 2.3m 10.9m
	Min. Ground Floor Height	4.5m	3.0m
	Maximum Building Height	17.0m	21.6m
	Angular Plane	45 degrees (max)	Permission to encroach into the angular plane 5.2 metres on Apple Street 4.2 metres on Water Street
Apartment Suites	Not permitted on the	Seeking permission for	

		ground floor	residential suites to be located on the ground floor
	Loading Space(s)	1.0 space	0.0 spaces
	Parking Spaces	109	104
	Children’s Play Area	Required	Request to not provide

In the original circulation that was posted in the Recorder and Times as well as the mail-out circulation, a reduction in parking was requested from 153 parking spaces to 103 spaces. This was a typographical error. A parking reduction was not needed for the original building proposed with 84 suites and commercial space. Since the building has seen minor design changes since the original submission, a reduction in parking is being requested from 109 spaces to 104 spaces for the increase in suites from 84 to 94. Commercial space is proposed to remain the same as originally presented.

Site Characteristics:

Total Area (approx.):	3,700.0 square metres
Frontage (Apple Street):	61.0 m
Frontage (Water Street):	61.0 m
Frontage (Home Street):	61.0 m
Frontage (Ernie Fox Quay):	60.0 m

A site visit was conducted by staff on June 29, 2026. During the inspection, it was noted that the property is currently occupied by a commercial building and associated parking. This site was the former Brockville Courthouse and was most recently used as a Family Health Practice and Wellness Spa.

Attachment 5 of this report is the Angular Plane drawings showing the proposed encroachments. Attachment 6 is an excerpt from the City of Brockville GIS system showing the location of the property. Attachment 7 provides photos of the subject site taken by Staff.

Proposed Site Development:

The redevelopment of the site includes the proposed creation of the following:

Level 1	725.0m2 - Leasable Commercial Space Residents Lobby/Mail Room/ Dog Washroom Mechanical Room/Garbage Storage 5 Residential Suites Parking (36 indoor spaces) and (19 Outdoor Spaces)
---------	---

	Bike Storage (63 indoor spaces) and (4 Outdoor spaces)
Level 2	Fitness Room Amenity Space 5 Residential Suites 49 Parking Spaces (uncovered)
Level 3	16 Residential Suites Amenity Room Outdoor Amenity Terrace
Level 4	17 Residential Suites
Level 5	17 Residential Suites
Level 6	17 Residential Suites
Level 7	17 Residential Suites

Total Commercial Leasable Area: 725.0 square metres

Total Amenity Space: 1,377.95 square metres

Total Residential Suite Count: 94 Suites

The residential suite breakdown is as follows:

- 47 - 1-bedroom suites proposed
- 47 - 2-bedroom suites proposed

Access to the indoor parking is proposed to be from Apple Street. With access to the 2nd storey uncovered parking is proposed from Water Street, both municipal roadways. A Transportation Impact Study was submitted with the application that does not anticipate any required upgrades but does recommend that the intersection at King Street West and Perth Street be further investigated in the near future as population increases further west along King Street. The Traffic Impact Study is Attachment 8 to this report. This impact study is being updated due to the increase in unit counts.

Surrounding Land Use:

North	Lands on the opposite side of Water Street are zoned, "MW-Mixed Use Waterfront" Zone, in part, and "R9-Multiple Residential" Zone, and are occupied by a mix of residential units. Most buildings are 2 or 3 storeys in height with the exception of 85 Water Street which is 8-storeys and contains 82 rental apartment dwellings. Further north at 107-119 King Street West, a 6-storey mixed-use building containing approximately 610.0 square metres of commercial space and up to 128 residential suites was approved in 2025 and zoned "MD-Mixed Use Downtown Special Exception" Zone.
South	There is a water lot located south across Ernie Fox Quay that is owned by the City of Brockville and zoned "OS-Open Space" Zone and contains a portion of the Brock Trail system.

West	The lands to the west are zoned "OS-Open Space" Zone and occupied by Hardy Park.
East	Lands to the east, across Apple Street, are zoned "R9-Multiple Residential" Zone, in part, and "MW-3-Mixed Use Waterfront Special Exception" Zone, in part, and are occupied by the Harbourview Condominium containing 77 Suites, Tall Ships Landing Condominium with 88 Suites and a small portion of the Brock Trail.

All properties listed above are subject to "Source Water Protection" considerations.

Comments received are summarized below:

1. Building Services Division:

- No concern. Technical requirements of the OBC relating to site plan will be reviewed at the next phase of the development review process.

2. Engineering Department:

- No comment received at the time of publishing this report.

3. Fire Department

- No concern at this time in regard to the proposed Official Plan and Zoning Amendments.

4. Operations Department

- Concern with not providing a loading area. The minimum should be required.
- No concern about the Children Play Area, however, the developer should enhance Hardy Park with a second play structure or feature, or consider an equivalently values community enhancement, public washrooms, etc. for the harbour within the development.
- Has the developer accounted for snow storage and garbage collection on site?
- Traffic Impact Study provided did not adequately capture the safety conditions at the intersection of Apple St and Water St.
 - A Traffic Impact Study Addendum will be required that focuses on the sight triangles at the intersection and provides recommendations to address.
 - It is also important to note that any improvements that are required at this intersection will need to be part of the developers cost and scope.

5. Cataraqui Region Conservation Authority

- No comment received at the time of publishing this report.

6. Enbridge Gas - North York

- No concern.

Public Comment received is summarized below and is Attachment 9 to this report:

1. Brockville Resident

- Opposed to the Applications
- Disregard to By-laws, Zoning and Guidelines
 - Shocked at the number of requested amendments.
 - A building of this size was not planned for this location.
 - A return to the drawing board is in order.
 - Zoning regulations are in place for a reason, why change them.
- River Protection
 - Due regard needs to be taken on this fragile environment as Ernie Fox Quay was the former riverbed.
- Parkland
 - Former St. Lawrence Inlet has now been filled.
 - Removal of the vegetation on the lot should not be permitted.
- Population Density
 - Adding 83 Units (100 - 150 people) in this area at the same time as the other development further up Home Street will invite Chaos during construction and significantly change the nature of the area.
 - Increased policing, fire protection and infrastructure will incur major costs.
 - Traffic is already an issue. Especially during festivals.
 - Fear that the area will lose festivals and the area will become strictly residential. Impacts will be seen by businesses in the area.
- Personal Impact
 - Noise and exhaust pollution will be considerable, and we may need to vacate our premises for periods of time in the summer.
 - Increased use of air conditioning during construction. Loss of trees will also increase air conditioner use.
 - Increased use of heat in the winter due to lack of sunlight.

Public Consultation

Notice of the applications and Public Meeting was provided in the Recorder and Times on June 4, 2026, and placed within the News/Notice Section of the Brockville City Website. Notice was also sent to property owners and condominium boards located within 120.0 metres of the subject lands, signage was placed on the property and both internal departments and external agencies were solicited for comment.

Policy Alignment

The contents of this report are provided for information purposes for the Public Meeting. Following the Public Meeting, Staff will prepare a report which will include review and consideration of policies that are relevant to the requested amendments.

Conclusion

A Report on this matter, including a detailed analysis of the proposed amendments, review and consideration of the issues raised at the Public Meeting and a recommendation from Planning Staff, will be prepared for consideration of the Planning and Development Committee at a future meeting.

Approved by:
Andrew McGinnis, Chief Planning Officer
Sandra MacDonald, City Manager

Status:
Approved - 30 Jun 2026
Approved - 03 Jul 2026

Attachments:

- [Attachment 1](#)
- [Attachment 2](#)
- [Attachment 3](#)
- [Attachment 4](#)
- [Attachment 5](#)
- [Attachment 6](#)
- [Attachment 7](#)
- [Attachment 8](#)
- [Attachment 9](#)

FOTENN

ATTACHMENT 1



5 Home Street, Brockville

Planning Rationale
Official Plan Amendment and Zoning By-law Amendment Applications
May 1, 2026

FOTENN

Prepared for Lion's Trade

Prepared by Fotenn Planning + Design
420 O'Connor Street
Ottawa, ON K2P 2H7

May 2026

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1.0 Introduction

1

Fotenn Planning + Design has been retained by Lion's Trade to prepare this Planning Rationale in support of Official Plan Amendment, Zoning By-law Amendment, and Site Plan Control applications, which are intended to facilitate the proposed development on the lands municipally known as 5 Home Street in the City of Brockville.

1.1 Required Applications

To facilitate the proposed development, Official Plan Amendment and Zoning By-law Amendment Applications are required.

A site-specific Official Plan Amendment (OPA) is proposed to the Brockville Official Plan. The OPA would facilitate the proposed maximum height and amend the minimum building height, minimum first floor height, and angular plane requirements for the proposal.

The Zoning By-law Amendment (ZBA) proposes to amend certain current zoning provisions applicable on the subject property. New site-specific zoning provisions would set out building heights (including angular plane provisions), setbacks and step backs, minimum first floor and building height requirements, and loading space requirements, providing the necessary relief from specific provisions of the current zone as detailed throughout this report.

A Site Plan Control Application for the proposed development has also been submitted to further detail site-specific design considerations such as landscaping, servicing locations, and building materiality.

2.0 Site Context and Surrounding Area

2

2.1 Existing Conditions

The subject property is located in the eastern portion of Downtown Brockville. The site, a large square lot, is bordered by public right-of-way on all four sides. The lot has approximately 76.7 metres of frontage along Home Street, 76.5 metres on Apple Street, 62.1 metres along Water Street, and 65 metres along Ernie Fox Quay. The total lot area is 4,884 square metres. The lands are legally described as Lots 77 & 78, Registered Plan 67, City of Brockville, County Of Leeds.



Figure 1: Site Context Aerial (Subject Property Noted)

The site is located within the greater Brockville downtown and waterfront neighbourhoods. More specifically, the subject site is within the Brockville River district, an area of Brockville characterized by the historic downtown and the St. Lawrence River waterfront. The surrounding community features the public-accessible waterfront, including trails, and the waterfront, which acts as a central hub for boating, festivals, and scenic views.

The subject site is in close proximity to key employment areas, services, and community amenities, and is within a 5-minute walk to City Hall, the Brockville Library, the Brockville Court House, the United Counties of Leeds & Grenville Social Services Department, the Aquatarium, and many other important community destinations.

2.2 Surrounding Area

The surrounding community is characterized by a mix of land uses, including residential, institutional, and commercial.

Surrounding land uses are described as follows:

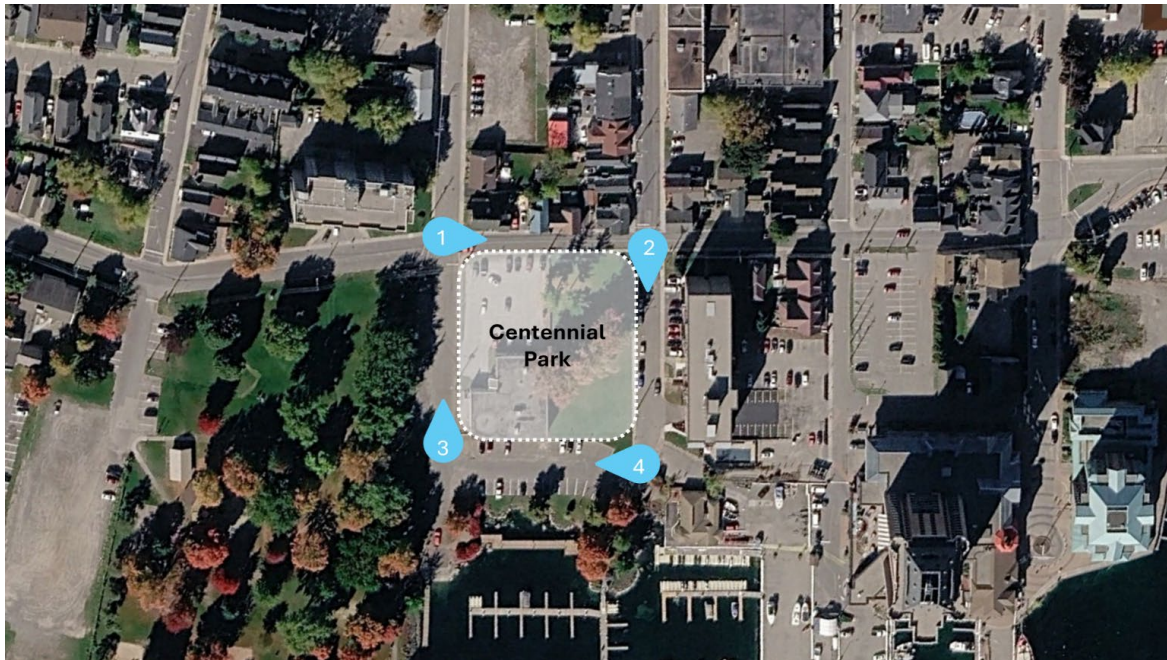
3

North: The subject site is bordered by Water Street to the north. Further north, opposite the subject lands is an 8-storey residential bar building with frontage on Water Street as-well. The remainder of this block is characterized by low-rise residential development. King Street, a vibrant commercial Mainstreet is 130 metres north of the subject lands.

East: The subject site is immediately bordered by Apple Street to the east. Opposite the subject site, also with frontage on Apple Street is another 8-storey residential bar building. Further east is the residential development know as Tall Ships Landing which is 20-storeys in height. Also east are surface parking lots, the Blockhouse Island Park and Parkway, marinas, the Brockville Harbour, and other riverfront parks and developments.

South: Ernie Fox Quay is directly south of the subject site which is characterized as a public right-of-way and surface parking area. The Home Street boat launch and Brockville Marina are also immediately north. Blockhouse Island park, as well as the St. Lawrence River is also south of the property.

West: Immediately west of the subject property is Centennial and Hardy Park, as well as Brock Trail. Important cultural destinations such as the Brockville Museum and Brockville Arts Centre are also west of the subject property. A full-service grocery store is located 350-metres from the subject property.





As described above, the subject property is well-located accommodate new commercial and residential growth both benefiting from the existing full-suite of amenities and services, well also adding and complementing the overall immediate and broader character of the neighbourhood. The above-mentioned existing 8-storey buildings can be seen in the background of images #1 and #3 above.

2.3 Road Network

The subject property is well served with respect to the existing road network. Water Street is identified as a Collector Roadway on Schedule 4 of the Official Plan (Road Network). In close proximity (one block north) King Street West is identified as an Arterial Roadways. Arterials are roads within the City intended to carry higher volumes of traffic to local and regional destinations. These roadways function as major public and infrastructure corridors that are intended to accommodate not only vehicular traffic but also public transit, pedestrians, cyclists and public utilities. Due to their intended function Arterial Roadways are generally best suited for increased activity as a result of residential and commercial intensification.

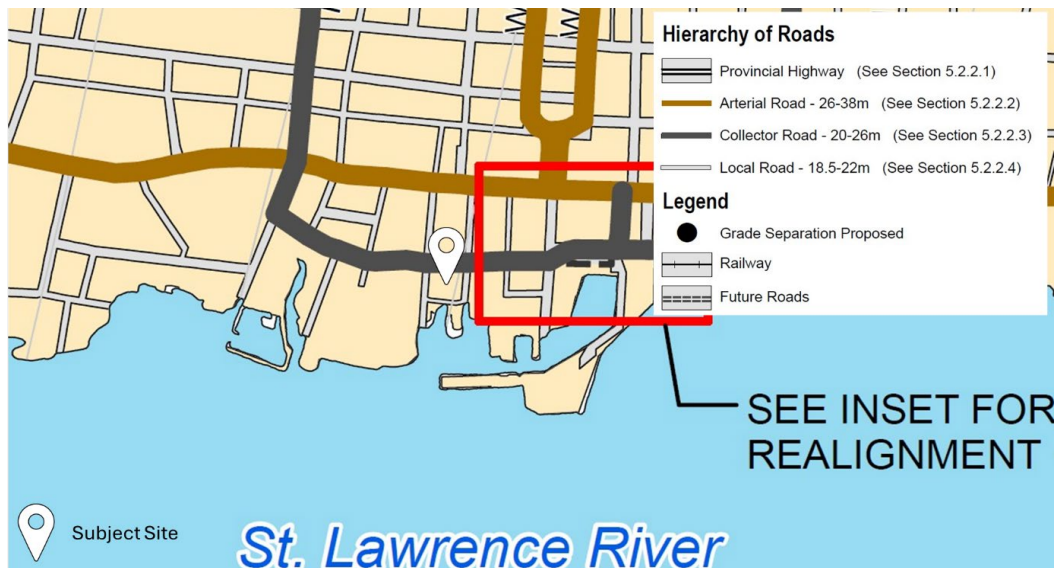
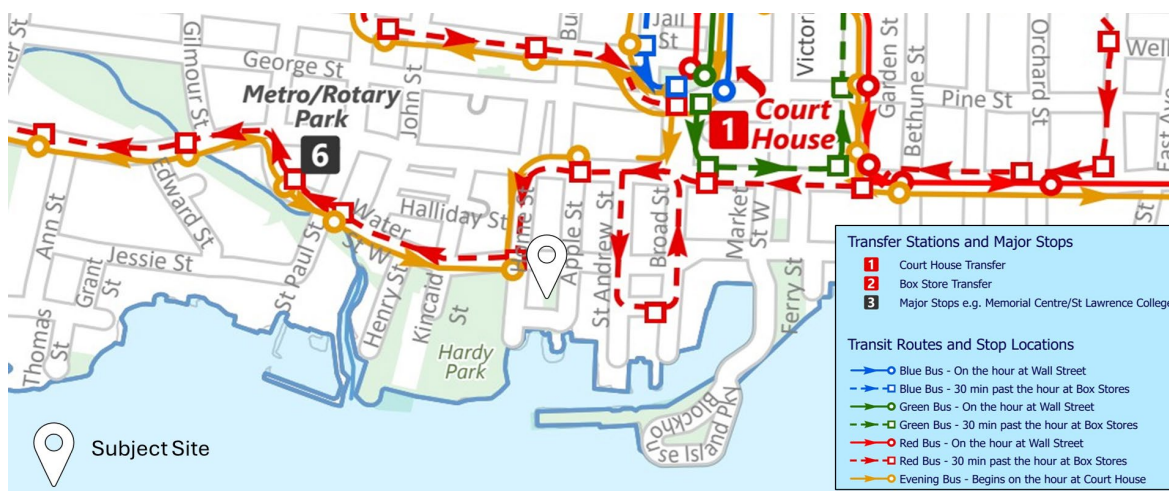


Figure 2: Excerpt from Schedule 4 of the Official Plan (Street Network)

2.4 Transit Network

The subject property is also well served by public transit with daytime and evening service located along Water Street and Home Street and other routes in the greater network located only a few minutes walk away. The subject site is approximately 15-minutes walk from the Via Rail Station on Perth Street, and residents could also benefit from the River Route Bus Service. The River Route Bus Service is a public transit service to key employment areas from Brockville to Cardinal along County Road 2.



2.5 Active Transportation Network

The subject site will benefit from proximity to both existing and future active transportation routes within Brockville. The Brock/Waterfront trail is easily accessible from the site, and potential future neighbourhood cycling and spine cycling routes are located along Water Street and King Street West respectively. Further, the site is strategically located in close and walkable proximity to recreational, institutional, service, and employment locations in Brockville.



Figure 3: Schedule C - Primary Urban Cycling Network

3.0

7

Proposed Development & Design Brief

The proposed development is a seven (7) storey mixed-use (residential and commercial) building with a total gross floor area (GFA) of 13,336.44 square metres. A total of 84 residential units are proposed, including a mix 1-bed +den, 2-bed, and 2-bed +den units. With frontage on Ernie Fox Quay, the proposal includes two commercial units consisting of 727.49m².

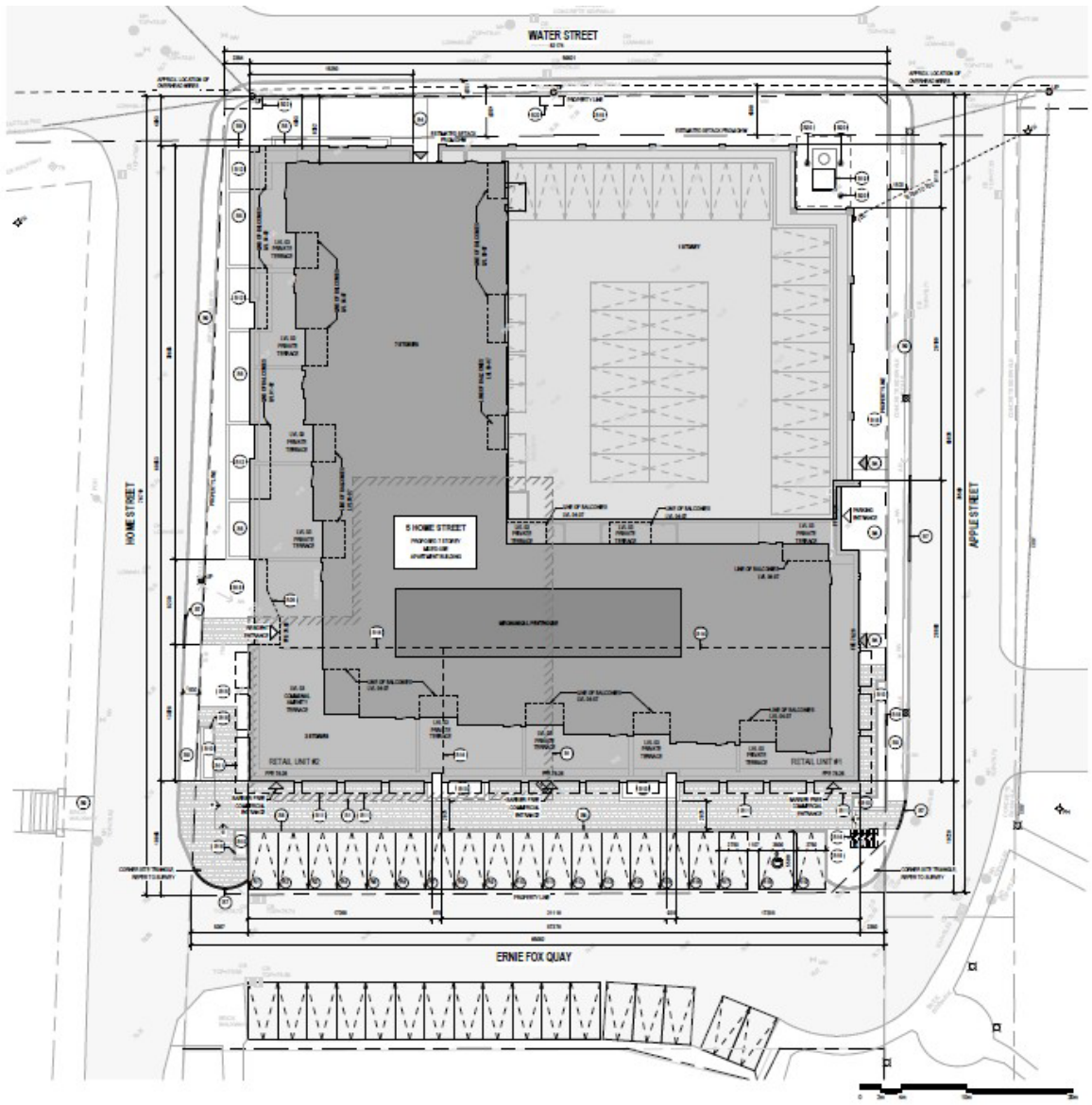


Figure 4: Proposed Site Plan

May 2026

5 Home Street, Brockville
Planning Rationale

The existing building on site will be demolished and the proposed building will occupy the entire block and has frontage on all four public streets setting the boundaries for the property (Water, Home, Apple, Ernie Quay).

Proposed Unit Typology:

Unit Size	Count	Percentage
1-bedroom + Den	34	41%
2-bedroom	46	54%
2-bedroom + Den	4	5%
Total	84	100%

The proposed building provides primary frontage along Erie Fox Quay and Home Street with an active residential and commercial interface. Along Apple Street, the building transitions down from the proposed 7-storeys at the intersection of Apple and Ernie Fox, to the two-storey form enclosing the parking garage to the northern extent of the site north to Water Street. Similarly, the building provides for a 7-storey form at the north-west corner of Home Street and Water Street, stepping down to the 2-storey parking garage form to the east. As discussed further throughout this report, the enclosed parking structure is architecturally detailed, with articulation, materiality, and unique massing. Further, the interface with the public realm along Water Street and Apple is also improved with robust landscaping and tree planting, vastly improving on the existing parking lot condition on-site today.

The upper floors of the building step back from the public right-of-way after the first two-storeys, giving the building massing space away from the right-of-way, and accentuating the active two-storey podium along Home Street and Ernie Fox Quay. The ground floor features a high floor-to-ceiling height and is proposed to be clad in a masonry material and transparent glazing that will provide a high-quality, active, and inviting street frontage.

Above the ground floor, the building steps back and is proposed to maintain the podium aesthetic through the use of red masonry material with significant glazing to animate the building facade. The building materiality program is continued with accents and strategically located materials such as:

- extruded aluminum siding wood grain,
- aluminum and glass railing,
- dark gray aluminum panel,
- red soldier course brick masonry, and
- black brick masonry.

The ground floor along Ernie Fox Quay, and at the intersection of Home Street and Ernie Fox Quay features retail uses with direct access to the sidewalk and clear glazing that will animate the pedestrian realm. The design and scale of the retail spaces ensures flexibility as they can accommodate opportunities for community-serving retail together with smaller, street-oriented retail uses which can also be consolidated for a larger retailer which will support the surrounding area. The main residential entrance and lobby are at the south-west corner of the ground floor along Home Street, and are heavily glazed, animating the street and allowing for views into and out of the building.

Along Ernie Fox Quay, the public realm is further animated with overhead commercial canopy, seating, robust landscaping, and brick pavers along the sidewalk which exceed 3-metres in width along this frontage.



Figure 5 Proposed South Elevation



Figure 6 Proposed West Elevation



Figure 7 Proposed North Elevation



Figure 8 Proposed East Elevation

Vehicular access for the development is provided from the public right-of-way at one single location on the east side of the subject property with access to Apple Street while existing at-grade parking is proposed to be retained along Ernie Fox Quay. For the entire 270 metre periphery of the site, along four public roadways, only 1 curb-cut is proposed which drastically reduces interruptions to the pedestrian realm and improves safety.

One underground parking level and one at-grade level provide 84 vehicular parking spaces, while 19 spaces are proposed at-grade along Ernie Fox Quay (the continuation of an existing legal non-conforming condition). Bicycle parking is provided at-grade and within the parking garage. A total of 34 bicycle parking spaces are provided.

The building features 1,475.65 square metres of amenity space including 467 square metres of communal amenity area and 1008 square metres of private amenity on private balconies and terraces.

3.1 Design Statement

The development has been designed to revitalize this underused site occupying an entire city-block. Given this substantial development area, the design focused on the importance of architectural tools to break up the massing, through the articulation of a multi-level building form stepping-back from Home Street and Ernie Fox Quay towards the 7-storey portion. As noted earlier, the 2-storey retail and residential podium component is proposed to be located fronting towards the West and South, and converging at the intersection to provide for a prominent gateway feature to this portion of the Waterfront Area of Brockville and interfacing with the river and prominent public park system. At 6.6 metres in height, the commercial ground floor offers a comfortable sense of enclosure and positively frames the public right-of-way. This is further accentuated by the ample 6-6.8 metre step-back after the second storey at this intersection.



Figure 9: View of the Proposed Development Looking north-east along Ernie Fox Quay

The proposed building design and site layout uses breaks in the street wall, ample street-level transparent glazing, and high-quality materiality to add interest to the streetscape and to provide space for public activities adjacent to the sidewalk at the corner. The commercial podium along Ernie Quay and the residential podium along Home Street, clad with red masonry and generous windows, ensure a pedestrian-oriented scale, defines the street edge, and addresses the compatibility of the new development with the existing low and mid-rise buildings nearby.

The public realm is prioritized along the entire 270 metre boundary of the site with only one break in the sidewalk proposed. The remainder of the periphery is programed with wide sidewalks, and ample landscaping features to further improve upon the public realm and pedestrian experience.



Given the site's context and materiality on nearby buildings, brick has been chosen for the exterior cladding of the proposed building. The careful arrangement of the masonry colors, the glazing, and other material accents, assists with breaking up mass of the building. The upper storeys (3-7, setback a further 1.6 metres to 6.7 metres) maintain the material palette to further complement the visual character of the building. The majority of the frontage along Water and Apple Streets is characterized by a 2-storey built-frame of the parking area with continuous materiality and architectural features brought forward harmoniously with the remainder of the building. This reduces the massing along these two facades, while ensuring a consistent architectural approach and screening the required parking area. A combination of indoor/outdoor amenity spaces is located on the podium roof-top along with private balconies space as well.



The proposed landscape plan submitted as part of this application package provides for a robust planting program including newly planted trees framing the perimeter of the site and the public realm. A prominent entrance design is also

proposed at the south-west corner of the subject property which includes a widened pedestrian realm, seating area, planters, and differentiated pavers and will represent a welcoming entry to the property.



4.0 Policy and Regulatory Framework

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4.1 Provincial Planning Statement

The Provincial Planning Statement (PPS), issued under Section 3 of the *Planning Act* came into effect October 20, 2024, replacing the Provincial Policy Statement that came into effect on May 1, 2020. It provides policy direction on matters of provincial interest related to land use and development. The Planning Act requires that decisions affecting planning matters “be consistent with” policy statements issued under the Act.

The proposed development is consistent with the following policies of the PPS:

2.1 Planning for People and Homes

- / Planning authorities should support the achievement of complete communities by:
 - accommodating an appropriate range and mix of land uses, housing options, transportation options with multimodal access, employment, public service facilities and other institutional uses (including schools and associated child care facilities, long-term care facilities, places of worship and cemeteries), recreation, parks and open space, and other uses to meet long-term needs;
 - improving accessibility for people of all ages and abilities by addressing land use barriers which restrict their full participation in society; and
 - improving social equity and overall quality of life for people of all ages, abilities, and incomes, including equity-deserving groups.

The proposed development accommodates residential and commercial uses on a site where various modes of transportation network are readily available. The proposed increase in height and density bolster these initiatives by adding a greater array of modern housing supply which can support the commercial facilities and benefit from the rapid transit network.

2.2 Housing

- / establishing and implementing minimum targets for the provision of housing that is affordable to low and moderate income households, and coordinating land use planning and planning for housing with Service Managers to address the full range of housing options including affordable housing needs;
- / permitting and facilitating:
 - all housing options required to meet the social, health, economic and wellbeing requirements of current and future residents, including additional needs housing and needs arising from demographic changes and employment opportunities; and
 - all types of residential intensification, including the development and redevelopment of underutilized commercial and institutional sites (e.g., shopping malls and plazas) for residential use, development and introduction of new housing options within previously developed areas, and redevelopment, which results in a net increase in residential units in accordance with policy 2.3.1.3;
- / promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation; and
- / requiring transit-supportive development and prioritizing intensification, including potential air rights development, in proximity to transit, including corridors and stations.

The proposed development directs new housing development to a location where appropriate levels of infrastructure and public service facilities are readily available, and its density will make efficient use of the subject site and support

nearby transit and active transportation opportunities. The proposed increase in density further advances the efficient use of resources by proposing additional housing supply in an area that can support it.

2.3 Settlement Areas and Settlement Area Boundary Expansions

2.3.1.2 Land use patterns within settlement areas should be based on densities and a mix of land uses which:

- / efficiently use land and resources;
- / optimize existing and planned infrastructure and public service facilities;
- / support active transportation;
- / are transit-supportive, as appropriate;
- / are freight-supportive.

The subject site is within a built-up settlement area already contextualized by two 8-storey buildings in the immediate vicinity with sufficient servicing and infrastructure. The subject site is in an ideal location with convenient access to existing and improved public transit as well as a variety of nearby amenities and uses. The Multi-Use Pathway nearby to the site provides convenient access to an active transportation network. The proposed development is situated in an existing community with public service facilities and established infrastructure.

2.4 Strategic Growth Areas

2.4.1.2 Support the achievement of complete communities, a range and mix of housing options, intensification and more mixed-use development, strategic growth areas should be planned:

- / to accommodate significant population and employment growth;
- / as focal areas for education, commercial, recreational, and cultural uses;
- / to accommodate and support the transit network and provide connection points for inter- and intra-regional transit; and
- / to support affordable, accessible, and equitable housing.

The proposed development is consistent with Policy 2.4.1.2 of the PPS, as it is an intensification of the subject site, located in a prioritized growth area of the City where services are readily available, accommodating a mix of uses and possesses convenient access to public transit, nearby amenities and employment opportunities.

2.9 Energy Conservation, Air Quality and Climate Change

Planning authorities shall plan to reduce greenhouse gas emissions and prepare for the impacts of a changing climate through approaches that:

- / Support the achievement of compact, transit-supportive, and complete communities
- / Promote green infrastructure, low impact development, and active transportation, protect the environment and improve air quality

The proposal would serve to redevelop the subject site with a compact and dense built form that is transit-oriented. It locates an array of uses within an area supported by local transit, cycling infrastructure, and a robust pedestrian network. The proposal introduces additional density to a site where the existing building has surpassed its lifespan.

The proposed development is consistent with the policies of the Provincial Policy Statement. The proposed redevelopment of the subject property represents efficient, cost-effective growth, intensifying an underutilized property within an existing community that is well suited to accommodate the proposed mixed-use development.

The design of the new building will contain complementary and appropriate materials and design choices. The building design and programming establishes a better functionality for the site while ensuring the height, bulk, form, and massing of the new building do not detract from the existing community attributes.

The proposed development represents a compact redevelopment of the lands making efficient use of both the site itself and existing infrastructure. The development will promote active transportation given the network of pedestrian and cycling infrastructure in the area. The range of unit sizes provided will ensure a diversity of housing opportunities in this area. Intensification of the subject property will make efficient use of existing infrastructure, public service facilities.

4.2 City of Brockville Official Plan

The Brockville Official Plan (OP) provides strategic land use direction that will guide the evolution of Brockville for the long-term, and combines the City's key goals, objectives and visions for Brockville within a 20-year planning horizon. Further, the OP provides a clear policy framework for managing and accommodating the growth projected for the City.

The OP states that Brockville's future includes the creation of a complete and sustainable community; a community that provides access to a full range and mix of housing, planning for economic growth and growth of jobs, retail opportunities, community services and facilities, recreational and open space opportunities.

The OP contains urban design policies that support a high-quality public realm, a thriving downtown and waterfront, and supports a diverse range and mix of land uses and ensures the preservation of the cultural heritage and character of Brockville's downtown and surrounding area.

As per the direction of the Official Plan, the subject property at 5 Home Street is denoted as an area prioritized for residential intensification that can accommodate up to 8-storeys through a prescribed Official Plan Amendment that adheres to the established policy and urban design direction of the plan.

As discussed below, it is Fotenn's professional opinion that the proposed development adheres to the stated objectives and intent of the official plan and promotes a full-slate of key policy provisions through providing for a reinvestment in this underutilized property that is complementary to the existing community and will drive the evolution of this area of Brockville towards becoming a complete and sustainable community.

As will be demonstrated throughout this section of the report, the proposed 7-storey, mixed-use development facilitates the creation of a complete and sustainable community through providing a full range and mix of residential and retail opportunities within close proximity to the established and thriving established downtown and waterfront neighbourhoods.

Below is an in-depth assessment of the proposals adherence to the relevant policy direction of the OP.

Section 2.3: The City's Planning Goals & Objectives

Section 2.3 of the OP establishes the four strategic planning themes that are intended to give rise to the goals and associated objectives set out in this Section of the Plan. The OP establishes that these goals and objectives form the basis for the detailed policies that follow and reflect the four themes identified in the Strategic Plan:

1. Sustainable and Climate Resilient

a. Conserved and Enhanced Natural Environment

- b. Healthy Community
- c. Sustained Action in Addressing Climate Change

2. An Economically Strong and Diverse City

- a. Flexible and Adaptable Economy
- b. Revitalized Community
- c. Innovative and Advanced Workforce

3. A High Quality of City Services and Amenities

- a. Effective Multi-Modal Transportation System
- b. Expanded Servicing Infrastructure
- c. Strong Community Services

4. A Well-Planned and Responsive City

- a. Responsive Planning Administration
- b. Managed Growth
- c. Unique Built Form Identity.

5. A Focus on Housing Supply and Choice

- a. Increased Housing Supply
- b. Support innovative, infill, and intensification in housing
- c. Address financial and regulatory tools for housing

The proposed development and corresponding amendments support the “Planning Goals & Objectives” by promoting growth by intensification of an underutilized parcel of land relative to the established urban core of Brockville as well as transportation infrastructure; supporting sustainable mobility options including a robust pedestrian and cyclist network; ensuring strong urban design to promote a well-integrated built form; efficient land use; and an employment generating use at-grade.

Further, the proposed development provides additional density in an area with existing employment-generating uses, maintaining their viability by locating customers and employees in proximity. Also, the proposed development proposes an efficient, modern building that allows for dense and efficient development for both the property owner as well as the City.

From a housing perspective, the proposed development provides a diversity of unit typologies allowing for tenants in various stages of their lives to remain located in a desirable neighbourhood with adequate service and transit infrastructure. The proposed development is in proximity to retail and amenities, employment and recreation uses that support a complete neighbourhood.

Section 3.2.1.1 states that the City is forecast to experience population and employment growth over the planning horizon. Table 3.1 identifies the population, household and employment projections.

Section 3.2.1.1 states that the population, household and employment projections in Table 3.1 shall form the basis for planning and growth management activities, in particular the establishment of land needs to accommodate growth.

Table 3.1 – Population, Household and Employment Projections

	<i>Population</i>	<i>Households</i>	<i>Employment</i>
2021	23,603	10,970	13,690
2026	24,320	11,404	14,106
2031	25,059	11,721	14,534
2036	25,681	11,940	14,895
2041	26,247	12,151	15,223
2046	26,782	12,725	15,285

Source: MetroEconomics, 2021

Figure 10 Brockville Growth Projections.

The proposed application will result in residential intensification and population growth that is aligned with the above Official Plan projections. The proposed development results in efficient growth in an area served by existing infrastructure and public services. The proposed development will result in 84-units of new housing stock that meets sustainability and accessibility design standards, and will support the growth of Brockville's population by contributing to the range of housing options in the downtown.

3.2.2 City Structure

Section 3.2.2 of the OP establishes that the structure for the City promotes the creation of a complete community, which meets immediate and future needs by providing access to a full range and mix of housing, diverse employment and shopping opportunities, a range of community services and facilities, recreational, parks and open space opportunities, convenient transportation choices, and the protection and enhancement of natural resources.

3.2.2.1 Mixed Use Nodes and Corridors

The City's Land Use and Growth Management Strategy envisages Mixed Use Nodes, connected by linking Corridors as a framework to create opportunities for intensification, redevelopment and infill in a manner that will not have a destabilizing effect on established neighbourhoods. Strategically-located Nodes and Corridors provide an effective means of establishing a City Structure, upon which land use designations are based. A Node is envisioned as a City-wide focal point, accommodating a range of commercial / retail / service uses; offices and non-industrial uses, and population-related employment uses; a mix of residential uses; municipal and community services and facilities; and entertainment and cultural facilities.

The subject property is identified within a Node, as illustrated on Schedule 1. The proposed Development is in keeping with the direction of the Node and provides for development that establishes efficient land use patterns and densities, and promotes the OP objectives stating that Nodes are the logical focus of intensive redevelopment over time.



Figure 11 Official Plan Schedule 1: City Structure

Along with being located with a Node, the subject Site is also designated within the Downtown and Central Waterfront Area.

As per the OP, the Downtown and Central Waterfront Area is envisaged as being the primary focus for, and occupying the greatest mix of, commercial / retail / service and higher density residential uses.

As noted, the site is located within the established Mixed-Use Node and the Downtown and Central Waterfront Area on Schedule 1 of the OP. The proposed redevelopment advances the policy direction of these areas and represents a significant investment and residential/commercial intensification in a mostly vacant and underutilized large lot in the Downtown and Central Waterfront Area.

The proposed development contributes to the existing urban identity of a Node in the Downtown and Central Waterfront Area by introducing a mix of uses including new residential housing options to support the development of well-served neighbourhood by contributing to a sufficient residential density that can support and is in proximity to a array of existing and planned services, amenities, employment areas, and mobility options. The subject site is appropriate to be developed with higher densities, while also contributing to the public realm.

The proposed building height increases the overall residential density on the site in achievement of policy direction with the 7-storey height respecting the existing built-form of the area, with two 8-storey buildings in immediate proximity to the site.

3.2.2.2 Transit-Oriented Development

Section 3.2.2.2 establishes that an anticipated shift toward development that is transit-oriented is encouraged by the City of Brockville. Transit-oriented design involves new buildings, neighbourhoods and developments being oriented in a way to complement proximity to transit, and facilitate pedestrian activity. Where higher density can be accommodated, for example, along Corridors, a higher level of transit service is also feasible.

Relevant policies of this OP section include:

3.2.2.2.1. The Mixed-Use Nodes, as identified on Schedule 1, shall be developed and redeveloped in accordance with Section 4.5 the principles of transit-oriented development design, as established in this Plan.

3.2.2.2.3. The City shall encourage transit-oriented development within a 5- minute walk (500 metres) of a Mixed-Use Node or linking Corridor.

3.2.2.2. 4. New or expanded development within 800 metres, or an 8-minute walking distance to existing or potential transit route stops shall observe and have regard to the transit-oriented development design principles, as established by the City.

The proposed development conforms to the relevant Official Plan policies as they relate to growth management and intensification within a transit supportive location. The proposed development will intensify an underutilized parcel within the City's built-up area and within a Mixed-Use Node, in the Downtown and Central Waterfront Area , a prioritized area/lot for intensification.

The proposed development also contributes to the creation of a more complete neighbourhood, providing opportunities for people to live in proximity to work, amenities and services, public service facilities, and local City transit. A balanced modal split is anticipated with future residents and visitors able to choose between active and public transportation to meet their daily needs while also having access to private vehicle parking as well.

3.2.3 The City's Urban Area

Section 3.2.3 of the OP sets out policy objectives for the Urban Area to function as a focal point for growth, development and urban activities. The OP states that the Urban will continue to be the focus of residential, commercial, employment, office, institutional, entertainment, cultural, recreational and parks and open space uses. The Urban Area will support opportunities for infill, redevelopment and intensification through a mix and range of uses appropriate within the community context.

Relevant policies of this OP section include:

3.2.3 1. The Urban Area is illustrated on Schedule 1 as including all land use designations, except for the Urban Reserve Area. The Urban Area shall be the focus of growth and accommodate a full range and mix of residential, commercial, employment, office, institutional, entertainment, cultural, recreational, and parks and open spaces uses, subject to the policies of this Plan, including the land use designations of Section 4, and servicing capacity and infrastructure availability.

3.2.3 3. The City shall identify and promote intensification, infill and redevelopment of designated and vacant and/or underutilized sites, and areas in transition in the Urban Area, taking into account existing building stock and the availability of suitable existing or planned infrastructure and public service facilities to accommodate projected needs. Urban Areas will provide for full municipal sanitary sewage, stormwater management and potable water services, in accordance with Section 5.3, as well as an appropriate level of transportation infrastructure.

The proposed development represents a mid-rise intensification on the subject property. The site is within an established area targeted for redevelopment and intensification given its location. The proposed development has been carefully designed to ensure compatibility with the surrounding community and an appropriate scale.

The development provides a compact, mixed-use, mid-rise building, that will contribute to the provision of a varied mix of residential units to foster a vibrant and diverse community in proximity to key amenities and the transit system. The proposed development is in proximity to existing amenities and services that can be accessed by active transportation. Limiting on-site vehicular parking and providing ample bike parking will encourage residents to meet their day-to-day needs within the community.

3.2.4.3 Residential Intensification

Section 3.2.4.3 of the OP speaks to residential intensification as the process of creating complete communities that utilize existing services and infrastructure efficiently and minimize the impact on our environment.

The OP goes on to state that complete communities are envisioned to be vibrant, healthy, safe and able to sustain mixed-use Nodes that reduce the reliance on the private automobile and encourage active modes of transportation and increased walkability. This is achieved by locating the majority of homes, jobs, shops, institutions and services in proximity to each other.

Relevant policies of this OP section include:

3.2.4.3 1. A portion of the City's future housing needs shall be provided through residential intensification, which may include any of the following:

- ii. infill development and residential development of vacant land or underutilized land in the Built-Up Area;

3.2.4.3 2. The City shall monitor the level of residential development within the Built-Up Area, and the number of new units created that represent residential intensification. The City shall target that 35 percent of all new residential units created during the planning period shall be through intensification¹

3.2.4.3 4. The City shall consider applications for infill development, intensification and redevelopment of sites and buildings based on the following criteria:

- i. the proposed development lands are appropriately suited for intensification in the context of the surrounding neighbourhood and the City as a whole;

The subject lands are well suited for intensification as they are within an underused lot, within the city's urban downtown and waterfront core in close proximity to other mid and high-rise development. The site is noted a priority area for intensification on Schedule 2 of this plan.

- ii. the existing water, sanitary sewer services, and stormwater management facilities can accommodate the additional development;

As noted in the submitted civil materials, the site is served by the existing water, sanitary sewer services, and stormwater management facilities can accommodate the additional development;

- iii. the road network can accommodate the traffic generated;

The site is located along four roadways, with 1 collector (Water Street), and 3 local roads noted (Apple, Home, and Ernie Fox). There is ample road capacity for this project. Further, the site is located in proximity to a full suite of active transportation routes as well as city buses.

- iv. the proposed development is consistent with the policies of the appropriate land use designation associated with the land;

As discussed throughout this report, the proposed development adheres to the intent and general direction of the full set of policy direction of the OP.

- v. the proposal respects and reinforces the existing physical character of the buildings, streetscapes and parks and open space areas;

The proposal fits well within its context with height and massing precedent in close proximity.

- vi. the proposal is compatible with the surrounding development;

The proposed development is compatible in term of height, massing, uses, and programming with the surrounding development.

- vii. the proposal provide heights, massing and scale appropriate to the site and compatible with adjacent lands;

The 7-storey building height is considered appropriate as per Schedule 2, with the pedestrian friendly podium and active frontage for both residential and commercial uses aligned with the direction of this plan.

- viii. the proposal provides adequate privacy, sunlight and views of the sky for existing and new residents;

The building orientation, height, podium size, and general adherence to the angular plane ensures adequate privacy, sunlight and views of the sky for existing and new residents.

- ix. the proposal screens loading and service areas; and

The proposal fully screens the parking area as well as rooftop service areas.

- x. the proposal complies to the appropriate urban design and built form policies of this Plan.

As discussed in more detail throughout the report, the proposal aligns well with the urban design direction of this plan.

3.2.4.3 5. The City shall ensure that a proposal representing residential intensification can be satisfactorily integrated with the physical characteristics of residential and commercial areas and proper health and safety standards are maintained. Land use compatibility and urban design assessments may be required as a component of the planning rationale report accompanying development applications, as outlined under Section 6.4.12 of this Plan.

3.2.4.3 5.7. The City shall support appropriate urban residential infill and intensification proposals in Community Improvement Project Areas, provided the proposal conforms to the policies of this Plan and the applicable Community Improvement Plan.

3.2.4.3 5. 8. The number of units proposed for intensification proposals shall be viable from a market perspective.

The proposed development directs new housing development to a location where appropriate levels of infrastructure and public service facilities are readily available, and its density will make efficient use of the subject site and support nearby transit. The proposed increase in density further advances the efficient use of resources by proposing additional housing supply in an area that can support it.

The proposed residential and commercial building represents urban infill on an underutilized lot within an area that can accommodate increased growth. The proposed development transforms an existing underutilized lot to facilitate a redevelopment that brings residential and commercial intensification to the area and to a high-profile corner lot, while also respecting the existing character.

The site layout and building design incorporates an approach that improves the public interface along the public realm, with building elements and treatments that define the street edge. The ground floor features large amounts of glazing and opportunities for direct access from retail spaces to the pedestrian sidewalk.

The height and massing are appropriate here and compatible with the neighbourhood with two 8-storey apartment buildings within close proximity to the subject site.

3.2.6.1 Downtown and Central Waterfront Area

As previously noted, the subject site is within the Downtown and Central Waterfront Area as established on Schedule 1:

Relevant policies of this OP section include:

1. Where possible based on site suitability and development intent, the City shall promote and direct growth through infill, intensification and redevelopment of vacant and/or underutilized land to the Downtown and Central Waterfront Area.
2. Priority in the use of Community Improvement Plans shall be the revitalization of the Downtown and Central Waterfront Area, or portions of the Area as determined by the City, in accordance with Section 3.4.2.
3. The City shall ensure the highest quality of urban design and architecture in the Downtown and Central Waterfront Area, in accordance the Downtown and Waterfront Master Plan and Urban Design Strategy (DWMPUDS). The City shall be satisfied that all development and redevelopment is consistent with the guidelines contained within the DWMPUDS.
4. The City shall work with the Downtown Business Improvement Association (DBIA) to achieve collective goals and promote the economic vitality of the Downtown and Central Waterfront Area.

Section 3.3.1 speaks to Locations Of Economic Activity and through policy **3.3.1 3**. states that Commercial, retail and office employment uses may be encouraged in the Downtown and Central Waterfront Area, and the mixed use, commercial nodes and along main transit routes to create strong central and secondary business district environments that are accessible.

The increased residential population, and additional commercial spaces will directly lead to sustained economic activity not only in the immediate area, but within the broader area as well. The subject property is strategically located to provide residential with convenient access to various employment areas throughout the City.

3.4 Revitalizing Our City

As per Section 3.4, the City employs a range of planning policies geared towards the revitalization, regeneration, and improvement of the existing community. The following policies support the tools of community revitalization.

3.4.1 URBAN DESIGN

Section 3.4.1 establishes the urban design direction policy for the City of Brockville. Relevant policies of this OP section include:

3.4.1.1. The City shall seek to maintain and improve the physical design characteristics of the Urban Area in the context of new and existing development by ensuring consistency with the Downtown and Waterfront Master Plan and Urban Design Strategy, and stressing excellence in architecture, urban design and built form.

- 3.4.1.2.** Through the review of development proposals requiring a Planning Act application, the City:
- i. shall ensure that new development is designed in keeping with the traditional character of the City in a manner that both preserves their traditional community image and enhances their sense of place within the City;
 - ii. shall promote efficient and cost-effective development design patterns that minimize land consumption while providing for safe and efficient municipal services.
 - iii. shall promote the improvement of the physical character, appearance and safety of streetscapes, civic spaces, and parks;
 - iv. may require, at the City's sole discretion, that proponents submit design guidelines or urban design briefs with development applications establishing how the policies of this Plan and the guidelines of the City's approved master plans and urban design strategies have been considered and addressed. Such guidelines may also be required to address related issues of residential streetscaping, landscaping, setbacks, signage, garage placement, architectural treatment, and shadow and wind impacts among other matters that may be identified by the City.
 - v. shall encourage design that considers, and wherever possible continues, existing and traditional street patterns and neighbourhood structure; and
 - vi. may require, at the City's sole discretion, that proponents submit design guidelines with development applications establishing how the policies of this Plan have been considered and addressed. Such guidelines may also be required to address related issues of residential streetscaping, landscaping, setbacks, signage, garage placement, and architectural treatment.
 - vii. shall promote the integration of barrier free features in new development. Such features, including level surfaces, ramps, railings and automatic door openers, shall be provided in compliance with the Accessibility for Ontarians with Disabilities Act (AODA);
 - viii. shall promote transit-supportive developments and developments providing facilities that promote active transportation, such as bicycle parking and pedestrian connections to nearby transit stops.

The proposed development will intensify an underutilized property characterized by surface parking, enclosing the street edge and improving the public realm with active uses at-grade and residential units above. The development will balance between respecting the existing fabric of the area while also improving the exiting condition and physical design characteristics of the lot.

The proposed development encloses the street edge with active, at-grade uses that feature large amounts of glazing and active entrances to the sidewalk. The upper floors of the building integrate setbacks and step backs to ensure an appropriate pedestrian scale along the street. The proposed residential entrance at the corner of Home Street and Ernie Fox Quay will also contribute to a more animated street frontage at that location.

Within the building, the podium rooftop amenity space is adequately positioned from the building's exterior walls and will provide a high-quality and unique communal amenity space for residents and their guests. This will be complemented by private balconies and terraces throughout the building.

The design of the building contemplates a built form that is compatible within the existing context and the planned function of the area. The seven (7) storey built form responds to the policies and regulations established for mid-rise building heights and the planned function of the surrounding area while also providing appropriate setbacks, ensuring that the front, rear, and side yards interface appropriately with the existing community.

3.4.1.4 Any development proposal in excess of five storeys shall only be permitted subject to a site-specific amendment to this Plan as well as the Zoning By-law and satisfying certain criteria to ensure the proposed development is compatible with neighbouring land uses and that the development provides a suitable transition with adjacent stable residential neighbourhoods.

The criteria for any building proposed in excess of five storeys shall include the following:

- i. **Signature Architecture** – Signature architecture above three storeys shall be required to ensure a high level of architectural treatment and design. Signature architecture may consist of visually interesting architectural features and roof treatments, enhanced building articulation through the use of distinguishable architectural elements, including cornices and mouldings, materials, and colours consistent with the prominent architecture within the immediate area. Roof mounted equipment and mechanical penthouses should be screened from public view or architecturally integrated with roof features.

The mandate of “Signature Architecture” was a guiding principle of the redevelopment process for this project. The proposed development seeks to intensify the subject property with a mid-rise development with careful design attention given to ensuring that the future building is compatible with the surrounding context and planned function of the surrounding area while ensure a high level of architectural treatment and design that is visually appealing, high-quality, and character defining.

The building design seeks to respect the form and character of the surroundings through the podium scale, the use of red brick masonry, and landscaped transitions to the public realm, while the upper portions of the building will be developed in a manner that complements the buildings scale through proper use of form and material while positively contributing to the city’s skyline.

The proposed building design and site layout uses setbacks, landscaping, ample street-level transparent glazing, and high-quality materiality to add architectural interest to the streetscape, and to provide space for activities adjacent to the sidewalk. Given the site’s context and existing materiality on nearby buildings, brick has been chosen for the exterior cladding of the proposed building podium.

- ii. **Angular Plane** – A 45-degree angular plane, as illustrated in Figure 3.1, shall be used to regulate the height and massing of buildings greater than three storeys. Buildings should be appropriately scaled and stepped back from the property lines to ensure an appropriate pedestrian scale and that there are no adverse impacts on the adjacent neighbourhoods, the public realm, and open spaces.

The majority of the proposed building adheres to the height provisions established through the application of a 45-degree angular plane with only a small portion of the upper floor facing Home Street and Apple Street interrupting the plane. Further, the proposed building incorporates step backs above the second storey to reduce the impacts of height and massing on the building realm. These step backs serve to create an appropriate scale for the building.

The angular plane is one of many tools to achieve appropriate building massing and scale, supplemented by building articulation and separation, podium heights and building stepbacks. Although not fully adhering the 45-angular plane on each façade, the building is still successful in providing adequate transition to the surrounding community and ensuring appropriate massing and scale that will complement rather than detract the existing fabric of the neighbourhood.



Figure 13 Water Street Angular Plane Analysis.



Figure 12 Home Street Angular Plane Analysis.



Figure 15 Ernie Fox Quay Angular Plane Analysis.

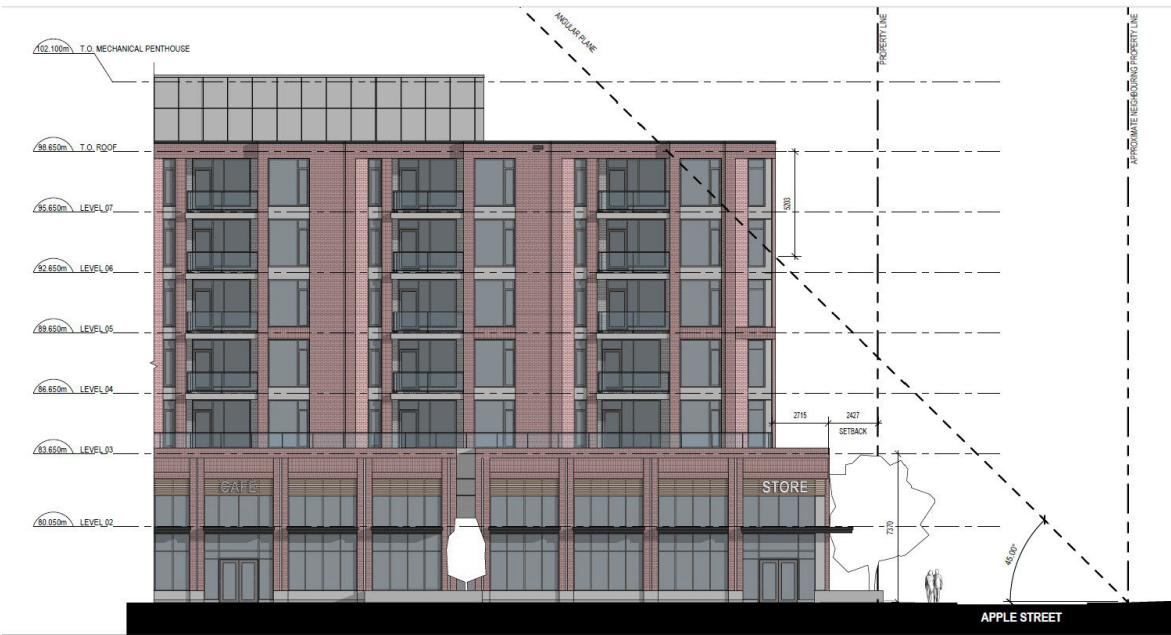


Figure 14 Apple Street Angular Plane Analysis.

- iii. **Tall Building Guidelines** – Development proposed in the Skyline Development Areas or over five storeys in the City shall be consistent with the following policies:
- i. Building designs should be consistent with the Tall Building Guidelines as outlined in the City’s approved Downtown Waterfront Master Plan and Urban Design Strategy (DWMPUDS);
 - ii. Tall buildings should generally consist of a clearly defined podium that is between three and four storeys and a tower portion above the podium;
 - iii. Podiums shall be pedestrian scale and should form a consistent street wall and incorporate at-grade active uses;
 - iv. Towers should be appropriately set back from the podium and from the property lines;
 - v. Towers should incorporate building step backs at appropriate height(s) to fit within the 45-degree angular planes taken from the opposite street line;
 - vi. New towers shall have adequate separation distances from existing towers and each other to ensure access to sunlight and sky view at the pedestrian level;
 - vii. Slender building designs of towers are to be achieved through floor plate’s sizes, floor plate’s length to width ratios and building massing;
 - viii. Buildings shall not generate adverse shadow and wind impacts on low-rise residential properties, parks and open spaces, and the public realm. The City may develop criteria to assess shadow and wind impacts of new developments. At the City’s discretion, Shadow Impact Study and Pedestrian Wind Impact Study including necessary mitigation measures may be required to address adverse microclimatic impacts to the City’s satisfaction;
 - ix. Buildings shall be designed to protect significant views and vistas, as identified by the City. At the City’s discretion, Visual Impact Assessment may be required to assess the impacts of new buildings on significant views and vistas. At the minimum, Visual Impact Assessment should include before and after visualizations of the significant views and vistas, the St. Lawrence shoreline (as appropriate) as well as design refinements to mitigate any loss of views from the public realm;
 - x. Parking should be provided either underground or in parking structures. Exterior facades of parking structures are to be articulated to avoid blank wall and to visually engage with pedestrians. Surface parking areas shall not be provided between buildings and the street unless adequately screened by landscaping.
- iv. Downtown and Waterfront Master Plan and Urban Design Strategy (DWMPUDS) – Development shall be consistent with the City’s approved DWMPUDS where applicable.

The proposed 7-storey building follows the policy direction of the Tall Building Guidelines and the City’s approved Downtown Waterfront Master Plan and Urban Design Strategy (DWMPUDS) through:

- A clearly defined two-storey podium with a step back to the taller building portion above.
- A podium providing active at-grade residential and commercial uses, that frames the pedestrian realm and creates vibrancy.
- Set-backs of the taller portion of the building a number of metres (between 1.5 metres and 6.8 metres) from the podium façade to reduce massing on the public realm.
- Fitting the vast majority of the tower height and massing with the established 45-degree angular plane.
- Ensuring access to sunlight and sky view at the pedestrian level by locating at an appropriate distance from the other taller buildings in the area.
- Providing an appropriate footprint and orientation of the taller portion of the building to mitigate overlook, overwhelming massing, and shadow or wind impacts.
- Providing parking fully enclosed within the building in an architecturally designed extension of the overall building aesthetic. The exterior elevations of the parking structure on Water Street and Apple Street has been designed to be articulated to avoid blank wall and to visually engage with pedestrians.

The proposed development proposes to redevelop and intensify an underutilized property characterized by surface parking, enclosing the street edge and improving the public realm with active uses at-grade and residential units above.

The proposed development encloses the street edge with active, at-grade (commercial & residential) uses on both Home Street and Ernie Fox Quay that feature large amounts of glazing and active entrances to the sidewalk. The upper floors of the building integrate setbacks and step backs to ensure an appropriate pedestrian scale along the street.

The proposed development provides adequate glazing and outdoor amenity spaces that improve passive surveillance along the street and has been designed to enclose the street edge and improve the public realm.

The design of the building contemplates a built form that is compatible within the existing context and the planned function of the area. The seven (7) storey built -form responds to the policies and regulations established for mid-rise building heights within the Designation and the Downtown and Waterfront Master Plan and Urban Design Strategy supporting the planned function of the surrounding area while also providing appropriate setbacks, ensuring that the building interfaces appropriately with the existing community.

The proposal considers adaptability and diversity by intensifying the prominent corner property and adding to the diversity of housing types and commercial opportunities available in the community. The ground floor retail space provides opportunities for one larger tenant space, or a collection of smaller spaces.

All street facades have been carefully designed with high-quality materials and significant glazing or articulation that will animate the street and respond to the location unique four-sided condition.

The space between the building will be landscaped to provide a generous and continuous pedestrian realm along the streets. Materials and design details for this space would be resolved further through a future Site Plan Control application.

3.4.1.5 A minimum ground floor height shall be required for new development with frontage on Main Streets, Water Street and Secondary Streets or in a Mixed-use and Commercial Area to ensure a consistent ground floor height. Where ground floor residential uses are permitted, a minimum ground floor height of 4.5 metres shall be required to accommodate a ground floor that may be converted to commercial/retail or office uses. The ground floor shall provide for clearly visible/accessible entrances, extensive window openings to accommodate the display of goods/products, higher urban design and enhanced building articulation to provide visual interest at the street.

Given the subject site consists of an entire city-block, the design has focused on two of the four public realm interfaces to provide active residential and commercial frontage. Along Ernie Quay, at the south-west corner of Home Street, and the south-east corner of Apple Street, a minimum ground floor height of 6.6 metres has been provided to accommodate commercial/retail uses. Along the remainder of Home Street, the two-storey podium ranges from a height of 6.6 metres to about 4.1 metres further north where the elevation change impacts the above-grade podium height.

Along Home Street and Ernie Fox Quay, the ground floor has been designed to provide for clearly visible/accessible entrances, extensive window openings to accommodate the display of goods/products, and higher urban design and enhanced building articulation to provide visual interest at the street.

Along, the remainder of Apple Street and Water Street, the design has been carefully considered to provide design gestures that reflect the design direction of the official plan while providing for the functional role of screening the parking area. This design approach, along with the proposed landscape plan and public realm improvements will ensure that the building interface here will be complementary to the overall building design and existing community character.

3.4.1.8. Buildings shall be designed to address the adjacent streets and street corners through a combination of design, façade articulation and uses. Principal entrances shall be directly connected from the public realm and active uses should be oriented to the public streets. Development design that establishes reverse lotting on City roads or requires features such as noise attenuation, appropriate landscaping or privacy fencing, in accordance with Section 3.7.2, shall generally not be permitted. However, reverse-lotting may be permitted along Collector Roads and Arterial Roads, at the discretion

of the City and subject to the provision of uniform noise attenuation or privacy fencing and a suitable maintenance program to the satisfaction of the City, in accordance with Section 3.7.2.

The proposed development has frontage on public four streets. The primary residential entrance is prominently located at the corner of Home Street and Ernie Fox Quay, while other individual residential patios with activating features are located along Home Street. A secondary residential entrance is located on Water Street.

The main commercial entrances are prominently located along Ernie Fox Quay.

3.4.1.9. The City shall require that infill developments or redevelopment be compatible with the established character of the immediate neighbourhood, particularly in terms of building height, massing, landscaping and setbacks. New building(s) should achieve a complementary design relationship to surrounding buildings while accommodating a diversity of architectural styles, built forms, building materials, landscaping and colours.

The proposed infill development will bring the subject site into alignment with the overall character of the surrounding residential and mixed-use area and away from the existing underdeveloped lot with significant surface parking. The height, and massing promote and respect the existing and planned function of the neighbourhood given the existing policy framework of the area, and the existing 8-storey buildings in close proximity to the site.

3.4.1.10 Streetscaping that reflects the intended character of the City shall be encouraged. In particular, contextually appropriate streetscaping and public realm features shall be required in the Downtown and Central Waterfront Area, and the Mixed Use and Commercial Nodes, at the cost of the proponent.

The proposal provides a mix of residential and commercial activities at-grade to reflect the diverse nature of the existing fabric of the surrounding area. In both the residential and commercial instances, the podium and at-grade interface is proposed to be vibrant, welcoming, and of high-quality materiality.

The public realm is enhanced surrounding the entire boundary of the site with over 270 metres of street frontages on four public streets. The building massing and articulation frames each street well and improves the sidewalk and landscaping conditions. The frontage along Ernie Fox Quay, and at the south-west intersection reflects the merging of the residential and commercial components of the building and provides for trees, seating, brick materiality and large glazed facades.

3.4.1.11. The City, in consultation with a development proponent(s), shall define a style of street furnishing that should include shared and accessible bicycle racks, garbage and recycling receptacles, benches and street lamps to be used in a new development. The City may consult, as appropriate, the Brockville Municipal Accessibility Advisory Committee (BMAAC), the DBIA, and/or the Heritage Brockville Committee.

The applicant is open to further discussions regarding appropriate street furniture as part of this proposal.

3.4.1.17. The City shall encourage development design that considers the principles of Crime Prevention through Environmental Design (CPTED). Specifically, the City shall support proponents of new development to provide active uses at grade, to design, maximize glazing and entryways to the street, and situate buildings on lots to maximize natural surveillance, to ensure unobstructed views into parks and open spaces and to use appropriate lighting to deter crime.

The full public realm interface along Home Street and Ernie Fox is provided with active at-grade uses and large windows to ensure CPTED principles are promoted.

The evolution of this site from a mostly vacant and underutilized property to a mixed-use building with commercial and residential tenants will facilitate a more vibrant area and daily connection to the public realm. This will benefit the pedestrian realm as well as nearby park space.

3.4.1.20. The City shall review the design and layout of parking areas and service areas in accordance with the policies of this Plan. In general, parking and service areas should be designed as follows:

- i. The placement and design of garages should de-emphasize their appearance on the street;
- ii. Building services, utilities and mechanical equipment should be architecturally integrated into the building design and directed away from public street, low-rise residential properties and adequately screened and buffered. The design and location of building services, utilities and mechanical equipment shall minimize their potential negative impacts on the streetscape and adjacent properties.

The public realm is only interrupted once for vehicle access which is fully enclosed within the building envelopment. All other service and equipment features of the site design are screened and de-emphasized.

3.4.1.22. The City shall encourage design of new buildings that improves pedestrian safety comfort:

- i. Elements such as awnings, canopies, cantilever, overhangs and sheltered entrances shall be incorporated into the building design to protect pedestrians from inclement weather and adverse wind impact;
- ii. Formal pedestrian connection from the street to the main building entrance and throughout the site shall be provided.

The public realm is improved through the proposed redevelopment of the site. This is achieved through positive framing of the street with an appropriately scaled podium, high-quality materiality, ample sidewalk and public realm space, and seating/landscaping features.

3.4.1.23. A high-quality landscape design that enhances the aesthetics of developments in all seasons, improves the site and land use compatibility and contributes to an attractive streetscape is achieved through:

- i. Where possible, existing trees and vegetation shall be preserved and incorporated into site landscaping;
- ii. Landscaping within the private realm shall be complementary to the adjacent streetscapes;
- iii. A combination of generously sized landscaped strips and fencing or equivalent alternatives should be used to buffer developments from adjacent uses and to provide screening of on-site parking and service areas.
- iv. Environmentally sustainable landscaping practices such as bioswales, permeable paving and the use of water-efficient indigenous plants are strongly encouraged.
- v. The use of berms along public street for screening purpose is generally discouraged. Other effective and visually engaging alternatives should be considered.

A Landscape Plan has been submitted which proposes substantial planting in the proposed greenspace. The space between the building and the public realm will be landscaped to provide a generous and continuous pedestrian realm along the streets. Materials and design details for this space would be resolved further through a future Site Plan Control application.

Additional trees are proposed to be planted along the boundary line between the public and private realm.

3.5 Strengthening Our Essential Human Services

In OP Section **3.5**, the City states that planning for the human environment promotes the community's quality of life and ensures that housing for special needs of socioeconomic groups such as seniors, the physically challenged, and low-income individuals are being met. Furthermore, it provides adequate opportunities for education, recreation and the arts. Subsection **3.5.1.1** speaks to the Supply of Land for Housing.

Relevant policy of this section of the OP includes:

3.5.1.1.3. The City shall identify sites as potential for intensification and redevelopment for medium and high-density housing on Schedule 1 to this Plan. The following policies apply:

- i. These sites are generally larger in size, provide opportunity for increased housing and housing mix.
- ii. Sites that are identified on Schedule 1 are not the sole sites for intensification and redevelopment as other opportunities may arise through the implementation of this Plan.
- iii. intensification and redevelopment shall include brownfield, greyfield, and bluefield sites.
- iv. Land use and neighbourhood design compatibility shall be a priority in the medium and high-density intensification sites. All such proposals shall comply with the policies of this plan regarding Neighbourhood Development Areas and for those sites located in the Downtown Central Waterfront Area, the policies of those sections as applicable.
- v. Every intensification site shall incorporate the Urban Design policies of this plan.
- vi. A Secondary Plan for an intensification site may be required at the sole discretion of the City.
- vii. Redesignation of intensification sites as shown on Schedule 1 to a lower residential density shall only occur through the Official Plan review process.
- viii. Downzoning of intensification sites to a lower residential density, to another use, and/or reducing the overall yield of residential units shall not be permitted.

The subject site is noted on Schedule as a "Potential Intensification Site" on Schedule 1 of the Official Plan. In following that direction from the OP, a respectful and appropriate commercial and residential intensification program is proposed on this underdeveloped site in the heart of Brockville.

3.5.1.2 Affordable Housing:

Relevant policy of this section of the OP includes:

3.5.1.2.1. The provision of housing that is affordable and accessible to low and moderate income households shall be a priority.

3.5.1.2.4. The City shall encourage the provision of affordable housing through:

- i. supporting increased residential densities in appropriate locations and a full range of housing types, adequate land supply, redevelopment and residential intensification, where practical;

3.5.1.2.7. The City shall encourage that affordable housing be considered when opportunities for redevelopment become available. This includes the redevelopment of existing single-use and underutilized areas with full municipal services, such as shopping plazas, business and employment sites and older commercial and residential areas, especially where the land is in close proximity to human services. Special attention will be given to the design of buildings, the landscaping treatment and features of the site to ensure that the proposed redevelopment is physically compatible with the adjacent uses.

3.5.1.2.10. The City shall encourage opportunities for more affordable housing to be provided in the Downtown and Central Waterfront Area, and Mixed Use and Commercial Uses.

3.5.1.2.14. The City shall encourage affordable housing in a variety of building forms to meet the housing needs of a socially and economically diverse population in support of a broad range of employment opportunities.

The proposed development is exploring provision of affordable units through the Canada Mortgage and Housing Corporation funding channels. Further, through increasing the supply of housing in an urban and built-up area of Brockville, the proposal is improving availability and affordability of housing-stock. The development is also proposing a mix of unit types to meet the diverse needs of residents.

3.6.8 Urban Forestry

Section 3.6.8 of the OP states that the treed urban landscape is an integral part of the City's green infrastructure. Properly planned and managed, the treed urban landscape provides significant ecological, social, and economic benefits, including but not limited to; improved air and water quality; reduced erosion and storm water runoff; energy conservation; improved health; enhanced liveability; reduced noise; heritage value; and increased property values. It shall be the policy of the City that:

Relevant policy of this section of the OP includes:

3.6.8 .1. The City shall encourage the planting and preservation of native trees and other hardy non-invasive vegetation throughout the City.

3.6.8 .10. The City shall ensure that tree saving plans, including replacement plans for those trees which cannot be saved, are integrated into site layout and design plans during the approvals review process.

3.6.8 .11. The City shall maintain a list of acceptable native trees.

3.6.8 .12. The City will require the integration of trees into parking lots and other impervious areas through the implementation of Landscape Areas in the Zoning By-law.

As part of the submitted Landscape Plan, new trees are proposed to be planted along the boundaries of the subject site.

3.7.1.1 Natural Hazards

The policy of Section 3.7.1.1 states that it is the intent of the City to protect life and property by respecting natural and human-made hazards, which may represent constraints to development.

Relevant policy of this section of the OP includes:

3.7.1.1.a) Development and site alteration shall not be permitted within:

a) defined portions of the flooding hazard along connecting channels of the St. Lawrence River;

3.7.1.1.c) areas that would be rendered inaccessible to people and vehicles during times of flooding unless it has been demonstrated that the site has safe access appropriate for the nature of the development and the flooding hazard.

3.7.1.1 2. Development shall be directed away from areas within or adjacent to the regulatory floodplain, as identified generally on Schedule 3, as defined by the Conservation Authority, except under very specific conditions as identified in 3.7.1.1(6). Any development and site alteration proposed in or adjacent to the regulatory floodplain shall be approved by the Conservation Authority under the applicable regulation.

3.7.1.1 4. Development shall not be permitted to locate in a flooding hazard where the use is: i. an institutional use including hospitals, long-term care homes, retirement homes, pre-schools, school nurseries, day cares and schools; ii. an essential emergency service such as that provided by fire, police and ambulance stations and electrical substations; or iii. uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

3.7.1.1 5. Development on an existing lot of record shall only be considered in those portions of the flooding hazard where the effects and risk to public safety are minor, could be mitigated in accordance with provincial standards, and where all of the following are demonstrated and achieved:

a) development and site alteration is carried out in accordance with floodproofing standards, protection works standards, and access standards;

- b) vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies;
- c) new hazards are not created and existing hazards are not aggravated;
- d) no adverse environmental impacts will result and;
- e) the use is not among those prohibited from locating in a flooding hazard in 3.7.1.1(4) of this Plan.

3.7.1.1 6. Should floodproofing be required, the minimum standards for floodproofing shall be defined according to Conservation Authority policies.

3.7.1.1.9. The following shall be considered in the review of development proposals within Screening Areas on Schedule 3, and the City shall consult the Conservation Authority on technical aspects pertaining to natural hazards in this regard:

- i. the existing physical hazards;
- ii. the potential impacts of these hazards;
- iii. the proposed methods by which these impacts may be overcome in a manner consistent with accepted engineering and resource management practices and techniques;
- iv. the costs and benefits in economic, social and ecological terms of any engineering works or resources management practices needed to overcome these impacts;
- v. protection of Natural Heritage Features identified in Section 3.6.5; and
- vi. the potential impact on surrounding lands, upstream lands and downstream lands.

An analysis report is submitted as part of this application under separate cover. To address any concerns the new development took an approach with the grade being raised and an above ground parking garage rather than underground.

Full approvals will be sought from appropriate authorities as part of the fulsome application and development process.

3.7.2 Human-Made Hazards: Air Quality & Climate Change

Relevant policy of this section of the OP includes:

3.7.2.14. The presence of trees improves air quality and reduces energy use through shading and protection as well as having aesthetic value. The City shall endeavour to improve and enhance the City tree inventory through policies set out under Section 3.6.7 Urban Tree Policy.

3.7.2.15. The City shall strive to create a transit-supportive, compact and walkable urban form consisting of mixed uses and efficient transportation networks, encouraging cycling and walking.

Inner urban infill housing such as the proposed development, supports climate change resiliency by curbing urban sprawl, reducing greenhouse gas emissions, and creating more compact, walkable, and energy-efficient communities.

4.0 Development our Thriving City Structure

As per Section 4.0 of the OP, one of the main goals in creating a complete community is to develop a cohesive and thriving City Structure. The Brockville OP intends to achieve this through the identification of Mixed-use Nodes and Corridors, well-defined neighbourhoods, and areas to accommodate future development, employment areas, parks and open spaces, and an urban reserve area. The OP further delineates this approach by the establishment of nine Land Use designations as identified on Schedule 1.

Through Schedules 1 and 2, the subject property is designated as:

- Downtown and Central Waterfront Area,
- Mixed-Use Node

- Potential Intensification Site.
- Within the Skyline Development Area with a height provision of 8-storeys,
- Both a Main Street Area and Waterfront Development Area.
- Home Street, Water Street, and Apple Street are in the Intermittent Street frontage area.

Relevant policy of this section of the OP includes:

4.2 Downtown & Central Waterfront Area

The subject site is within the Downtown and Central Waterfront Area. This designation reflects the historical City of Brockville as an area containing commercial services, cultural heritage, recreational uses and residential uses. This Area represents the broadest diversity of land uses, greatest level of activity, and highest quality of design that reflects the historical character and culture of the City of Brockville. The desired mix of uses shall be achieved by encouraging intensification and the redevelopment of existing vacant and underutilized sites where it is feasible and practical.

4.2.2 Permitted Uses

4.2.2.2. Medium and High-density residential uses shall be permitted including residential units that form part of a mixed-use building.

4.2.2.2.9. A full range of commercial and retail establishments shall be permitted, which are intended to serve the needs of the City-residents and individuals travelling into the City.

The proposed development is a mid-rise, mixed-use building and therefore adheres to the Permitted Uses.

4.2.3 Land Use & Built Form Policies

4.2.3.1. New development in the Downtown and Central Waterfront Area shall ensure that proper building frontage maintained along public or private roads.

The proposed development occupies an entire city-block and abuts all four-public roads. Active frontage is provided along Home Street and Ernie Fox Quay, with vibrant and complementary treatments also along Water Street and Apple Street.

4.2.3.2. New development shall be consistent with the City's approved Downtown and Waterfront Master Plan and Urban Design Strategy.

As demonstrated throughout this report, the proposed development is consistent with the City's approved Downtown and Waterfront Master Plan and Urban Design Strategy.

4.2.3.3. The height and massing of the building should have regard to the height and massing of the buildings on any adjacent property and may be subject to additional setbacks, height restrictions, or landscaping to provide an appropriate transition, streetscape analysis, shadow studies and sightlines studies should be prepared to demonstrate compatibility, appropriate transitions and no negative impact upon adjacent properties.

The OP considers appropriate height up to 8-storeys on the subject site with other buildings within that range already located in the immediate community east and west of the property. The ample setbacks, and articulation of massing ensure that the building fits well within the local context.

The building transitions down to a 2-storey height to the north-east, and provides a substantial step back after the 2-storey podium along the west and south elevations.

The building abuts the river to the south and parkland to the west, further assisting in appropriate transition of building form.

4.2.3.4. For residential units, the development shall be adequately serviced by parks, school facilities and community services.

The community is well-served by community services and amenities with Schools, Parks, recreation centres, library, pathways, etc.. within walking distance.

4.2.3.5. All required parking shall be provided on the site or in a shared facility having adequate capacity within 150 metres of the subject lands.

All required parking is provided on the site.

4.2.3.7. For developments with a potential to impact the traffic patterns of the area, a report shall be provided by the proponent identifying the adequacy of the road network to accommodate the expected traffic flows, in association with policies in Section 5.2.1. Pedestrian traffic, bicycle parking and connectivity for pedestrians and cyclists should also be analyzed and included.

Please see the provide traffic assessment report submitted under separate cover.

4.2.3.8. Development along Main Streets, Secondary Main Streets, and Water Street as identified on Schedule 2, shall reinforce the linkages to the waterfront and preserve and enhance views, contribute to pedestrian animation at the ground floor level, and provide streetscape elements that improve look, feel, and vibrancy of the Main and Secondary Streets and Water Street. Temporary uses, event space, pilot projects and tactical urbanist projects shall be encouraged along Main Street areas, Secondary Main Street and Waterfront Street Area.

The proposal represents a substantial evolution of the subject site from an underdeveloped lot consisting of significant parking lot area, to a full site redevelopment that provides improvements to the building form, residential intensification and commercial vibrancy of the area. The project represents a connecting link between the waterfront and the community further afield.

4.2.3.10. Lands identified as Waterfront Development Area on Schedule 2 should be subject to the following policies as they represent strategic areas requiring special guidance to direct redevelopment, programming and investment:

- i. Development proposals shall be consistent with the policies of this Section and the urban design policies of Section 3.4.1, the policies of Section 3.7.1, the intensification policies of Section 3.2.4.3, mixed use policies of Section 3.2.6, and tourism policies of Section 3.3.2, in addition to the other policies in the Plan.

As discussed throughout the report, the proposal is consistent with the policy direction of Section 3.4.1, 3.7.1, 3.2.4.3, 3.2.6 and 3.3.2.

- ii. Development proposals shall contribute to increasing the number of affordable housing units within the City, in accordance with Section 3.5.1.2.

The applicant is exploring affordable housing opportunities through CMHC programs and funding models.

- iii. Development proposals shall complement the higher density housing forms and recognize the different tenures needed in the Downtown and Central Waterfront Area and the City as a whole.

The proposal includes a range of unit types in a mid-rise, high density model. This will promote the OP housing and residential intensification objectives for the area.

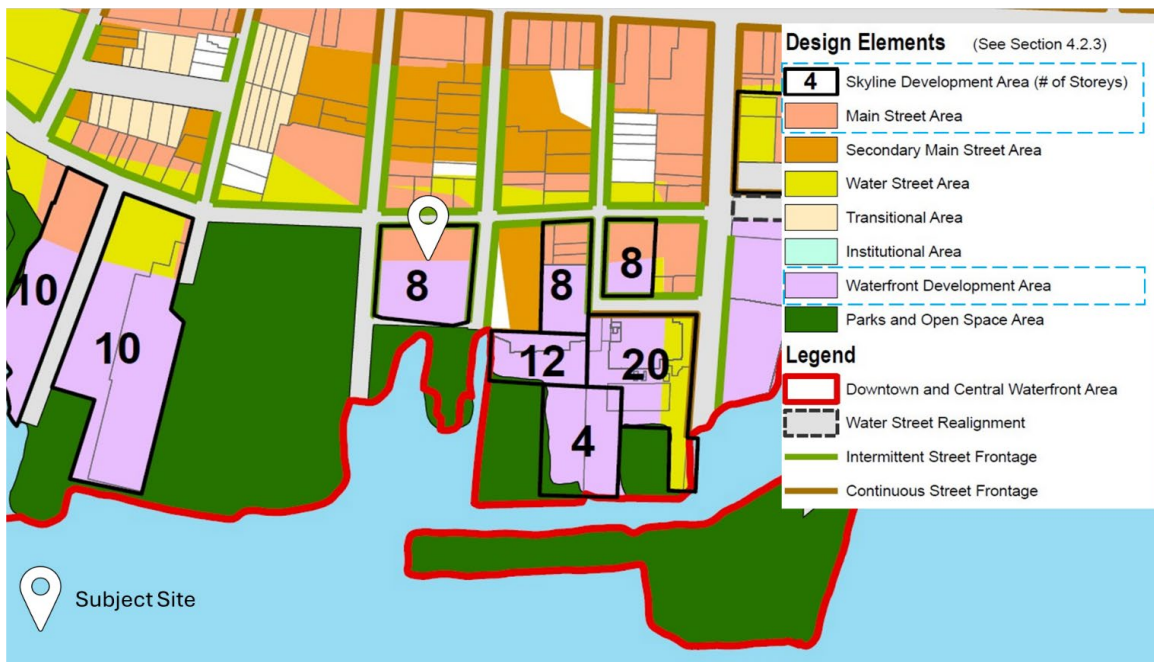


Figure 16 Official Plan Schedule 2: Design Strategy, Downtown and Central Waterfront.

4.2.3.12. The height, massing, orientation and layout of buildings shall promote the creation of a pedestrian-scaled environment and reinforce the character of the Main and Secondary Streets and Water Street. Preparation of streetscape studies are supported to assess the pedestrian scaled environment and connectivity to the surrounding area. Street furniture and landscaping may be proposed along/in front the entrances of buildings where appropriate. Blank walls shall not be permitted to front along public streets. Active at grade uses should be provided.

The proposed development has frontage on four public roads and selected to provide active at-grade uses along both Home Street and Ernie Fox Quay. The proposed development incorporates an active public realm consisting of at-grade units with residential patios along the street edge, plentiful glazing, and balconies. Landscaping and tree planting is proposed along the periphery of the site. The 2-storey podium with step backs will frame the public realm, and allow for air and light along the ROW.

The Ernie Fox Quay public realm with benefit from increased sidewalk width, seating and landscaping, and active storefronts.

The treatment along Water Street provides for an architecturally designed façade and landscaping to provide visual interest along that interface.

4.2.3.14. For Water Street and Secondary Streets required to have building frontages as identified on Schedule 2, a minimum of 70% of the frontage shall be occupied by a continuous building frontage within a building setback zone from the public right-of-way established in the Zoning By-law.

The proposal adheres to the 70% lot frontage requirement.

4.2.3.17. Buildings heights within Skyline Development Areas and Waterfront Development Areas of the Downtown and Central Waterfront Area shall be in accordance with the heights identified on Schedule 2 and subject to the criteria outlined below.

The proposed 7-storey building height is aligned with the maximum height of 8-storeys noted on the Schedule in the Skyline Development designation for the subject property.

4.2.3.18. Any development proposal in excess of five storeys shall only be permitted subject to a site-specific amendment to this Plan and satisfying certain criteria to ensure the building height is compatible with neighbouring land uses and that the development provides a suitable transition with adjacent stable residential neighbourhoods. The criteria for any building proposed in excess of three storeys shall include the following: i.

- i. **Signature Architecture** – Signature architecture above three storeys shall be required to ensure a high level of architectural treatment and design. Signature architecture may consist of enhanced building articulation through the use of distinguishable architectural elements, including cornices and mouldings, materials, and colours consistent with the prominent architecture within the Downtown and Central Waterfront Area. ii. Angular Plane –
- ii. **An angular plane** consistent with the Downtown and Waterfront Master Plan and Urban Design Strategy shall be required. Figure 3.1 provides an example of an angular plane.
- iii. **Tall Building Guidelines** – Development proposed in the Skyline Development Areas or over five storeys in the Downtown and Central Waterfront Area, shall be consistent with the City’s approved Downtown and Waterfront Master Plan and Urban Design Strategy, which outlines additional design guidelines for tall buildings, which relate to massing, views and vistas, point block development standards that mitigate shadow overlays, view obstructions and additional step back requirements for towers above three storeys, building placement, and architecture.
- iv. **Downtown and Waterfront Master Plan and Urban Design Strategy (DWMPUDS)** – Development shall be consistent with the City’s approved DWMPUDS

The above policy direction was discussed previously within this report. See response within Section 3.4.1.4 on pages 25, 26, 27, 28, 29, 30 of this report.

4.2.3.19. A minimum ground floor height shall be required for new development with frontage on Main Streets, Water Street and Secondary Streets to ensure a consistent ground floor height. Where ground floor residential uses shall be permitted, a minimum ground floor height of 4.5 metres shall be required to accommodate a ground floor that may be converted to commercial/retail or office uses. The ground floor shall provide for clearly visible/accessible entrances, extensive window openings to accommodate the display of goods/products, higher urban design and enhanced building articulation to provide visual interest at the street.

4.2.3.22. A consistent building height of two to three storeys shall be provided at the street edge to maintain the continuity of the street and consistent roof lines and ensure that buildings are presented at a pedestrian scale.

The proposed development provides a variable 2-storey podium along Home Street and Ernie Fox Quay as well as a 2-storey arterial feature to screen and enclose the parking area.

5.2.3.5. Efficient site design practices shall be promoted which focus on compact and accessible land development to minimize land consumption. Surface parking shall be minimized where possible to enhance the pedestrian realm and encourage non-auto modal options at grade. 6. Opportunities to provide active modal choices such as cycling, walking

and transit shall be promoted to reduce parking demand and automobile use as set out through the Transportation Master Plan (TMP). The City may develop further plans and strategies to enhance active transportation.

5.3.1.6.6. Infilling of vacant areas which are already provided with full municipal services shall be encouraged, and shall be of a higher priority when evaluating proposed plans of subdivision and consents.

The proposed development represents an efficient infill opportunity on an underutilized site. The site was identified for its intensification potential in the Official Plan, and is well suited to accommodate additional residential and commercial growth due to its optimal location within the greater Brockville downtown and waterfront area.

5.3.5 Stormwater Management

Section 5.3.5 of the OP states that the topography of the City is variable with significant grades towards the St. Lawrence River and is serviced by an extensive network of storm sewers, culverts, and drainage channels that outlet to the three major receiving waters: » The St. Lawrence River » Butlers Creek » Buells Creek In many areas of the City, namely the Downtown and Central Waterfront Area, impermeable surfaces such as building rooftops and parking lots reduce the ability of the land to absorb storm flows. Additionally, the water runs off the land at an increased rate. The effect of this often results in flooding, changes to adjacent watercourses such as erosion of banks, and potential pollution. This impacts the quality of surface water as well as the natural environment.

Relevant Policy of this section of the OP includes:

5.3.5.10. For new development within the Downtown and Central Waterfront Area and within a Neighbourhood Area or Neighbourhood Development Area south of Highway 401, all individual developments shall provide on-site controls to limit post-development flows to the pre-development (current) rate in order to minimize the impact on downstream sewers and the receiving watercourses. It shall also be a requirement to analyze the downstream sewer capacities on a case by case basis early on in the planning stage of each development in order to prioritize sewer separation/replacement to accommodate development.

The stormwater management strategy is discussed within the relevant submitted materials of this application under separate cover. The details will be refined and finalized through the Site Plan Control Approvals process.

4.3 City of Brockville Zoning By-Law

The property is zoned MW-2-Mixed Use Waterfront Special Exception Zone, within Zoning By-law 050-2014 and is subject to additional provisions as follows:

- Minimum 2 Storey Building Height at Street Edge Provisions (entire site),
- Minimum Ground Floor Height Provisions (along Water Street and around both corners at Apple Street and Home Street),
- Intermittent Street Frontage Provisions (Along, Water Street, Home Street and Apple Street),
- CRCA Screening Area Provisions and St. Lawrence River-1:100 Year Floodplain Plus Wave Uprush Factor Provisions,.

The Mixed Use Waterfront zone is meant to permit a variety of uses in Brockville's Central Waterfront area and accommodate increased intensification and mixed-use development. Table 6.1 of the by-law (Permitted Uses in Commercial and Mixed Use Zones) established the following permitted uses relevant to this proposal:

- Apartment Dwelling as part of a Mixed Commercial/Residential Building (1) in the Mixed Use Waterfront Zone.
- Many non-res uses including commercial use, convenience store, restaurant, retail use, etc.

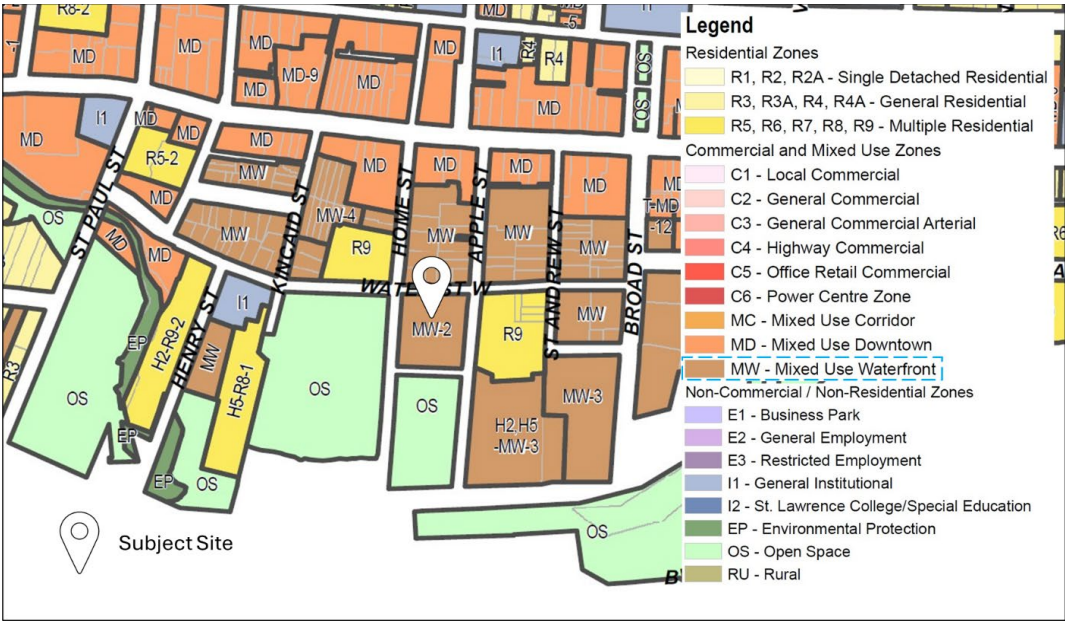


Figure 17: Excerpt from Schedule "A" of the City of Brockville's Zoning By-Law Map



Figure 18 Schedule "B"

The proposed development is compared to the MW-2 zone requirements in the table below:

Zoning By-law Requirements			
Required	Required	Provided	Conformance
Minimum Lot Frontage Table 6.2(b)	15.0 m	+15 metres on all frontages	YES
Minimum Lot Area Table 6.2(b)	500.0 m ²	4,884m ²	YES
Minimum Front Yard Table 6.2(b) As yards facing Public right-of-way are considered front yard as per Section 3.47	0.0 m	Home: 2.35m Water: 4.8m Apple: 2.3m Ernie Fox: 10.9m	YES
Maximum Front Yard Table 6.2(b)	3.0 m where the lot is subject to Intermittent Street Frontage as shown on Schedule "B"	Home: 2.35m Water: 4.8m Apple: 2.3m -3.3m Ernie Fox: 10.9m	NO
Maximum Lot Coverage Table 6.2(b)	80%	70% (3,423.5m ²)	YES
Minimum Landscaped Open Space Table 6.2(b)	10% (488.4m ²)	13% (662.4m ²)	YES

Minimum Ground Floor Height Section 3.28	- minimum height of the first storey shall be 4.5 metres.	3.0metres	NO
Minimum Building Height Section 3.27	- Minimum height of any main building shall be two (2) storeys or 7.0 metres.	Between 4.1 and 6.6 metres along Water and corners.	NO
Maximum Building Height Table 6.2(b) Section 6.3.2.2	Section 6.3.2.2 MW-2 Zone: - 17.5 m [5 storeys] Angular Plane provisions (Section 3.5)	21.11m after angular plane.	NO
Angular Planes Section 3.5	The following provisions shall apply: - a) The maximum height of a building shall be further restricted to the height of a plane, extending from the street line on the opposite side of the road and upwards at a forty-five degree (45°) angle. The upper storeys of the building shall be stepped back in accordance with the angular plane. - b) The angular plane shall be applied in addition to the maximum building height as indicated in the zone provisions.	Angular plane interrupted for 5.2 metres for the east elevation facing Apple Street. Angular plane interrupted for 4.25 metres for the north elevation facing Water Street.	NO
Step-backs Table 6.2(b)	Any storey above the third storey shall be set back a minimum of 1.5 m from the main wall of the first three storeys	1.5 setback from podium at 2 nd -storey	YES
Intermittent Street Frontage Section 3.22	The width of the main building shall be a minimum of 70.0 percent of the lot frontage and set back at the applicable minimum and maximum front yard setbacks.	>70% frontage.	YES
Amenity Area per dwelling Unit (S. 3.4)	Mixed Commercial/ Residential Buildings: a) 10.0m ² per bachelor/one bedroom unit= 34x10=340m²	340m²	YES

	<ul style="list-style-type: none"> - b) 20.0m² per two (2) bedroom unit= 50x20=1,000m² - 3.4.e) A children's play area shall be provided where a maisonette or apartment dwelling development contains ten (10) or more dwelling units at a rate of 2.5 square metres per dwelling or apartment unit. 84x2.5=210m² <p>Total Requirement:</p> <ul style="list-style-type: none"> - The minimum size of any children's play area shall be 46.0 square metres, while the maximum size of such children's play area shall be 140.0 square metres. 	<p>1,000m²</p> <p>135.65m²</p> <p>Yes</p>	<p>YES</p> <p>NO</p> <p>YES</p>
Corner Visibility Triangle (S.3.50)	Local Road to Local Road: 6.0 metres Water Street and Home Street: 3.0 metres	6.0 3.0 TBD	YES
Apartment Units in Commercial And Mixed-Use Zones (Section 3.6)	Apartment unit(s) shall be located in the second or higher storey of commercial buildings.	Apartment Units Located at grade.	NO
Permitted Projections	TBD	TBD	TBD
Vehicle and Bicycle Parking			
Bicycle Parking Section 3.9	Apartment Dwelling: 0.25 spaces per dwelling unit= 21 spaces Retail, Office or Restaurant Use with less than 3,000.0 square metres of gross floor area: 1.0 space per 250.0 square metres of gross floor area.= 3	21 spaces 3	YES
Bicycle Parking Dimensions Section 3.9	Bicycle parking spaces shall be 0.6 metres by 1.8 metres. Bicycle parking spaces shall be accessed by an aisle with a minimum width of 1.5 metres	spaces 0.6 metres by 1.8 metres. aisle minimum width of 1.5 metres	YES
Vehicle Parking Requirements (Table 3.34(a))	Apartment Units as part of a Mixed Commercial/ Residential Building: - 1.0 space per unit.= 84 spaces	84 spaces + accessible	YES

	Retail Uses (General): <ul style="list-style-type: none"> - 5.0 spaces per 100.0 square metres gross leasable area. - Reduced to 2.5 per 100.0 square metre given provision stating where a lot is located in the Downtown and Central Waterfront Area, the parking required for any commercial uses in accordance with subclause 3.34 a) i) shall be reduced by 50.0 percent.= 7.0 spaces 		
		7.0 spaces	YES
Parking Space Dimensions	2.75 metres wide 5.5 metres long	2.75 metres wide 5.5 metres long	YES
Driveway and Aisle Dimensions	6m drive aisle 6m drive way	6m drive aisle 6m drive way	YES
Loading Area	Total floor area exceeding 300m ² , to 1,000m ² : one (1) loading space.	Not provided.	NO
Loading Area Dimensions	Each loading spaces shall be not less than 9.0 metres in length, 3.0 metres in width and having a vertical clearance of not less than 4.5 metres.	Not provided.	NO

As indicated in the zoning compliance table above, the proposed development requires amendments to certain provisions of Brockville Zoning By-law (050-2014).

Other Provisions:

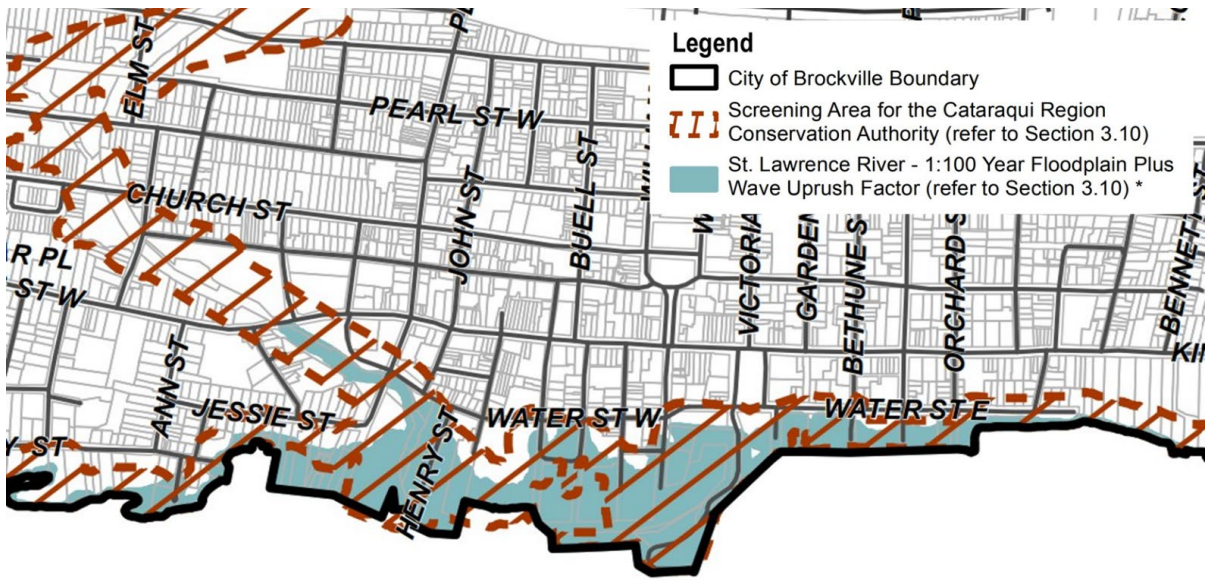
Appendix 1: Screening Area for the Cataraqui Region Conservation Authority

Section 3.10 Cataraqui Region Conservation Authority Screening Area (Appendix 1)

The Cataraqui Region Conservation Authority Screening Area, as delineated on Appendix 1, illustrates areas that may be regulated under Ontario Regulation 148/06. The actual regulated area may differ from the Screening Area shown on Appendix 1, which is shown for informational purposes and the regulated area, as determined by the Cataraqui Region Conservation Authority Screening area, shall prevail over the Screening area. The following provision shall apply:

- a) Development and redevelopment, including the placement or removal of fill, shall not be permitted in any regulated area without the prior written approval from the Cataraqui Region Conservation Authority.

The Subject Property is located within a regulated screening area under the jurisdiction of the Cataraqui Region Conservation Authority (CRCA). As such, a permit from the CRCA will be required. A wave uprush analysis has been completed, and previous comments from the CRCA have been reviewed and incorporated into the site and building design to facilitate the permit approval process. In response to identified water level concerns, the building has been designed to provide above-grade parking, which mitigates potential flood-related impacts. This design approach addresses previous comments and is intended to satisfy CRCA requirements.



ST. LAWRENCE RIVER

Figure 19 Appendix 1: Screening Area for the Cataraqui Region Conservation Authority.

5.0 Required Amendments

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5.1 Proposed Official Plan Amendment

To facilitate the proposed development, a site-specific Official Plan Amendment (OPA) is proposed to the Brockville Official Plan. As per Policy 3.4.1.4 and 4.2.3.18 the OPA is prescribed to amend the maximum building heights and associated angular plane policies for the property to permit the proposed development. The OPA also seeks to amend the provisions policy 3.4.1.5 and 4.2.3.19 of the Official Plan pertaining to minimum first floor height as well as Policy 4.2.3.12 of the OP pertaining to active uses along Water Street, to permit the proposed development.

A thorough rationalization of the appropriateness of the proposed amendments to the Official Plan has been provided throughout this report. The proposed development conforms to the Official Plan policies regarding intensification, managing growth, and the land use policies. The proposal complies with the City's urban design objectives and compatibility criteria. It is therefore our professional opinion that the proposed Official Plan Amendments requested are appropriate and facilitate good land use planning.

5.2 Proposed Zoning By-law Amendment

To facilitate the proposed development, a Zoning By-law Amendment is being submitted to amend certain provisions of the zoning by-law pertaining to the subject site and proposed development. The site specific amendment would address specific performance standards.

The new zoning schedule and exception would provide relief from specific provisions of the current zoning as detailed throughout this report to address non-compliance in the following areas:

- **Maximum Front Yard Setback** (Table 6.2(b))
 - o Portions of the building frontage along Water Street, Home Street, and Ernie Fox Quay exceed the 3-metre maximum. An amendment to this provision is deemed appropriate as the building provides frontage along 270-metres of public right of way. The variable setback assists in providing visual articulation and breaks in the massing to improve the interface with the public realm.
- **Minimum Ground Floor Height** (Section 3.28)
 - o Portions of the building along Water Street, Home Street, and Apple Street do not provide the minimum ground floor height. An amendment to this provision is deemed appropriate as the two-storey podium/building is generally consistent for the entire front-facing boundary of the building. Where the ground floor height is less than the by-law requirement along Home Street, this is to accommodate two-levels of residential apartment units which are an important consideration for the viability of the proposal, and the levels of residential intensification anticipated.
- **Minimum Building Height** (Section 3.27)
 - o Portions of the building along Home Street and Water Street do not provide the minimum building height. An amendment to this provision is deemed appropriate as the building massing is generally consistent with the by-law requirement across the site, with variation necessary to accommodate the site's topography, and internal programming. No adverse impacts on the public realm are anticipated due to this amendment request.
- **Maximum Building Height** (Table 6.2(b) and Section 6.3.2.2)
 - o The proposed building exceeds the permitted maximum building height. An amendment to this provision is deemed appropriate as additional building height was considered up to 8-storeys for this site in the Official Plan, and the OPA for this height is a prescribed process to achieve this height. The building provides for high-quality architecture that fits well within the existing and planned context,

and no adverse impacts are anticipated to the surrounding community due to this amendment request. The additional height will assist the City in achieving their growth projections, residential intensification objectives, and priorities to create a complete community here. The building height is already contemplated in the Official Plan, and represented in existing nearby apartment buildings.

- **Angular Planes (Section 3.5)**
 - o The proposed building exceeds the permitted height as per the angular plane along the Water Street and Apple Street facades. An amendment to this provision is deemed appropriate as only small, upper levels of the building at the Water Street and Apple Street façade exceed the angular plane limit. As stated throughout this report, the modest height increase will not lead to adverse impacts on the public realm, or nearby private property. The building height is already contemplated in the Official Plan, and represented in existing nearby apartment buildings.
- **Children's play area (3.4.e)**
 - o The proposal provides less than the required children's play area. An amendment to this provision is deemed appropriate as the objectives of this provision will be accommodated within the building and in nearby park space. Further, the building provides 135.65m² of the required 210m² of children's play area space, with other amenity area provided that can be used for dual purposes such as typical amenity space as well as for children. Also, Hardy Park and Centennial Park are located directly west of the proposed building within 20-metres of the proposed main residential entrance. These parks are substantial in size and offer passive and active play options for children that reside in the building.
- **Apartment Units in Commercial And Mixed-Use Zones (Section 3.6)**
 - o The proposal locates apartment units at-grade along Home Street. An amendment to this provision is deemed appropriate as the proposed building provides a robust mix of both commercial and residential uses at-grade, leading to a sustainable use mix that will be reciprocal in their support for each other. The commercial space along Ernie Fox Quay will be of a size and orientation so as to allow for flexibility and adaptability in tenants over time if necessary.

The Official Plan and Zoning By-law Amendments are appropriate as they promote the ongoing transformation of the area to a supportive urban character and provide an appropriately-scaled, mid-rise building that features a mix of uses, is compatible with the surroundings, and achieves a high standard of urban design. The amendments facilitate a redevelopment that promotes a positive interface with the public realm using ample clear glazing, and active entrances along all four frontages.

6.0 Conclusion

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It is our professional planning opinion that the proposed Official Plan Amendment and Zoning By-law Amendment applications represent good planning as follows:

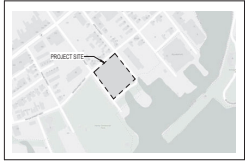
- / The development proposal is consistent with the intent of the Provincial Planning Statement with respect to infill development, particularly allowing development in established urban areas where services, amenities, facilities, transit, and infrastructure are readily available.
- / The proposed development is supported by the submitted plans and studies and will create no adverse impacts on the area regarding shadowing, wind, noise, or transportation capacity.
- / The proposed development conforms to the Official Plan policies regarding intensification, managing growth, and the land use policies.
- / The proposal complies with the City's urban design objectives and compatibility criteria. The 7-storey built form and materials reflect the character of the existing community and will contribute positively to the community.
- / The proposed development adheres to the intent of the Zoning By-law with regards to the proposed built form, building orientation, and lot location. The proposed amendments for the subject property is compatible with the zoning framework of the surrounding area and will help to ensure compact and efficient development on the subject property.
- / The requested Official Plan and Zoning By-law Amendments are appropriate for the subject property and will facilitate the intensification of the lands, consistent with the Provincial Planning Statement and in conformity with the Official Plan.



Tim Beed, MCIP RPP
Associate, Planner

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PROJECT SITE



LOCATION PLAN
SCALE: 1/8" = 1'-0"

SITE STATISTICS table with columns: Description, Quantity, Unit, Notes.

SITE PLAN SYMBOLS LEGEND table with symbols and descriptions.

PARKING SPACE LEGEND table with symbols and descriptions.

SITE PLAN NOTES list of 15 numbered notes.

UNIT COUNT table with columns: Unit Type, Count, Area, etc.

GROSS AREA (SQM) table with columns: Area Type, Area, etc.

RETAIL UNIT COUNT table with columns: Unit Type, Count, etc.

AMENITY SQM (PRIVATE) table with columns: Amenity Type, Area, etc.

AMENITY SQM (COMMON) table with columns: Amenity Type, Area, etc.

ATTACHMENT 2

3. REGISTER FOR COORDINATES 74 8447
4. REGISTER FOR COORDINATES 24 8111
5. SEE RECORDS

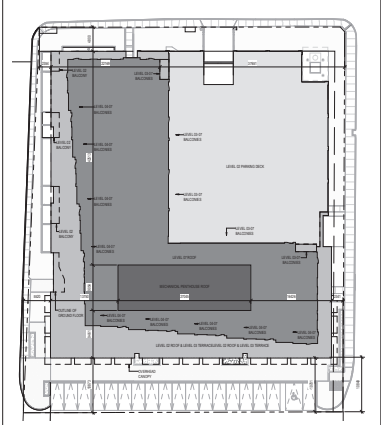
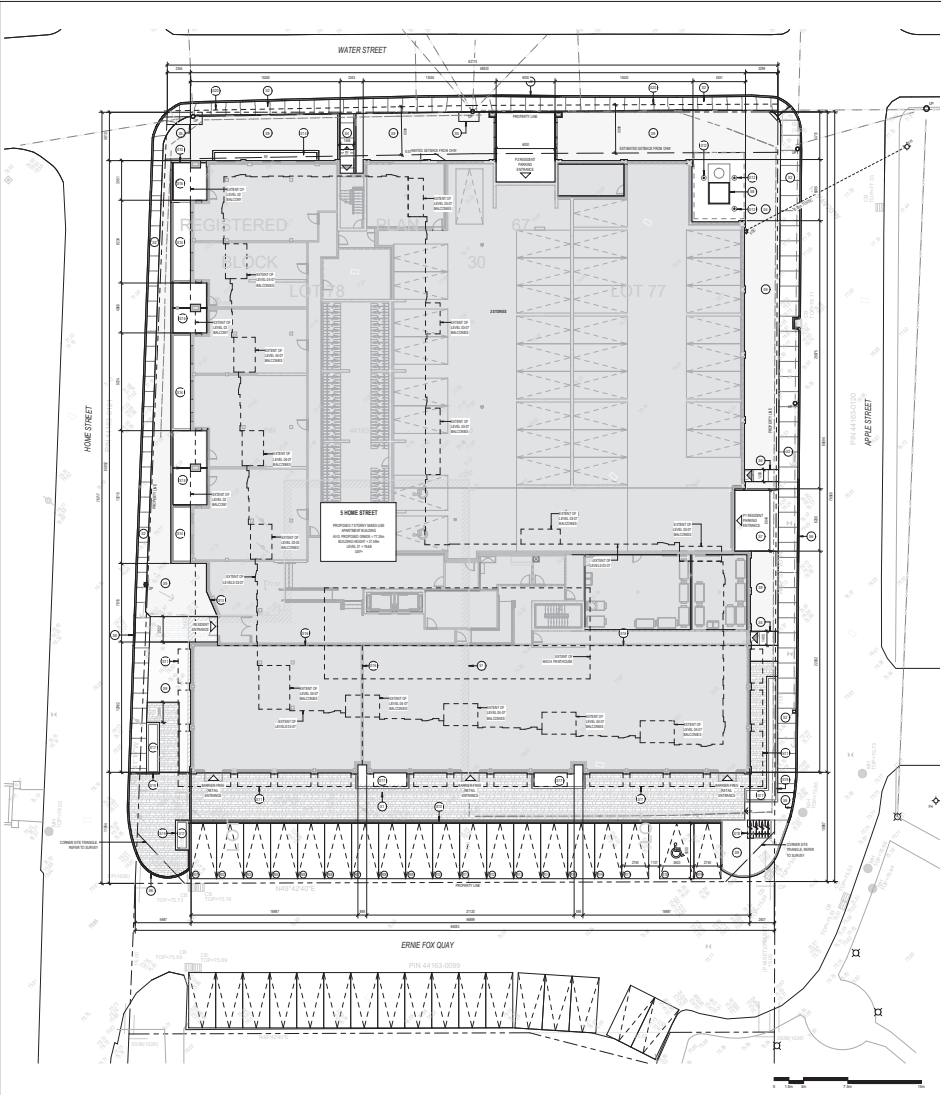


6 HOME STREET
5 HOME STREET
BROOKVILLE, ON
M9V 0A5

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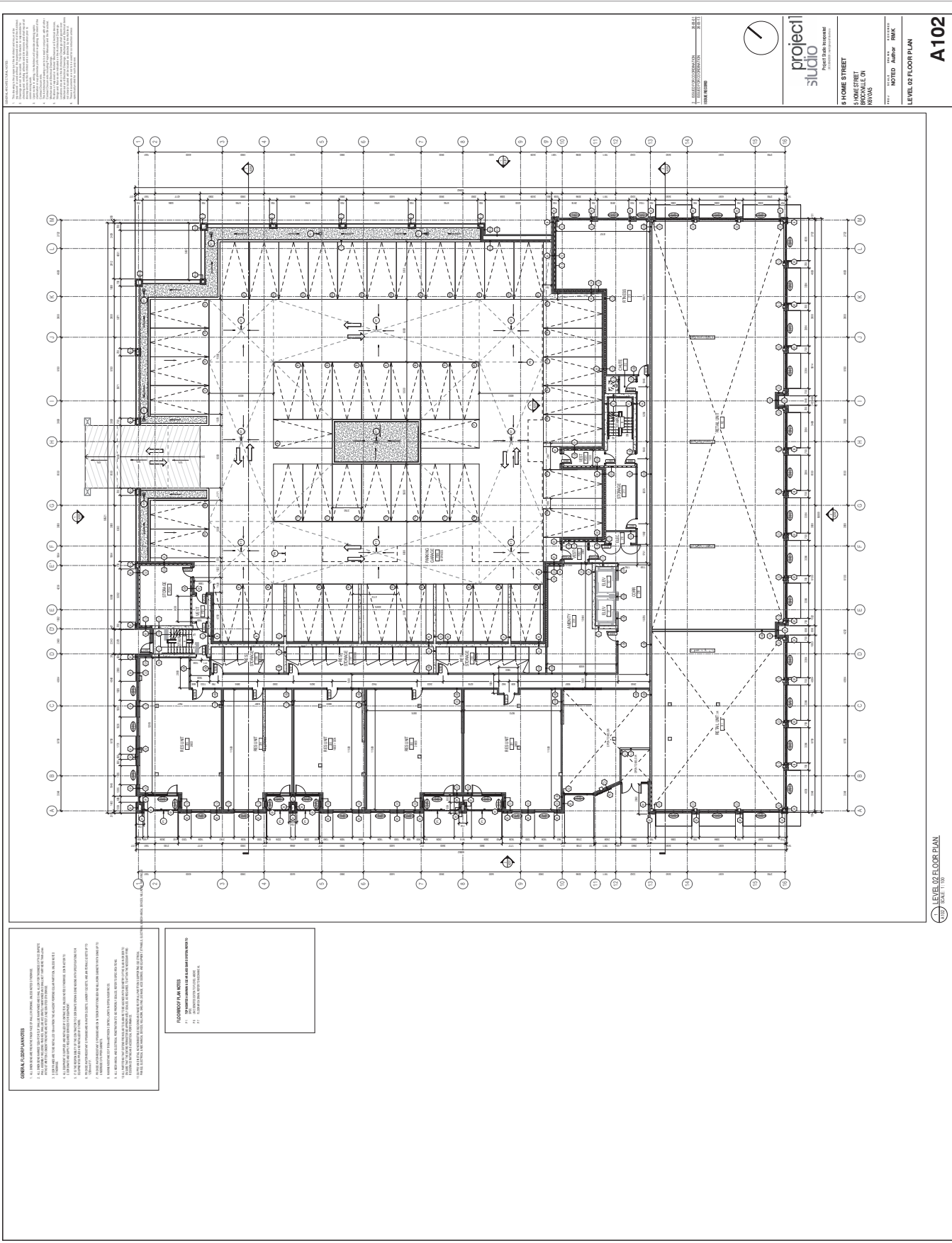
SITE PLAN
SP-01

RESIDENTIAL UNIT SCHEDULE tables (6 columns) with columns: Unit Type, Count, Area, etc.



ZONING SETBACK PLAN
SCALE: 1" = 10'

SITE PLAN
SCALE: 1" = 10'



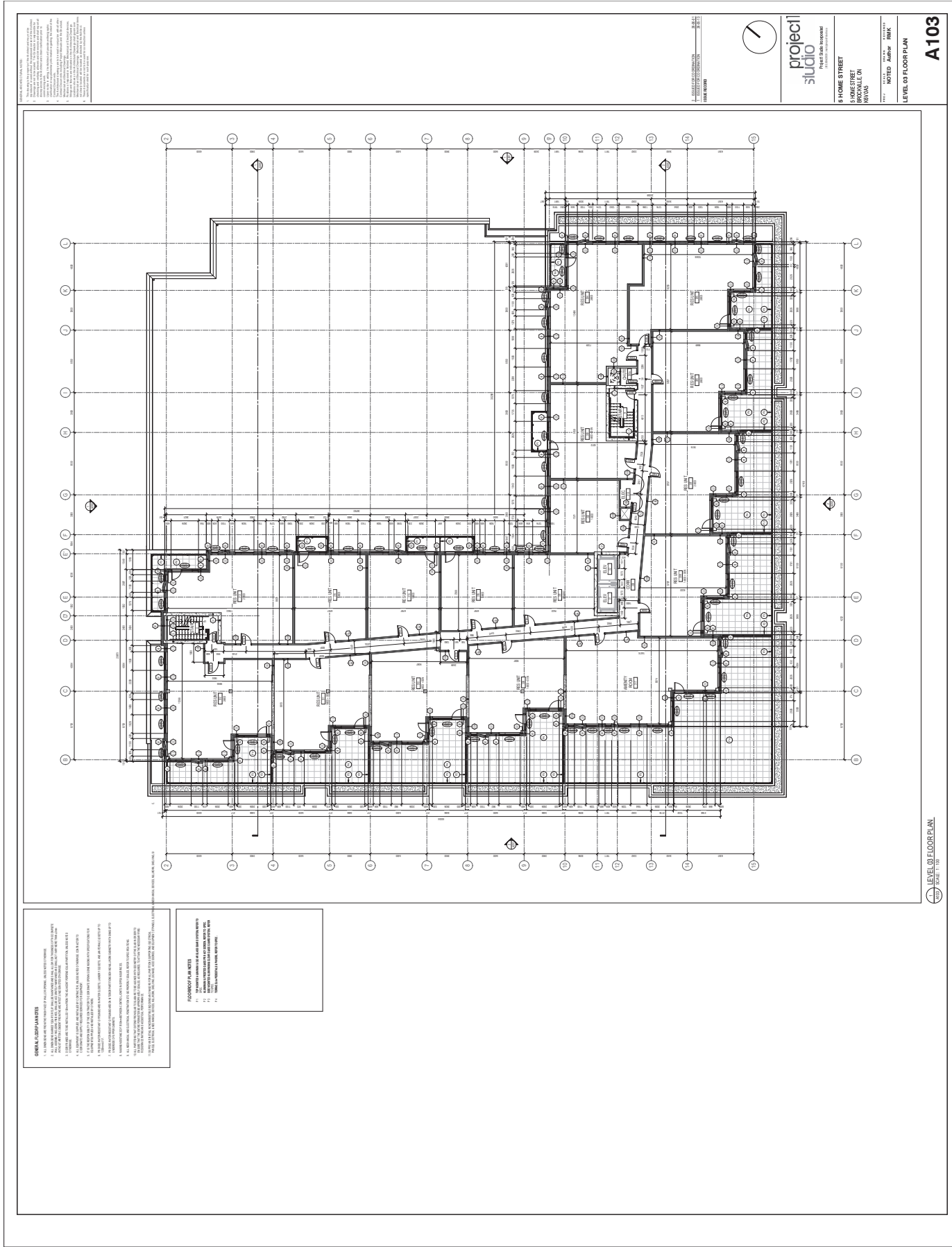
GENERAL NOTES

1. ALL WORK IS TO BE ACCORDING TO ALL CITY, STATE AND FEDERAL REQUIREMENTS.
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
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MECHANICAL NOTES

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LEVEL OF FLOOR PLAN
A102



- 1. ALL DIMENSIONS ARE TO FACE UNLESS SPECIFIED OTHERWISE.
- 2. ALL WALLS AND PARTITIONS ARE TO BE CONCRETE UNLESS SPECIFIED OTHERWISE.
- 3. ALL FLOORING SHALL BE POLISHED CONCRETE UNLESS SPECIFIED OTHERWISE.
- 4. ALL CEILING SHALL BE POLISHED CONCRETE UNLESS SPECIFIED OTHERWISE.
- 5. ALL GLASS SHALL BE 12MM CLEAR GLASS UNLESS SPECIFIED OTHERWISE.
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PROJECT: 10/10/18
DRAWING NO: 10/10/18-03
DATE: 10/10/18
SCALE: 1/8" = 1'-0"



project studio
PROJECT: 10/10/18
10 HOME STREET
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NOTES:
1. NOTES: 10/10/18-03

LEVEL 03 FLOOR PLAN
A 103

LEVEL 03 FLOOR PLAN
10/10/18

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PROJECT INFORMATION

PROJECT NO. 2020-001

DATE: 10/20/2020



project studio

PROJECT ARCHITECTS

6 HOME STREET
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 WILSONVILLE, OR
 97158

NOTES

DATE: 10/20/2020

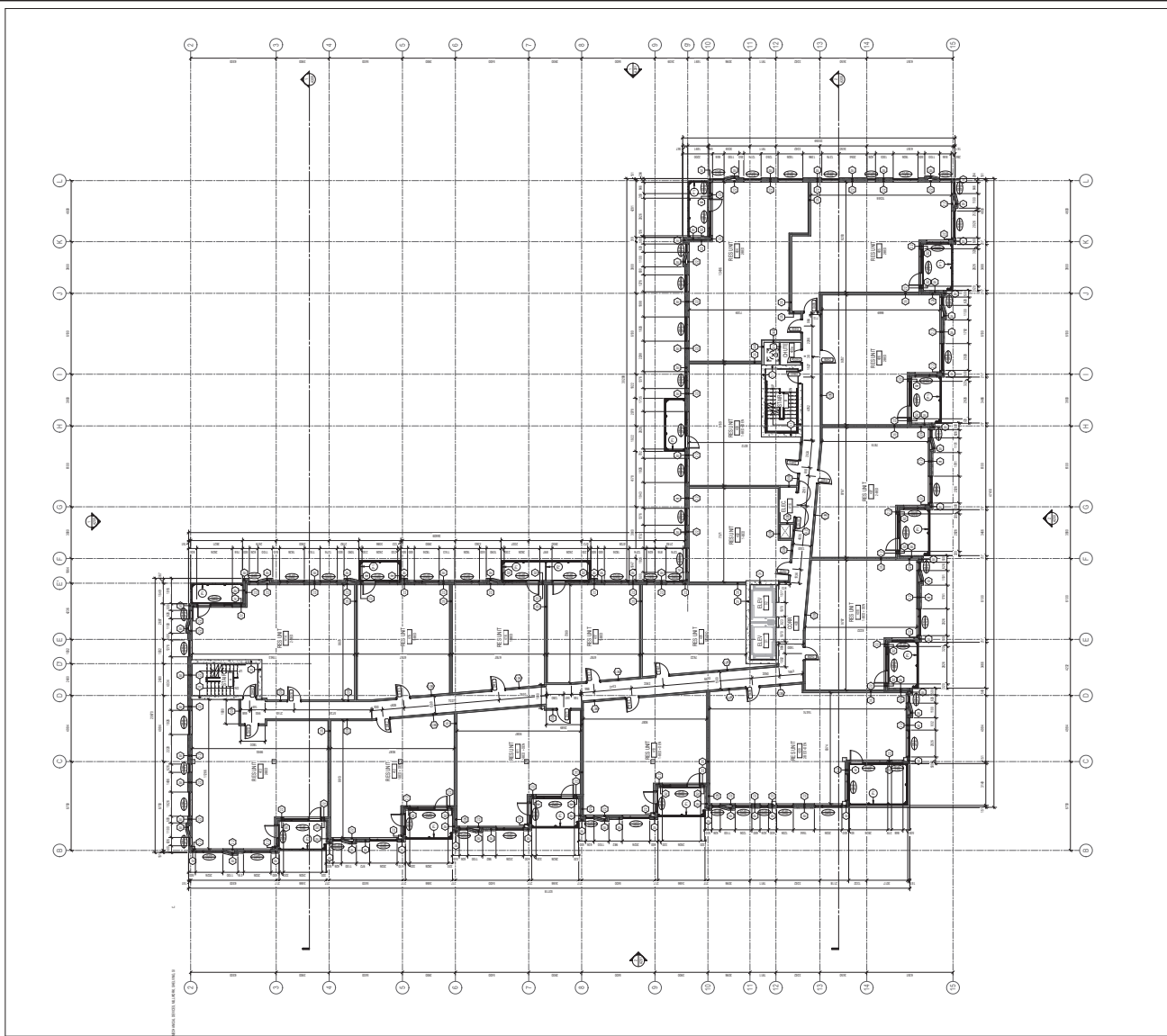
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LEVEL 04 FLOOR PLAN

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GENERAL NOTES

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ROOM/NO. IN NOTES

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2. MEETING ROOM
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6. ELEVATOR
7. STORAGE
8. BREAK ROOM
9. CONFERENCE ROOM
10. LOBBY

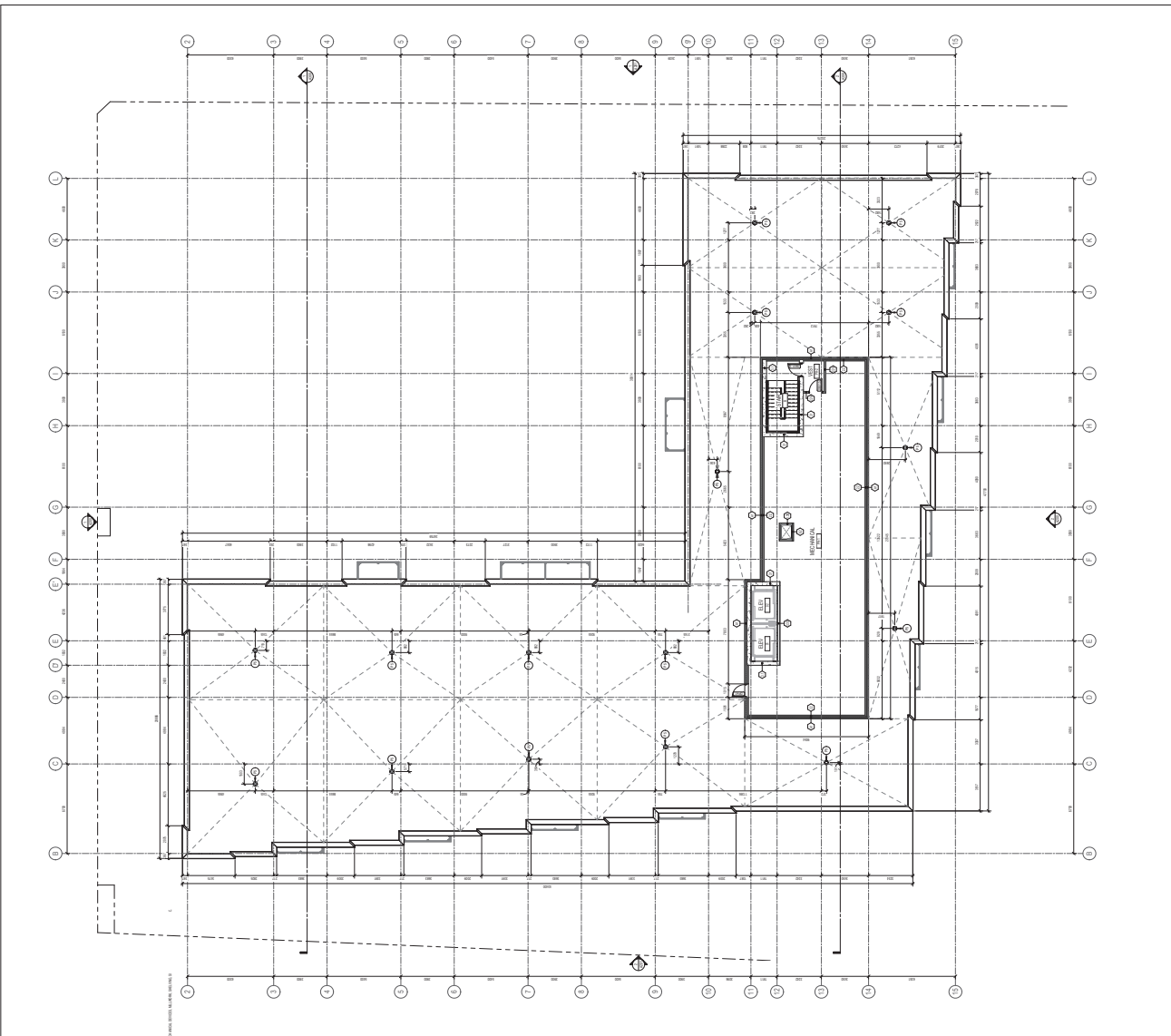
LEVEL 04 FLOOR PLAN

10/20/2020



PROJECT INFORMATION
DATE

PROJECT INFORMATION
DATE



GENERAL NOTES
1. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE CITY OF CHICAGO AND THE ILLINOIS BUILDING CODE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSURANCE.
3. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
4. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
5. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND STRUCTURES.
6. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE CITY.
7. THE CONTRACTOR SHALL MAINTAIN A NEAT AND SAFE WORK SITE AT ALL TIMES.
8. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND NOTES.
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15. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND NOTES.

ROOF PLAN NOTES
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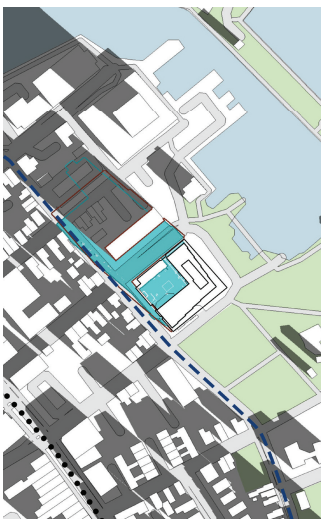
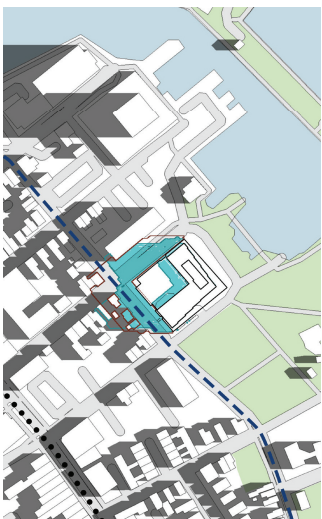
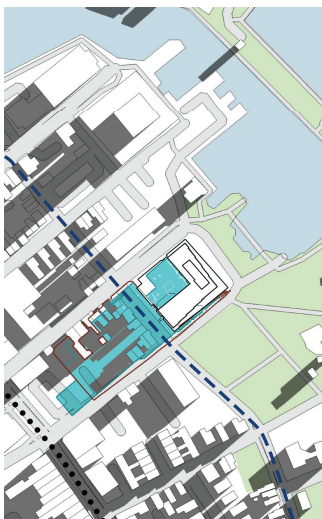
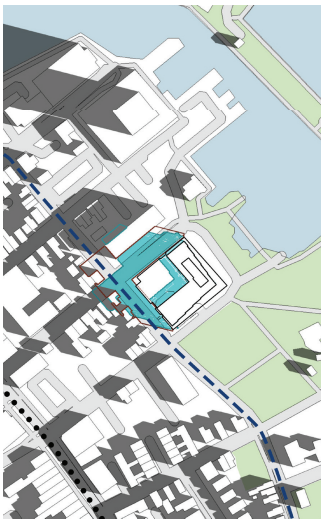
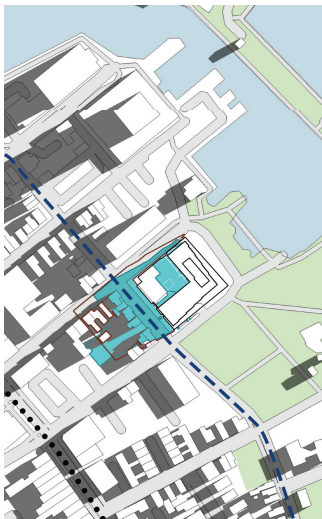
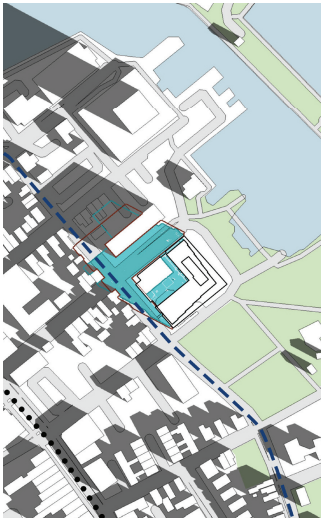
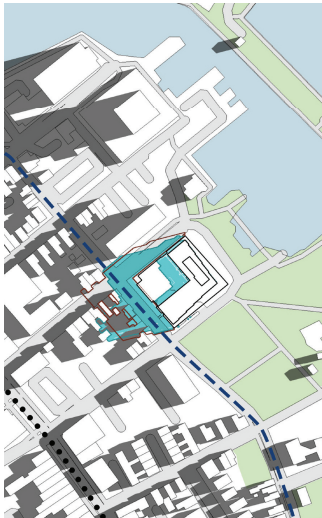






ROOF PLAN
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ATTACHMENT 3



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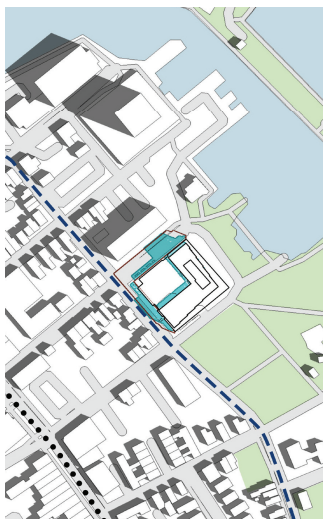
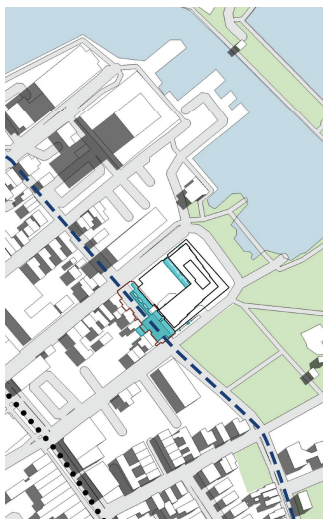
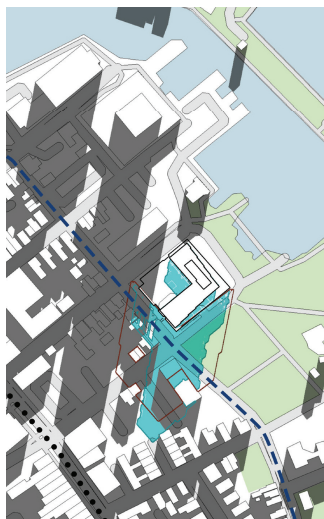
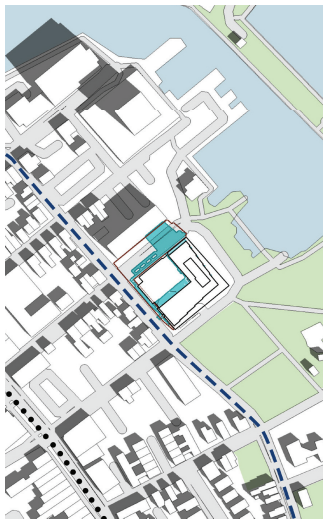
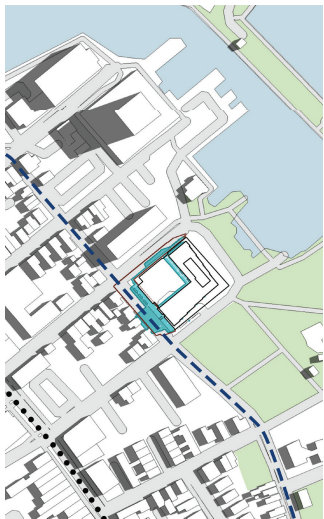
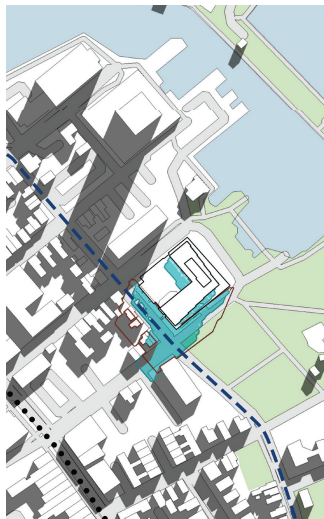
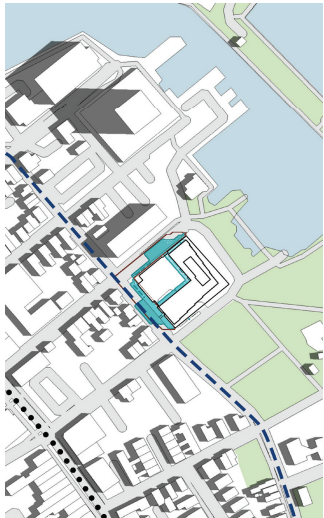
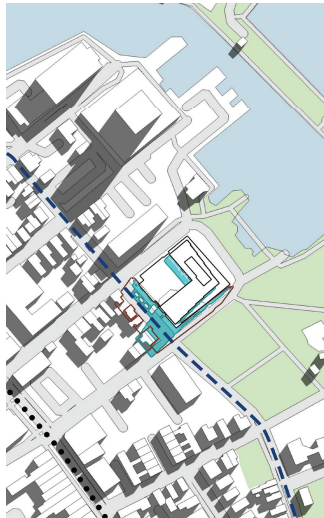
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 -  Proposed Project Shadow/Outline
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 -  Arterial Road
 -  Collector Road



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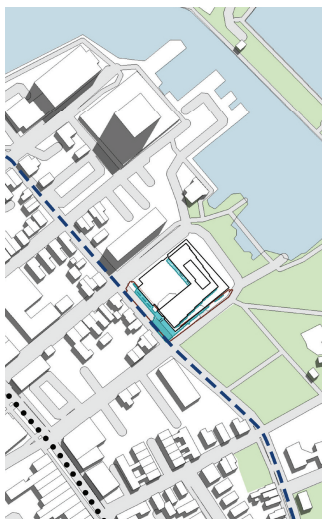
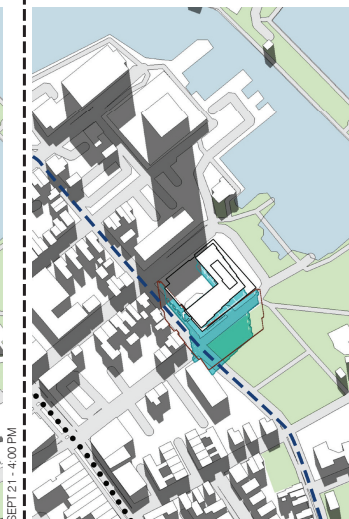
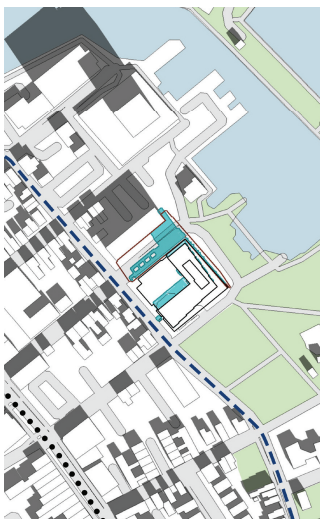
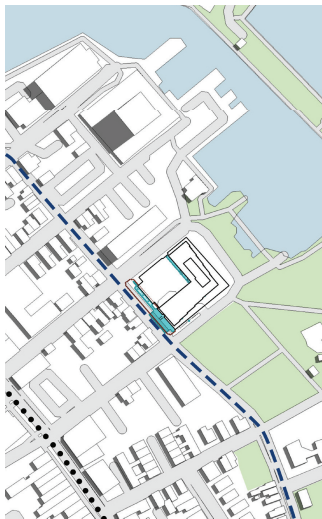
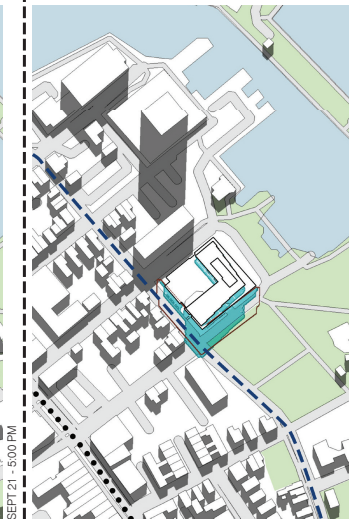
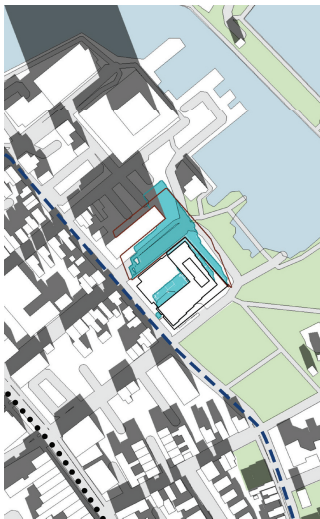
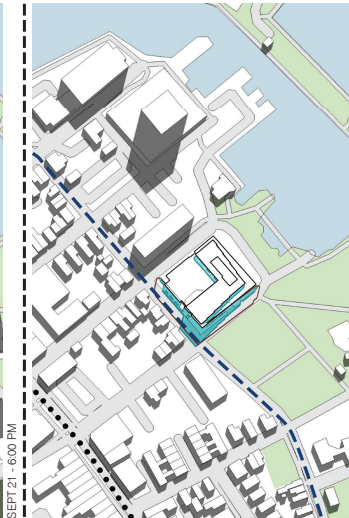
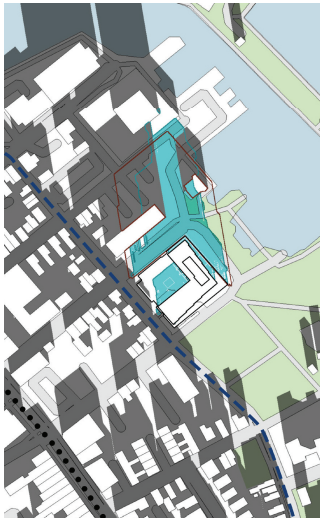
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| 2407 | SCALE: N.T.S.

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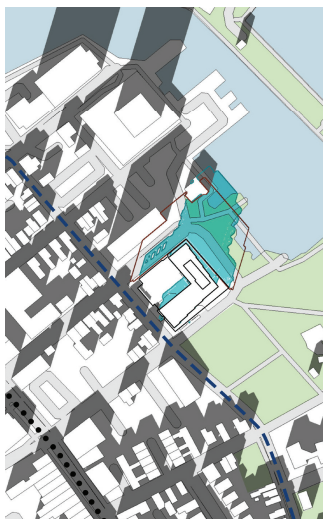
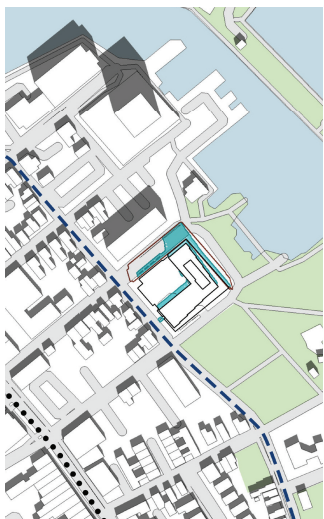
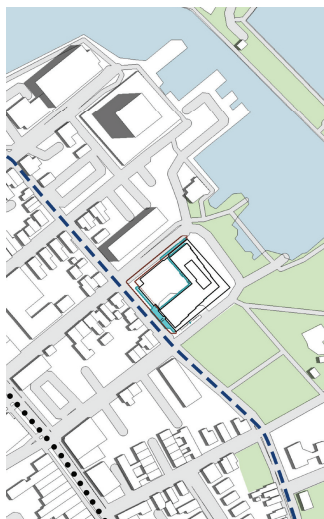
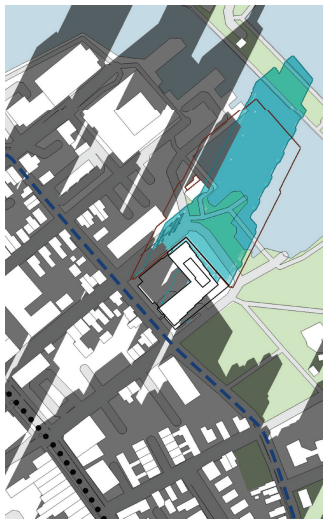
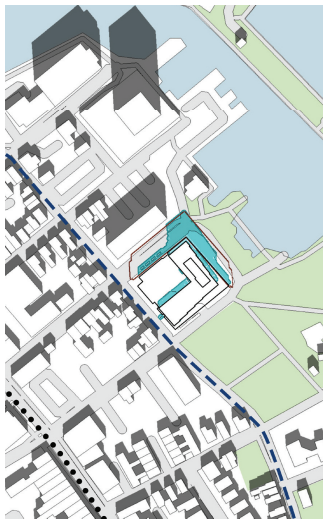
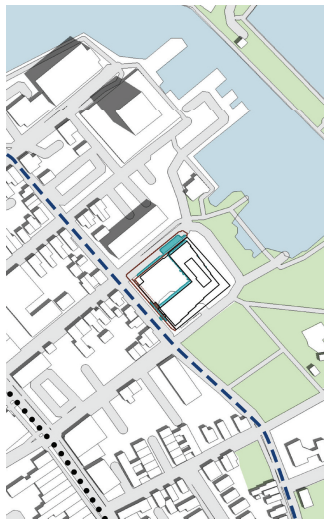
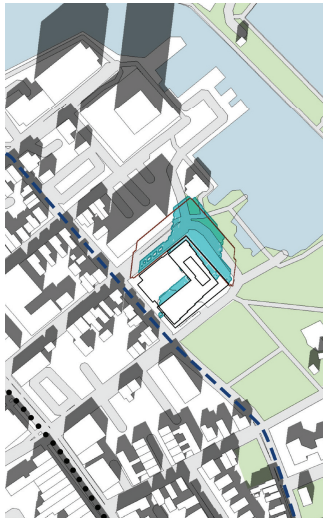
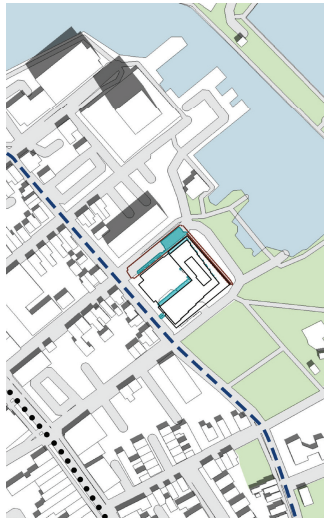




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- LEGEND**
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 - Arterial Road
 - Collector Road



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ATTACHMENT 4

Home @ Ernie Fox Quay



Home @ Apple Street



Home @ Water Street



Home @ Ernie Fox Quay



Apple Street @ Water Street

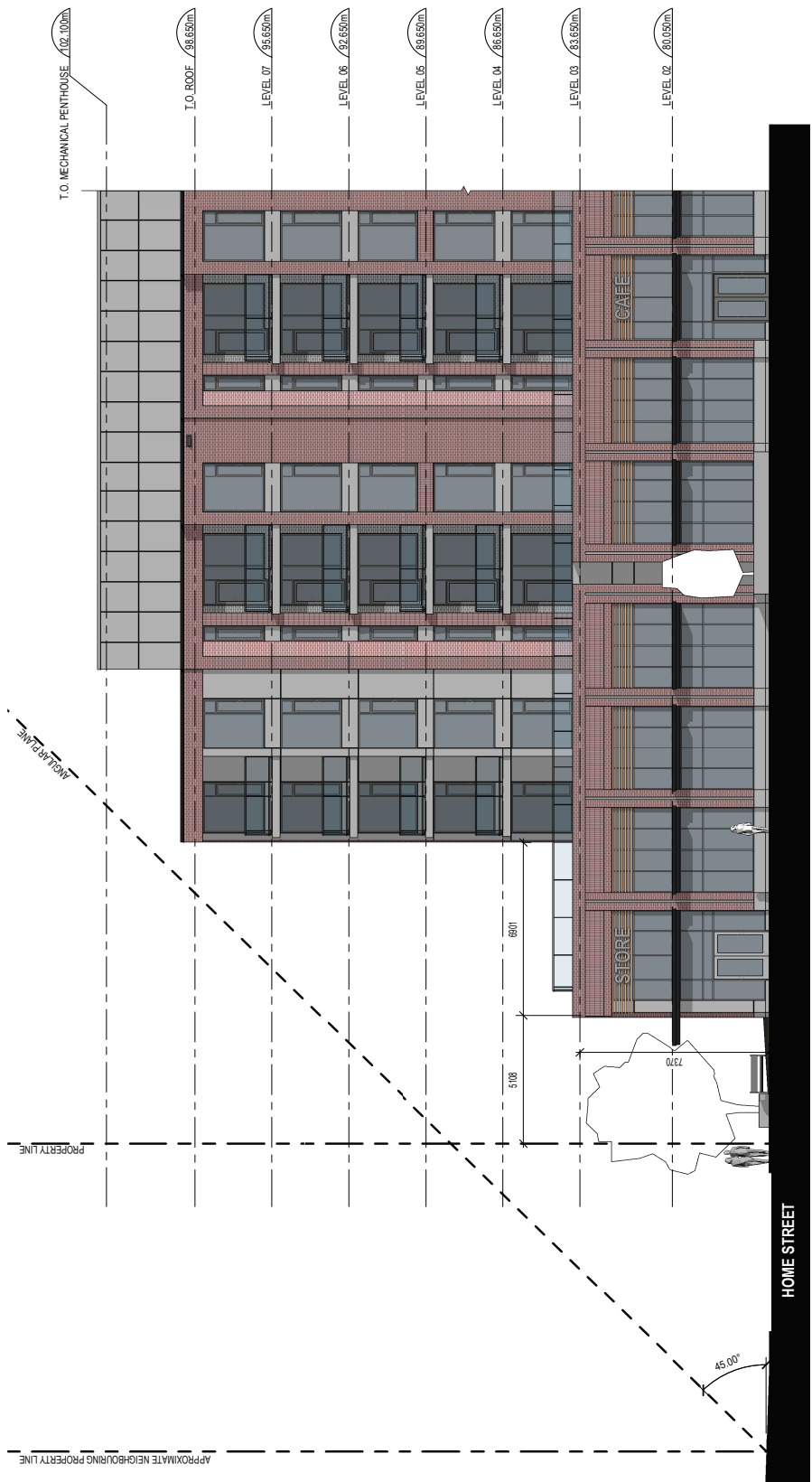


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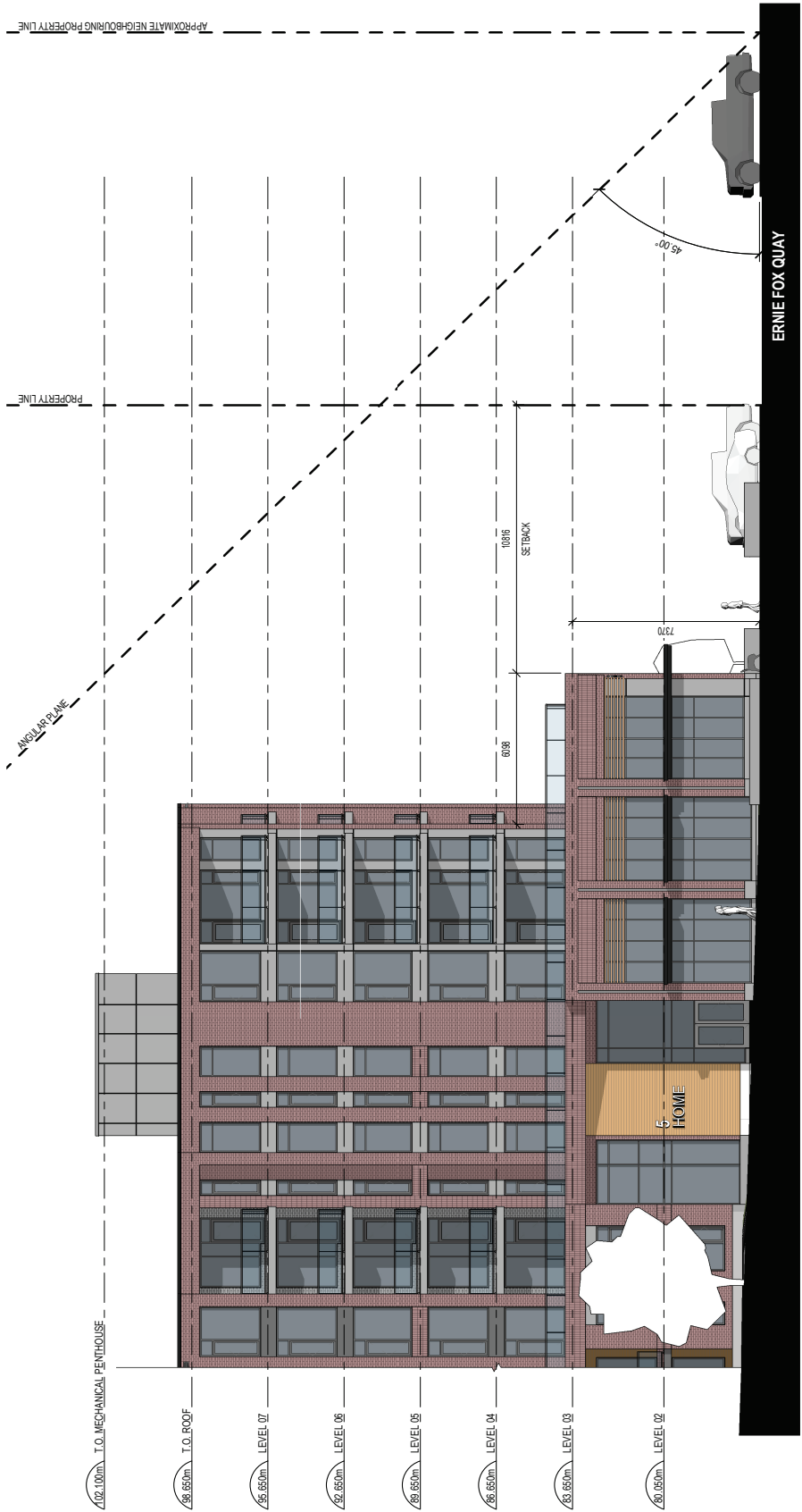
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5 HOME STREET | WATER STREET ANGULAR PLANE DIAGRAM
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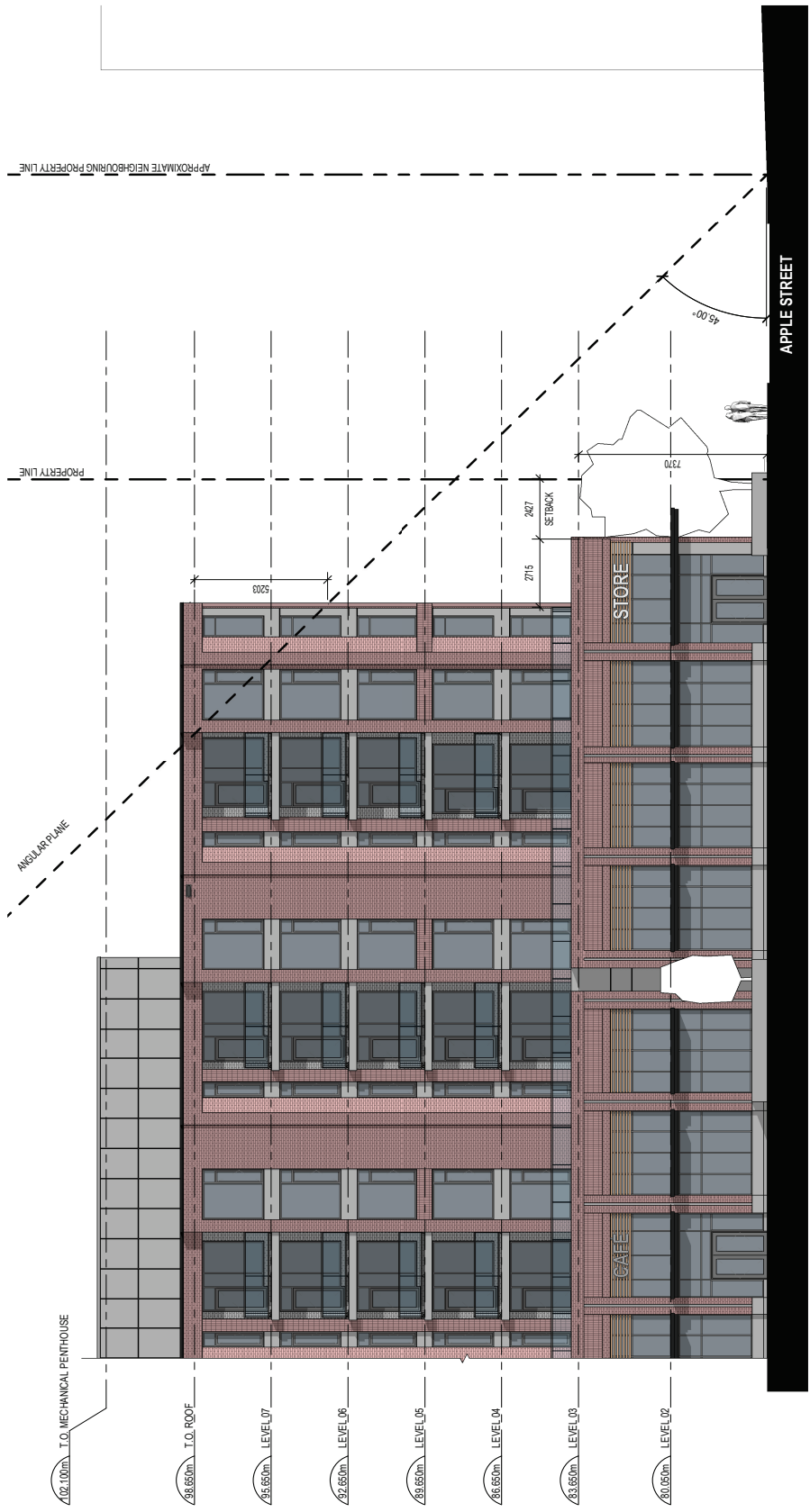
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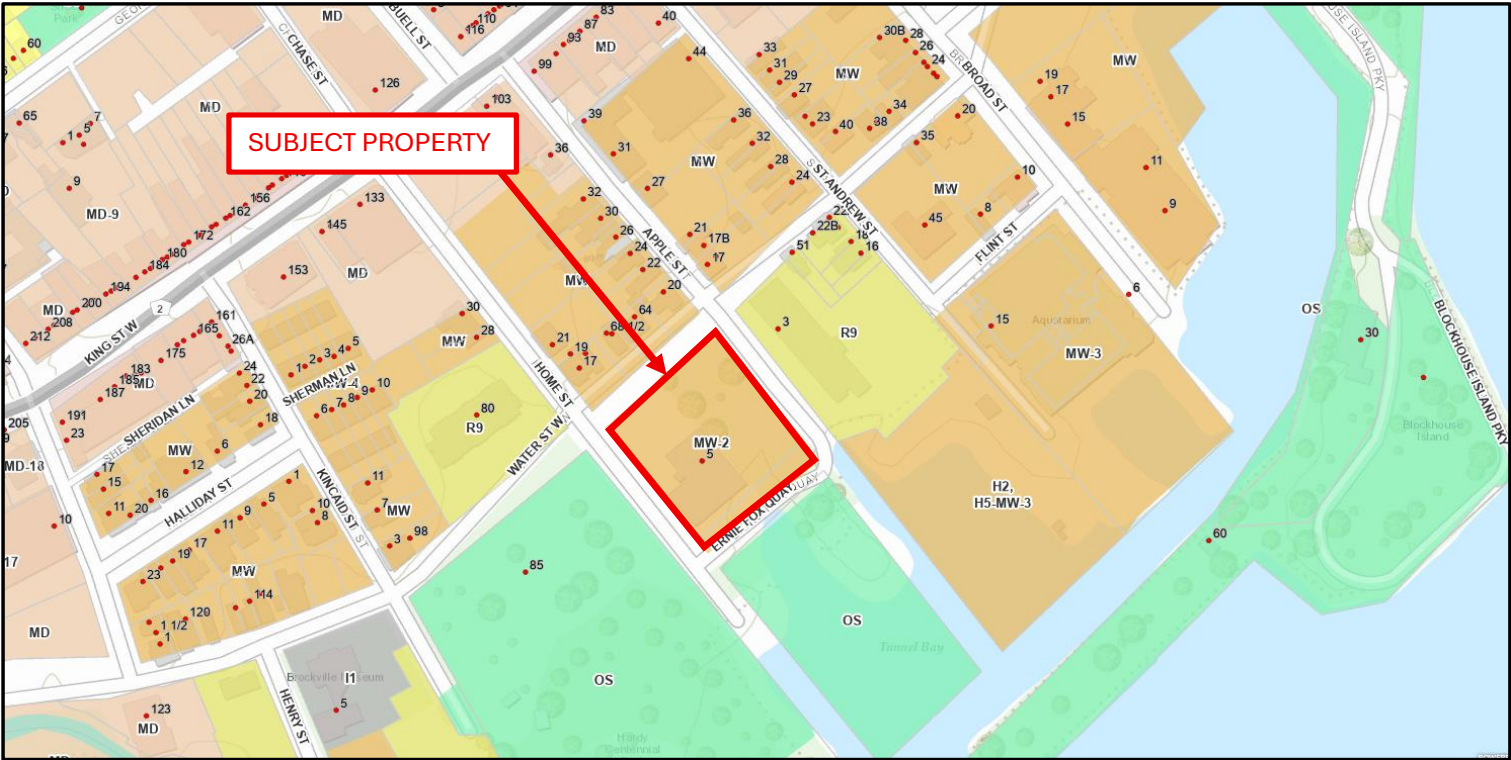
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5 HOME STREET | ERNIE FOX QUAY ANGULAR PLANE DIAGRAM
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5 HOME STREET | APPLE STREET ANGULAR PLANE DIAGRAM
| 2407 | 1:150 | 28-04-30



Brockville GIS System Accessed June 25, 2026.

ATTACHMENT 6

ATTACHMENT 7



5 Home Street – Looking North at the building.



5 Home Street – Looking North towards 3 Apple Street.



Looking North at the corner of Ernie Fox Quay and Apple Street



Looking Southwest at the corner of Apple Street and Water Street



Looking Southeast at the corner of Home Street and Water Street



Looking East across Home Street



Looking Northeast across Home Street – Water Street is to the left



5 Home Street – Looking North from the Home Street boat launch

ATTACHMENT 8

5 Home Street Transportation Impact Study

Prepared for:

Lion Trade Ltd. & Bytown Structura Corporation
192 Ivy Crescent
Ottawa ON, K1M 1X8

Prepared by:



6 Plaza Court
Ottawa, ON K2H 7W1

March 2026

PN: 2026-034

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5 Home Street Transportation Impact Study

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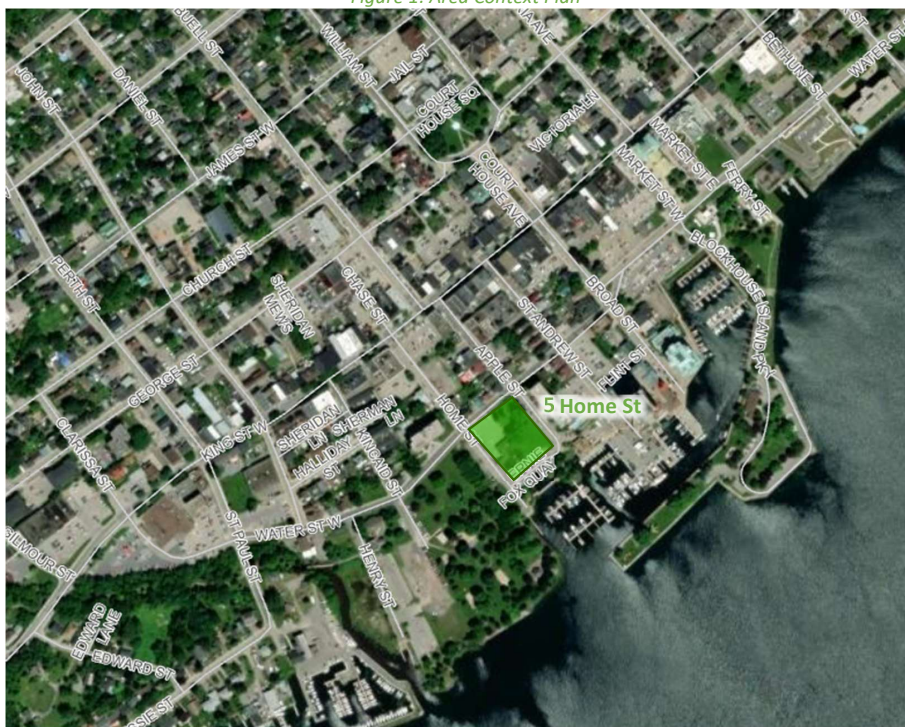


1 Introduction

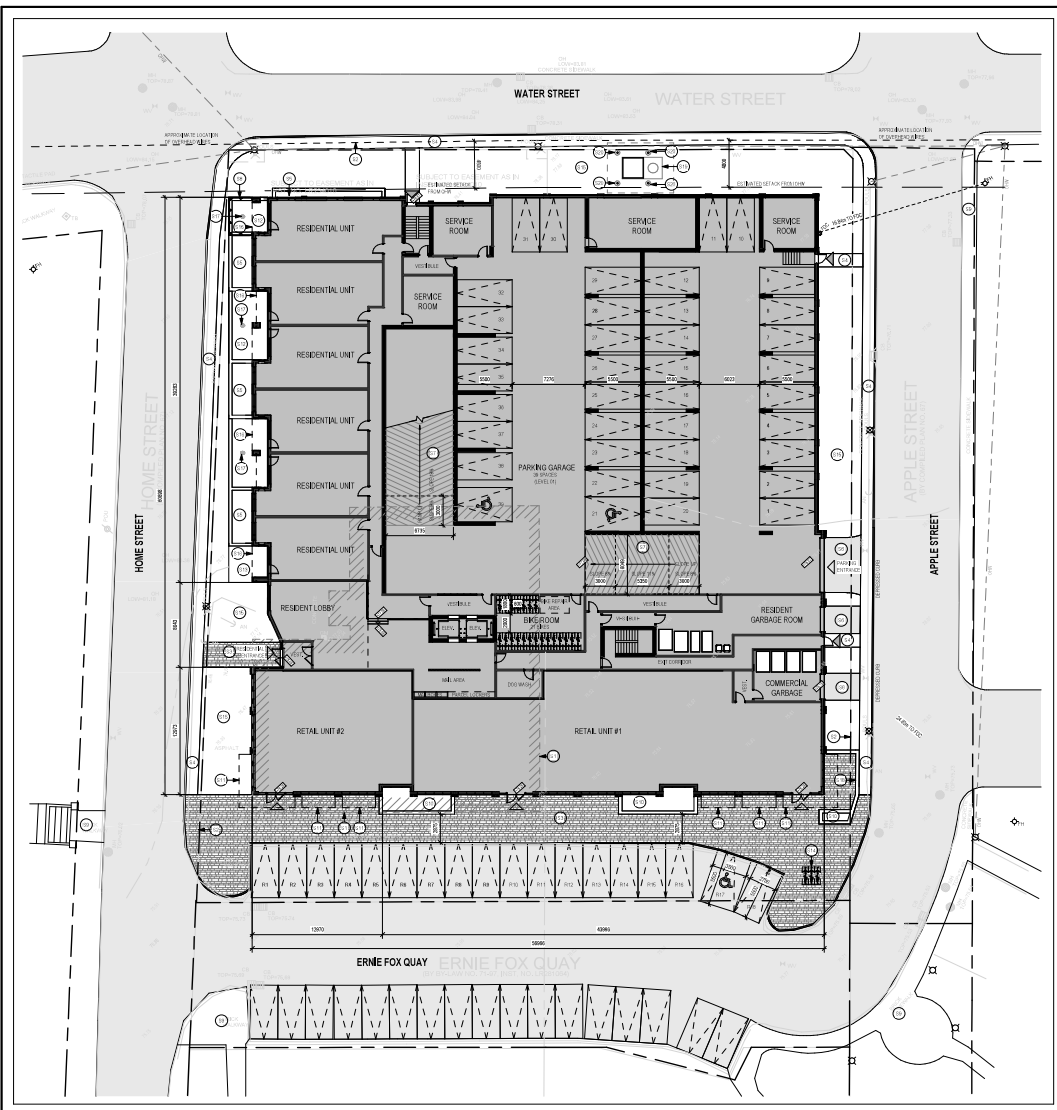
This Transportation Impact Study has been prepared for the site plan for the proposed development site of 5 Home Street in the City of Brockville, Ontario. The existing site has a surface parking lot and a medical/services building. The proposed development includes a 7-storey residential building, with a total of 86 units and 7,081 sq. ft. of ground floor retail space. Parking is internal on the ground floor and a single level of underground parking, accessed from Apple Street. The proposed development is anticipated to have a full build-out and occupancy horizon of 2029. The analysis will therefore include the 2024 existing conditions, 2029 and 2034 future background conditions, and 2029 and 2034 future total conditions.

Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: <https://geohub-uclg.hub.arcgis.com/> Accessed: March 13, 2026



1 SURVEY INFO
SCALE: 1:200

SITE PLAN NOTES

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2 LOCATION PLAN
SCALE: 1:200

Site Statistics

Current Zoning Designation	RM-1 (RESIDENTIAL MEDIUM DENSITY)
Lot Area	10,000 sq. ft.
Full Lot Area	10,000 sq. ft.
Average Number of Units per Lot	10

Proposed Development - 10 Residential Units

No. of Units	10
Max. Floor Area	10,000 sq. ft.
Max. Lot Coverage	100%
Max. Building Height	10 stories
Max. Floor Plate Area	10,000 sq. ft.
Max. Floor Plate Depth	100 ft.
Max. Floor Plate Width	100 ft.
Max. Floor Plate Area	10,000 sq. ft.
Max. Floor Plate Depth	100 ft.
Max. Floor Plate Width	100 ft.

AMENITY SCH. (PRIVATE)

TYPE	AREA	COMMENTS
RES-101	1000.00	RESIDENTIAL UNIT #1
RES-102	1000.00	RESIDENTIAL UNIT #2
RES-103	1000.00	RESIDENTIAL UNIT #3
RES-104	1000.00	RESIDENTIAL UNIT #4
RES-105	1000.00	RESIDENTIAL UNIT #5
RES-106	1000.00	RESIDENTIAL UNIT #6
RES-107	1000.00	RESIDENTIAL UNIT #7
RES-108	1000.00	RESIDENTIAL UNIT #8
RES-109	1000.00	RESIDENTIAL UNIT #9
RES-110	1000.00	RESIDENTIAL UNIT #10

AMENITY SCH. (COMMUNAL)

TYPE	AREA	COMMENTS
RES-111	1000.00	RESIDENT LLOBBY
RES-112	1000.00	RESIDENT GARAGE ROOM
RES-113	1000.00	BIKE ROOM
RES-114	1000.00	COMMERCIAL GARAGE
RES-115	1000.00	RETAIL UNIT #1
RES-116	1000.00	RETAIL UNIT #2

PARKING SCH. (VEHICLE)

TYPE	AREA	COMMENTS
RES-117	1000.00	PARKING GARAGE
RES-118	1000.00	COMMERCIAL GARAGE

PARKING SCH. (BICYCLE)

TYPE	AREA	COMMENTS
RES-119	1000.00	BIKE ROOM

UNIT COUNT

TYPE	AREA	UNIT COUNT
RES-101	1000.00	1
RES-102	1000.00	1
RES-103	1000.00	1
RES-104	1000.00	1
RES-105	1000.00	1
RES-106	1000.00	1
RES-107	1000.00	1
RES-108	1000.00	1
RES-109	1000.00	1
RES-110	1000.00	1
RES-111	1000.00	1
RES-112	1000.00	1
RES-113	1000.00	1
RES-114	1000.00	1
RES-115	1000.00	1
RES-116	1000.00	1
RES-117	1000.00	1
RES-118	1000.00	1
RES-119	1000.00	1
RES-120	1000.00	1

GROSS AREA (GBC)

TYPE	AREA	COMMENTS
RES-101	1000.00	RESIDENTIAL UNIT #1
RES-102	1000.00	RESIDENTIAL UNIT #2
RES-103	1000.00	RESIDENTIAL UNIT #3
RES-104	1000.00	RESIDENTIAL UNIT #4
RES-105	1000.00	RESIDENTIAL UNIT #5
RES-106	1000.00	RESIDENTIAL UNIT #6
RES-107	1000.00	RESIDENTIAL UNIT #7
RES-108	1000.00	RESIDENTIAL UNIT #8
RES-109	1000.00	RESIDENTIAL UNIT #9
RES-110	1000.00	RESIDENTIAL UNIT #10

LEASABLE AREA (RESIDENTIAL)

TYPE	AREA	COMMENTS
RES-101	1000.00	RESIDENTIAL UNIT #1
RES-102	1000.00	RESIDENTIAL UNIT #2
RES-103	1000.00	RESIDENTIAL UNIT #3
RES-104	1000.00	RESIDENTIAL UNIT #4
RES-105	1000.00	RESIDENTIAL UNIT #5
RES-106	1000.00	RESIDENTIAL UNIT #6
RES-107	1000.00	RESIDENTIAL UNIT #7
RES-108	1000.00	RESIDENTIAL UNIT #8
RES-109	1000.00	RESIDENTIAL UNIT #9
RES-110	1000.00	RESIDENTIAL UNIT #10

RETAIL UNIT COUNT

TYPE	AREA	UNIT COUNT
RES-111	1000.00	1
RES-112	1000.00	1

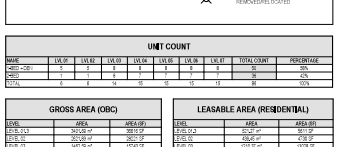


SITE PLAN SYMBOLS LEGEND

- BOUNDARY LINE
- PROPERTY LINE
- SETBACK LINE
- OVERHEAD LINES
- PROPOSED STONE PAVING
- FOOTC
- FRONT YARD
- NEW STREET LIGHT
- STREET LIGHT TO BE REMOVED
- STREET LIGHT TO BE RELOCATED
- STREET LIGHT TO BE REPLACED
- STREET LIGHT TO BE REMOVED AND REPLACED
- STREET LIGHT TO BE REPLACED AND RELOCATED
- STREET LIGHT TO BE REPLACED AND REMOVED
- STREET LIGHT TO BE REPLACED AND RELOCATED AND REMOVED

ISSUE RECORD

1. ISSUED FOR COORDINATION	2019/01
2. ISSUED FOR COORDINATION	2019/07
3. ISSUED FOR COORDINATION	2019/08
4. ISSUED FOR COORDINATION	2019/09



5 HOME STREET
5 Home Street
Brookville, ON
M9V 0A5

SP-01

5 Home Street Transportation Impact Study

1.1 Existing Conditions

1.1.1 Area Road Network

King Street West: King Street West is an arterial road. It has a two-lane urban cross-section with sidewalks and on-street parking provided on both sides of the road. The unposted speed limit is 50 km/h, and the typical right-of-way is 20.0 metres, but varies between 16.0 metres to 21.5 metres within the study area.

Court House Avenue: Court House Avenue is an arterial road. It has a divided two-lane cross-section. Sidewalks and on-street parking is provided on both sides of the road. The unposted speed limit is 50 km/h, and the right-of-way is approximately 35.5 metres.

Water Street: Water Street is a collector road with a two-lane urban cross-section. Sidewalks are provided on both sides of the street east of Home Street and on the north side to the west. The posted speed limit is 40 km/h, and the existing right-of-way varies and is below the 20-26 metre reserve outlined in the Official Plan.

Perth Street: Perth Street is a collector road with a two-lane urban cross-section. Sidewalks are provided on both sides of the road. On-street parking is permitted on the east side of the roadway. The unposted speed limit is 50 km/h, and the existing right-of-way is approximately 15.5 metres within the study area.

St Paul Street: St Paul Street is a collector road with a two-lane urban cross-section. Sidewalks are provided on both sides of the road. The unposted speed limit is 50 km/h, and the existing right-of-way is approximately 15.25 metres within the study area.

Buell Street: Buell Street is a local road with a two-lane urban cross-section. Sidewalks are provided on both sides of the road. On-street parking is permitted on the east side of the roadway, with both sides permitted north of George Street. The unposted speed limit is 50 km/h, and the right-of-way of approximately 18.0 metres within the study area.

Home Street: Home Street is a local road with a two-lane urban cross-section. Sidewalks are provided on both sides of the road and on-street parking is permitted on the west side of the roadway. The unposted speed limit is 50 km/h, and the right-of-way of approximately 12.2 metres within the study area.

Apple Street: Apple Street is a local road with a two-lane urban cross-section. Sidewalks are provided on both sides of the road and on-street parking is permitted on the west side of the roadway. The unposted speed limit is 50 km/h, and the right-of-way of approximately 12.2 metres within the study area.

Broad Street: Broad Street is a local road based on the definitions in the City of Brockville Official Plan. It has a two-lane urban cross-section. Sidewalks are provided on both sides of the road, and on-street parking is provided on the west side of the road. The unposted speed limit is 50 km/h, and the right-of-way is 18.25 metres.

1.1.2 Existing Intersections

The existing key study area intersections of the site have been summarized below:

Water St at Home St

The intersection of Water Street at Home Street is a stop-controlled intersection on the minor approach of Home Street. Each approach consists of a shared all-movement lane. No turn restrictions were noted.

Water St at Apple St

The intersection of Water Street at Apple Street is a stop-controlled intersection on the minor approach of Apple Street. Each approach

5 Home Street Transportation Impact Study

	consists of a shared all-movement lane. No turn restrictions were noted.
<i>King St W at Home St</i>	The intersection of King Street W at Home Street is a stop-controlled intersection on the minor approach of Home Street. Each approach consists of a shared all-movement lane. The north leg is one-way northbound.
<i>King St W at Buell St</i>	The intersection of King Street West at Buell Street is a signalized intersection. The southbound approach consists of an auxiliary left-turn lane and shared through/right-turn lane. The eastbound approach consists of an auxiliary left-turn lane and a through lane, and the westbound approach consists of a shared left-turn/through lane and a short auxiliary right-turn lane. No turn restrictions were noted.
<i>King St W at Perth St/St Paul St</i>	The intersection of King Street West at Perth Street/St Paul Street is a signalized intersection. The northbound and southbound approaches each consists of a shared all-movement lane. The eastbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through lane and a short auxiliary right-turn lane. No turn restrictions were noted.
<i>King St W at Court House Ave/Broad St</i>	The intersection of King Street West at Court House Avenue/Broad Street is a signalized intersection. The northbound and southbound approaches each consists of a shared all-movement lane, where the southbound approach operates as a shared left-turn/through lane with a short auxiliary right-turn lane. The eastbound approach consists of a left-turn lane and an auxiliary shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane. Eastbound right-turns on red are restricted.

1.1.3 Existing Driveways

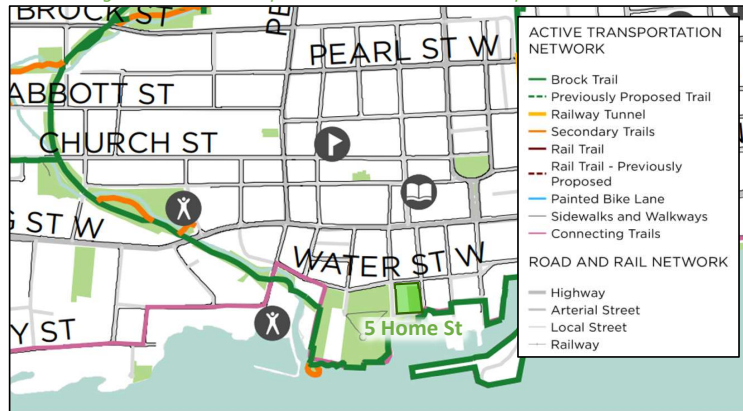
In the vicinity of the site, driveways to residential dwellings are located along Water Street, a private site and residential apartment access and surface parking along Apple Street, street parking on the west sided of Home Street, and on-street parking and a boat launch access to the south of the site. The driveways are not considered to be significant traffic generators or impact the proposed site access location.

1.1.4 Cycling and Pedestrian Facilities

Sidewalks are predominantly provided on both sides of the study area roadways. From the Official Plan, Court House Avenue and King Street East/West are potential spine cycling routes and Water Street is a potential neighbourhood cycling route within the study area. The Waterfront Trail is located south of the proposed site. The Active Transportation Plan includes the proposed spine cycling routes along Water Street, St Paul Street, Perth Street and Court House Avenue, connector route along King Street W and an enhanced pedestrian corridor along King Street W. Figure 3 and Figure 4 illustrate the existing active transportation network from the Active Transportation Plan and active transportation network from the Official Plan, respectively.

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Figure 3: Active Transportation Plan – Active Transportation Network



Source: City of Brockville Active Transportation Plan (September 2019)

Figure 4: Official Plan – Active Transportation Network



Source: City of Brockville Official Plan (February, 2012)

1.1.5 Existing Transit

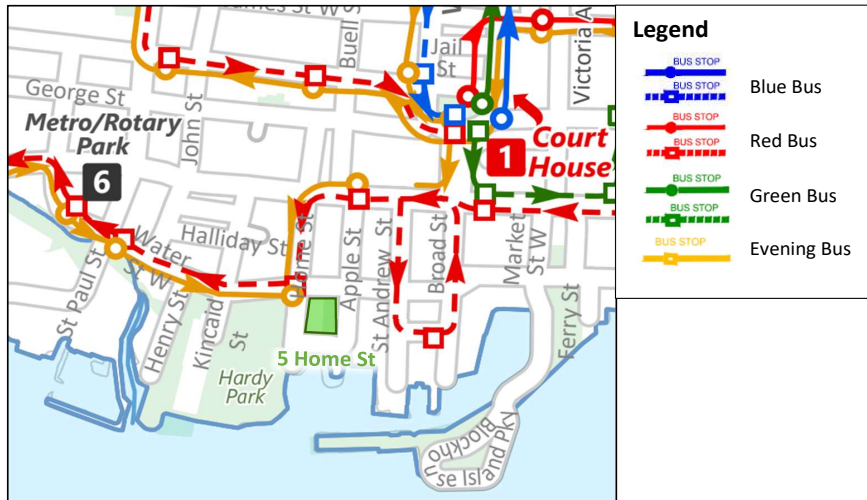
Figure 5 illustrates the transit system map in the study area and Figure 6 illustrates nearby transit stops. All transit information is from March 13, 2026 and is included for general information purposes and context to the surrounding area.

Within the study area, the Red Bus and Evening Bus travels along King Street East/West, Court House Avenue, Home Street and Water Street. Buses run on an hourly schedule Monday to Friday 6:45 am to 6:15 pm with evening service between 6pm and 9pm, and Saturday 8:15 am to 6:15 pm. The frequency of these routes within proximity of the proposed site based on March 13, 2026 service levels are:

- Red Bus – 30 minutes past the hour service
- Evening Bus – on the hour service

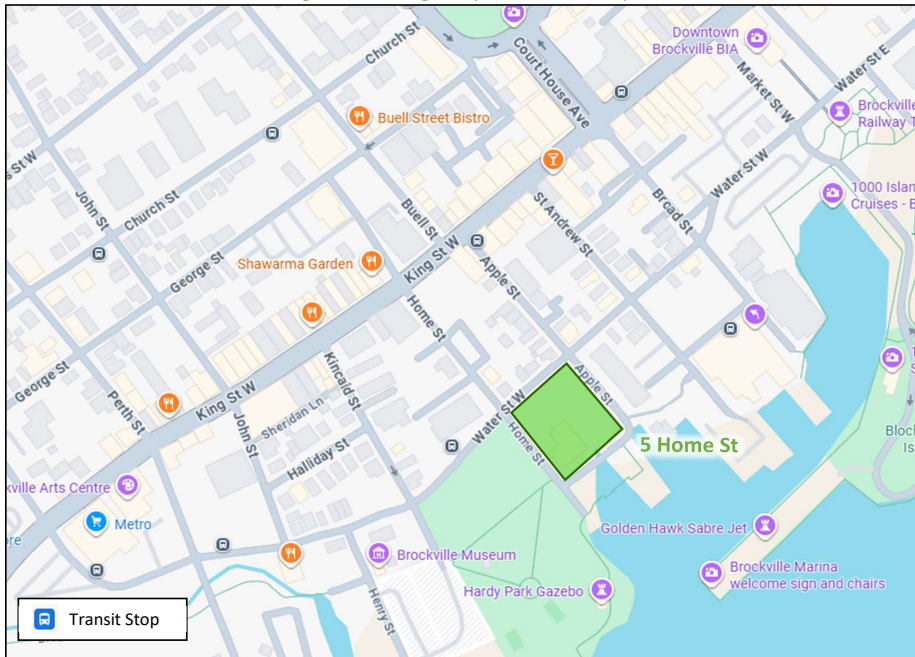
5 Home Street Transportation Impact Study

Figure 5: Existing Study Area Transit Service



Source: <https://brockville.com/city-services/transit/> Accessed: March 13, 2026

Figure 6: Existing Study Area Transit Stops



Source: <https://www.google.com/maps> Accessed: March 13, 2026

1.1.6 Collision Analysis

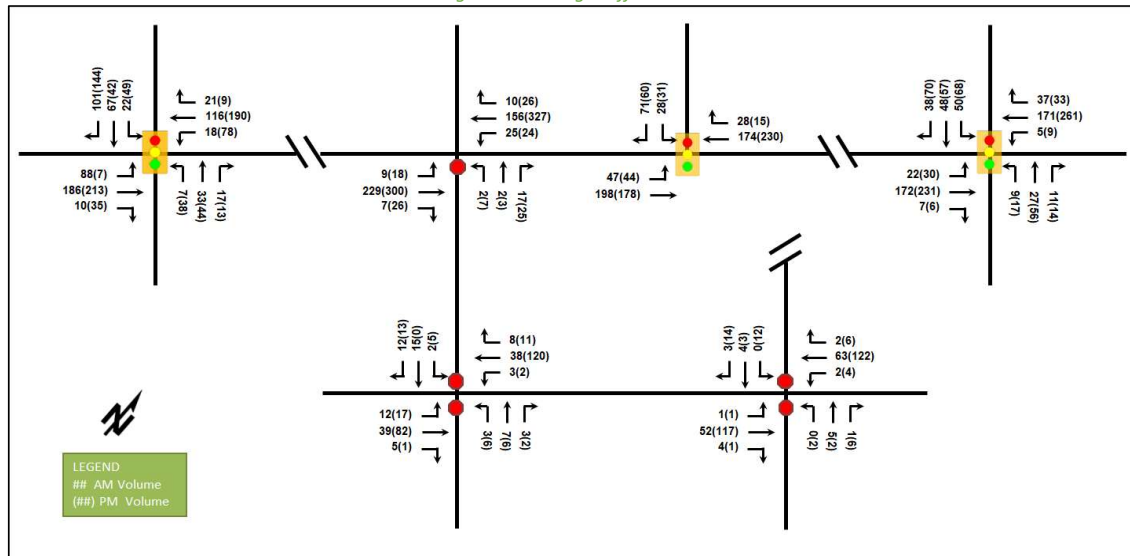
No collision data was reviewed as part of this study.

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1.1.7 Existing Peak Hour Travel Demand

Existing turning movement counts from the Traffic Impact Study for 107 King Street, Brockville (EFI Engineering, 2024) were referenced and confirmed by the City of Brockville to be valid counts to use. The volumes have not been balanced. Detailed turning movement count data has been summarized in Appendix A.

Figure 7: Existing Traffic Counts



2 Future Background Conditions

2.1 Planned Conditions

2.1.1 Changes to the Area Transportation Network

The City of Brockville’s Active Transportation Plan notes a short-term cycling and pedestrian improvements in the area and since these projects have not been confirmed, it is assumed that no impacts to the existing pedestrian or cycling traffic is anticipated within the study horizons.

2.1.2 Other Study Area Developments

The City of Brockville highlighted the following area developments for consideration in the background conditions.

2.1.2.1 107-119 King Street West

The proposed mixed-use development at 107 King Street West includes 140 residential units and 617 square meters of commercial space. The development is projected to generate approximately 34 trips during the AM peak hour and 37 trips during the PM peak hour. (EFI, 2024)

It is noted that the forecasted trips did not include a reduction of the existing site traffic and remains conservative for the traffic impacts. The volumes presented in the TIS will be used in this study and the reduction will not be calculated.

2.1.2.2 36-46 King Street West

The proposed development site of 46 King Street West will be adapt the existing site to a nine-storey mixed-use building with ground floor commercial space, second floor office space, and 64 residential units. Underground

5 Home Street Transportation Impact Study

parking will be accessed via the existing rear public laneway of Victoria Lane. The development was forecasted to generate a total of 35 AM and 39 PM new peak hour two-way vehicle trips. (CGH, 2023)

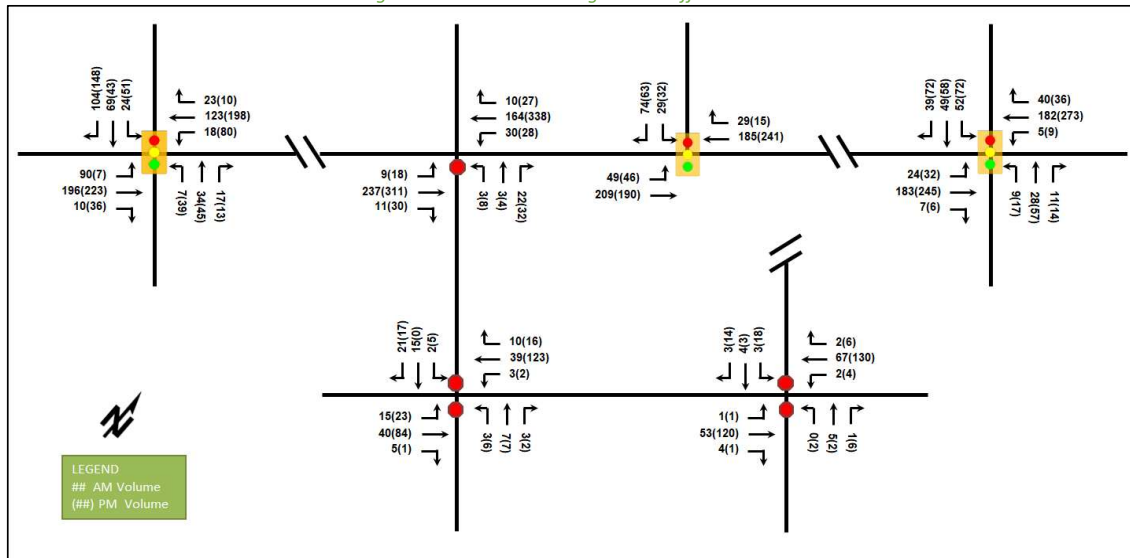
2.1.3 Background Growth

To generate 2029 and 2034 future background traffic volumes, a 0.5% compound annual growth rate was assumed to be applied to the existing 2024 traffic counts.

2.2 Future Background Travel Demands

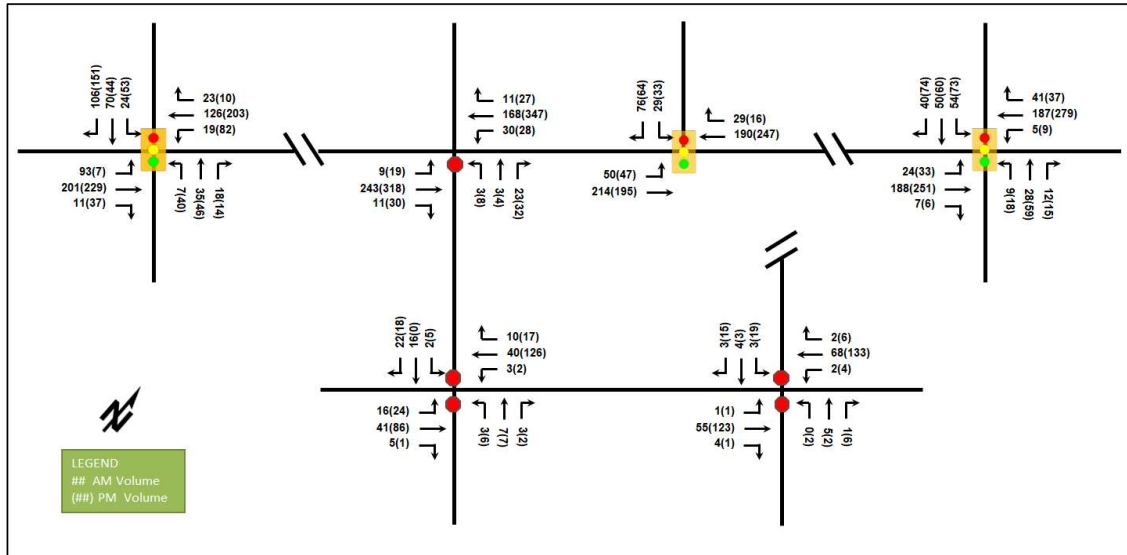
Applying the background growth rate discussed in Section 2.1.3 above to the 2024 existing traffic volumes and the background development traffic, the future background traffic volumes were projected. Figure 8 and Figure 9 illustrate the 2029 and 2034 future background traffic volumes, respectively. The volumes have not been balanced.

Figure 8: 2029 Future Background Traffic Volumes



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Figure 9: 2034 Future Background Traffic Volumes



3 Demand Forecasting

3.1 Site Trip Generation

The proposed development will include 86 mid-rise multifamily housing units and 7,084 square feet of retail space. The ITE Trip Generation Manual 12th Edition has been reviewed to determine the appropriate auto trip generation rate equations for the proposed land uses and the fitted curve was applied for the residential use and average rates for the retail use. The rates are summarized in Table 1. It is noted that given the downtown context of the site, these auto trip generation rates are considered to be conservative.

Table 1: ITE Trip Generation Rate

Land Use	Data Source	Fitted Curve Rates		Average Rate	
		AM Peak	PM Peak	AM Peak	PM Peak
Multifamily Housing (Mid-Rise)	LUC 221	$T = 0.25(X) + 5.35$	$T = 0.29(X) - 6.26$	0.28	0.26
Strip Retail Plaza (<40k)	LUC 822	N/A	$\ln(T) = 0.68 \ln(X) + 2.77$	3.93	6.29

Notes: T = Average Vehicle Trip, X = Number of Dwelling Units

Using the above vehicle trip rates, the total vehicle trip generation has been estimated. Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development for the retail components for mixed-use developments. The rates summarized in Table 2 represent the percentage of trips to/from the retail uses based on the residential component.

Table 2: Internal Capture Rates

Land Use	AM		PM	
	In	Out	In	Out
Residential to/from Shopping Centre	17%	14%	10%	26%

The pass-by rate of 40% has been selected using ITE Trip Generation Manual 12th Edition. As land use 822 (Strip Retail Plaza) does not have a pass-by trip percentage provided, pass-by trip rates from land use code 821 (Shopping Plaza) was utilized.

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Based on the trip generation rates, the internal capture and pass-by rates, and the development statistics, the overall vehicle trip generation has been forecast. Table 3 below illustrates the total vehicle trip generation.

Table 3: Vehicle Site Trip Generation

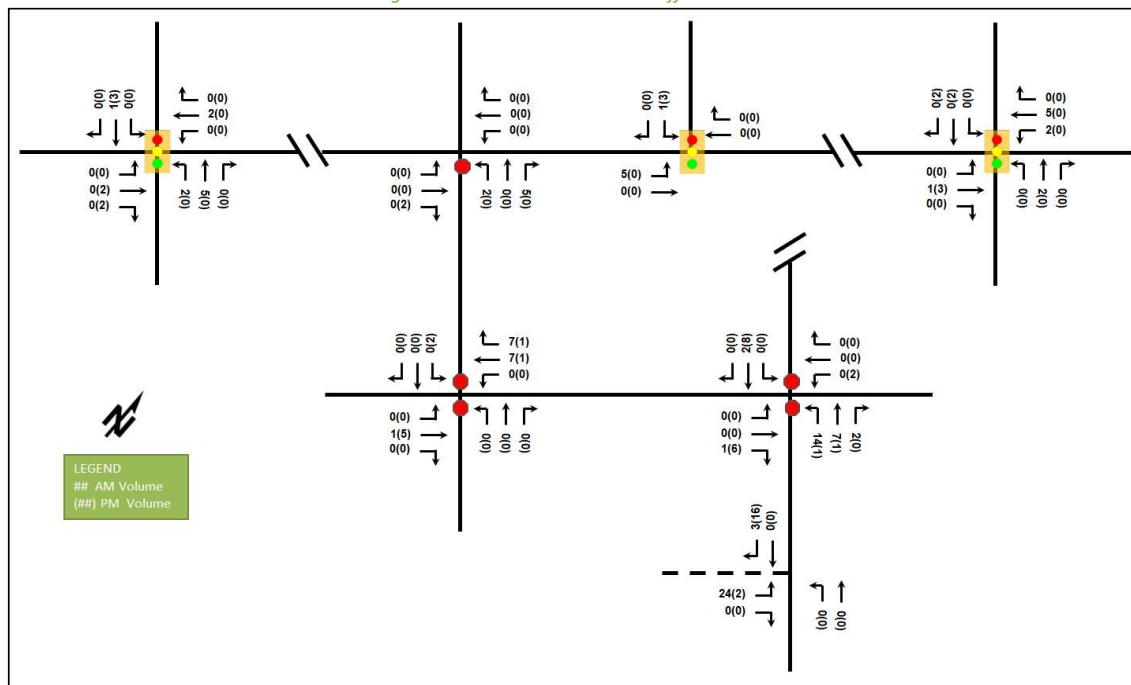
Land Use	Units/GFA	AM Peak (veh/hr)			PM Peak (veh/hr)		
		In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	86	4	23	27	14	5	19
Strip Retail Plaza (<40k)	7081 sq.ft	7	7	14	12	10	22
Internal Capture		-2	-1	-3	-1	-4	-5
Pass-By		-6	-5	-11	-9	-9	-18
Total		3	24	27	16	2	18

As shown above, a total of 27 AM and 18 PM new peak hour two-way vehicle trips are projected as a result of proposed development.

3.2 Vehicle Traffic Distribution and Assignment

Traffic distribution was based on the existing volume splits at Study Area intersections and a knowledge of the area travel. Based on these factors, new site-generated trips were assigned to Study Area intersections, which is illustrated in Figure 10. Retail primary and pass-by auto volumes are assumed to access street parking along King Street West. Section 5.2 provides further information regarding proposed access configurations.

Figure 10: New Site-Generated Traffic Volumes



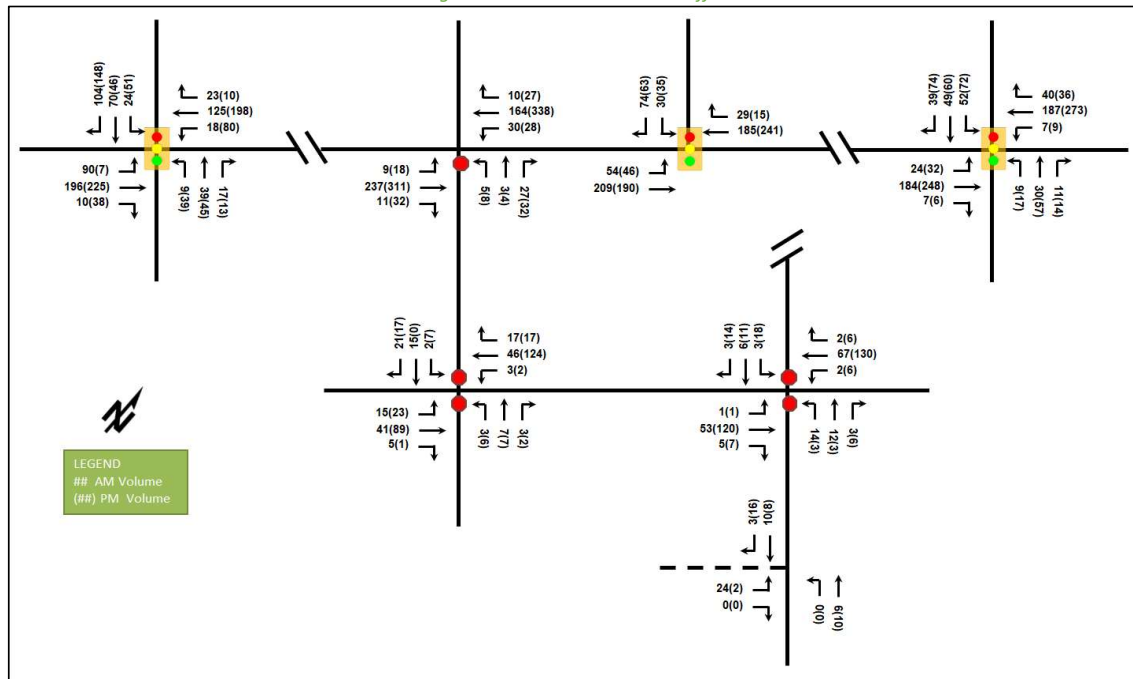
3.3 Future Total Travel Demands

The 2029 and 2034 site-generated traffic has been added to the 2029 and 2034 future background traffic volumes to estimate the future total traffic volumes. Figure 11 and Figure 12 illustrate the 2029 and 2034 future total traffic

5 Home Street Transportation Impact Study

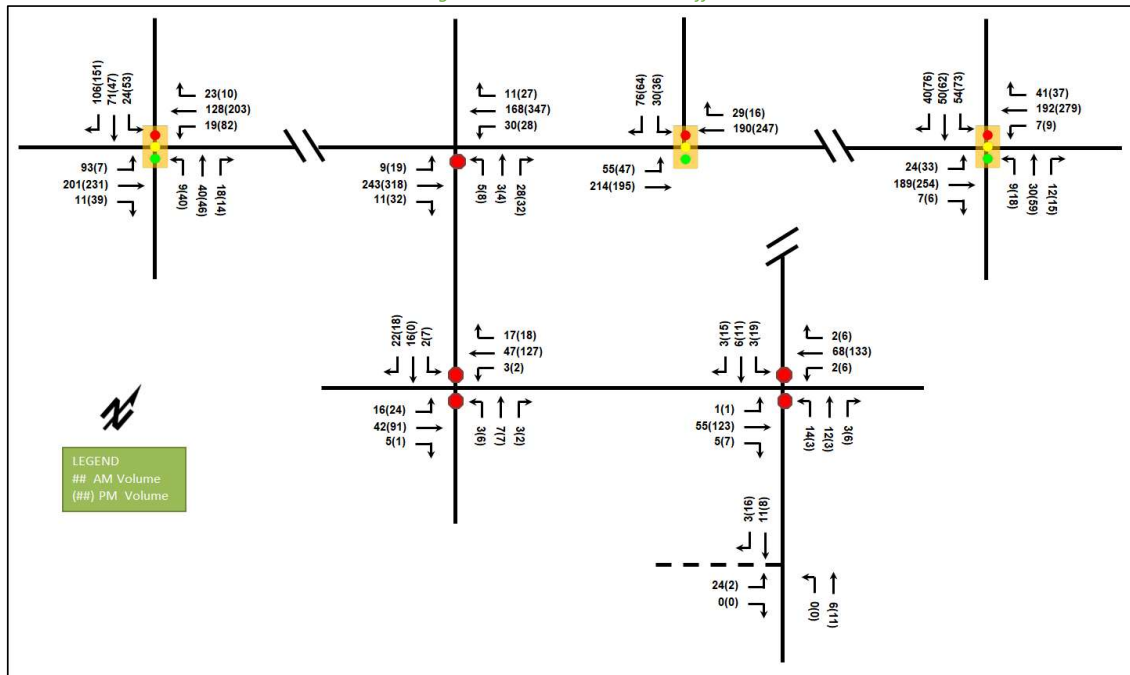
volumes, respectively. The volumes have not been balanced. Access configuration details are presented in Section 5.2.

Figure 11: 2029 Future Total Traffic



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Figure 12: 2034 Future Total Traffic



4 Operational Analysis

4.1 Analytical Methods

To understand the operational characteristics of the Study Area intersections, a Synchro model has been created using Synchro Version 11. The level of service is based on HCM 6th Edition delay calculations for individual lane movements and the overall intersection, for both signalized and unsignalized intersections.

4.1.1 Signal Timing

Signal timing has been assumed at a cycle length of 60 or 75 seconds both AM and PM peak hours based on turn phasing, crosswalk distances and red/amber timing. The red and yellow timing has been calculated per Ontario Traffic Manual Book 12. Optimization of the timing and phase splits was completed for future conditions, as required.

4.1.2 Heavy Vehicles

Heavy vehicle percentages (HV%) have been calculated for each movement based on the existing turning movement counts for the Study Area intersections and have been applied to both the existing and future analysis horizons. A minimum HV% of 1% was applied where no HV% was noted in the traffic counts to ensure a conservative analysis.

4.1.3 Active Transportation Volumes

Cyclist and pedestrian volumes were provided for all intersections from the turning movement count information collected. A minimum volume of 5 pedestrians and/or cyclists was applied for the future conditions to ensure a conservative analysis.

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4.1.4 Peak Hour Factor

Peak hour factors (PHF) have been entered for each intersection based on the turning movement counts provided. The peak hour factors used for each intersection are shown below in Table 4.

Table 4: Peak Hour Factors

Intersection	Peak Hour Factor	
	AM	PM
Water Street West at Home Street	0.82	0.90
Water Street West at Apple Street	0.84	0.88
King Street at Home Street	0.93	0.94
King Street at Buell Street	0.80	0.94
King Street at Perth Steet	0.83	0.85
King Street at Broad Street	0.92	0.99

4.1.5 Other Parameters

All other parameters have been coded using accepted best practices and default parameters, where applicable.

4.1.6 Performance Measures

The level of service (LOS) has been determined using the HCM definitions for LOS at signalized and unsignalized intersections for the individual movements and overall for the unsignalized intersections. The overall intersection LOS for signalized locations has been calculated based on a weighted average of the critical movement. Table 5 summarizes the LOS criteria.

Table 5: Level of Service Criteria for Signalized/Unsignalized Intersections

LOS	Signalized Intersection Volume to Capacity	Unsignalized Intersection Delay (s)
A	≤0.60	≤10
B	0.61 to 0.70	>10 and ≤15
C	0.70 to 0.80	>15 and ≤25
D	0.81 to 0.90	>25 and ≤35
E	0.91 to 1.00	>35 and ≤50
F	>1.00	>50

Critical movements and critical intersections have been defined as individual movements with LOS F or a V/C ratio of 1.00 or greater, and intersections with an overall LOS F. Critical movements and critical intersections will be indicated in red within operational result tables below and may require mitigation measures.

4.2 Existing Operational Analysis

Table 6 summarizes the operational analysis for the existing conditions during both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 1.1.2. Synchro worksheets for the existing traffic conditions are included in Appendix B.

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Table 6: Existing Intersections Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Water Street W at Home Street <i>Unsignalized</i>	EB	A	0.01	7.3	0.0	A	0.01	7.5	0.0
	WB	A	0.00	7.3	0.0	A	0.00	7.4	0.0
	NB	A	0.02	9.6	0.8	B	0.02	10.5	0.8
	SB	A	0.04	9.5	0.8	A	0.02	9.5	0.8
	Overall	A	-	3.5	-	A	-	1.7	-
Water Street W at Apple Street <i>Unsignalized</i>	EB	A	0.00	7.4	0.0	A	0.00	7.5	0.0
	WB	A	0.00	7.3	0.0	A	0.00	7.5	0.0
	NB	A	0.01	9.7	0.0	A	0.02	9.7	0.0
	SB	A	0.01	9.4	0.0	B	0.04	10.0	0.8
	Overall	A	-	1.0	-	A	-	1.5	-
King Street W at Home Street <i>Unsignalized</i>	EBL/T	A	0.01	7.6	0.0	A	0.02	8.1	0.0
	EBR	-	-	-	-	-	-	-	-
	WBL/T	A	0.02	7.8	0.8	A	0.02	8.0	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	A	0.03	9.9	0.8	B	0.06	11.5	1.5
	Overall	A	-	1.0	-	A	-	1.0	-
King Street at Buell Street <i>Signalized</i>	EBL	A	0.10	8.3	7.4	A	0.08	7.7	6.8
	EBT	A	0.25	9.6	24.7	A	0.19	8.5	21.1
	WBT	A	0.33	10.9	14.6	A	0.35	10.4	17.3
	WBR	A	0.06	2.1	0.6	A	0.03	3.1	m0.7
	SBL	A	0.07	19.1	8.4	A	0.07	19.8	9.3
	SBR	A	0.17	5.8	7.1	A	0.13	6.5	8.0
	Overall	A	0.25	9.5	-	A	0.28	9.5	-
King Street at Perth Street <i>Signalized</i>	EBL	A	0.21	9.7	11.8	A	0.02	8.1	2.0
	EBT/R	A	0.28	10.1	23.3	A	0.35	10.3	28.9
	WBL/T	A	0.33	18.5	24.4	C	0.72	30.1	#57.4
	WBR	A	0.05	0.1	0.0	A	0.02	0.1	0.0
	NB	A	0.12	11.4	9.7	A	0.23	14.4	16.3
	SB	A	0.39	10.8	21.4	A	0.47	10.8	24.9
	Overall	A	0.33	11.7	-	A	0.60	16.9	-
King Street at Broad Street <i>Signalized</i>	EBL	A	0.04	5.7	2.7	A	0.06	6.6	3.8
	EBT/R	A	0.21	6.0	11.8	A	0.25	7.2	17.7
	WBL/T	A	0.28	17.1	32.2	A	0.40	18.7	45.5
	WBR	A	0.06	0.2	0.0	A	0.05	0.1	0.0
	NB	A	0.12	17.7	11.8	A	0.21	20.1	18.9
	SBL/T	A	0.27	23.9	24.0	A	0.34	25.1	28.4
	SBR	A	0.08	0.3	0.0	A	0.14	0.9	1.0
	Overall	A	0.26	12.4	-	A	0.36	14.0	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

Generally, the study area intersections are shown to operate with good overall LOS and low delays and no additional operational constraints (V/C ratio greater than 0.90 or LOS E or worse) are noted.

The westbound shared left-turn/through movement at the intersection of King Street W at Perth Street/St Paul Street may experience cycles where the queue does not fully clear during the PM peak hour.

5 Home Street Transportation Impact Study

4.3 Future Background Conditions

4.3.1 2029 Future Background Conditions

The forecasted 2029 future background intersection volumes have been analyzed to allow for a comparison of the future volumes with and without the proposed development.

Table 7 summarizes the operational analysis for the 2029 future background conditions during both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 1.1.2. Synchro worksheets for the 2029 future background traffic conditions are included in Appendix C.

Table 7: 2029 Future Background Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Water Street W at Home Street <i>Unsignalized</i>	EB	A	0.01	7.3	0.0	A	0.02	7.6	0.8
	WB	A	0.00	7.3	0.0	A	0.00	7.4	0.0
	NB	A	0.02	9.7	0.8	B	0.03	10.8	0.8
	SB	A	0.05	9.4	1.5	A	0.03	9.5	0.8
	Overall	A	-	3.8	-	A	-	2.0	-
Water Street W at Apple Street <i>Unsignalized</i>	EB	A	0.00	7.4	0.0	A	0.00	7.5	0.0
	WB	A	0.00	7.3	0.0	A	0.00	7.5	0.0
	NB	A	0.01	9.7	0.0	A	0.02	9.8	0.0
	SB	A	0.02	9.5	0.0	B	0.06	10.3	1.5
	Overall	A	-	1.2	-	A	-	1.6	-
King Street W at Home Street <i>Unsignalized</i>	EBL/T	A	0.01	7.6	0.0	A	0.02	8.1	0.8
	EBR	-	-	-	-	-	-	-	-
	WBL/T	A	0.03	7.8	0.8	A	0.03	8.1	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.04	10.1	0.8	B	0.08	11.7	2.3
Overall	A	-	1.2	-	A	-	1.1	-	
King Street at Buell Street <i>Signalized</i>	EBL	A	0.11	8.3	7.5	A	0.09	7.7	7.0
	EBT	A	0.27	9.7	25.9	A	0.20	8.6	22.5
	WBT	A	0.35	11.0	15.1	A	0.37	10.5	17.9
	WBR	A	0.06	2.0	0.7	A	0.03	3.1	m0.6
	SBL	A	0.07	19.1	8.5	A	0.07	19.8	9.5
	SBR	A	0.18	5.7	7.1	A	0.14	6.5	8.1
Overall	A	0.27	9.6	-	A	0.29	9.5	-	
King Street at Perth Street <i>Signalized</i>	EBL	A	0.22	9.8	11.9	A	0.02	8.1	2.0
	EBT/R	A	0.29	10.2	24.5	A	0.36	10.5	30.1
	WBL/T	A	0.34	18.7	25.5	C	0.75	32.0	#60.2
	WBR	A	0.05	0.2	0.0	A	0.02	0.1	0.0
	NB	A	0.12	11.5	9.7	A	0.24	14.4	16.6
	SB	A	0.40	11.2	22.5	A	0.49	11.3	26.2
Overall	A	0.35	11.9	-	B	0.62	17.7	-	

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Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King Street at Broad Street Signalized	EBL	A	0.05	5.7	2.8	A	0.07	6.6	3.9
	EBT/R	A	0.22	6.0	12.4	A	0.27	7.3	18.4
	WBL/T	A	0.30	17.3	34.1	A	0.42	19.0	47.6
	WBR	A	0.06	0.2	0.0	A	0.05	0.1	0.0
	NB	A	0.12	17.8	12.1	A	0.21	20.2	19.0
	SBL/T	A	0.28	24.1	24.9	A	0.36	25.4	29.5
	SBR	A	0.08	0.3	0.0	A	0.14	1.1	1.4
Overall	A	0.28	12.5	-	-	A	0.38	14.1	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2029 future background horizon in the study area generally operate similarly to the existing conditions. No additional operational constraints (V/C ratio greater than 0.90 or LOS E or worse) are noted.

4.3.2 2034 Future Background Conditions

The 2034 future background intersection volumes have been analyzed to allow for a comparison of the future volumes with and without the proposed development.

Table 8 summarizes the operational analysis for the 2034 future background conditions during both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 1.1.2. Synchro worksheets for the 2034 future background traffic conditions are included in Appendix D.

Table 8: 2034 Future Background Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Water Street W at Home Street Unsignalized	EB	A	0.01	7.4	0.0	A	0.02	7.6	0.8
	WB	A	0.00	7.3	0.0	A	0.00	7.4	0.0
	NB	A	0.02	9.7	0.8	B	0.03	10.8	0.8
	SB	A	0.06	9.4	1.5	A	0.03	9.5	0.8
	Overall	A	-	3.8	-	-	-	1.9	-
Water Street W at Apple Street Unsignalized	EB	A	0.00	7.4	0.0	A	0.00	7.5	0.0
	WB	A	0.00	7.3	0.0	A	0.00	7.5	0.0
	NB	A	0.01	9.7	0.0	A	0.02	9.8	0.0
	SB	A	0.02	9.5	0.0	B	0.06	10.3	1.5
	Overall	A	-	1.2	-	A	-	1.7	-
King Street W at Home Street Unsignalized	EBL/T	A	0.01	7.6	0.0	A	0.02	8.1	0.8
	EBR	-	-	-	-	-	-	-	-
	WBL/T	A	0.03	7.8	0.8	A	0.03	8.1	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.04	10.2	0.8	B	0.08	11.8	2.3
	Overall	A	-	1.2	-	A	-	1.1	-

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Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King Street at Buell Street <i>Signalized</i>	EBL	A	0.11	8.3	7.7	A	0.09	7.7	7.1
	EBT	A	0.28	9.8	26.7	A	0.21	8.7	23.1
	WBT	A	0.36	11.1	15.5	A	0.38	10.6	18.5
	WBR	A	0.06	2.0	0.7	A	0.03	3.3	m0.7
	SBL	A	0.07	19.1	8.5	A	0.07	19.8	9.7
	SBR	A	0.18	5.7	7.2	A	0.14	6.5	8.2
	Overall	A	0.28	9.6	-	-	A	0.30	9.6
King Street at Perth Street <i>Signalized</i>	EBL	A	0.23	9.8	12.3	A	0.02	8.1	2.0
	EBT/R	A	0.30	10.3	25.0	A	0.37	10.7	31.1
	WBL/T	A	0.35	18.9	26.2	C	0.77	33.5	#62.7
	WBR	A	0.05	0.2	0.0	A	0.02	0.1	0.0
	NB	A	0.13	11.3	9.9	A	0.24	14.5	17.0
	SB	A	0.41	11.3	22.8	A	0.50	11.7	27.3
	Overall	A	0.35	12.0	-	-	B	0.64	18.3
King Street at Broad Street <i>Signalized</i>	EBL	A	0.05	5.7	2.8	A	0.07	6.6	4.0
	EBT/R	A	0.23	6.0	12.5	A	0.27	7.3	19.0
	WBL/T	A	0.31	17.4	34.8	A	0.43	19.1	48.8
	WBR	A	0.07	0.2	0.0	A	0.05	0.2	0.0
	NB	A	0.12	17.6	12.1	A	0.22	20.2	19.7
	SBL/T	A	0.29	24.2	25.5	A	0.36	25.6	29.9
	SBR	A	0.08	0.3	0.0	A	0.15	1.3	1.8
	Overall	A	0.29	12.5	-	-	A	0.38	14.2

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2034 future background horizon in the study area generally operate similarly to the existing and 2029 future background conditions.

4.4 Future Total Conditions

4.4.1 Future Total Traffic Control Warrants

Using Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the unsignalized intersection of King Street W at Home Street was analyzed. In the 2034 forecasted future total horizon, signalization is not warranted and no change to the study area intersection control is required. Traffic control warrant sheets have been included in Appendix E.

4.4.2 2029 Future Total Conditions

The proposed development’s trip generation has been added to the 2029 future total traffic volumes to project the impact of the new traffic on the future road network.

Table 9 summarizes the operational analysis for the 2029 future total conditions in both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 4.4.1. Synchro worksheets for the 2029 future total traffic conditions are included in Appendix F.

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Table 9: 2029 Future Total Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Water Street W at Home Street <i>Unsignalized</i>	EB	A	0.01	7.4	0.0	A	0.02	7.6	0.8
	WB	A	0.00	7.3	0.0	A	0.00	7.4	0.0
	NB	A	0.02	9.8	0.8	B	0.03	10.8	0.8
	SB	A	0.05	9.5	1.5	A	0.03	9.7	0.8
	Overall	A	-	3.5	-	A	-	2.0	-
Water Street W at Apple Street <i>Unsignalized</i>	EB	A	0.00	7.4	0.0	A	0.00	7.5	0.0
	WB	A	0.00	7.3	0.0	A	0.01	7.5	0.0
	NB	A	0.04	9.8	0.8	B	0.02	10.0	0.8
	SB	A	0.02	9.6	0.8	B	0.07	10.6	1.5
	Overall	A	-	2.5	-	A	-	1.9	-
King Street W at Home Street <i>Unsignalized</i>	EBL/T	A	0.01	7.6	0.0	A	0.02	8.1	0.8
	EBR	-	-	-	-	-	-	-	-
	WBL/T	A	0.03	7.8	0.8	A	0.03	8.1	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.05	10.3	1.5	B	0.08	11.7	2.3
	Overall	A	-	1.4	-	A	-	1.1	-
King Street at Buell Street <i>Signalized</i>	EBL	A	0.12	8.4	8.2	A	0.09	7.7	7.0
	EBT	A	0.27	9.7	25.9	A	0.20	8.6	22.5
	WBT	A	0.35	10.8	14.7	A	0.37	10.5	18.1
	WBR	A	0.06	1.9	0.7	A	0.03	3.1	m0.6
	SBL	A	0.07	19.1	8.8	A	0.08	19.9	10.0
	SBR	A	0.18	5.7	7.1	A	0.14	6.5	8.1
	Overall	A	0.27	9.5	-	A	0.29	9.6	-
King Street at Perth Street <i>Signalized</i>	EBL	A	0.22	9.8	11.9	A	0.02	8.1	2.0
	EBT/R	A	0.29	10.2	24.5	A	0.37	10.6	30.7
	WBL/T	A	0.35	18.8	25.9	C	0.75	32.1	#60.3
	WBR	A	0.05	0.2	0.0	A	0.02	0.1	0.0
	NB	A	0.14	12.0	10.9	A	0.24	14.4	16.6
	SB	A	0.40	11.3	22.7	A	0.49	11.7	27.0
	Overall	A	0.35	12.0	-	B	0.62	17.8	-
King Street at Broad Street <i>Signalized</i>	EBL	A	0.05	5.7	2.9	A	0.07	6.7	4.0
	EBT/R	A	0.22	6.1	12.7	A	0.27	7.4	19.2
	WBL/T	A	0.32	17.5	35.3	A	0.42	19.0	47.6
	WBR	A	0.06	0.2	0.0	A	0.05	0.1	0.0
	NB	A	0.13	18.1	12.6	A	0.21	20.2	19.0
	SBL/T	A	0.29	24.1	24.9	A	0.36	25.5	29.8
	SBR	A	0.08	0.3	0.0	A	0.15	1.3	1.8
	Overall	A	0.29	12.6	-	A	0.38	14.1	-
Site Access at Apple Street <i>Unsignalized</i>	EB	A	0.03	8.7	0.8	A	0.00	8.7	0.0
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	4.9	-	A	-	0.5	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2029 future total horizon in the study area generally operate similarly to the 2029 future background conditions, and the site access intersection is forecast to operate well. Negligible impacts are forecast from site-generated traffic, and no resultant mitigation is required.



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4.4.3 2034 Future Total Conditions

The proposed development's trip generation has been added to the 2034 future background traffic volumes to project the impact of the new traffic on the future road network.

Table 10 summarizes the operational analysis for the 2034 future total conditions during both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 4.4.1. Synchro worksheets for the 2034 future total traffic conditions are included in Appendix G.

Table 10: 2034 Future Total Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Water Street W at Home Street Unsignalized	EB	A	0.01	7.4	0.0	A	0.02	7.6	0.8
	WB	A	0.00	7.3	0.0	A	0.00	7.4	0.0
	NB	A	0.02	9.8	0.8	B	0.03	10.9	0.8
	SB	A	0.06	9.5	1.5	A	0.04	9.7	0.8
	Overall	A	-	3.5	-	A	-	2.0	-
Water Street W at Apple Street Unsignalized	EB	A	0.00	7.4	0.0	A	0.00	7.5	0.0
	WB	A	0.00	7.3	0.0	A	0.01	7.5	0.0
	NB	A	0.04	9.8	0.8	B	0.02	10.1	0.8
	SB	A	0.02	9.6	0.8	B	0.08	10.7	1.5
	Overall	A	-	2.4	-	A	-	2.0	-
King Street W at Home Street Unsignalized	EBL/T	A	0.01	7.6	0.0	A	0.02	8.1	0.8
	EBR	-	-	-	-	-	-	-	-
	WBL/T	A	0.03	7.8	0.8	A	0.03	8.1	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.05	10.3	1.5	B	0.08	11.8	2.3
Overall	A	-	1.3	-	A	-	1.1	-	
King Street at Buell Street Signalized	EBL	A	0.12	8.4	8.3	A	0.09	7.7	7.1
	EBT	A	0.28	9.8	26.7	A	0.21	8.7	23.1
	WBT	A	0.36	10.9	14.8	A	0.38	10.6	18.8
	WBR	A	0.06	2.0	0.7	A	0.03	3.4	m0.7
	SBL	A	0.07	19.1	8.8	A	0.08	19.9	10.2
	SBR	A	0.18	5.7	7.2	A	0.14	6.5	8.2
	Overall	A	0.28	9.6	-	A	0.30	9.7	-
King Street at Perth Street Signalized	EBL	A	0.23	9.8	12.3	A	0.02	8.1	2.0
	EBT/R	A	0.30	10.3	25.0	A	0.38	10.7	31.5
	WBL/T	A	0.36	18.9	26.5	C	0.77	33.7	#62.9
	WBR	A	0.05	0.2	0.0	A	0.02	0.1	0.0
	NB	A	0.15	11.8	11.1	A	0.24	14.5	17.0
	SB	A	0.41	11.5	23.4	A	0.51	12.0	28.2
	Overall	A	0.35	12.1	-	B	0.64	18.4	-
King Street at Broad Street Signalized	EBL	A	0.05	5.7	2.9	A	0.07	6.7	4.1
	EBT/R	A	0.23	6.1	12.8	A	0.28	7.5	19.5
	WBL/T	A	0.32	17.6	36.5	A	0.43	19.1	48.8
	WBR	A	0.07	0.2	0.0	A	0.05	0.2	0.0
	NB	A	0.13	17.8	12.6	A	0.22	20.2	19.7
	SBL/T	A	0.29	24.3	25.5	A	0.37	25.7	30.3
	SBR	A	0.08	0.3	0.0	A	0.15	1.4	2.0
Overall	A	0.29	12.7	-	A	0.39	14.2	-	

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Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Site Access at Apple Street Unsignalized	EB	A	0.03	8.7	0.8	A	0.00	8.7	0.0
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	4.7	-	A	-	0.5	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2034 future total horizon in the study area generally operate similarly to the 2029 future total conditions and the 2034 future background conditions, and the site access intersection is forecast to operate well. Negligible impacts are forecast from site generated traffic, and no resultant mitigation is required.

5 Development Review

5.1 Design for Sustainable Modes

The proposed site maintains the sidewalks on the Water Street and Apple Street frontages, adds a sidewalk along Home Street and a widened interlock boulevard the southern edge of the building. Interior bike racks are provided within the building for resident cyclists, and an exterior bike rack is provided in the interlock boulevard south of the building. The interior spaces are located on the first level of parking for ease of access. The existing transit service will remain at the northwest corner of the site.

5.2 Access Intersection Design Elements

Underground parking will be accessed via Apple Street. The access is located approximately 41.0 metres south of Water Street and approximately 35.0 metres north of Ernie Fox Quay. The TAC Geometric Design Guidelines suggests minimum corner clearance values for driveways of 15.0 metres along local road. Therefore, the site access meets the corner clearance requirements.

The access is proposed to be 6.0-metre-wide at its typical width and have corner radii of 3.0 metres. The site access meets the TAC Geometric Design Guidelines typical driveway width requirements and does not exceed the maximum 7.3 metre width.

According to the TAC Geometric Design Guidelines, for apartment developments with fewer than 100 units, no minimum requirement is specified for a local road. However, the provision of 8.0 metres to allow a car to queue on the private approach is recommended. The proposed throat length from the end of the curb return to the first on-site conflict of the garage door is approximately 8.5 metres. Therefore, throat length provided is acceptable.

5.3 Parking Supply

The vehicle and bicycle parking for the development is subject to City of Brockville Zoning By-Law #050, 2014, which states for the Mixed Commercial/Residential Building located in Downtown and Central Waterfront Area, the minimum resident vehicle parking requirement is 1.0 space per unit, which equates to 86 spaces, 4.0 spaces per 100.0 square metres gross leasable area of commercial space assuming a land use of Commercial Use in Mixed Commercial Residential Development, which equates to 26 spaces. The total parking requirement for the site is 112 vehicle spaces. The development is proposed 103 parking spaces, including 85 underground parking spaces and 18 on-street parking. The proposed development provides nine fewer spaces than the minimum requirement. Overall, the reduction of parking is supported for the site due to the downtown location and proximity to both transit and cycling routes. On-street parking is permitted on Apple Street and in 17 public parking spaces on Ernie Fox Quay that can accommodate short term overflow parking if required.

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The minimum bicycle parking requirement for the Mixed Commercial/Residential Building is 0.25 spaces per unit for the residential units, which equates to 22 spaces, and 1.0 space per 250.0 square metres of gross floor area for the commercial space, which equates to three spaces. The development is proposed to include 24 bicycle parking spaces for the residential and commercial components, thereby meeting the minimum bicycle parking requirement.

6 Findings and Recommendations

- a) The existing site has a surface parking lot and a medical/services building and it is proposed to include 7-storey residential building, with a total of 86 units and 7,081 sq. ft. of ground floor retail space.
- b) Parking is internal on the ground floor and a single level of underground parking, accessed from Apple Street.
- c) The proposed development is anticipated to have a full build-out and occupancy horizon of 2029.
- d) A total of 27 AM and 18 PM new peak hour two-way vehicle trips are projected as a result of proposed development.
- e) A 0.5% compound annual growth rate was assumed to be applied to the existing 2024 traffic counts to generate 2029 and 2034 future background traffic volumes.
- f) The study area intersections and the site access operation well in all horizons, except for the westbound shared left-turn/through movement at the intersection King Street W at Perth Street/St Paul Street, which may experience cycles where the queue does not fully clear during the PM peak hour in all horizons.
- g) The access intersection is forecast to operate well during peak hours in all horizons, and no mitigation measures are required.
- h) The access meets the TAC Geometric Design Guidelines typical driveway width requirement.
- i) Throat length is appropriate for the site.
- j) The development proposes 103 parking spaces, which is nominally below the required 112 spaces, is supported for the downtown context and proximity to transit and cycling routes.
- k) The development proposes 24 bicycle parking spaces, which meet the bicycle parking requirements.

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The development will have a minor impact on the study area road network. The proposed access will operate well and meets the TAC Geometric Design Guidelines requirements. Additionally, through the provision of on-site facilities, this development will be supportive of active mode transportation. It is recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:

Reviewed By:

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Appendix A

Turning Movement Count Data



APPENDIX A: TRAFFIC COUNTS

NOTE* All tables displaying negligible data (Total All = 0) are not shown.

King Street West and Home Street (Point 1) Traffic Counts

AM																	
Cars																	
Streets	Home Street				Chase Street				King Street				King Street				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	3	3	0	0	0	0	1	47	2	50	8	21	1	30	83
7:45 - 8:00	1	0	2	3	0	0	0	0	0	70	4	74	5	25	2	32	109
8:00 - 8:15	0	1	1	2	0	0	0	0	1	38	1	40	4	28	3	35	77
8:15 - 8:30	1	1	3	5	0	0	0	0	4	53	2	59	4	24	1	29	93
8:30 - 8:45	1	0	6	7	0	0	0	0	0	48	0	48	6	39	1	46	101
8:45 - 9:00	0	1	6	7	0	0	0	0	4	57	3	64	10	37	2	49	120
9:00 - 9:15	1	0	2	3	0	0	0	0	4	57	1	62	3	39	1	43	108
9:15 - 9:30	0	1	3	4	0	0	0	0	1	61	3	65	6	36	5	47	116
Total	4	4	26	34	0	0	0	0	15	431	16	462	46	249	16	311	807

Trucks/Bus																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:30 - 8:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:45 - 9:00	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
9:00 - 9:15	0	0	0	0	0	0	0	0	0	3	0	3	0	3	1	4	7
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	10	0	10	0	7	1	8	18

PM																	
Cars																	
Streets	King Street				King Street				Chase Street				Home Street				
Direction	Westbound				Eastbound				Southbound				Northbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	5	59	7	71	3	76	4	83	0	0	0	0	0	0	0	0	154
4:15-4:30	3	73	6	82	7	88	9	104	0	0	0	0	2	2	6	10	196
4:30-4:45	5	64	4	73	5	72	8	85	0	0	0	0	1	0	6	7	165
4:45-5:00	7	78	10	95	3	68	5	76	0	0	0	0	1	0	5	6	177
5:00-5:15	3	69	6	78	5	92	4	101	0	0	0	0	3	1	8	12	191
5:15-5:30	2	56	5	63	2	65	2	69	0	0	0	0	3	2	7	12	144
5:30-5:45	6	59	0	65	3	48	6	57	0	0	0	0	3	0	8	11	133
5:45-6:00	6	69	3	78	1	59	7	67	0	0	0	0	0	1	7	8	153
Total	37	527	41	605	29	568	45	642	0	0	0	0	13	6	47	66	1313

Bicycles																	
Direction	Westbound				Eastbound				Southbound				Northbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
4:15-4:30	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:30-4:45	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:45-5:00	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
5:00-5:15	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
5:15-5:30	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
5:30-5:45	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
5:45-6:00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	5	0	5	0	14	1	15	0	0	0	0	0	0	0	0	20

Light Trucks																	
Direction	Westbound				Eastbound				Southbound				Northbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	3	0	3	0	2	0	2	0	0	0	0	0	0	0	0	5
4:15-4:30	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	2
4:30-4:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45-5:00	0	3	0	3	1	1	0	2	0	0	0	0	0	0	0	0	5
5:00-5:15	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45-6:00	0	1	0	1	1	1	0	2	0	0	0	0	0	0	0	0	3
Total	0	12	0	12	3	6	0	9	0	0	0	0	0	0	0	0	21

Trucks/Buses																	
Direction	Westbound				Eastbound				Southbound				Northbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	4	0	4	0	2	0	2	0	0	0	0	0	0	0	0	6
4:15-4:30	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	3
4:30-4:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45-5:00	0	3	0	3	1	1	0	2	0	0	0	0	0	0	0	0	5
5:00-5:15	0	5	0	5	0	1	0	1	0	0	0	0	0	0	0	0	6
5:15-5:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:30-5:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45-6:00	0	1	0	1	1	3	0	4	0	0	0	0	0	0	0	0	5
Total	0	15	0	15	3	10	0	13	0	0	0	0	0	0	0	0	28

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
4:00-4:15	9	10	1	2	22
4:15-4:30	18	21	4	4	47
4:30-4:45	17	17	3	1	38
4:45-5:00	10	19	2	7	38
5:00-5:15	9	17	4	10	40
5:15-5:30	4	7	3	3	17
5:30-5:45	7	10	3	2	22
5:45-6:00	3	6	3	3	15
Total	78	107	23	32	240

Water Street West and Home Street (Point 2) Traffic Counts

AM																	
Cars																	
Streets	Home Street				Home Street				Water Street West				Water Street West				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	1	1	2	0	1	0	1	2	14	0	16	0	6	0	6	25
7:45 - 8:00	1	0	0	1	0	3	2	5	0	15	1	16	0	3	0	3	25
8:00 - 8:15	0	2	0	2	0	0	3	3	1	6	4	11	1	2	2	5	21
8:15 - 8:30	0	1	0	1	1	3	1	5	4	8	0	12	2	6	2	10	28
8:30 - 8:45	1	1	0	2	0	1	6	7	3	7	1	11	0	6	1	7	27
8:45 - 9:00	1	5	1	7	2	7	2	11	3	9	1	13	0	8	4	12	43
9:00 - 9:15	0	0	0	0	0	3	3	6	2	7	2	11	3	8	2	13	30
9:15 - 9:30	1	1	2	4	0	4	1	5	4	16	1	21	0	15	0	15	45
Total	4	12	4	19	3	22	18	43	19	82	10	111	6	54	11	71	244

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 - 8:30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	4	0	4	1	0	0	1	5

Trucks/Bus																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	0	1	0	0	1	0	2	0	2	0	0	0	0	3
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	2	0	2	0	1	1	2	5

Pedestrians						
Direction	Westbound		Eastbound		Southbound	Northbound
Start Time	Total		Total		Total	Total
7:30 - 7:45	0		2		0	0
7:45 - 8:00	0		0		0	0
8:00 - 8:15	0		1		1	0
8:15 - 8:30	1		3		1	0
8:30 - 8:45	0		3		0	0
8:45 - 9:00	3		1		0	1
9:00 - 9:15	0		0		1	0
9:15 - 9:30	0		3		0	2
Total	4		13		3	3

PM																	
Cars																	
Streets	Home Street				Home Street				Water Street West				Water Street West				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	1	3	1	5	0	0	4	4	5	26	0	31	0	29	4	33	73
4:15-4:30	1	0	1	2	2	0	1	3	6	22	1	29	0	30	2	32	66
4:30-4:45	0	1	0	1	1	0	2	3	5	14	0	19	1	32	1	34	57
4:45-5:00	4	1	0	5	2	0	5	7	1	19	0	20	1	29	4	34	66
5:00-5:15	1	1	0	2	2	0	2	4	0	15	1	16	0	29	2	31	53
5:15-5:30	1	2	0	3	2	0	3	5	3	13	2	18	0	19	4	23	49
5:30-5:45	0	0	0	0	4	0	4	8	2	13	1	16	0	28	1	29	53
5:45-6:00	2	2	1	5	3	0	2	5	2	16	0	18	1	15	1	17	45
Total	10	10	3	23	16	0	23	39	24	138	5	167	3	211	19	233	462

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30-4:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	2	0	2	0	2	0	2	5

Light Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:15-4:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
5:00-5:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	2	2	0	2	0	2	0	0	0	0	5

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
4:00-4:15	1	1	0	0	2
4:15-4:30	1	1	3	1	6
4:30-4:45	0	0	0	1	1
4:45-5:00	0	0	3	0	3
5:00-5:15	0	0	0	0	0
5:15-5:30	0	0	0	0	0
5:30-5:45	0	0	2	0	2
5:45-6:00	0	1	0	0	1
Total	2	3	8	2	15

Water Street West and Apple Street (Point 3) Traffic Counts

AM																	
Cars																	
Streets	Northbound				Southbound				Eastbound				Westbound				
Direction	Water St				Apple St				Water St				Apple St				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	1	0	1	0	0	0	0	0	9	0	9	1	7	0	8	18
7:45 - 8:00	0	0	1	1	0	0	0	0	1	15	0	16	4	6	0	10	27
8:00 - 8:15	0	2	0	2	1	0	0	1	0	10	0	10	0	7	0	7	20
8:15 - 8:30	0	0	0	0	0	1	0	1	0	10	1	11	0	8	0	8	20
8:30 - 8:45	0	2	0	2	0	1	1	2	0	10	1	11	0	12	1	13	28
8:45 - 9:00	0	1	0	1	0	0	0	0	0	13	0	13	1	17	0	18	32
9:00 - 9:15	0	1	1	2	0	2	1	3	0	13	3	16	1	14	0	15	36
9:15 - 9:30	0	1	0	1	0	1	1	2	1	16	0	17	0	20	1	21	41
Total	0	8	2	10	1	5	3	9	2	96	5	103	7	91	2	100	222

PM																	
Cars																	
Streets	Home Street				Home Street				Water Street West				Water Street West				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	2	1	1	4	1	1	1	3	0	26	0	26	2	30	2	34	67
4:15-4:30	0	0	0	0	5	1	5	11	1	29	0	30	0	19	3	22	63
4:30-4:45	0	0	1	1	2	0	4	6	0	33	1	34	2	30	1	33	74
4:45-5:00	1	1	1	3	3	1	3	7	0	30	0	30	0	30	1	31	71
5:00-5:15	1	1	4	6	2	1	2	5	0	25	0	25	2	43	1	46	82
5:15-5:30	0	1	2	3	4	0	1	5	0	18	0	18	1	25	0	26	52
5:30-5:45	0	1	0	1	2	0	0	2	1	22	0	23	0	23	2	25	51
5:45-6:00	0	1	1	2	2	1	1	4	1	15	0	16	3	27	1	31	53
Total	4	6	10	20	21	5	17	43	3	198	1	202	10	227	11	248	513

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:00	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:00-5:15	0	0	2	2	0	1	0	1	0	1	0	1	0	1	0	1	5
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:00	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	1	0	2	3	0	1	0	1	0	2	0	2	0	6	0	6	12

Trucks/Buses																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
4:00-4:15	0	0	0	0	0
4:15-4:30	0	2	2	4	8
4:30-4:45	0	2	1	0	3
4:45-5:00	0	3	0	3	6
5:00-5:15	0	6	1	4	11
5:15-5:30	0	0	2	1	3
5:30-5:45	0	0	1	0	1
5:45-6:00	2	1	5	3	11
Total	2	14	12	15	43

King Street West and Perth Street (Point 4) Traffic Counts

AM																	
Cars																	
Streets	Perth Street				St Paul Street				King Street West				King Street West				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	3	9	2	14	7	16	15	38	26	43	4	73	5	18	8	31	156
7:45 - 8:00	2	11	6	19	6	23	24	53	25	53	5	83	5	38	9	52	207
8:00 - 8:15	1	9	4	14	5	20	35	60	16	46	1	63	4	39	3	46	183
8:15 - 8:30	1	4	5	10	4	8	27	39	21	44	0	65	4	21	1	26	140
8:30 - 8:45	0	8	3	11	10	2	24	36	21	40	2	63	2	33	6	41	151
8:45 - 9:00	0	11	5	16	8	11	23	42	22	49	1	72	4	43	7	54	184
9:00 - 9:15	1	10	3	14	4	8	28	40	21	47	1	69	4	27	4	35	158
9:15 - 9:30	2	6	3	11	14	14	22	50	19	48	1	68	4	45	11	60	189
Total	10	68	31	109	58	102	198	358	171	370	15	556	32	264	49	345	1368

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2

PM																	
Cars																	
Streets	King Street West				King Street West				St Paul Street				Perth Street				
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	2	63	4	69	15	52	1	68	17	16	3	36	20	12	44	76	249
4:15-4:30	1	48	10	59	18	46	1	65	5	14	1	20	14	8	29	51	195
4:30-4:45	1	54	10	65	19	41	3	63	9	7	5	21	9	11	35	55	204
4:45-5:00	3	46	10	59	20	46	3	69	6	5	4	15	5	10	33	48	191
5:00-5:15	2	46	4	52	21	37	3	61	7	6	1	14	6	15	39	60	187
5:15-5:30	0	53	10	63	18	53	2	73	7	9	3	19	10	6	30	46	201
5:30-5:45	7	42	9	58	18	62	4	84	5	6	5	16	10	8	37	55	213
5:45-6:00	0	35	5	40	21	44	2	67	3	11	3	17	6	11	24	41	165
Total	16	387	62	465	150	381	19	550	59	74	25	158	80	81	271	432	1605

Bicycles																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	2	0	2	1	0	0	1	0	0	0	0	0	0	0	0	3
4:15-4:30	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4:30-4:45	0	1	0	1	0	1	0	1	0	0	0	0	0	1	2	3	5
4:45-5:00	0	2	0	2	2	3	0	5	0	0	0	0	0	0	0	0	7
5:00-5:15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:15-5:30	0	2	0	2	0	3	0	3	0	0	0	0	1	0	1	2	7
5:30-5:45	0	0	0	0	2	3	0	5	0	0	1	1	0	0	0	0	6
5:45-6:00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	10	0	10	5	13	0	18	0	0	1	1	1	1	3	5	34

Light Trucks																	
Direction	Westbound				Eastbound				Northbound				Southbound				Total All
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	1	0	1	2	0	0	2	0	0	0	0	1	0	0	1	4
4:15-4:30	0	1	0	1	1	3	0	4	0	1	0	1	0	1	1	2	8
4:30-4:45	0	0	1	1	2	1	0	3	0	1	0	1	0	0	0	0	5
4:45-5:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:00-5:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15-5:30	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
5:45-6:00	0	0	0	0	0	1	0	1	1	0	0	1	1	1	0	2	4
Total	0	4	1	5	5	5	0	10	2	3	0	5	2	2	3	7	27

Trucks/Buses																	
Direction	Westbound				Eastbound				Northbound				Southbound				Total All
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
4:15-4:30	0	0	0	0	1	1	1	3	0	0	0	0	0	0	0	0	3
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	1	2	4	0	0	0	0	0	0	2	2	6

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
4:00-4:15	8	14	6	7	35
4:15-4:30	11	3	3	4	21
4:30-4:45	11	8	4	6	29
4:45-5:00	4	5	9	0	18
5:00-5:15	4	4	4	3	15
5:15-5:30	5	17	0	4	26
5:30-5:45	3	9	2	2	16
5:45-6:00	4	4	4	5	17
Total	50	64	32	31	177

King Street West and Buell Street (Point 5) Traffic Counts

AM																	
Cars																	
Streets	Buell Street				King Street West				King Street West				Buell Street				
Direction	Southbound				Eastbound				Westbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	4	0	8	12	7	39	0	46	0	34	4	38	96	4	0	8	12
7:45 - 8:00	7	0	10	17	5	58	0	63	0	32	5	37	117	7	0	10	17
8:00 - 8:15	6	0	10	16	4	50	0	54	0	29	4	33	103	6	0	10	16
8:15 - 8:30	6	0	10	16	11	50	0	61	0	37	9	46	123	6	0	10	16
8:30 - 8:45	4	0	12	16	10	39	0	49	0	42	8	50	115	4	0	12	16
8:45 - 9:00	7	0	23	30	12	70	0	82	0	54	5	59	171	7	0	23	30
9:00 - 9:15	10	0	21	31	11	36	0	47	0	33	10	43	121	10	0	21	31
9:15 - 9:30	7	0	15	22	14	53	0	67	0	45	5	50	139	7	0	15	22
Total	51	0	109	160	74	395	0	469	0	306	50	356	985	51	0	109	160

Bicycles																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	2	0	2	1	0	0	1	0	0	0	0	0	0	0	0	3
7:45 - 8:00	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 - 8:15	0	1	0	1	0	1	0	1	0	0	0	0	0	1	2	3	5
8:15 - 8:30	0	2	0	2	2	3	0	5	0	0	0	0	0	0	0	0	7
8:30 - 8:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
8:45 - 9:00	0	2	0	2	0	3	0	3	0	0	0	0	1	0	1	2	7
9:00 - 9:15	0	0	0	0	2	3	0	5	0	0	1	1	0	0	0	0	6
9:15 - 9:30	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	10	0	10	5	13	0	18	0	0	1	1	1	1	3	5	34

PM																	
Cars																	
Streets	King Street West				King Street West				St Paul Street				Perth Street				
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	48	5	53	11	42	0	53	0	0	0	0	5	0	15	20	126
4:15-4:30	0	52	3	55	8	41	0	49	0	0	0	0	12	0	11	23	127
4:30-4:45	0	52	3	55	14	42	0	56	0	0	0	0	7	0	13	20	131
4:45-5:00	0	51	7	58	8	48	0	56	0	0	0	0	8	0	21	29	143
5:00-5:15	0	69	1	70	13	45	0	58	0	0	0	0	4	0	15	19	147
5:15-5:30	0	47	11	58	8	35	0	43	0	0	0	0	4	0	16	20	121
5:30-5:45	0	40	2	42	16	43	0	59	0	0	0	0	4	0	13	17	118
5:45-6:00	0	36	2	38	9	34	0	43	0	0	0	0	7	0	18	25	106
Total	0	395	34	429	87	330	0	417	0	0	0	0	51	0	122	173	1019

Bicycles																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30-4:45	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
4:45-5:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
5:15-5:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	3	0	2	0	2	0	0	0	0	0	0	2	2	7

Light Trucks																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	3
4:15-4:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30-4:45	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00-5:15	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
5:15-5:30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:30-5:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45-6:00	0	1	1	2	0	0	0	0	0	0	0	0	0	0	1	1	3
Total	0	5	1	6	2	4	0	6	0	0	0	0	0	0	1	1	13

Trucks/Buses																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15-4:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30-4:45	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45-5:00	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	1	4	0	1	0	1	0	0	0	0	0	0	0	0	5

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
4:00-4:15	5	2	1	3	11
4:15-4:30	11	9	5	2	27
4:30-4:45	11	12	0	2	25
4:45-5:00	8	9	4	11	32
5:00-5:15	1	4	2	1	8
5:15-5:30	5	5	2	1	13
5:30-5:45	6	0	1	4	11
5:45-6:00	2	6	2	1	11
Total	49	47	17	25	138

King Street West and Broad Street (Point 6) Traffic Counts

AM																	
Cars																	
Streets	Broad Street				Court House Avenue				King Street West				King Street West				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	1	3	4	8	11	15	4	30	4	49	0	53	2	31	5	38	129
7:45 - 8:00	3	8	0	11	16	13	3	32	6	45	3	54	0	26	6	32	129
8:00 - 8:15	1	5	3	9	13	17	6	36	2	40	1	43	3	31	7	41	129
8:15 - 8:30	2	10	1	13	13	13	13	39	9	40	4	53	1	30	6	37	142
8:30 - 8:45	1	6	4	11	12	10	10	32	4	33	0	37	1	40	9	50	130
8:45 - 9:00	3	6	3	12	16	17	8	41	4	38	3	45	2	40	8	50	148
9:00 - 9:15	2	8	2	12	12	12	10	34	8	49	2	59	2	39	12	53	158
9:15 - 9:30	3	7	1	11	10	9	10	29	6	47	2	55	0	47	7	54	149
Total	16	53	18	87	103	106	64	273	43	341	15	399	11	284	60	355	1114

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
9:15 - 9:30	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	3
Total	0	0	0	0	1	0	0	1	0	4	0	4	0	2	0	2	7

Trucks/Buses																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	2	3
7:45 - 8:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 - 8:15	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	2	3
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
8:30 - 8:45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:45 - 9:00	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
9:00 - 9:15	0	0	1	1	0	0	0	0	0	3	0	3	0	1	0	1	5
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3
Total	1	0	1	2	1	0	0	1	0	6	1	7	1	8	2	11	21

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
7:30 - 7:45	1	4	1	3	9
7:45 - 8:00	7	10	2	2	21
8:00 - 8:15	3	14	1	0	18
8:15 - 8:30	9	10	6	1	26
8:30 - 8:45	3	9	1	1	14
8:45 - 9:00	5	8	4	6	23
9:00 - 9:15	5	9	1	2	17
9:15 - 9:30	7	4	4	3	18
Total	40	68	20	18	146

PM																	
Cars																	
Streets	Court House Avenue				Broad Street				King Street West				King Street West				
Direction	Southbound				Northbound				Westbound				Eastbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	18	14	20	53	6	11	2	19	0	64	6	70	2	64	1	67	209
4:15-4:30	16	13	24	53	4	14	4	22	5	58	8	71	5	51	3	59	205
4:30-4:45	14	10	10	34	4	12	2	18	1	77	9	87	11	60	2	73	212
4:45-5:00	18	15	16	49	3	8	3	14	1	62	10	73	10	54	0	64	200
5:00-5:15	15	7	8	30	6	18	2	26	3	54	13	70	8	60	1	69	195
5:15-5:30	12	18	11	41	5	11	3	19	0	52	8	60	2	41	1	44	164
5:30-5:45	15	9	1	25	8	2	1	11	2	53	7	62	8	46	2	56	154
5:45-6:00	12	16	7	35	5	10	2	17	3	54	7	64	7	44	5	56	172
Total	120	102	97	320	41	86	19	146	15	474	68	557	53	420	15	488	1511

Bicycles																	
Direction	Southbound				Northbound				Westbound				Eastbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
4:15-4:30	0	1	1	2	0	0	0	0	0	3	0	3	0	1	0	1	6
4:30-4:45	2	0	1	3	0	0	0	0	0	0	0	0	0	1	1	2	5
4:45-5:00	0	0	0	0	0	0	0	0	0	2	1	3	0	4	0	4	7
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
5:15-5:30	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	2	1	3	6	0	0	0	0	0	8	1	9	1	14	1	16	31

Light Trucks																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	1	0	1	0	2	0	2	1	2	0	3	6
4:15-4:30	1	0	0	1	0	0	0	0	0	1	1	2	0	3	0	3	6
4:30-4:45	1	0	0	1	1	0	0	1	0	2	0	2	0	0	0	0	4
4:45-5:00	0	0	0	0	1	1	0	2	0	1	2	3	1	0	0	1	6
5:00-5:15	1	0	0	1	0	0	0	0	0	1	1	2	1	1	0	2	5
5:15-5:30	0	1	0	1	0	0	0	0	0	1	0	1	0	1	0	1	3
5:30-5:45	0	0	0	0	1	0	0	1	0	2	0	2	0	1	0	1	4
5:45-6:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total	3	1	0	4	3	2	0	5	0	10	5	15	3	8	0	11	35

Trucks/Buses																	
Direction	Westbound				Eastbound				Northbound				Southbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15-4:30	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:00	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	5

Pedestrians					
Direction	Westbound	Eastbound	Southbound	Northbound	
Start Time	Total	Total	Total	Total	Total All
4:00-4:15	1	3	15	8	27
4:15-4:30	3	3	9	13	28
4:30-4:45	0	1	10	10	21
4:45-5:00	4	0	13	3	20
5:00-5:15	1	2	9	10	22
5:15-5:30	2	3	9	7	21
5:30-5:45	4	0	3	1	8
5:45-6:00	1	1	7	2	11
Total	16	13	78	54	161

Appendix B

Synchro Intersection Worksheets – 2024 Existing Conditions



HCM 2010 TWSC
1: Water Street W & Home Street

ExistingAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	12	39	5	3	38	8	3	7	3	2	15	12
Future Vol, veh/h	12	39	5	3	38	8	3	7	3	2	15	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	3	13	1	1	1	1	1	1
Mvmt Flow	15	48	6	4	46	10	4	9	4	2	18	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	56	0	0	54	0	0	157	145	51	147	143	51
Stage 1	-	-	-	-	-	-	81	81	-	59	59	-
Stage 2	-	-	-	-	-	-	76	64	-	88	84	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1555	-	-	1558	-	-	811	748	1020	824	750	1020
Stage 1	-	-	-	-	-	-	930	830	-	955	848	-
Stage 2	-	-	-	-	-	-	936	844	-	922	827	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1555	-	-	1558	-	-	777	738	1020	806	740	1020
Mov Cap-2 Maneuver	-	-	-	-	-	-	777	738	-	806	740	-
Stage 1	-	-	-	-	-	-	921	822	-	945	845	-
Stage 2	-	-	-	-	-	-	900	841	-	900	819	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.6		0.4		9.6		9.5	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	798	1555	-	-	1558	-	-	840
HCM Lane V/C Ratio	0.02	0.009	-	-	0.002	-	-	0.042
HCM Control Delay (s)	9.6	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

HCM 2010 TWSC
2: Apple Street & Water Street W

ExistingAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	52	4	2	63	2	0	5	1	0	4	3
Future Vol, veh/h	1	52	4	2	63	2	0	5	1	0	4	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	62	5	2	75	2	0	6	1	0	5	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	67	0	0	152	148	65	150	149	76
Stage 1	-	-	-	-	-	-	67	67	-	80	80	-
Stage 2	-	-	-	-	-	-	85	81	-	70	69	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1528	-	-	1541	-	-	818	745	1002	820	744	988
Stage 1	-	-	-	-	-	-	946	841	-	931	830	-
Stage 2	-	-	-	-	-	-	925	830	-	942	839	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	1541	-	-	810	744	1002	813	743	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	744	-	813	743	-
Stage 1	-	-	-	-	-	-	945	840	-	930	829	-
Stage 2	-	-	-	-	-	-	915	829	-	933	838	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.7			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	777	1528	-	-	1541	-	-	831				
HCM Lane V/C Ratio	0.009	0.001	-	-	0.002	-	-	0.01				
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

ExistingAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕				
Traffic Vol, veh/h	9	229	7	25	156	10	2	2	17	0	0	0
Future Vol, veh/h	9	229	7	25	156	10	2	2	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	3	1	1	3	10	1	1	1	1	1	1
Mvmt Flow	10	246	8	27	168	11	2	2	18	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	179	0	0	254	0	0	494	499	246			
Stage 1	-	-	-	-	-	-	266	266	-			
Stage 2	-	-	-	-	-	-	228	233	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1403	-	-	1317	-	-	536	475	795			
Stage 1	-	-	-	-	-	-	781	691	-			
Stage 2	-	-	-	-	-	-	812	714	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1403	-	-	1317	-	-	519	0	795			
Mov Cap-2 Maneuver	-	-	-	-	-	-	519	0	-			
Stage 1	-	-	-	-	-	-	775	0	-			
Stage 2	-	-	-	-	-	-	793	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.3			1			9.9					
HCM LOS	A			A			A					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	753	1403	-	-	1317	-	-					
HCM Lane V/C Ratio	0.03	0.007	-	-	0.02	-	-					
HCM Control Delay (s)	9.9	7.6	-	-	7.8	0	-					
HCM Lane LOS	A	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

ExistingAM Peak Hour
5 Home Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↓	↓
Traffic Volume (vph)	47	198	174	28	28	71
Future Volume (vph)	47	198	174	28	28	71
Lane Group Flow (vph)	59	248	218	35	35	89
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	47.0	34.0	34.0	28.0	28.0
Total Split (%)	17.3%	62.7%	45.3%	45.3%	37.3%	37.3%
Maximum Green (s)	7.5	41.5	28.5	28.5	22.9	22.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	41.5	41.5	28.5	28.5	22.9	22.9
Actuated g/C Ratio	0.55	0.55	0.38	0.38	0.31	0.31
v/c Ratio	0.10	0.25	0.33	0.06	0.07	0.17
Control Delay	8.3	9.6	10.9	2.1	19.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	9.6	10.9	2.1	19.1	5.8
LOS	A	A	B	A	B	A
Approach Delay		9.3	9.7		9.5	
Approach LOS		A	A		A	
Queue Length 50th (m)	3.6	16.7	10.1	0.0	3.5	0.0
Queue Length 95th (m)	7.4	24.7	14.6	0.6	8.4	7.1
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	570	974	669	590	511	519
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.25	0.33	0.06	0.07	0.17

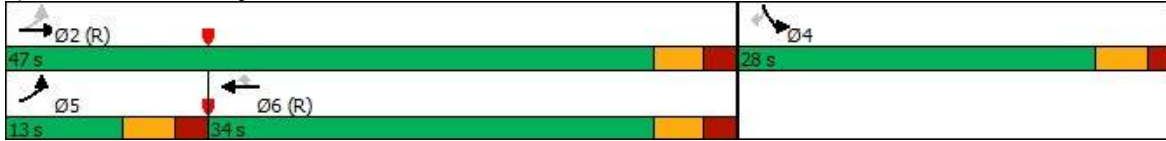
Intersection Summary

Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.33	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 35.6%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
4: King Street W & Buell Street
















Existing AM Peak Hour
5 Home Street

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

ExistingAM Peak Hour
5 Home Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	88	186	18	116	21	7	33	22	67
Future Volume (vph)	88	186	18	116	21	7	33	22	67
Lane Group Flow (vph)	106	236	0	162	25	0	68	0	230
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	11.0	34.6	23.6	23.6	23.6	25.4	25.4	25.4	25.4
Total Split (%)	18.3%	57.7%	39.3%	39.3%	39.3%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.5	29.1	18.1	18.1	18.1	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.1	18.1		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.30	0.30		0.33		0.33
v/c Ratio	0.21	0.28		0.33	0.05		0.12		0.39
Control Delay	9.7	10.1		18.5	0.1		11.4		10.8
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	9.7	10.1		18.5	0.1		11.4		10.8
LOS	A	B		B	A		B		B
Approach Delay		10.0		16.0			11.4		10.8
Approach LOS		A		B			B		B
Queue Length 50th (m)	5.9	14.0		13.6	0.0		3.6		10.0
Queue Length 95th (m)	11.8	23.3		24.4	0.0		9.7		21.4
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	501	850		498	552		555		593
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.21	0.28		0.33	0.05		0.12		0.39
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.39									
Intersection Signal Delay: 11.7					Intersection LOS: B				
Intersection Capacity Utilization 46.7%					ICU Level of Service A				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

Existing AM Peak Hour
 5 Home Street

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings
6:

Existing AM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	22	172	5	171	37	9	27	50	48	38
Future Volume (vph)	22	172	5	171	37	9	27	50	48	38
Lane Group Flow (vph)	24	195	0	191	40	0	51	0	106	41
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.04	0.21		0.28	0.06		0.12		0.27	0.08
Control Delay	5.7	6.0		17.1	0.2		17.7		23.9	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	5.7	6.0		17.1	0.2		17.7		23.9	0.3
LOS	A	A		B	A		B		C	A
Approach Delay		6.0		14.1			17.7		17.3	
Approach LOS		A		B			B		B	
Queue Length 50th (m)	0.9	7.2		18.0	0.0		4.1		11.8	0.0
Queue Length 95th (m)	2.7	11.8		32.2	0.0		11.8		24.0	0.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	551	934		673	673		433		389	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.04	0.21		0.28	0.06		0.12		0.27	0.08
Intersection Summary										
Cycle Length: 75										
Actuated Cycle Length: 75										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 75										
Control Type: Pretimed										
Maximum v/c Ratio: 0.28										
Intersection Signal Delay: 12.4										
Intersection LOS: B										
Intersection Capacity Utilization 44.5%										
ICU Level of Service A										
Analysis Period (min) 15										

Lanes, Volumes, Timings
6:

ExistingAM Peak Hour
5 Home Street

Splits and Phases: 6:



HCM 2010 TWSC
1: Water Street W & Home Street

ExistingPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	17	82	1	2	120	11	6	6	2	5	0	13
Future Vol, veh/h	17	82	1	2	120	11	6	6	2	5	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	19	91	1	2	133	12	7	7	2	6	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	145	0	0	92	0	0	280	279	92	277	273	139
Stage 1	-	-	-	-	-	-	130	130	-	143	143	-
Stage 2	-	-	-	-	-	-	150	149	-	134	130	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1443	-	-	1509	-	-	674	631	968	677	636	912
Stage 1	-	-	-	-	-	-	876	791	-	862	780	-
Stage 2	-	-	-	-	-	-	855	776	-	872	791	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1443	-	-	1509	-	-	656	622	968	662	626	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	656	622	-	662	626	-
Stage 1	-	-	-	-	-	-	864	780	-	850	779	-
Stage 2	-	-	-	-	-	-	841	775	-	850	780	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.1			10.5			9.5		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	671	1443	-	-	1509	-	-	825				
HCM Lane V/C Ratio	0.023	0.013	-	-	0.001	-	-	0.024				
HCM Control Delay (s)	10.5	7.5	0	-	7.4	0	-	9.5				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 2010 TWSC
2: Apple Street & Water Street W

ExistingPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	117	1	4	122	6	2	2	6	12	3	14
Future Vol, veh/h	1	117	1	4	122	6	2	2	6	12	3	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	133	1	5	139	7	2	2	7	14	3	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	146	0	0	134	0	0	298	292	134	293	289	143
Stage 1	-	-	-	-	-	-	136	136	-	153	153	-
Stage 2	-	-	-	-	-	-	162	156	-	140	136	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1442	-	-	1457	-	-	656	620	918	661	623	907
Stage 1	-	-	-	-	-	-	870	786	-	852	773	-
Stage 2	-	-	-	-	-	-	842	770	-	865	786	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1442	-	-	1457	-	-	640	617	918	652	620	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	640	617	-	652	620	-
Stage 1	-	-	-	-	-	-	869	785	-	851	770	-
Stage 2	-	-	-	-	-	-	820	767	-	855	785	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.7			10		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	775	1442	-	-	1457	-	-	750				
HCM Lane V/C Ratio	0.015	0.001	-	-	0.003	-	-	0.044				
HCM Control Delay (s)	9.7	7.5	0	-	7.5	0	-	10				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

ExistingPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕				
Traffic Vol, veh/h	18	300	26	24	327	26	7	3	25	0	0	0
Future Vol, veh/h	18	300	26	24	327	26	7	3	25	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	8	1	3	1	1	1	1	1	1	1
Mvmt Flow	19	319	28	26	348	28	7	3	27	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	376	0	0	347	0	0	771	785	319			
Stage 1	-	-	-	-	-	-	357	357	-			
Stage 2	-	-	-	-	-	-	414	428	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1188	-	-	1218	-	-	370	326	724			
Stage 1	-	-	-	-	-	-	710	630	-			
Stage 2	-	-	-	-	-	-	669	586	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1188	-	-	1218	-	-	353	0	724			
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	0	-			
Stage 1	-	-	-	-	-	-	696	0	-			
Stage 2	-	-	-	-	-	-	651	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.4			0.5			11.5					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	589	1188	-	-	1218	-	-					
HCM Lane V/C Ratio	0.063	0.016	-	-	0.021	-	-					
HCM Control Delay (s)	11.5	8.1	-	-	8	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

ExistingPM Peak Hour
5 Home Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶	↷	↶	↷
Traffic Volume (vph)	44	178	230	15	31	60
Future Volume (vph)	44	178	230	15	31	60
Lane Group Flow (vph)	47	189	245	16	33	64
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	48.0	35.0	35.0	27.0	27.0
Total Split (%)	17.3%	64.0%	46.7%	46.7%	36.0%	36.0%
Maximum Green (s)	7.5	42.5	29.5	29.5	21.9	21.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	42.5	42.5	29.5	29.5	21.9	21.9
Actuated g/C Ratio	0.57	0.57	0.39	0.39	0.29	0.29
v/c Ratio	0.08	0.19	0.35	0.03	0.07	0.13
Control Delay	7.7	8.5	10.4	3.1	19.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.5	10.4	3.1	19.8	6.5
LOS	A	A	B	A	B	A
Approach Delay		8.3	10.0		11.0	
Approach LOS		A	A		B	
Queue Length 50th (m)	2.7	11.9	10.8	0.0	3.4	0.0
Queue Length 95th (m)	6.8	21.1	17.3	m0.7	9.3	8.0
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	563	998	693	565	488	482
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.19	0.35	0.03	0.07	0.13

Intersection Summary

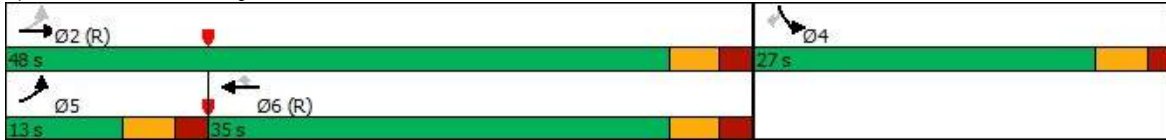
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 38.7%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
4: King Street W & Buell Street

ExistingPM Peak Hour
5 Home Street

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

ExistingPM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	7	213	78	190	9	38	44	49	42
Future Volume (vph)	7	213	78	190	9	38	44	49	42
Lane Group Flow (vph)	8	292	0	316	11	0	112	0	276
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	10.5	34.6	24.1	24.1	24.1	25.4	25.4	25.4	25.4
Total Split (%)	17.5%	57.7%	40.2%	40.2%	40.2%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.0	29.1	18.6	18.6	18.6	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.6	18.6		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.31	0.31		0.33		0.33
v/c Ratio	0.02	0.35		0.72	0.02		0.23		0.47
Control Delay	8.1	10.3		30.1	0.1		14.4		10.8
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	8.1	10.3		30.1	0.1		14.4		10.8
LOS	A	B		C	A		B		B
Approach Delay		10.3		29.1			14.4		10.8
Approach LOS		B		C			B		B
Queue Length 50th (m)	0.4	17.0		30.4	0.0		7.5		10.6
Queue Length 95th (m)	2.0	28.9		#57.4	0.0		16.3		24.9
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	394	846		439	521		483		586
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.02	0.35		0.72	0.02		0.23		0.47
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.72									
Intersection Signal Delay: 16.9					Intersection LOS: B				
Intersection Capacity Utilization 58.8%					ICU Level of Service B				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

ExistingPM Peak Hour
 5 Home Street

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings
6:

ExistingPM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	30	231	9	261	33	17	56	68	57	70
Future Volume (vph)	30	231	9	261	33	17	56	68	57	70
Lane Group Flow (vph)	30	239	0	273	33	0	88	0	127	71
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.06	0.25		0.40	0.05		0.21		0.34	0.14
Control Delay	6.6	7.2		18.7	0.1		20.1		25.1	0.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	6.6	7.2		18.7	0.1		20.1		25.1	0.9
LOS	A	A		B	A		C		C	A
Approach Delay		7.2		16.7			20.1		16.4	
Approach LOS		A		B			C		B	
Queue Length 50th (m)	1.3	11.1		27.1	0.0		8.3		14.4	0.0
Queue Length 95th (m)	3.8	17.7		45.5	0.0		18.9		28.4	1.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	494	953		682	684		420		373	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.06	0.25		0.40	0.05		0.21		0.34	0.14
Intersection Summary										
Cycle Length: 75										
Actuated Cycle Length: 75										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 75										
Control Type: Pretimed										
Maximum v/c Ratio: 0.40										
Intersection Signal Delay: 14.0										
Intersection Capacity Utilization 51.8%										
Analysis Period (min) 15										
Intersection LOS: B										
ICU Level of Service A										

Lanes, Volumes, Timings
6:

ExistingPM Peak Hour
5 Home Street

Splits and Phases: 6:



Appendix C

Synchro Intersection Worksheets – 2029 Future Background Conditions



HCM 2010 TWSC
1: Water Street W & Home Street

2029 Future Background AM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	15	40	5	3	39	10	3	7	3	2	15	21
Future Vol, veh/h	15	40	5	3	39	10	3	7	3	2	15	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	3	13	1	1	1	1	1	1
Mvmt Flow	18	49	6	4	48	12	4	9	4	2	18	26
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	60	0	0	55	0	0	172	156	52	157	153	54
Stage 1	-	-	-	-	-	-	88	88	-	62	62	-
Stage 2	-	-	-	-	-	-	84	68	-	95	91	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1550	-	-	1556	-	-	793	738	1019	811	741	1016
Stage 1	-	-	-	-	-	-	922	824	-	952	845	-
Stage 2	-	-	-	-	-	-	927	840	-	914	821	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1550	-	-	1556	-	-	749	727	1019	792	730	1016
Mov Cap-2 Maneuver	-	-	-	-	-	-	749	727	-	792	730	-
Stage 1	-	-	-	-	-	-	911	814	-	941	842	-
Stage 2	-	-	-	-	-	-	881	837	-	890	811	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.8			0.4			9.7			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	784	1550	-	-	1556	-	-	869				
HCM Lane V/C Ratio	0.02	0.012	-	-	0.002	-	-	0.053				
HCM Control Delay (s)	9.7	7.3	0	-	7.3	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2				

HCM 2010 TWSC
2: Apple Street & Water Street W

2029 Future Background AM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	53	4	2	67	2	0	5	1	3	4	3
Future Vol, veh/h	1	53	4	2	67	2	0	5	1	3	4	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	63	5	2	80	2	0	6	1	4	5	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	68	0	0	158	154	66	156	155	81
Stage 1	-	-	-	-	-	-	68	68	-	85	85	-
Stage 2	-	-	-	-	-	-	90	86	-	71	70	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1522	-	-	1540	-	-	810	740	1001	813	739	982
Stage 1	-	-	-	-	-	-	945	840	-	925	826	-
Stage 2	-	-	-	-	-	-	920	826	-	941	839	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1522	-	-	1540	-	-	802	739	1001	806	738	982
Mov Cap-2 Maneuver	-	-	-	-	-	-	802	739	-	806	738	-
Stage 1	-	-	-	-	-	-	944	839	-	924	825	-
Stage 2	-	-	-	-	-	-	910	825	-	932	838	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.7			9.5		
HCM LOS	A			A			A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	773	1522	-	-	1540	-	-	820				
HCM Lane V/C Ratio	0.009	0.001	-	-	0.002	-	-	0.015				
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				













HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

2029 Future BackgroundAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕				
Traffic Vol, veh/h	9	237	11	30	164	10	3	3	22	0	0	0
Future Vol, veh/h	9	237	11	30	164	10	3	3	22	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	3	1	1	3	10	1	1	1	1	1	1
Mvmt Flow	10	255	12	32	176	11	3	3	24	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	187	0	0	267	0	0	521	526	255			
Stage 1	-	-	-	-	-	-	275	275	-			
Stage 2	-	-	-	-	-	-	246	251	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1393	-	-	1303	-	-	517	458	786			
Stage 1	-	-	-	-	-	-	774	684	-			
Stage 2	-	-	-	-	-	-	797	701	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1393	-	-	1303	-	-	499	0	786			
Mov Cap-2 Maneuver	-	-	-	-	-	-	499	0	-			
Stage 1	-	-	-	-	-	-	768	0	-			
Stage 2	-	-	-	-	-	-	775	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.3			1.2			10.1					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	735	1393	-	-	1303	-	-					
HCM Lane V/C Ratio	0.041	0.007	-	-	0.025	-	-					
HCM Control Delay (s)	10.1	7.6	-	-	7.8	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

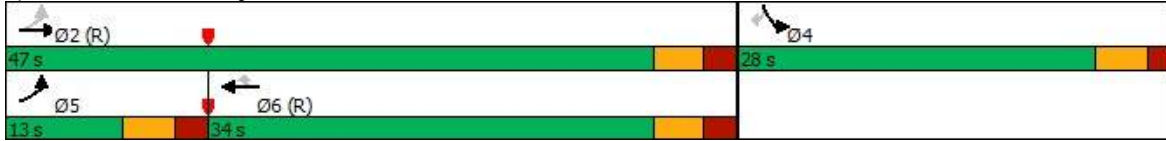
2029 Future Background AM Peak Hour
5 Home Street

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	49	209	185	29	29	74
Future Volume (vph)	49	209	185	29	29	74
Lane Group Flow (vph)	61	261	231	36	36	93
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	47.0	34.0	34.0	28.0	28.0
Total Split (%)	17.3%	62.7%	45.3%	45.3%	37.3%	37.3%
Maximum Green (s)	7.5	41.5	28.5	28.5	22.9	22.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	41.5	41.5	28.5	28.5	22.9	22.9
Actuated g/C Ratio	0.55	0.55	0.38	0.38	0.31	0.31
v/c Ratio	0.11	0.27	0.35	0.06	0.07	0.18
Control Delay	8.3	9.7	11.0	2.0	19.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	9.7	11.0	2.0	19.1	5.7
LOS	A	A	B	A	B	A
Approach Delay		9.4	9.8		9.4	
Approach LOS		A	A		A	
Queue Length 50th (m)	3.7	17.8	10.6	0.0	3.6	0.0
Queue Length 95th (m)	7.5	25.9	15.1	0.7	8.5	7.1
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	559	974	669	591	511	521
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.27	0.35	0.06	0.07	0.18
Intersection Summary						
Cycle Length: 75						
Actuated Cycle Length: 75						
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green						
Natural Cycle: 65						
Control Type: Pretimed						
Maximum v/c Ratio: 0.35						
Intersection Signal Delay: 9.6				Intersection LOS: A		
Intersection Capacity Utilization 36.2%				ICU Level of Service A		
Analysis Period (min) 15						

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2029 Future Background AM Peak Hour
 5 Home Street

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings 2029 Future Background AM Peak Hour
 5: St Paul Street/Perth Street & King Street W 5 Home Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	90	196	18	123	23	7	34	24	69
Future Volume (vph)	90	196	18	123	23	7	34	24	69
Lane Group Flow (vph)	108	248	0	170	28	0	69	0	237
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	11.0	34.6	23.6	23.6	23.6	25.4	25.4	25.4	25.4
Total Split (%)	18.3%	57.7%	39.3%	39.3%	39.3%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.5	29.1	18.1	18.1	18.1	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.1	18.1		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.30	0.30		0.33		0.33
v/c Ratio	0.22	0.29		0.34	0.05		0.12		0.40
Control Delay	9.8	10.2		18.7	0.2		11.5		11.2
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	9.8	10.2		18.7	0.2		11.5		11.2
LOS	A	B		B	A		B		B
Approach Delay		10.1		16.1			11.5		11.2
Approach LOS		B		B			B		B
Queue Length 50th (m)	6.1	14.7		14.4	0.0		3.6		10.8
Queue Length 95th (m)	11.9	24.5		25.5	0.0		9.7		22.5
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	498	851		498	552		556		591
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.22	0.29		0.34	0.05		0.12		0.40

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 11.9	Intersection LOS: B
Intersection Capacity Utilization 49.5%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2029 Future Background AM Peak Hour
 5 Home Street

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings 2029 Future Background AM Peak Hour
 6: Broad Street/Court House Avenue & King Street W 5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	24	183	5	182	40	9	28	52	49	39
Future Volume (vph)	24	183	5	182	40	9	28	52	49	39
Lane Group Flow (vph)	26	207	0	203	43	0	52	0	110	42
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.05	0.22		0.30	0.06		0.12		0.28	0.08
Control Delay	5.7	6.0		17.3	0.2		17.8		24.1	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	5.7	6.0		17.3	0.2		17.8		24.1	0.3
LOS	A	A		B	A		B		C	A
Approach Delay		6.0		14.3			17.8		17.5	
Approach LOS		A		B			B		B	
Queue Length 50th (m)	1.0	7.5		19.3	0.0		4.2		12.3	0.0
Queue Length 95th (m)	2.8	12.4		34.1	0.0		12.1		24.9	0.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	547	934		673	673		434		386	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.05	0.22		0.30	0.06		0.12		0.28	0.08
Intersection Summary										
Cycle Length: 75										
Actuated Cycle Length: 75										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 75										
Control Type: Pretimed										
Maximum v/c Ratio: 0.30										
Intersection Signal Delay: 12.5 Intersection LOS: B										
Intersection Capacity Utilization 45.2% ICU Level of Service A										
Analysis Period (min) 15										

Lanes, Volumes, Timings

2029 Future Background AM Peak Hour

6: Broad Street/Court House Avenue & King Street W

5 Home Street

Splits and Phases: 6: Broad Street/Court House Avenue & King Street W



HCM 2010 TWSC
1: Water Street W & Home Street

2029 Future Background PM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	23	84	1	2	123	16	6	7	2	5	0	17
Future Vol, veh/h	23	84	1	2	123	16	6	7	2	5	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	26	93	1	2	137	18	7	8	2	6	0	19
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	155	0	0	94	0	0	306	305	94	301	296	146
Stage 1	-	-	-	-	-	-	146	146	-	150	150	-
Stage 2	-	-	-	-	-	-	160	159	-	151	146	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1431	-	-	1506	-	-	648	610	966	653	617	904
Stage 1	-	-	-	-	-	-	859	778	-	855	775	-
Stage 2	-	-	-	-	-	-	845	768	-	854	778	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1431	-	-	1506	-	-	625	598	966	635	605	904
Mov Cap-2 Maneuver	-	-	-	-	-	-	625	598	-	635	605	-
Stage 1	-	-	-	-	-	-	843	763	-	839	774	-
Stage 2	-	-	-	-	-	-	827	767	-	827	763	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.6			0.1			10.8			9.5		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	642	1431	-	-	1506	-	-	825				
HCM Lane V/C Ratio	0.026	0.018	-	-	0.001	-	-	0.03				
HCM Control Delay (s)	10.8	7.6	0	-	7.4	0	-	9.5				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

HCM 2010 TWSC
2: Apple Street & Water Street W

2029 Future Background PM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	120	1	4	130	6	2	2	6	18	3	14
Future Vol, veh/h	1	120	1	4	130	6	2	2	6	18	3	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	136	1	5	148	7	2	2	7	20	3	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	155	0	0	137	0	0	310	304	137	305	301	152
Stage 1	-	-	-	-	-	-	139	139	-	162	162	-
Stage 2	-	-	-	-	-	-	171	165	-	143	139	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1431	-	-	1453	-	-	644	611	914	649	613	897
Stage 1	-	-	-	-	-	-	866	784	-	842	766	-
Stage 2	-	-	-	-	-	-	833	764	-	862	784	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1431	-	-	1453	-	-	627	608	914	640	610	897
Mov Cap-2 Maneuver	-	-	-	-	-	-	627	608	-	640	610	-
Stage 1	-	-	-	-	-	-	865	783	-	841	763	-
Stage 2	-	-	-	-	-	-	811	761	-	852	783	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.8			10.3		
HCM LOS	A			A			A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	767	1431	-	-	1453	-	-	719				
HCM Lane V/C Ratio	0.015	0.001	-	-	0.003	-	-	0.055				
HCM Control Delay (s)	9.8	7.5	0	-	7.5	0	-	10.3				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2				

HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

2029 Future BackgroundPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔				
Traffic Vol, veh/h	18	311	30	28	338	27	8	4	32	0	0	0
Future Vol, veh/h	18	311	30	28	338	27	8	4	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	8	1	3	1	1	1	1	1	1	1
Mvmt Flow	19	331	32	30	360	29	9	4	34	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	389	0	0	363	0	0	804	818	331			
Stage 1	-	-	-	-	-	-	369	369	-			
Stage 2	-	-	-	-	-	-	435	449	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1175	-	-	1201	-	-	354	312	713			
Stage 1	-	-	-	-	-	-	702	623	-			
Stage 2	-	-	-	-	-	-	655	574	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1175	-	-	1201	-	-	336	0	713			
Mov Cap-2 Maneuver	-	-	-	-	-	-	336	0	-			
Stage 1	-	-	-	-	-	-	688	0	-			
Stage 2	-	-	-	-	-	-	634	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.4			0.6			11.7					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	582	1175	-	-	1201	-	-					
HCM Lane V/C Ratio	0.08	0.016	-	-	0.025	-	-					
HCM Control Delay (s)	11.7	8.1	-	-	8.1	0	-					
HCM Lane LOS		B	A	-	-	A	A					
HCM 95th %tile Q(veh)		0.3	0.1	-	-	0.1	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

2029 Future Background PM Peak Hour
5 Home Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	46	190	241	15	32	63
Future Volume (vph)	46	190	241	15	32	63
Lane Group Flow (vph)	49	202	256	16	34	67
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	48.0	35.0	35.0	27.0	27.0
Total Split (%)	17.3%	64.0%	46.7%	46.7%	36.0%	36.0%
Maximum Green (s)	7.5	42.5	29.5	29.5	21.9	21.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	42.5	42.5	29.5	29.5	21.9	21.9
Actuated g/C Ratio	0.57	0.57	0.39	0.39	0.29	0.29
v/c Ratio	0.09	0.20	0.37	0.03	0.07	0.14
Control Delay	7.7	8.6	10.5	3.1	19.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.6	10.5	3.1	19.8	6.5
LOS	A	A	B	A	B	A
Approach Delay		8.4	10.0		11.0	
Approach LOS		A	B		B	
Queue Length 50th (m)	2.8	12.8	11.2	0.0	3.5	0.0
Queue Length 95th (m)	7.0	22.5	17.9	m0.6	9.5	8.1
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	554	998	693	565	488	484
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.20	0.37	0.03	0.07	0.14

Intersection Summary

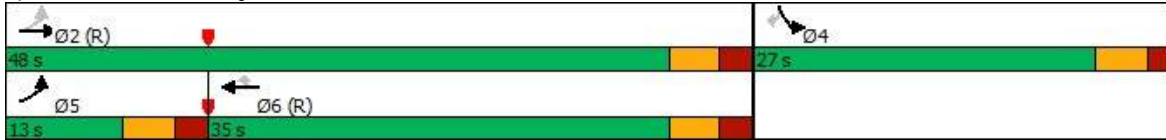
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 39.3%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2029 Future Background PM Peak Hour
 5 Home Street

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

2029 Future Background PM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	7	223	80	198	10	39	45	51	43
Future Volume (vph)	7	223	80	198	10	39	45	51	43
Lane Group Flow (vph)	8	304	0	327	12	0	114	0	285
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	10.5	34.6	24.1	24.1	24.1	25.4	25.4	25.4	25.4
Total Split (%)	17.5%	57.7%	40.2%	40.2%	40.2%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.0	29.1	18.6	18.6	18.6	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.6	18.6		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.31	0.31		0.33		0.33
v/c Ratio	0.02	0.36		0.75	0.02		0.24		0.49
Control Delay	8.1	10.5		32.0	0.1		14.4		11.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	8.1	10.5		32.0	0.1		14.4		11.3
LOS	A	B		C	A		B		B
Approach Delay		10.4		30.8			14.4		11.3
Approach LOS		B		C			B		B
Queue Length 50th (m)	0.4	18.0		31.8	0.0		7.7		11.5
Queue Length 95th (m)	2.0	30.1		#60.2	0.0		16.6		26.2
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	385	846		437	521		483		585
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.02	0.36		0.75	0.02		0.24		0.49
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.75									
Intersection Signal Delay: 17.7					Intersection LOS: B				
Intersection Capacity Utilization 60.5%					ICU Level of Service B				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2029 Future Background PM Peak Hour
 5 Home Street

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings
6:

2029 Future Background PM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	32	245	9	273	36	17	57	72	58	72
Future Volume (vph)	32	245	9	273	36	17	57	72	58	72
Lane Group Flow (vph)	32	253	0	285	36	0	89	0	132	73
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.07	0.27		0.42	0.05		0.21		0.36	0.14
Control Delay	6.6	7.3		19.0	0.1		20.2		25.4	1.1
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	6.6	7.3		19.0	0.1		20.2		25.4	1.1
LOS	A	A		B	A		C		C	A
Approach Delay		7.2		16.8			20.2		16.8	
Approach LOS		A		B			C		B	
Queue Length 50th (m)	1.5	11.6		28.5	0.0		8.4		15.0	0.0
Queue Length 95th (m)	3.9	18.4		47.6	0.0		19.0		29.5	1.4
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	483	953		682	684		419		371	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.07	0.27		0.42	0.05		0.21		0.36	0.14
Intersection Summary										
Cycle Length: 75										
Actuated Cycle Length: 75										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 75										
Control Type: Pretimed										
Maximum v/c Ratio: 0.42										
Intersection Signal Delay: 14.1										
Intersection Capacity Utilization 53.8%										
Intersection LOS: B										
ICU Level of Service A										
Analysis Period (min) 15										

Lanes, Volumes, Timings
6:

2029 Future Background PM Peak Hour
5 Home Street

Splits and Phases: 6:



Appendix D

Synchro Intersection Worksheets – 2034 Future Background Conditions



HCM 2010 TWSC
1: Water Street W & Home Street

2034 Future BackgroundAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	16	41	5	3	40	10	3	7	3	2	16	22
Future Vol, veh/h	16	41	5	3	40	10	3	7	3	2	16	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	3	13	1	1	1	1	1	1
Mvmt Flow	20	50	6	4	49	12	4	9	4	2	20	27
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	56	0	0	180	162	53	163	159	55
Stage 1	-	-	-	-	-	-	93	93	-	63	63	-
Stage 2	-	-	-	-	-	-	87	69	-	100	96	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1549	-	-	1555	-	-	784	732	1017	804	735	1015
Stage 1	-	-	-	-	-	-	916	820	-	950	844	-
Stage 2	-	-	-	-	-	-	923	839	-	909	817	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1549	-	-	1555	-	-	739	720	1017	784	723	1015
Mov Cap-2 Maneuver	-	-	-	-	-	-	739	720	-	784	723	-
Stage 1	-	-	-	-	-	-	904	809	-	938	841	-
Stage 2	-	-	-	-	-	-	875	836	-	885	806	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.9			0.4			9.7			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	777	1549	-	-	1555	-	-	863				
HCM Lane V/C Ratio	0.02	0.013	-	-	0.002	-	-	0.057				
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2				

HCM 2010 TWSC
2: Apple Street & Water Street W

2034 Future Background AM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	55	4	2	68	2	0	5	1	3	4	3
Future Vol, veh/h	1	55	4	2	68	2	0	5	1	3	4	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	65	5	2	81	2	0	6	1	4	5	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	70	0	0	161	157	68	159	158	82
Stage 1	-	-	-	-	-	-	70	70	-	86	86	-
Stage 2	-	-	-	-	-	-	91	87	-	73	72	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1520	-	-	1537	-	-	807	737	998	809	736	980
Stage 1	-	-	-	-	-	-	942	839	-	924	826	-
Stage 2	-	-	-	-	-	-	919	825	-	939	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1520	-	-	1537	-	-	799	736	998	802	735	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	799	736	-	802	735	-
Stage 1	-	-	-	-	-	-	941	838	-	923	825	-
Stage 2	-	-	-	-	-	-	909	824	-	930	836	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.7			9.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	770	1520	-	-	1537	-	-	817				
HCM Lane V/C Ratio	0.009	0.001	-	-	0.002	-	-	0.015				
HCM Control Delay (s)	9.7	7.4	0	-	7.3	0	-	9.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

2034 Future BackgroundAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕				
Traffic Vol, veh/h	9	243	11	30	168	11	3	3	23	0	0	0
Future Vol, veh/h	9	243	11	30	168	11	3	3	23	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	3	1	1	3	10	1	1	1	1	1	1
Mvmt Flow	10	261	12	32	181	12	3	3	25	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	193	0	0	273	0	0	532	538	261			
Stage 1	-	-	-	-	-	-	281	281	-			
Stage 2	-	-	-	-	-	-	251	257	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1386	-	-	1296	-	-	510	451	780			
Stage 1	-	-	-	-	-	-	769	680	-			
Stage 2	-	-	-	-	-	-	793	697	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1386	-	-	1296	-	-	491	0	780			
Mov Cap-2 Maneuver	-	-	-	-	-	-	491	0	-			
Stage 1	-	-	-	-	-	-	762	0	-			
Stage 2	-	-	-	-	-	-	771	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.3			1.1			10.2					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	730	1386	-	-	1296	-	-					
HCM Lane V/C Ratio	0.043	0.007	-	-	0.025	-	-					
HCM Control Delay (s)	10.2	7.6	-	-	7.8	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

2034 Future Background AM Peak Hour
5 Home Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	50	214	190	29	29	76
Future Volume (vph)	50	214	190	29	29	76
Lane Group Flow (vph)	63	268	238	36	36	95
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	47.0	34.0	34.0	28.0	28.0
Total Split (%)	17.3%	62.7%	45.3%	45.3%	37.3%	37.3%
Maximum Green (s)	7.5	41.5	28.5	28.5	22.9	22.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	41.5	41.5	28.5	28.5	22.9	22.9
Actuated g/C Ratio	0.55	0.55	0.38	0.38	0.31	0.31
v/c Ratio	0.11	0.28	0.36	0.06	0.07	0.18
Control Delay	8.3	9.8	11.1	2.0	19.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	9.8	11.1	2.0	19.1	5.7
LOS	A	A	B	A	B	A
Approach Delay		9.5	9.9		9.3	
Approach LOS		A	A		A	
Queue Length 50th (m)	3.8	18.4	10.9	0.0	3.6	0.0
Queue Length 95th (m)	7.7	26.7	15.5	0.7	8.5	7.2
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	553	974	669	590	511	523
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.28	0.36	0.06	0.07	0.18

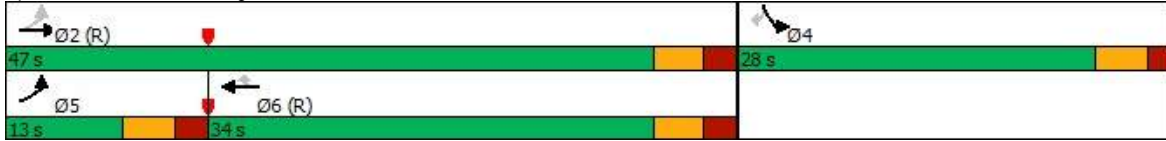
Intersection Summary

Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 36.5%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2034 Future Background AM Peak Hour
 5 Home Street

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

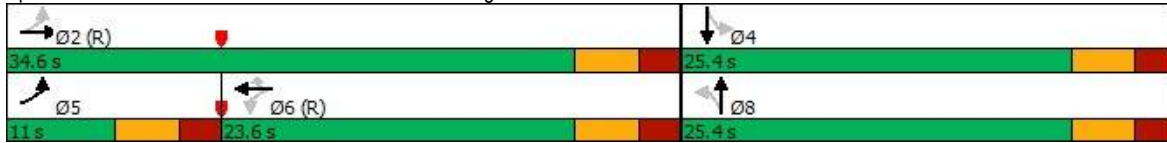
2034 Future Background AM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	93	201	19	126	23	7	35	24	70
Future Volume (vph)	93	201	19	126	23	7	35	24	70
Lane Group Flow (vph)	112	255	0	175	28	0	72	0	241
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	11.0	34.6	23.6	23.6	23.6	25.4	25.4	25.4	25.4
Total Split (%)	18.3%	57.7%	39.3%	39.3%	39.3%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.5	29.1	18.1	18.1	18.1	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.1	18.1		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.30	0.30		0.33		0.33
v/c Ratio	0.23	0.30		0.35	0.05		0.13		0.41
Control Delay	9.8	10.3		18.9	0.2		11.3		11.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	9.8	10.3		18.9	0.2		11.3		11.3
LOS	A	B		B	A		B		B
Approach Delay		10.2		16.3			11.3		11.3
Approach LOS		B		B			B		B
Queue Length 50th (m)	6.3	15.3		14.8	0.0		3.7		10.9
Queue Length 95th (m)	12.3	25.0		26.2	0.0		9.9		22.8
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	497	850		497	552		556		592
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.23	0.30		0.35	0.05		0.13		0.41
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.41									
Intersection Signal Delay: 12.0					Intersection LOS: B				
Intersection Capacity Utilization 50.2%					ICU Level of Service A				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2034 Future Background AM Peak Hour
 5 Home Street

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings 2034 Future Background AM Peak Hour
 6: Broad Street/Court House Avenue & King Street W 5 Home Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	24	188	5	187	41	9	28	54	50	40
Future Volume (vph)	24	188	5	187	41	9	28	54	50	40
Lane Group Flow (vph)	26	212	0	208	45	0	53	0	113	43
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.05	0.23		0.31	0.07		0.12		0.29	0.08
Control Delay	5.7	6.0		17.4	0.2		17.6		24.2	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	5.7	6.0		17.4	0.2		17.6		24.2	0.3
LOS	A	A		B	A		B		C	A
Approach Delay		6.0		14.3			17.6		17.7	
Approach LOS		A		B			B		B	
Queue Length 50th (m)	1.0	7.6		19.8	0.0		4.2		12.6	0.0
Queue Length 95th (m)	2.8	12.5		34.8	0.0		12.1		25.5	0.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	545	934		673	673		433		385	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.05	0.23		0.31	0.07		0.12		0.29	0.08

Intersection Summary

Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Pretimed
 Maximum v/c Ratio: 0.31
 Intersection Signal Delay: 12.5 Intersection LOS: B
 Intersection Capacity Utilization 45.4% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings

2034 Future Background AM Peak Hour

6: Broad Street/Court House Avenue & King Street W

5 Home Street

Splits and Phases: 6: Broad Street/Court House Avenue & King Street W



HCM 2010 TWSC
1: Water Street W & Home Street

2034 Future Background PM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	24	86	1	2	126	17	6	7	2	5	0	18
Future Vol, veh/h	24	86	1	2	126	17	6	7	2	5	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	27	96	1	2	140	19	7	8	2	6	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	97	0	0	315	314	97	310	305	150
Stage 1	-	-	-	-	-	-	151	151	-	154	154	-
Stage 2	-	-	-	-	-	-	164	163	-	156	151	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1427	-	-	1503	-	-	640	603	962	644	610	899
Stage 1	-	-	-	-	-	-	854	774	-	851	772	-
Stage 2	-	-	-	-	-	-	840	765	-	849	774	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1427	-	-	1503	-	-	616	590	962	626	597	899
Mov Cap-2 Maneuver	-	-	-	-	-	-	616	590	-	626	597	-
Stage 1	-	-	-	-	-	-	837	759	-	834	771	-
Stage 2	-	-	-	-	-	-	820	764	-	822	759	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.1	10.8	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	633	1427	-	-	1503	-	-	821
HCM Lane V/C Ratio	0.026	0.019	-	-	0.001	-	-	0.031
HCM Control Delay (s)	10.8	7.6	0	-	7.4	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

HCM 2010 TWSC
2: Apple Street & Water Street W

2034 Future Background PM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	123	1	4	133	6	2	2	6	19	3	15
Future Vol, veh/h	1	123	1	4	133	6	2	2	6	19	3	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	140	1	5	151	7	2	2	7	22	3	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	158	0	0	141	0	0	318	311	141	312	308	155
Stage 1	-	-	-	-	-	-	143	143	-	165	165	-
Stage 2	-	-	-	-	-	-	175	168	-	147	143	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1428	-	-	1448	-	-	637	605	910	642	608	893
Stage 1	-	-	-	-	-	-	862	780	-	839	764	-
Stage 2	-	-	-	-	-	-	829	761	-	858	780	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1428	-	-	1448	-	-	620	602	910	633	605	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	620	602	-	633	605	-
Stage 1	-	-	-	-	-	-	861	779	-	838	761	-
Stage 2	-	-	-	-	-	-	806	758	-	848	779	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.8			10.3		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	761	1428	-	-	1448	-	-	715				
HCM Lane V/C Ratio	0.015	0.001	-	-	0.003	-	-	0.059				
HCM Control Delay (s)	9.8	7.5	0	-	7.5	0	-	10.3				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2				

HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

2034 Future Background PM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔				
Traffic Vol, veh/h	19	318	30	28	347	27	8	4	32	0	0	0
Future Vol, veh/h	19	318	30	28	347	27	8	4	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	8	1	3	1	1	1	1	1	1	1
Mvmt Flow	20	338	32	30	369	29	9	4	34	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	398	0	0	370	0	0	822	836	338			
Stage 1	-	-	-	-	-	-	378	378	-			
Stage 2	-	-	-	-	-	-	444	458	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1166	-	-	1194	-	-	345	304	706			
Stage 1	-	-	-	-	-	-	695	617	-			
Stage 2	-	-	-	-	-	-	649	569	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1166	-	-	1194	-	-	327	0	706			
Mov Cap-2 Maneuver	-	-	-	-	-	-	327	0	-			
Stage 1	-	-	-	-	-	-	680	0	-			
Stage 2	-	-	-	-	-	-	628	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.4			0.6			11.8					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	573	1166	-	-	1194	-	-					
HCM Lane V/C Ratio	0.082	0.017	-	-	0.025	-	-					
HCM Control Delay (s)	11.8	8.1	-	-	8.1	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

2034 Future Background PM Peak Hour
5 Home Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶	↷	↶	↷
Traffic Volume (vph)	47	195	247	16	33	64
Future Volume (vph)	47	195	247	16	33	64
Lane Group Flow (vph)	50	207	263	17	35	68
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	48.0	35.0	35.0	27.0	27.0
Total Split (%)	17.3%	64.0%	46.7%	46.7%	36.0%	36.0%
Maximum Green (s)	7.5	42.5	29.5	29.5	21.9	21.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	42.5	42.5	29.5	29.5	21.9	21.9
Actuated g/C Ratio	0.57	0.57	0.39	0.39	0.29	0.29
v/c Ratio	0.09	0.21	0.38	0.03	0.07	0.14
Control Delay	7.7	8.7	10.6	3.3	19.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.7	10.6	3.3	19.8	6.5
LOS	A	A	B	A	B	A
Approach Delay		8.5	10.1		11.0	
Approach LOS		A	B		B	
Queue Length 50th (m)	2.9	13.1	11.6	0.0	3.6	0.0
Queue Length 95th (m)	7.1	23.1	18.5	m0.7	9.7	8.2
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	549	998	693	565	488	485
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.21	0.38	0.03	0.07	0.14

Intersection Summary

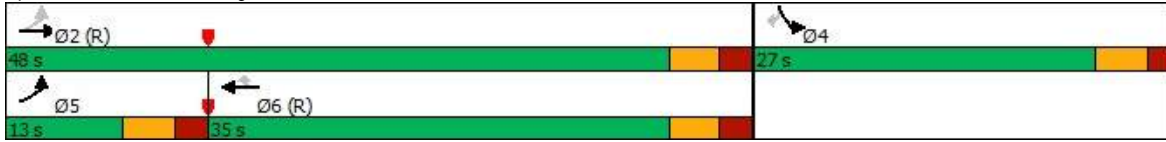
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 39.6%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2034 Future Background PM Peak Hour
 5 Home Street

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

2034 Future Background PM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	7	229	82	203	10	40	46	53	44
Future Volume (vph)	7	229	82	203	10	40	46	53	44
Lane Group Flow (vph)	8	313	0	335	12	0	117	0	292
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	10.5	34.6	24.1	24.1	24.1	25.4	25.4	25.4	25.4
Total Split (%)	17.5%	57.7%	40.2%	40.2%	40.2%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.0	29.1	18.6	18.6	18.6	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.6	18.6		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.31	0.31		0.33		0.33
v/c Ratio	0.02	0.37		0.77	0.02		0.24		0.50
Control Delay	8.1	10.7		33.5	0.1		14.5		11.7
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	8.1	10.7		33.5	0.1		14.5		11.7
LOS	A	B		C	A		B		B
Approach Delay		10.6		32.4			14.5		11.7
Approach LOS		B		C			B		B
Queue Length 50th (m)	0.4	18.7		32.9	0.0		8.0		12.1
Queue Length 95th (m)	2.0	31.1		#62.7	0.0		17.0		27.3
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	379	846		435	521		483		584
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.02	0.37		0.77	0.02		0.24		0.50
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.77									
Intersection Signal Delay: 18.3					Intersection LOS: B				
Intersection Capacity Utilization 61.8%					ICU Level of Service B				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2034 Future Background PM Peak Hour
 5 Home Street

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings 2034 Future Background PM Peak Hour
 6: Broad Street/Court House Avenue & King Street W 5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	33	251	9	279	37	18	59	73	60	74
Future Volume (vph)	33	251	9	279	37	18	59	73	60	74
Lane Group Flow (vph)	33	260	0	291	37	0	93	0	135	75
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.07	0.27		0.43	0.05		0.22		0.36	0.15
Control Delay	6.6	7.3		19.1	0.2		20.2		25.6	1.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	6.6	7.3		19.1	0.2		20.2		25.6	1.3
LOS	A	A		B	A		C		C	A
Approach Delay		7.3		17.0			20.2		16.9	
Approach LOS		A		B			C		B	
Queue Length 50th (m)	1.5	12.0		29.2	0.0		8.7		15.4	0.0
Queue Length 95th (m)	4.0	19.0		48.8	0.0		19.7		29.9	1.8
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	479	954		682	684		419		371	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.07	0.27		0.43	0.05		0.22		0.36	0.15
Intersection Summary										
Cycle Length: 75										
Actuated Cycle Length: 75										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 75										
Control Type: Pretimed										
Maximum v/c Ratio: 0.43										
Intersection Signal Delay: 14.2										
Intersection Capacity Utilization 54.9%										
Analysis Period (min) 15										
Intersection LOS: B										
ICU Level of Service A										

Lanes, Volumes, Timings

2034 Future Background PM Peak Hour

6: Broad Street/Court House Avenue & King Street W

5 Home Street

Splits and Phases: 6: Broad Street/Court House Avenue & King Street W



Appendix E

Traffic Control Warrant Sheets



King S W at Home St
2034 Future Total

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	331	46%	18%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	30	18%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	311	43%	7%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	5	7%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B









Appendix F

Synchro Intersection Worksheets – 2029 Future Total Conditions



Lanes, Volumes, Timings
 1: Water Street W & Home Street

2029 Future TotalAM Peak Hour
 5 Home Street

				
Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	41	46	7	15
Future Volume (vph)	41	46	7	15
Lane Group Flow (vph)	74	81	17	46
Sign Control	Free	Free	Stop	Stop

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 19.3%	ICU Level of Service A
Analysis Period (min) 15	

HCM 2010 TWSC
1: Water Street W & Home Street

2029 Future TotalAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	15	41	5	3	46	17	3	7	3	2	15	21
Future Vol, veh/h	15	41	5	3	46	17	3	7	3	2	15	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	3	13	1	1	1	1	1	1
Mvmt Flow	18	50	6	4	56	21	4	9	4	2	18	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	56	0	0	186	174	53	171	167	67
Stage 1	-	-	-	-	-	-	89	89	-	75	75	-
Stage 2	-	-	-	-	-	-	97	85	-	96	92	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1528	-	-	1555	-	-	777	721	1017	795	728	999
Stage 1	-	-	-	-	-	-	921	823	-	937	834	-
Stage 2	-	-	-	-	-	-	912	826	-	913	821	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	1555	-	-	734	710	1017	776	717	999
Mov Cap-2 Maneuver	-	-	-	-	-	-	734	710	-	776	717	-
Stage 1	-	-	-	-	-	-	910	813	-	926	831	-
Stage 2	-	-	-	-	-	-	866	824	-	889	811	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.3	9.8	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	769	1528	-	-	1555	-	-	854
HCM Lane V/C Ratio	0.021	0.012	-	-	0.002	-	-	0.054
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

HCM 2010 TWSC
2: Apple Street & Water Street W

2029 Future TotalAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	53	5	2	67	2	14	12	3	3	6	3
Future Vol, veh/h	1	53	5	2	67	2	14	12	3	3	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	63	6	2	80	2	17	14	4	4	7	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	69	0	0	159	154	66	162	156	81
Stage 1	-	-	-	-	-	-	68	68	-	85	85	-
Stage 2	-	-	-	-	-	-	91	86	-	77	71	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1522	-	-	1538	-	-	809	740	1001	805	738	982
Stage 1	-	-	-	-	-	-	945	840	-	925	826	-
Stage 2	-	-	-	-	-	-	919	826	-	934	838	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1522	-	-	1538	-	-	798	739	1001	789	737	982
Mov Cap-2 Maneuver	-	-	-	-	-	-	798	739	-	789	737	-
Stage 1	-	-	-	-	-	-	944	839	-	924	825	-
Stage 2	-	-	-	-	-	-	907	825	-	914	837	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.8			9.6		
HCM LOS	A			A			A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	788	1522	-	-	1538	-	-	800				
HCM Lane V/C Ratio	0.044	0.001	-	-	0.002	-	-	0.018				
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				













HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

2029 Future TotalAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕				
Traffic Vol, veh/h	9	237	11	30	164	10	5	3	27	0	0	0
Future Vol, veh/h	9	237	11	30	164	10	5	3	27	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	3	1	1	3	10	1	1	1	1	1	1
Mvmt Flow	10	255	12	32	176	11	5	3	29	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	187	0	0	267	0	0	521	526	255			
Stage 1	-	-	-	-	-	-	275	275	-			
Stage 2	-	-	-	-	-	-	246	251	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1393	-	-	1303	-	-	517	458	786			
Stage 1	-	-	-	-	-	-	774	684	-			
Stage 2	-	-	-	-	-	-	797	701	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1393	-	-	1303	-	-	499	0	786			
Mov Cap-2 Maneuver	-	-	-	-	-	-	499	0	-			
Stage 1	-	-	-	-	-	-	768	0	-			
Stage 2	-	-	-	-	-	-	775	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.3			1.2			10.3					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	721	1393	-	-	1303	-	-					
HCM Lane V/C Ratio	0.052	0.007	-	-	0.025	-	-					
HCM Control Delay (s)	10.3	7.6	-	-	7.8	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

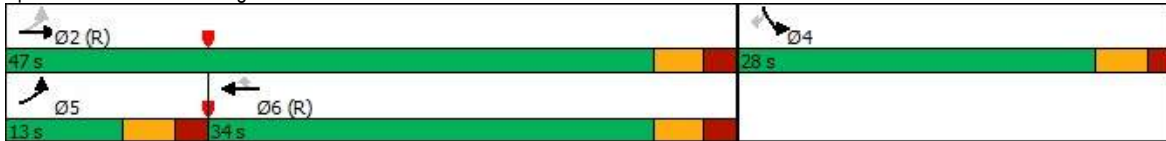
2029 Future TotalAM Peak Hour
5 Home Street

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	54	209	185	29	30	74
Future Volume (vph)	54	209	185	29	30	74
Lane Group Flow (vph)	68	261	231	36	38	93
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	47.0	34.0	34.0	28.0	28.0
Total Split (%)	17.3%	62.7%	45.3%	45.3%	37.3%	37.3%
Maximum Green (s)	7.5	41.5	28.5	28.5	22.9	22.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	41.5	41.5	28.5	28.5	22.9	22.9
Actuated g/C Ratio	0.55	0.55	0.38	0.38	0.31	0.31
v/c Ratio	0.12	0.27	0.35	0.06	0.07	0.18
Control Delay	8.4	9.7	10.8	1.9	19.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	9.7	10.8	1.9	19.1	5.7
LOS	A	A	B	A	B	A
Approach Delay		9.4	9.6		9.6	
Approach LOS		A	A		A	
Queue Length 50th (m)	4.1	17.8	10.2	0.0	3.8	0.0
Queue Length 95th (m)	8.2	25.9	14.7	0.7	8.8	7.1
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	559	974	669	591	511	521
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.35	0.06	0.07	0.18
Intersection Summary						
Cycle Length: 75						
Actuated Cycle Length: 75						
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green						
Natural Cycle: 65						
Control Type: Pretimed						
Maximum v/c Ratio: 0.35						
Intersection Signal Delay: 9.5				Intersection LOS: A		
Intersection Capacity Utilization 36.2%				ICU Level of Service A		
Analysis Period (min) 15						

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2029 Future TotalAM Peak Hour
 5 Home Street

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

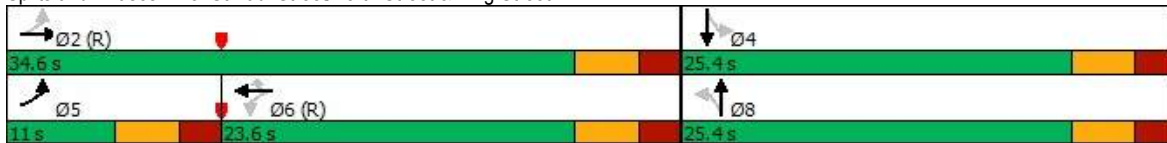
2029 Future TotalAM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT			
Lane Configurations												
Traffic Volume (vph)	90	196	18	125	23	9	39	24	70			
Future Volume (vph)	90	196	18	125	23	9	39	24	70			
Lane Group Flow (vph)	108	248	0	173	28	0	78	0	238			
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	5	2		6			8		4			
Permitted Phases	2		6		6	8		4				
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4			
Total Split (s)	11.0	34.6	23.6	23.6	23.6	25.4	25.4	25.4	25.4			
Total Split (%)	18.3%	57.7%	39.3%	39.3%	39.3%	42.3%	42.3%	42.3%	42.3%			
Maximum Green (s)	5.5	29.1	18.1	18.1	18.1	20.0	20.0	20.0	20.0			
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3			
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1			
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0			
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4			
Lead/Lag	Lead		Lag	Lag	Lag							
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0			
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0			
Act Effct Green (s)	29.1	29.1		18.1	18.1		20.0		20.0			
Actuated g/C Ratio	0.48	0.48		0.30	0.30		0.33		0.33			
v/c Ratio	0.22	0.29		0.35	0.05		0.14		0.40			
Control Delay	9.8	10.2		18.8	0.2		12.0		11.3			
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0			
Total Delay	9.8	10.2		18.8	0.2		12.0		11.3			
LOS	A	B		B	A		B		B			
Approach Delay		10.1		16.2			12.0		11.3			
Approach LOS		B		B			B		B			
Queue Length 50th (m)	6.1	14.7		14.6	0.0		4.3		10.9			
Queue Length 95th (m)	11.9	24.5		25.9	0.0		10.9		22.7			
Internal Link Dist (m)		92.5		225.2			102.9		91.6			
Turn Bay Length (m)	15.0				5.0							
Base Capacity (vph)	498	851		499	552		551		591			
Starvation Cap Reductn	0	0		0	0		0		0			
Spillback Cap Reductn	0	0		0	0		0		0			
Storage Cap Reductn	0	0		0	0		0		0			
Reduced v/c Ratio	0.22	0.29		0.35	0.05		0.14		0.40			
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 60												
Control Type: Pretimed												
Maximum v/c Ratio: 0.40												
Intersection Signal Delay: 12.0												
Intersection Capacity Utilization 49.0%												
Analysis Period (min) 15												
Intersection LOS: B												
ICU Level of Service A												

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2029 Future TotalAM Peak Hour
 5 Home Street

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings

2029 Future TotalAM Peak Hour

6: Broad Street/Court House Avenue & King Street W

5 Home Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	24	184	7	187	40	9	30	52	49	39
Future Volume (vph)	24	184	7	187	40	9	30	52	49	39
Lane Group Flow (vph)	26	208	0	211	43	0	55	0	110	42
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.05	0.22		0.32	0.06		0.13		0.29	0.08
Control Delay	5.7	6.1		17.5	0.2		18.1		24.1	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	5.7	6.1		17.5	0.2		18.1		24.1	0.3
LOS	A	A		B	A		B		C	A
Approach Delay		6.1		14.6			18.1		17.5	
Approach LOS		A		B			B		B	
Queue Length 50th (m)	1.0	7.7		20.2	0.0		4.5		12.3	0.0
Queue Length 95th (m)	2.9	12.7		35.3	0.0		12.6		24.9	0.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	543	934		669	673		437		385	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.05	0.22		0.32	0.06		0.13		0.29	0.08

Intersection Summary

Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Pretimed	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 12.6	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 6: Broad Street/Court House Avenue & King Street W

2029 Future TotalAM Peak Hour
 5 Home Street

Splits and Phases: 6: Broad Street/Court House Avenue & King Street W



HCM 2010 TWSC
7: Apple Street & Site Access

2029 Future TotalAM Peak Hour
5 Home Street

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	24	0	0	6	10	3
Future Vol, veh/h	24	0	0	6	10	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	27	0	0	7	11	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	20	13	14	0	-	0
Stage 1	13	-	-	-	-	-
Stage 2	7	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	1000	1070	1611	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1000	1070	1611	-	-	-
Mov Cap-2 Maneuver	1000	-	-	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1611	-	1000	-	-	
HCM Lane V/C Ratio	-	-	0.027	-	-	
HCM Control Delay (s)	0	-	8.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 2010 TWSC
1: Water Street W & Home Street

2029 Future TotalPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	23	89	1	2	124	17	6	7	2	7	0	17
Future Vol, veh/h	23	89	1	2	124	17	6	7	2	7	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	26	99	1	2	138	19	7	8	2	8	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	157	0	0	100	0	0	313	313	100	309	304	148
Stage 1	-	-	-	-	-	-	152	152	-	152	152	-
Stage 2	-	-	-	-	-	-	161	161	-	157	152	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1429	-	-	1499	-	-	642	604	958	645	611	901
Stage 1	-	-	-	-	-	-	853	774	-	853	774	-
Stage 2	-	-	-	-	-	-	843	767	-	848	774	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1429	-	-	1499	-	-	619	592	958	628	599	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	619	592	-	628	599	-
Stage 1	-	-	-	-	-	-	837	759	-	837	773	-
Stage 2	-	-	-	-	-	-	825	766	-	821	759	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.1	10.8	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	635	1429	-	-	1499	-	-	800
HCM Lane V/C Ratio	0.026	0.018	-	-	0.001	-	-	0.033
HCM Control Delay (s)	10.8	7.6	0	-	7.4	0	-	9.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

HCM 2010 TWSC
2: Apple Street & Water Street W

2029 Future TotalPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	120	7	6	130	6	3	3	6	18	11	14
Future Vol, veh/h	1	120	7	6	130	6	3	3	6	18	11	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	136	8	7	148	7	3	3	7	20	13	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	155	0	0	144	0	0	322	311	140	313	312	152
Stage 1	-	-	-	-	-	-	142	142	-	166	166	-
Stage 2	-	-	-	-	-	-	180	169	-	147	146	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1431	-	-	1445	-	-	633	605	911	642	605	897
Stage 1	-	-	-	-	-	-	863	781	-	838	763	-
Stage 2	-	-	-	-	-	-	824	761	-	858	778	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1431	-	-	1445	-	-	609	601	911	632	601	897
Mov Cap-2 Maneuver	-	-	-	-	-	-	609	601	-	632	601	-
Stage 1	-	-	-	-	-	-	862	780	-	837	759	-
Stage 2	-	-	-	-	-	-	792	757	-	847	777	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			10			10.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	727	1431	-	-	1445	-	-	689				
HCM Lane V/C Ratio	0.019	0.001	-	-	0.005	-	-	0.071				
HCM Control Delay (s)	10	7.5	0	-	7.5	0	-	10.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2				

HCM 2010 TWSC

2029 Future TotalPM Peak Hour

3: Home Street /Chase Street & King Street W

5 Home Street

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔				
Traffic Vol, veh/h	18	311	32	28	338	27	8	4	32	0	0	0
Future Vol, veh/h	18	311	32	28	338	27	8	4	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	8	1	3	1	1	1	1	1	1	1
Mvmt Flow	19	331	34	30	360	29	9	4	34	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	389	0	0	365	0	0	804	818	331			
Stage 1	-	-	-	-	-	-	369	369	-			
Stage 2	-	-	-	-	-	-	435	449	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1175	-	-	1199	-	-	354	312	713			
Stage 1	-	-	-	-	-	-	702	623	-			
Stage 2	-	-	-	-	-	-	655	574	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1175	-	-	1199	-	-	336	0	713			
Mov Cap-2 Maneuver	-	-	-	-	-	-	336	0	-			
Stage 1	-	-	-	-	-	-	688	0	-			
Stage 2	-	-	-	-	-	-	634	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.4			0.6			11.7					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	582	1175	-	-	1199	-	-					
HCM Lane V/C Ratio	0.08	0.016	-	-	0.025	-	-					
HCM Control Delay (s)	11.7	8.1	-	-	8.1	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

2029 Future TotalPM Peak Hour
5 Home Street

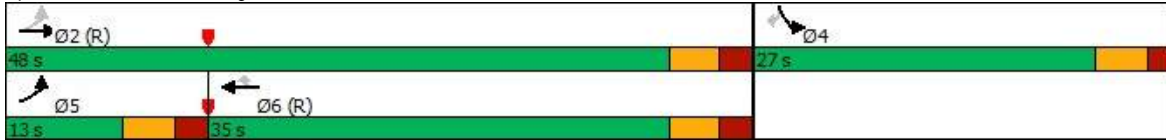
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	190	241	15	35	63
Future Volume (vph)	46	190	241	15	35	63
Lane Group Flow (vph)	49	202	256	16	37	67
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	48.0	35.0	35.0	27.0	27.0
Total Split (%)	17.3%	64.0%	46.7%	46.7%	36.0%	36.0%
Maximum Green (s)	7.5	42.5	29.5	29.5	21.9	21.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	42.5	42.5	29.5	29.5	21.9	21.9
Actuated g/C Ratio	0.57	0.57	0.39	0.39	0.29	0.29
v/c Ratio	0.09	0.20	0.37	0.03	0.08	0.14
Control Delay	7.7	8.6	10.5	3.1	19.9	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.6	10.5	3.1	19.9	6.5
LOS	A	A	B	A	B	A
Approach Delay		8.4	10.1		11.3	
Approach LOS		A	B		B	
Queue Length 50th (m)	2.8	12.8	11.3	0.0	3.8	0.0
Queue Length 95th (m)	7.0	22.5	18.1	m0.6	10.0	8.1
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	554	998	693	565	488	484
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.20	0.37	0.03	0.08	0.14
Intersection Summary						
Cycle Length: 75						
Actuated Cycle Length: 75						
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green						
Natural Cycle: 65						
Control Type: Pretimed						
Maximum v/c Ratio: 0.37						
Intersection Signal Delay: 9.6				Intersection LOS: A		
Intersection Capacity Utilization 39.3%				ICU Level of Service A		
Analysis Period (min) 15						

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2029 Future TotalPM Peak Hour
 5 Home Street

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

2029 Future TotalPM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	7	225	80	198	10	39	45	51	46
Future Volume (vph)	7	225	80	198	10	39	45	51	46
Lane Group Flow (vph)	8	310	0	327	12	0	114	0	288
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	10.5	34.6	24.1	24.1	24.1	25.4	25.4	25.4	25.4
Total Split (%)	17.5%	57.7%	40.2%	40.2%	40.2%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.0	29.1	18.6	18.6	18.6	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.6	18.6		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.31	0.31		0.33		0.33
v/c Ratio	0.02	0.37		0.75	0.02		0.24		0.49
Control Delay	8.1	10.6		32.1	0.1		14.4		11.7
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	8.1	10.6		32.1	0.1		14.4		11.7
LOS	A	B		C	A		B		B
Approach Delay		10.5		31.0			14.4		11.7
Approach LOS		B		C			B		B
Queue Length 50th (m)	0.4	18.4		31.9	0.0		7.7		12.1
Queue Length 95th (m)	2.0	30.7		#60.3	0.0		16.6		27.0
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	385	846		436	521		483		583
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.02	0.37		0.75	0.02		0.24		0.49
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.75									
Intersection Signal Delay: 17.8					Intersection LOS: B				
Intersection Capacity Utilization 60.9%					ICU Level of Service B				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2029 Future TotalPM Peak Hour
 5 Home Street

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings

2029 Future TotalPM Peak Hour

6: Broad Street/Court House Avenue & King Street W

5 Home Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	32	248	9	273	36	17	57	72	60	74
Future Volume (vph)	32	248	9	273	36	17	57	72	60	74
Lane Group Flow (vph)	32	257	0	285	36	0	89	0	134	75
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.07	0.27		0.42	0.05		0.21		0.36	0.15
Control Delay	6.7	7.4		19.0	0.1		20.2		25.5	1.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	6.7	7.4		19.0	0.1		20.2		25.5	1.3
LOS	A	A		B	A		C		C	A
Approach Delay		7.3		16.8			20.2		16.8	
Approach LOS		A		B			C		B	
Queue Length 50th (m)	1.5	12.1		28.5	0.0		8.4		15.3	0.0
Queue Length 95th (m)	4.0	19.2		47.6	0.0		19.0		29.8	1.8
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	483	953		682	684		419		372	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.07	0.27		0.42	0.05		0.21		0.36	0.15

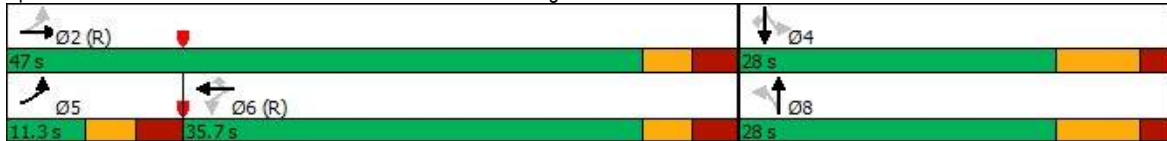
Intersection Summary

Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Pretimed	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 6: Broad Street/Court House Avenue & King Street W

2029 Future TotalPM Peak Hour
 5 Home Street

Splits and Phases: 6: Broad Street/Court House Avenue & King Street W



HCM 2010 TWSC
7: Apple Street & Site Access

2029 Future TotalPM Peak Hour
5 Home Street

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	2	0	0	10	8	16
Future Vol, veh/h	2	0	0	10	8	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	2	0	0	11	9	18
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	29	18	27	0	0	
Stage 1	18	-	-	-	-	
Stage 2	11	-	-	-	-	
Critical Hdwy	6.41	6.21	4.11	-	-	
Critical Hdwy Stg 1	5.41	-	-	-	-	
Critical Hdwy Stg 2	5.41	-	-	-	-	
Follow-up Hdwy	3.509	3.309	2.209	-	-	
Pot Cap-1 Maneuver	988	1063	1593	-	-	
Stage 1	1007	-	-	-	-	
Stage 2	1015	-	-	-	-	
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	988	1063	1593	-	-	
Mov Cap-2 Maneuver	988	-	-	-	-	
Stage 1	1007	-	-	-	-	
Stage 2	1015	-	-	-	-	
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1593	-	988	-	-	
HCM Lane V/C Ratio	-	-	0.002	-	-	
HCM Control Delay (s)	0	-	8.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Appendix G

Synchro Intersection Worksheets – 2034 Future Total Conditions



HCM 2010 TWSC
1: Water Street W & Home Street

2034 Future TotalAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	16	42	5	3	47	17	3	7	3	2	16	22
Future Vol, veh/h	16	42	5	3	47	17	3	7	3	2	16	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	3	13	1	1	1	1	1	1
Mvmt Flow	20	51	6	4	57	21	4	9	4	2	20	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	57	0	0	193	180	54	177	173	68
Stage 1	-	-	-	-	-	-	94	94	-	76	76	-
Stage 2	-	-	-	-	-	-	99	86	-	101	97	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1527	-	-	1554	-	-	769	716	1016	787	722	998
Stage 1	-	-	-	-	-	-	915	819	-	936	834	-
Stage 2	-	-	-	-	-	-	910	826	-	908	817	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1527	-	-	1554	-	-	723	704	1016	767	710	998
Mov Cap-2 Maneuver	-	-	-	-	-	-	723	704	-	767	710	-
Stage 1	-	-	-	-	-	-	902	808	-	923	831	-
Stage 2	-	-	-	-	-	-	862	824	-	883	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0.3	9.8	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	763	1527	-	-	1554	-	-	848
HCM Lane V/C Ratio	0.021	0.013	-	-	0.002	-	-	0.058
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

HCM 2010 TWSC
2: Apple Street & Water Street W

2034 Future TotalAM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	55	5	2	68	2	14	12	3	3	6	3
Future Vol, veh/h	1	55	5	2	68	2	14	12	3	3	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	65	6	2	81	2	17	14	4	4	7	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	71	0	0	162	157	68	165	159	82
Stage 1	-	-	-	-	-	-	70	70	-	86	86	-
Stage 2	-	-	-	-	-	-	92	87	-	79	73	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1520	-	-	1536	-	-	805	737	998	802	735	980
Stage 1	-	-	-	-	-	-	942	839	-	924	826	-
Stage 2	-	-	-	-	-	-	918	825	-	932	836	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1520	-	-	1536	-	-	795	736	998	786	734	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	795	736	-	786	734	-
Stage 1	-	-	-	-	-	-	941	838	-	923	825	-
Stage 2	-	-	-	-	-	-	906	824	-	912	835	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			9.8			9.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	785	1520	-	-	1536	-	-	797				
HCM Lane V/C Ratio	0.044	0.001	-	-	0.002	-	-	0.018				
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 2010 TWSC

2034 Future TotalAM Peak Hour













3: Home Street /Chase Street & King Street W

5 Home Street

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕				
Traffic Vol, veh/h	9	243	11	30	168	11	5	3	28	0	0	0
Future Vol, veh/h	9	243	11	30	168	11	5	3	28	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	3	1	1	3	10	1	1	1	1	1	1
Mvmt Flow	10	261	12	32	181	12	5	3	30	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	193	0	0	273	0	0	532	538	261			
Stage 1	-	-	-	-	-	-	281	281	-			
Stage 2	-	-	-	-	-	-	251	257	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1386	-	-	1296	-	-	510	451	780			
Stage 1	-	-	-	-	-	-	769	680	-			
Stage 2	-	-	-	-	-	-	793	697	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1386	-	-	1296	-	-	491	0	780			
Mov Cap-2 Maneuver	-	-	-	-	-	-	491	0	-			
Stage 1	-	-	-	-	-	-	762	0	-			
Stage 2	-	-	-	-	-	-	771	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.3			1.1			10.3					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	716	1386	-	-	1296	-	-					
HCM Lane V/C Ratio	0.054	0.007	-	-	0.025	-	-					
HCM Control Delay (s)	10.3	7.6	-	-	7.8	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

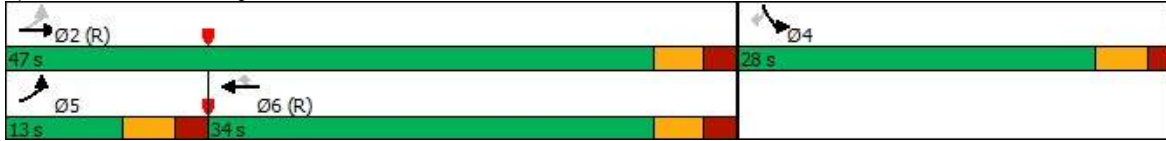
2034 Future TotalAM Peak Hour
5 Home Street

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	214	190	29	30	76
Future Volume (vph)	55	214	190	29	30	76
Lane Group Flow (vph)	69	268	238	36	38	95
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	47.0	34.0	34.0	28.0	28.0
Total Split (%)	17.3%	62.7%	45.3%	45.3%	37.3%	37.3%
Maximum Green (s)	7.5	41.5	28.5	28.5	22.9	22.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	41.5	41.5	28.5	28.5	22.9	22.9
Actuated g/C Ratio	0.55	0.55	0.38	0.38	0.31	0.31
v/c Ratio	0.12	0.28	0.36	0.06	0.07	0.18
Control Delay	8.4	9.8	10.9	2.0	19.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	9.8	10.9	2.0	19.1	5.7
LOS	A	A	B	A	B	A
Approach Delay		9.5	9.7		9.5	
Approach LOS		A	A		A	
Queue Length 50th (m)	4.2	18.4	10.4	0.0	3.8	0.0
Queue Length 95th (m)	8.3	26.7	14.8	0.7	8.8	7.2
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	553	974	669	590	511	523
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.28	0.36	0.06	0.07	0.18
Intersection Summary						
Cycle Length: 75						
Actuated Cycle Length: 75						
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green						
Natural Cycle: 65						
Control Type: Pretimed						
Maximum v/c Ratio: 0.36						
Intersection Signal Delay: 9.6				Intersection LOS: A		
Intersection Capacity Utilization 36.5%				ICU Level of Service A		
Analysis Period (min) 15						

Lanes, Volumes, Timings
4: King Street W & Buell Street

2034 Future TotalAM Peak Hour
5 Home Street

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings

2034 Future TotalAM Peak Hour

5: St Paul Street/Perth Street & King Street W

5 Home Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	93	201	19	128	23	9	40	24	71
Future Volume (vph)	93	201	19	128	23	9	40	24	71
Lane Group Flow (vph)	112	255	0	177	28	0	81	0	243
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	11.0	34.6	23.6	23.6	23.6	25.4	25.4	25.4	25.4
Total Split (%)	18.3%	57.7%	39.3%	39.3%	39.3%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.5	29.1	18.1	18.1	18.1	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.1	18.1		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.30	0.30		0.33		0.33
v/c Ratio	0.23	0.30		0.36	0.05		0.15		0.41
Control Delay	9.8	10.3		18.9	0.2		11.8		11.5
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	9.8	10.3		18.9	0.2		11.8		11.5
LOS	A	B		B	A		B		B
Approach Delay		10.2		16.4			11.8		11.5
Approach LOS		B		B			B		B
Queue Length 50th (m)	6.3	15.3		15.1	0.0		4.4		11.3
Queue Length 95th (m)	12.3	25.0		26.5	0.0		11.1		23.4
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	496	850		497	552		552		591
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.23	0.30		0.36	0.05		0.15		0.41

Intersection Summary

Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 49.6%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2034 Future TotalAM Peak Hour
 5 Home Street

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings

2034 Future TotalAM Peak Hour

6: Broad Street/Court House Avenue & King Street W

5 Home Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	24	189	7	192	41	9	30	54	50	40
Future Volume (vph)	24	189	7	192	41	9	30	54	50	40
Lane Group Flow (vph)	26	213	0	217	45	0	56	0	113	43
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.05	0.23		0.32	0.07		0.13		0.29	0.08
Control Delay	5.7	6.1		17.6	0.2		17.8		24.3	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	5.7	6.1		17.6	0.2		17.8		24.3	0.3
LOS	A	A		B	A		B		C	A
Approach Delay		6.1		14.6			17.8		17.7	
Approach LOS		A		B			B		B	
Queue Length 50th (m)	1.0	7.9		20.8	0.0		4.6		12.6	0.0
Queue Length 95th (m)	2.9	12.8		36.5	0.0		12.6		25.5	0.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	541	934		669	673		436		384	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.05	0.23		0.32	0.07		0.13		0.29	0.08

Intersection Summary

Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Pretimed	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
 6: Broad Street/Court House Avenue & King Street W

2034 Future TotalAM Peak Hour
 5 Home Street

Splits and Phases: 6: Broad Street/Court House Avenue & King Street W



HCM 2010 TWSC
7: Apple Street & Site Access

2034 Future TotalAM Peak Hour
5 Home Street

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	24	0	0	6	11	3
Future Vol, veh/h	24	0	0	6	11	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	27	0	0	7	12	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	21	14	15	0	-	0
Stage 1	14	-	-	-	-	-
Stage 2	7	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	998	1069	1609	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	998	1069	1609	-	-	-
Mov Cap-2 Maneuver	998	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1609	-	998	-	-	
HCM Lane V/C Ratio	-	-	0.027	-	-	
HCM Control Delay (s)	0	-	8.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 2010 TWSC
1: Water Street W & Home Street

2034 Future TotalPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	24	91	1	2	127	18	6	7	2	7	0	18
Future Vol, veh/h	24	91	1	2	127	18	6	7	2	7	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	27	101	1	2	141	20	7	8	2	8	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	161	0	0	102	0	0	321	321	102	316	311	151
Stage 1	-	-	-	-	-	-	156	156	-	155	155	-
Stage 2	-	-	-	-	-	-	165	165	-	161	156	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1424	-	-	1496	-	-	634	598	956	639	605	898
Stage 1	-	-	-	-	-	-	849	770	-	850	771	-
Stage 2	-	-	-	-	-	-	839	764	-	843	770	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1424	-	-	1496	-	-	610	585	956	621	592	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	610	585	-	621	592	-
Stage 1	-	-	-	-	-	-	832	755	-	833	770	-
Stage 2	-	-	-	-	-	-	819	763	-	816	755	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.1	10.9	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	628	1424	-	-	1496	-	-	798
HCM Lane V/C Ratio	0.027	0.019	-	-	0.001	-	-	0.035
HCM Control Delay (s)	10.9	7.6	0	-	7.4	0	-	9.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

HCM 2010 TWSC
2: Apple Street & Water Street W

2034 Future TotalPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	123	7	6	133	6	3	3	6	19	11	15
Future Vol, veh/h	1	123	7	6	133	6	3	3	6	19	11	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	140	8	7	151	7	3	3	7	22	13	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	158	0	0	148	0	0	330	318	144	320	319	155
Stage 1	-	-	-	-	-	-	146	146	-	169	169	-
Stage 2	-	-	-	-	-	-	184	172	-	151	150	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1428	-	-	1440	-	-	625	600	906	635	599	893
Stage 1	-	-	-	-	-	-	859	778	-	835	761	-
Stage 2	-	-	-	-	-	-	820	758	-	854	775	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1428	-	-	1440	-	-	601	596	906	625	595	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	601	596	-	625	595	-
Stage 1	-	-	-	-	-	-	858	777	-	834	757	-
Stage 2	-	-	-	-	-	-	787	754	-	843	774	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.1	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	721	1428	-	-	1440	-	-	685
HCM Lane V/C Ratio	0.019	0.001	-	-	0.005	-	-	0.075
HCM Control Delay (s)	10.1	7.5	0	-	7.5	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2













HCM 2010 TWSC
3: Home Street /Chase Street & King Street W

2034 Future TotalPM Peak Hour
5 Home Street

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔				
Traffic Vol, veh/h	19	318	32	28	347	27	8	4	32	0	0	0
Future Vol, veh/h	19	318	32	28	347	27	8	4	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	10	-	-	5	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	8	1	3	1	1	1	1	1	1	1
Mvmt Flow	20	338	34	30	369	29	9	4	34	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	398	0	0	372	0	0	822	836	338			
Stage 1	-	-	-	-	-	-	378	378	-			
Stage 2	-	-	-	-	-	-	444	458	-			
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-			
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309			
Pot Cap-1 Maneuver	1166	-	-	1192	-	-	345	304	706			
Stage 1	-	-	-	-	-	-	695	617	-			
Stage 2	-	-	-	-	-	-	649	569	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1166	-	-	1192	-	-	327	0	706			
Mov Cap-2 Maneuver	-	-	-	-	-	-	327	0	-			
Stage 1	-	-	-	-	-	-	680	0	-			
Stage 2	-	-	-	-	-	-	628	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.4			0.6			11.8					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	573	1166	-	-	1192	-	-					
HCM Lane V/C Ratio	0.082	0.017	-	-	0.025	-	-					
HCM Control Delay (s)	11.8	8.1	-	-	8.1	0	-					
HCM Lane LOS	B	A	-	-	A	A	-					
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-					

Lanes, Volumes, Timings
4: King Street W & Buell Street

2034 Future TotalPM Peak Hour
5 Home Street

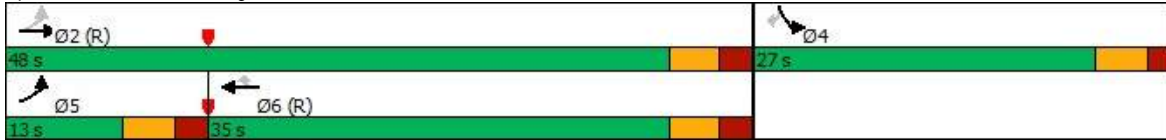
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	47	195	247	16	36	64
Future Volume (vph)	47	195	247	16	36	64
Lane Group Flow (vph)	50	207	263	17	38	68
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Minimum Split (s)	10.5	24.5	24.5	24.5	25.1	25.1
Total Split (s)	13.0	48.0	35.0	35.0	27.0	27.0
Total Split (%)	17.3%	64.0%	46.7%	46.7%	36.0%	36.0%
Maximum Green (s)	7.5	42.5	29.5	29.5	21.9	21.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		12.0	12.0	12.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	42.5	42.5	29.5	29.5	21.9	21.9
Actuated g/C Ratio	0.57	0.57	0.39	0.39	0.29	0.29
v/c Ratio	0.09	0.21	0.38	0.03	0.08	0.14
Control Delay	7.7	8.7	10.6	3.4	19.9	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.7	10.6	3.4	19.9	6.5
LOS	A	A	B	A	B	A
Approach Delay		8.5	10.2		11.3	
Approach LOS		A	B		B	
Queue Length 50th (m)	2.9	13.1	11.7	0.0	3.9	0.0
Queue Length 95th (m)	7.1	23.1	18.8	m0.7	10.2	8.2
Internal Link Dist (m)		34.4	141.8		75.0	
Turn Bay Length (m)				15.0		
Base Capacity (vph)	549	998	693	565	488	485
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.21	0.38	0.03	0.08	0.14
Intersection Summary						
Cycle Length: 75						
Actuated Cycle Length: 75						
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green						
Natural Cycle: 65						
Control Type: Pretimed						
Maximum v/c Ratio: 0.38						
Intersection Signal Delay: 9.7				Intersection LOS: A		
Intersection Capacity Utilization 39.6%				ICU Level of Service A		
Analysis Period (min) 15						

Lanes, Volumes, Timings
 4: King Street W & Buell Street

2034 Future TotalPM Peak Hour
 5 Home Street
















m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: King Street W & Buell Street



Lanes, Volumes, Timings
5: St Paul Street/Perth Street & King Street W

2034 Future TotalPM Peak Hour
5 Home Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	7	231	82	203	10	40	46	53	47
Future Volume (vph)	7	231	82	203	10	40	46	53	47
Lane Group Flow (vph)	8	318	0	335	12	0	117	0	295
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Minimum Split (s)	10.5	23.5	23.5	23.5	23.5	25.4	25.4	25.4	25.4
Total Split (s)	10.5	34.6	24.1	24.1	24.1	25.4	25.4	25.4	25.4
Total Split (%)	17.5%	57.7%	40.2%	40.2%	40.2%	42.3%	42.3%	42.3%	42.3%
Maximum Green (s)	5.0	29.1	18.6	18.6	18.6	20.0	20.0	20.0	20.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.4		5.4
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0
Act Effct Green (s)	29.1	29.1		18.6	18.6		20.0		20.0
Actuated g/C Ratio	0.48	0.48		0.31	0.31		0.33		0.33
v/c Ratio	0.02	0.38		0.77	0.02		0.24		0.51
Control Delay	8.1	10.7		33.7	0.1		14.5		12.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	8.1	10.7		33.7	0.1		14.5		12.0
LOS	A	B		C	A		B		B
Approach Delay		10.6		32.5			14.5		12.0
Approach LOS		B		C			B		B
Queue Length 50th (m)	0.4	19.0		32.9	0.0		8.0		12.7
Queue Length 95th (m)	2.0	31.5		#62.9	0.0		17.0		28.2
Internal Link Dist (m)		92.5		225.2			102.9		91.6
Turn Bay Length (m)	15.0				5.0				
Base Capacity (vph)	379	846		434	521		483		582
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.02	0.38		0.77	0.02		0.24		0.51
Intersection Summary									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 60									
Control Type: Pretimed									
Maximum v/c Ratio: 0.77									
Intersection Signal Delay: 18.4					Intersection LOS: B				
Intersection Capacity Utilization 62.2%					ICU Level of Service B				
Analysis Period (min) 15									

Lanes, Volumes, Timings
 5: St Paul Street/Perth Street & King Street W

2034 Future TotalPM Peak Hour
 5 Home Street

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: St Paul Street/Perth Street & King Street W



Lanes, Volumes, Timings
6: Broad Street/Court House Ave & King Street W

2034 Future TotalPM Peak Hour
5 Home Street

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	33	254	9	279	37	18	59	73	62	76
Future Volume (vph)	33	254	9	279	37	18	59	73	62	76
Lane Group Flow (vph)	33	263	0	291	37	0	93	0	137	77
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6			8		4	
Permitted Phases	2		6		6	8		4		4
Minimum Split (s)	11.3	24.3	33.3	33.3	33.3	27.7	27.7	27.7	27.7	27.7
Total Split (s)	11.3	47.0	35.7	35.7	35.7	28.0	28.0	28.0	28.0	28.0
Total Split (%)	15.1%	62.7%	47.6%	47.6%	47.6%	37.3%	37.3%	37.3%	37.3%	37.3%
Maximum Green (s)	5.0	40.7	29.4	29.4	29.4	20.3	20.3	20.3	20.3	20.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	5.4	5.4	5.4	5.4	5.4
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		7.7		7.7	7.7
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes	Yes					
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		10.0	20.0	20.0	20.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0	0	0
Act Effct Green (s)	40.7	40.7		29.4	29.4		20.3		20.3	20.3
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.27		0.27	0.27
v/c Ratio	0.07	0.28		0.43	0.05		0.22		0.37	0.15
Control Delay	6.7	7.5		19.1	0.2		20.2		25.7	1.4
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0
Total Delay	6.7	7.5		19.1	0.2		20.2		25.7	1.4
LOS	A	A		B	A		C		C	A
Approach Delay		7.4		17.0			20.2		16.9	
Approach LOS		A		B			C		B	
Queue Length 50th (m)	1.5	12.4		29.2	0.0		8.7		15.7	0.0
Queue Length 95th (m)	4.1	19.5		48.8	0.0		19.7		30.3	2.0
Internal Link Dist (m)		141.8		92.0			86.6		69.0	
Turn Bay Length (m)					15.0					10.0
Base Capacity (vph)	479	954		682	684		419		372	507
Starvation Cap Reductn	0	0		0	0		0		0	0
Spillback Cap Reductn	0	0		0	0		0		0	0
Storage Cap Reductn	0	0		0	0		0		0	0
Reduced v/c Ratio	0.07	0.28		0.43	0.05		0.22		0.37	0.15
Intersection Summary										
Cycle Length: 75										
Actuated Cycle Length: 75										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 75										
Control Type: Pretimed										
Maximum v/c Ratio: 0.43										
Intersection Signal Delay: 14.2										
Intersection LOS: B										
Intersection Capacity Utilization 55.0%										
ICU Level of Service A										
Analysis Period (min) 15										

Lanes, Volumes, Timings
 6: Broad Street/Court House Ave & King Street W

2034 Future TotalPM Peak Hour
 5 Home Street

Splits and Phases: 6: Broad Street/Court House Ave & King Street W



HCM 2010 TWSC
7: Apple Street & Site Access

2034 Future TotalPM Peak Hour
5 Home Street

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	2	0	0	11	8	16
Future Vol, veh/h	2	0	0	11	8	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	2	0	0	12	9	18
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	30	18	27	0	0	
Stage 1	18	-	-	-	-	
Stage 2	12	-	-	-	-	
Critical Hdwy	6.41	6.21	4.11	-	-	
Critical Hdwy Stg 1	5.41	-	-	-	-	
Critical Hdwy Stg 2	5.41	-	-	-	-	
Follow-up Hdwy	3.509	3.309	2.209	-	-	
Pot Cap-1 Maneuver	987	1063	1593	-	-	
Stage 1	1007	-	-	-	-	
Stage 2	1014	-	-	-	-	
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	987	1063	1593	-	-	
Mov Cap-2 Maneuver	987	-	-	-	-	
Stage 1	1007	-	-	-	-	
Stage 2	1014	-	-	-	-	
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1593	-	987	-	-	
HCM Lane V/C Ratio	-	-	0.002	-	-	
HCM Control Delay (s)	0	-	8.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

ATTACHMENT 9

June 26, 2026.

To: Members of City of Brockville Planning Commi

From:

Re: Proposed Amendments to the Official Plan and Zoning By-law 050-2014
Re: 5 Home St. (Fil Nos. D09-41 & D14-103)

We are submitting our regards in regard to the above project and trust that you will give serious attention to them. We have owned our condo at Harbourview for over 30 yrs and have lived here permanently since 2010 when we moved here to retire.

Our concerns are as follows:

1) Disregard to Bylaws, Zoning + Guidelines:

When we saw the notice in the Recorder + Times re this project, and later received the letter in that regard we were shocked at the list of required changes to Official Plan and Bylaws to complete the project as envisaged by the land-owner. If these many changes are required, this project should be built elsewhere. It was not planned for this location obviously. To build on this site will require special care and consideration and thus a return to the drawing board is in order.

Our city planners and elected officials have worked hard to put in place the requirements needed for our small city and its unique location and history. We trust you will vigorously defend what you have had enacted on our behalf.

From time to time small reasonable accommodations can be made to fit the circumstances presented by a project (eg. parking spaces + playgrounds).

2) River Protection:

We have happy memories of coming to Brockville to visit family. One visit (c 1975) involved a boating expedition upriver for a picnic on one of the islands in which we headed out in a friend's outboard, past the ancient boat-sheds at the bottom on Apple St and into the channel -- the very waterway where the proposed plan places part of the condo edifice! We have a photo which shows inlet very clearly (c early 1980s). The old historical maps also show the inlet clearly. Although filled in during the creation of Erie Fox Quay the river bed is still there and due regard needs to continue to be taken of this fragile environment. After all, this is the St Lawrence River, one of the world's great rivers and an international river at that. In Canadian terms it is also a river of great historical and economic significance. It is a huge responsibility and one that should never be taken lightly.

3) Park Land:

The little area of parkland along Apple + Water streets covering the filled-in St. Lawrence inlet, the sites of the former boat-sheds + private homes has been a good solution. We are not fully aware of its legal status: City of Brockville maps (see attachment) show it colored green and legended as "parks", the same as Centre and Hardy Parks etc. Surely we are not building on parks! The trees (maples, cedars + black locust), bushes, wild flowers and grasslands make it a little oasis for a wide selection of wild life: currently - squirrels, chipmunks, a weasel, rabbits, a mother raccoon and five kits plus many types of birds and on occasion, some rare-sightings.

4) Population Density / Traffic / Parking:

An additional 83 units (100-150 people) to this small historic area, in addition to a similar-sized proposed project further north on Home and Apple Sts. to be built at the same-time will invite chaos for the years during which it is being constructed and will significantly change the nature of the area requiring major costs to the city in regard to policing, fire protection and infrastructure. While increased population downtown and a growing city are thought to be good, the costs to support this growth are often upfront. We must make sure we don't take on more than we can handle at once.

Traffic is currently a problem especially at times of special events centered in our parks or river bank. At such times, we currently have a crisis in parking. We simply cannot have guests during such times as our Visitors parking lot is over-taken by festival goers and street parking becomes non-existent. In recent time the doctors' parking lot at 3 Home St and the spaces along Ernie Fox Quay were used during week-ends by festival attendees and this made a real difference. This will disappear as will street parking on Apple St. Hardy Park will cease to be a festival venue. Once this happens the area will become strictly residential and the impact on local businesses, including some on King St., will be significant.

5) Personal Impact:

The noise and exhaust pollution in regard to our personal suite will be considerable and may require, due to health issues, that we vacate the premises for periods of time during the summer. It will certainly require closed windows, increased use of air conditioners and cleaners during construction and site and parking lot development. No more sitting on our balcony watching sailboats on the river! and less to see as our view will be partially blocked by the building. If trees are demolished we will have more sun in summer (more cooling costs and less sun in winter (more heating costs) and this will be true for the whole west side of the building + there's more costs.

In conclusion, we thank you for this opportunity to share with you our heart-felt concerns for the city and home we love.

Sincerely, [REDACTED]