Condo Developments

The Official Plan Review should identify incentives to encourage the appropriate type of development.

Main Street

Main Street has not developed the way it was supposed to. Need to clarify the relationship between the Main Street and the big box retail. Residential hinterland is not big enough to support small scale retail.

The Official Plan Review will examine the dimensions of Main Street to determine where the physical conditions are deterring its development as a Main Street.

A long term vision should be taken into consideration. Main Street will require attractions to stimulate pedestrian attraction.

Dundas Street

The Official Plan will need to relate to the current plans for North Oakville for the north side of Dundas Street. The role of Dundas Street as a spine or edge street must be coordinated with North Oakville connectors.

Streetscape

There may be challenges of planting street trees in compressed road cross sections.

Oakville Hydro

Will examine the opportunity for District Energy.

Design guidelines

The final intent of this review is to enshrine the Design guidelines into the Official Plan.

2.3 developers & their representatives (3:00pm)

- Laurie McPherson
  Bousfields, for Cityzen Developments
- Paulo Stellato
  Cityzen Developments
- Tom Kasprzak
  Bousfields, for Silgold/Smart Centres
- Brad Keast
  Smart Centres
- Elaine Sui
  Smart Centres
- David Prakash
  Smart Centres
- Scott Zavaros
  Metrontario
- Steve Deveaux
  Tribute Communities
- Yvonne Choi
  Wood Bull LLP, for Smart Centres
- Michael Shih
  Emshih Developments
- Glenn Wellings
  Emshih Developments
- J Wylie Freeman
- Michael Spaziani
  Fitzsimmons and Emshih
- Jose Menendez
  Oakville Hydro

Commercial and Office Space

Concerned that the plan has already been determined.

Concerned that the Core will not accommodate the expansion of the power centre. There should be an evolving plan: residential intensification and power centre buildout.

Concerned about the amount of small scale retail that can be supported.

Main Street

Framework of roads evolve over a very long term, but the main street should evolve within a shorter term. Will need to continue to move forward with the main street. A long term horizon should be kept in mind.

Will need to match/compliment North Oakville. Needs to redefine a sense of community, be pedestrian friendly and have quality retail.

Phasing of Vision

Need to determine where the long term vision and the interim condition intersect in order to prepare the revised plan for the Uptown Core.

Will need to accommodate high density residential development as originally planned for.

Higher densities and height limits are a concern. Will need to work with residents in order to gain acceptance of higher density residential development.

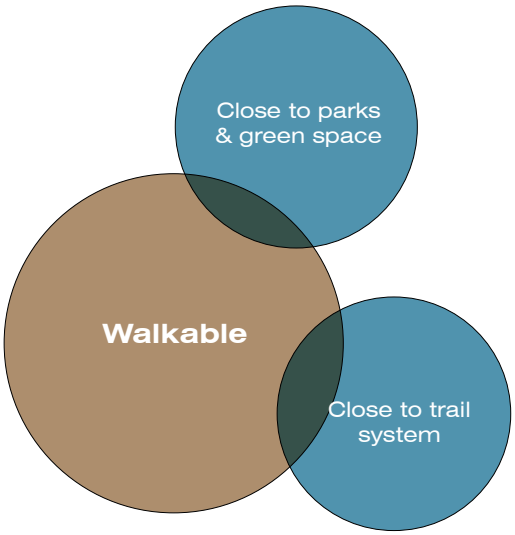
The new Official Plan should consider incentives to encourage higher quality streetscapes and public realm. Street standards should be reviewed to fit an urban context. Parking and parkland standards should be reviewed. Consider incentives on sustainability.

3 public workshop

(7:00pm) Residents were invited to join a table group to respond to a number of questions regarding the Uptown.

3.1 key qualities and characteristics of a successful and appealing town centre

"Brainstorm as a Table Group and list the key qualities and characteristics of a successful and appealing core."




Accessibility
Open market concept
-Street related retail
Specialty Boutiques
-Butcher
-Bakery
-Fresh produce
-Unique shops
Unique
Local community feel
-Shops & restaurants
Unique destination
-Market
-Cafés, culture
Places to sit, play & walk
Aesthetics
-Inviting architecture & green features
-Lots of trees, fountains, plazas
European Character and Design
Appealing design & approach
- parking out of sight
- streetscape
- building design
Height restrictions established & maintained
Relationship of building to street
Streetscapes need to be close to the street
Scale
Reflect current housing style of the area
Pedestrian friendly, walkable
Landscaping, Green Features and Water Features
High quality of public realm landscaping

Unionville, Ontario

Niagra on the Lake, Ontario

Coyoacan, D.F., Mexico

Montréal-Rue Prince Arthur

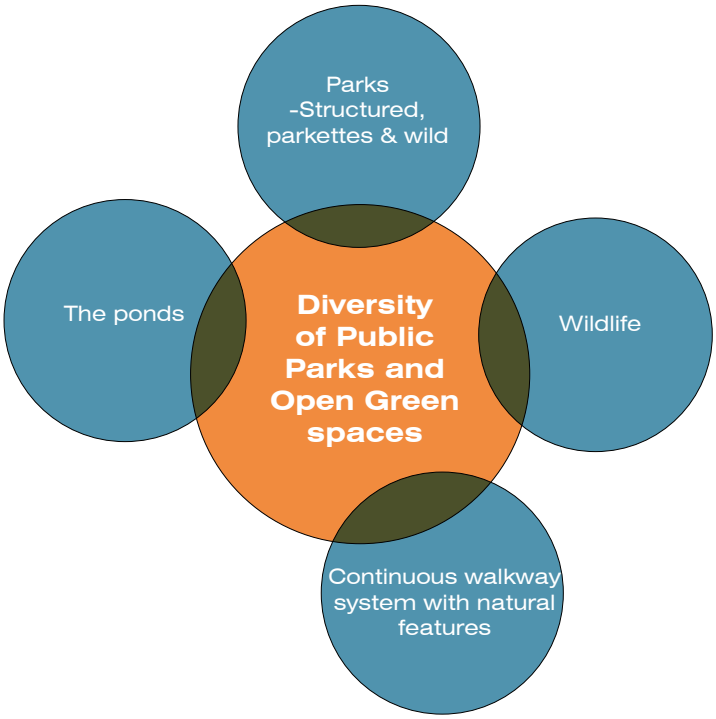
3.2 favorite urban centres

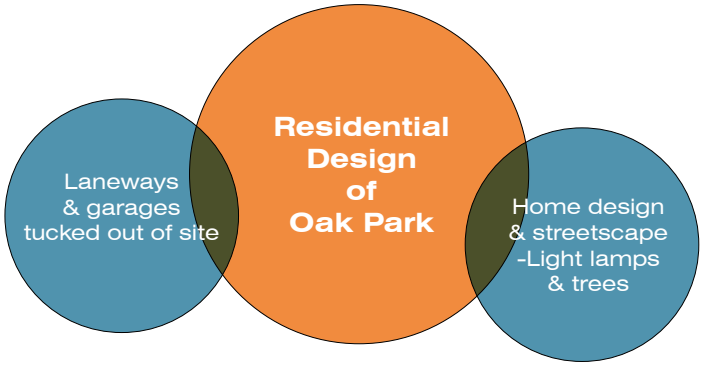
"List your favorite urban centres."

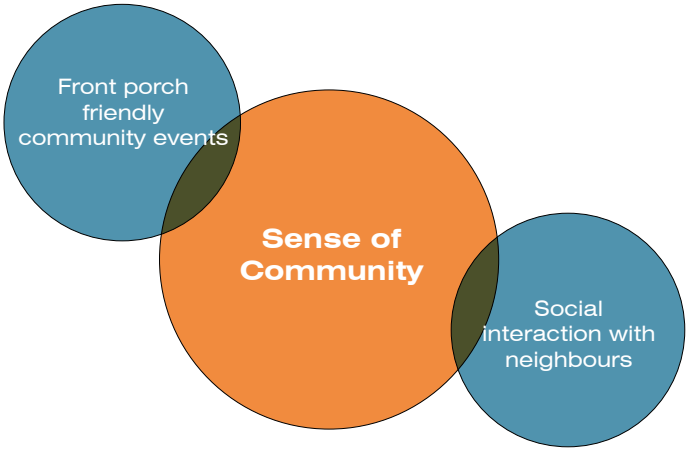
Coyoacan D.F., Mexico
Madison, Wisconsin
Cancun, Mexico
Oakville- Downtown
Algarve, Portugal
Oxford, England
The Beach, Toronto
Picton, On.
Covent Garden, London
Niagara on the Lake
Gage Park in Brampton
Port Credit
Collingwood Skiing Village
Vancouver Gas Town
Yale Town
Old Montreal
Underground Concourse
Kleinburg
Unionville
Parts of Burlington
Ottawa- Byward
Quebec City- Chemin St. Louis
Markham- "new urbanism" "Duani-designer"
Montreal- Prince Arthur
Toronto –Beaches, Danforth, Bloor West
Austria- Vienna
Georgia
San Francisco
San Diego
Mill Valley
Montreal
Quebec City (old town)
Unionville
Neuchatel, Switzerland

3.3 key qualities and characteristics of the uptown core

"Brainstorm as a Table Group and list the core attributes of the Uptown Core. What are the best qualities and characteristics? Choose the three top attributes."







3.4 key changes to augment the best qualities of the uptown core

"Brainstorm as a Table Group and list the opportunities that, if implemented, could make those attributes even better."

Open Space / Parks

> Develop a community park near the ponds
> More squares and parkettes
> Memorial
> Wild park- unspoiled
> Public square/space
> More active park structures for families
> Parks & green space

Streetscape

> Street signage- for creating a village environment
> Village lighting/ street lamps- vintage lighting, street lamps
> Sidewalk features
> More trees
> Street lights
> Trees, flowers, water

Unique Destination- Activities / Retail

> Retail areas with 'premium'
> More town/ municipal sponsored
> Activities
> Pedestrian only shopping
> Town square focal area –clock, cultural,

fountain, gazebo to act as outdoor stage
> Tribute sales office movies- events (resident's association)
> Residents! Oak park is a true neighbourhood
> Close old folks residences- generational
> Lock in commercial space around town centre, create downtown Oakville feel: retail shops facing onto park/town centre; private school?

Scale- Design / Built Form

> Look and design
> More 'street front' businesses rather than setback- like pubs
> Keep scale of height of buildings "human"
> European-style market square
> Increased density for retail/ business
> Interesting architecture
> Green building technology incentives which is reflective in Oakville core values
> Height level should be maintained
> Better building aesthetics
> Multi-level parking design
> Location of parking
> Maintain closed streets—don't connect
> Carry through house design to retail
> Pedestrian scale
> House design & streetscape i.e. trees, lights
> Homes close to street – conducive to neighbour interaction

Walkability / Accessibility

> Accessibility to the ponds/water/green space/ trails
> add more bicycle lanes
> Increase paths, sidewalks and crosswalk
> Winding walkways
> Winter accessibility, ie. paths for walking in summer/ skating in winter
> People walking in residential area (Oakpark)
> Schools and park south of Glenashton (proximity)
> Access to trails and public parkettes
> A pub you can walk to
> Access to local community
> Gatwick & Georgian to Trafalgar- restrict traffic
> greenspace linking North side of Glen Ashton from Trafalgar to Windfield
> Laneways (less car traffic, people friendly)
> Garages are tucked away
> Trail system (access to) and parks/green
> Curved streets
> Streets are closed off (less traffic)
> School access
> Proximity to retail

3.5 issues and opportunities

"Identify the key opportunities for change in the Uptown Core."

a.

- Oak trees please.
- Keep streets closed to vehicular traffic, but open to pedestrian and bike movement.
- Preserve Naturalisation.

b.

- Bike path.
- Transit route.
- Green roofs.
- Don't touch [green space].
- Trees.
- Retail.
- Pedestrian crossing [walkways]
- Extend path.
- Parkette.
- Keep [encircled building]as a community building.

c.

- Lower retail.
- Bike trail?... Fishing?... Baseball?...
- Bike locking areas.
- Movies, museum, art gallery?
- Large wall to block lights?
- No high story buildings.

d.

- Trails/parkland.
- Market, trails, parks.
- Lights too harsh!
- Street sinage.
- Green, walkable place.
- Community of design.
- Clean public transit pollution (Smell? Noise?)

e.

- Heritage features.
- Accessible.
- Restore cemetery.
- Access to park corridor maintained.
- Proper timed crossing.
- keep wildlife.
- Finish park... toboggan hill?
- Front porch friendly.
- Library.
- Pub/patios.
- Art.

f.

- Need buses “transit” to link East/West, not just North/South (re-link Troquin Ridge Pool to River Oaks Community Centre and parts between).
- Town centre- public parkette, outdoor skating park.
- Limit size.
- Create street parking- 2 sides, crosswalks, lights.
- Reduce traffic (3 lanes?)

3.6 favourite precedents (visual preference survey)

We assembled a series of photographs that depicted various precedents for different urban elements such as sidewalks, parking lots and buildings. Residents were asked to place a dot on their favorite photographs. The following are the photographs that received the most dots from residents. The photo boards are included in the appendix III.

1. Gathering Spaces

setback courtyard, green/water features

2. Green Spaces

natural, semi-manicured, open

3. Sidewalks

pedestrian friendly, green streetscape

5. Shopping

european character, market

4. Parking

street parking

6. High Density Housing

mid- to high-rise, mixed use

4 conclusions

Through these questions we were able to identify key urban elements that residents value:

1. high quality public realm
   - > Streestcapes
   - > Trails and walkways
   - > Pedestrian oriented- scale, design and amenities
   - > High quality of materials and design
   - > “Green” structures and landscaping

2. destinations and attractions
   - > Market
   - > Strong “life centres”
   - > Central space as focus

3. commerce
   - > Small scale
   - > Cafes and restaurants
   - > Street related
   - > Variety: non-brand names

4. built form
   - > European character
     - street oriented
     - design
     - mixed use

5. treasured qualities
   - > Connections
     - transit
     - walkable
   - > Residential Character
   - > Community
     - cohesive
     - qualities that enable communities to thrive
     - porches, retail, infrastructure and walkability
   - > Public Realm
     - green spaces and natural features
     - trails and walkways
     - streetscapes

UPTOWN
Town of Oakville CORE REVIEW

Appendix II

appendix II

1st. Workshop Presentation

March 4, 2008

Town of Oakville
Uptown Core Review

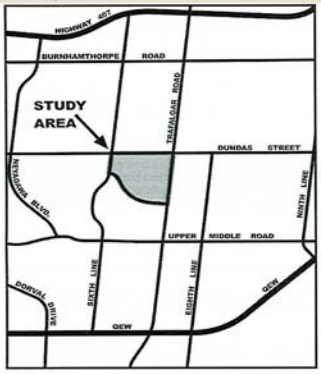
The Planning Partnership • URS Canada • Cushman + Wakefield LePage

the scope of our work

- ***Land Use*** - A review of the range, intensity and mix of land uses;
- ***Urban Design*** - New urban design policies/guidelines will be prepared;
- ***The Public Realm*** - An assessment of public open spaces and facilities will be carried out;
- ***Relationship to Adjacent Areas*** - A review of options for integrating the Uptown Core with adjacent areas will be carried out;
- ***Review of Current Applications*** - A review of current applications will be undertaken;

what are we doing?

- Our team is carrying out a review of the Uptown Core Secondary Plan on behalf of the Town of Oakville.
- The Review is required by the existing policies of the Official Plan, based on approaching a population of 3,000 persons.



the scope of our work

- ***Transportation*** - The capacity of the existing and future transportation system will be addressed;
- ***Other Municipal Infrastructure*** - The availability of municipal infrastructure systems will be addressed; and,
- ***Implementation Tools*** - A review of the statutory tools and non-statutory approaches to the implementation of the Plan will be undertaken.

deliverables

1. New/Revised Official Plan Policies
2. New Urban Design Policies and Guidelines
3. New Transportation Plan
4. Infrastructure Improvements Required
5. Implementation Strategy

brief history

4. The new Town of Oakville Official Plan in 1984 showed the Uptown Core mid-way between Upper Middle Road and Dundas Street.

1984 Figure C

brief history

excerpts from Uptown Core Charrette - Resource Book by Ghent Planning Services, 2003

1. An Uptown Core concept was considered in early versions of the Oakville Official Plan. The 1961 Plan contains references to a business and administrative centre in North Oakville;
2. From 1961 to the mid-1970's, the Uptown Core extended in size from Upper Middle Road to Dundas Street;
3. The Uptown Core was referred to in the 1978 OMB decision. The Board decision clarified the rationale and purpose of the Uptown Core…

"As more office space and retail facilities are needed to serve the expanded population and as they cannot go in the existing Central Business District without destroying a part of Oakville worth preserving, it follows that the concept of an uptown core serving the people north of the Queen Elizabeth Way as the Central Business District serves south of it, is worth maintaining" pg. 119

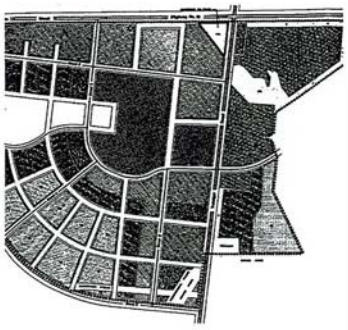
brief history

5. The 1988 Official Plan Consolidation was the first Official Plan to show:
   - The current location of the Uptown Core;
   - The community plan for the core with a grid structure;
   - Detailed policies for the core;
   - Several small parks; and,
   - A small part of the Core on the east of Trafalgar Road.

1988 Figure P

brief history

6. The 1991 Official Plan Consolidation revised the Secondary Plan for the Uptown Core to a radial grid street network and one large central park area.



1991 Figure P

town's expectations for the Uptown Core

"to function as the commercial, cultural, institutional and recreation heart of the Town of Oakville, north of the Queen Elizabeth Way."

"Design objectives:

- *strong coherent urban image*
- *highly developed human scaled civic streetscape*
- *create a year round 24-hour active town centre*
- *create pedestrian and vehicular connections*
- *creation of streets and public spaces that have been defined into recognizable spaces by surrounding buildings*
- *creation of a clearly defined "Main Street" concept with commercial development clearly oriented to Oak Park Boulevard;*
- *creation of a major retail area that is integrated into the pattern of streets and blocks that define the Uptown Core.*
- *elimination of permanent large areas of surface parking in the ultimate built-out phase of development."*

brief history

7. The 2001 Official Plan Consolidation is the current Plan for the Uptown Core

our first impressions from a "Fresh Eyes" perspective

our first impressions from a "Fresh Eyes" perspective

1 a coherent urban image is not clearly defined or has been compromised

our first impressions from a "Fresh Eyes" perspective

2 The environment lacks a critical mass of activity & is not conducive to a culture of walking

our first impressions from a "Fresh Eyes" perspective

3 Parts of the Uptown Core lack a distinct 'look & 'feel'

our first impressions from a "Fresh Eyes" perspective

4 the 'Main Street' is not clearly defined

our first impressions from a "Fresh Eyes" perspective

5 the quality of public realm is inconsistent

our first impressions from a "Fresh Eyes" perspective

7 Current policy and regulations do not seem to be resulting in intended outcomes

our first impressions from a "Fresh Eyes" perspective

6 The quality of the retail environment is not consistent with the calibre of other comparable new town cores - Oakville can do better

transportation first impressions

our first impressions from a "Fresh Eyes" perspective

1 transportation network

Trafalgar Road: north-south four-lane Primary Arterial road under jurisdiction of Halton Region. High volume corridor:

- 33,000 vehicles-per-day (vpd; south of Oak Park Boulevard)
- 20,000 vpd (north of Dundas Street)

Dundas Street: east-west four-lane Primary Arterial under jurisdiction of Halton Region. High volume corridor:

- 37,000 vpd (west of Sixth Line)
- 37000-39,000 vpd (Sixth Line to Trafalgar Road)
- 37,000 vpd (east of Trafalgar Road)

GO Transit bus service along Trafalgar Road, as well as local Oakville Transit in the area, including a transit terminal.

our first impressions from a "Fresh Eyes" perspective

2 transportation network in the Uptown Core

- Glenashton Road: curvilinear east-west four-lane divided Major Collector road under the jurisdiction of Town of Oakville.
- Oak Park Boulevard: Major Collector road under the jurisdiction of Town of Oakville.
- Residential area: Modified radial grid network of two-lane local streets parallel to and perpendicular (radially) to Glenashton Drive. Numerous laneways provide access for residences and waste collection.
- Commercial area: Grid network of two-lane local streets.

our first impressions from a "Fresh Eyes" perspective

3 future traffic considerations

Future traffic conditions to be exacerbated with increased development:

- Lands north of Dundas Street are proposed to be developed into an urban mixed-use community;
- Oakville Uptown Core originally planned to be a major mixed-use node with "central business district" (CBD) characteristics.

our first impressions from a "Fresh Eyes" perspective

4 traffic improvements

To accommodate growth, Region of Halton has identified improvements:

- Dundas Street (east of Oak Park Boulevard): six lanes in 2009;
- Dundas Street (west of Oak Park Boulevard): six lanes in 2013;
- Trafalgar Road: six lanes in 2013.

Oakville Official Plan identifies Trafalgar Road and Dundas Street as higher-order transit corridors linking GO services to rapid transit and local transit facilities.

Trafalgar Road and Dundas Street identified as transit way or bus way corridors. Proposed rights-of-way have been defined to facilitate higher-order transit.

Higher-order transit is dependent on funding from higher levels of government and integration with Metrolinx (formerly Greater Toronto Transportation Authority).

market first impressions

our first impressions from a "Fresh Eyes" perspective

1 Oakville and GTA West office market

- Oakville has an inventory of some 33 buildings totaling just less than 2 million sf. Significant building boom during 1988-1992 era (15 buildings representing over one-third of today's inventory).
- Oakville's present vacancy rate is 5.4% for All Classes of space (7.2% for Class A), which is slightly below levels for all of GTA West (includes Airport Corporate Centre, Mississauga City Centre, Meadowvale, other smaller Mississauga office nodes, and Burlington).
- Current average asking Class A rental rate of $14.20 is a discount compared to other GTA West office concentrations. Airport Corporate Centre, Mississauga City Centre and Meadowvale are in the range of $16.50 to $17.50 psf, with additional rent (taxes and operating costs) roughly $2.00 to $4.00 psf higher.
- Dominant orientation towards QEW proximity – offers accessibility and signage.
- North Oakville offers walkable local amenities, proximity to alternate access routes (Highways 403 and 407).
- One new building was added in 2007 – Westbury Corporate Centre Phase 1; Phase 2 will be added in 2008 (totaling 150,000 sf per phase). The buildings are located at 2265-2275 Upper Middle Road (photos below).

our first impressions from a "Fresh Eyes" perspective

- **Office Market**
- **Condominium Market**
- **Retail Market**

our first impressions from a "Fresh Eyes" perspective

2 mapping of major office locations

our first impressions from a "Fresh Eyes" perspective

3 current and future office development at Oak Park

231 Oak Park Boulevard

- Cushman & Wakefield LePage has the listing of this building. Presently some 5,000 sf available (6%) with asking net rent of $16.50 psf increasing to $18.50 psf during a 10-year lease. Additional rent of just over $10.00 psf.

Future Phase II at Oak Park Business Centre

- Phase II is being reconsidered as a LEED certified project – initial plan was for 6 storeys.
- Retail space is planned at-grade.
- Parking structure will offer space for both office buildings (existing and future) as well as adjacent retail developments.
- Likely asking rents in the low $20s psf net, with gross rents in the low $30s psf, in order to be competitive in the local market.

our first impressions from a "Fresh Eyes" perspective

5 mapping of active projects

our first impressions from a "Fresh Eyes" perspective

4 condominium market

Oakville Condominium Market – Active Projects

- Oakville has six condominium projects being actively marketed as of year-end 2007. These projects total some 551 suites, of which 57% are sold.
- Present asking prices on unsold units range from $350 to $870 psf.
- No projects scheduled for opening in 2008 Q1.

Oakville Condominium Market – Resale Activity

- Some 29 projects with roughly 2,400 units. Average sale price was $299 psf at year-end 2007.

Oakville Condominium Market – Development Pipeline

- Oakville has approved 4 projects totaling 880 units.
- Total of some 23 projects in various planning stages (approximately 9,500 units); mostly in North Oakville.

our first impressions from a "Fresh Eyes" perspective

6 Uptown Core retail environment

Local Trends

- Oakville has above average incomes that translate to significant disposable income – cited in Town of Oakville Retail and Service Policy Review (2006). Per capita income is some 46% above Ontario average.
- Significant retail expansion planned for North Oakville to serve growing residential base.

Local Retail Environment

- Trafalgar Road is highway commercial and strip retail developments.
- Uptown Core is a mix of land extensive big box users (Wal-Mart, Loblaws Superstore) and small box power centre ancillary commercial retail units.
- Wal-Mart will reportedly be expanding to Supercentre format.
- Extensive land remains available for contiguous commercial-retail development in the area north of Oak Park Boulevard on the west side of Trafalgar Road. Opportunity exists to provide walkable streetscape to capitalize on growing residential base to the southwest.
- Ground floor rents at 231 Oak Park are +/- $25.00 psf.
- Achievable rents at freestanding pad sites with good visibility are estimated in the range of $30.00 - $35.00 psf. Strip retail rents estimated in the high $20s to low $30s for units 1,500 to 2,000 sf; rents are lower for larger units.
- Retail land values are in the range of $1.1 to $1.2 million per acre.

points to consider in moving forward

points to consider moving forward

1 Is the Uptown Core plan a viable and compelling vision that encourages the desired type of development?

points to consider moving forward

3 How can we plan for the gradual evolution into a vibrant mixed-use area?


points to consider moving forward
4
How do we ensure that development has a positive impact at the street level?


points to consider moving forward
6
How can we better celebrate arrival and important destinations?


points to consider moving forward
5
How do we protect & reinforce views to important features & landmarks?


points to consider moving forward
7
How do we balance the desire for shopping convenience with an enhanced urban pedestrian environment?

points to consider moving forward

8 The nature of retail is in constant flux: ensure the planning & policy framework to bring the vision to fruition

the 8 Keys for Success

- 1 Establish an identifiable and marketable image/character
- 2 Build a high-order transit system
- 3 Establish a fine grained street and block pattern
- 4 Build a great public realm - streetscapes, urban squares and parks
- 5 Build public buildings – transit hub, Parking Garages, government offices, Library, Art Gallery, Theatre
- 6 Get the parking strategy correct
- 7 Concentrate the retail
- 8 Ensure a supportive residential hinterland (higher density)

the Challenge is Implementation

- A strong vision is required to guide investment decisions
- Political will to achieve the vision is a fundamental requirement
- Administrative support is required from all municipal departments
- Public sector investment always precedes private sector investment
  - Set the stage for change
  - Reduce the risks of the development process
  - Reduce the costs of development
- Success takes time, and change will happen incrementally based on a variety of factors

what is next

Prepare Draft Preliminary Analysis Report
Council Presentation

Phase 2
Prepare Draft Report
Public Open House
Prepare Final Report
Public Meeting/Council Presentation

the purpose of this meeting

to obtain a common understanding of the original vision and function of the Uptown Core

to have a common understanding of the range of issues and opportunities that are currently experienced in the Uptown Core

UPTOWN
Town of Oakville CORE REVIEW

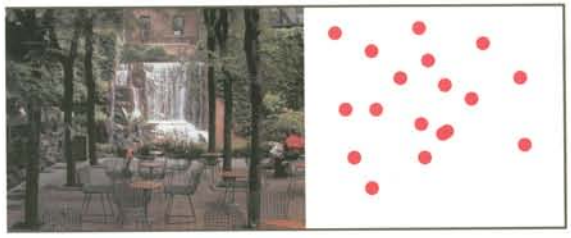
Appendix III

appendix III

Favourite Precedents (Visual Preference Survey)

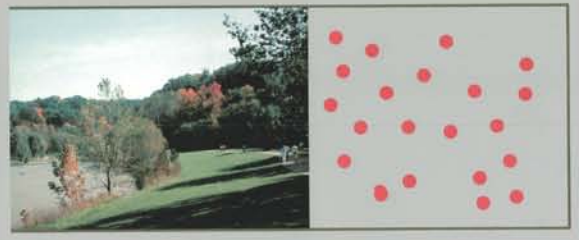
Gathering Spaces

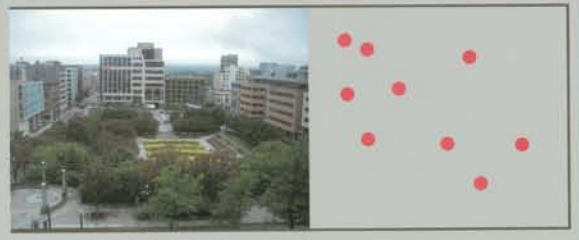
Place a dot to indicate your preference



Green Spaces

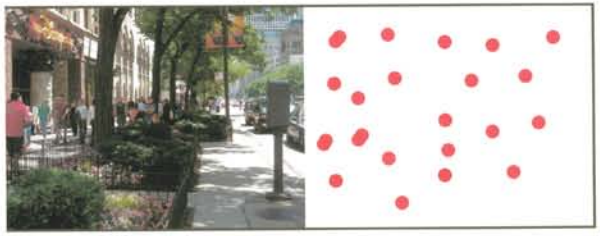
Place a dot to indicate your preference





Sidewalks

Place a dot to indicate your preference



visual preference survey

Uptown Core Workshop - Town of Oakville

Parking

Place a dot to indicate your preference

Shopping

Place a dot to indicate your preference

High Density Housing

Place a dot to indicate your preference

visual preference survey

UPTOWN
Town of Oakville CORE REVIEW

Appendix IV

appendix IV

2nd. Workshop Presentation

April 17th, 2008

Uptown Core Review
Town of Oakville

The Planning Partnership • URS Canada • Cushman + Wakefield LePage

presentation outline

the plan
- the vision
- current development applications
- street hierarchy strategy
- open space system
- development phasing
- height strategy
- land use

4 successful case studies

8 keys to successful urban centre development

the challenge is implementation

the vision

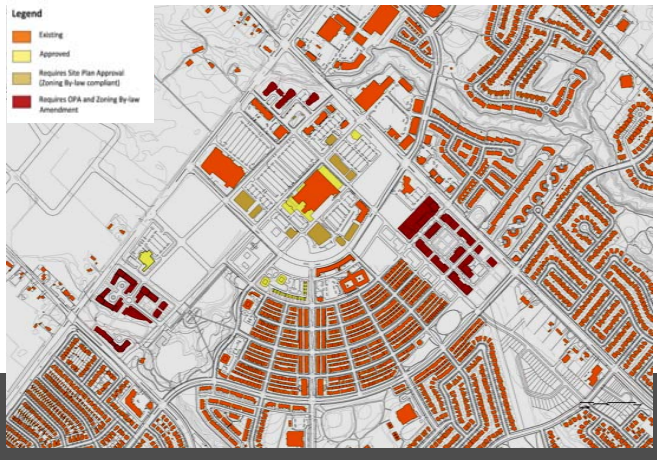
"to function as the commercial, cultural, institutional and recreation heart of the Town of Oakville, north of the Queen Elizabeth Way."

"Design objectives:

- *strong coherent urban image;*
- *highly developed human scaled civic streetscape;*
- *create a year round 24-hour active town centre;*
- *create pedestrian and vehicular connections ;*
- *creation of streets and public spaces that have been defined into recognizable spaces by surrounding buildings;*
- *creation of a clearly defined "Main Street" concept with commercial development clearly oriented to Oak Park Boulevard;*
- *creation of a major retail area that is integrated into the pattern of streets and blocks that define the Uptown Core; and,*
- *elimination of permanent large areas of surface parking in the ultimate built-out phase of development."*

the plan

current development applications



the plan

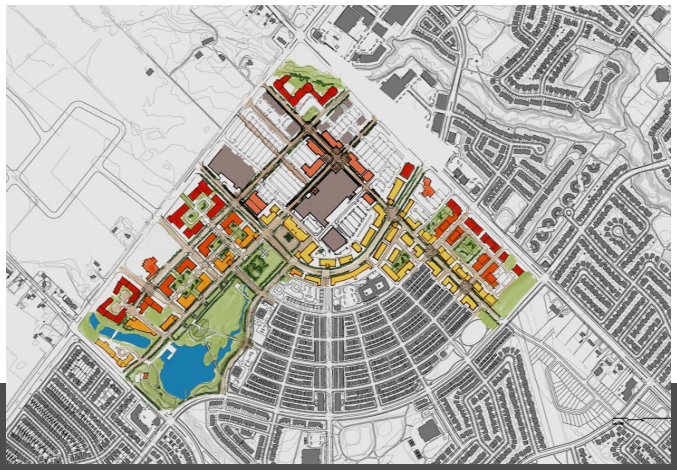
street hierarchy strategy

the plan

Open Space System

the plan

initial phase



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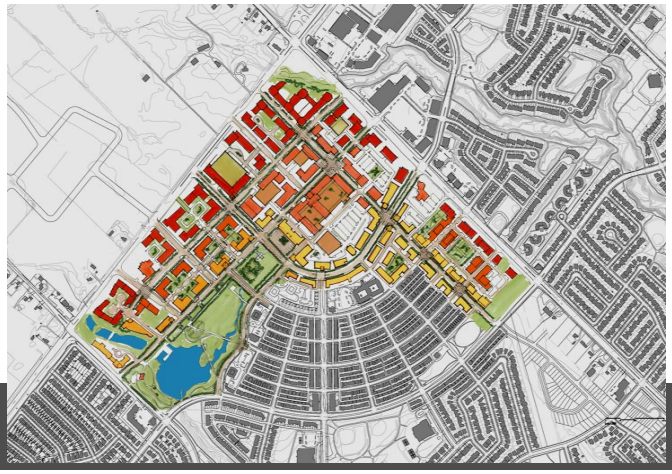
final phase



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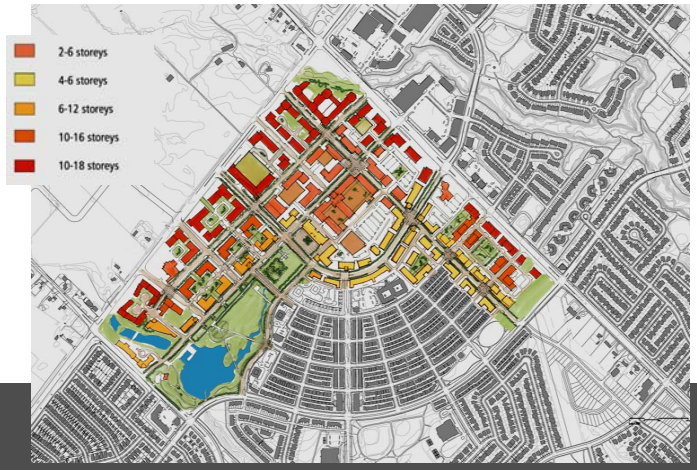
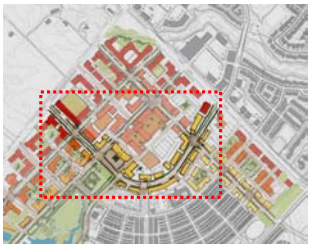
height strategy



the plan

Main Street Oak Park Blvd.

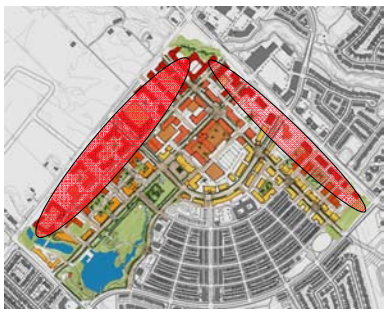


the plan

public realm

the plan

built form – High Rise (Mixed Use Optional)

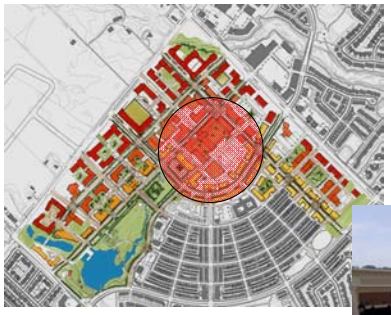


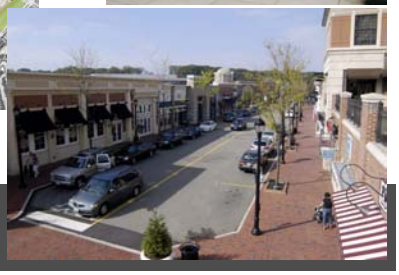
the plan

built form – Mid Rise (Mixed Use Optional)

the plan

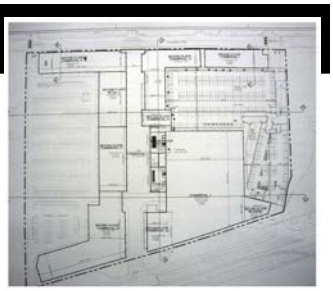
built form – Mid Rise Mixed Use Life Style Centre





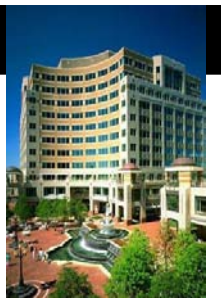
the foundry district
toronto, ontario

- Proposed program
  - 70,000sf retail
  - 60 residential units



the foundry district
toronto, ontario

reston town centre
reston, virginia



The centre is based on a greenfield master plan developed in 1962

- Intensification and Diversification
  Development has been ongoing since 1962
- Image
  It it has an identifiable image and character that sets it apart - huge investment in public spaces
- Mixed Use
  Integrates office space, retail, restaurant and entertainment space, hotels and residential uses
- Transit
  The public sector built a high order transit link to downtown Washington to stimulate development

reston town centre
reston, virginia

addison circle
addison, texas

Built on an old airport site, that was owned by the Municipality

- Transit and Mixed Use
  Includes high order transit and a mix of retail, office and residential uses
- Public Subsidies
  Required extensive public subsidies to get started, including infrastructure and public realm investment
- Cooperation
  Plan was developed with extensive cooperation between the Municipality and the developer

addison circle
addison, texas

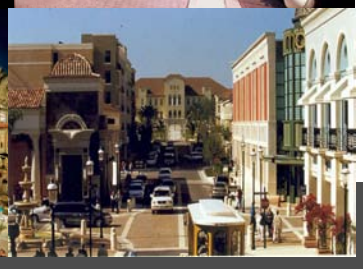
city place
west palm beach, florida

CityPlace was a run-down low-density residential neighbourhood, purchased by the City

- Mixed Use
  Now a thriving entertainment and retail based development, surrounded by medium density housing

- Image and Public Realm
  Has an identifiable image and character, reflected in the beautiful public realm and buildings
- Public Sector Investment
  Required a $55 million US public sector investment to get things started

city place
west palm beach, florida

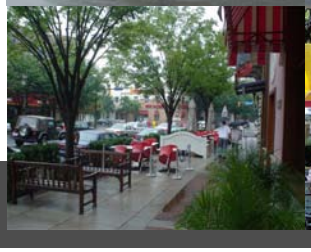


downtown bethesda
bethesda, maryland

Downtown Bethesda was a run down commercial strip

- Transit and Parking
  Public sector built high order transit facility and public parking to stimulate new investment
- Public Realm and Mixed Use
  Has a high quality public realm, and includes office retail and residential uses

downtown bethesda
bethesda, maryland



the 8 Keys for Successful Urban Centres Realization

1. Establish an identifiable and marketable image/character
2. Build a high-order transit system
3. Establish a fine grained street and block pattern
4. Build a great public realm - streetscapes, urban squares and parks
5. Build public buildings - Parking Garages, government offices, Library, Art Gallery, Theatre
6. Get the parking strategy correct
7. Concentrate the retail
8. Ensure a supportive residential hinterland (higher density)

the Challenge is Implementation

- A strong vision is required to guide investment decisions
- Political will to achieve the vision is a fundamental requirement
- Administrative support is required from all municipal departments
- Public sector investment always precedes private sector investment
  - Set the stage for change
  - Reduce the risks of the development process
  - Reduce the costs of development
- Success takes time, and change will happen incrementally based on a variety of factors

the Challenge is Implementation

The Secondary Plan Review will provide:

- An updated and strengthened Vision Statement
- Policy direction based on establishing both minimum and maximum development parameters - height, density, parking
- Detailed and explicit urban design policies...not guidelines
- A public realm plan, and direction for infrastructure investment
- A comprehensive implementation strategy

Public Workshop

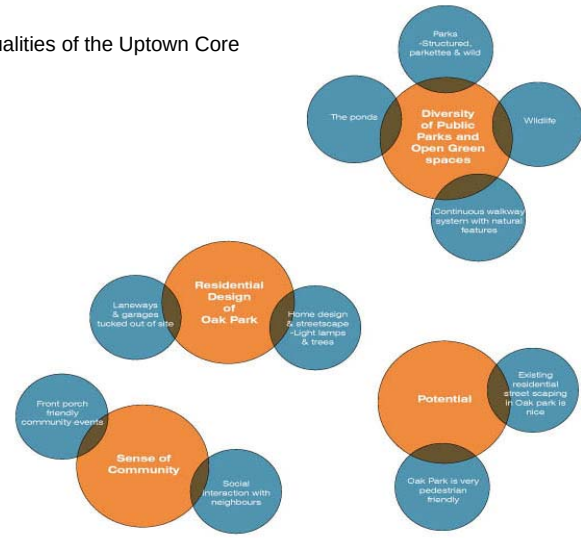
1. Key qualities and characteristics of a successful and appealing town centre.
2. Favourite urban centres
3. Best qualities of the Uptown Core
4. Best opportunities for change
5. Visual preferences

Key qualities of successful town centres

Favourite urban centres

Cancun, Mexico
Downtown Oakville
Picton
Niagara-on-the-Lake
Port Credit
Vancouver Gas Town
Kleinburg
Unionville
Byward market in Ottawa
San Francisco
Montreal

Best qualities of the Uptown Core



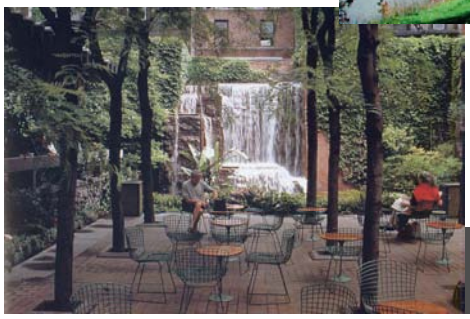
Key opportunities for change

More squares and parkettes, more active park space
More trees, street lights
Pedestrian shopping,
Town square focal areas
Create a downtown Oakville feel
More street front businesses
Human scale
Interesting architecture
Bicycle lanes

Favourite precedents

Green space

Gathering spaces



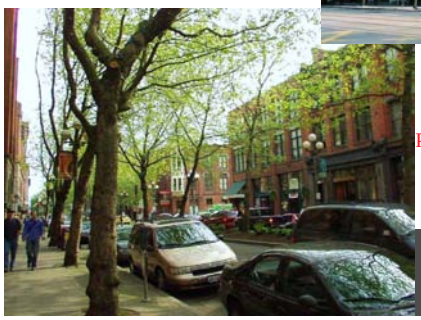
Favourite precedents

Shopping

Sidewalks

Favourite precedents

High density housing



Parking

Final Report - February 2009

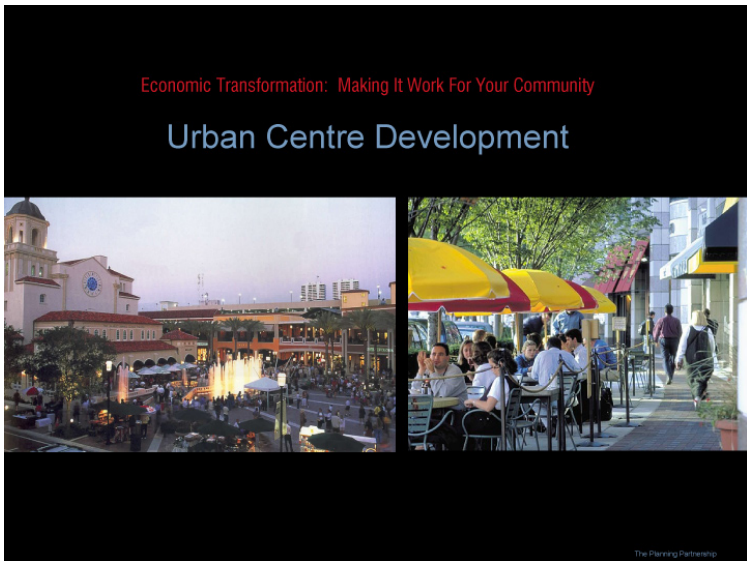
UPTOWN
Town of Oakville CORE REVIEW

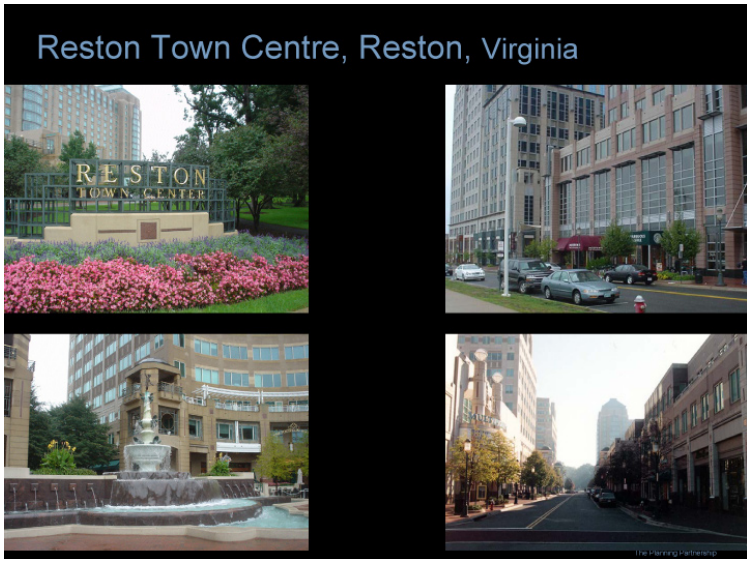
Appendix V

appendix V

Case Studies of Best Practices

Presented to Town for Internal Use

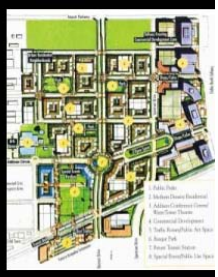




Addison Circle, Addison, Texas

Built on an old airport site, that was owned by the Municipality

- **Transit and Mixed Use**
  Includes high order transit and a mix of retail, office and residential uses
- **Public Subsidies**
  Required extensive public subsidies to get started, including infrastructure and public realm investment
- **Cooperation**
  Plan was developed with extensive cooperation between the Municipality and the developer



Addison Circle, Addison, Texas

CityPlace, West Palm Beach, Florida

CityPlace was a run-down low-density residential neighbourhood, purchased by the City

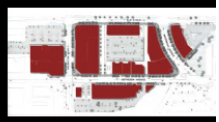
- **Mixed Use**
  Now a thriving entertainment and retail based development, surrounded by medium density housing
- **Image and Public Realm**
  Has an identifiable image and character, reflected in the beautiful public realm and buildings
- **Public Sector Investment**
  Required a $55 million US public sector investment to get things started

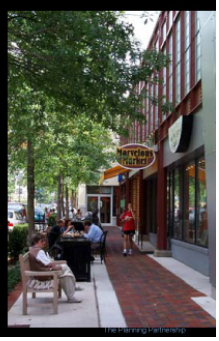
CityPlace, West Palm Beach, Florida

Downtown Bethesda, Bethesda, Maryland

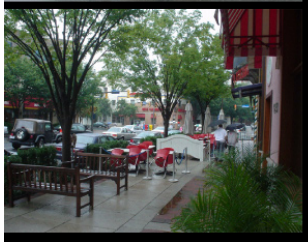
Downtown Bethesda was a run down commercial strip

- Transit and Parking
  Public sector built high order transit facility and public parking to stimulate new investment
- Public Realm and Mixed Use
  Has a high quality public realm, and includes office retail and residential uses





Downtown Bethesda, Bethesda, Maryland

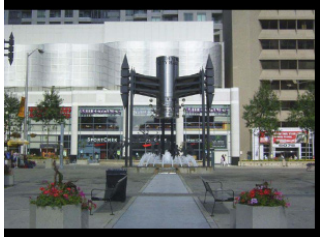


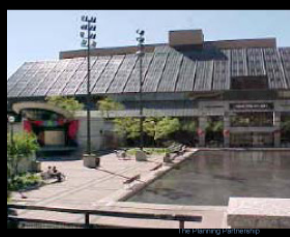
North York City Centre, Toronto, Ontario

North York City Centre was a small scale 'Mainstreet'.

- Political Will
  Plan for urban centre first adopted in early 70's - required tremendous political will to implement
- Public Investment
  Required major public investment in transit, buildings and public realm to get things started
- Private Sector Assistance
  Parking authority was established to assist private sector development

North York City Centre, Toronto, Ontario





The 8 Keys for Successful Downtown Revitalization

1. Establish an identifiable and marketable image/character
2. Build/incorporate a high-order transit system
3. Establish a fine grained street and block pattern
4. Build a great public realm - streetscapes, urban squares and parks
5. Build public buildings - parking garages, government offices, library, art gallery, theatre
6. Get the parking strategy correct
7. Concentrate the retail
8. Ensure a supportive residential hinterland (higher density)

The Planning Partnership

The Challenge is Implementation

- A strong vision is required to guide investment decisions
- Political will to achieve the vision is a fundamental requirement
- Administrative support is required from all municipal departments
- Public sector investment always precedes private sector investment
  - Establish the environment for change
  - Reduce the costs of development
  - Reduce the risks of the development process
- Success takes time, and change will happen incrementally based on a variety of factors

The Planning Partnership

Economic Benefits

- Creation of environment for economic success
  - Leads to increased lease rates
  - Reduced vacancy rates
- Increased tourism
  - Builds the community's reputation
  - Creates jobs
- Stimulation of private sector redevelopment activity
  - Enhances property values
  - Leads to increased property tax assessment

The Planning Partnership

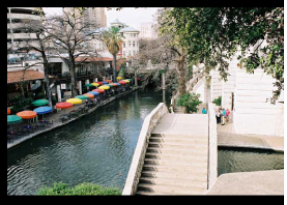
Economic Benefits

State Street/Michigan Avenue - Chicago

- $36 million US invested by State/City in 1996
  - Lease rates have increased over 20%
  - Vacancy rate has decreased from over 10% to 1.5%
  - Retail floor space increased from 2.2 million sq.ft. to over 3.3 million sq.ft.

Riverwalk, San Antonio, Texas

- $425K US invested by City in early 1900s
  - Has overtaken the Alamo as the most important attraction in the City's $3.5 billion tourist industry



The Planning Partnership

Economic Benefits

Times Square - New York, New York

- 1992 - 42nd Street Redevelopment Plan included $300 million US in public funding
  - Generated $2.5 billion in private sector investment
  - Vacancy rate has decreased from over 20% to just under 5%
  - 2001 lease rates increased to $58 from $38

The Planning Partnership

Note to Reader: Status of Draft Report

Transportation Constraints

The Uptown Core Planning Review Draft Transportation Report has now been completed and is attached. It is still to be considered a draft report and not yet approved as a final report.

The Uptown Core Planning Review Draft Transportation Report was undertaken to determine the level of development within the Uptown Core Growth Area that could be supported by the transportation system. The draft report took into consideration the implementation of future HOV lanes along Dundas Street and made recommendations for additional infrastructure improvements. The Region and the Town's review of the draft report point to several areas that have yet to be resolved. Further work, including the consolidation of the individual transportation studies for each of the Growth Areas into a final transportation overview report (undertaken by iTRANS) was completed and additional analysis for the Uptown Core road network, transit modal splits and infrastructure improvements will need to be addressed. The Livable Oakville policies require further study through individual development applications submitted to the Town. They will be required to complete a transportation impact study that will take into account their development impacts to the road network. This will provide a cumulative assessment of roadway capacities and infrastructure needs as each development comes forward.

UPTOWN
Town of Oakville CORE REVIEW

Appendix VI

DRAFT

Uptown Core Planning Review
Town of Oakville

TRANSPORTATION REPORT

URS

33015822
February 2009

Table of Contents

1. Introduction

1.1 Study Background and Purpose

URS Canada Inc. was retained by The Planning Partnership on behalf of the Town of Oakville to undertake the transportation component of *the Uptown Core Planning Review*, for the Uptown Core, located in the Town of Oakville.

The purpose of this review was to:

- Review existing transportation conditions, opportunities, and constraints;
- Forecast future traffic associated with the development of the lands;
- Review previous transportation conditions in conjunction with an updated land use plan;
- Assess future traffic conditions; and
- Identify operational concerns and required mitigation measures such as road and / or intersection improvements, if any.

This report has been prepared to document the study methodology, findings and recommendations associated with proposed development of the Oakville Uptown Core.

1.2 Location and Study Area

The subject lands are located within the Town of Oakville. The general boundaries of the study area are:

- Trafalgar Road to the east;
- Dundas Street to the north;
- Sixth Line to the west; and
- Glenashton Drive to the south.

For the purpose of this report, the key roads include the above boundary roads as well as Oak Park Boulevard. In addition to these existing roads, the intersections of several local roads in the study area were incorporated into the study, in accordance with the Uptown Core development plan.

1.3 Study Approach

The traffic review was primarily based on the weekday p.m. peak hour on a weekday since it is deemed to be the critical period:

- Ambient background volumes are traditionally higher during the PM peak than the AM peak;

- A significant proportion of the Uptown Core traffic is retail/restaurant related and will have minimal contribution during the AM peak;
- The PM peak is generally the simultaneous peak for both commuter and commercial traffic; and
- Thus, total future traffic volumes will be much lower during the AM peak than the PM peak.

Notwithstanding, a review of the a.m. peak hour traffic volumes was also undertaken for key arterial/arterial and arterial/collector intersections in the study area.

Traffic operations were based on observed (2007 base year) and forecast traffic volumes (2021 horizon year). Critical intersections and movements were identified based on whether or not the determined operations resulted in a high volume-to-capacity ratio (i.e. ≥0.85 for immediate existing conditions, or ≥0.90 for long-term conditions), or a high delay (i.e. associated with Level of Service E or F).

The assessment methodology used in this study was based on a review of road link volumes and turning movements at intersections. This was supplemented with traffic projections for the subject development in the area.

This study incorporates the updated land use plan developed by The Planning Partnership.

The work plan and approach for this study was confirmed with Town of Oakville staff.

1.4 Overall Development Context

The lands within the Uptown Core are intended to form a mixed-use, medium- to high-density urban node, with characteristics commonly associated with a “downtown.”

Most of the medium-density residential parcels south of Oak Park Boulevard have been developed, as have some portions of the commercial centre north of Oak Park Boulevard, in the Central Retail Area. Commercial facilities that have been built to date include:

- A Loblaw’s supermarket;
- A Wal-mart store;
- Two plazas, including sit-down and fast-food restaurants; and
- A commercial office building.

The potential build-out scenario for this study was derived from an as-of-right land use planning scenario provided by The Planning Partnership. The tested scenario for this assessment included the following:

- Residential: 7,251 future units plus 1,638 existing units for a total of 8,889 units;
- Commercial (retail/restaurant): 101,306 m^2; and
- Commercial (office): 50,530 m^2.

The Planning Partnership's detailed block-by-block summary of the assumed development yield is provided in *Appendix 1*. An alternative development scenario with slightly more residential units (9,261 units) and less commercial retail/restaurant (99,033 m^2) was also considered but found to have negligible variation in traffic forecasts or impact.

2. Existing Road Network

The following is a description of the primary arterial road facilities in the area.

Trafalgar Road is a north-south four-lane road under the jurisdiction of Halton Region with a planned right-of-way of 47 metres. South of Dundas Street, there is a continuous left turn lane. Based on Automated Traffic Recorder (ATR) counts, the average daily traffic (ADT) was determined to be:

- 32,900 vehicles per day south of Glenashton Drive (September 2007);
- 32,800 vehicles per day between Glenashton Drive and Oak Park Boulevard (September 2007);
- 22,300 vehicles per day between Oak Park Boulevard and Dundas Street (May 2006); and
- 20,400 vehicles per day north of Dundas Street (May 2006).

Dundas Street is an east-west four-lane under the jurisdiction of Halton Region with a planned right-of-way of 47 metres. Based on ATR counts, the average ADT was determined to be:

- 37,000 vehicles per day west of Sixth Line (September 2007);
- 38,700 vehicles per day between Sixth Line and Oak Park Boulevard (September 2007);
- 37,100 vehicles per day between Oak Park Boulevard and Trafalgar Road (September 2007); and
- 37,200 vehicles per day east of Trafalgar Road (September 2007).

Other key roads in the area include:

- Sixth Line;
- Glenashton Road; and
- Oak Park Boulevard.

3. Traffic Forecasts

Traffic forecasts for this study were based on a review of available turning movement data for the study area, projections for traffic growth, and site-generated traffic as determined by the land use plan. This is outlined in the following sections.

3.1 Existing Traffic

Weekday peak-hour turning movement traffic count data for the intersections along Dundas Street and Trafalgar Road were obtained from the Region of Halton, while data for the intersections on Glenashton Drive were obtained from the Town of Oakville. The survey dates for the obtained turning movement count data are summarized in the following table. All counts along Dundas Street and Trafalgar Avenue were based on a common 2007 base year.

Summary of Traffic Data

INTERSECTION	JURISDICTION	SURVEY DATE
Sixth Line / Dundas Street	Halton Region	Monday 28-May-2007
Oak Park Boulevard / Dundas Street	Halton Region	Tuesday 29-May-2007
Trafalgar Road / Dundas Street	Halton Region	Tuesday 5-Jun-2007
Hays Boulevard / Trafalgar Road	Halton Region	Tuesday 5-Jun-2007
Oak Park Boulevard / Trafalgar Road	Halton Region	Tuesday 5-Jun-2007
Glenashton Drive / Trafalgar Road	Halton Region	Tuesday 5-Jun-2007
Glenashton Drive / Sixth Line	Town of Oakville	Friday 4-Jun-2007
Central Park Drive / Glenashton Drive	Town of Oakville	Friday 25-Jun-2007
Parkhaven Boulevard / Glenashton Drive	Town of Oakville	Friday 11-Jun-2007
Windfield Drive / Glenashton Drive	Town of Oakville	Friday 25-Jun-2007

Figure 3.1 illustrates the peak hour traffic volumes at the key existing intersections for the weekday a.m. and p.m. peak hours.

Figure 3.1a: Existing A.M. Peak Hour Traffic Volumes (2007)

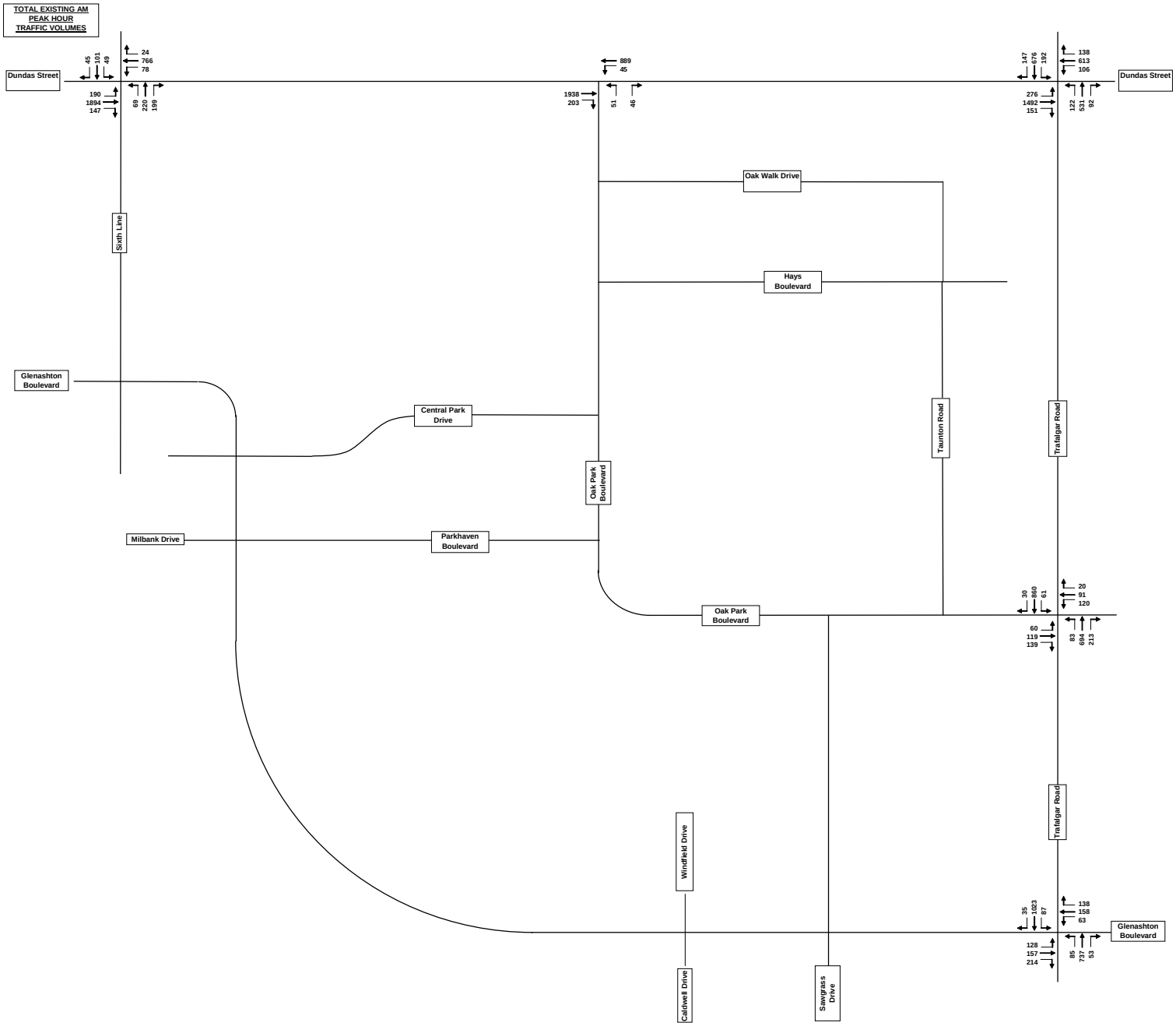


Figure 3.1b: Existing P.M. Peak Hour Traffic Volumes (2007)

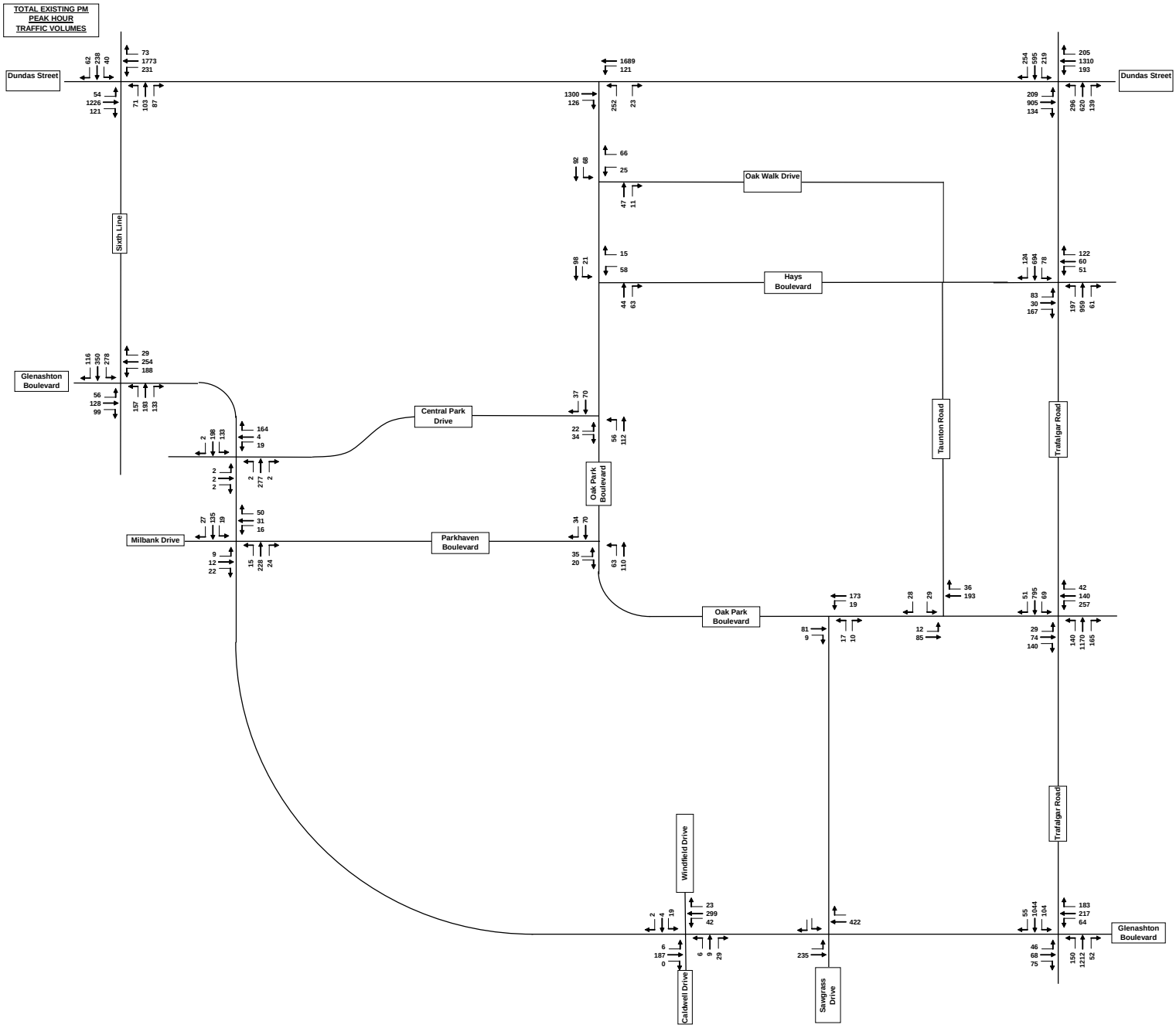
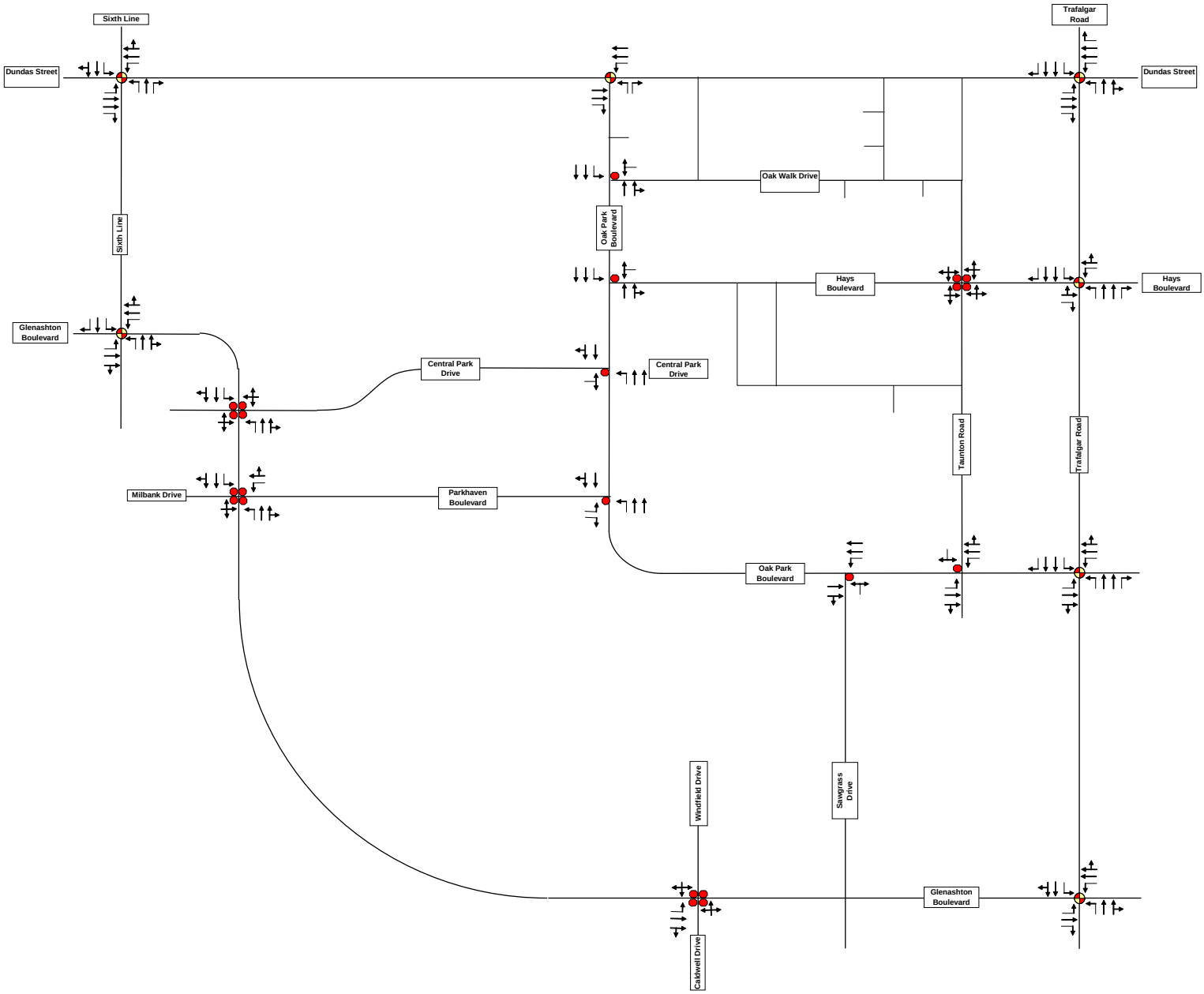


Figure 3.2: Existing Lane Configurations



The operations of the boundary road intersections were analyzed on the basis of the above noted traffic volumes.

This analysis reflects the existing lane configurations as shown in Figure 3.2. The assessment of intersection operations is based on the results of the Synchro7 analysis software, which is based on the methodology in the *Highway Capacity Manual*, 2000. The *Highway Capacity Manual* is produced by the Transportation Research Board.

The following table summarizes the overall Level of Service (LOS), control delay, and volume-to-capacity ratio (V/C) for each of the subject intersections. LOS is a qualifying measure of traffic operations at an intersection, relating the delay per vehicle for a 15-minute analysis period. Detailed Level of Service definitions related to intersection operations are contained in *Appendix 2*. The volume-to-capacity ratio is a measure of the proportion of the calculated intersection capacity that is utilized by the modeled traffic volumes. Critical intersections and movements were identified based on whether or not the determined operations resulted in a high volume-to-capacity ratio (i.e. ≥0.85 for existing conditions) or a high delay (i.e. associated with Level of Service E or F). Detailed output for the existing traffic conditions are in *Appendix 3*.

Table 3.1: Existing Traffic – Signalized Intersection Analysis

INTERSECTION	OVERALL/ CRITICAL MOVEMENT	OPERATIONS							
		A.M. Peak Hour				P.M. Peak Hour			
		Move-ment	LOS	Delay	V/C	Move-ment	LOS	Delay	V/C
Sixth Line / Dundas Street	Intersection		B	19s	0.75		B	16s	0.78
	Critical Movement	SB Lt	E	56s	0.55	NB Lt	E	74s	0.62
		NB Th	F	84s	0.88	NB Th	E	64s	0.45
		NB Rt	E	66s	0.79	NB Rt	F	104s	0.45
Oak Park Blvd / Dundas Street	Intersection		A	5s	0.64		B	15s	0.70
	Critical Movement	NB Lt	E	57s	0.46	NB Lt	E	75s	0.86
Trafalgar Road / Dundas Street	Intersection		D	37s	0.84		E	57s	0.95
	Critical Movement	NB Th-Rt	E	63s	0.91	SB Lt	F	96s	0.93
						SB Th	E	69s	0.90
						NB Lt	F	91s	0.96
						NB Th-Rt	F	86s	0.98
						EB Lt	F	168s	1.01
						WB Th	D	40s	0.87
Hays Boulevard / Trafalgar Road	Intersection						B	12s	0.43
	Critical Movement					EB Lt	E	66s	0.69
Oak Park Blvd / Trafalgar Road	Intersection		B	14s	0.40		B	14s	0.55
	Critical Movement	WB Lt	E	63s	0.72	NB Lt	E	56s	0.36
Glenashton Drive / Trafalgar Road	Intersection		C	26s	0.47		C	24s	0.55
	Critical Movement	-				-			
Glenashton Drive / Sixth Line	Intersection						C	24s	0.51
	Critical Movement					WB Lt	F	86s	0.87

* *At signalized intersections, movements with a v/c ratio ≥0.85 or an average vehicle delay greater than 55 seconds are defined as critical.*

The analysis of existing conditions revealed that the intersections adjacent to the Uptown Core currently operate at good overall levels of service during the weekday a.m. and p.m. peak periods, although the major intersection of Dundas Street and Trafalgar Road is currently operating near capacity. There are also a number of critical movements at several of the intersections. The contemplated widenings of both Dundas Street and Trafalgar Road in the future to six-lane cross-sections would ameliorate these conditions.

3.2 Future Background Traffic

Future background traffic was developed for a 2021 horizon year. This included traffic growth unrelated to the subject development (i.e. the Uptown Core lands). Traditionally, future background traffic changes are related to three components, namely:

- Growth in through traffic due to developments outside of the study area (inter-regional through trips);
- Diverted traffic due to boundary road improvements; and
- Growth in traffic due to developments in the immediate area.

There is significant development planned immediately north of the study area (North Oakville). Traffic data for this development area was derived based on first-principles calculations with the following:

- Future population of 55,000 and employment of 25,000;
- Application of standard ITE trip generation rates for residential and employment uses, with adjustments for modal split and mutual residential-commercial synergy (as derived for and documented in the Uptown Core site traffic section of this report); and
- Application of the trip distribution documented in the *Oakville Transportation Master Plan and North Oakville East and West Secondary Plans – Transportation Background Report* (prepared by ENTRA Consultants for the Town of Oakville, February 2004).

Improvements are planned for both Dundas Street and Trafalgar Road. These include:

- Dundas Street (Oak Park Drive to Highway 403): widened to six lanes with provision of HOV lanes in 2009. Initially the HOV designation would be during peak periods only, then staged to HOV only (i.e. full time), and ultimately as Bus Rapid Transit (BRT) lanes;
- Dundas Street (Neyagawa Boulevard to Oak Park Drive): widened to six lanes with provision of HOV lanes in 2013. Initially the HOV designation would be during peak periods only, then staged to HOV only (i.e. full time), and ultimately as Bus Rapid Transit (BRT) lanes; and
- Trafalgar Road (Dundas Street to Highway 407): widened to six lanes in 2014; and
- Trafalgar Road (Upper Middle Road to Dundas Street): widened to six lanes in 2015.

The assumed road network improvements for Dundas Street were as per Dundas Street EA drawings provided by the Town, however Town staff also indicated that the Region will also

provide westbound double left turn lanes at the Dundas Street/Trafalgar Road intersection in the design of the intersection.

Notwithstanding that a significant amount of background traffic was added to account for the North Oakville lands, a 1% per year growth rate on Dundas Street and Trafalgar Road was applied for through traffic growth.

Exhibits are included in *Appendix 4* illustrating the following: figures of traffic growth incorporating the 1% annual growth factor; tables summarizing the derivation of the North Oakville traffic and figures illustrating the traffic growth for the North Oakville lands; and figures total future background traffic.

(As a further calculation, the total annualized background growth arising from existing to total future background traffic was identified in order to derive the total annual background growth rate within the study area. Based on a review of traffic volumes at select locations along Dundas Street east of Sixth Line and west of Trafalgar Road for the p.m. peak hour, the derived resultant average annual growth rate was determined to be in the order of 2.1-2.3% (depending on the sample direction and location). This projected total growth is reasonable and in keeping with typical arterial corridor growth rates.)

3.3 Uptown Core Traffic

The potential build-out scenario for this study was derived from an as-of-right land use planning scenario provided by The Planning Partnership. The tested scenario for this assessment included the following:

- Residential: 7,251 future units plus 1,638 existing units for a total of 8,889 units;
- Commercial (retail/restaurant): 101,306 m^2; and
- Commercial (office): 50,530 m^2.

The Planning Partnership's detailed block-by-block summary of the assumed development yield is provided in *Appendix 1*. An alternative development scenario with slightly more residential units (9,261 units) and less commercial retail/restaurant (99,033 m2) was also considered but found to have negligible variation in traffic forecasts or impact.

3.3.1 Trip Generation

Standard ITE trip generation rates for residential and commercial uses were incorporated into the travel forecasts. However, adjustments for modal split and mutual residential-commercial synergy were also applied. These factors were confirmed with Town staff.

In summary, the vehicle trip generation for the proposed uses was derived based on:

Residential Uses

- Raw trip generation rates for medium/high density development based on equations in the ITE manual of *Trip Generation, 8th Edition* (Land Use Code 230);
- 20% use public transit for travel. The Halton Official Plan identifies an average 2021 target mode split of 15% for the entire Halton Planning Area. Since the Uptown Core lands are expected to be an intensely developed area with a transit hub and adjacent high-order transit along Dundas Street and Trafalgar Road, it is expected that the transit mode split would be much higher than the average for the entire Halton Planning Area. Thus, we have assumed a 20% transit mode split; and
- 5% travel via other modes (walk, cycle, etc).

Commercial (Non-office) Uses

- Raw trip generation rates for shopping centre uses based on equations in the ITE manual of *Trip Generation, 8th Edition* (Land Use Code 820);
- 20% use public transit for travel;
- 5% travel via other modes (walk, cycle, etc);
- 5% adjustment to reflect the synergy associated with the large-scale mixed-use development to reflect chained trips multiple trip purposes, and to reflect short internal trips; and
- 21.8% pass-by traffic adjustment calculated based on equations in the ITE *Trip Generation Handbook – An ITE Recommended Practice* for Land Use Code 820. This was only applied for the p.m. peak hour.

Commercial (Office) Uses

- Raw trip generation rates for office uses based on equations in the ITE manual of *Trip Generation, 8th Edition* (Land Use Code 710);
- 20% use public transit for travel;
- 5% travel via other modes (walk, cycle, etc); and
- 5% adjustment to reflect the synergy associated with the large-scale mixed-use development to reflect chained trips multiple trip purposes, and to reflect short internal trips

The use of the above factors related to other mode travel (transit, walk, and cycling) are important elements to the successful planning of the Uptown Core area. It is envisioned that these travel mode splits can be achieved as there is a comprehensive network of sidewalks and bikeways, transit services, HOV and/or Bus Rapid Transit lanes on the arterial corridors, a transit hub, and to some extent since there will be auto congestion on the primary Dundas Street and Trafalgar Road corridors which would promote other travel modes. These modal splits will achieve good transportation conditions in the Uptown Core although there may be congested conditions along the primary Trafalgar Road and Dundas Street corridors. The implementation of high-order transit along

these two corridors may ultimately result in slightly better conditions along these roads as other areas of the Town shift travel patterns from auto-based modes to transit.

The total trip generation for the Uptown Core is illustrated in the following table.

Table 3.2: Trip Generation Rates and Volumes

Land Use	Unit	Unadjusted Trip Rates					
		A.M. Peak Hour			P.M. Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Planned Apartments	Units	0.037	0.182	0.219	0.186	0.092	0.278
Planned Retail	1000 ft2	0.415	0.265	0.680	2.207	1.087	3.295
Planned General Office	1000 ft2	1.234	0.168	1.402	0.222	1.082	1.304

Land Use	Unit	Adjusted Trip Rates					
		A.M. Peak Hour			P.M. Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Planned Apartments	Units	0.028	0.136	0.164	0.140	0.069	0.209
Planned Retail	1000 ft2	0.290	0.186	0.476	1.545	0.761	2.306
Planned General Office	1000 ft2	0.864	0.118	0.981	0.155	0.758	0.913

Land Use	Magnitude	Adjusted Trip Generation					
		A.M. Peak Hour			P.M. Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Planned Apartments	7,251	203	989	1,192	1,013	499	1,512
Planned Retail	734	213	136	350	1,135	559	1,694
Planned General Office	429	370	50	421	67	325	391
	TOTAL	**416**	**1,126**	**1,542**	**2,148**	**1,058**	**3,206**

The projected vehicular trip generation associated with development of the Uptown Core is expected to result in about 1,550 trips during the a.m. peak period and 3,200 trips during the p.m. peak hour.

Traffic generation associated with commercial establishments is often derived from two sources, namely new (primary) trips and pass-by trips. Primary trips are those trips to a commercial development that are destination oriented and are new to the boundary road network. Pass-by trips are derived from the existing traffic that is already passing by the subject development site. Therefore, pass-by trips are not new trips on the boundary road network. However, pass-by trips impact the turning movements at the site entrances or where the original trip diverts its path. Thus, the diversion of pass-by trips to the site would result in an increase of turns and a reduction of the major street through volume at these turning locations. The resultant trip generation for pass-by related traffic associated with the proposed commercial (non-office) uses is summarized in the following table.

Table 3.3: Pass-by Trip Generation

Pass-By Trip Percentage	Pass-by Trips		
	P.M. Peak Hour		
	IN	OUT	TOTAL
21.8%	184	184	369

3.3.2 Trip Distribution

The distribution of site traffic was derived from the trip distribution found in the *Oakville Transportation Master Plan and North Oakville East and West Secondary Plans – Transportation Background Report* (prepared by ENTRA Consultants for the Town of Oakville, February 2004).

The detailed trip distribution is included in *Appendix 4*.

3.3.3 Traffic Assignment

For the purposes of traffic assignment, the proposed development within the Uptown Core was divided into three zones:

- Zone A, comprised of blocks one to five bounded by Oak Park Boulevard, Hays Boulevard, Dundas Street and Sixth Line;
- Zone B, comprised of blocks seven to 11 and bounded by Oak Park Boulevard, Trafalgar Road, Glenashton Drive and the existing residential development west of Taunton Road; and
- The Central Retail Area (CRA) zone, comprising the remaining blocks and bounded by Oak Park Boulevard, Trafalgar Road and Dundas Street.

The labeling of the Uptown Core blocks is depicted in *Appendix 1*.

The site trips outlined in the trip generation table were assigned to each zone according to its land use, trip generation rates and adjustment factors. These trips were then assigned amongst the access points based on the trip distribution noted above and assigned to intersections between their origins and destinations.

3.3.4 Total Future Traffic

Total future traffic on the study area road network is based on the sum of the future background traffic and the site traffic for the Oakville Uptown Core. Figure 3.3 illustrates the total future traffic associated with the weekday a.m. and p.m. peak hours.

Figure 3.3a: Total Future Traffic Volumes (A.M. Peak Hour - 2021)

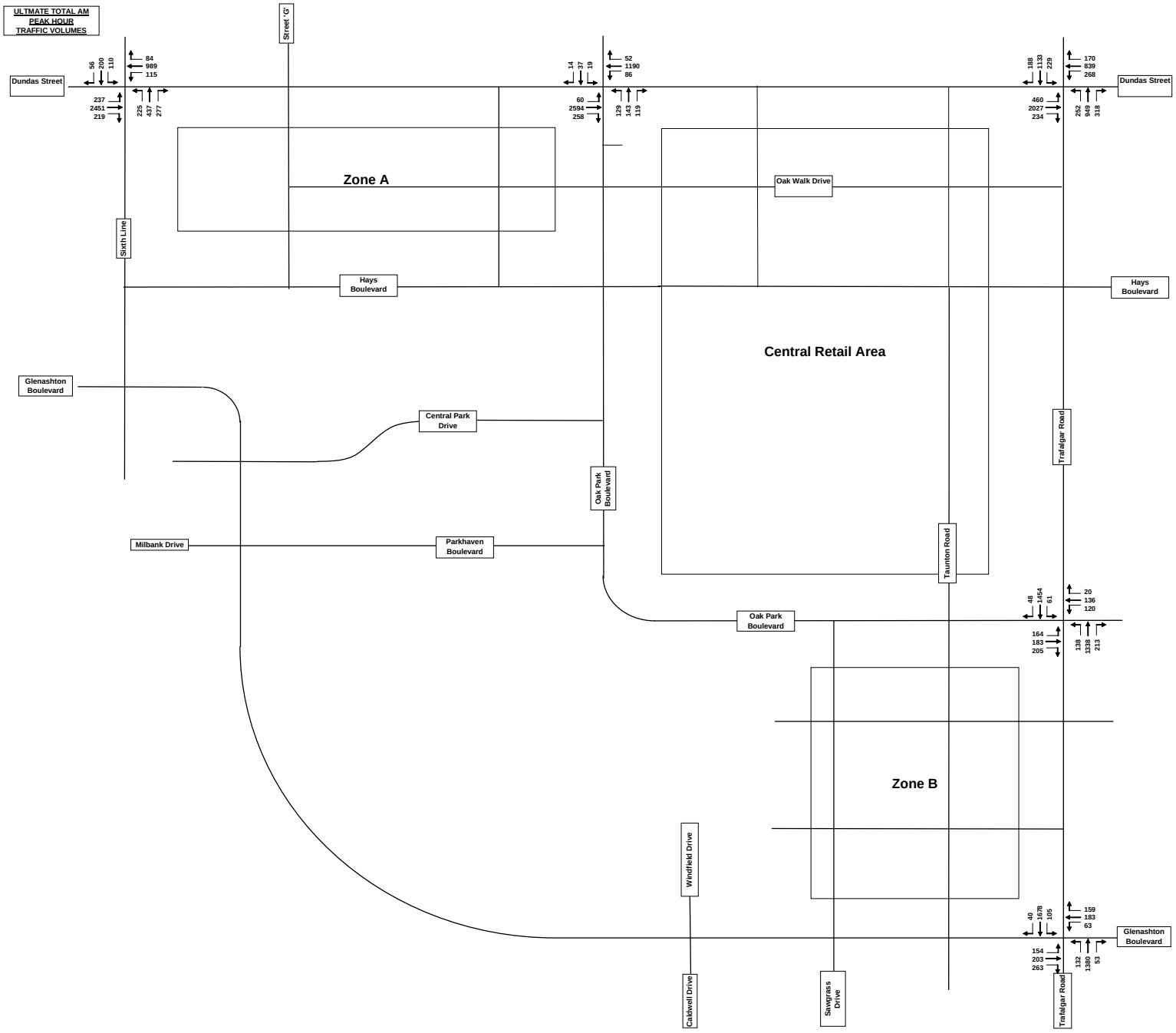
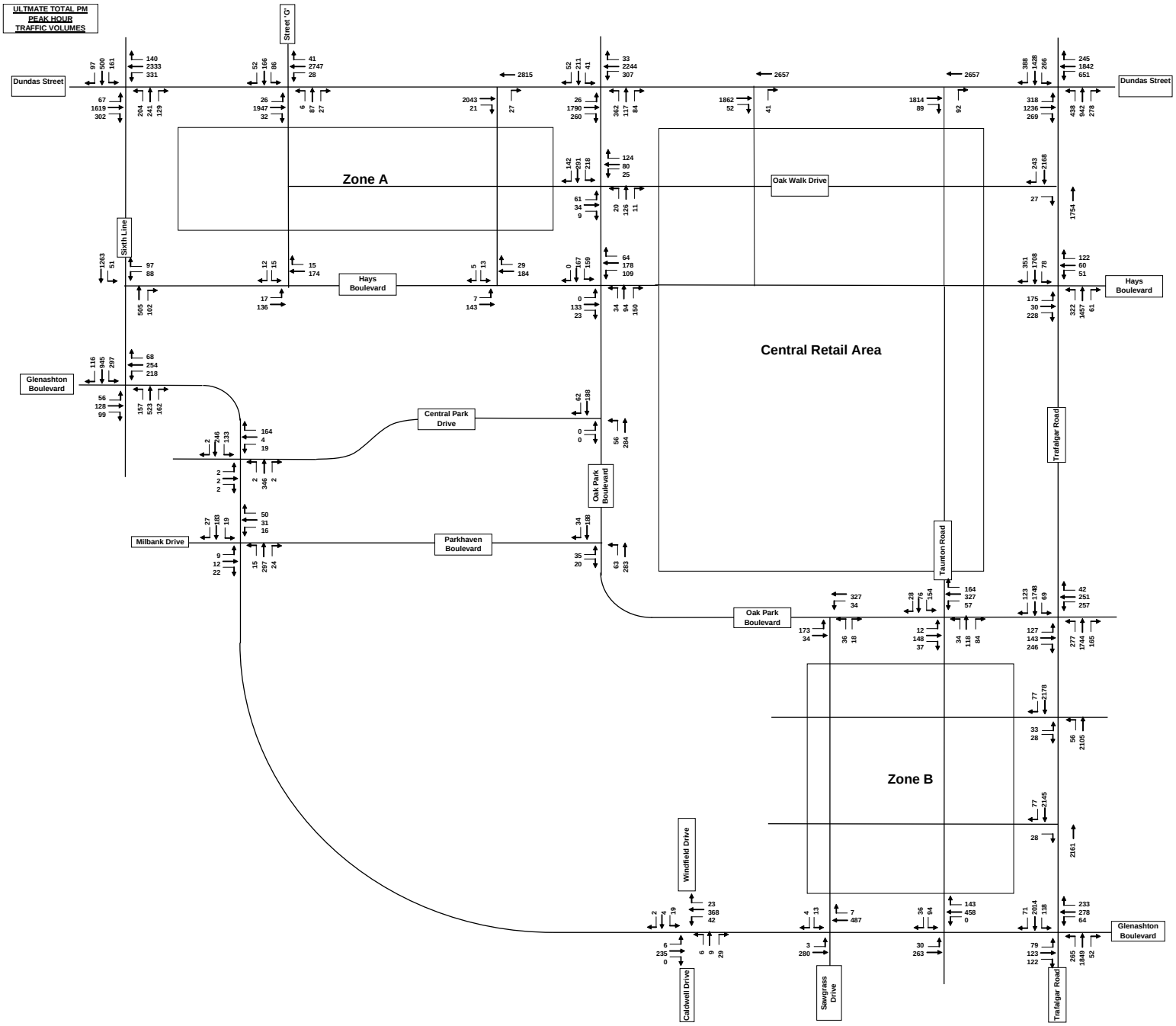


Figure 3.3b: Total Future Traffic Volumes (P.M. Peak Hour - 2021)



3.4 Future Traffic Conditions

3.4.1 Traffic Assessment

Assessment of the total future traffic at the study intersections was based on the total traffic volumes for the a.m. and p.m. peak hours. This analysis reflects the planned future lane configurations (illustrated in Figure 4.2 of this report).

The following table summarizes the overall Level of Service (LOS), volume-to-capacity ratio (V/C), and average control delay for each of the key intersections in the study area. Critical intersections and movements were identified based on whether or not the determined operations resulted in a high volume-to-capacity ratio (i.e. ≥0.90 for long-term conditions) or a high delay (i.e. associated with Level of Service E or F). Detailed output for the future traffic conditions are in the *Appendix 5*.

Table 3.4: Total Future Traffic: Summary of Signalized Intersection Operations

INTERSECTION	OVERALL/ CRITICAL MOVEMENT	OPERATIONS							
		A.M. Peak Hour				P.M. Peak Hour			
		Move-ment	LOS	Delay	V/C	Move-ment	LOS	Delay	V/C
Sixth Line / Dundas Street	Intersection		D	51s	0.92		D	36s	0.86
	Critical Movement	NB Th	F	116s	0.98	SB Th-Rt	E	63s	0.88
		SB Lt	F	>120s	0.91	NB Lt	F	97s	0.92
		EB Th-Rt	D	53s	0.99	EB Th-Rt	D	44s	0.93
		WB Lt	F	106s	0.96	WB Lt	F	82s	0.94
Street 'G' / Dundas Street	Intersection						B	14s	0.81
	Critical Movement					SB Th-Rt	E	60s	0.75
Oak Park Boulevard / Dundas Street	Intersection		B	19s	0.77		C	30s	0.90
	Critical Movement					SB Th-Rt	E	72s	0.85
						NB Lt	F	82s	0.90
						WB Lt	D	53s	0.98
Trafalgar Road / Dundas Street	Intersection		E	59s	0.92		F	>120s	1.26
	Critical Movement	SB Lt	E	57s	0.85	SB Lt	F	>120s	0.98
		SB Th	E	77s	0.97	SB Th	F	>120s	1.14
		NB Lt	F	>120s	1.00	NB Lt	F	>120s	1.42
		NB Th	E	58s	0.82	EB Lt	F	>120s	1.35
		NB Rt	E	59s	0.57	WB Lt	F	>120s	1.05
		EB Lt	E	58s	0.95	WB Th	F	>120s	1.04
		EB Th	D	55s	1.00				
		WB Lt	E	79s	0.86				
Hays Boulevard / Trafalgar Road	Intersection						C	24s	0.84
	Critical Movement					EB Lt	E	74s	0.84
						NB Lt	E	80s	0.89
Oak Park Boulevard / Trafalgar Road	Intersection		B	16s	0.56		C	30s	0.81
	Critical Movement	WB Lt	E	58s	0.71	WB Lt	E	76s	0.90

INTERSECTION	OVERALL/ CRITICAL MOVEMENT	OPERATIONS							
		A.M. Peak Hour				P.M. Peak Hour			
		Move-ment	LOS	Delay	V/C	Move-ment	LOS	Delay	V/C
Glenashton Drive / Trafalgar Road	Intersection		B	19s	0.62		C	23s	0.76
	Critical Movement					NB Lt	E	58s	0.84
						EB Lt	E	70s	0.73
						WB Th-Rt	E	56s	0.76
Glenashton Drive / Sixth Line	Intersection						C	25s	0.78
	Critical Movement					WB Lt	E	73s	0.86

* *At signalized intersections, movements with a v/c ratio ≥0.90 or an average vehicle delay greater than 55 seconds are defined as critical.*

The analyses of the total traffic conditions at the assessed intersections in the study area indicate high traffic volumes on the primary arterials (Dundas Street and Trafalgar Road), especially in the peak directions along Dundas Street (i.e. eastbound during the a.m. peak hour and westbound during the p.m. peak hour) and at the Dundas Street/Trafalgar Road intersection. The peak directions along Dundas Street will be at capacity and will have insufficient capacity to accommodate future traffic (assuming a capacity of 800-900 vehicles per lane). The Dundas Street/Sixth Line intersection is expected to be near capacity during the a.m. peak hour. The Dundas Street/Trafalgar Road intersection is expected to experience high delays and have insufficient capacity.

Although several of the intersections have high overall delays and/or v/c ratios with critical movements, the operating conditions are generally acceptable since both Dundas Street and Trafalgar Road are high-volume regional arterials. The only exceptions are the Dundas Street/Sixth Line and Dundas Street/Trafalgar Road intersections wherein poor overall Level of Service, high delays and high v/c ratios with several poorly operating critical movements are expected.

Additional information regarding each intersection is identified below. At those locations where poor intersection operations have been noted, potential intersection improvements have been identified. It is acknowledged that the 2021 assessment already includes six-lane widenings of Dundas Street and Trafalgar Road. Given that it is unrealistic to provide eight general purpose travel lanes along these corridors, the improvement alternatives are generally limited to auxiliary turn lanes at the intersections. Since the traffic volumes are notably higher for the p.m. peak hour, we have also assessed the intersection operations during the p.m. peak in order to test the benefit of the identified improvements. Results of the sensitivity assessment are provided in *Appendix 6*.

- Dundas Street/Sixth Line: Near capacity conditions are expected during the a.m. and p.m. peak hours, plus several critical movements. Potential improvements to mitigate these operations would be the provision of exclusive eastbound and westbound right turn lanes along Dundas Street. The provision of these improvements result in improved overall intersection operations during the p.m. peak hour with LOS C, delay=30s and a v/c ratio=0.83, and a reduced number of

critical movements and improved movement operations. During the a.m. peak hour, these improvements result in intersection operations with LOS D, delay=39s and a v/c ratio=0.88, with the same number of critical movements (four).

- Dundas Street/Street 'G': Reasonable overall intersection operations are expected, although there is a critical movement during the p.m. peak hour, namely the side street approach. This critical movement is acceptable given that this intersection is along the high-volume Dundas Street corridor. The through movements along Dundas Street are expected to operate well.

- Dundas Street/Oak Park Drive: Near capacity conditions are expected during the p.m. peak hour, plus three critical movements. Potential improvements to mitigate these operations would be the provision of an exclusive westbound right turn lane along Dundas Street, as well as an exclusive southbound right turn lane from Oak Park Drive (i.e. the North Oakville approach). The provision of these improvements result in slightly better overall intersection operations during the p.m. peak hour with LOS C, delay=24s, and v/c ratio=0.85. The same critical movements exist although their operations are improved. The effect of these improvements on the a.m. peak hour operations result in similar overall conditions with LOS B, delay=18s and v/c ratio=0.77.

- Dundas Street/Trafalgar Road: High delays and near / over capacity conditions are expected during the a.m. and p.m. peak hours, plus several poorly operating critical movements. A potential improvement to mitigate these operations would be the provision of double left turn lanes on the northbound approach from Trafalgar Road (given that this is a significant regional intersection, an improvement of this nature would have to be confirmed for design implementation in terms of overall approach alignments (minimizing skew) and incorporating future high-order transit ways). This results in a slightly improved overall v/c ratio=1.06 in the p.m. peak hour and v/c ratio=0.89 in the a.m. peak hour. Critical movements are slightly improved, although there are still expected to be high delays and insufficient capacity for numerous movements at the intersection.

- Trafalgar Road/Hayes Boulevard: Reasonable overall intersection operations are expected, although there are two critical movements during the p.m. peak hour, namely the northbound left from Trafalgar Road and the side street left turn. The occurrence of these critical movements is acceptable given that this intersection is along the high-volume Trafalgar Road corridor. The through movements along Trafalgar Road are expected to operate well.

- Trafalgar Road/Oak Park Boulevard: Good overall intersection operations are expected, although there is one critical movement during each of the a.m. and p.m. peak hours. These are both the westbound left from Oak Park Boulevard. The occurrence of these critical movements is acceptable given that this intersection is along the high-volume Trafalgar Road corridor.

- Trafalgar Road/Glenashton Drive: Good overall intersection operations are expected, although there are three critical movements during the p.m. peak hour, namely the northbound left from Trafalgar Road and two movements on the side street approaches. The occurrence of these critical movements is acceptable given that this intersection is along the high-volume Trafalgar Road corridor. The through movements along Trafalgar Road are expected to operate well.

- Glenashton Drive/Sixth Line: Good overall intersection operations are expected, although there is one critical movement during the p.m. peak hour, namely the westbound left from Glenashton Drive. A potential improvement to mitigate this critical movement would be the dedication of the existing southbound right turn lane as a shared through-right turn lane in order to provide two southbound through lanes. There are two existing southbound receiving lanes. The provision of this improvement results in slightly improved overall intersection operations with LOS C, delay=20s, and v/c ratio=0.68 and elimination of the critical movement.

In any event, as high-order transit service is introduced through this area, these traffic conditions will provide added incentive to travelers to shift modes from automobile to transit and potentially result in slightly better operations. It is envisioned that high non-auto mode splits can be achieved as there is a comprehensive network of sidewalks and bikeways, transit services, a transit hub, HOV and/or Bus Rapid Transit lanes on the arterial corridors, and to some extent since there will be auto congestion on the primary Dundas Street and Trafalgar Road corridors which would promote other travel modes.

As noted earlier in this report, the achievement of high non-auto based travel splits (transit, walk, and cycling) are important elements to the successful planning of the Uptown Core area. These modal splits will achieve good transportation conditions in the Uptown Core although there may be congested conditions along the primary Trafalgar Road and Dundas Street corridors. The implementation of high-order transit along these two corridors may ultimately result in slightly better conditions along these roads as other areas of the Town shift travel patterns from auto-based modes to transit.

3.4.2 HOV Considerations

Figures 3.3a and 3.3b identify the peak directional traffic volumes along Dundas Street to range from 2,600 to 2,900 vehicles. As noted previously, given these traffic volumes Dundas Street will be at capacity and have insufficient capacity to accommodate future traffic (assuming a capacity of 800-900 vehicles per lane).

The Synchro traffic model is not capable of modelling the discrete impacts of a dedicated high occupancy vehicle (HOV) lane within the multilane Dundas Street corridor (without manipulating the assumed road network and traffic volumes, such as extracting all HOVs to replicate a network of pure general purpose lanes and vehicles). As such, the model does not explicitly recognize that there would be higher utilization of the general purpose lanes (GPLs) and slightly less utilization of the HOV lanes.

However, a lane utilization factor of 0.91 has been incorporated into the Synchro analysis to reflect that some lanes will have higher approach volumes than others. But it must be noted that as congested conditions occur, the lane utilization becomes uniform/equal across all congested lanes. In our analysis case with an assumption of 0.91, that would mean the two GPLs would reflect equal lane utilization of 1.00 but there would be much less utilization of the HOV lane at about 0.73. Thus, our assessment is based on approximately 27% less traffic volumes in the HOV lane[1]. In summary, the Synchro assessment includes an inherent assumption that there would be ≈27% less utility of the adjacent HOV lane than the GPLs, with ≈27% of the traffic in the HOV lane (and ≈73% in the two GPLs).

Given this implicit assumption, it is noted that the analysis reasonably reflects the disparity of lane utilization of the GPLs and HOV lanes for congested conditions.

As a further consideration, a supplementary review of the traffic conditions was undertaken to gather a better understanding of the future operating conditions along Dundas Street. Based on data contained within the Transportation Tomorrow Survey for the Town of Oakville, the average vehicle occupancy during the a.m. peak period (i.e. 6:00 to 9:00 a.m.) is 1.1846 persons per vehicle. Thus, if the auto occupancy did not change in the future and based on the assumption that all the existing HOVs (2+) would migrate from the GPLs to the HOV lanes, the single occupant vehicles in the two GPLs would comprise ≈82% of the traffic and there would be about ≈18% in the HOV lane.

But that is based on existing traffic conditions. Given that there are numerous transportation planning initiatives by the Town of Oakville and the Region of Halton to promote reduced auto dependency, it is expected that the proportion of HOVs will increase in the future. Further, it is expected that vehicle occupancy will increase and the utilization of the HOV lane would increase simply because it will be less congested than the adjacent GPLs and more desirable to commuters. As such, it is not unreasonable to assume that the existing base split of 82%GPLs:18%HOVs would increase and that the incorporated model assumption noted above of 73%GPLs:27%HOVs could be achieved. This would involve only a 9% migration of single occupant vehicles in the GPLs towards the HOVs.

[1] Alternatively, the 27% is more correctly expressed as a 27% reduction in the HOV lane capacity since the lane utilization factor is applied in the saturation flow and capacity calculations of the Highway Capacity Manual and Synchro algorithms.

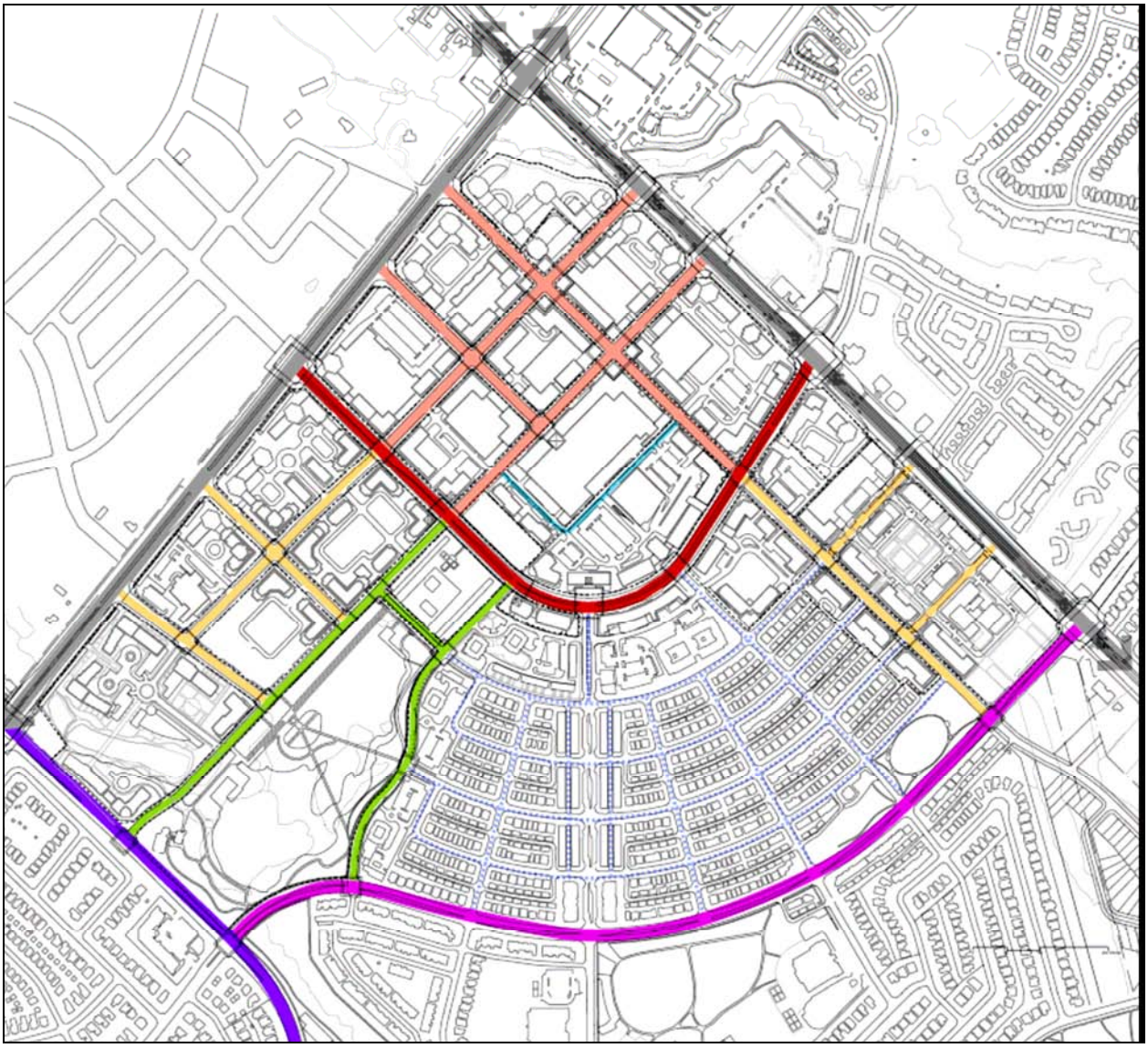
4. Plan Design

4.1 Road Planning

The various road cross-section designs for the local and collector street system have been developed to enhance the overall integration of auto needs with other modes, as well as for compatibility with adjacent lands and buildings. In that regard, many of the road cross-sections incorporate on-street parking (during off-peak conditions), reduced right-of-ways, reduced road widths, utility trenches, landscaping, and alternative design standards are contemplated (such as refined daylighting, turning radii, sidewalk locations, etc).

Figure 4.1 illustrates the ultimate road network configurations. The laning at the boundary signalized intersections are illustrated in Figure 4.2. The assumed intersection laning at the boundary signalized intersections are as per the original *Uptown Core Detailed Transportation Assessment – Mature State Development* (Marshall Macklin Monaghan Limited, 1996) and the *Revised Traffic Impact Study Update Final Report – Oak Park (Uptown Core) Commercial Development – Town of Oakville* (Marshall Macklin Monaghan Limited, 2006), with the exception of the provision of westbound double left turn lanes at the Dundas Street/Trafalgar Road intersection which were identified by Town staff as improvements per the Dundas Street EA. As noted in the previous chapter, a number of additional intersection laning improvements have been suggested in order to improve some of the identified operating conditions at these intersections.

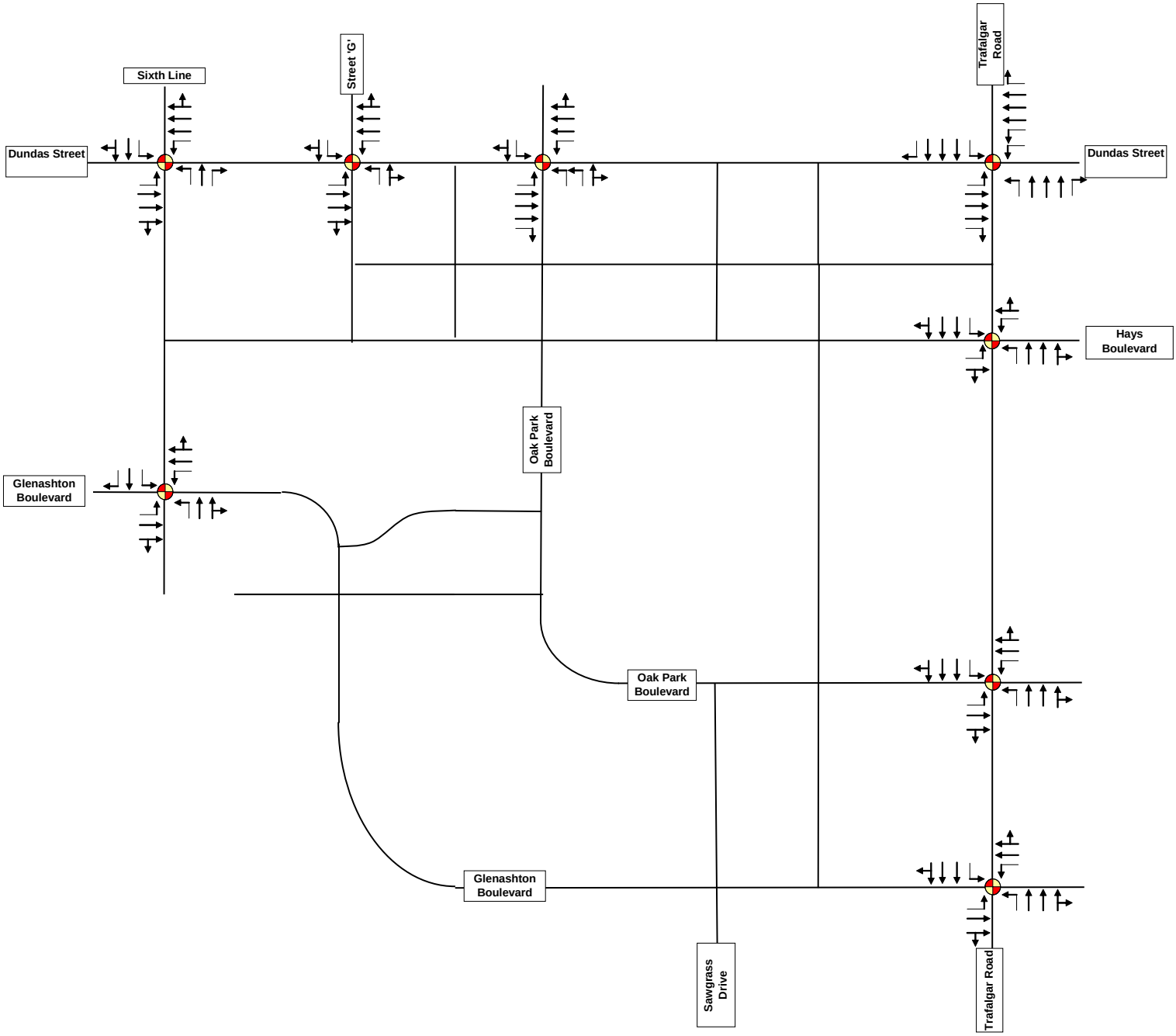
Figure 4.2 Ultimate Road Configurations



	Edge Road – Regional Arterial	**Six Lanes (HOV or BRT)**
	Edge Road – Arterial	**Four Lanes**
	Edge Road – Major Collector	**Four Lanes**
	Main Street	**Four Lanes**
	Centre District Road	**Four Lanes**
	Urban Neighbourhood Streets	**Two Lanes**
	Lane	**Two Lanes**
	Park Road	**Two Lanes**
	Neighbourhood Streets	**Two Lanes**

** The above laning depicts the number of general purpose travel lanes*

Figure 4.2 Assumed Intersection Configurations



4.2 Transit Facilities

The development and configuration of the road network of the Oakville Uptown Core is intended to be supportive of alternative travel modes, including transit. Local transit routes within the Uptown Core are focused around the transit hub at the northeast corner of the Taunton Road/Oak Walk Drive intersection.

Local transit routes provide coverage such that most residences, and all schools, neighbourhood centres and public facilities are within a walking distance of no more than 400 metres of a bus stop (most of the Central Retail Area is within 400 m of the transit hub). Bus stops should be placed at most intersections along the routes, passenger generators and transfer points. Bus stop spacing should be approximately 250-300 metres (not less than 200 metres).

The transit routing is complimented with a comprehensive network of sidewalks and sidewalk connections throughout the community to facilitate walking to transit stops. This includes sidewalks on all streets and sidewalk or path connections to link the adjacent sidewalks.

Consideration should be made to encourage bicycle-transit intermodal connections, including bicycle racks on buses and bicycle lockups/lockers at the transit hub.

4.3 Bikeway Network

A comprehensive cycling plan for the Uptown Core will improve the safety and attractiveness of cycling as an alternative travel mode. The Town of Oakville is currently undertaking an *Active Transportation Master Plan* to identify a comprehensive cycling (on- and off-road) and sidewalk network.

On-street bikeway facilities are to be provided on Oak Park Boulevard and the curbside lane of primary roads (such as Hays Boulevard and Taunton Road) will be wide enough to accommodate cyclists. Cycling should be further improved within the Uptown Core by providing convenient bicycle lockup/locker facilities throughout the Central Retail Area, as well as at the transit hub as noted above.

4.4 Pedestrian Provisions

A comprehensive network of sidewalks and sidewalk connections are proposed to provide for convenient movement throughout the Uptown Core.

Sidewalk connections should also be incorporated to link sidewalks to paths and other walkways at notable sites and open space areas.

The community is configured to provide pedestrian access to pedestrian and transit routes. It is desirable to provide pedestrian connections or openings to transit routes along arterial roads every 250 metres.

4.5 Parking

Parking provisions in the Uptown Core are important elements of the area plan. Due to the incorporated community planning and design principles of the commercial components within the Uptown Core area, the area should consider a reduced parking requirement.

For example, since the Uptown Core is to be developed with increased density and in a mixed-use format, there will be reduced automobile dependency since residential, commercial and employment uses are located in proximity to each other. In many cases, the commercial uses are in the form of mixed-use residential buildings or office buildings. This results in fewer automobile trips and hence less demand for parking.

Although on a day-to-day basis, restaurant and retail uses are expected to draw many of their customers exclusively to patronize those uses, significant portions of the restaurant patrons and other facilities are expected to be related to adjacent employment centres and residential lands. Accordingly, the respective parking requirements are not mutually exclusive additive components.

Similarly, the development synergy results in trip-chaining, wherein a single automobile trip results in visitation to more than one use. As an example, due to the development compactness and the attractiveness of the area, a restaurant visitor may also walk to a nearby retail establishment. Thus, a secondary parking need for the retail trip is not realized.

Furthermore, the community is being developed in a pedestrian-friendly and bicycle-friendly form with paths, sidewalks, and bikeways. This enhances the promotion of alternate travel modes and further reduces automobile trips and parking demands. Finally, the provision of transit servicing in the Uptown Core and the transit hub will also serve to reduce auto trips and parking needs.

There are opportunities for shared use of parking both on-site and within the context of the Uptown Core area as a whole. The principles of shared parking should be incorporated to reflect reduced peak parking demands.

In order to promote the vitality of the at-grade commercial uses in the Uptown Core area, the use of on-street parking should be promoted. On-street parking is provided in many locations to provide for parking opportunities. For example, on-street parking is crucial for visitors in the laneway based residential areas, as well as in the ‘main street’ area in order to provide high-turnover parking to support the vitality of the adjacent commercial uses.

Modified parking provisions for the Uptown Core area are appropriate as an incentive to travel via non-auto based modes. This could include reduced minimum parking supply rates as well as adoption of maximum parking supply rates.

These modifications would help reduce the auto ownership in the area, and henceforth the amount of auto traffic and congestion. The reductions and maximum are supportable from a technical perspective as the Town of Oakville has already approved many residential developments with reduced parking standards and has also commissioned a study that

recommended reduced parking supply rates. The implementation of a maximum parking supply rate is also appropriate as it reduces the excessive provision of parking, thereby reducing construction costs and land consumption.

Reductions may also stimulate development since there would be less costs to developers to provide parking, which in many cases in the Uptown Core area would be in structured parking facilities.

In lieu or perhaps in tandem with consideration of parking supply reductions, the Town may also consider payment-in-lieu practices to offset parking needs in order to support potential future parking needs.

4.6 Plan Design Summary

Although most of the road elements of the Uptown Core area are already constructed, there are many attributes that are to be realized with complete build-out of the community. Not only does this include the complete network of roads and intersections, but also the other significant elements pertaining to walkways and sidewalks, bikeways, transit routes, and the transit hub. These elements are crucial for efficient movement of people in the area.

5. Summary

Trafalgar Road and Dundas Street are the two main arterial roads bounding Oakville's Uptown Core area. Trafalgar Road is a four-lane north-south road and Dundas Street is a four-lane east-west road. In the period from 2009 to 2015, these roads will be widened to six lanes throughout the study area. The widening is also anticipated to include HOV lanes (which will ultimately be replaced with Bus Rapid Transit lanes) on Dundas Street and high-order transit services on Trafalgar Road.

The configuration of the road network within the Uptown Core accommodates alternative travel modes, including transit, a bikeway network and pedestrian provisions to improve transportation conditions within this area. Local transit routes provide coverage such that most residences, schools, neighborhood centres and public facilities will be within a reasonable walking distance of a bus stop. A transit hub is already in place which is supported with transit routing complimented with a comprehensive network of sidewalks and sidewalk connections throughout the community to facilitate walking to transit stops. Providing convenient street-side bicycle lockup/locker facilities throughout the Central Retail area, as well as at the transit hub, will amend the safety and attractiveness of alternative travel modes.

It is envisioned that high non-auto mode splits for the Uptown Core lands can be achieved as there is a comprehensive network of sidewalks and bikeways, transit services, a transit hub, HOV and/or Bus Rapid Transit lanes on the arterial corridors, and to some extent since there will be auto congestion on the primary Dundas Street and Trafalgar Road corridors which would promote other travel modes. Also, there are planning related attributes of the Uptown Core lands that promote non-auto travel, such as consolidated mixed-use development, creation of a “main street” community, and potentially reduced and maximum parking supply rates.

The collector and local roads through the Uptown Core will have good operations and levels of service. Due to traffic growth in the area, analyses of the total traffic conditions at the assessed intersections in the study area indicate that Dundas Street will be at capacity and have insufficient capacity to accommodate future traffic (assuming a capacity of 800-900 vehicles per lane), particularly at the Dundas Street/Trafalgar Road intersection which is expected to experience high delays and have insufficient capacity. Several potential intersection improvements have been identified.

It is noted that the Town is considering a Town-wide Livable Oakville Transportation Overview Study to better understand the capacity issues within the growth areas of the Town and how to address problems (i.e. increased levels of transit service and transit priority measures, accepting higher levels of congestion, providing additional capacity, or other means).

The following safe-guards should be considered to ensure thorough reviews are completed prior to future development in the Uptown Core and subsequent major impacts to the area roadways:

- The future traffic volumes should be monitored to confirm operating conditions and the necessity for additional road/intersection improvements;

- Implement additional road/intersection improvements;
- Development applications with a yield that exceeds the as-of-right provisions should be supported with a transportation study to document the impacts and infrastructure needs; and
- Potential interim development caps until road/intersection improvements are in-place to ensure that development levels do not result in extremely poor operating conditions.

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Appendix 1

Development Plan
(by The Planning Partnership)

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Oakville Uptown Core Review
Job 0917

9-Oct-08

Block by Block Analysis As-of-Right

ANALYSIS

Block Number	Residential						Retail					Office				Total Floor Area (ha)	Site Area (ha)	FSI
	Total Residential Floor Area (sq.m)	Total Number of Units	Parking				Total Retail Floor Area (sq.m)	Parking				Total Office Floor Area (sq.m)	Parking					
			at 1.75 spaces/unit [2]		at 2.0 spaces/unit [2]			at 1/28 sq.m (Main street retail) & 1/22sq.m (large scale retail)					at 1/28 sq.m					
			Total No. of Pkg Spaces	Levels underground (average)	Total No. of Pkg Spaces	Levels underground (average)		No. of Pkg Spaces	Structure parking	Ground parking	On-street parking spaces		No. of Pkg Spaces	Levels underground	Levels parking structure			
Block 1	72,090	759	1,328	0	1,518	0	1,166	42	0	0	42					7	6	1
Block 2	16,420	173	302	4	346	5										2	1	2
Block 3	33,155	349	611	4	698	6	2,170	78	0	0	60					4	2	2
Block 4	29,000	481	842	3	939	5	2,090	75	0	29	46					3	3	1
Block 5	28,000	475	832	4	951	6	2,200	79	0	0	61					3	2	1
Block 6	11,760	124	217	3	248	4	2,640	94	0	76	19					1	0	3
Block 7	28,760	303	530	2	605	2	2,640	94	0	51	43	5,880	210	3	0	4	2	2
Block 8	22,555	237	415	2	427	3	2,325	83	0	19	64					2	1	3
Block 9	146,740	1,545	2,703	3	3,089	3	3,570	128	0	28	100					15	6	2
Block 10	14,060	148	259	1	152	1	1,540	55	0	38	17	0	0	1	0	2	1	2
Block 11	9,250	69	121	1	138	2	880	31	0	26	6	8,860	316	2	0	2	1	2
Block 12	9,240	97	170	0	195	0	8,960	320	234	0	86	17,640	607	3	3	4	4	1
Block 13	26,498	279	488	3	558	4	8,080	289	137	60	91	12,650	452	0	0	5	4	1
Block 14	6,600	69	122	3	139	3	22,200	988	953	0	35	5,500	196	0	0	3	4	1
Block 15	17,280	182	318	3	364	3	7,920	283	283	0	0					3	2	1
Block 16	10,065	106	185	3	212	4	4,620	165	125	0	40					1	2	1
Block 17	46,260	487	852	3	974	4	3,960	141	99	0	42					5	2	2
Block 18	55,000	579	1,013	3	1,158	4	5,085	182	156	0	26	0	0	1	0	6	2	3
Block 19	44,770	471	825	4	943	5	5,080	181	127	0	54					5	3	2
Block 20	30,160	317	556	4	635	5	14,180	645	599	0	46					4	3	2
Total	657,663	7,251	12,690		14,286		101,306	3,951	2,713	326	877	50,530	1,782			81	50	

Existing Development	Block 21	Single Detached	204
		Semi Detached	297
		Townhouse	411
		Apartments	351
		Life Style Apartments	375
	Total		1,638
	Gran Total Residential Units		8,889

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Uptown Core: Block Labeling

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Appendix 2

Level of Service Definitions

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS
(Highway Capacity Manual, 2000)

The assessment of operations for signalized intersections is based on the results of the Highway Capacity Software (HCS), which is based on the methodology in the Highway Capacity Manual, 2000.

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the control delay per vehicle for a 15-minute analysis period.

LOS A described operations with very low delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favourable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

LOS C describes operations with delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with delay greater than 35 and up to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Level of Service	Stopped Delay Per Vehicle (Seconds)
A	$\leq$ 10.0
B	> 10.0 and $\leq$ 20.0
C	> 20.0 and $\leq$ 35.0
D	> 35.0 and $\leq$ 55.0
E	> 55.0 and $\leq$ 80.0
F	> 80.0

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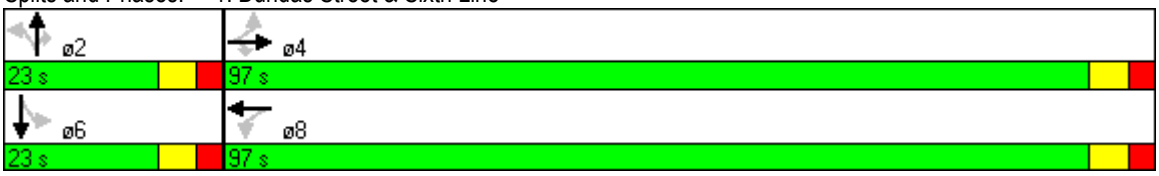
Appendix 3

Intersection Analyses Output
Existing (2007) Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	190	1894	147	78	766	69	220	199	49	101
Turn Type	Perm		Perm	Perm		Perm		Perm	Perm	
Protected Phases		4			8		2			6
Permitted Phases	4		4	8		2		2	6	
Detector Phase	4	4	4	8	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	97.0	97.0	97.0	97.0	97.0	23.0	23.0	23.0	23.0	23.0
Total Split (%)	80.8%	80.8%	80.8%	80.8%	80.8%	19.2%	19.2%	19.2%	19.2%	19.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 36 (30%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Dundas Street & Sixth Line



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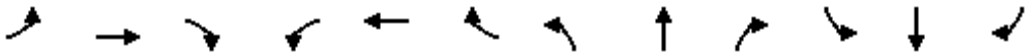


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1894	147	78	766	24	69	220	199	49	101	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	4.8	3.8	3.8	4.8	3.8	3.8
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3618	1619	1750	3601		2006	1904	1619	2006	3451	
Flt Permitted	0.35	1.00	1.00	0.08	1.00		0.66	1.00	1.00	0.32	1.00	
Satd. Flow (perm)	636	3618	1619	143	3601		1392	1904	1619	683	3451	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	1894	147	78	766	24	69	220	199	49	101	45
RTOR Reduction (vph)	0	0	36	0	2	0	0	0	31	0	39	0
Lane Group Flow (vph)	190	1894	111	78	788	0	69	220	168	49	107	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	90.3	90.3	90.3	90.3	90.3		15.7	15.7	15.7	15.7	15.7	
Effective Green, g (s)	90.3	90.3	90.3	90.3	90.3		15.7	15.7	15.7	15.7	15.7	
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75		0.13	0.13	0.13	0.13	0.13	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	479	2723	1218	108	2710		182	249	212	89	452	
v/s Ratio Prot		0.52			0.22			c0.12			0.03	
v/s Ratio Perm	0.30		0.07	c0.55			0.05		0.10	0.07		
v/c Ratio	0.40	0.70	0.09	0.72	0.29		0.38	0.88	0.79	0.55	0.24	
Uniform Delay, d1	5.2	7.7	3.9	8.1	4.7		47.7	51.3	50.6	48.8	46.8	
Progression Factor	1.00	1.00	1.00	1.82	0.94		0.92	0.91	0.89	1.00	1.00	
Incremental Delay, d2	2.5	1.5	0.1	39.1	0.3		1.3	37.5	20.3	7.4	0.3	
Delay (s)	7.7	9.2	4.1	53.7	4.7		45.3	84.4	65.5	56.2	47.0	
Level of Service	A	A	A	D	A		D	F	E	E	D	
Approach Delay (s)		8.8			9.1			71.2			49.3	
Approach LOS		A			A			E			D	

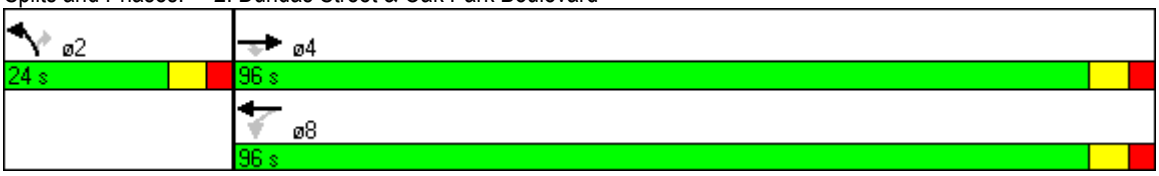
Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1938	203	45	889	51	46
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	96.0	96.0	96.0	96.0	24.0	24.0
Total Split (%)	80.0%	80.0%	80.0%	80.0%	20.0%	20.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Dundas Street & Oak Park Boulevard



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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1938	203	45	889	51	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.8	3.5	3.8	3.0	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3618	1619	1750	3618	1652	1566
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3618	1619	159	3618	1652	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1938	203	45	889	51	46
RTOR Reduction (vph)	0	37	0	0	0	30
Lane Group Flow (vph)	1938	166	45	889	51	16
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	98.0	98.0	98.0	98.0	8.0	8.0
Effective Green, g (s)	98.0	98.0	98.0	98.0	8.0	8.0
Actuated g/C Ratio	0.82	0.82	0.82	0.82	0.07	0.07
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2955	1322	130	2955	110	104
v/s Ratio Prot	c0.54			0.25	c0.03	
v/s Ratio Perm		0.10	0.28			0.01
v/c Ratio	0.66	0.13	0.35	0.30	0.46	0.16
Uniform Delay, d1	4.3	2.2	2.8	2.7	53.9	52.8
Progression Factor	0.58	0.41	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	7.3	0.3	3.1	0.7
Delay (s)	3.3	1.1	10.1	2.9	57.0	53.5
Level of Service	A	A	B	A	E	D
Approach Delay (s)	3.1			3.3	55.4	
Approach LOS	A			A	E	

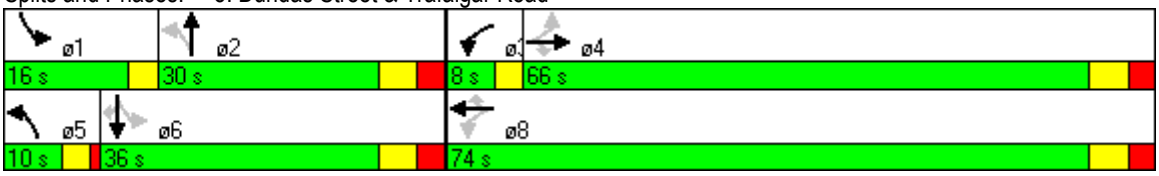
Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	276	1492	151	106	613	138	122	531	192	676	147
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		pm+pt		Perm
Protected Phases		4		3	8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	3.0	4.0	4.0	2.0	4.0	3.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	6.0	23.0	23.0	6.0	23.0	6.0	23.0	23.0
Total Split (s)	66.0	66.0	66.0	8.0	74.0	74.0	10.0	30.0	16.0	36.0	36.0
Total Split (%)	55.0%	55.0%	55.0%	6.7%	61.7%	61.7%	8.3%	25.0%	13.3%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	1.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	4.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Ped	None	Ped	Ped

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 5: Dundas Street & Trafalgar Road



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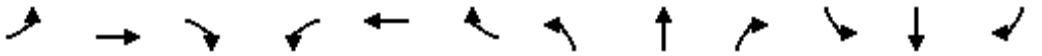


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	276	1492	151	106	613	138	122	531	92	192	676	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.8	3.8	3.5	3.8	4.8
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	4.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3618	1566	1750	3618	1566	1750	3538		1750	3618	1794
Flt Permitted	0.42	1.00	1.00	0.06	1.00	1.00	0.22	1.00		0.16	1.00	1.00
Satd. Flow (perm)	773	3618	1566	118	3618	1566	403	3538		287	3618	1794
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	276	1492	151	106	613	138	122	531	92	192	676	147
RTOR Reduction (vph)	0	0	62	0	0	60	0	11	0	0	0	95
Lane Group Flow (vph)	276	1492	89	106	613	78	122	612	0	192	676	52
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	59.4	59.4	59.4	67.8	67.8	67.8	28.7	22.7		38.2	28.2	28.2
Effective Green, g (s)	59.4	59.4	59.4	67.8	67.8	67.8	28.7	22.7		38.2	28.2	28.2
Actuated g/C Ratio	0.50	0.50	0.50	0.56	0.56	0.56	0.24	0.19		0.32	0.24	0.24
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	4.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	383	1791	775	140	2044	885	164	669		244	850	422
v/s Ratio Prot		c0.41		c0.03	0.17		0.04	c0.17		c0.08	0.19	
v/s Ratio Perm	0.36		0.06	0.39		0.05	0.14			0.17		0.03
v/c Ratio	0.72	0.83	0.11	0.76	0.30	0.09	0.74	0.91		0.79	0.80	0.12
Uniform Delay, d1	23.8	26.0	16.2	22.7	13.7	11.9	39.1	47.7		33.0	43.2	36.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.85		1.00	1.00	1.00
Incremental Delay, d2	11.8	4.9	0.3	23.2	0.4	0.2	17.3	20.5		17.0	5.4	0.1
Delay (s)	35.6	31.0	16.5	46.0	14.0	12.1	49.0	61.1		50.0	48.6	36.3
Level of Service	D	C	B	D	B	B	D	E		D	D	D
Approach Delay (s)		30.5			17.7			59.1			47.1	
Approach LOS		C			B			E			D	

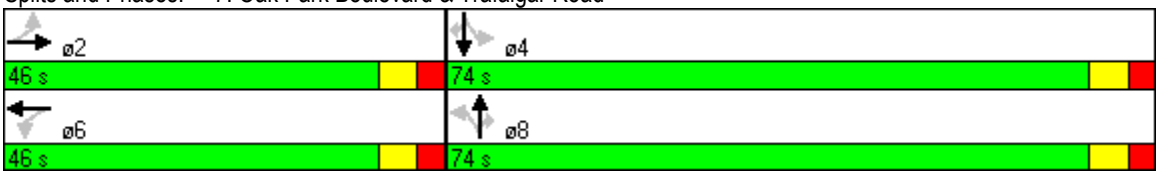
Intersection Summary			
HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	60	119	120	91	83	694	213	61	860	30
Turn Type	Perm		Perm		Perm		Perm	Perm		Perm
Protected Phases		2		6		8			4	
Permitted Phases	2		6		8		8	4		4
Detector Phase	2	2	6	6	8	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	46.0	46.0	46.0	46.0	74.0	74.0	74.0	74.0	74.0	74.0
Total Split (%)	38.3%	38.3%	38.3%	38.3%	61.7%	61.7%	61.7%	61.7%	61.7%	61.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 86 (72%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 7: Oak Park Boulevard & Trafalgar Road



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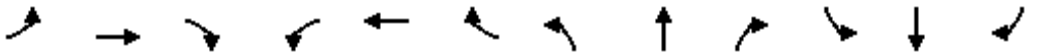


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	119	139	120	91	20	83	694	213	61	860	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.5	3.5	3.8	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.92		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3217		1750	3520		1750	3618	1566	1750	3618	1566
Flt Permitted	0.68	1.00		0.56	1.00		0.31	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	1185	3217		1024	3520		577	3618	1566	702	3618	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	119	139	120	91	20	83	694	213	61	860	30
RTOR Reduction (vph)	0	116	0	0	17	0	0	0	59	0	0	8
Lane Group Flow (vph)	60	142	0	120	94	0	83	694	154	61	860	22
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	19.5	19.5		19.5	19.5		86.5	86.5	86.5	86.5	86.5	86.5
Effective Green, g (s)	19.5	19.5		19.5	19.5		86.5	86.5	86.5	86.5	86.5	86.5
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.72	0.72	0.72	0.72	0.72
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	523		166	572		416	2608	1129	506	2608	1129
v/s Ratio Prot		0.04			0.03			0.19			c0.24	
v/s Ratio Perm	0.05			c0.12			0.14		0.10	0.09		0.01
v/c Ratio	0.31	0.27		0.72	0.16		0.20	0.27	0.14	0.12	0.33	0.02
Uniform Delay, d1	44.3	44.0		47.7	43.2		5.5	5.8	5.2	5.1	6.1	4.7
Progression Factor	1.00	1.00		1.00	1.00		0.81	0.80	0.62	0.57	0.54	0.57
Incremental Delay, d2	0.9	0.3		15.6	0.1		1.0	0.2	0.2	0.5	0.3	0.0
Delay (s)	45.2	44.3		63.3	43.4		5.4	4.9	3.4	3.4	3.6	2.7
Level of Service	D	D		E	D		A	A	A	A	A	A
Approach Delay (s)		44.5			53.7			4.6			3.6	
Approach LOS		D			D			A			A	

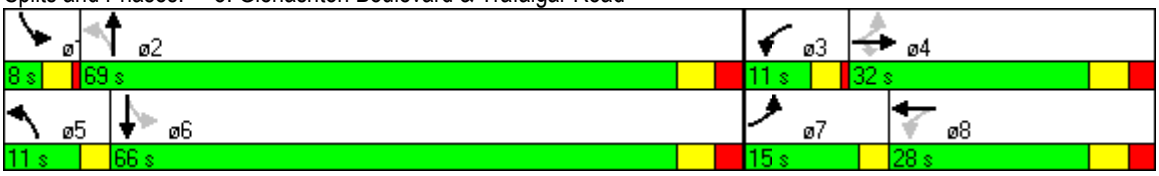
Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	128	157	214	63	158	85	737	87	1023
Turn Type	pm+pt		Perm	pm+pt		pm+pt		pm+pt	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	3.0	4.0	4.0	2.0	4.0	3.0	4.0	2.0	4.0
Minimum Split (s)	6.0	23.0	23.0	6.0	23.0	6.0	23.0	6.0	23.0
Total Split (s)	15.0	32.0	32.0	11.0	28.0	11.0	69.0	8.0	66.0
Total Split (%)	12.5%	26.7%	26.7%	9.2%	23.3%	9.2%	57.5%	6.7%	55.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.0	3.0	1.0	3.0	0.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	7.0	4.0	7.0	3.0	7.0	4.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?		Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 96 (80%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 8: Glenashton Boulevard & Trafalgar Road



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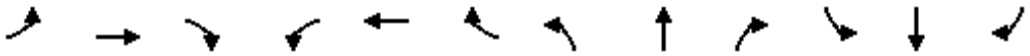


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	128	157	214	63	158	138	85	737	53	87	1023	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	3.0	7.0	7.0	4.0	7.0		3.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1842	1619	1750	3365		1750	3581		1750	3600	
Flt Permitted	0.35	1.00	1.00	0.66	1.00		0.22	1.00		0.30	1.00	
Satd. Flow (perm)	606	1842	1619	1211	3365		397	3581		554	3600	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	157	214	63	158	138	85	737	53	87	1023	35
RTOR Reduction (vph)	0	0	164	0	123	0	0	4	0	0	2	0
Lane Group Flow (vph)	128	157	50	63	173	0	85	786	0	87	1056	0
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	27.0	17.4	17.4	18.4	12.8		74.3	68.0		76.7	69.7	
Effective Green, g (s)	27.0	17.4	17.4	18.4	12.8		74.3	68.0		76.7	69.7	
Actuated g/C Ratio	0.22	0.14	0.14	0.15	0.11		0.62	0.57		0.64	0.58	
Clearance Time (s)	3.0	7.0	7.0	4.0	7.0		3.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	234	267	235	211	359		317	2029		424	2091	
v/s Ratio Prot	c0.05	c0.09		0.01	0.05		c0.01	0.22		c0.01	c0.29	
v/s Ratio Perm	0.07		0.03	0.03			0.15			0.12		
v/c Ratio	0.55	0.59	0.21	0.30	0.48		0.27	0.39		0.21	0.51	
Uniform Delay, d1	39.2	47.9	45.3	44.6	50.5		10.1	14.4		8.7	14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.76	0.77	
Incremental Delay, d2	2.6	3.3	0.5	0.8	1.0		0.5	0.6		0.2	0.8	
Delay (s)	41.9	51.3	45.7	45.4	51.5		10.6	15.0		6.9	12.3	
Level of Service	D	D	D	D	D		B	B		A	B	
Approach Delay (s)		46.5			50.4			14.6			11.9	
Approach LOS		D			D			B			B	

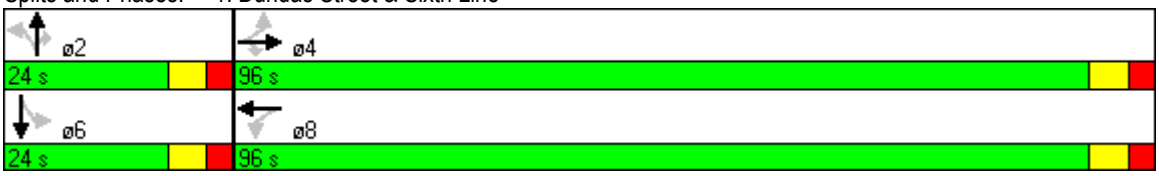
Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	54	1226	121	231	1773	71	103	87	40	238
Turn Type	Perm		Perm	Perm		Perm		Perm	Perm	
Protected Phases		4			8		2			6
Permitted Phases	4		4	8		2		2	6	
Detector Phase	4	4	4	8	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	96.0	96.0	96.0	96.0	96.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	80.0%	80.0%	80.0%	80.0%	80.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 43 (36%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Dundas Street & Sixth Line



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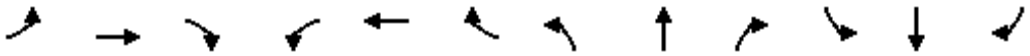


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1226	121	231	1773	73	71	103	87	40	238	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	4.8	3.8	3.8	4.8	3.8	3.8
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3618	1619	1750	3596		2006	1904	1619	2006	3506	
Flt Permitted	0.09	1.00	1.00	0.21	1.00		0.45	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	159	3618	1619	380	3596		940	1904	1619	1458	3506	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	1226	121	231	1773	73	71	103	87	40	238	62
RTOR Reduction (vph)	0	0	28	0	2	0	0	0	76	0	20	0
Lane Group Flow (vph)	54	1226	93	231	1844	0	71	103	11	40	280	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	91.5	91.5	91.5	91.5	91.5		14.5	14.5	14.5	14.5	14.5	
Effective Green, g (s)	91.5	91.5	91.5	91.5	91.5		14.5	14.5	14.5	14.5	14.5	
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76		0.12	0.12	0.12	0.12	0.12	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	121	2759	1234	290	2742		114	230	196	176	424	
v/s Ratio Prot		0.34			0.51			0.05			c0.08	
v/s Ratio Perm	0.34		0.06	c0.61			0.08		0.01	0.03		
v/c Ratio	0.45	0.44	0.08	0.80	0.67		0.62	0.45	0.05	0.23	0.66	
Uniform Delay, d1	5.1	5.1	3.6	8.6	6.9		50.2	49.0	46.7	47.7	50.4	
Progression Factor	1.00	1.00	1.00	0.82	0.67		1.27	1.28	2.21	1.00	1.00	
Incremental Delay, d2	11.8	0.5	0.1	17.9	1.0		10.5	1.4	0.1	0.7	3.8	
Delay (s)	17.0	5.6	3.7	24.9	5.7		74.4	64.3	103.5	48.3	54.2	
Level of Service	B	A	A	C	A		E	E	F	D	D	
Approach Delay (s)		5.9			7.8			80.1			53.5	
Approach LOS		A			A			F			D	

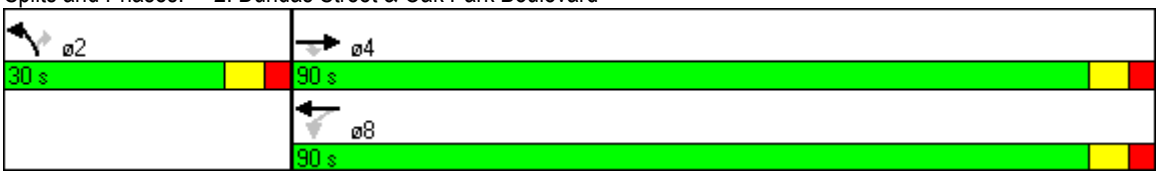
Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1300	126	121	1689	252	23
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	90.0	90.0	90.0	90.0	30.0	30.0
Total Split (%)	75.0%	75.0%	75.0%	75.0%	25.0%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 32 (27%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Dundas Street & Oak Park Boulevard



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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1300	126	121	1689	252	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.8	3.5	3.8	3.0	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3618	1619	1750	3618	1652	1566
Flt Permitted	1.00	1.00	0.18	1.00	0.95	1.00
Satd. Flow (perm)	3618	1619	324	3618	1652	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1300	126	121	1689	252	23
RTOR Reduction (vph)	0	37	0	0	0	19
Lane Group Flow (vph)	1300	89	121	1689	252	4
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	84.8	84.8	84.8	84.8	21.2	21.2
Effective Green, g (s)	84.8	84.8	84.8	84.8	21.2	21.2
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.18	0.18
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2557	1144	229	2557	292	277
v/s Ratio Prot	0.36			c0.47	c0.15	
v/s Ratio Perm		0.06	0.37			0.00
v/c Ratio	0.51	0.08	0.53	0.66	0.86	0.01
Uniform Delay, d1	8.1	5.5	8.2	9.7	48.0	40.8
Progression Factor	0.94	0.83	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	8.7	1.4	27.1	0.0
Delay (s)	8.3	4.6	17.0	11.0	75.1	40.8
Level of Service	A	A	B	B	E	D
Approach Delay (s)	8.0			11.4	72.3	
Approach LOS	A			B	E	

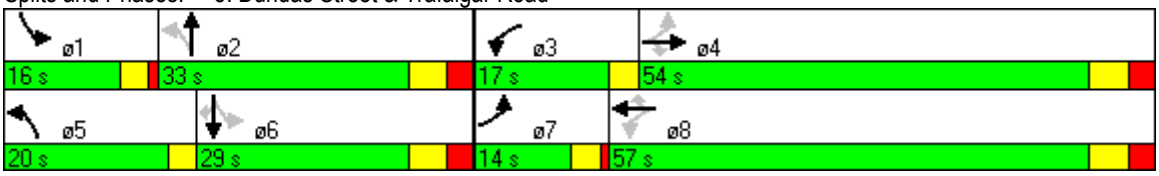
Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	209	905	134	193	1310	205	296	620	219	595	254
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		pm+pt		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	7	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	2.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	2.0	4.0	4.0
Minimum Split (s)	6.0	23.0	23.0	6.0	23.0	23.0	6.0	23.0	6.0	23.0	23.0
Total Split (s)	14.0	54.0	54.0	17.0	57.0	57.0	20.0	33.0	16.0	29.0	29.0
Total Split (%)	11.7%	45.0%	45.0%	14.2%	47.5%	47.5%	16.7%	27.5%	13.3%	24.2%	24.2%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 43 (36%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 5: Dundas Street & Trafalgar Road



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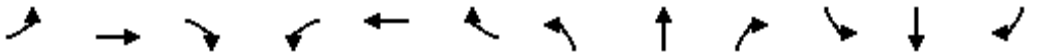

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	905	134	193	1310	205	296	620	139	219	595	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.8	3.8	3.5	3.8	4.8
Total Lost time (s)	4.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0		4.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3618	1566	1750	3618	1566	1750	3518		1750	3618	1794
Flt Permitted	0.08	1.00	1.00	0.20	1.00	1.00	0.16	1.00		0.18	1.00	1.00
Satd. Flow (perm)	149	3618	1566	360	3618	1566	295	3518		335	3618	1794
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	209	905	134	193	1310	205	296	620	139	219	595	254
RTOR Reduction (vph)	0	0	79	0	0	109	0	16	0	0	0	155
Lane Group Flow (vph)	209	905	55	193	1310	97	296	743	0	219	595	99
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	59.4	49.4	49.4	61.6	50.0	50.0	42.0	26.0		34.0	22.0	22.0
Effective Green, g (s)	59.4	49.4	49.4	61.6	50.0	50.0	42.0	26.0		34.0	22.0	22.0
Actuated g/C Ratio	0.50	0.41	0.41	0.51	0.42	0.42	0.35	0.22		0.28	0.18	0.18
Clearance Time (s)	4.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	207	1489	645	319	1508	653	309	762		236	663	329
v/s Ratio Prot	c0.08	0.25		c0.06	0.36		c0.14	c0.21		0.09	0.16	
v/s Ratio Perm	c0.41		0.04	0.25		0.06	0.20			0.17		0.06
v/c Ratio	1.01	0.61	0.09	0.61	0.87	0.15	0.96	0.98		0.93	0.90	0.30
Uniform Delay, d1	33.5	27.7	21.5	18.2	32.0	21.8	32.3	46.7		36.8	47.9	42.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.90		1.00	1.00	1.00
Incremental Delay, d2	134.7	1.9	0.3	3.3	7.6	0.5	63.1	44.4		58.9	21.3	2.3
Delay (s)	168.2	29.6	21.8	21.5	39.6	22.2	91.3	86.4		95.8	69.2	44.7
Level of Service	F	C	C	C	D	C	F	F		F	E	D
Approach Delay (s)		52.0			35.5			87.8			68.8	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	57.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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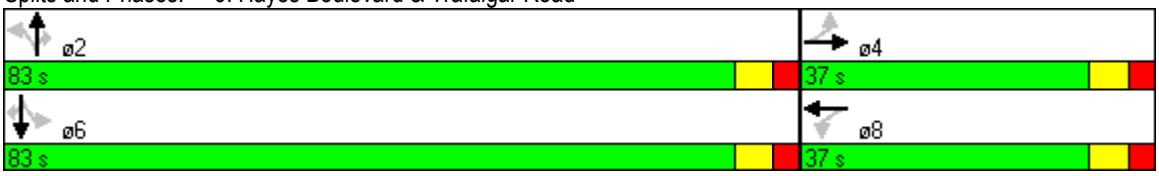
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	83	30	51	60	197	959	61	78	694	124
Turn Type	Perm		Perm		Perm		Perm	Perm		Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	83.0	83.0	83.0	83.0	83.0	83.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 6: Hayes Boulevard & Trafalgar Road



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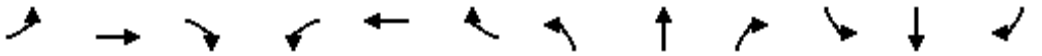


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	30	167	51	60	122	197	959	61	78	694	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.8	3.8	3.0	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.87		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	1662		1652	1713		1750	3618	1619	1750	3618	1619
Flt Permitted	0.47	1.00		0.43	1.00		0.38	1.00	1.00	0.28	1.00	1.00
Satd. Flow (perm)	826	1662		747	1713		706	3618	1619	517	3618	1619
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	83	30	167	51	60	122	197	959	61	78	694	124
RTOR Reduction (vph)	0	143	0	0	69	0	0	0	13	0	0	32
Lane Group Flow (vph)	83	54	0	51	113	0	197	959	48	78	694	92
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.4	17.4		17.4	17.4		88.6	88.6	88.6	88.6	88.6	88.6
Effective Green, g (s)	17.4	17.4		17.4	17.4		88.6	88.6	88.6	88.6	88.6	88.6
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.74	0.74	0.74	0.74	0.74	0.74
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	120	241		108	248		521	2671	1195	382	2671	1195
v/s Ratio Prot		0.03			0.07			0.27			0.19	
v/s Ratio Perm	c0.10			0.07			c0.28		0.03	0.15		0.06
v/c Ratio	0.69	0.22		0.47	0.45		0.38	0.36	0.04	0.20	0.26	0.08
Uniform Delay, d1	48.8	45.3		47.1	47.0		5.7	5.6	4.2	4.8	5.1	4.4
Progression Factor	1.00	1.00		1.00	1.00		0.11	0.11	0.00	0.74	0.65	0.98
Incremental Delay, d2	17.1	0.5		3.3	1.3		1.9	0.3	0.1	0.8	0.2	0.1
Delay (s)	65.9	45.8		50.4	48.3		2.5	1.0	0.1	4.4	3.5	4.4
Level of Service	E	D		D	D		A	A	A	A	A	A
Approach Delay (s)		51.8			48.7			1.2			3.7	
Approach LOS		D			D			A			A	

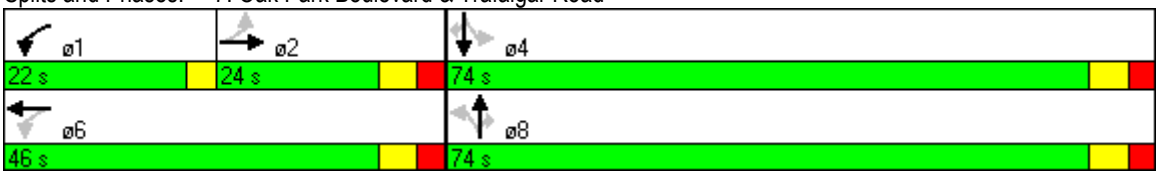
Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	29	74	257	140	140	1170	165	69	795	51
Turn Type	Perm		pm+pt		Perm		Perm	Perm		Perm
Protected Phases		2	1	6		8			4	
Permitted Phases	2		6		8		8	4		4
Detector Phase	2	2	1	6	8	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	6.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	24.0	24.0	22.0	46.0	74.0	74.0	74.0	74.0	74.0	74.0
Total Split (%)	20.0%	20.0%	18.3%	38.3%	61.7%	61.7%	61.7%	61.7%	61.7%	61.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lead							
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 32 (27%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 7: Oak Park Boulevard & Trafalgar Road



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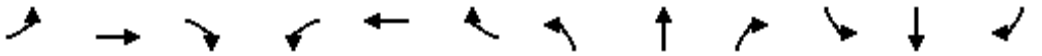


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	74	140	257	140	42	140	1170	165	69	795	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.5	3.5	3.8	3.5
Total Lost time (s)	7.0	7.0		3.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.90		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3156		1750	3493		1750	3618	1566	1750	3618	1566
Flt Permitted	0.64	1.00		0.44	1.00		0.32	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	1108	3156		804	3493		595	3618	1566	355	3618	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	74	140	257	140	42	140	1170	165	69	795	51
RTOR Reduction (vph)	0	130	0	0	26	0	0	0	60	0	0	18
Lane Group Flow (vph)	29	84	0	257	156	0	140	1170	105	69	795	33
Turn Type	Perm			pm+pt			Perm		Perm	Perm		Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	8.7	8.7		29.5	29.5		76.5	76.5	76.5	76.5	76.5	76.5
Effective Green, g (s)	8.7	8.7		29.5	29.5		76.5	76.5	76.5	76.5	76.5	76.5
Actuated g/C Ratio	0.07	0.07		0.25	0.25		0.64	0.64	0.64	0.64	0.64	0.64
Clearance Time (s)	7.0	7.0		3.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	80	229		338	859		379	2306	998	226	2306	998
v/s Ratio Prot		0.03		c0.11	0.04			c0.32			0.22	
v/s Ratio Perm	0.03			c0.07			0.24		0.07	0.19		0.02
v/c Ratio	0.36	0.37		0.76	0.18		0.37	0.51	0.11	0.31	0.34	0.03
Uniform Delay, d1	53.0	53.0		40.1	35.7		10.3	11.7	8.5	9.8	10.1	8.1
Progression Factor	1.00	1.00		1.00	1.00		0.36	0.36	0.07	0.39	0.38	0.07
Incremental Delay, d2	2.8	1.0		10.3	0.1		2.3	0.7	0.2	3.4	0.4	0.1
Delay (s)	55.8	54.0		50.4	35.8		6.0	4.9	0.7	7.2	4.2	0.6
Level of Service	E	D		D	D		A	A	A	A	A	A
Approach Delay (s)		54.2			44.3			4.5			4.2	
Approach LOS		D			D			A			A	

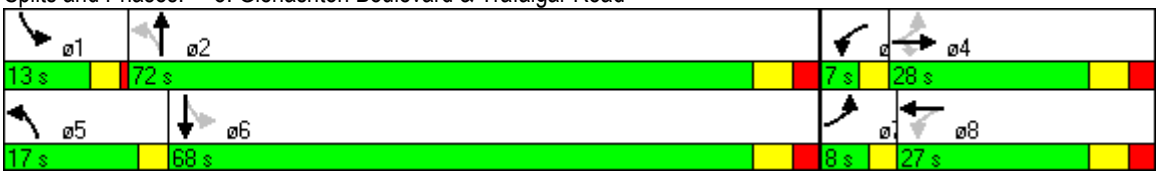
Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	46	68	75	64	217	150	1212	104	1044
Turn Type	pm+pt		Perm	pm+pt		pm+pt		pm+pt	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	2.0	4.0
Minimum Split (s)	6.0	23.0	23.0	6.0	23.0	6.0	23.0	6.0	23.0
Total Split (s)	8.0	28.0	28.0	7.0	27.0	17.0	72.0	13.0	68.0
Total Split (%)	6.7%	23.3%	23.3%	5.8%	22.5%	14.2%	60.0%	10.8%	56.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.0	3.0	0.0	3.0	0.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	7.0	3.0	7.0	3.0	7.0	4.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?		Yes	Yes	Yes					
Recall Mode	None	Ped	Ped	None	Ped	None	C-Max	None	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 8: Glenashton Boulevard & Trafalgar Road



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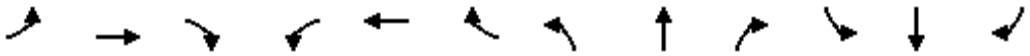

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	68	75	64	217	183	150	1212	52	104	1044	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0		3.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1842	1619	1750	3370		1750	3596		1750	3591	
Flt Permitted	0.30	1.00	1.00	0.71	1.00		0.20	1.00		0.15	1.00	
Satd. Flow (perm)	520	1842	1619	1313	3370		366	3596		279	3591	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	68	75	64	217	183	150	1212	52	104	1044	55
RTOR Reduction (vph)	0	0	64	0	131	0	0	2	0	0	2	0
Lane Group Flow (vph)	46	68	11	64	269	0	150	1262	0	104	1097	0
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	21.7	17.7	17.7	20.1	16.9		79.2	70.5		78.0	70.4	
Effective Green, g (s)	21.7	17.7	17.7	20.1	16.9		79.2	70.5		78.0	70.4	
Actuated g/C Ratio	0.18	0.15	0.15	0.17	0.14		0.66	0.59		0.65	0.59	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0		3.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	132	272	239	232	475		342	2113		275	2107	
v/s Ratio Prot	c0.01	0.04		0.01	c0.08		c0.03	c0.35		0.02	0.31	
v/s Ratio Perm	0.05		0.01	0.04			0.26			0.22		
v/c Ratio	0.35	0.25	0.05	0.28	0.57		0.44	0.60		0.38	0.52	
Uniform Delay, d1	41.7	45.3	43.9	43.2	48.1		9.3	15.7		10.5	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.12	1.27	
Incremental Delay, d2	1.6	0.5	0.1	0.6	1.6		0.9	1.3		0.8	0.9	
Delay (s)	43.3	45.8	44.0	43.8	49.7		10.2	17.0		12.5	19.6	
Level of Service	D	D	D	D	D		B	B		B	B	
Approach Delay (s)		44.4			48.9			16.3			19.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	56	128	188	254	157	193	278	350	116
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		2		6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	2	2	6	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	34.0	34.0	34.0	34.0	86.0	86.0	86.0	86.0	86.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	71.7%	71.7%	71.7%	71.7%	71.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 36 (30%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 15: Glenashton Boulevard & Sixth Line

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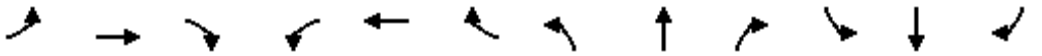

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	128	99	188	254	29	157	193	133	278	350	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.8	3.0	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	3271		1652	3446		1750	3396		1750	1904	1619
Flt Permitted	0.54	1.00		0.61	1.00		0.54	1.00		0.55	1.00	1.00
Satd. Flow (perm)	938	3271		1061	3446		987	3396		1022	1904	1619
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	128	99	188	254	29	157	193	133	278	350	116
RTOR Reduction (vph)	0	79	0	0	7	0	0	42	0	0	0	37
Lane Group Flow (vph)	56	148	0	188	276	0	157	284	0	278	350	79
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	24.3	24.3		24.3	24.3		81.7	81.7		81.7	81.7	81.7
Effective Green, g (s)	24.3	24.3		24.3	24.3		81.7	81.7		81.7	81.7	81.7
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.68	0.68		0.68	0.68	0.68
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	190	662		215	698		672	2312		696	1296	1102
v/s Ratio Prot		0.05			0.08			0.08			0.18	
v/s Ratio Perm	0.06			c0.18			0.16			c0.27		0.05
v/c Ratio	0.29	0.22		0.87	0.40		0.23	0.12		0.40	0.27	0.07
Uniform Delay, d1	40.6	40.0		46.4	41.5		7.3	6.7		8.4	7.5	6.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.81	0.82	0.38
Incremental Delay, d2	0.9	0.2		39.3	0.4		0.8	0.1		1.6	0.5	0.1
Delay (s)	41.5	40.1		85.7	41.9		8.1	6.8		8.4	6.6	2.6
Level of Service	D	D		F	D		A	A		A	A	A
Approach Delay (s)		40.4			59.4			7.2			6.6	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

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Appendix 4

Traffic Forecasts

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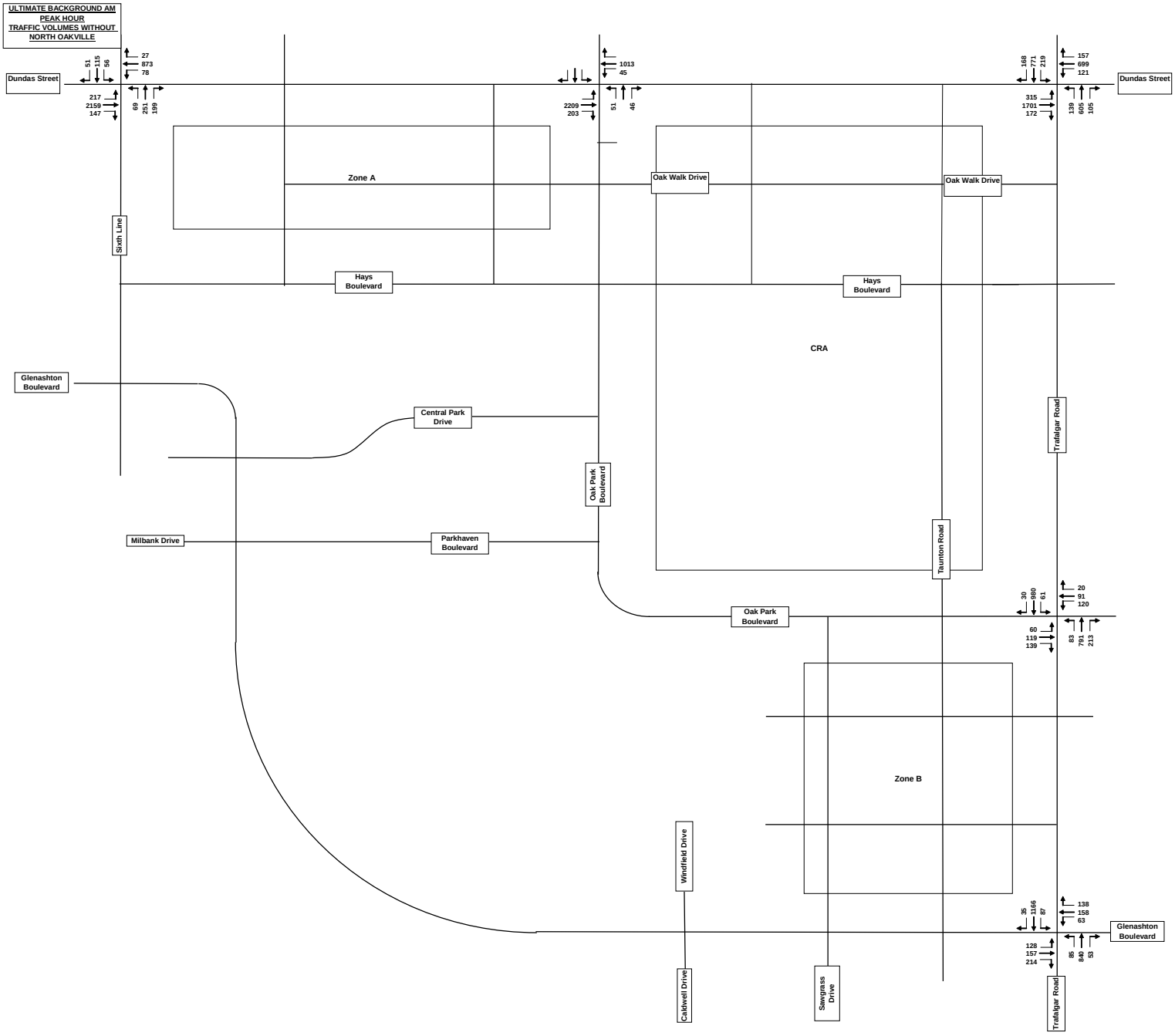
Future Background A.M. Peak Hour: 1% Growth without North Oakville



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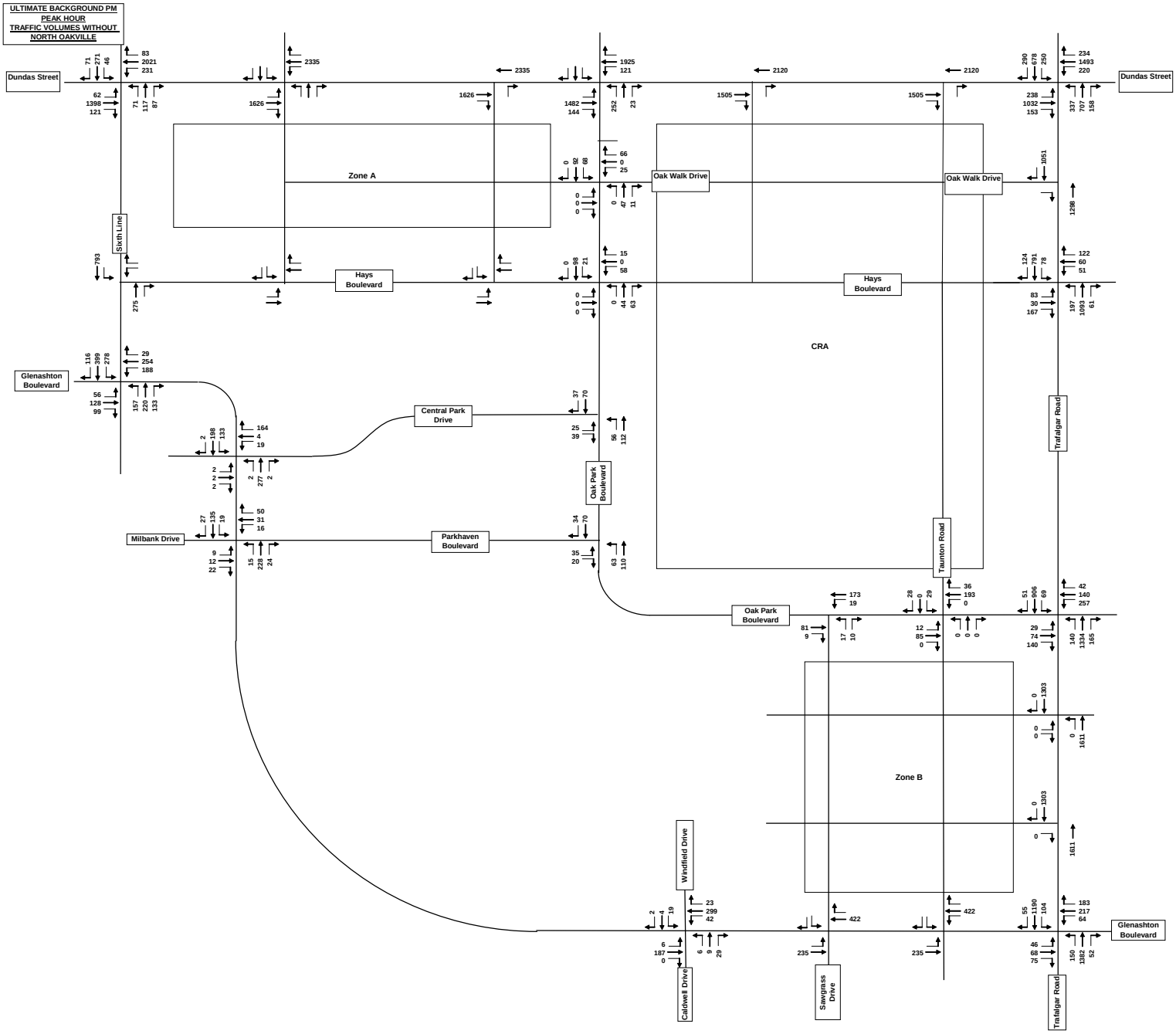
Future Background P.M. Peak Hour: 1% Growth without North Oakville



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North Oakville Future Trip Generation

Land Use	ITE Code	Unit	Unadjusted Trip Rates						Adjustments			Adjusted Trip Rates					
			A.M. Peak Hour			P.M. Peak Hour			Synergy	Shift to Transit	Shift to Other	A.M. Peak Hour			P.M. Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL				IN	OUT	TOTAL	IN	OUT	TOTAL
Planned Residential	230	Units	0.037	0.182	0.219	0.186	0.092	0.278		-20.0%	-5.0%	0.028	0.136	0.164	0.140	0.069	0.209
Planned Employment	710	Jobs	0.271	0.037	0.308	0.063	0.309	0.372	-5.0%	-20.0%	-5.0%	0.190	0.026	0.216	0.044	0.216	0.261

Land Use	ITE Code	Unit	Magnitude	Adjusted Trip Generation					
				A.M. Peak Hour			P.M. Peak Hour		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Planned Residential	230	Units	19600	548	2674	3222	2738	1349	4087
Planned Employment	710	Jobs	25000	4743	647	5390	1108	5409	6517
			TOTAL	**5291**	**3321**	**8612**	**3846**	**6758**	**10604**

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North Oakville Future Trip Distribution

Trip Distribution To / From	P.M. Peak Hour Outbound Percentage	Outbound Volume	Inbound Percentage	Inbound Volume
East via 407				
Toronto	5.0%	166	18.3%	968
York	1.0%	33	1.6%	85
Durham	0.2%	7	0.1%	5
Brampton	1.8%	60	1.5%	79
Mississauga (50%)	6.7%	221	8.4%	444
East via Burnhamthorpe	0.0%	0	0.0%	
Mississauga (25%)	3.3%	110	4.2%	222
East via Dundas	0.0%	0	0.0%	
Mississauga (25%)	**3.3%**	**110**	**4.2%**	**222**
North	0.0%	0	0.0%	
Milton	1.3%	43	0.8%	42
Halton Hills	0.9%	30	0.2%	11
West via Dundas	**0.0%**	**0**	**0.0%**	
Burlington (50%)	**5.5%**	**183**	**1.9%**	**101**
West via QEW	0.0%	0	0.0%	
Burlington (50%)	5.5%	183	1.9%	101
Hamilton	6.7%	223	1.9%	101
Niagara	1.0%	33	0.3%	16
Total	**13.2%**	**438**	**4.1%**	**217**
Within North Oakville (50%)	28.3%	940	26.7%	1413
South to Oakville (50%)	**28.3%**	**940**	**26.7%**	**1413**

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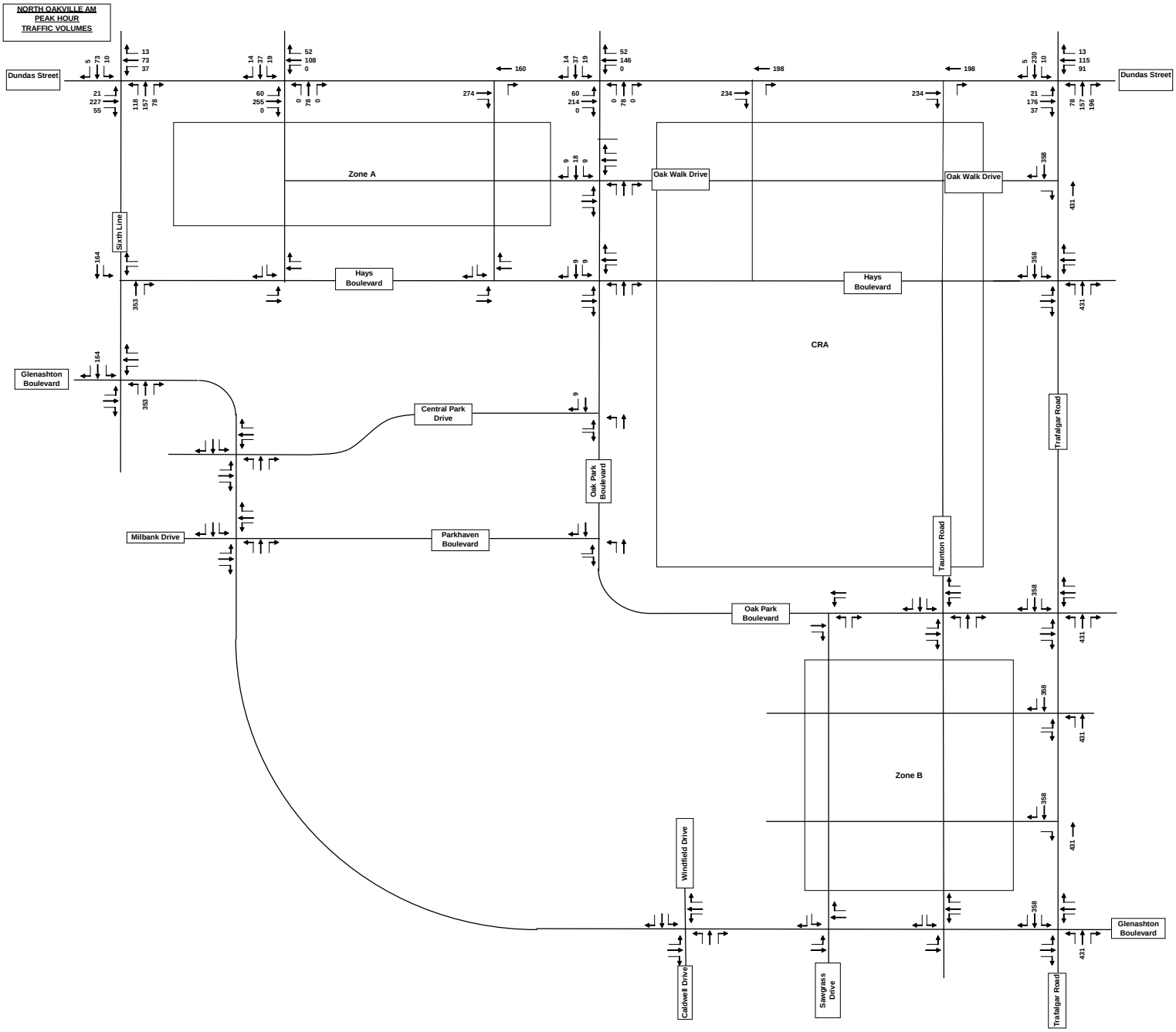
Future Background A.M. Peak Hour: North Oakville



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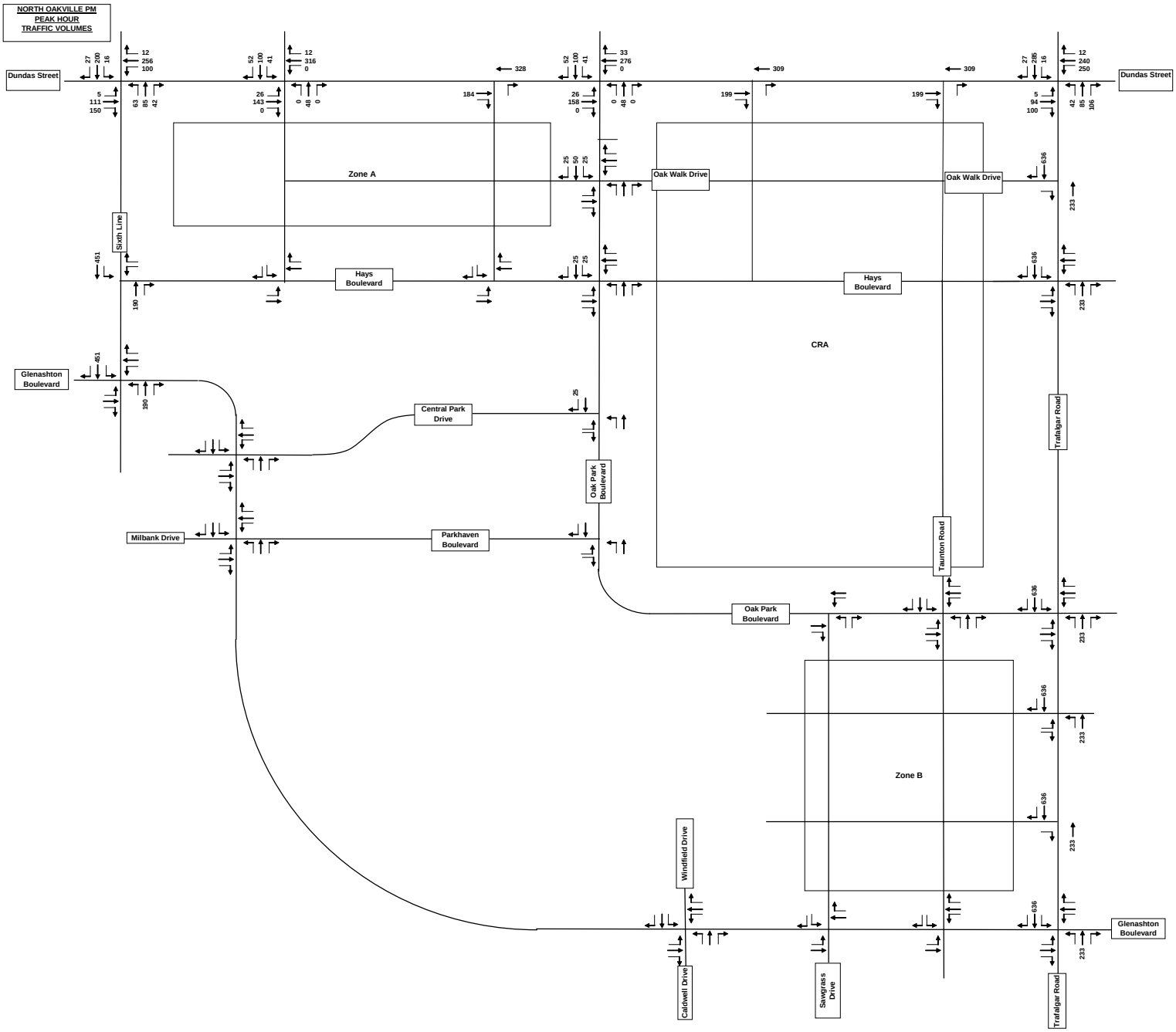
Future Background P.M. Peak Hour: North Oakville



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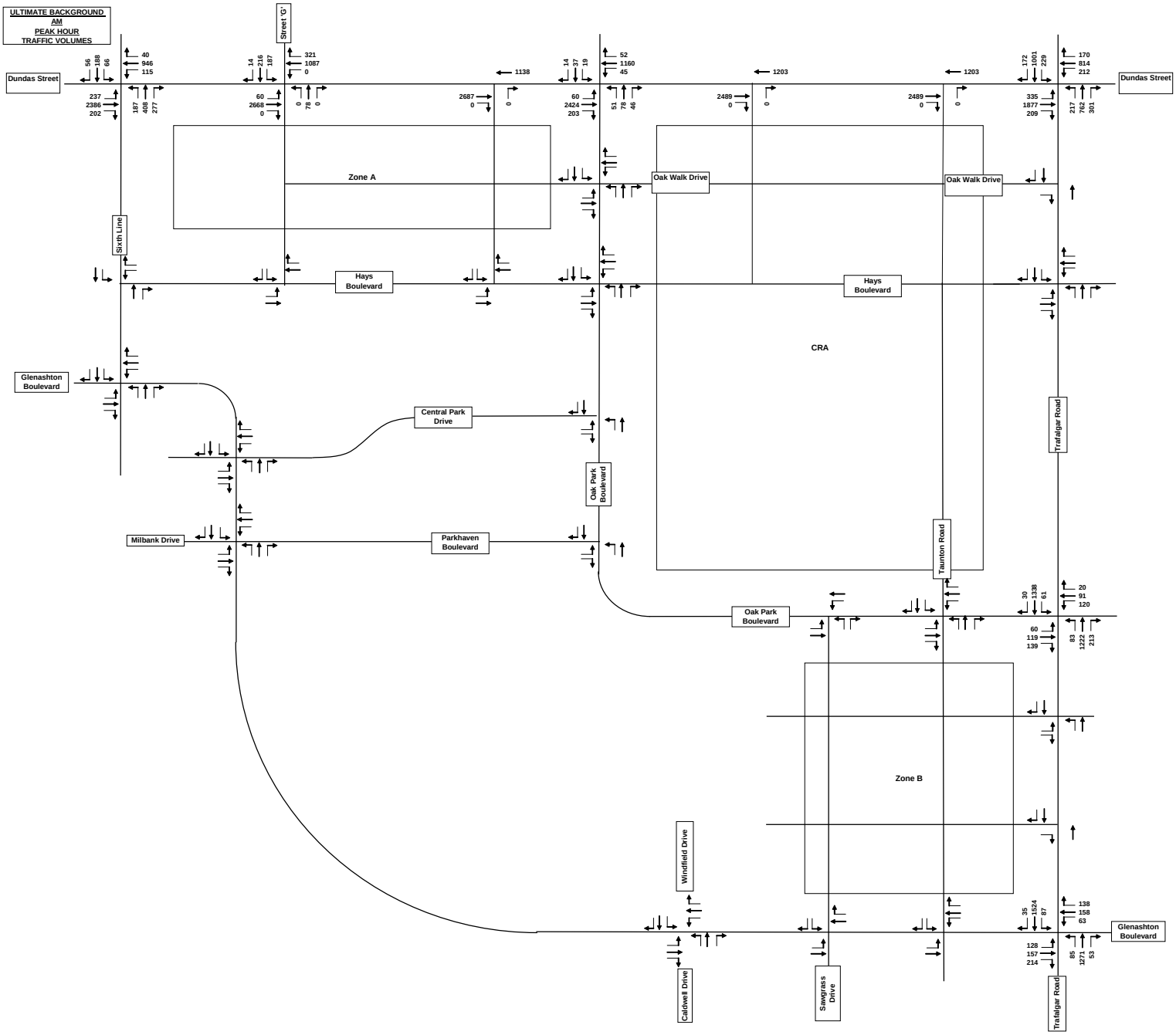

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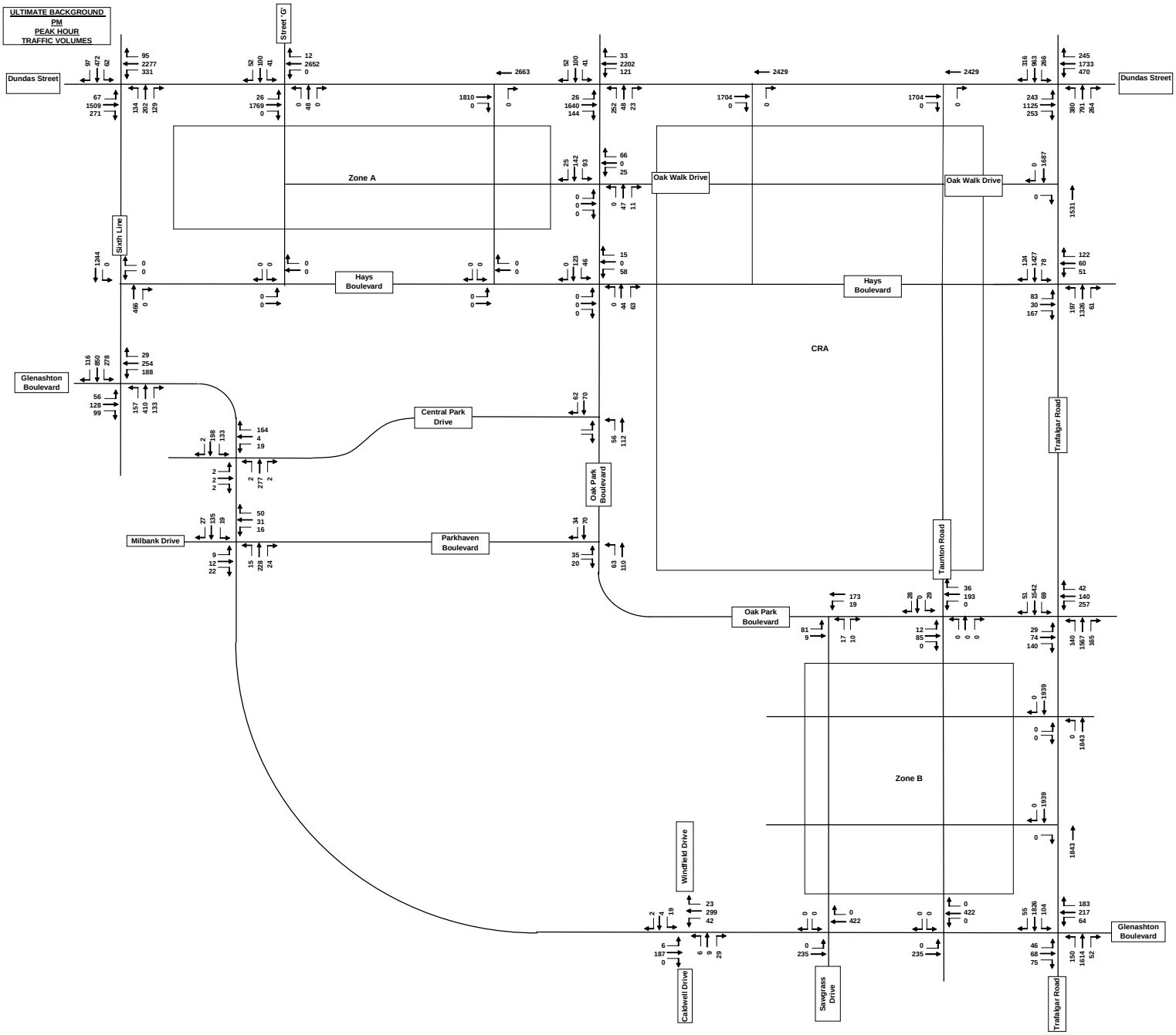

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Uptown Core: Trip Distribution

Trip Distribution To / From	A.M. Peak Hour Outbound Percentage	Outbound Volume	Inbound Percentage	Inbound Volume
East via Dundas				
Mississauga (25%)	4.2%	49	3.3%	26
Toronto (25%)	4.6%	54	1.3%	10
Oakville (10%)	5.5%	64	5.8%	45
Total	**14.2%**	**168**	**10.3%**	**81**
North via Trafalgar				
Toronto (50%)	9.2%	108	2.5%	20
York	1.6%	19	1.0%	8
Durham	0.1%	1	0.2%	2
Brampton	1.5%	18	1.8%	14
Halton Hills	0.2%	2	0.9%	7
Mississauga (50%)	8.4%	99	6.7%	52
Oakville (10%)	5.5%	64	5.8%	45
Total	**26.4%**	**311**	**18.8%**	**148**
North via Oak Park				
Oakville (10%)	**5.5%**	**64**	**5.8%**	**45**
North via Proposed Street between Oak Park & Sixth				
Oakville (10%)	**5.5%**	**64**	**5.8%**	**45**
North via Sixth				
Milton	0.8%	9	1.3%	10
Oakville (10%)	5.5%	64	5.8%	45
Total	**6.3%**	**74**	**7.1%**	**56**
West via Dundas				
Niagara (25%)	0.1%	1	0.3%	2
Hamilton (25%)	0.5%	6	1.7%	13
Burlington (25%)	1.0%	11	2.8%	22
Oakville (10%)	5.5%	64	5.8%	45
Total	**7.0%**	**82**	**10.4%**	**82**
South via Sixth				
Niagara (25%)	0.1%	1	0.3%	2
Hamilton (25%)	0.5%	6	1.7%	13
Burlington (25%)	1.0%	11	2.8%	22
Oakville (10%)	5.5%	64	5.8%	45
Total	**7.0%**	**82**	**10.4%**	**82**
South via Trafalgar				
Niagara (50%)	0.2%	2	0.5%	4
Hamilton (50%)	1.0%	11	3.4%	26
Burlington (50%)	1.9%	22	5.5%	43
Toronto (25%)	4.6%	54	1.3%	10
Mississauga (25%)	4.2%	49	3.3%	26
Oakville (10%)	5.5%	64	5.8%	45
Total	**17.2%**	**203**	**19.7%**	**155**
East via Glenashton				
Oakville (10%)	**5.5%**	**64**	**5.8%**	**45**
East via Oak Park				
Oakville (10%)	**5.5%**	**64**	**5.8%**	**45**

Trip Distribution To / From	P.M. Peak Hour Outbound Percentage	Outbound Volume	Inbound Percentage	Inbound Volume
East via Dundas				
Mississauga (25%)	3.3%	40	4.2%	85
Toronto (25%)	1.3%	15	4.6%	93
Oakville (10%)	5.8%	69	5.5%	111
Total	**10.3%**	**124**	**14.2%**	**289**
North via Trafalgar				
Toronto (50%)	2.5%	30	9.2%	186
York	1.0%	12	1.6%	32
Durham	0.2%	2	0.1%	2
Brampton	1.8%	22	1.5%	30
Halton Hills	0.9%	11	0.2%	4
Mississauga (50%)	6.7%	80	8.4%	171
Oakville (10%)	5.8%	69	5.5%	111
Total	**18.8%**	**226**	**26.4%**	**536**
North via Oak Park				
Oakville (10%)	**5.8%**	**69**	**5.5%**	**111**
North via Proposed Street between Oak Park & Sixth				
Oakville (10%)	**5.8%**	**69**	**5.5%**	**111**
North via Sixth				
Milton	1.3%	16	0.8%	16
Oakville (10%)	5.8%	69	5.5%	111
Total	**7.1%**	**85**	**6.3%**	**127**
West via Dundas				
Niagara (25%)	0.3%	3	0.1%	2
Hamilton (25%)	1.7%	20	0.5%	10
Burlington (25%)	2.8%	33	1.0%	19
Oakville (10%)	5.8%	69	5.5%	111
Total	**10.4%**	**125**	**7.0%**	**141**
South via Sixth				
Niagara (25%)	0.3%	3	0.1%	2
Hamilton (25%)	1.7%	20	0.5%	10
Burlington (25%)	2.8%	33	1.0%	19
Oakville (10%)	5.8%	69	5.5%	111
Total	**10.4%**	**125**	**7.0%**	**141**
South via Trafalgar				
Niagara (50%)	0.5%	6	0.2%	3
Hamilton (50%)	3.4%	40	1.0%	19
Burlington (50%)	5.5%	66	1.9%	39
Toronto (25%)	1.3%	15	4.6%	93
Mississauga (25%)	3.3%	40	4.2%	85
Oakville (10%)	5.8%	69	5.5%	111
Total	**19.7%**	**236**	**17.2%**	**350**
East via Glenashton				
Oakville (10%)	**5.8%**	**69**	**5.5%**	**111**
East via Oak Park				
Oakville (10%)	**5.8%**	**69**	**5.5%**	**111**

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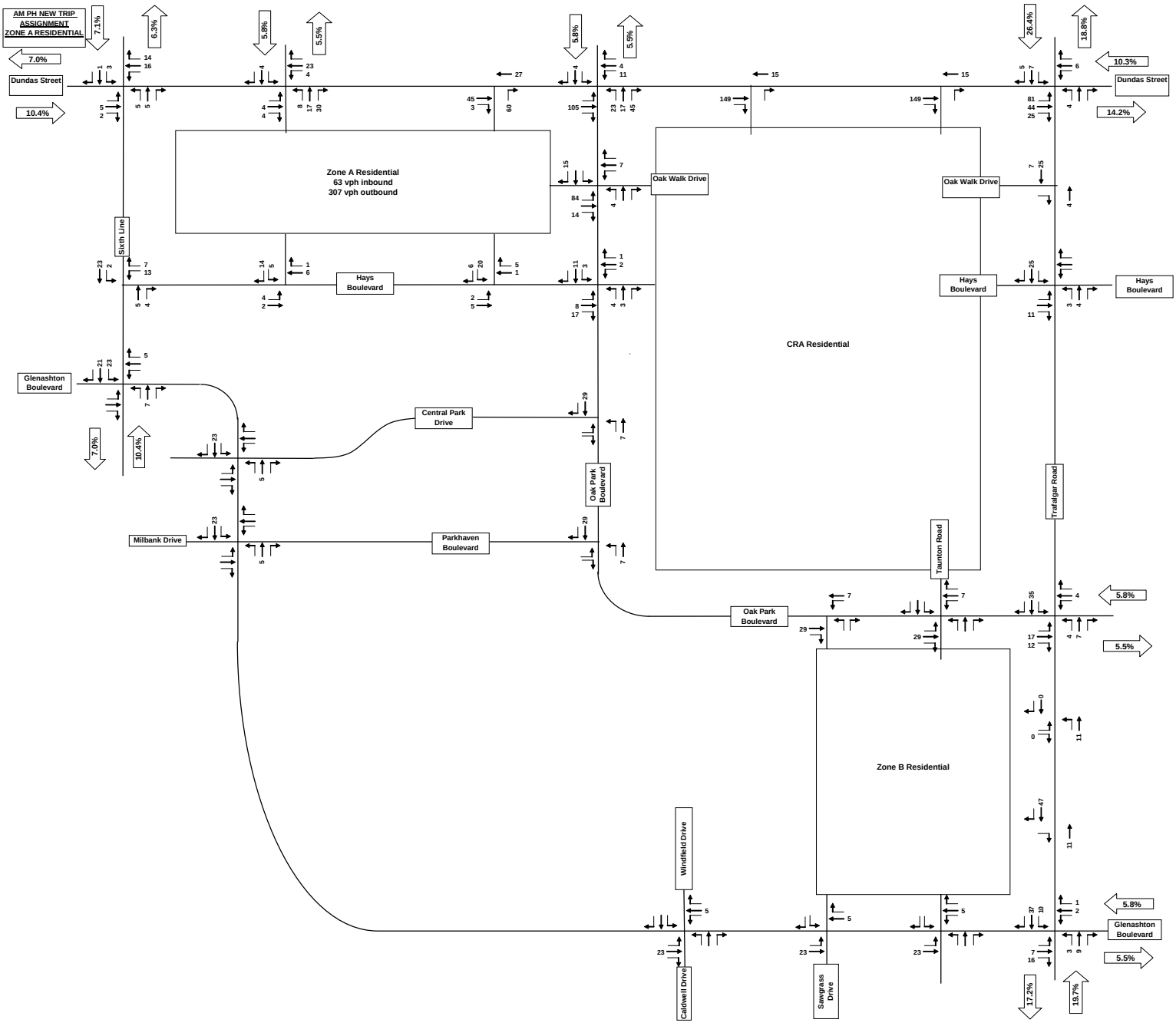
Uptown Core A.M. Peak Hour New Trip Assignment: Zone A Residential



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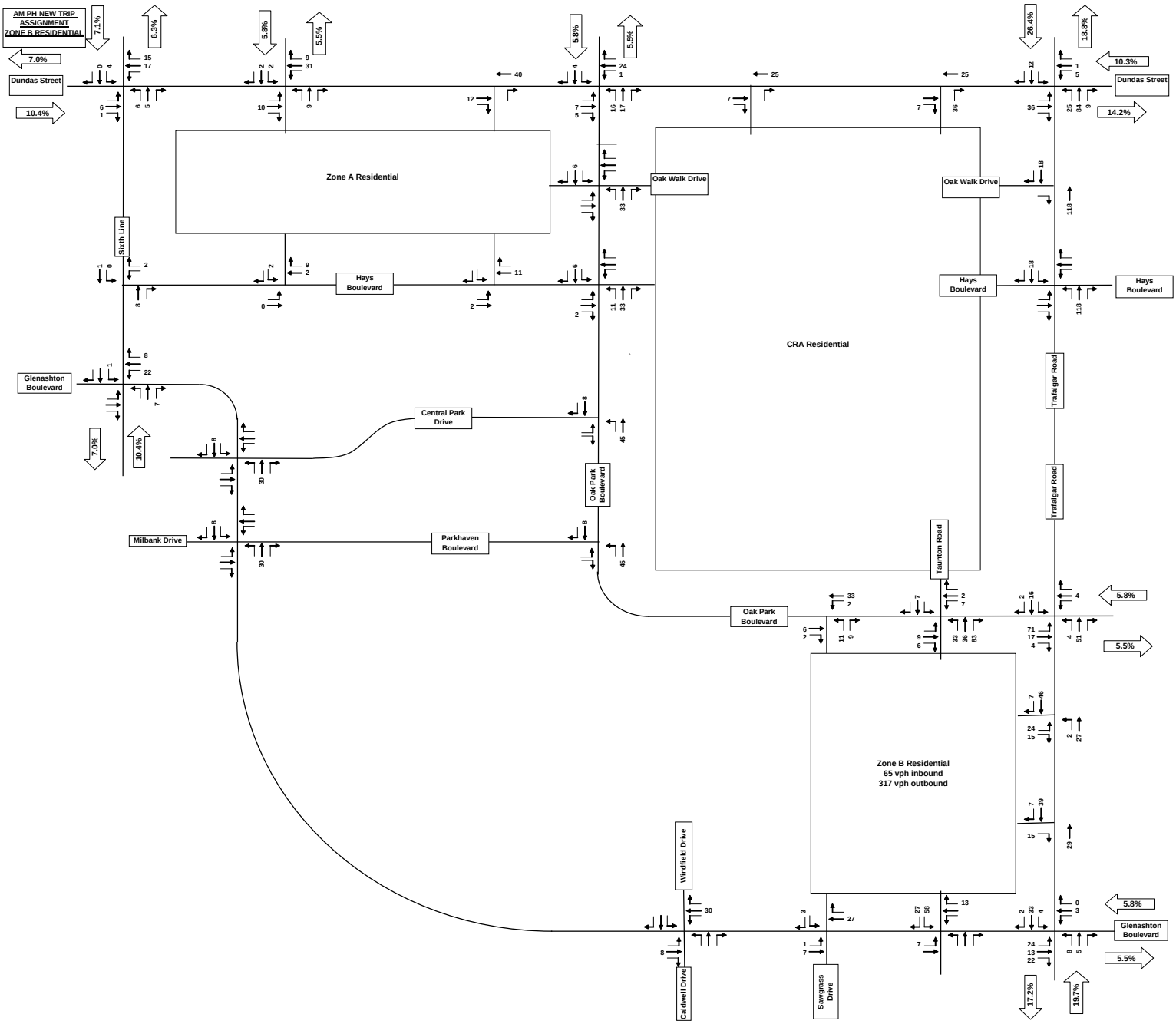
Uptown Core A.M. Peak Hour New Trip Assignment: Zone B Residential



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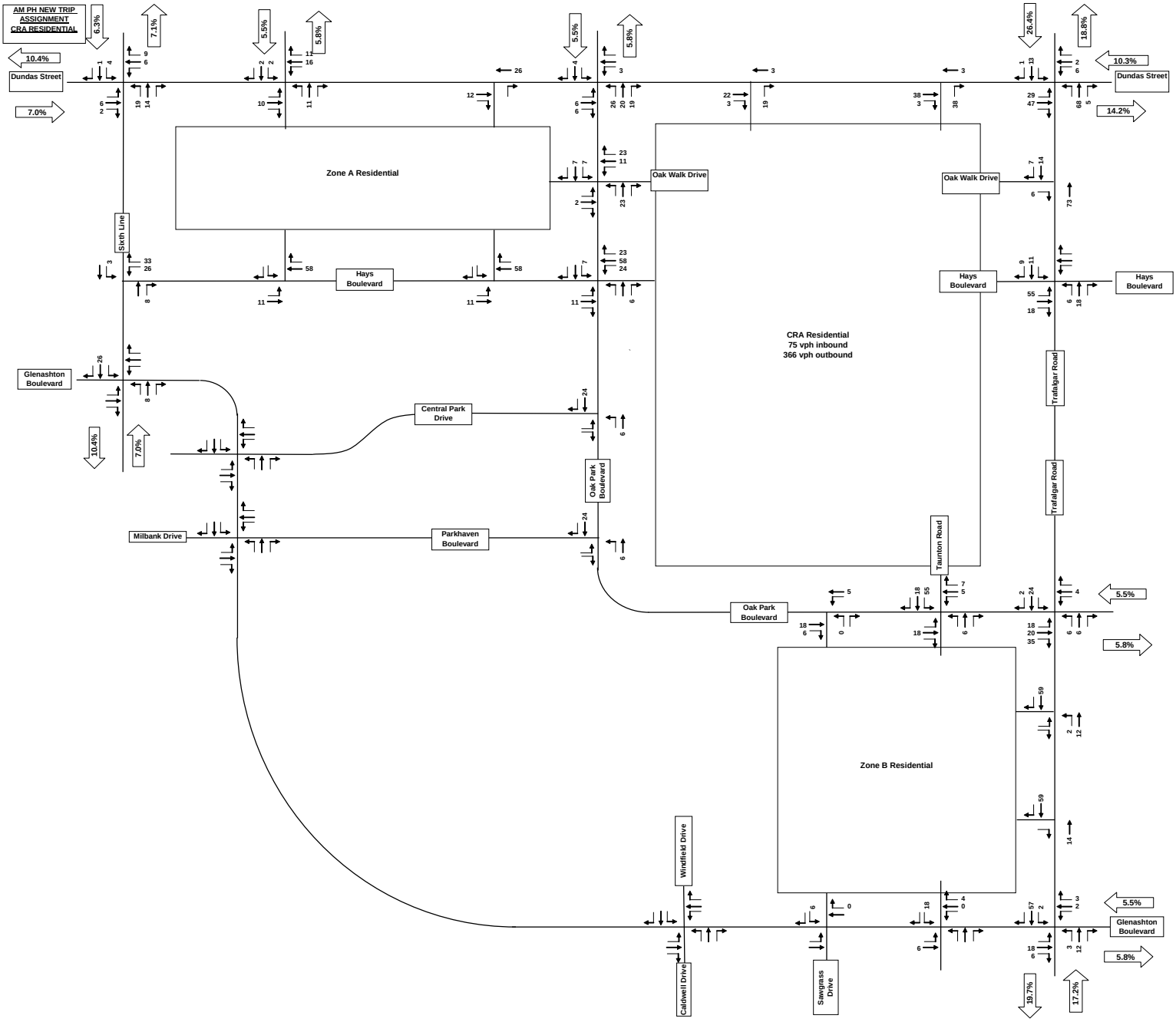
Uptown Core A.M. Peak Hour New Trip Assignment: CRA Residential



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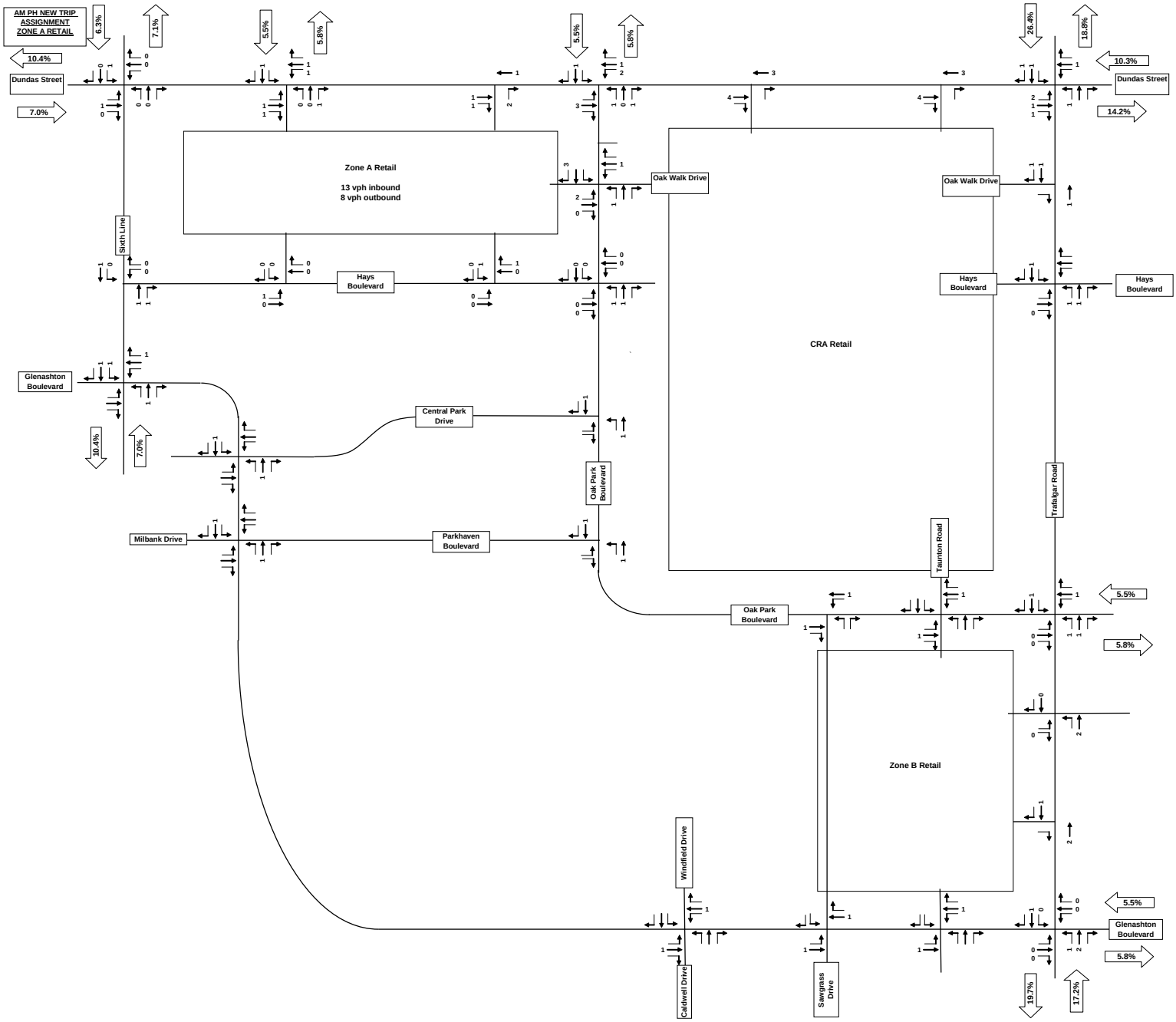
Uptown Core A.M. Peak Hour New Trip Assignment: Zone A Retail



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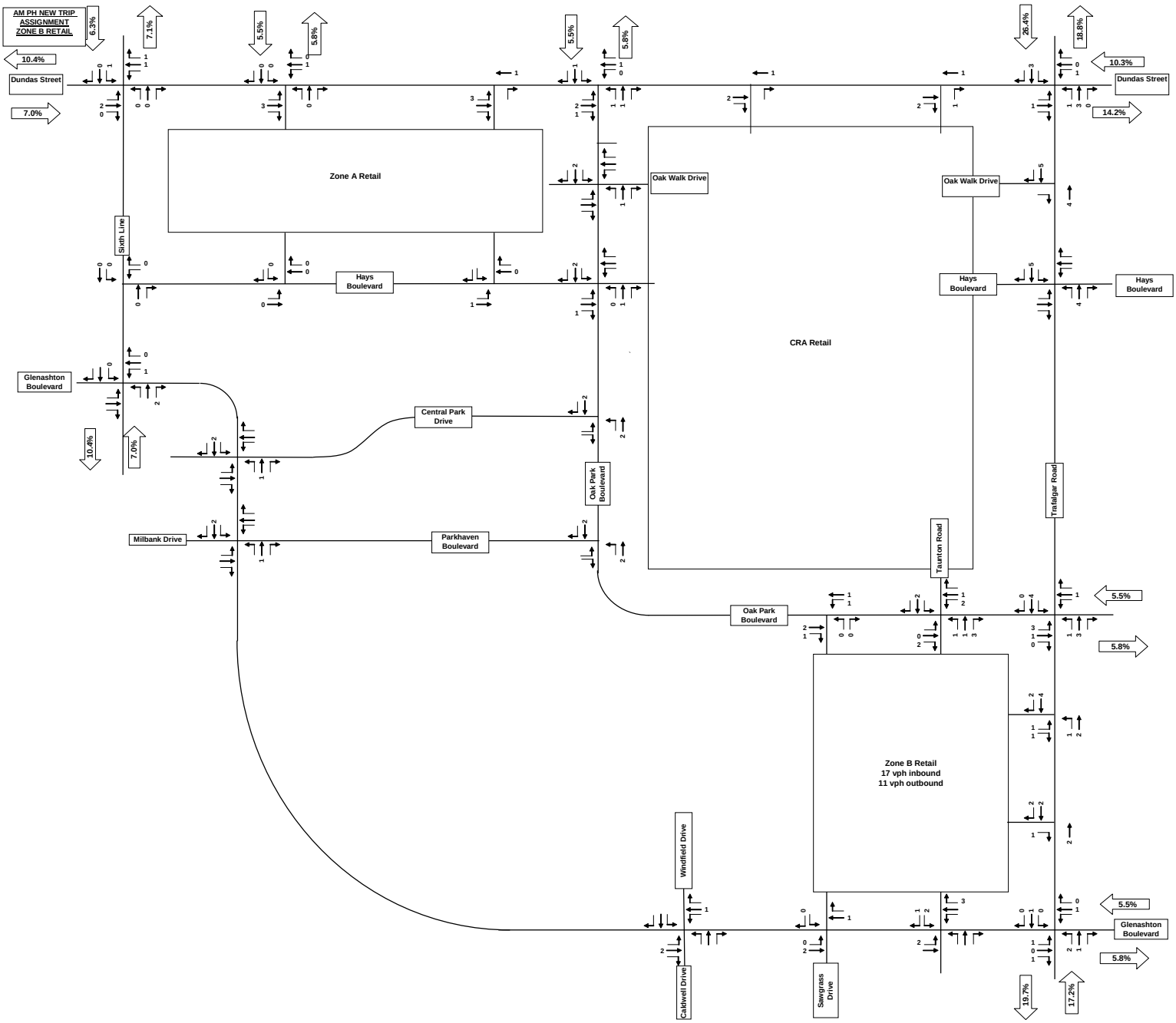

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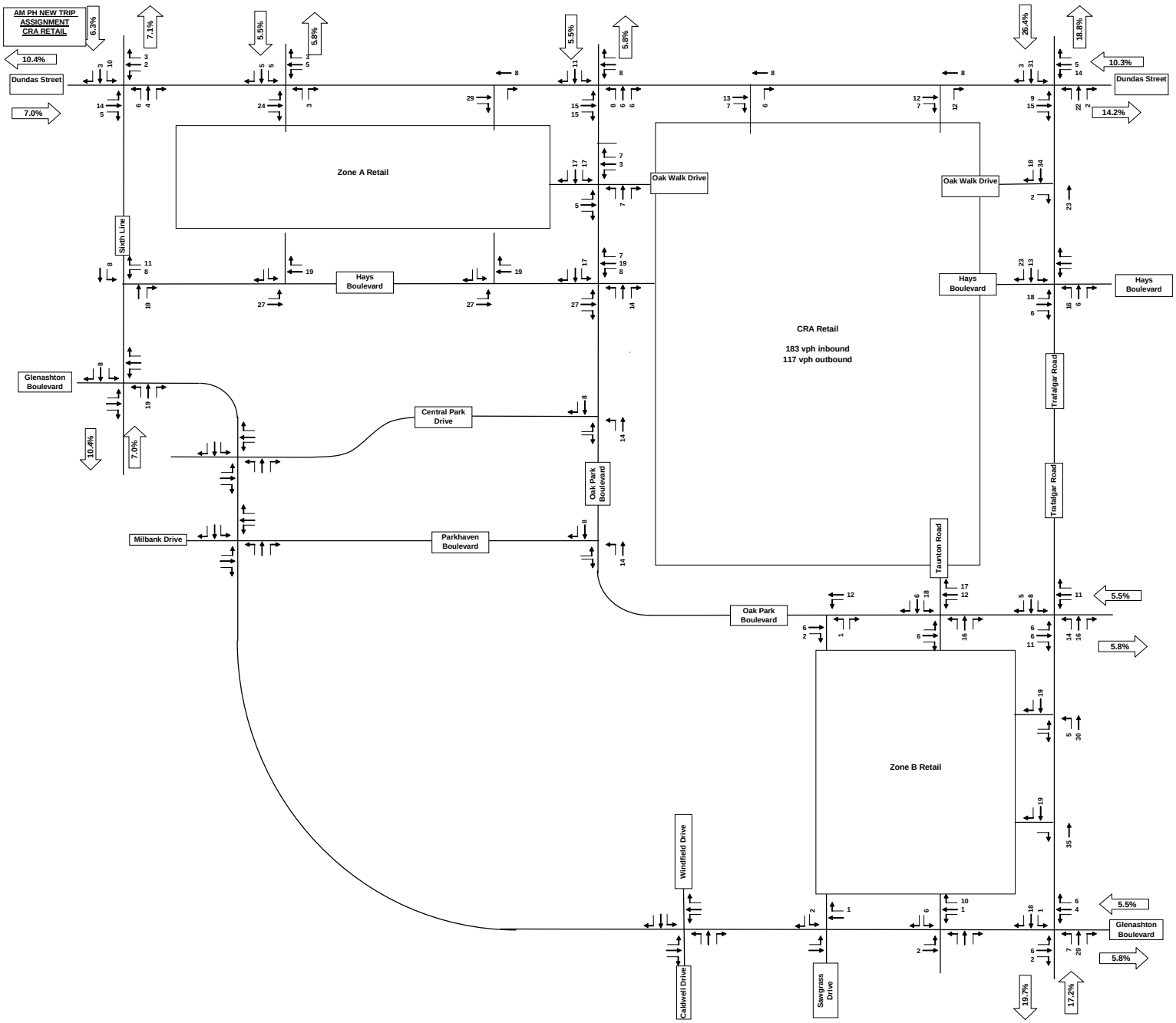

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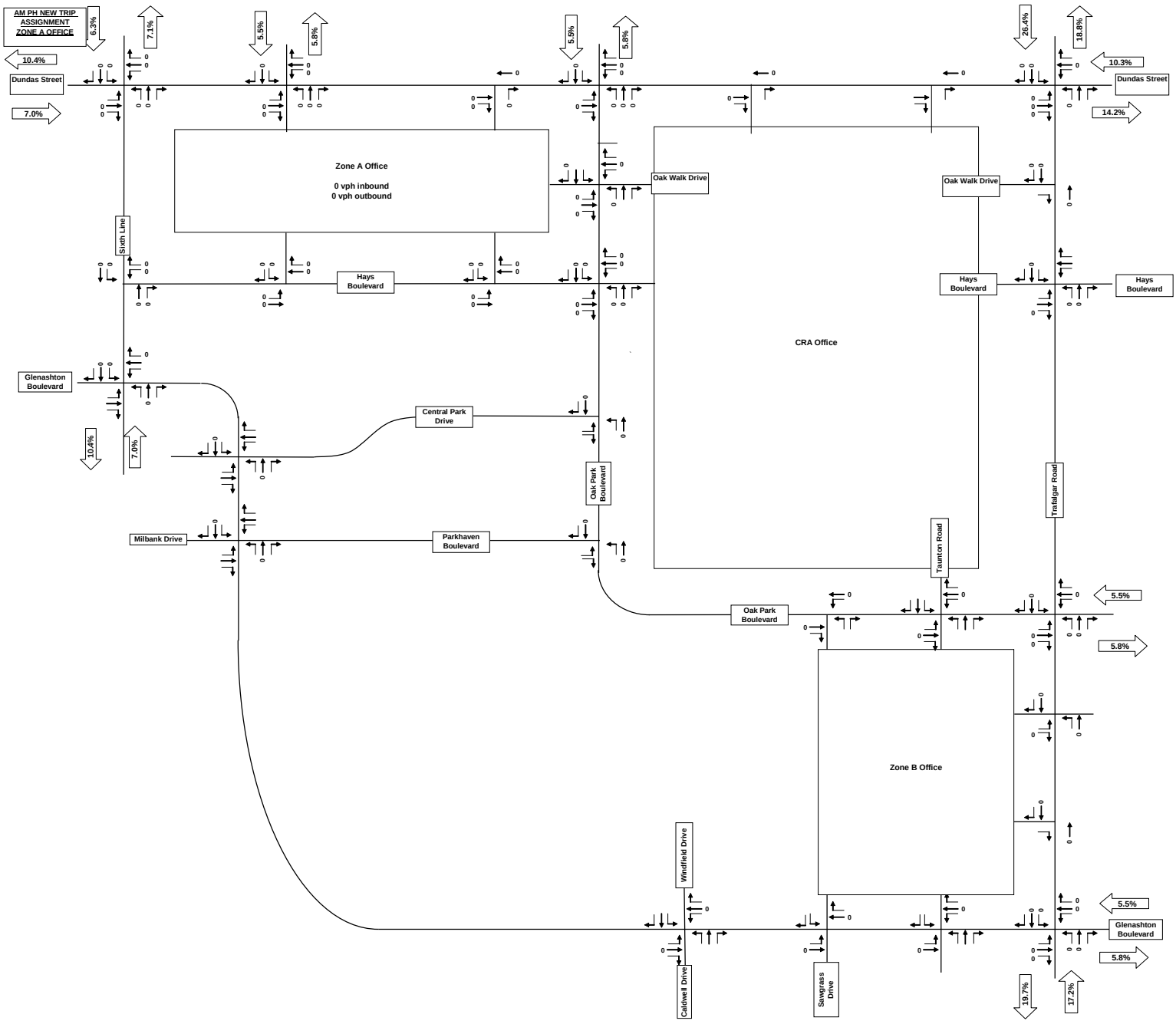
Uptown Core A.M. Peak Hour New Trip Assignment: Zone A Office



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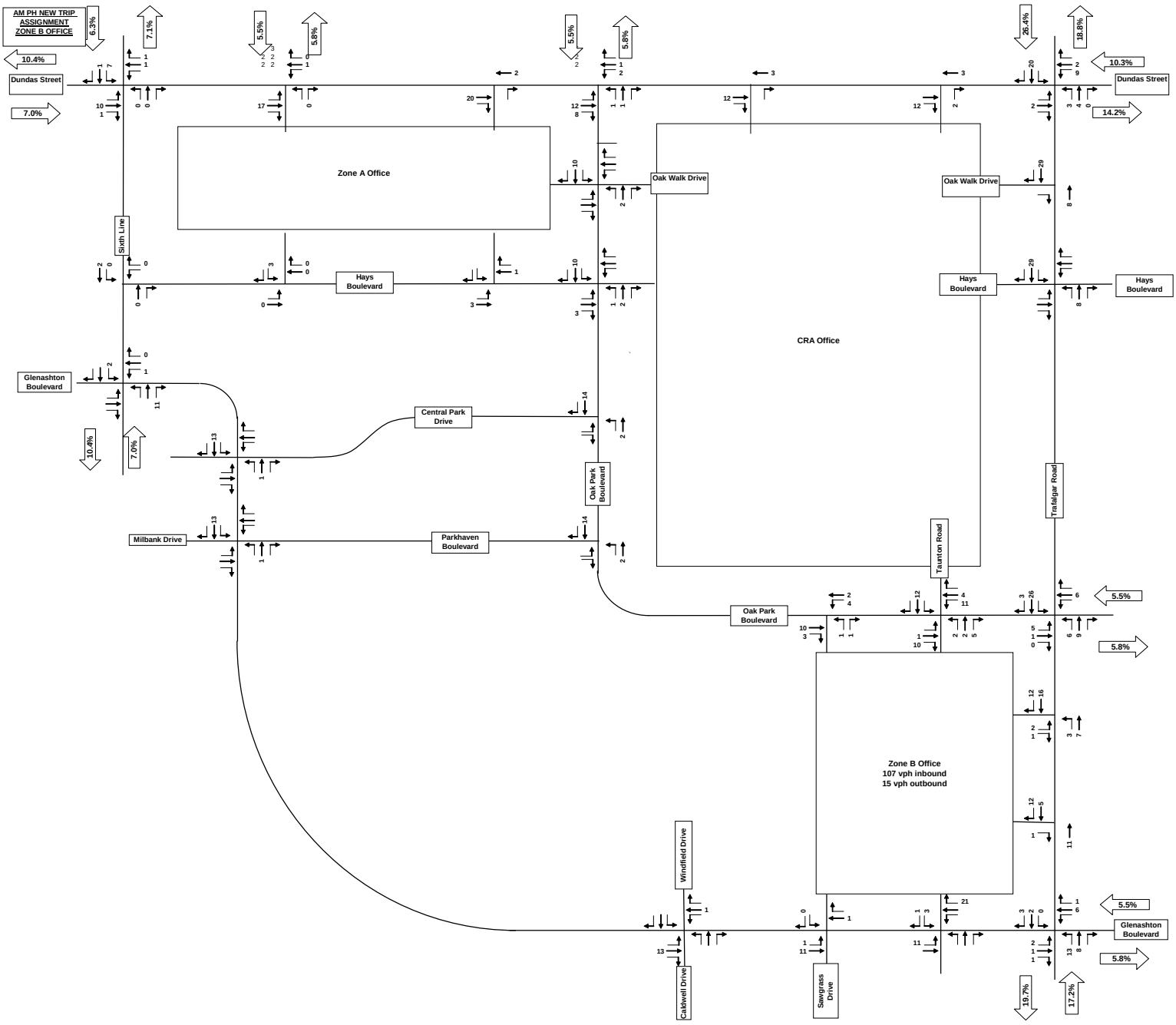

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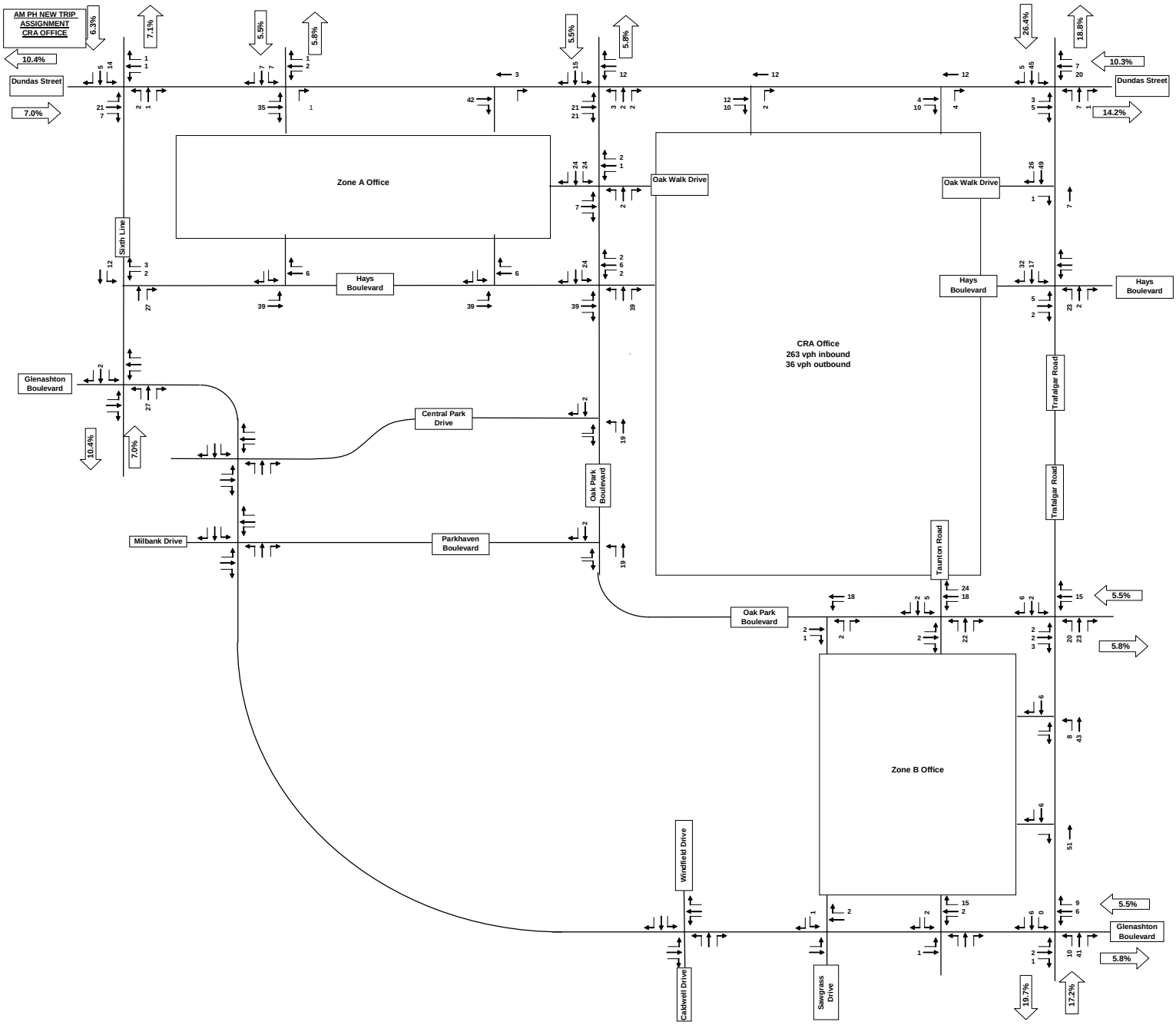

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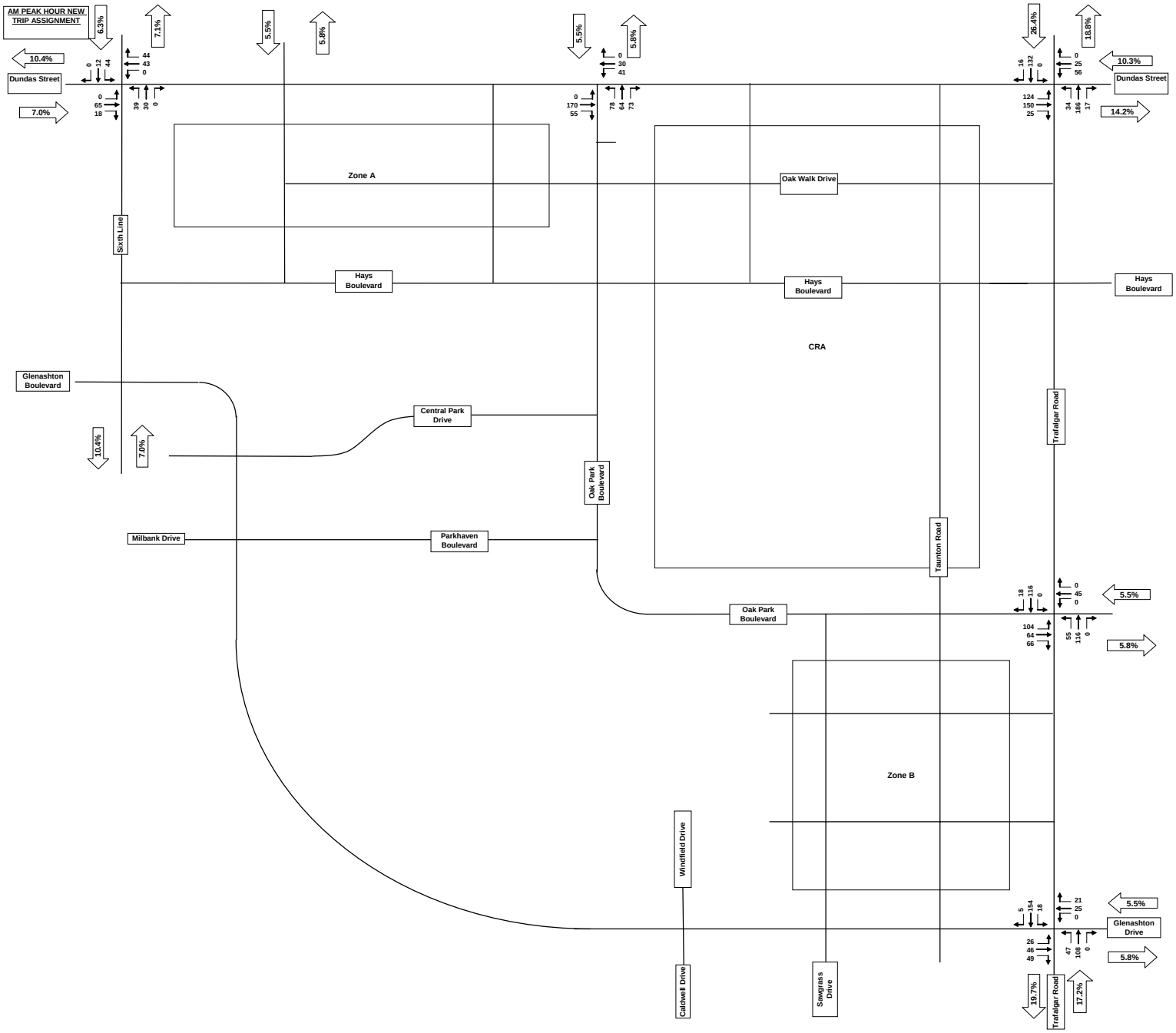
Uptown Core A.M. Peak Hour Total Trip Assignment



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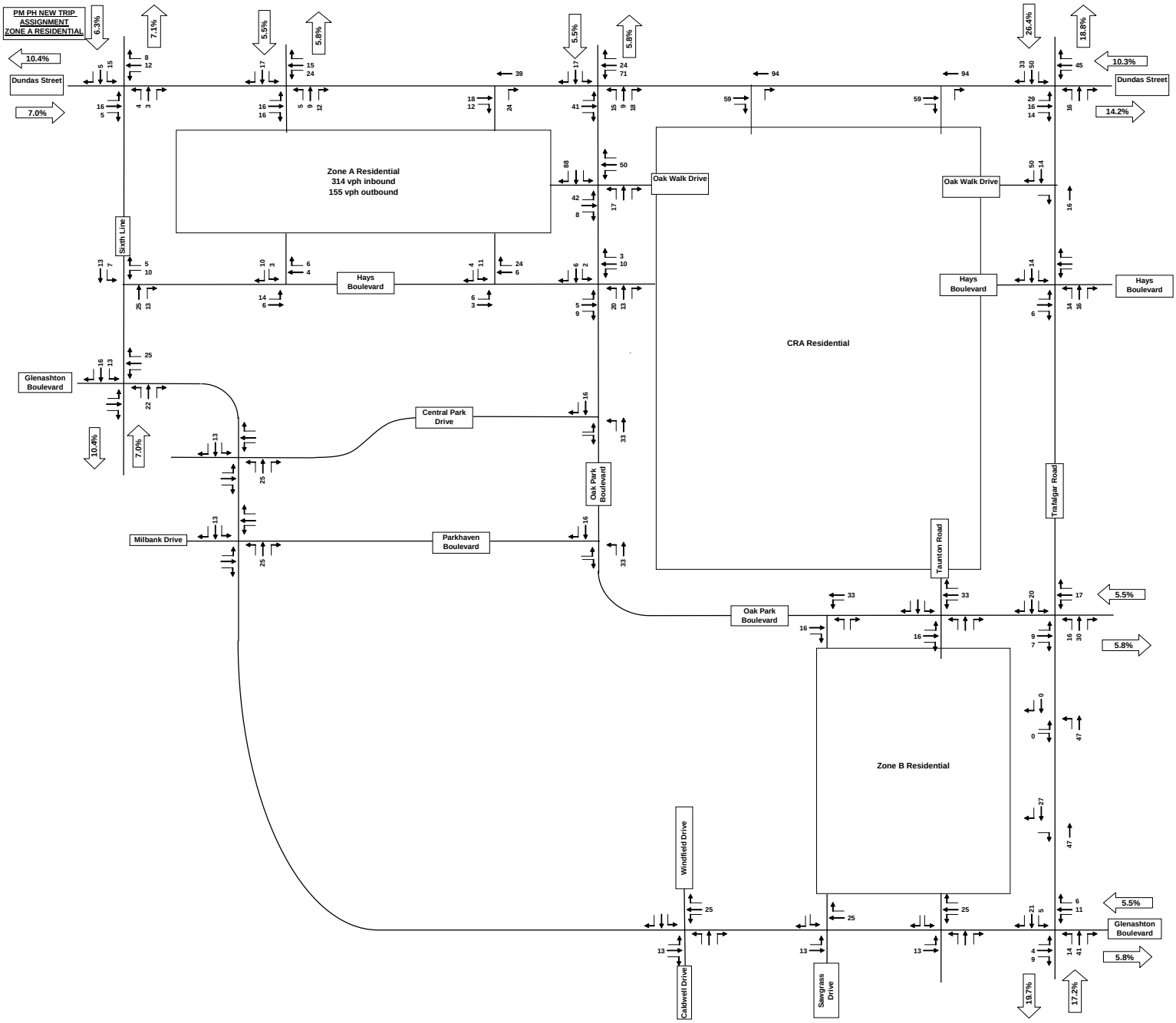
Uptown Core P.M. Peak Hour New Trip Assignment: Zone A Residential



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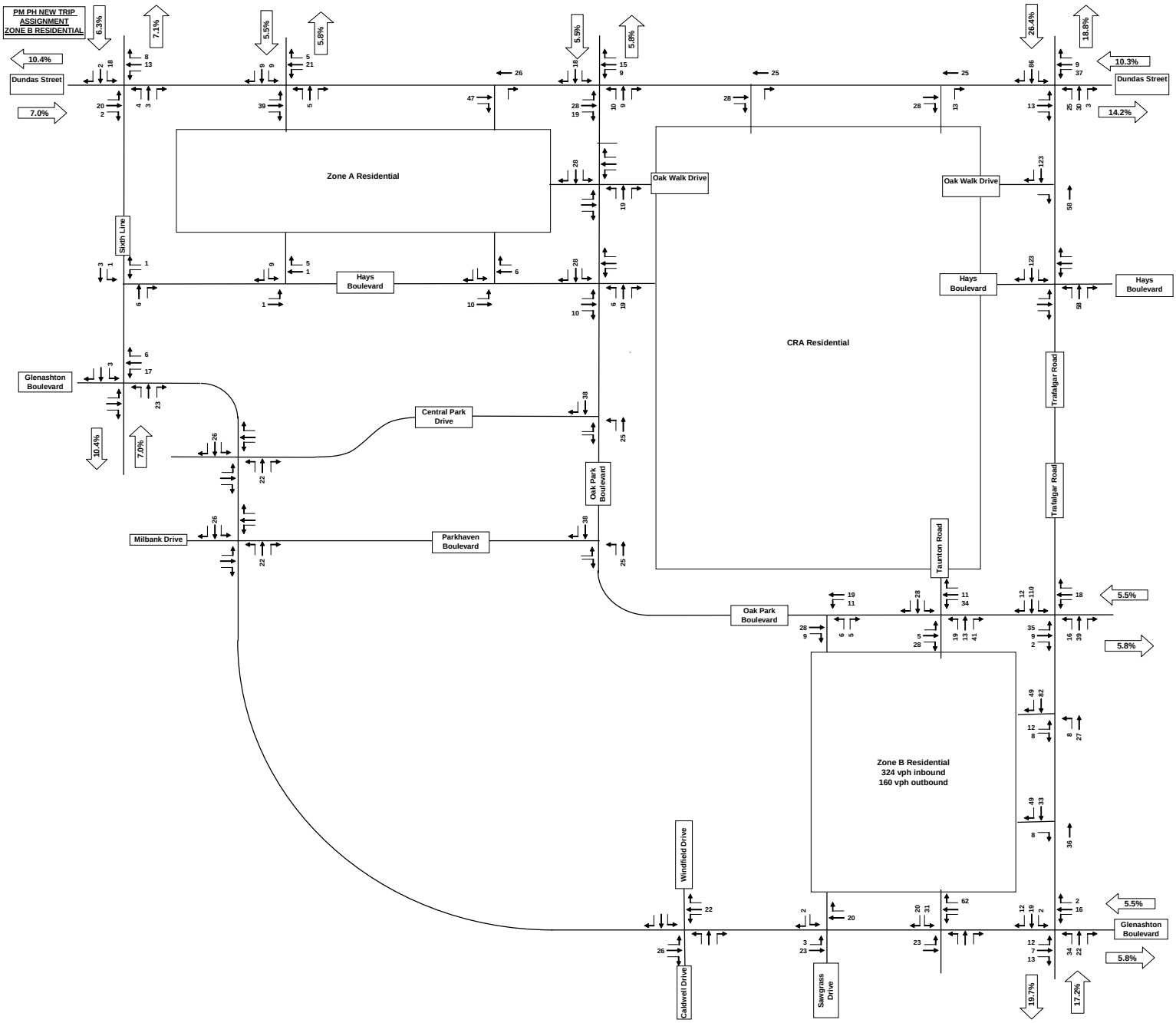

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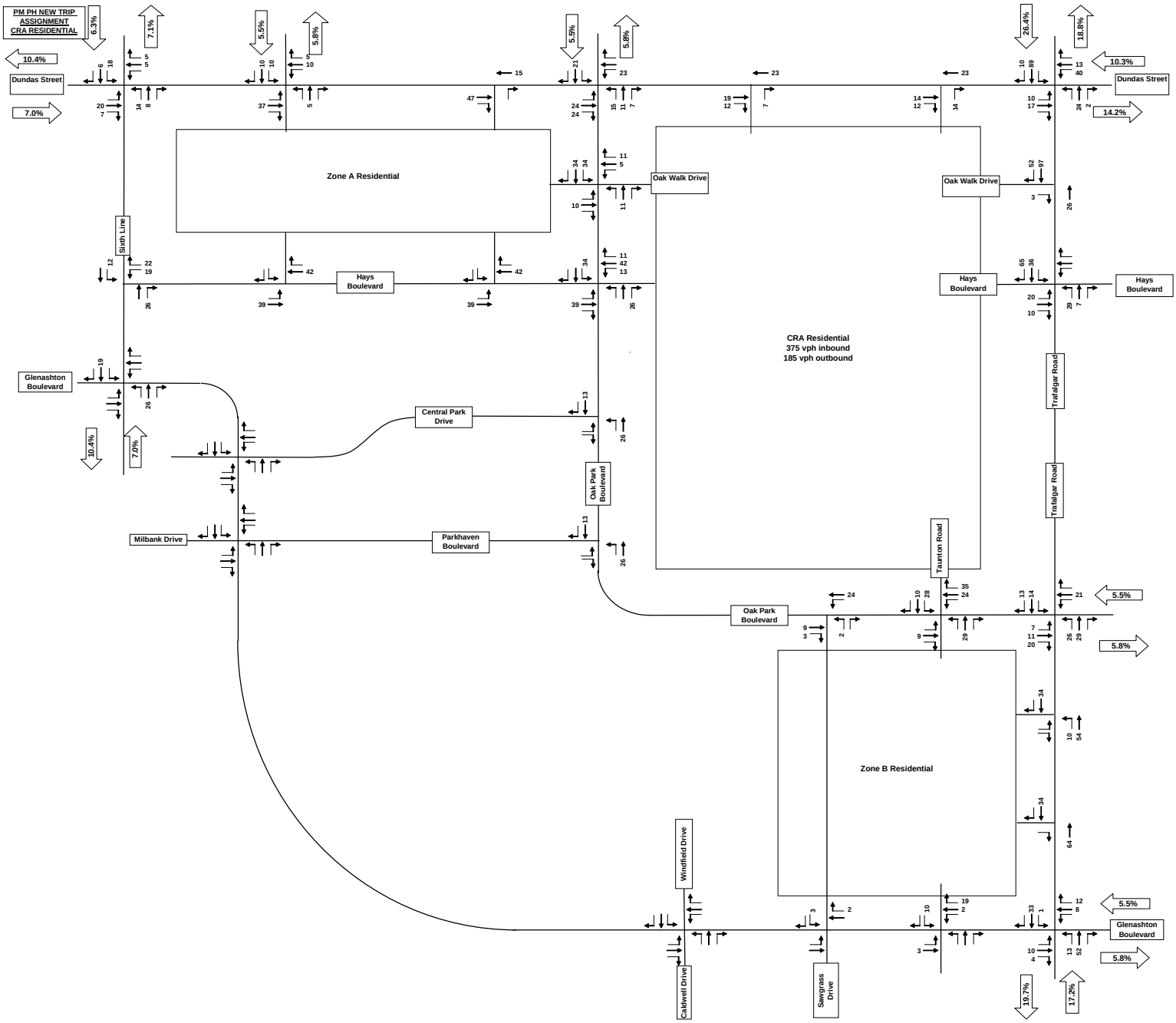
Uptown Core P.M. Peak Hour New Trip Assignment: CRA Residential



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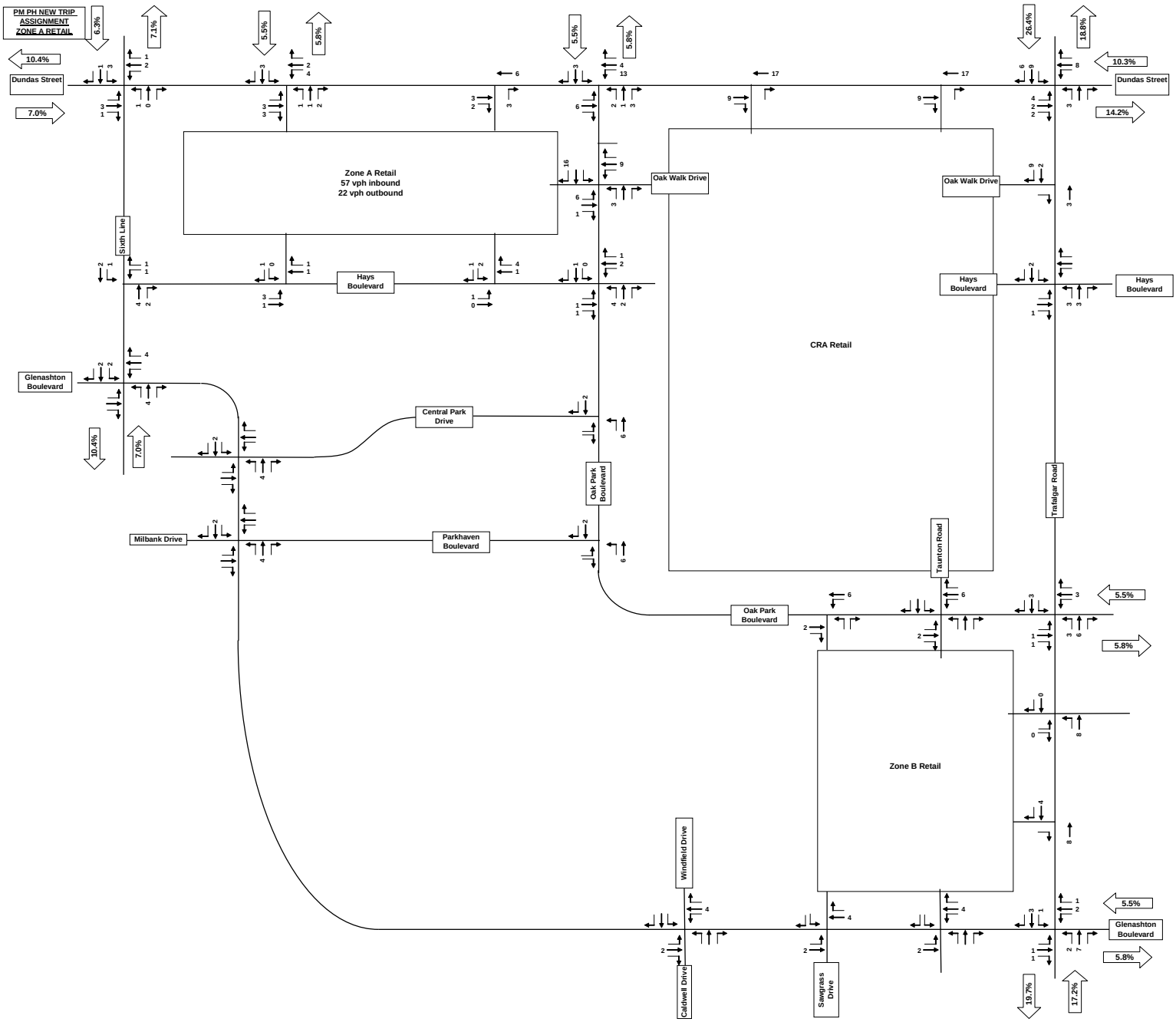
Uptown Core P.M. Peak Hour New Trip Assignment: Primary Zone A Retail



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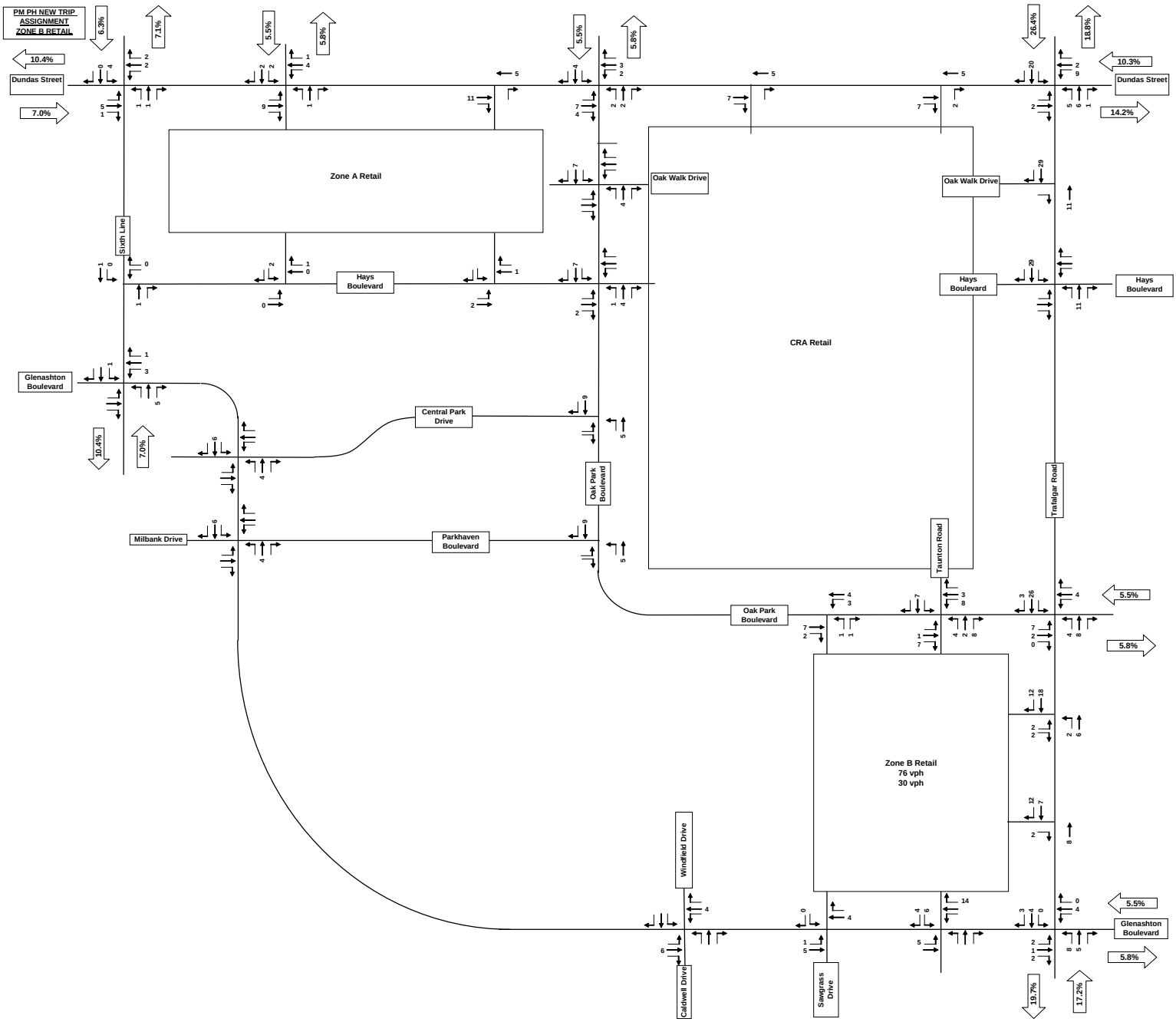

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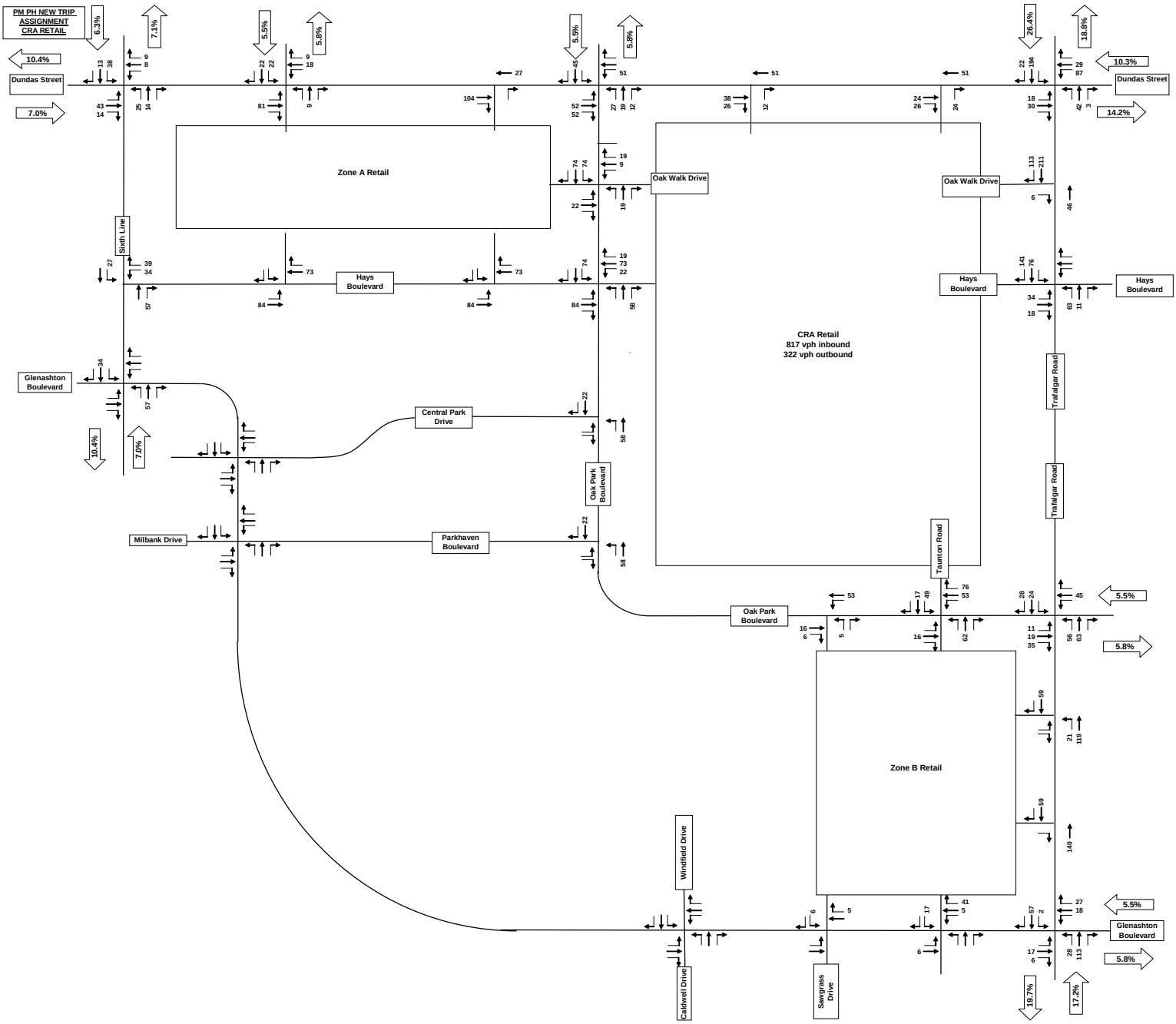

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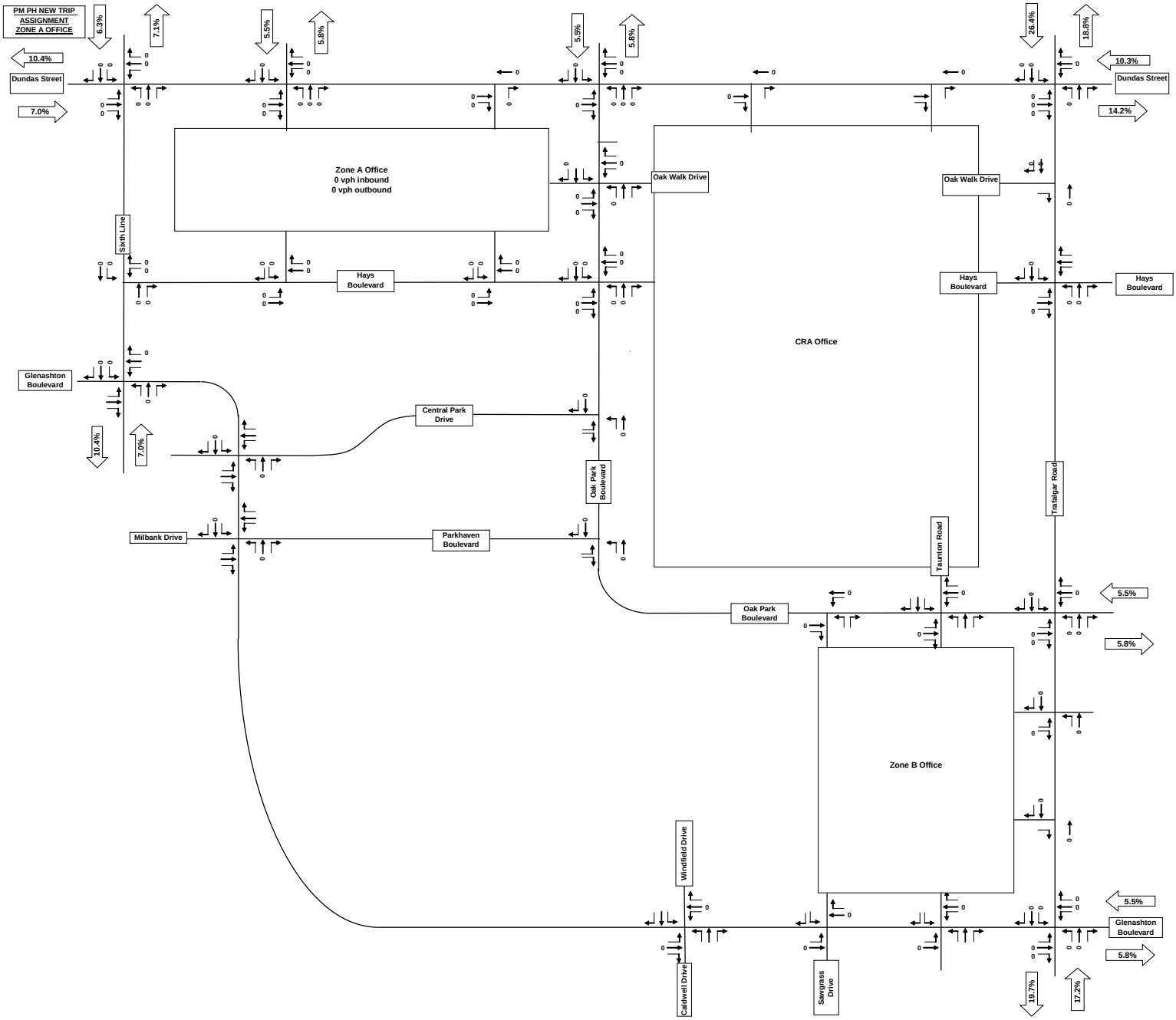
Uptown Core P.M. Peak Hour New Trip Assignment: Zone A Office



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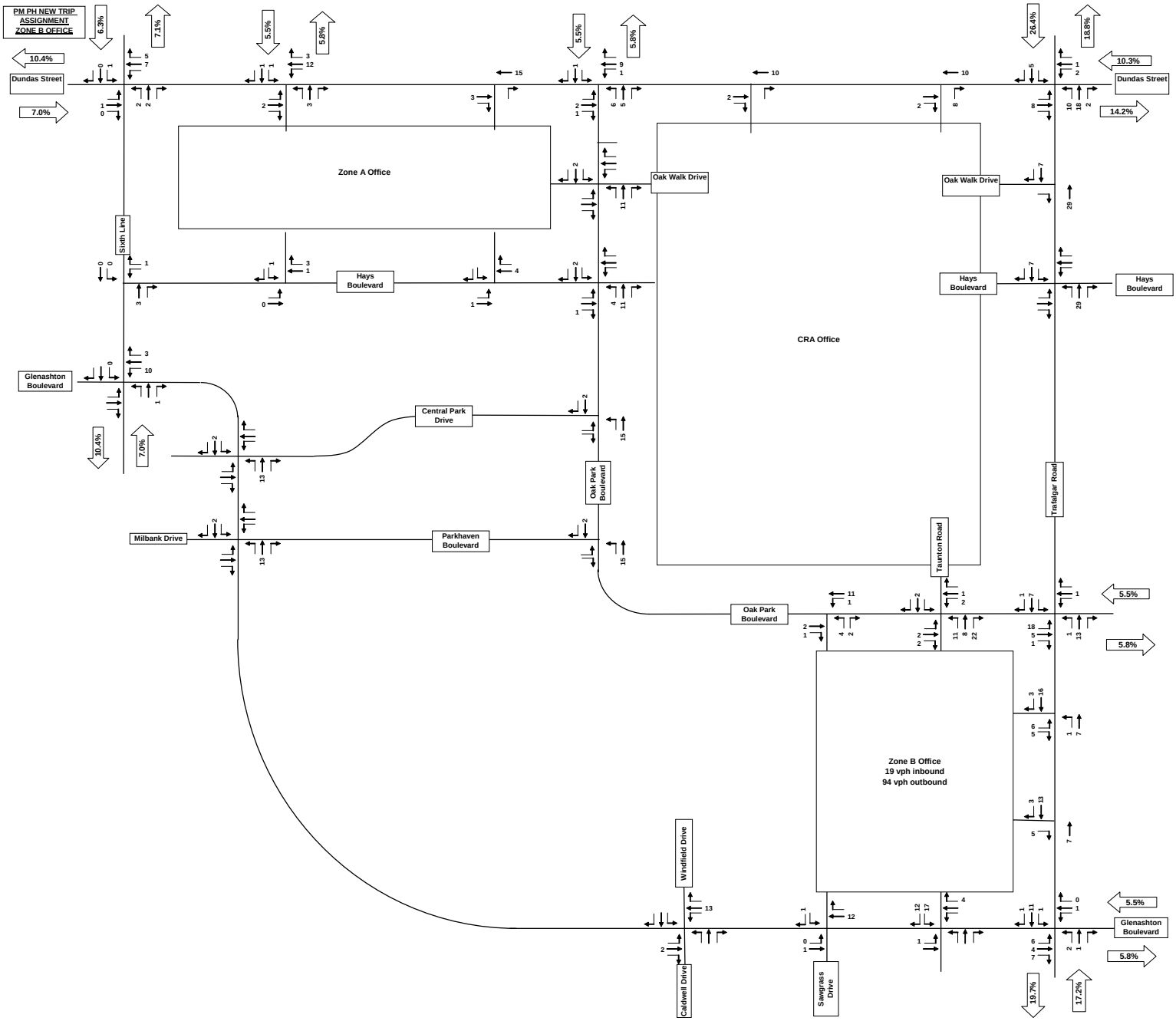

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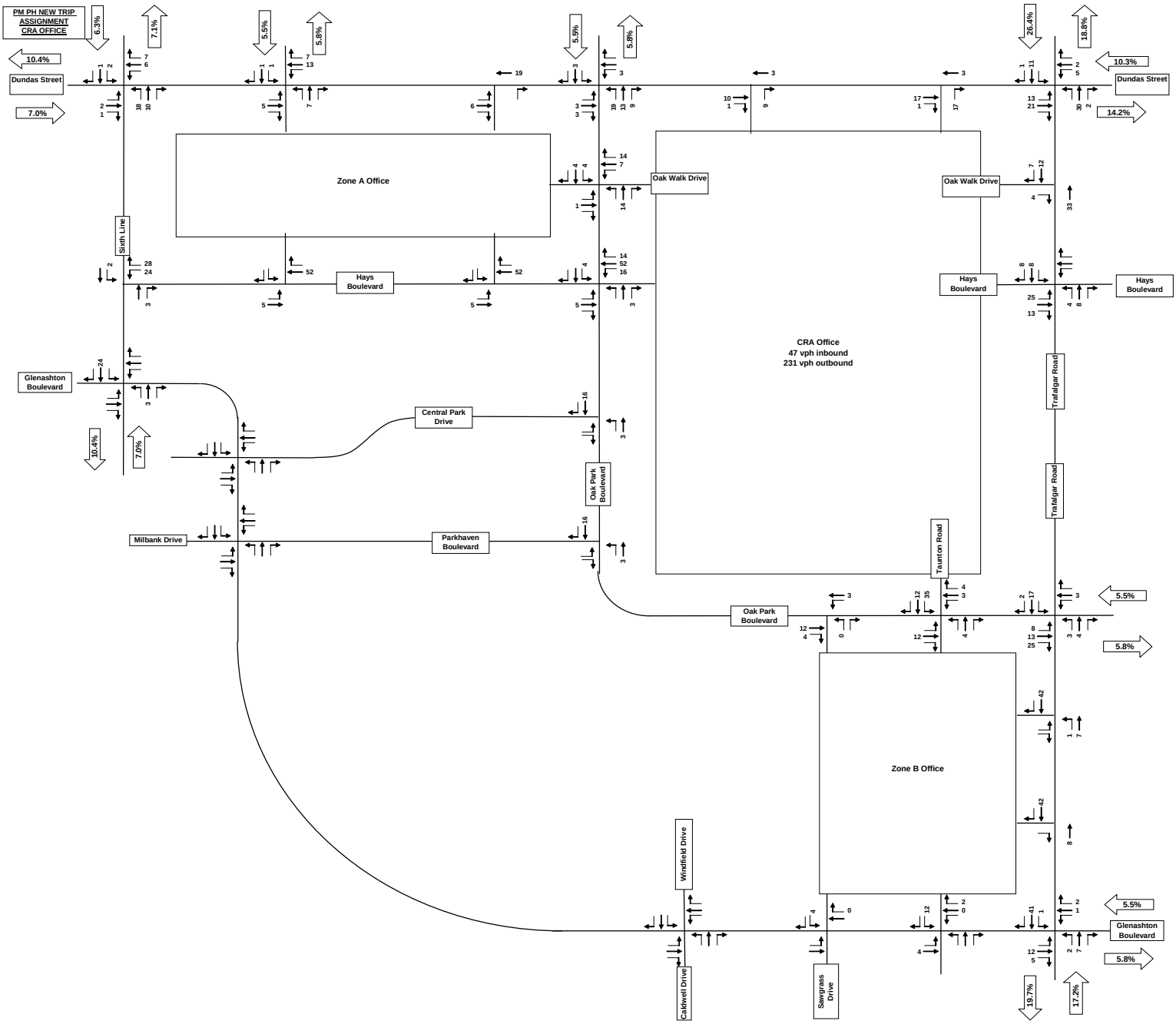

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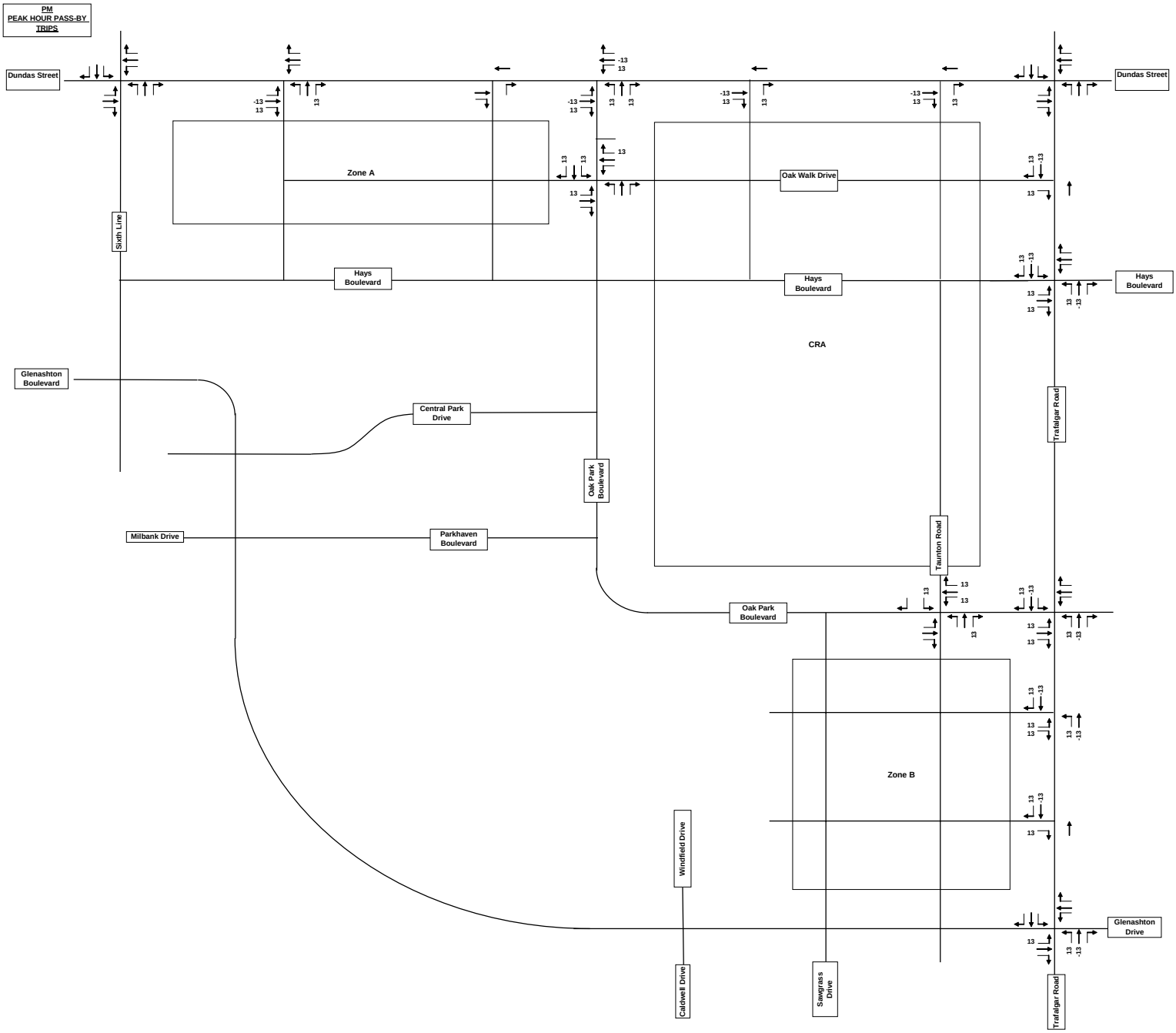
Uptown Core P.M. Peak Hour New Trip Assignment: Pass-by Retail Trips



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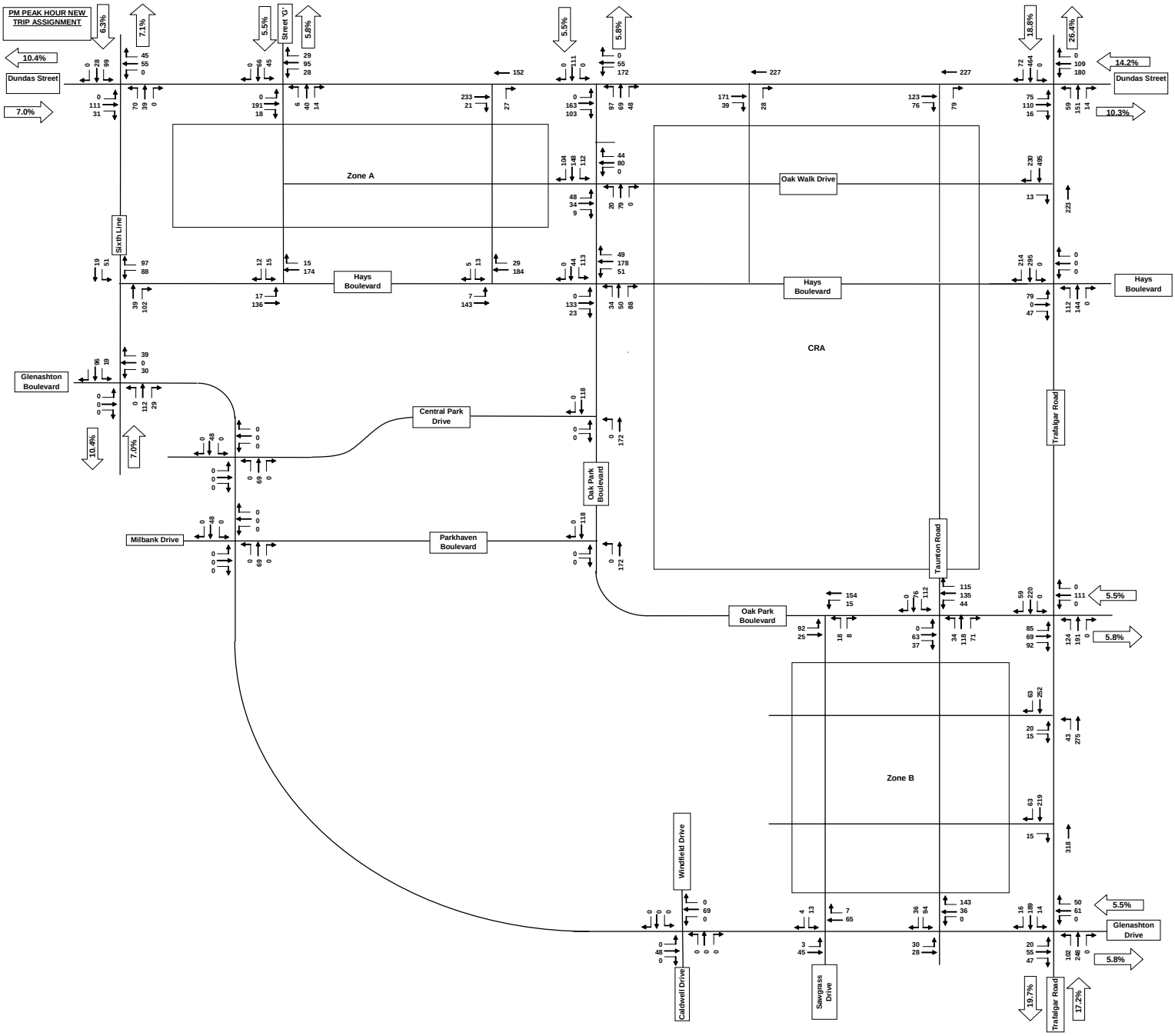
Uptown Core P.M. Peak Hour Total Trip Assignment



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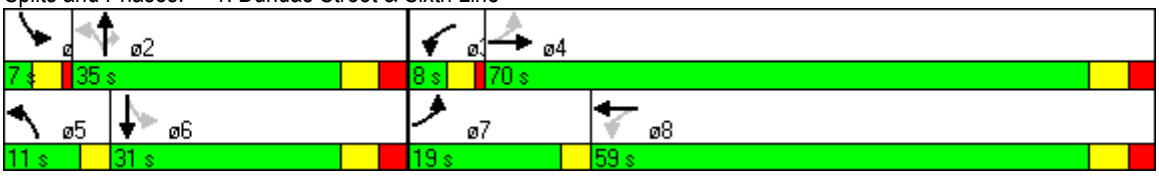
Appendix 5

Intersection Analyses Output
Future (2021) Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	237	2451	115	989	225	437	277	110	200
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	3.0	4.0	2.0	4.0	3.0	4.0	4.0	2.0	4.0
Minimum Split (s)	6.0	23.0	6.0	23.0	6.0	30.0	30.0	6.0	30.0
Total Split (s)	19.0	70.0	8.0	59.0	11.0	35.0	35.0	7.0	31.0
Total Split (%)	15.8%	58.3%	6.7%	49.2%	9.2%	29.2%	29.2%	5.8%	25.8%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.0	1.0	3.0	0.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	4.0	7.0	3.0	7.0	7.0	4.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Ped	Ped	None	Ped

Intersection Summary
Cycle Length: 120
Actual Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Dundas Street & Sixth Line



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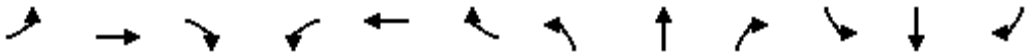


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	2451	219	115	989	84	225	437	277	110	200	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	4.8	3.8	3.8	4.8	3.8	3.8
Total Lost time (s)	3.0	7.0		4.0	7.0		3.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	5134		1750	5137		2006	1904	1619	2006	3499	
Flt Permitted	0.19	1.00		0.07	1.00		0.51	1.00	1.00	0.17	1.00	
Satd. Flow (perm)	356	5134		133	5137		1078	1904	1619	352	3499	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	237	2451	219	115	989	84	225	437	277	110	200	56
RTOR Reduction (vph)	0	9	0	0	8	0	0	0	55	0	22	0
Lane Group Flow (vph)	237	2661	0	115	1065	0	225	437	222	110	234	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	71.0	63.0		59.5	55.5		35.0	28.0	28.0	27.0	24.0	
Effective Green, g (s)	71.0	63.0		59.5	55.5		35.0	28.0	28.0	27.0	24.0	
Actuated g/C Ratio	0.59	0.52		0.50	0.46		0.29	0.23	0.23	0.22	0.20	
Clearance Time (s)	3.0	7.0		4.0	7.0		3.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	356	2695		120	2376		376	444	378	121	700	
v/s Ratio Prot	0.07	c0.52		c0.03	0.21		c0.04	c0.23		c0.02	0.07	
v/s Ratio Perm	0.32			0.44			0.13		0.14	0.18		
v/c Ratio	0.67	0.99		0.96	0.45		0.60	0.98	0.59	0.91	0.33	
Uniform Delay, d1	13.2	28.1		30.3	21.9		35.0	45.8	40.9	46.7	41.2	
Progression Factor	1.00	1.00		1.50	0.80		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	25.0		60.1	0.2		2.6	70.3	2.3	82.9	0.3	
Delay (s)	18.0	53.1		105.5	17.7		37.7	116.1	43.1	129.6	41.4	
Level of Service	B	D		F	B		D	F	D	F	D	
Approach Delay (s)		50.3			26.2			75.8			67.9	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	60		

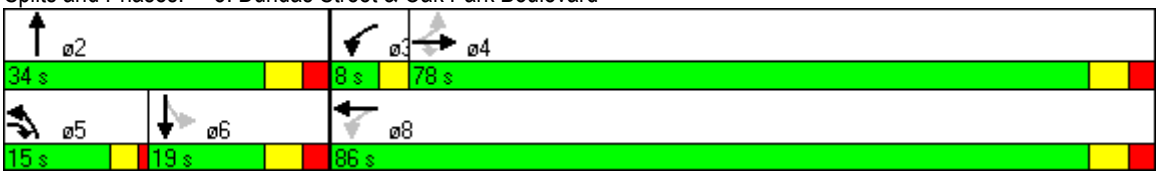
c Critical Lane Group

DRAFT

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	60	2594	258	86	1190	129	143	19	37
Turn Type	Perm		pm+ov	pm+pt		Prot		Perm	
Protected Phases		4	5	3	8	5	2		6
Permitted Phases	4		4	8				6	
Detector Phase	4	4	5	3	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	1.0	1.0	4.0	1.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	6.0	8.0	23.0	6.0	23.0	23.0	23.0
Total Split (s)	78.0	78.0	15.0	8.0	86.0	15.0	34.0	19.0	19.0
Total Split (%)	65.0%	65.0%	12.5%	6.7%	71.7%	12.5%	28.3%	15.8%	15.8%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	1.0	0.0	3.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	3.0	7.0	4.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag	Lag
Lead-Lag Optimize?				Yes					
Recall Mode	C-Max	C-Max	None	None	C-Max	None	Max	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 5: Dundas Street & Oak Park Boulevard



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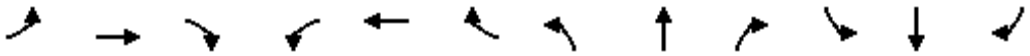

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	2594	258	86	1190	52	129	143	119	19	37	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	3.0	3.5	3.5	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0	4.0	3.0	7.0		4.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	5198	1619	1750	5166		3204	1717		1750	1826	
Flt Permitted	0.21	1.00	1.00	0.06	1.00		0.95	1.00		0.60	1.00	
Satd. Flow (perm)	392	5198	1619	101	5166		3204	1717		1100	1826	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	2594	258	86	1190	52	129	143	119	19	37	14
RTOR Reduction (vph)	0	0	78	0	4	0	0	24	0	0	12	0
Lane Group Flow (vph)	60	2594	180	86	1238	0	129	238	0	19	39	0
Turn Type	Perm		pm+ov	pm+pt			Prot			Perm		
Protected Phases		4	5	3	8		5	2			6	
Permitted Phases	4		4	8						6		
Actuated Green, G (s)	69.6	69.6	83.8	77.6	77.6		14.2	28.4		10.2	10.2	
Effective Green, g (s)	69.6	69.6	83.8	77.6	77.6		14.2	28.4		10.2	10.2	
Actuated g/C Ratio	0.58	0.58	0.70	0.65	0.65		0.12	0.24		0.08	0.08	
Clearance Time (s)	7.0	7.0	4.0	3.0	7.0		4.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	227	3015	1131	134	3341		379	406		94	155	
v/s Ratio Prot		c0.50	0.02	c0.03	0.24		0.04	c0.14			0.02	
v/s Ratio Perm	0.15		0.09	0.39						0.02		
v/c Ratio	0.26	0.86	0.16	0.64	0.37		0.34	0.59		0.20	0.25	
Uniform Delay, d1	12.5	21.1	6.1	22.8	9.9		48.6	40.6		51.1	51.3	
Progression Factor	0.89	0.82	0.46	1.80	0.58		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	3.4	0.1	10.2	0.3		0.5	6.2		1.1	0.9	
Delay (s)	13.8	20.8	2.9	51.3	6.1		49.1	46.8		52.2	52.2	
Level of Service	B	C	A	D	A		D	D		D	D	
Approach Delay (s)		19.1			9.0			47.6			52.2	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	60		

c Critical Lane Group

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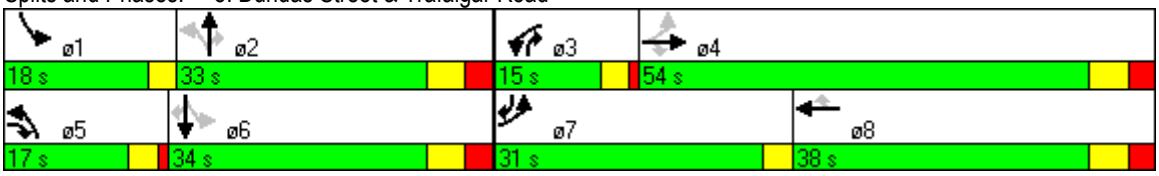
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	2027	234	268	839	170	252	949	318	229	1133	188
Turn Type	pm+pt		pm+ov	Prot		Perm	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	8	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0	3.0	4.0	3.0
Minimum Split (s)	6.0	30.0	6.0	6.0	30.0	30.0	6.0	30.0	6.0	7.0	30.0	6.0
Total Split (s)	31.0	54.0	17.0	15.0	38.0	38.0	17.0	33.0	15.0	18.0	34.0	31.0
Total Split (%)	25.8%	45.0%	14.2%	12.5%	31.7%	31.7%	14.2%	27.5%	12.5%	15.0%	28.3%	25.8%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	3.0	1.0	1.0	3.0	3.0	1.0	3.0	1.0	0.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	4.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	7.0	3.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	None	None	Max	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 8: Dundas Street & Trafalgar Road



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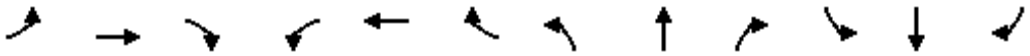


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	2027	234	268	839	170	252	949	318	229	1133	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.8	3.8	3.5	3.8	4.8
Total Lost time (s)	3.0	7.0	4.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	7.0	3.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	5198	1566	3395	5198	1566	1750	5198	1619	1750	5198	1794
Flt Permitted	0.20	1.00	1.00	0.95	1.00	1.00	0.15	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	370	5198	1566	3395	5198	1566	276	5198	1619	273	5198	1794
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	460	2027	234	268	839	170	252	949	318	229	1133	188
RTOR Reduction (vph)	0	0	4	0	0	123	0	0	28	0	0	24
Lane Group Flow (vph)	460	2027	231	268	839	47	252	949	290	229	1133	164
Turn Type	pm+pt		pm+ov	Prot		Perm	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	62.0	47.0	60.0	11.0	33.4	33.4	39.7	26.7	37.7	41.3	27.0	52.6
Effective Green, g (s)	62.0	47.0	60.0	11.0	33.4	33.4	39.7	26.7	37.7	41.3	27.0	52.6
Actuated g/C Ratio	0.52	0.39	0.50	0.09	0.28	0.28	0.33	0.22	0.31	0.34	0.22	0.44
Clearance Time (s)	3.0	7.0	4.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	7.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	486	2036	783	311	1447	436	251	1157	509	270	1170	786
v/s Ratio Prot	c0.20	c0.39	0.03	0.08	0.16		c0.11	0.18	0.05	0.10	0.22	0.04
v/s Ratio Perm	0.29		0.12			0.03	c0.22		0.13	0.19		0.05
v/c Ratio	0.95	1.00	0.29	0.86	0.58	0.11	1.00	0.82	0.57	0.85	0.97	0.21
Uniform Delay, d1	26.5	36.4	17.6	53.8	37.3	32.2	34.2	44.4	34.4	31.3	46.1	20.8
Progression Factor	0.84	0.62	0.64	1.00	1.00	1.00	1.23	1.17	1.67	1.00	1.00	1.00
Incremental Delay, d2	35.4	32.2	0.2	25.4	1.7	0.5	107.9	5.8	1.2	25.4	30.6	0.1
Delay (s)	57.8	55.0	11.5	79.2	39.0	32.7	149.9	57.8	58.8	56.6	76.7	21.0
Level of Service	E	D	B	E	D	C	F	E	E	E	E	C
Approach Delay (s)		51.7			46.6			73.3			67.0	
Approach LOS		D			D			E			E	

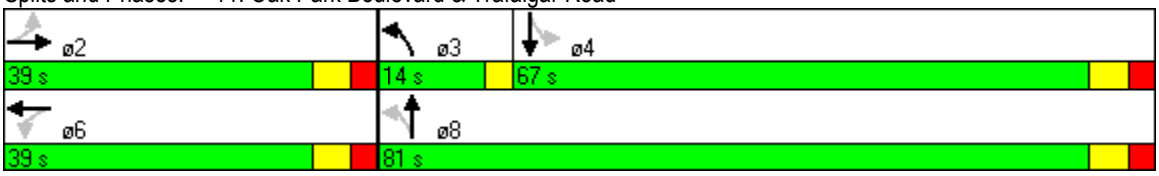
Intersection Summary			
HCM Average Control Delay	58.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	164	183	120	136	138	1338	61	1454
Turn Type	Perm		Perm		pm+pt		Perm	
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	3	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	1.0	4.0	4.0	4.0
Minimum Split (s)	30.0	30.0	30.0	30.0	8.0	23.0	23.0	23.0
Total Split (s)	39.0	39.0	39.0	39.0	14.0	81.0	67.0	67.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	11.7%	67.5%	55.8%	55.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	3.0	7.0	7.0	7.0
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?					Yes			
Recall Mode	Ped	Ped	Ped	Ped	None	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 59 (49%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 11: Oak Park Boulevard & Trafalgar Road



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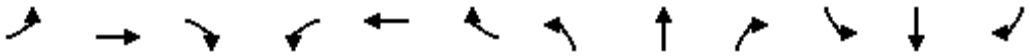

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	164	183	205	120	136	20	138	1338	213	61	1454	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.2	3.2	3.5	3.5	3.8	3.8	3.5	3.8	3.5	3.5	3.8	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	0.98		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1691	3114		1750	3548		1750	5091		1750	5173	
Flt Permitted	0.65	1.00		0.42	1.00		0.12	1.00		0.15	1.00	
Satd. Flow (perm)	1163	3114		776	3548		220	5091		283	5173	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	183	205	120	136	20	138	1338	213	61	1454	48
RTOR Reduction (vph)	0	146	0	0	10	0	0	16	0	0	3	0
Lane Group Flow (vph)	164	242	0	120	146	0	138	1535	0	61	1499	0
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	26.0	26.0		26.0	26.0		80.0	80.0		68.4	68.4	
Effective Green, g (s)	26.0	26.0		26.0	26.0		80.0	80.0		68.4	68.4	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.67	0.67		0.57	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	675		168	769		256	3394		161	2949	
v/s Ratio Prot		0.08			0.04		c0.04	0.30			0.29	
v/s Ratio Perm	0.14			c0.15			c0.32			0.22		
v/c Ratio	0.65	0.36		0.71	0.19		0.54	0.45		0.38	0.51	
Uniform Delay, d1	42.9	39.9		43.6	38.4		10.0	9.5		14.1	15.6	
Progression Factor	1.00	1.00		1.00	1.00		1.11	1.22		0.24	0.22	
Incremental Delay, d2	6.1	0.3		14.4	0.1		2.2	0.4		3.2	0.3	
Delay (s)	48.9	40.2		58.0	38.5		13.2	12.0		6.6	3.8	
Level of Service	D	D		E	D		B	B		A	A	
Approach Delay (s)		42.8			47.0			12.1			3.9	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

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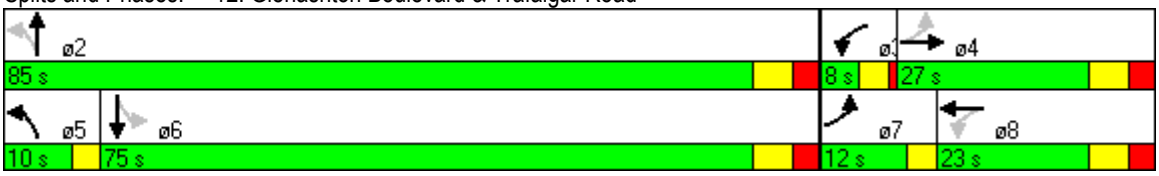
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	154	203	63	183	132	1380	105	1678
Turn Type	pm+pt		pm+pt		pm+pt		Perm	
Protected Phases	7	4	3	8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	2.0	4.0	1.0	4.0	3.0	4.0	4.0	4.0
Minimum Split (s)	6.0	23.0	8.0	23.0	6.0	23.0	23.0	23.0
Total Split (s)	12.0	27.0	8.0	23.0	10.0	85.0	75.0	75.0
Total Split (%)	10.0%	22.5%	6.7%	19.2%	8.3%	70.8%	62.5%	62.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	1.0	3.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	4.0	7.0	3.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead		Lag	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 112 (93%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 12: Glenashton Boulevard & Trafalgar Road



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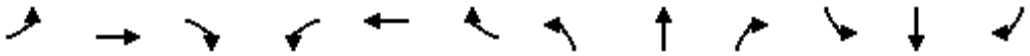


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	203	263	63	183	159	132	1380	53	105	1678	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	3.0	7.0		4.0	7.0		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	0.93		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3312		1750	3366		1750	5169		1750	5180	
Flt Permitted	0.31	1.00		0.35	1.00		0.09	1.00		0.17	1.00	
Satd. Flow (perm)	571	3312		649	3366		159	5169		321	5180	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	154	203	263	63	183	159	132	1380	53	105	1678	40
RTOR Reduction (vph)	0	114	0	0	67	0	0	3	0	0	2	0
Lane Group Flow (vph)	154	352	0	63	275	0	132	1430	0	105	1716	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.8	19.6		18.0	14.8		79.2	79.2		68.9	68.9	
Effective Green, g (s)	26.8	19.6		18.0	14.8		79.2	79.2		68.9	68.9	
Actuated g/C Ratio	0.22	0.16		0.15	0.12		0.66	0.66		0.57	0.57	
Clearance Time (s)	3.0	7.0		4.0	7.0		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	216	541		127	415		202	3412		184	2974	
v/s Ratio Prot	c0.05	0.11		0.01	0.08		c0.04	0.28			0.33	
v/s Ratio Perm	c0.11			0.06			c0.39			0.33		
v/c Ratio	0.71	0.65		0.50	0.66		0.65	0.42		0.57	0.58	
Uniform Delay, d1	40.0	47.0		45.7	50.2		12.7	9.6		16.2	16.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.52	0.45	
Incremental Delay, d2	11.2	2.8		3.1	4.0		7.6	0.4		11.9	0.8	
Delay (s)	51.2	49.8		48.7	54.3		20.3	10.0		20.3	8.1	
Level of Service	D	D		D	D		C	A		C	A	
Approach Delay (s)		50.2			53.4			10.8			8.8	
Approach LOS		D			D			B			A	

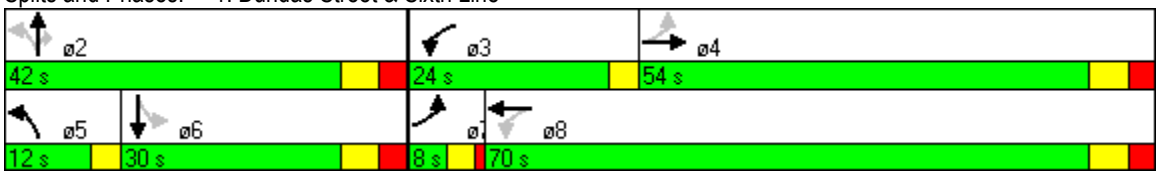
Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	67	1619	331	2333	204	241	129	161	500
Turn Type	pm+pt		pm+pt		pm+pt		Perm	Perm	
Protected Phases	7	4	3	8	5	2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	1.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
Minimum Split (s)	6.0	23.0	6.0	23.0	6.0	30.0	30.0	30.0	30.0
Total Split (s)	8.0	54.0	24.0	70.0	12.0	42.0	42.0	30.0	30.0
Total Split (%)	6.7%	45.0%	20.0%	58.3%	10.0%	35.0%	35.0%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	3.0	7.0	3.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Ped	Ped	Ped	Ped

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Dundas Street & Sixth Line



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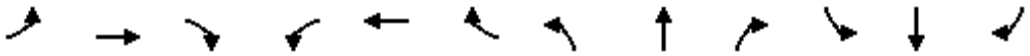

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	1619	302	331	2333	140	204	241	129	161	500	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	4.8	3.8	3.8	4.8	3.8	3.8
Total Lost time (s)	4.0	7.0		3.0	7.0		3.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	5076		1750	5154		2006	1904	1619	2006	3530	
Flt Permitted	0.08	1.00		0.08	1.00		0.16	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	152	5076		143	5154		331	1904	1619	1286	3530	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	1619	302	331	2333	140	204	241	129	161	500	97
RTOR Reduction (vph)	0	22	0	0	6	0	0	0	92	0	14	0
Lane Group Flow (vph)	67	1899	0	331	2467	0	204	241	37	161	583	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	51.7	48.5		71.5	64.3		34.5	34.5	34.5	22.5	22.5	
Effective Green, g (s)	51.7	48.5		71.5	64.3		34.5	34.5	34.5	22.5	22.5	
Actuated g/C Ratio	0.43	0.40		0.60	0.54		0.29	0.29	0.29	0.19	0.19	
Clearance Time (s)	4.0	7.0		3.0	7.0		3.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	108	2052		353	2762		221	547	465	241	662	
v/s Ratio Prot	0.02	0.37		c0.16	0.48		c0.07	0.13			0.17	
v/s Ratio Perm	0.25			c0.40			c0.20		0.02	0.13		
v/c Ratio	0.62	0.93		0.94	0.89		0.92	0.44	0.08	0.67	0.88	
Uniform Delay, d1	25.7	34.0		37.7	24.8		36.5	34.9	31.2	45.3	47.4	
Progression Factor	1.00	1.00		1.41	0.34		1.01	1.00	1.11	1.00	1.00	
Incremental Delay, d2	11.0	10.1		32.5	3.3		59.5	0.6	0.1	7.1	15.2	
Delay (s)	36.7	44.1		85.5	11.7		96.5	35.5	34.7	52.4	62.6	
Level of Service	D	D		F	B		F	D	C	D	E	
Approach Delay (s)		43.9			20.4			57.0			60.4	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	60		

c Critical Lane Group

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	26	1947	28	2747	6	87	86	166
Turn Type	pm+pt		Perm		Perm		Perm	
Protected Phases	7	4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	6.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	6.0	90.0	84.0	84.0	30.0	30.0	30.0	30.0
Total Split (%)	5.0%	75.0%	70.0%	70.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 105 (88%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: Dundas Street & Street G

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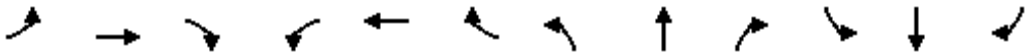

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1947	32	28	2747	41	6	87	27	86	166	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.8	3.8	3.5	3.8	3.8	3.0	3.5	3.8	3.8	3.8	3.8
Total Lost time (s)	3.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1809	5186		1750	5187		1652	1777		1809	1836	
Flt Permitted	0.05	1.00		0.09	1.00		0.38	1.00		0.68	1.00	
Satd. Flow (perm)	90	5186		159	5187		664	1777		1302	1836	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1947	32	28	2747	41	6	87	27	86	166	52
RTOR Reduction (vph)	0	1	0	0	1	0	0	10	0	0	10	0
Lane Group Flow (vph)	26	1978	0	28	2787	0	6	104	0	86	208	0
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	87.8	87.8		82.1	82.1		18.2	18.2		18.2	18.2	
Effective Green, g (s)	87.8	87.8		82.1	82.1		18.2	18.2		18.2	18.2	
Actuated g/C Ratio	0.73	0.73		0.68	0.68		0.15	0.15		0.15	0.15	
Clearance Time (s)	3.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	3794		109	3549		101	270		197	278	
v/s Ratio Prot	0.01	c0.38			c0.54			0.06			c0.11	
v/s Ratio Perm	0.18			0.18			0.01			0.07		
v/c Ratio	0.25	0.52		0.26	0.79		0.06	0.38		0.44	0.75	
Uniform Delay, d1	14.4	7.0		7.3	12.9		43.6	45.9		46.2	48.7	
Progression Factor	2.66	2.17		0.56	0.41		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.3		3.8	1.2		0.2	0.9		1.6	11.2	
Delay (s)	39.1	15.4		7.9	6.6		43.8	46.8		47.8	59.9	
Level of Service	D	B		A	A		D	D		D	E	
Approach Delay (s)		15.7			6.6			46.6			56.4	
Approach LOS		B			A			D			E	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

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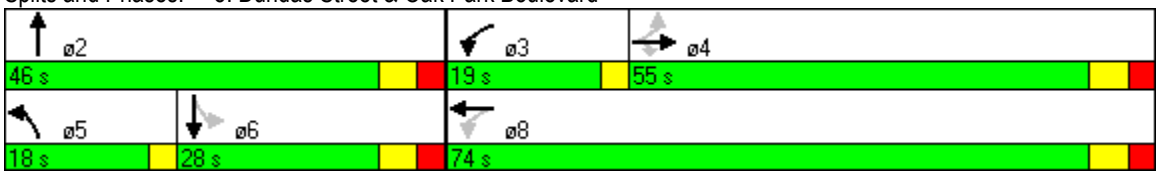
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	26	1790	260	307	2244	362	117	41	211
Turn Type	Perm		Perm	pm+pt		Prot		Perm	
Protected Phases		4		3	8	5	2		6
Permitted Phases	4		4	8				6	
Detector Phase	4	4	4	3	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	6.0	23.0	6.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	19.0	74.0	18.0	46.0	28.0	28.0
Total Split (%)	45.8%	45.8%	45.8%	15.8%	61.7%	15.0%	38.3%	23.3%	23.3%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	3.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	Ped	Ped	Ped

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 116 (97%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 5: Dundas Street & Oak Park Boulevard



HCM Signalized Intersection Capacity Analysis
5: Dundas Street & Oak Park Boulevard

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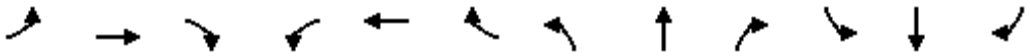
3/4/2009



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1790	260	307	2244	33	362	117	84	41	211	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	3.0	3.5	3.5	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.94		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	5198	1619	1750	5187		3204	1727		1750	1848	
Flt Permitted	0.08	1.00	1.00	0.08	1.00		0.95	1.00		0.63	1.00	
Satd. Flow (perm)	154	5198	1619	144	5187		3204	1727		1163	1848	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1790	260	307	2244	33	362	117	84	41	211	52
RTOR Reduction (vph)	0	0	106	0	1	0	0	22	0	0	6	0
Lane Group Flow (vph)	26	1790	154	307	2276	0	362	179	0	41	257	0
Turn Type	Perm		Perm	pm+pt			Prot			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8						6		
Actuated Green, G (s)	48.0	48.0	48.0	68.3	68.3		15.0	37.7		19.7	19.7	
Effective Green, g (s)	48.0	48.0	48.0	68.3	68.3		15.0	37.7		19.7	19.7	
Actuated g/C Ratio	0.40	0.40	0.40	0.57	0.57		0.12	0.31		0.16	0.16	
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	62	2079	648	313	2952		401	543		191	303	
v/s Ratio Prot		0.34		c0.14	0.44		c0.11	0.10			c0.14	
v/s Ratio Perm	0.17		0.10	c0.41						0.04		
v/c Ratio	0.42	0.86	0.24	0.98	0.77		0.90	0.33		0.21	0.85	
Uniform Delay, d1	26.0	32.9	23.9	37.7	19.8		51.8	31.5		43.4	48.7	
Progression Factor	0.58	0.66	0.68	0.52	0.91		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.0	4.8	0.8	33.4	0.5		29.9	0.4		0.6	22.9	
Delay (s)	34.0	26.6	16.9	53.0	18.6		81.7	31.8		44.0	71.6	
Level of Service	C	C	B	D	B		F	C		D	E	
Approach Delay (s)		25.5			22.7			63.9			67.9	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM Average Control Delay	30.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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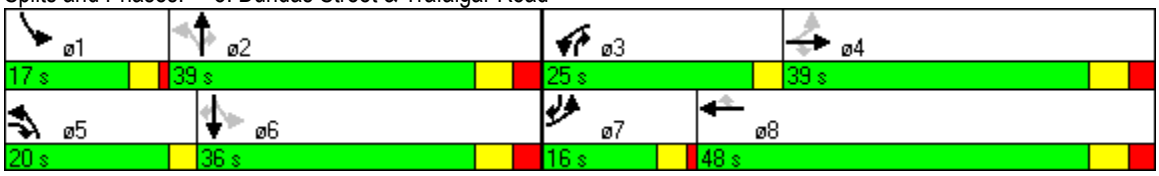
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	318	1236	269	651	1842	245	438	942	278	266	1428	388
Turn Type	pm+pt		pm+ov	Prot		Perm	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	8	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	2.0	4.0	2.0	1.0	4.0	4.0	2.0	4.0	1.0	3.0	4.0	2.0
Minimum Split (s)	6.0	30.0	6.0	6.0	30.0	30.0	6.0	30.0	6.0	7.0	30.0	6.0
Total Split (s)	16.0	39.0	20.0	25.0	48.0	48.0	20.0	39.0	25.0	17.0	36.0	16.0
Total Split (%)	13.3%	32.5%	16.7%	20.8%	40.0%	40.0%	16.7%	32.5%	20.8%	14.2%	30.0%	13.3%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	1.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	1.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	4.0	7.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Ped	None	None	Ped	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 8: Dundas Street & Trafalgar Road



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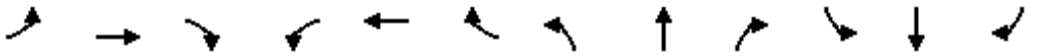

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	318	1236	269	651	1842	245	438	942	278	266	1428	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.8	3.8	3.5	3.8	4.8
Total Lost time (s)	4.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	4.0	7.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	5198	1566	3395	5198	1566	1750	5198	1619	1750	5198	1794
Flt Permitted	0.12	1.00	1.00	0.95	1.00	1.00	0.12	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	230	5198	1566	3395	5198	1566	230	5198	1619	336	5198	1794
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	318	1236	269	651	1842	245	438	942	278	266	1428	388
RTOR Reduction (vph)	0	0	2	0	0	133	0	0	20	0	0	7
Lane Group Flow (vph)	318	1236	267	651	1842	112	438	942	258	266	1428	381
Turn Type	pm+pt		pm+ov	Prot		Perm	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	44.0	32.0	49.0	22.0	41.0	41.0	49.0	32.0	54.0	42.0	29.0	41.0
Effective Green, g (s)	44.0	32.0	49.0	22.0	41.0	41.0	49.0	32.0	54.0	42.0	29.0	41.0
Actuated g/C Ratio	0.37	0.27	0.41	0.18	0.34	0.34	0.41	0.27	0.45	0.35	0.24	0.34
Clearance Time (s)	4.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	4.0	7.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	1386	639	622	1776	535	309	1386	729	271	1256	613
v/s Ratio Prot	c0.13	0.24	0.06	c0.19	0.35		c0.20	0.18	0.06	0.11	0.27	0.06
v/s Ratio Perm	c0.36		0.11			0.07	c0.38		0.09	0.24		0.15
v/c Ratio	1.35	0.89	0.42	1.05	1.04	0.21	1.42	0.68	0.35	0.98	1.14	0.62
Uniform Delay, d1	32.6	42.3	25.3	49.0	39.5	28.0	53.7	39.4	21.6	32.0	45.5	33.0
Progression Factor	1.83	0.47	0.33	1.00	1.00	1.00	0.69	0.92	1.32	1.00	1.00	1.00
Incremental Delay, d2	646.8	7.7	0.3	126.9	88.3	0.9	769.0	1.2	0.3	91.3	257.9	2.0
Delay (s)	706.5	27.5	8.6	175.9	127.8	28.9	805.9	37.4	28.8	123.2	303.4	35.0
Level of Service	F	C	A	F	F	C	F	D	C	F	F	C
Approach Delay (s)		143.1			130.4			239.0			230.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	179.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	123.4%	ICU Level of Service	H
Analysis Period (min)	60		

c Critical Lane Group

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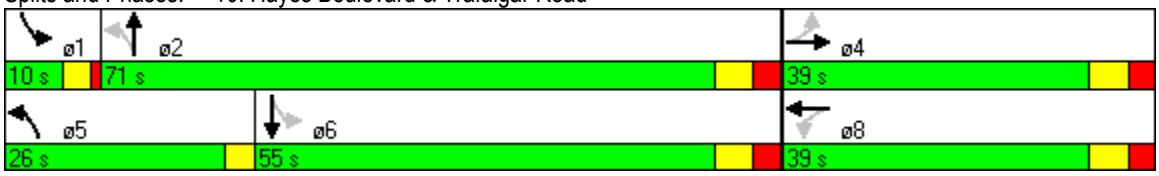
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	175	30	51	60	322	1457	78	1708
Turn Type	Perm		Perm		pm+pt		pm+pt	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	2.0	4.0	2.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	6.0	23.0	6.0	23.0
Total Split (s)	39.0	39.0	39.0	39.0	26.0	71.0	10.0	55.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	21.7%	59.2%	8.3%	45.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	0.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	3.0	7.0	4.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 10: Hayes Boulevard & Trafalgar Road



HCM Signalized Intersection Capacity Analysis
10: Hayes Boulevard & Trafalgar Road

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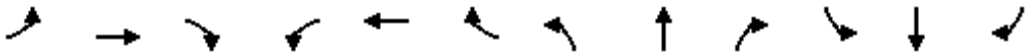
3/4/2009



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	30	228	51	60	122	322	1457	61	78	1708	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0		7.0	7.0		3.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.87		1.00	0.90		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1598		1652	1657		1750	5167		1750	5065	
Flt Permitted	0.55	1.00		0.40	1.00		0.07	1.00		0.16	1.00	
Satd. Flow (perm)	964	1598		693	1657		124	5167		291	5065	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	30	228	51	60	122	322	1457	61	78	1708	351
RTOR Reduction (vph)	0	179	0	0	65	0	0	3	0	0	23	0
Lane Group Flow (vph)	175	79	0	51	117	0	322	1515	0	78	2036	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.0	26.0		26.0	26.0		80.0	70.9		61.5	56.4	
Effective Green, g (s)	26.0	26.0		26.0	26.0		80.0	70.9		61.5	56.4	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.67	0.59		0.51	0.47	
Clearance Time (s)	7.0	7.0		7.0	7.0		3.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	346		150	359		362	3053		211	2381	
v/s Ratio Prot		0.05			0.07		c0.15	0.29		0.02	0.40	
v/s Ratio Perm	c0.18			0.07			c0.44			0.17		
v/c Ratio	0.84	0.23		0.34	0.33		0.89	0.50		0.37	0.85	
Uniform Delay, d1	45.0	38.7		39.7	39.6		37.4	14.2		14.9	28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.56	0.67		1.00	0.55	
Incremental Delay, d2	29.3	0.3		1.4	0.5		21.3	0.4		0.5	1.9	
Delay (s)	74.3	39.1		41.1	40.1		79.6	9.9		15.4	17.4	
Level of Service	E	D		D	D		E	A		B	B	
Approach Delay (s)		53.3			40.4			22.1			17.3	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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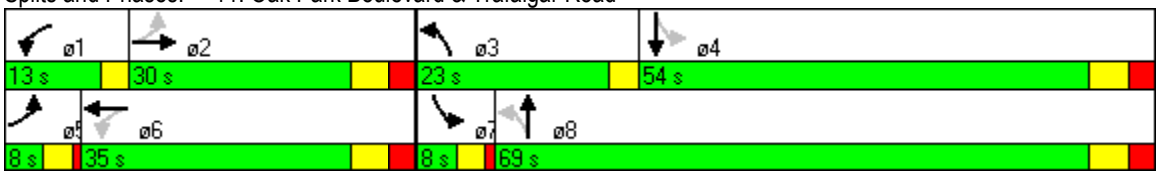
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	127	143	257	251	277	1744	69	1748
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	4.0	4.0	3.0	4.0	3.0	4.0	2.0	4.0
Minimum Split (s)	8.0	30.0	6.0	30.0	6.0	23.0	6.0	23.0
Total Split (s)	8.0	30.0	13.0	35.0	23.0	69.0	8.0	54.0
Total Split (%)	6.7%	25.0%	10.8%	29.2%	19.2%	57.5%	6.7%	45.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	0.0	3.0	0.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	3.0	7.0	3.0	7.0	4.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	Ped	None	Ped	None	C-Max	None	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 36 (30%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 11: Oak Park Boulevard & Trafalgar Road



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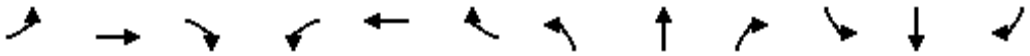

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	143	246	257	251	42	277	1744	165	69	1748	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.2	3.2	3.5	3.5	3.8	3.8	3.5	3.8	3.5	3.5	3.8	3.5
Total Lost time (s)	4.0	7.0		3.0	7.0		3.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.91		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1691	3061		1750	3540		1750	5131		1750	5147	
Flt Permitted	0.57	1.00		0.35	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1019	3061		649	3540		141	5131		149	5147	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	143	246	257	251	42	277	1744	165	69	1748	123
RTOR Reduction (vph)	0	199	0	0	12	0	0	9	0	0	6	0
Lane Group Flow (vph)	127	190	0	257	282	0	277	1900	0	69	1865	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	27.0	23.0		36.0	28.0		70.0	62.8		52.5	49.3	
Effective Green, g (s)	27.0	23.0		36.0	28.0		70.0	62.8		52.5	49.3	
Actuated g/C Ratio	0.22	0.19		0.30	0.23		0.58	0.52		0.44	0.41	
Clearance Time (s)	4.0	7.0		3.0	7.0		3.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	587		286	826		320	2685		108	2115	
v/s Ratio Prot	0.02	0.06		c0.07	0.08		c0.13	0.37		0.02	0.36	
v/s Ratio Perm	0.10			c0.19			c0.38			0.26		
v/c Ratio	0.50	0.32		0.90	0.34		0.87	0.71		0.64	0.88	
Uniform Delay, d1	39.5	41.8		37.9	38.3		35.6	21.7		21.3	32.7	
Progression Factor	1.00	1.00		1.00	1.00		0.72	1.37		1.23	0.37	
Incremental Delay, d2	1.6	0.3		38.0	0.2		23.2	1.5		7.3	3.6	
Delay (s)	41.0	42.1		75.9	38.6		48.8	31.1		33.4	15.7	
Level of Service	D	D		E	D		D	C		C	B	
Approach Delay (s)		41.9			56.0			33.3			16.3	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM Average Control Delay	30.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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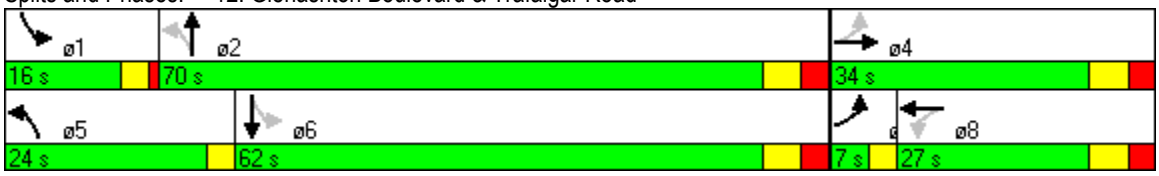
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	79	123	64	278	265	1849	118	2014
Turn Type	pm+pt		Perm		pm+pt		pm+pt	
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	3.0	4.0	4.0	4.0	3.0	4.0	2.0	4.0
Minimum Split (s)	6.0	23.0	23.0	23.0	6.0	23.0	6.0	23.0
Total Split (s)	7.0	34.0	27.0	27.0	24.0	70.0	16.0	62.0
Total Split (%)	5.8%	28.3%	22.5%	22.5%	20.0%	58.3%	13.3%	51.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0	0.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	7.0	7.0	3.0	7.0	4.0	7.0
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 12: Glenashton Boulevard & Trafalgar Road



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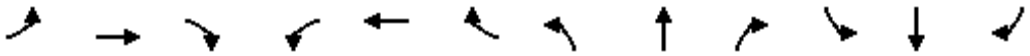

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	123	122	64	278	233	265	1849	52	118	2014	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	3.0	7.0		7.0	7.0		3.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.93		1.00	0.93		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3348		1750	3370		1750	5177		1750	5172	
Flt Permitted	0.19	1.00		0.60	1.00		0.06	1.00		0.07	1.00	
Satd. Flow (perm)	354	3348		1105	3370		114	5177		138	5172	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	123	122	64	278	233	265	1849	52	118	2014	71
RTOR Reduction (vph)	0	98	0	0	130	0	0	2	0	0	3	0
Lane Group Flow (vph)	79	147	0	64	381	0	265	1899	0	118	2082	0
Turn Type	pm+pt			Perm			pm+pt			pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.0	24.0		17.8	17.8		82.0	69.0		70.7	61.7	
Effective Green, g (s)	24.0	24.0		17.8	17.8		82.0	69.0		70.7	61.7	
Actuated g/C Ratio	0.20	0.20		0.15	0.15		0.68	0.57		0.59	0.51	
Clearance Time (s)	3.0	7.0		7.0	7.0		3.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	108	670		164	500		314	2977		202	2659	
v/s Ratio Prot	c0.02	0.04			0.11		c0.12	0.37		0.04	0.40	
v/s Ratio Perm	c0.13			0.06			c0.46			0.30		
v/c Ratio	0.73	0.22		0.39	0.76		0.84	0.64		0.58	0.78	
Uniform Delay, d1	44.8	40.2		46.2	49.1		36.3	17.1		14.3	23.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.47	0.38	
Incremental Delay, d2	25.1	0.2		1.5	7.1		21.4	1.1		2.7	1.5	
Delay (s)	69.9	40.3		47.7	56.1		57.8	18.2		23.7	10.5	
Level of Service	E	D		D	E		E	B		C	B	
Approach Delay (s)		47.5			55.2			23.0			11.2	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	56	128	218	254	157	523	297	945	116
Turn Type	Perm		pm+pt		Perm		Perm		Perm
Protected Phases		2	1	6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	2	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	6.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	23.0	23.0	11.0	34.0	86.0	86.0	86.0	86.0	86.0
Total Split (%)	19.2%	19.2%	9.2%	28.3%	71.7%	71.7%	71.7%	71.7%	71.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lead						
Lead-Lag Optimize?									
Recall Mode	Ped	Ped	None	Ped	C-Max	C-Max	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7 (6%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 22: Glenashton Boulevard & Sixth Line

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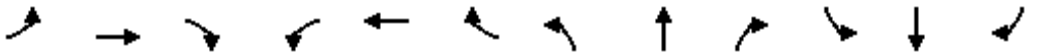

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	128	99	218	254	68	157	523	162	297	945	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.2	3.8	3.8	3.2	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0		3.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1691	3381		1691	3389		1750	3490		1750	1904	1619
Flt Permitted	0.56	1.00		0.50	1.00		0.16	1.00		0.37	1.00	1.00
Satd. Flow (perm)	991	3381		892	3389		301	3490		691	1904	1619
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	128	99	218	254	68	157	523	162	297	945	116
RTOR Reduction (vph)	0	86	0	0	20	0	0	24	0	0	0	40
Lane Group Flow (vph)	56	141	0	218	302	0	157	661	0	297	945	76
Turn Type	Perm			pm+pt			Perm			Perm		Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	16.0	16.0		27.0	27.0		79.0	79.0		79.0	79.0	79.0
Effective Green, g (s)	16.0	16.0		27.0	27.0		79.0	79.0		79.0	79.0	79.0
Actuated g/C Ratio	0.13	0.13		0.22	0.22		0.66	0.66		0.66	0.66	0.66
Clearance Time (s)	7.0	7.0		3.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	132	451		254	763		198	2298		455	1253	1066
v/s Ratio Prot		0.04		c0.06	0.09			0.19			0.50	
v/s Ratio Perm	0.06			c0.14			c0.52			0.43		0.05
v/c Ratio	0.42	0.31		0.86	0.40		0.79	0.29		0.65	0.75	0.07
Uniform Delay, d1	47.8	47.0		43.5	39.6		14.7	8.6		12.3	13.9	7.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.86	0.87	0.30
Incremental Delay, d2	2.2	0.4		29.3	0.3		32.1	0.3		6.2	3.7	0.1
Delay (s)	50.0	47.4		72.7	39.9		46.7	9.0		16.7	15.8	2.3
Level of Service	D	D		E	D		D	A		B	B	A
Approach Delay (s)		47.9			53.1			16.0			14.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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Appendix 6

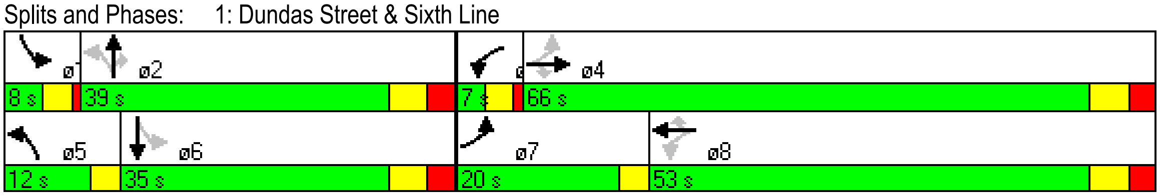
Intersection Analyses Output
Future (2021) Conditions

Sensitivity Assessment with Intersection Improvements

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Volume (vph)	237	2451	219	115	989	84	225	437	277	110	200
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt	
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	3.0	4.0	4.0	2.0	4.0	4.0	3.0	4.0	4.0	2.0	4.0
Minimum Split (s)	6.0	23.0	23.0	6.0	23.0	23.0	6.0	30.0	30.0	6.0	30.0
Total Split (s)	20.0	66.0	66.0	7.0	53.0	53.0	12.0	39.0	39.0	8.0	35.0
Total Split (%)	16.7%	55.0%	55.0%	5.8%	44.2%	44.2%	10.0%	32.5%	32.5%	6.7%	29.2%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.0	3.0	1.0	3.0	3.0	0.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	7.0	4.0	7.0	7.0	3.0	7.0	7.0	4.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Ped	Ped	None	Ped

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Dundas Street & Sixth Line



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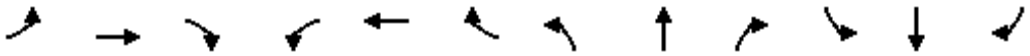

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	2451	219	115	989	84	225	437	277	110	200	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	4.8	3.8	3.8	4.8	3.8	3.8
Total Lost time (s)	3.0	7.0	7.0	4.0	7.0	7.0	3.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	5198	1619	1750	5198	1619	2006	1904	1619	2006	3499	
Flt Permitted	0.21	1.00	1.00	0.08	1.00	1.00	0.52	1.00	1.00	0.17	1.00	
Satd. Flow (perm)	387	5198	1619	143	5198	1619	1100	1904	1619	353	3499	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	237	2451	219	115	989	84	225	437	277	110	200	56
RTOR Reduction (vph)	0	0	84	0	0	48	0	0	48	0	22	0
Lane Group Flow (vph)	237	2451	135	115	989	36	225	437	229	110	234	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	67.6	59.0	59.0	56.1	51.5	51.5	38.4	30.4	30.4	30.4	26.4	
Effective Green, g (s)	67.6	59.0	59.0	56.1	51.5	51.5	38.4	30.4	30.4	30.4	26.4	
Actuated g/C Ratio	0.56	0.49	0.49	0.47	0.43	0.43	0.32	0.25	0.25	0.25	0.22	
Clearance Time (s)	3.0	7.0	7.0	4.0	7.0	7.0	3.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	367	2556	796	128	2231	695	420	482	410	145	770	
v/s Ratio Prot	0.07	c0.47		c0.03	0.19		c0.04	c0.23		c0.03	0.07	
v/s Ratio Perm	0.29		0.08	0.38		0.02	0.13		0.14	0.17		
v/c Ratio	0.65	0.96	0.17	0.90	0.44	0.05	0.54	0.91	0.56	0.76	0.30	
Uniform Delay, d1	14.6	29.3	16.9	27.9	24.1	20.0	31.7	43.4	39.0	40.4	39.1	
Progression Factor	1.00	1.00	1.00	1.30	0.94	1.27	1.00	1.00	0.99	1.00	1.00	
Incremental Delay, d2	3.9	13.8	0.5	30.0	0.2	0.0	1.3	26.3	1.7	22.6	0.2	
Delay (s)	18.5	43.2	17.4	66.2	22.9	25.4	32.9	69.6	40.4	63.0	39.3	
Level of Service	B	D	B	E	C	C	C	E	D	E	D	
Approach Delay (s)		39.2			27.3			52.2			46.4	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	60		

c Critical Lane Group

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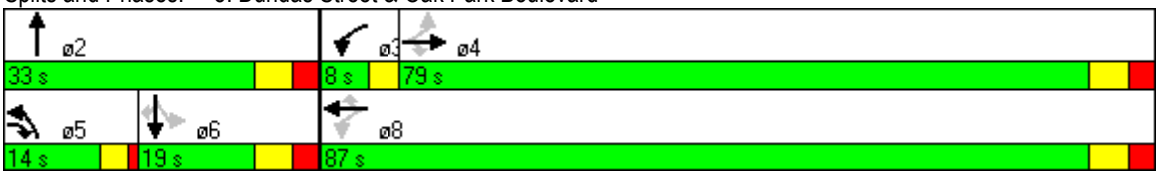
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	60	2594	258	86	1190	52	129	143	19	37	14
Turn Type	Perm		pm+ov	pm+pt		Perm	Prot		Perm		Perm
Protected Phases		4	5	3	8		5	2		6	
Permitted Phases	4		4	8		8			6		6
Detector Phase	4	4	5	3	8	8	5	2	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	1.0	1.0	4.0	4.0	1.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	6.0	8.0	23.0	23.0	6.0	23.0	23.0	23.0	23.0
Total Split (s)	79.0	79.0	14.0	8.0	87.0	87.0	14.0	33.0	19.0	19.0	19.0
Total Split (%)	65.8%	65.8%	11.7%	6.7%	72.5%	72.5%	11.7%	27.5%	15.8%	15.8%	15.8%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	1.0	0.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	3.0	7.0	7.0	4.0	7.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead		Lag	Lag	Lag
Lead-Lag Optimize?				Yes							
Recall Mode	C-Max	C-Max	None	None	C-Max	C-Max	None	Max	None	None	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 5: Dundas Street & Oak Park Boulevard



HCM Signalized Intersection Capacity Analysis
5: Dundas Street & Oak Park Boulevard

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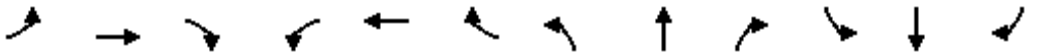


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	2594	258	86	1190	52	129	143	119	19	37	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	3.0	3.5	3.5	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0	4.0	3.0	7.0	7.0	4.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	5198	1619	1750	5198	1619	3204	1717		1750	1904	1619
Flt Permitted	0.22	1.00	1.00	0.05	1.00	1.00	0.95	1.00		0.60	1.00	1.00
Satd. Flow (perm)	414	5198	1619	100	5198	1619	3204	1717		1100	1904	1619
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	2594	258	86	1190	52	129	143	119	19	37	14
RTOR Reduction (vph)	0	0	77	0	0	18	0	25	0	0	0	13
Lane Group Flow (vph)	60	2594	181	86	1190	34	129	237	0	19	37	1
Turn Type	Perm		pm+ov	pm+pt		Perm	Prot			Perm		Perm
Protected Phases		4	5	3	8		5	2			6	
Permitted Phases	4		4	8		8				6		6
Actuated Green, G (s)	70.6	70.6	84.2	78.6	78.6	78.6	13.6	27.4		9.8	9.8	9.8
Effective Green, g (s)	70.6	70.6	84.2	78.6	78.6	78.6	13.6	27.4		9.8	9.8	9.8
Actuated g/C Ratio	0.59	0.59	0.70	0.65	0.65	0.65	0.11	0.23		0.08	0.08	0.08
Clearance Time (s)	7.0	7.0	4.0	3.0	7.0	7.0	4.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	244	3058	1136	134	3405	1060	363	392		90	155	132
v/s Ratio Prot		c0.50	0.02	c0.03	0.23		0.04	c0.14			0.02	
v/s Ratio Perm	0.14		0.09	0.39		0.02				0.02		0.00
v/c Ratio	0.25	0.85	0.16	0.64	0.35	0.03	0.36	0.61		0.21	0.24	0.01
Uniform Delay, d1	11.9	20.3	6.0	22.3	9.3	7.3	49.2	41.5		51.5	51.6	50.6
Progression Factor	0.88	0.74	0.45	1.68	0.71	0.17	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	3.1	0.1	10.3	0.3	0.1	0.6	7.0		1.2	0.8	0.0
Delay (s)	12.7	18.1	2.8	47.8	6.9	1.3	49.8	48.4		52.7	52.4	50.7
Level of Service	B	B	A	D	A	A	D	D		D	D	D
Approach Delay (s)		16.7			9.3			48.9			52.1	
Approach LOS		B			A			D			D	

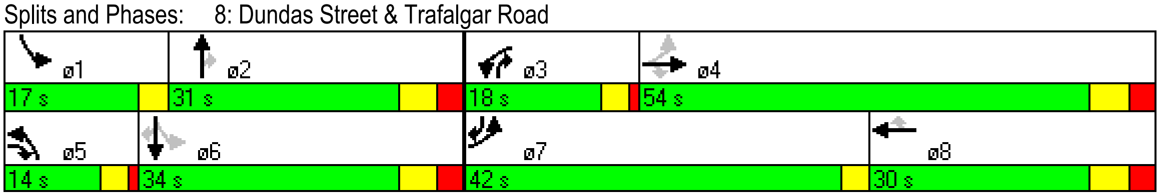
Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	2027	234	268	839	170	252	949	318	229	1133	188
Turn Type	pm+pt		pm+ov	Prot		Perm	Prot		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8			2	6		6
Detector Phase	7	4	5	3	8	8	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	4.0	2.0	2.0	4.0	4.0	2.0	1.0	2.0	3.0	4.0	3.0
Minimum Split (s)	6.0	26.0	6.0	6.0	26.0	26.0	6.0	26.0	6.0	7.0	26.0	6.0
Total Split (s)	42.0	54.0	14.0	18.0	30.0	30.0	14.0	31.0	18.0	17.0	34.0	42.0
Total Split (%)	35.0%	45.0%	11.7%	15.0%	25.0%	25.0%	11.7%	25.8%	15.0%	14.2%	28.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	3.0	1.0	1.0	3.0	3.0	1.0	3.0	1.0	0.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0	4.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	7.0	3.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	None	None	Max	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 8: Dundas Street & Trafalgar Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	2027	234	268	839	170	252	949	318	229	1133	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.8	3.8	3.5	3.8	4.8
Total Lost time (s)	3.0	7.0	4.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	7.0	3.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	5198	1566	3395	5198	1566	3395	5198	1619	1750	5198	1794
Flt Permitted	0.21	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	384	5198	1566	3395	5198	1566	3395	5198	1619	273	5198	1794
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	460	2027	234	268	839	170	252	949	318	229	1133	188
RTOR Reduction (vph)	0	0	10	0	0	121	0	0	21	0	0	4
Lane Group Flow (vph)	460	2027	224	268	839	49	252	949	297	229	1133	184
Turn Type	pm+pt		pm+ov	Prot		Perm	Prot		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8			2	6		6
Actuated Green, G (s)	65.0	47.8	57.8	13.2	34.9	34.9	10.0	24.3	37.5	40.7	27.0	54.1
Effective Green, g (s)	65.0	47.8	57.8	13.2	34.9	34.9	10.0	24.3	37.5	40.7	27.0	54.1
Actuated g/C Ratio	0.54	0.40	0.48	0.11	0.29	0.29	0.08	0.20	0.31	0.34	0.22	0.45
Clearance Time (s)	3.0	7.0	4.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	7.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	516	2071	754	373	1512	455	283	1053	506	261	1170	809
v/s Ratio Prot	c0.20	c0.39	0.02	0.08	0.16		0.07	0.18	0.06	c0.10	c0.22	0.05
v/s Ratio Perm	0.28		0.12			0.03			0.12	0.20		0.05
v/c Ratio	0.89	0.98	0.30	0.72	0.55	0.11	0.89	0.90	0.59	0.88	0.97	0.23
Uniform Delay, d1	23.8	35.6	18.8	51.6	36.0	31.2	54.5	46.7	34.7	32.1	46.1	20.2
Progression Factor	1.01	0.70	0.47	1.00	1.00	1.00	0.78	1.05	1.45	1.00	1.00	1.00
Incremental Delay, d2	17.8	21.2	0.2	6.7	1.5	0.5	30.9	12.2	1.5	33.9	30.6	0.1
Delay (s)	41.8	46.3	9.0	58.3	37.5	31.6	73.4	61.0	51.8	66.0	76.7	20.3
Level of Service	D	D	A	E	D	C	E	E	D	E	E	C
Approach Delay (s)		42.3			41.1			61.2			68.3	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM Average Control Delay	51.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

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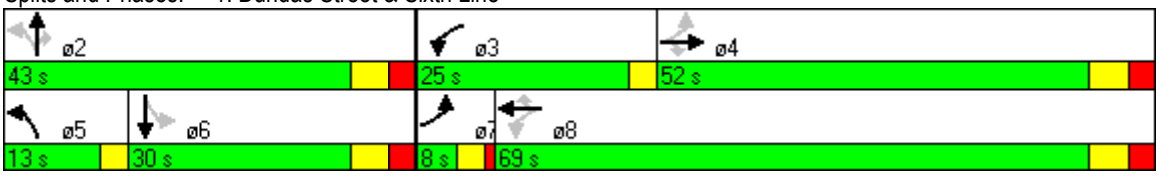
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Volume (vph)	67	1619	302	331	2333	140	204	241	129	161	500
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	Perm	
Protected Phases	7	4		3	8		5	2			6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	6	6
Switch Phase											
Minimum Initial (s)	1.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
Minimum Split (s)	6.0	23.0	23.0	6.0	23.0	23.0	6.0	30.0	30.0	30.0	30.0
Total Split (s)	8.0	52.0	52.0	25.0	69.0	69.0	13.0	43.0	43.0	30.0	30.0
Total Split (%)	6.7%	43.3%	43.3%	20.8%	57.5%	57.5%	10.8%	35.8%	35.8%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Ped	Ped	Ped	Ped

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 34 (28%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Dundas Street & Sixth Line



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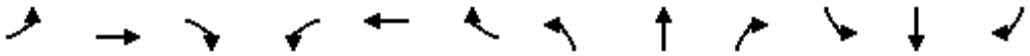


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	1619	302	331	2333	140	204	241	129	161	500	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	4.8	3.8	3.8	4.8	3.8	3.8
Total Lost time (s)	4.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	5198	1619	1750	5198	1619	2006	1904	1619	2006	3530	
Flt Permitted	0.09	1.00	1.00	0.08	1.00	1.00	0.16	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	157	5198	1619	147	5198	1619	331	1904	1619	1286	3530	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	1619	302	331	2333	140	204	241	129	161	500	97
RTOR Reduction (vph)	0	0	172	0	0	55	0	0	91	0	14	0
Lane Group Flow (vph)	67	1619	130	331	2333	85	204	241	38	161	583	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	50.2	47.0	47.0	70.5	63.3	63.3	35.5	35.5	35.5	22.5	22.5	
Effective Green, g (s)	50.2	47.0	47.0	70.5	63.3	63.3	35.5	35.5	35.5	22.5	22.5	
Actuated g/C Ratio	0.42	0.39	0.39	0.59	0.53	0.53	0.30	0.30	0.30	0.19	0.19	
Clearance Time (s)	4.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	108	2036	634	360	2742	854	238	563	479	241	662	
v/s Ratio Prot	0.02	0.31		c0.16	0.45		c0.07	0.13			0.17	
v/s Ratio Perm	0.24		0.08	c0.38		0.05	c0.18		0.02	0.13		
v/c Ratio	0.62	0.80	0.21	0.92	0.85	0.10	0.86	0.43	0.08	0.67	0.88	
Uniform Delay, d1	25.0	32.2	24.2	36.2	24.3	14.1	34.6	34.1	30.5	45.3	47.4	
Progression Factor	1.00	1.00	1.00	1.25	0.27	0.14	1.07	1.03	1.30	1.00	1.00	
Incremental Delay, d2	11.0	3.4	0.7	19.2	1.7	0.1	30.7	0.5	0.1	7.1	15.2	
Delay (s)	36.1	35.6	24.9	64.3	8.3	2.1	67.8	35.7	39.7	52.4	62.6	
Level of Service	D	D	C	E	A	A	E	D	D	D	E	
Approach Delay (s)		34.0			14.6			48.0			60.4	
Approach LOS		C			B			D			E	

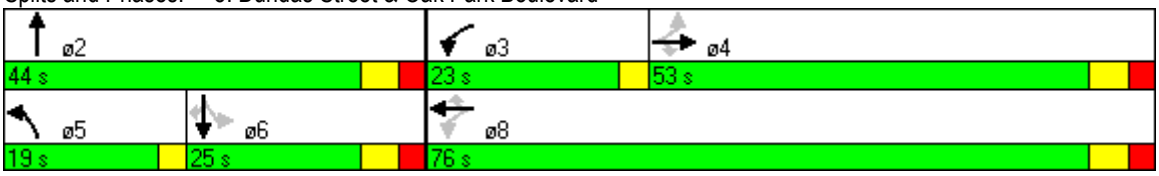
Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	26	1790	260	307	2244	33	362	117	41	211	52
Turn Type	Perm		Perm	pm+pt		Perm	Prot		Perm		Perm
Protected Phases		4		3	8		5	2		6	
Permitted Phases	4		4	8		8			6		6
Detector Phase	4	4	4	3	8	8	5	2	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	6.0	23.0	23.0	6.0	23.0	23.0	23.0	23.0
Total Split (s)	53.0	53.0	53.0	23.0	76.0	76.0	19.0	44.0	25.0	25.0	25.0
Total Split (%)	44.2%	44.2%	44.2%	19.2%	63.3%	63.3%	15.8%	36.7%	20.8%	20.8%	20.8%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead		Lag	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Ped	Ped	Ped	Ped

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 5 (4%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 5: Dundas Street & Oak Park Boulevard



HCM Signalized Intersection Capacity Analysis
5: Dundas Street & Oak Park Boulevard

DRAFT

2/25/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1790	260	307	2244	33	362	117	84	41	211	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.8	3.5	3.8	3.8	3.0	3.5	3.5	3.5	3.8	3.8
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	5198	1619	1750	5198	1619	3204	1727		1750	1904	1619
Flt Permitted	0.08	1.00	1.00	0.08	1.00	1.00	0.95	1.00		0.63	1.00	1.00
Satd. Flow (perm)	153	5198	1619	144	5198	1619	3204	1727		1163	1904	1619
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	1790	260	307	2244	33	362	117	84	41	211	52
RTOR Reduction (vph)	0	0	103	0	0	14	0	22	0	0	0	8
Lane Group Flow (vph)	26	1790	157	307	2244	19	362	179	0	41	211	44
Turn Type	Perm		Perm	pm+pt		Perm	Prot			Perm		Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8				6		6
Actuated Green, G (s)	48.2	48.2	48.2	70.0	70.0	70.0	15.7	36.0		17.3	17.3	17.3
Effective Green, g (s)	48.2	48.2	48.2	70.0	70.0	70.0	15.7	36.0		17.3	17.3	17.3
Actuated g/C Ratio	0.40	0.40	0.40	0.58	0.58	0.58	0.13	0.30		0.14	0.14	0.14
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	61	2088	650	336	3032	944	419	518		168	274	233
v/s Ratio Prot		0.34		c0.14	0.43		c0.11	0.10			c0.11	
v/s Ratio Perm	0.17		0.10	c0.39		0.01				0.04		0.03
v/c Ratio	0.43	0.86	0.24	0.91	0.74	0.02	0.86	0.35		0.24	0.77	0.19
Uniform Delay, d1	25.9	32.8	23.8	36.5	18.3	10.5	51.1	32.8		45.5	49.4	45.2
Progression Factor	0.52	0.63	0.55	1.47	0.30	0.02	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.8	4.4	0.8	10.6	0.4	0.0	19.6	0.4		0.8	13.6	0.4
Delay (s)	32.2	25.2	13.7	64.4	5.8	0.3	70.7	33.2		46.3	63.0	45.6
Level of Service	C	C	B	E	A	A	E	C		D	E	D
Approach Delay (s)		23.9			12.7			57.3			57.8	
Approach LOS		C			B			E			E	

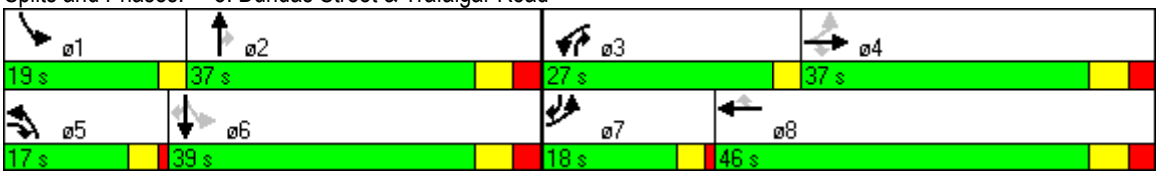
Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	328	1236	269	651	1842	245	438	942	278	266	1428	388
Turn Type	pm+pt		pm+ov	Prot		Perm	Prot		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8			2	6		6
Detector Phase	7	4	5	3	8	8	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	2.0	4.0	2.0	1.0	4.0	4.0	2.0	4.0	1.0	3.0	4.0	2.0
Minimum Split (s)	6.0	30.0	7.0	6.0	30.0	30.0	7.0	30.0	6.0	6.0	30.0	6.0
Total Split (s)	18.0	37.0	17.0	27.0	46.0	46.0	17.0	37.0	27.0	19.0	39.0	18.0
Total Split (%)	15.0%	30.8%	14.2%	22.5%	38.3%	38.3%	14.2%	30.8%	22.5%	15.8%	32.5%	15.0%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	1.0	3.0	1.0	0.0	3.0	3.0	1.0	3.0	0.0	0.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	4.0	3.0	7.0	7.0	4.0	7.0	3.0	3.0	7.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	Ped	None	None	Ped	Ped	None	C-Max	None	None	C-Max	None

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 8: Dundas Street & Trafalgar Road



HCM Signalized Intersection Capacity Analysis
8: Dundas Street & Trafalgar Road

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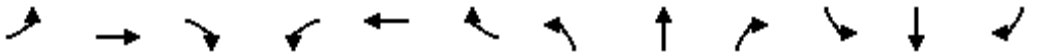
2/25/2009



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	328	1236	269	651	1842	245	438	942	278	266	1428	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.8	3.8	3.5	3.8	4.8
Total Lost time (s)	4.0	7.0	4.0	3.0	7.0	7.0	4.0	7.0	3.0	3.0	7.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	5198	1566	3395	5198	1566	3395	5198	1619	1750	5198	1794
Flt Permitted	0.13	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	246	5198	1566	3395	5198	1566	3395	5198	1619	273	5198	1794
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	328	1236	269	651	1842	245	438	942	278	266	1428	388
RTOR Reduction (vph)	0	0	3	0	0	133	0	0	26	0	0	1
Lane Group Flow (vph)	328	1236	266	651	1842	112	438	942	252	266	1428	387
Turn Type	pm+pt		pm+ov	Prot		Perm	Prot		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases	4		4			8			2	6		6
Actuated Green, G (s)	44.0	30.0	43.0	24.0	39.0	39.0	13.0	30.5	54.5	47.5	32.0	46.0
Effective Green, g (s)	44.0	30.0	43.0	24.0	39.0	39.0	13.0	30.5	54.5	47.5	32.0	46.0
Actuated g/C Ratio	0.37	0.25	0.36	0.20	0.32	0.32	0.11	0.25	0.45	0.40	0.27	0.38
Clearance Time (s)	4.0	7.0	4.0	3.0	7.0	7.0	4.0	7.0	3.0	3.0	7.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	266	1300	561	679	1689	509	368	1321	735	299	1386	688
v/s Ratio Prot	c0.14	0.24	0.05	c0.19	0.35		c0.13	0.18	0.07	c0.11	c0.27	0.07
v/s Ratio Perm	c0.31		0.12			0.07			0.09	0.24		0.15
v/c Ratio	1.23	0.95	0.47	0.96	1.09	0.22	1.19	0.71	0.34	0.89	1.03	0.56
Uniform Delay, d1	55.2	44.3	29.8	47.5	40.5	29.4	53.5	40.8	21.2	27.9	44.0	29.1
Progression Factor	0.93	0.74	0.94	1.00	1.00	1.00	1.04	1.42	0.97	1.00	1.00	1.00
Incremental Delay, d2	444.9	15.7	0.5	37.6	175.0	0.2	368.7	3.1	0.3	33.5	83.4	1.1
Delay (s)	496.4	48.6	28.5	85.1	215.5	29.7	424.4	60.9	20.8	61.4	127.4	30.2
Level of Service	F	D	C	F	F	C	F	E	C	E	F	C
Approach Delay (s)		125.8			167.9			150.2			100.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	138.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	60		

c Critical Lane Group

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	56	128	218	254	157	523	297	945
Turn Type	pm+pt		pm+pt		Perm		Perm	
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	1.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	6.0	23.0	6.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	9.0	23.0	13.0	27.0	84.0	84.0	84.0	84.0
Total Split (%)	7.5%	19.2%	10.8%	22.5%	70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	3.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	Ped	None	Ped	C-Max	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 22: Glenashton Boulevard & Sixth Line

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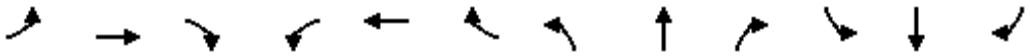


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	128	99	218	254	68	157	523	162	297	945	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.2	3.8	3.8	3.2	3.5	3.8	3.5	3.8	3.8	3.5	3.8	3.8
Total Lost time (s)	4.0	7.0		3.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1691	3381		1691	3389		1750	3490		1750	3559	
Flt Permitted	0.56	1.00		0.51	1.00		0.22	1.00		0.37	1.00	
Satd. Flow (perm)	991	3381		903	3389		414	3490		683	3559	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	128	99	218	254	68	157	523	162	297	945	116
RTOR Reduction (vph)	0	85	0	0	20	0	0	25	0	0	8	0
Lane Group Flow (vph)	56	142	0	218	302	0	157	660	0	297	1053	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	20.8	16.8		29.8	21.8		76.2	76.2		76.2	76.2	
Effective Green, g (s)	20.8	16.8		29.8	21.8		76.2	76.2		76.2	76.2	
Actuated g/C Ratio	0.17	0.14		0.25	0.18		0.64	0.64		0.64	0.64	
Clearance Time (s)	4.0	7.0		3.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	195	473		290	616		263	2216		434	2260	
v/s Ratio Prot	0.01	0.04		c0.06	0.09			0.19			0.30	
v/s Ratio Perm	0.04			c0.12			0.38			c0.43		
v/c Ratio	0.29	0.30		0.75	0.49		0.60	0.30		0.68	0.47	
Uniform Delay, d1	42.4	46.3		40.0	44.1		12.9	9.9		14.1	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.56	0.53	
Incremental Delay, d2	0.8	0.4		11.2	0.6		10.0	0.3		8.0	0.6	
Delay (s)	43.2	46.7		51.2	44.7		22.9	10.2		15.9	6.6	
Level of Service	D	D		D	D		C	B		B	A	
Approach Delay (s)		46.0			47.3			12.6			8.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

UPTOWN
Town of Oakville CORE REVIEW

Appendix VII

appendix VII

Market Analysis

DEVELOPMENT PROFORMAS

Purpose of the Proformas

A generic development proforma may be used to test the various cost of development (land acquisition; construction hard and soft costs; lease-up costs; financing costs, and developer's profit) and the resultant required economic rent to justify such a project, versus prevailing market rental rates. In the instance of a development with units for sale, such as a residential condominium project, the result of the proforma analysis is an economic sale price which can then be weighed against prevailing market sale prices.

The following development proforma represent the type of construction that could be contemplated for the Uptown Core in Oakville. Various sensitivities are tested to illustrate the impact of certain proforma inputs on the ultimate economic rent or sale price conclusion.

OFFICE PROFORMA

Building Description

A generic proforma was prepared for a 6-storey, roughly 52,000 sf office building with underground parking. The building has site coverage of approximately 25%, and the site measures 0.85 acres. The ground floor is intended for commercial-retail uses, while the upper floors offer office space. The total development period is estimated to be 32 months from the initial land acquisition and planning stage to full lease-up. There is an underground parking provision of 3.2 stalls per 1,000 sf of gross leasable area (GLA).

Proforma Inputs

The land acquisition cost is based on a price of $800,000 per acre, which is in line with market comparables in the western GTA. Additional land related costs include legal fees, land transfer tax, and financing costs. Hard construction costs amount to $185 psf, excluding parking, which is an additional cost of approximately $32,000 per stall. Soft costs account for roughly 16% of overall costs, and include items such as architectural and engineering fees; site improvements; construction cost contingency; development charges; building permit; parkland dedication; and development financing. The costs of leasing – such as tenant inducements ($25.00 psf) and leasing commissions ($8.00 psf on a 10-year deal) – are incorporated, as well as the cost of carrying un-leased space until full occupancy is achieved.

Proforma Results

The proforma described above generates total project costs of some $20.7 million. If a developer is attributed a 10% profit on development, then the required rental rate is approximately $40.00 psf. This is well above current achievable rents in Oakville – the weighted average asking net rental rate is just over $17.00 psf for Class A space. In contrast, Oak Park Business Centre, the existing office building in the Uptown Core, located at 231 Oak Park Boulevard, is presently asking $14.50 net psf. Lease deals since January 2007 across the Oakville market have averaged in the range of $14.00 to $20.00 net psf.

New office development is currently infeasible at Uptown Core based upon the generic proforma assumptions utilized. The proforma building has ground floor commercial-retail space that would likely rent for a premium compared to the upper office floors (in the range of $25.00 net psf in today's market), but this spread does not greatly diminish the required rent for the upper floors on an overall psf basis.

CUSHMAN & WAKEFIELD LEPAGE

Economic Rent/Price Calculation
Oakville Uptown Core - Generic Office Development

ASSUMPTIONS

TIMING ASSUMPTIONS

Land Acquisition	Jan-09	
Planning Period	6	months
Construction Commencement	Jul-09	
Construction Period	20	months
Substantial Completion	Mar-11	
Cost of Vacancy Period	6	months
Full Lease-Up	Sep-11	
Total Development Period	32	months

INTEREST RATE

Interim Financing	7.50%

BUILDING AREAS

Number of Buildings	1	
Number of Storeys - Office	5	
Number of Storeys - Retail	1	
Number of Storeys	6	
Average Floor Plate	8,611	sf
Gross Building Area	51,667	sf
Site Coverage	25.5%	times
Land Area	0.85	acres

	Mix	G.F.A.	G.L.A.
Office	83%	43,056 sf	40,042 sf
Retail	17%	8,611 sf	8,008 sf
Other	0%	0 sf	0 sf
TOTAL	100%	51,667 sf	48,050 sf

PARKING RATIO

3.20 stalls per 1,000 sf of GLA — 154 stalls

PROJECT COSTS

		$ 000s	psf
LAND			
	Purchase Price	$682	$13.20
	Additional Land Costs	$43	$0.83
	Land Carrying Costs	$118	$2.28
	TOTAL LAND	**$843**	**$16.31**
CONSTRUCTION & FRINGE			
	Hard Construction Costs	$9,541	$184.66
	Parking	$4,950	$95.80
	Architect. & Engineer.	$797	$15.42
	Site Improvements	$111	$2.16
	Const. Contingency	$725	$14.02
	Municipal Fees	$835	$16.17
	Development Interest	$848	$16.41
	TOTAL CONSTRUCTION & FRINGE	**$17,806**	**$344.63**
COST OF VACANCY		**$73**	**$1.42**
DEFERRED			
	Tenant Allowances	$1,292	$25.00
	Leasing Costs	$413	$8.00
	Financing Costs	$304	$5.89
	TOTAL DEFERRED	**$2,009**	**$38.89**
TOTAL PROJECT COSTS		**$20,732**	**$401.26**

ECONOMIC RENT CALCULATION

Required Return on Investment	10%	
Required Net Rent	$40.13	psf
Required Net Effective Rent (1)	$37.34	psf

(1) assuming 2.5% compound annual increase in year 6 of a 10-year lease

TESTING PROFORMA SENSITIVITIES

Land costs – The above proforma assumes land is acquired at today's prices. However, landowners in the Uptown Core have long-terms holdings, and arguably would attribute a much lower land cost to a conceptual proforma. However, land costs represent a relatively small component of overall project expenses in the above-described proforma – roughly 4% of development costs.

Parking – Underground parking costs approximately $32,000 per stall, compared to $22,000 per stall in above-ground parking structures, and just $2,000 per surface parking space. In the above proforma, the underground parking provision accounts for some 24% of total project costs – an amount that would be cut to 18% if structured parking was substituted, and just 2% if surface parking was provided in lieu of underground parking. With all other proforma assumptions remaining static, underground parking necessitates a rental rate of $40.00 psf, while structured parking translates to $36.50 psf and surface parking approximately $30.00 psf.

Municipal costs – Costs such as development charges, building permit fees, and a parkland dedication account for some 4% of total project expenses. The Town of Oakville is able to directly influence these charges in order to potentially increase the feasibility of new development that is being sought in the Uptown Core area, although it they represent only a small fraction of the overall project expenses.

Developer's profit – This element of the proforma has a significant influence on project viability. If developer's yield is reduced to 8% from 10%, the required net rent to be achieved to make the project economic falls from $40.00 psf to $32.00 psf. However, based upon transactions of existing office product across the GTA, an 8% developer's profit is too low on a risk-adjusted basis to justify new construction, compared to alternate real estate capital investments options or other classes of investment.

It is evident from the matrices below that two key proforma variables have considerable influence on the ultimate required rental rate to make a project viable – the type of parking provided and the developer's return on investment. With all of the proforma assumptions modeled utilizing a 10% developer's profit, the type of parking influences the required rental rate ranging from $29.60 to $40.10 psf (Testing Proforma Sensitivities – v1). Alternatively, when land costs are excluded, which is more reflective of long-term land ownership in the Uptown Core, at a 10% developer's profit, the type of parking influences the required rental rate ranging from $27.90 to $38.40 psf (Testing Proforma Sensitivities – v2). If the developer's profit is reduced to an 8% level, required rents fall to as low as $22.30 (Testing Proforma Sensitivities – v2), which is more viable in the context of prevailing achievable market rental rates for new space in Oakville, subject to tenant demand.

Testing Proforma Sensitivities - v1
Required Rent Matrix - Standard Model Assumptions

	Parking Type		
Developer's Profit	*Underground Parking*	*Above-Ground Parking Strucutre*	*Surface Parking*
8.0%	$32.10	$29.20	$23.70
9.0%	$36.10	$32.90	$26.60
10.0%	$40.10	$36.60	$29.60

Testing Proforma Sensitivities - v2
Required Rent Matrix - Land Costs Excluded

	Parking Type		
Developer's Profit	*Underground Parking*	*Above-Ground Parking Strucutre*	*Surface Parking*
8.0%	$30.80	$27.90	$22.30
9.0%	$34.60	$31.40	$25.10
10.0%	$38.40	$34.90	$27.90

CUSHMAN & WAKEFIELD LEPAGE

CONDOMINIUM APARTMENT PROFORMA

Building Description

A generic proforma was prepared for a 16-storey, 152-unit high-rise condominium apartment building with underground parking. The building has site coverage of approximately 33%, and the site measures roughly 1.1 acres. The total development period is estimated to be 39 months from the initial land acquisition and planning stage to substantial completion of the building and owner's occupancy of the suites. There is a parking provision of 1.5 stalls per residential unit.

Proforma Inputs

The land acquisition cost is based on a price of $2.5 million per acre, which is in line with market comparables in the western GTA, and particularly high density residential land sales across Oakville. Additional land related costs include legal fees, land transfer tax, and financing costs. Hard construction costs amount to $184 psf, excluding parking, which is an additional cost of approximately $32,000 per stall. Soft costs account for roughly 15% of overall expenses, and include items such as architectural and engineering fees; site improvements; construction cost contingency; development charges; building permit; parkland dedication; and development financing. Commissions to sales agents along with marketing costs amount to roughly 4% of total project costs.

Proforma Results

The proforma described above generates total project costs of some $48.7 million. If a developer is attributed a 10% profit on development, then the required unit sale price is approximately $344 psf (which translates to approximately $352,000 for a standard-sized unit of roughly 950 sf). This is in line with current asking prices for active condominium projects and recently completed projects in the Oakville market. Notably, Oakville has a wide range of condominium pricing, with units in upscale projects achieving a multiple of two times or greater this price point, albeit for an enhanced range of amenities and services, and luxury suite finishes and building materials. In conclusion, new condominium apartment development is currently viable, depending on the depth of buyer demand and the amount of competitive projects in the marketplace, based upon the pricing generated by the above-cited development proforma.

Economic Sale Price Calculation
Oakville Uptown Core - Generic High-Rise Condominium Apartment Development

ASSUMPTIONS

TIMING ASSUMPTIONS

Land Acquisition	Jan-09	
Planning Period	6	months
Construction Commencement	Jul-09	
Construction Period	27	months
Substantial Completion	Oct-11	
Total Development Period	**33**	**months**

INTEREST RATE

Interim Financing	7.50%

BUILDING AREAS

Number of Units	152	
Number of Buildings	1	
Average Unit Size (Gross)	1,024	sf
Number of Storeys	16	
Average Floor Plate	9,728	sf
Gross Building Area	155,647	sf
Site Coverage	0.33	times
Land Area	1.12	acres

Residential Units	Mix	Avg. Size	G.F.A.	G.L.A.	
1 Bedroom	50%	774	58,824	54,706	sf
2 Bedroom +	50%	1,274	96,824	90,046	sf
TOTAL	100%	1,024	155,647	144,752	sf

PARKING RATIO

1.50 stalls per residential unit — 228 stalls

PROJECT COSTS

		$ 000s	psf
LAND			
	Purchase Price	$2,808	$18.04
	Additional Land Costs	$181	$1.16
	Land Carrying Costs	$616	$3.96
	TOTAL LAND	$3,606	$23.16
CONSTRUCTION & FRINGE			
	Hard Construction Costs	$28,602	$183.76
	Parking	$7,328	$47.08
	Architect. & Engineer.	$1,976	$12.70
	Site Improvements	$147	$0.94
	Const. Contingency	$1,796	$11.54
	Municipal Fees	$2,507	$16.11
	Development Interest	$715	$4.59
	TOTAL CONSTRUCTION & FRINGE	$43,071	$276.72
SALES & MARKETING			
	Sales Commissions	$1,606	$10.32
	Marketing & Advertising	$380	$2.44
	TOTAL SALES & MARKETING	$1,986	$12.76
TOTAL PROJECT COSTS		$48,663	$312.65

REQUIRED SALE PRICE CALCULATION

Required Return on Investment	10%	
Required Average Sale Price	$343.91	psf

CUSHMAN & WAKEFIELD LePAGE

Testing Proforma Sensitivities

Land costs – The above proforma assumes land is acquired at today's prices. However, landowners in the Uptown Core have long-term holdings, and arguably would attribute a much lower land cost to a conceptual proforma. However, land costs represent a relatively small component of overall project costs in the above-described proforma – roughly 7.5% of overall development costs.

Parking provision – The proforma model allows a ratio of 1.5 parking spaces per residential unit. However, if this ratio is increased to 2.0 parking spaces per residential unit, the required sale price increases from $344 to $363 psf – or roughly 5.5%. This could be an important consideration for developers wishing to entice "empty nester"-type households that still own two vehicles but want to downsize from their existing homes, while remaining in Oakville. It is common for condominium builders to set aside parking stalls for additional purchase beyond the allotted 1 stall per residential suite.

Municipal costs – Cost such as development charges, building permit fees, and a parkland dedication account for some 5% of total project expenses. The Town of Oakville is able to directly influence these charges in order to potentially increase the feasibility of new development that is being sought in the Uptown Core area.

Construction costs – Given the wide range of price points across Oakville's condominium market (ranging from roughly $350 psf for more entry-level properties up to over $800 psf for exclusive projects, there is an opportunity for a developer to increase the construction budget component of a project and attempt to focus marketing towards and potentially attract a particular segment of the marketplace. By increasing hard construction costs by 25% (improving building exterior finishes, common areas, adding enhanced amenities and a higher-level of suite finishes), the required sale price increases from $344 psf to $402 psf – a spread of some 17%. This would rank the revised development at the upper end of the lower tier of pricing in the Oakville market.

UPTOWN
Town of Oakville CORE REVIEW

Appendix VIII

appendix VIII

Block-by-Block Analysis

A second statistical and massing analysis of the Uptown Core was completed to study the impact of higher built form on the existing and allowed as-of-right development structure and infrastructre and to establish the maximum acceptable height standard for the Uptown Core subject to bonusing policies.

Actual development statistics will be slightly different and will be reviewed on a case by case basis through the standard Town of Oakville Site Plan Development application process.

Furthermore, this analysis seeks to achieve three of the main objectives of the Places to Grow Plan: to promote intensification and compact development, to maximize the use of existing and new infrastructure to support growth in a compact efficient form and to protect, wisely manage, conserve and enhance natural resources.

The initial program for development included:

- 9,000-10,000 residential units
- over 100,000 square metres of retail
- over 45,000 square metres of employment

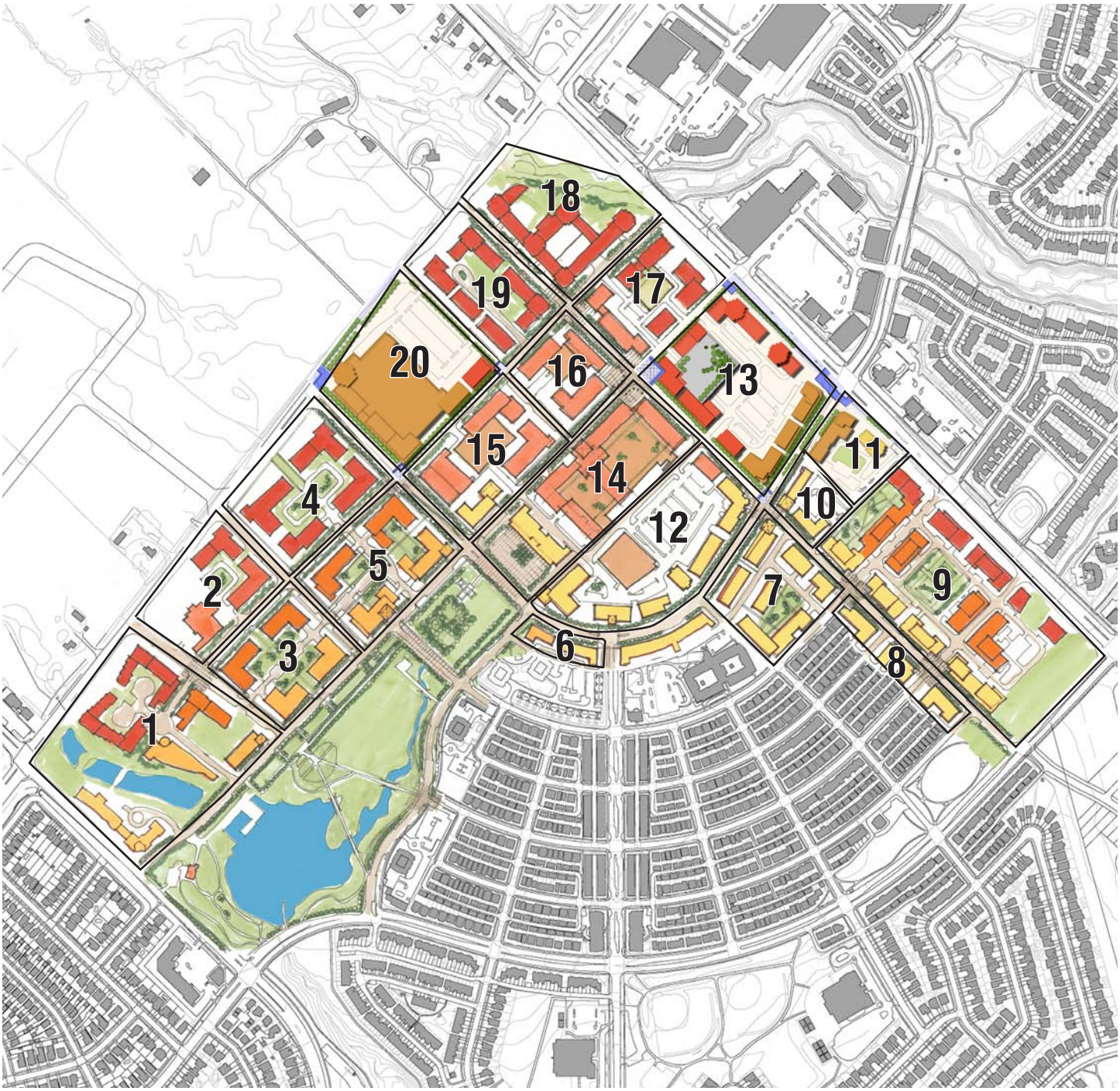
In addition to residential uses, the blocks also demonstrate possible location of mixed uses to provide for retail and employment uses, as well as the provision for parking. The amount of parking required has been adjusted at 1.75 spaces/unit for residential uses, 1/28m^2 for retail and employment uses, and 1/22m^2 for large format retail. The modules used to calculate the area required for each parking space was 38 m^2/space for parking structures, 32 m^2/space for surface parking, and 6.0m x 2.75m for on-street parking.

Buildings located along Dundas Street East and Trafalgar Road have a podium height of 6 storeys, while interior streets have a podium height of 4 storeys. Buildings are typically 22m deep, and the average residential unit has been calculated at 95m^2.

Each block includes a brief description of the site area, the number of residential units (at 95m^2/unit), the amount of retail and employment area, the total number of parking spaces on the block and the parking strategy (either parking structure, surface parking, and/or underground parking).

Urban Design Demonstration Plan

April 17, 2008

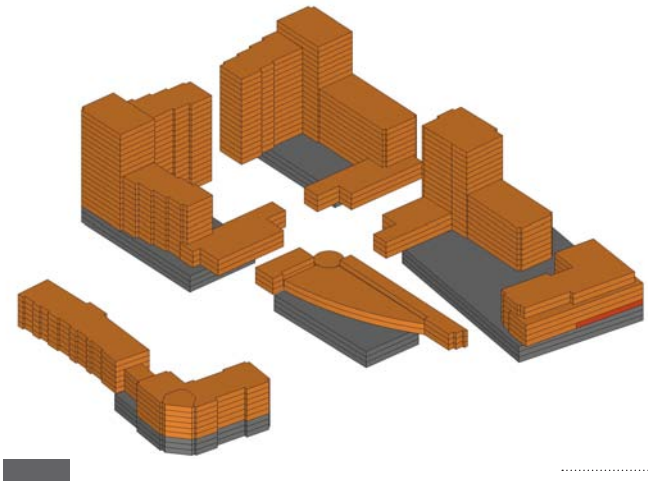


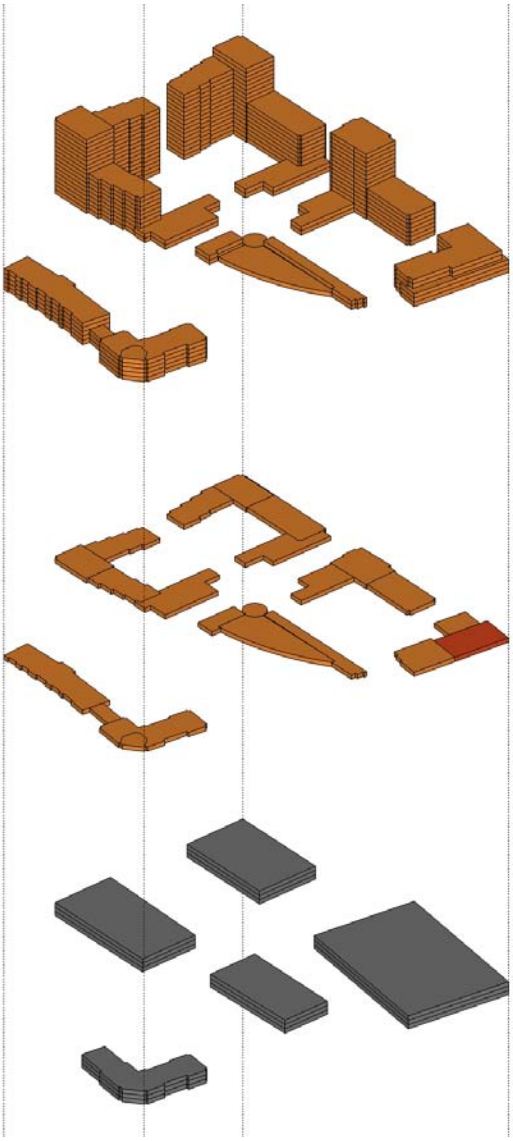
block 1

Located on the south west corner of the study area is a proposal for medium to high density residential development, ranging from 3 storey townhouses in the interior of the block, up to 18 storey buildings along Dundas Street East. Small-scale retail units are proposed at the corner of Hays Blvd across the central park.

Block Statistics

Site Area	5.53 ha
Residential	1,358 units
Retail	500 sq.m
Employment	n/a
Parking Provision	2,394 spaces; 3 levels underground for residential; on-street parking for retail
Height	3 storey townhomes & 6 to 18 storey buildings





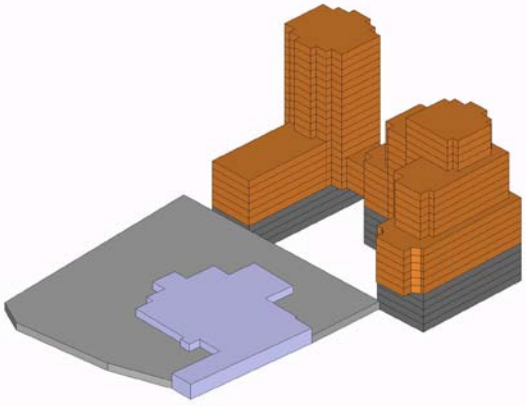
Residential
Retail
Underground Parking

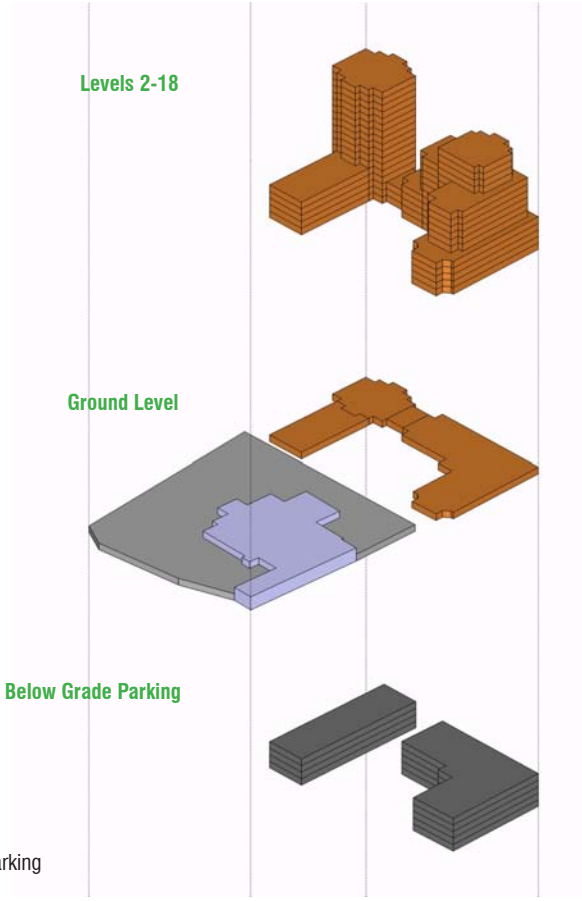
block 2

Block 2 is located in the west side of the study area, with some frontage onto Dundas Avenue East. Maintaining the police station in its current location, this block is envisioned with medium to high density residential buildings 6 to 18 storeys high, with underground parking. The buildings typically frame the streets with an interior courtyard for residents.

Block Statistics

Site Area	0.91 ha
Residential	348 units
Retail	n/a
Employment	n/a
Parking Provision	609 spaces; 4 levels underground for residential; surface parking for the existing police station
Height	6 to 18 storey apartment buildings



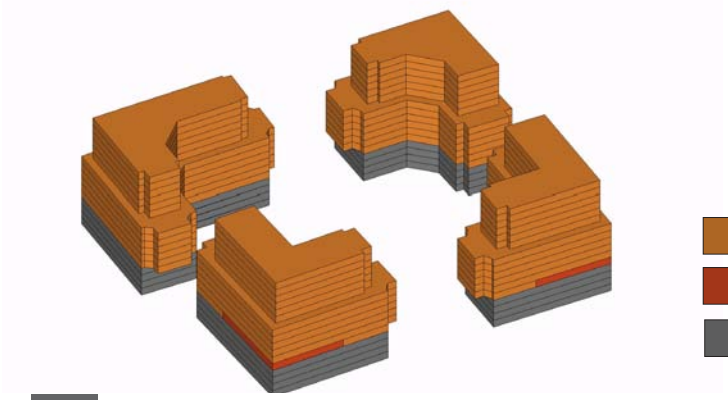


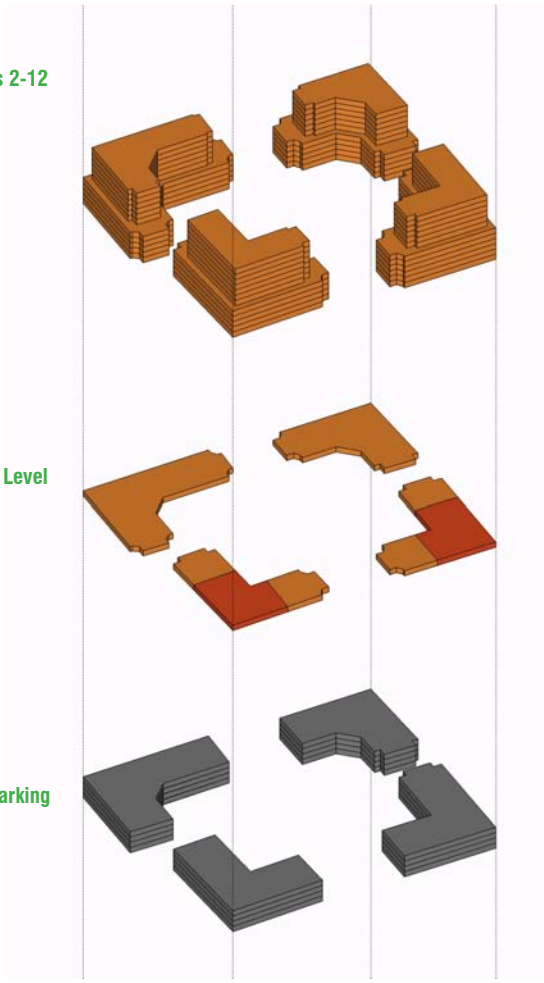
block 3

Block 3 is situated west in the study area, across from the central park. Twelve storey buildings sit on 6-storey podiums, and ground floor retail uses are introduced along Hays Blvd, while a central shared courtyard is framed by the proposed built form.

Block Statistics

Site Area	2.02 ha
Residential	732 units
Retail	2,170 sq.m
Employment	n/a
Parking Provision	1,359 spaces; 4 levels underground for residential; on-street parking for retail
Height	12 storey buildings on 6 storey podiums

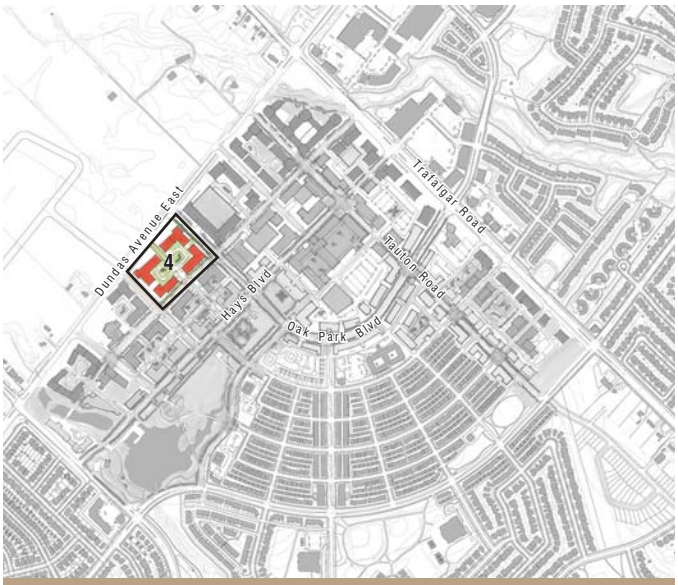




Residential
Retail
Underground Parking

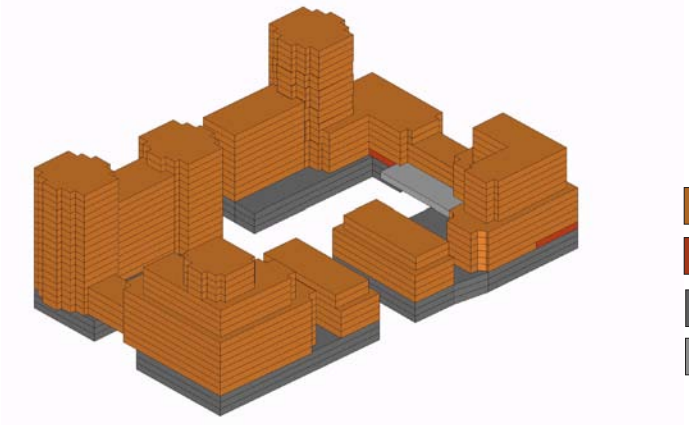
block 4

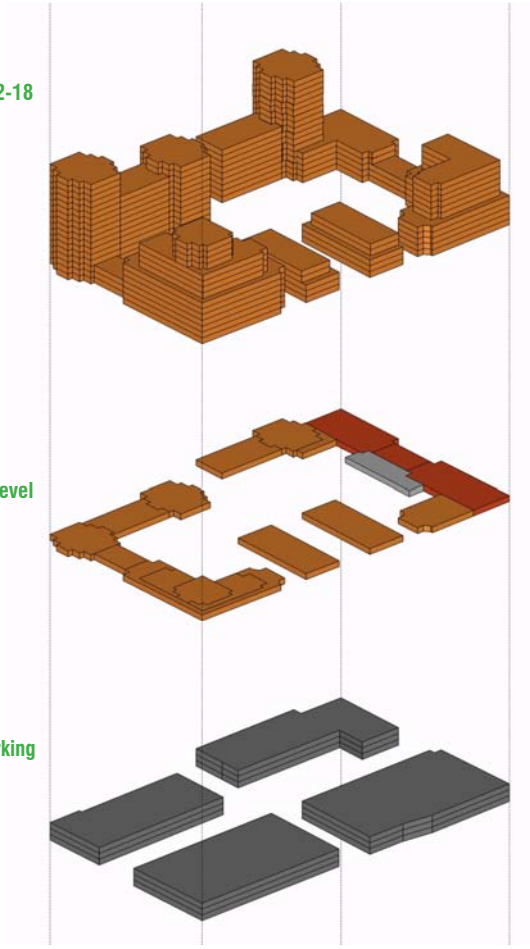
Located north-west in the study area, Block 4 is envisioned with medium to high density residential buildings, with some at-grade retail uses along Oak Park Blvd. 18-storey towers face onto Dundas Street East, while shorter buildings, from 6-storeys and up, line the interior streets.



Block Statistics

Site Area	2.53 ha
Residential	775 units
Retail	2,090 sq.m
Employment	n/a
Parking Provision	1,431 spaces; 3 levels underground for residential; surface parking and on-street parking for retail
Height	4 to 18 storey buildings





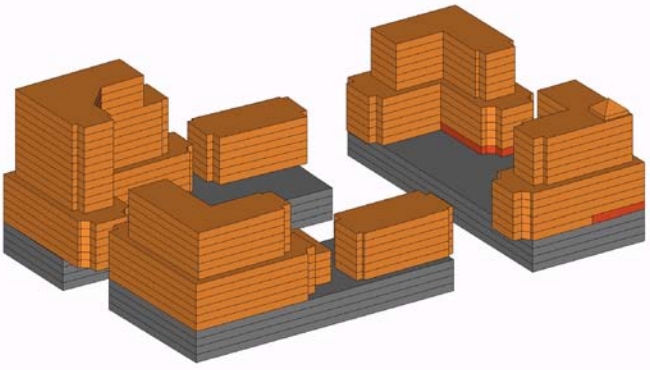
Residential
Retail
Underground Parking
Surface Parking

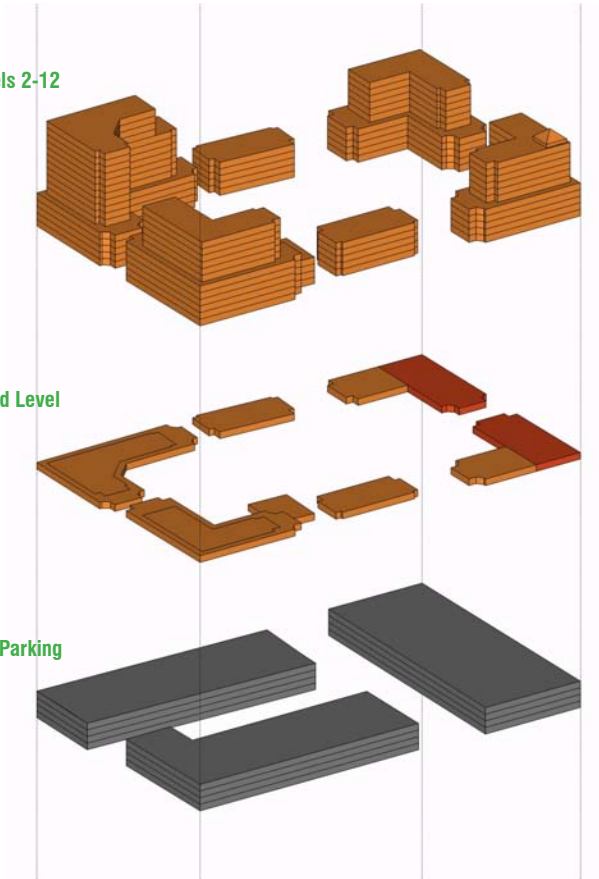
block 5

Edge buildings ranging from 6-storeys in height to 12-storeys at the corners line the perimeter of the block. Ground floor retail uses are located along Oak Park Blvd in order to address the main street condition, and an architectural feature is located at the intersection of Hays Blvd and Oak Park Blvd in order to highlight the signficance of the corner.

Block Statistics

Site Area	2.46 ha
Residential	785 units
Retail	2,200 sq.m
Employment	n/a
Parking Provision	1,452 spaces; 4 levels underground for residential; on-street parking for retail
Height	6 to 12 storey buildings





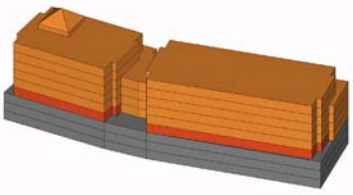
Residential
Retail
Underground Parking

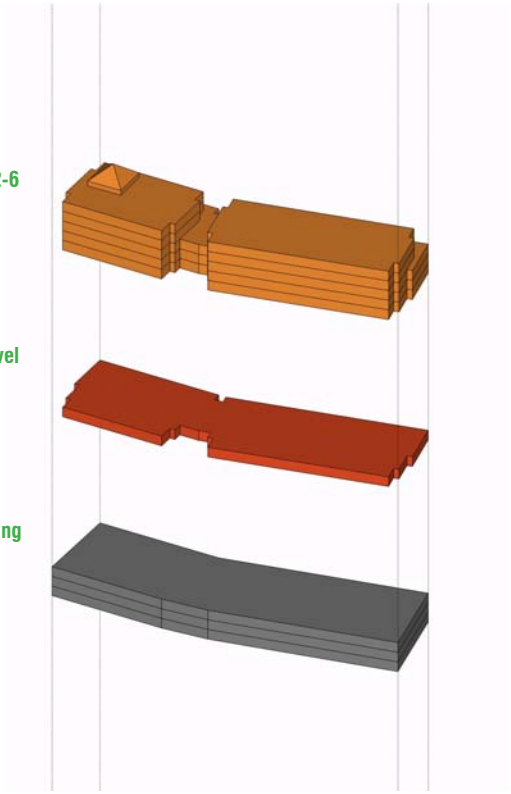
block 6

Located north-west in the study area, this block features a 6 storey residential building with retail at grade. An architectural feature is strategically located at the corner to address arrival at the central park and Oak Park Blvd.

Block Statistics

Site Area	0.42 ha
Residential	163 units
Retail	1,320 sq.m
Employment	n/a
Parking Provision	333 spaces; 3 levels underground for residential; surface parking and on-street parking for retail
Height	6 storey building

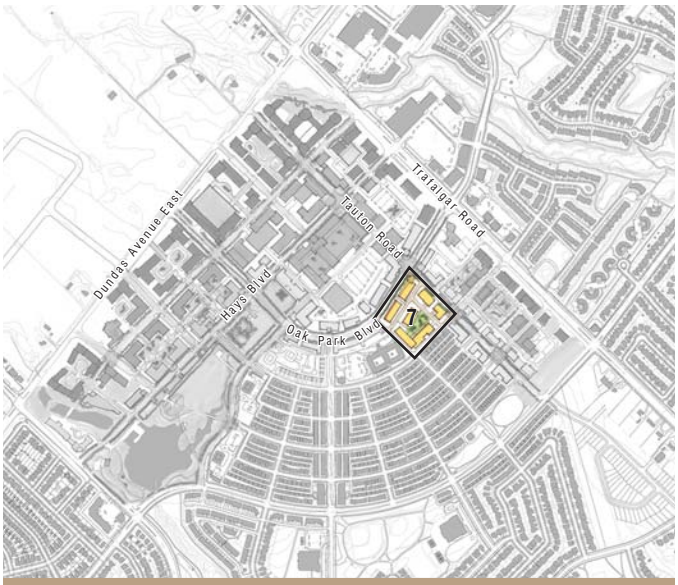




Residential

Retail

Underground Parking

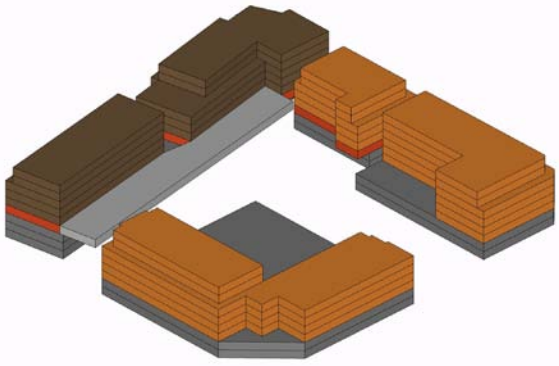


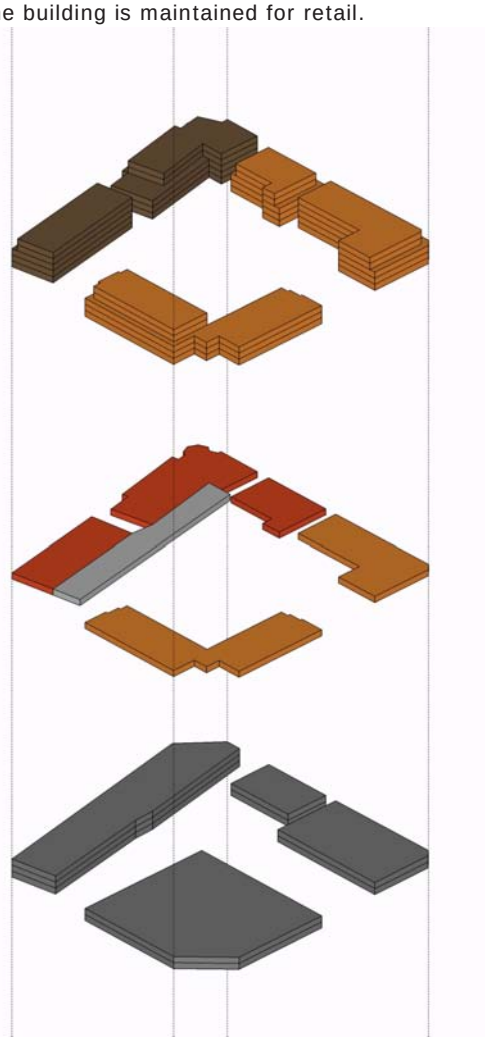
block 7

Located in the Main Street District, Block 7 is envisioned as a mixed-use block. Up to 6 storeys in height, at-grade retail is located along the main street, with either offices or residential apartments above. Underground parking accommodates the employment and residential uses, and some surface parking located in behind the building is maintained for retail.

Block Statistics

Site Area	2.04 ha
Residential	373 units
Retail	2,640 sq.m
Employment	5,880 sq.m
Parking Provision	926 spaces; 2 levels underground for residential; surface and on-street parking for retail; 3 levels underground for employment
Height	4 to 6 storey buildings

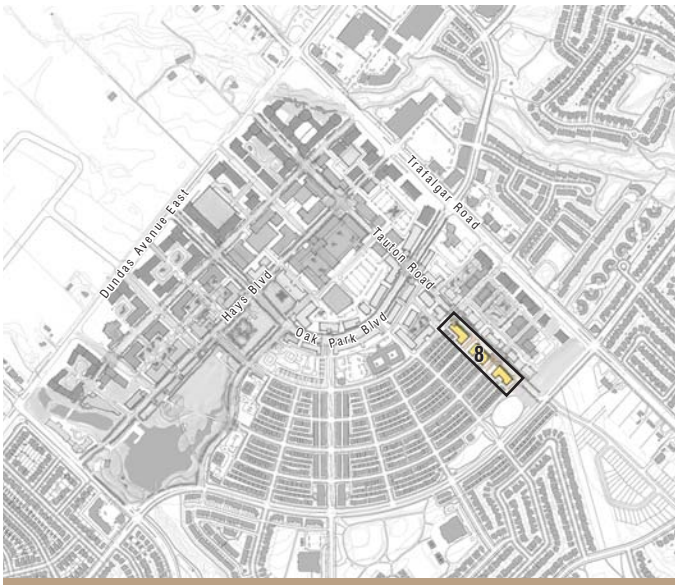




- Residential
- Retail
- Employment
- Underground Parking
- Surface Parking

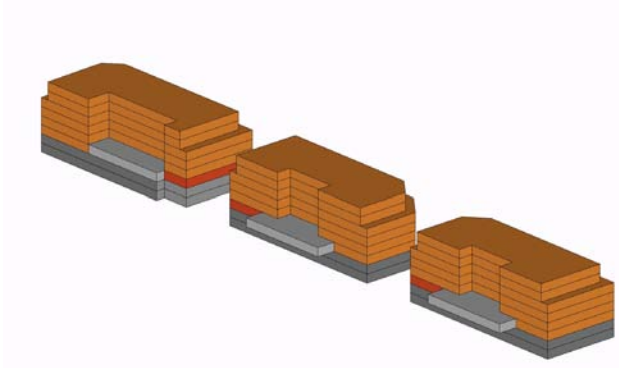
block 8

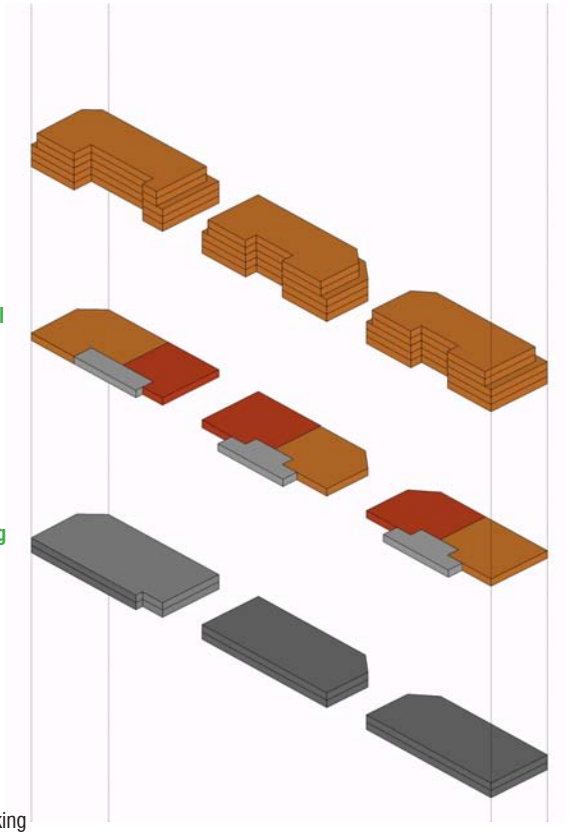
Located in the east end of the study area adjacent the existing residential neighbourhood, Block 8 is envisioned with three medium density buildings, 6 storeys in height. With some retail uses at grade, the buildings line Tauton Road, and complete the neighbouring existing residential neighbourhood blocks.



Block Statistics

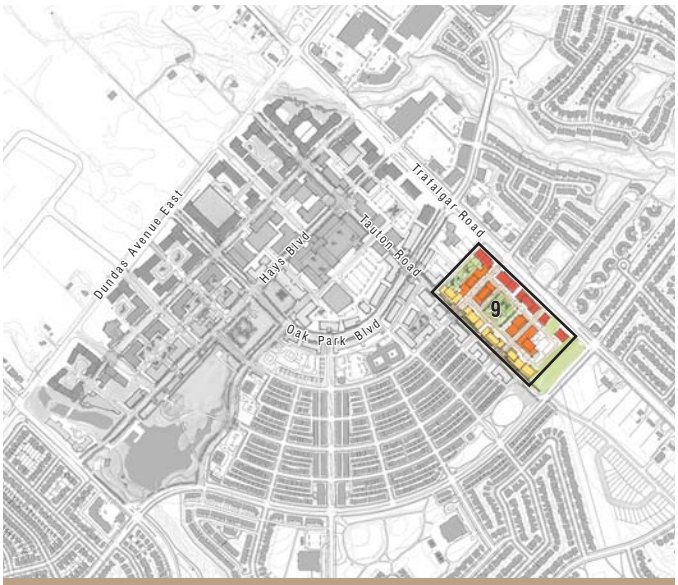
Site Area	0.96 ha
Residential	230 units
Retail	2,325 sq.m
Employment	n/a
Parking Provision	486 spaces; 2 levels underground for residential; surface parking and on-street parking for retail
Height	6 storey buildings





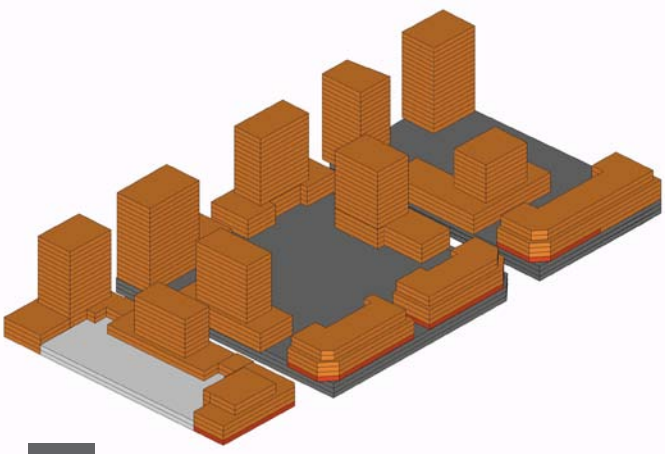
block 9

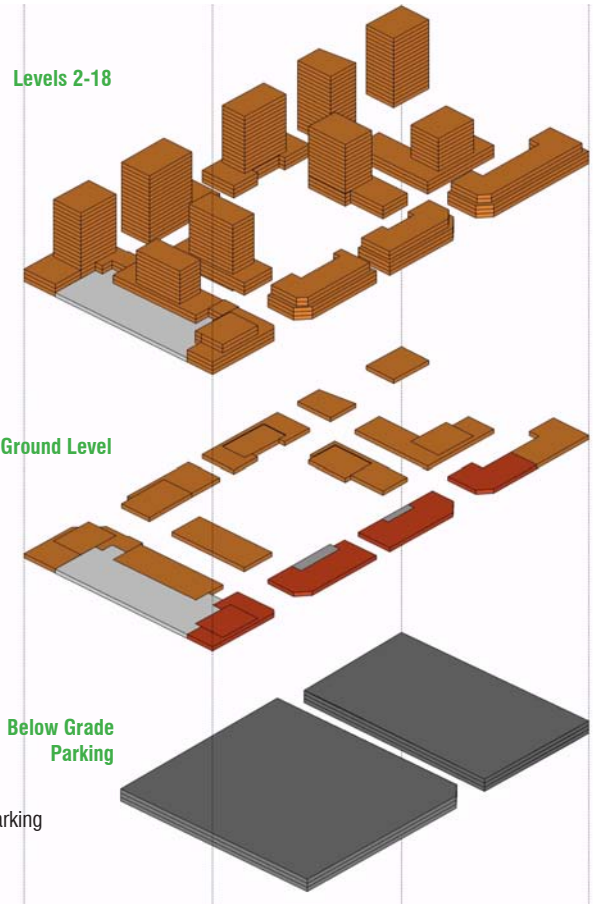
As one of the largest blocks in the study area, Block 9 has the greatest number of proposed residential units. The block is situated in the east end in the Urban Neighbourhood District, at the corner of Trafalgar Road and Glenashton Drive. The proposal is a mix of medium to high density residential uses, with some retail at grade along Tauton Road. Taller buildings, up to 18 storeys in height, are located along Trafalgar Road, and transition down to 6 storeys along Tauton Rd. While most of the residents park underground, a 2 storey parking structure is proposed at the north end, with a green roof feature.



Block Statistics

Site Area	6.20 ha
Residential	1,909 units
Retail	1,963 sq.m
Employment	n/a
Parking Provision	3,410 spaces; 3 levels underground & parking structure for residential; surface and on-street parking for retail;
Height	4 to 18 storey buildings

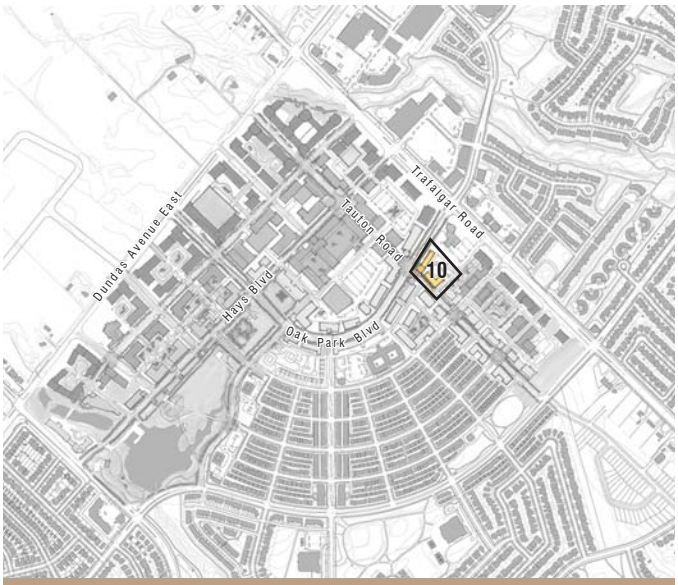




- Residential
- Retail
- Underground Parking
- Surface Parking
- Parking Structure

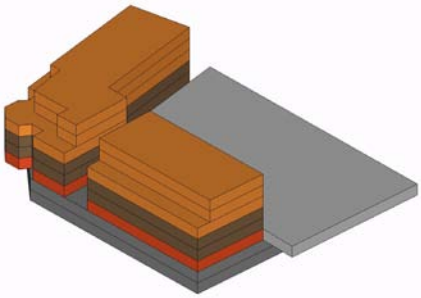
block 10

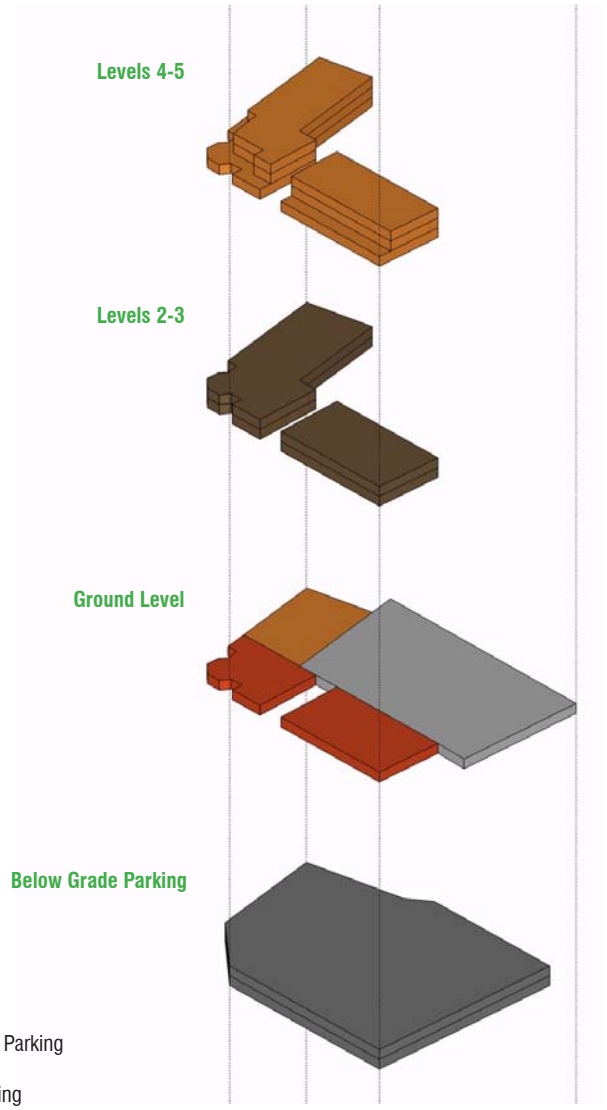
Located north-west in the study area, Block 10 is a mixed-use block with retail at grade, and offices and residential uses above. Buildings are proposed at 6 storeys, with 4 storey podiums. While parking for residents and employment uses are located underground, surface parking is located in the interior of the block for retail uses.

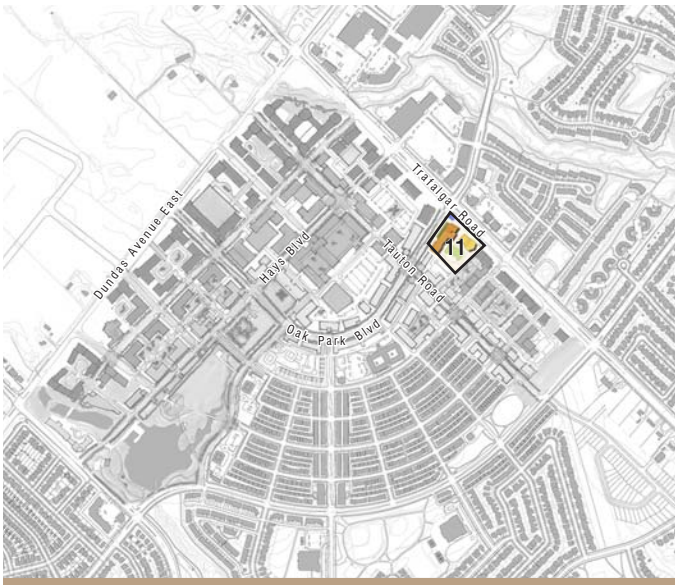


Block Statistics

Site Area	0.71 ha
Residential	76 units
Retail	1,540 sq.m
Employment	6,860 sq.m
Parking Provision	396 spaces; 1 level underground for residential; surface parking and on-street parking for retail; 1 level underground for employment
Height	6 storey buildings





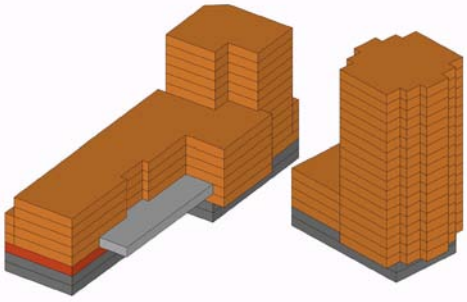


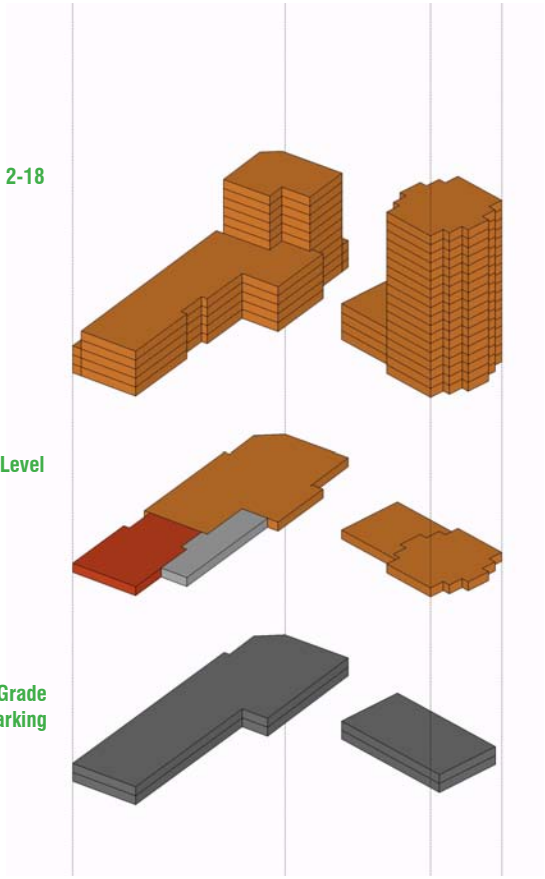
block 11

Located in the south-west corner of Trafalgar Road and Oak Park Blvd, Block 11 is envisioned as mainly a medium to high density residential block, with some retail uses at grade fronting onto the main street. Twelve to 18 storey towers are situated along Trafalgar Road, while 6 storey buildings line Oak Park Blvd.

Block Statistics

Site Area	1.03 ha
Residential	76 units
Retail	880 sq.m
Employment	n/a
Parking Provision	164 spaces; 2 level underground for residential; surface and on-street parking for retail
Height	4 to 18 storey buildings

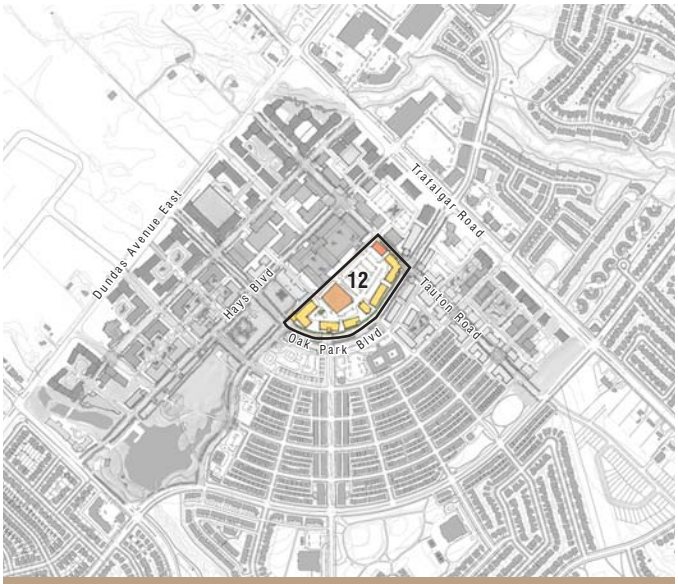




- Residential
- Retail
- Underground Parking
- Surface Parking

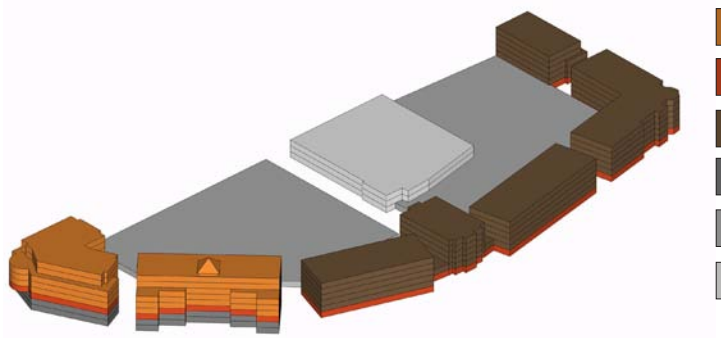
block 12

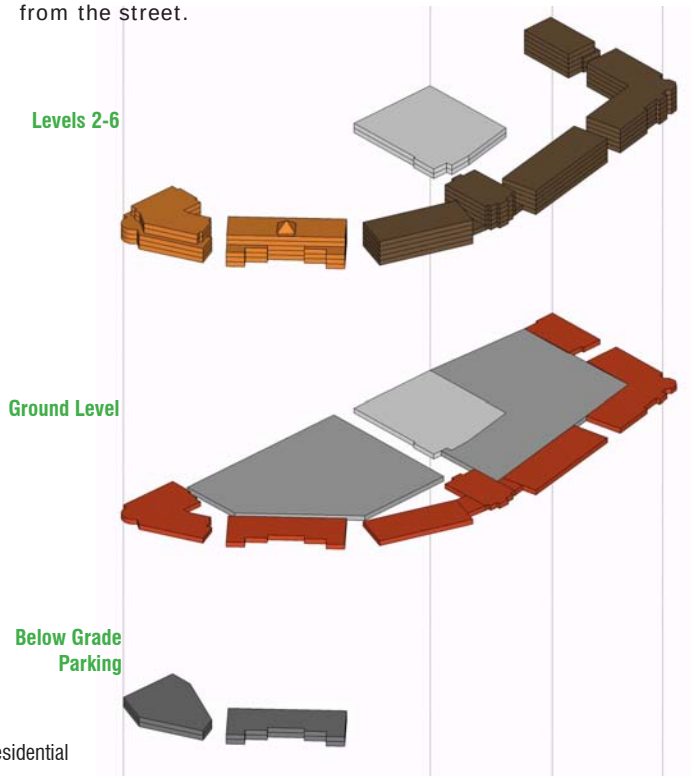
Block 12 is located in the Main Street District of the study area, and is envisioned as a mixed-use block with residential, employment, and retail uses. All buildings proposed are 6 storeys and have retail uses at grade to address the main street. With the highest amount of office space proposed in the study area, a parking structure and surface parking is located in the interior of the block to fulfill the parking requirements of both retail and employment uses so that parking is hidden from the street.



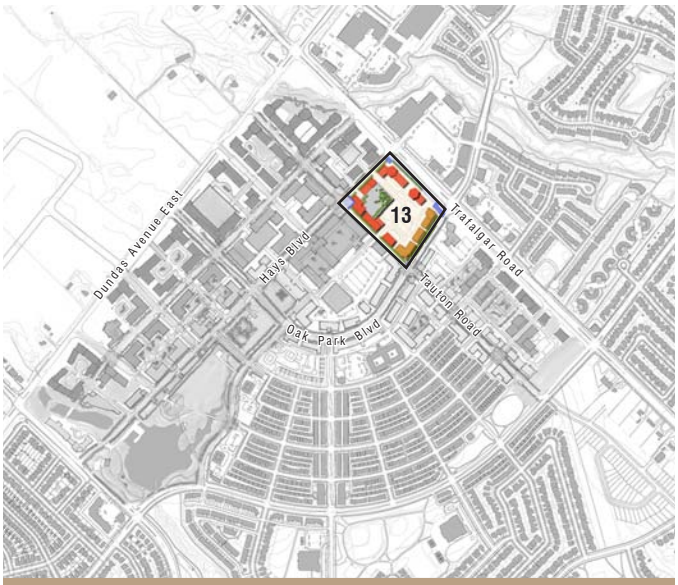
Block Statistics

Site Area	3.51 ha
Residential	248 units
Retail	8,960 sq.m
Employment	17,480 sq.m
Parking Provision	1,283 spaces; 2 levels underground for residential; parking structure, surface parking & on-street parking for retail; 3 levels underground & parking structure for employment
Height	6-storey buildings





- Residential
- Retail
- Employment
- Underground Parking
- Surface Parking
- Parking Structure

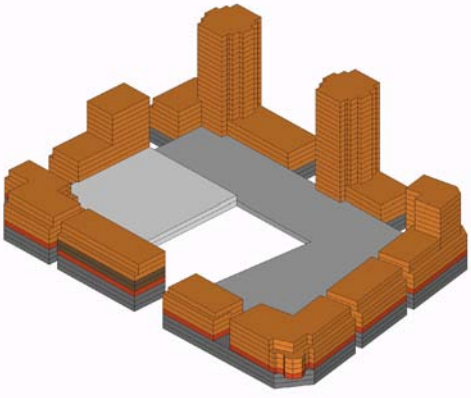


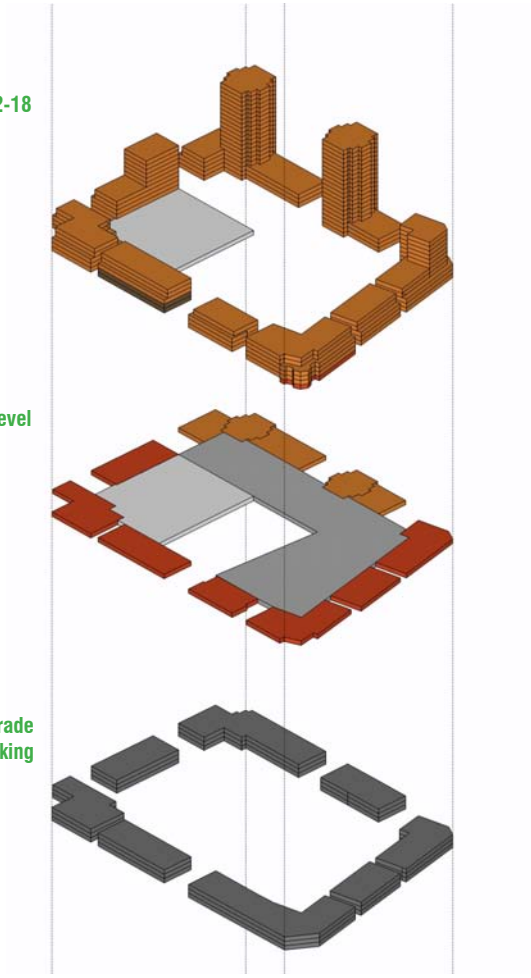
block 13

Block 13 is located in the north-east part of the study area, and is envisioned as a medium to high density mixed-use block. The streets are lined with perimeter buildings ranging from 6 storeys along Tauton Road and Oak Park Blvd, to 18 storey buildings along Trafalgar Road. A 2 storey parking structure with a green roof is proposed to satisfy the parking requirements of retail and employment uses.

Block Statistics

Site Area	3.95 ha
Residential	728 units
Retail	7,150 sq.m
Employment	1,500 sq.m
Parking Provision	1,575 spaces; 3 levels underground for residential; surface parking, parking structure & on-street parking for retail; parking structure for employment
Height	6 to18 storey buildings

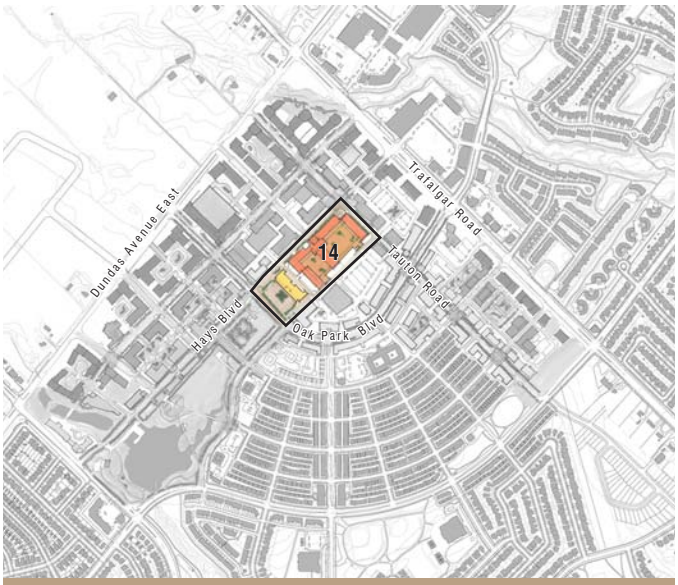




- Residential
- Retail
- Employment
- Underground Parking
- Surface Parking
- Parking Structure

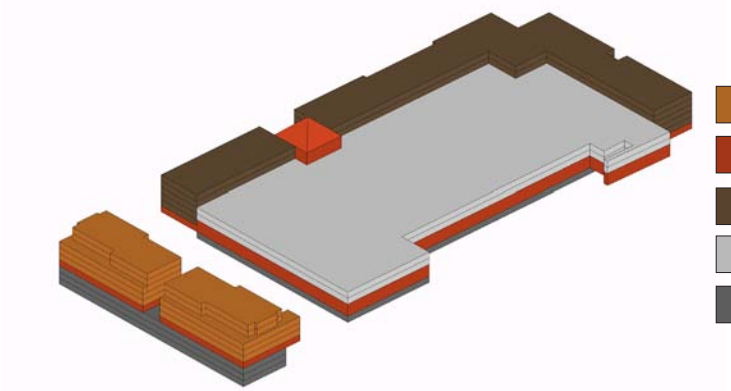
block 14

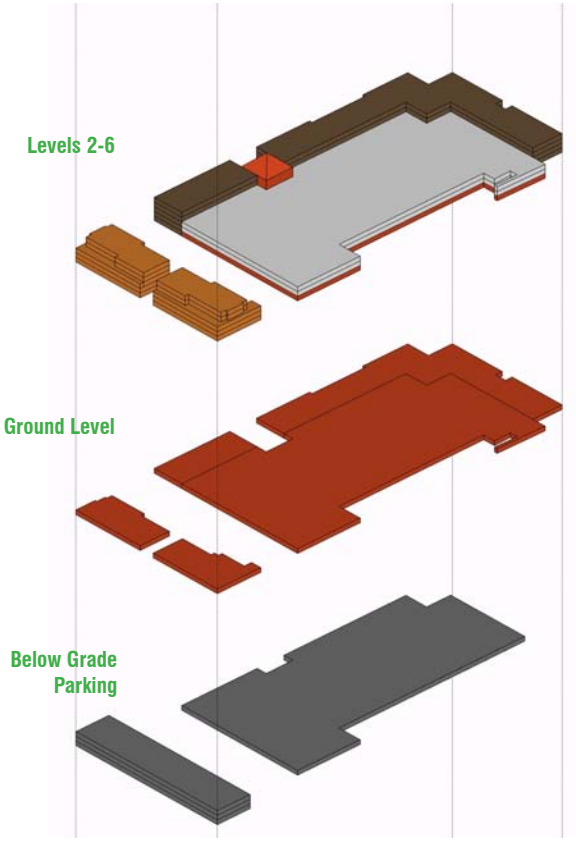
With 6 storey buildings lining the streets, Block 14 is mixed-use block situated in the centre of the study area. Retail uses occupy the entire ground floor of the buildings, with smaller-scale units organized around a large-format retail building. In addition to residential and office uses located above the small-scale retail, a 2 storey parking structure is proposed above the large-format retail space. In front of the residential buildings is a green courtyard which complements the central park across the street.



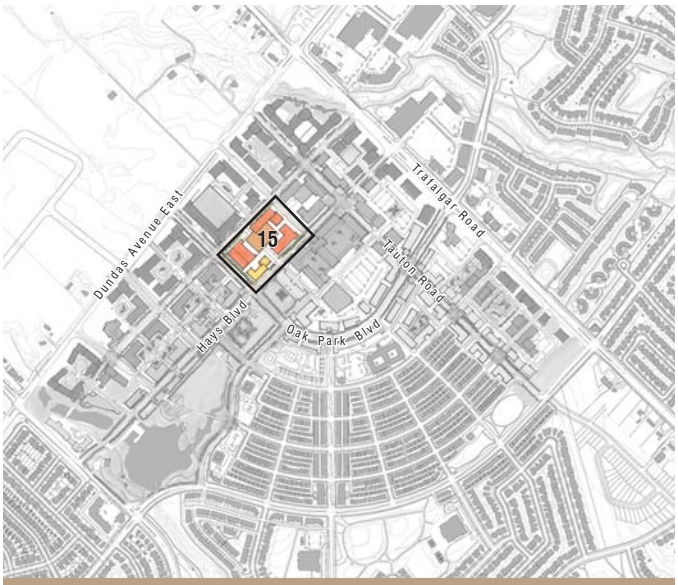
Block Statistics

Site Area	3.54 ha
Residential	116 units
Retail	22,200 sq.m
Employment	13,750 sq.m
Parking Provision	1,499 spaces; 3 levels underground for residential; parking structure & on-street parking for retail; 1 level underground for employment
Height	4 to 6 storey buildings





- Residential
- Retail
- Employment
- Parking Structure
- Underground Parking

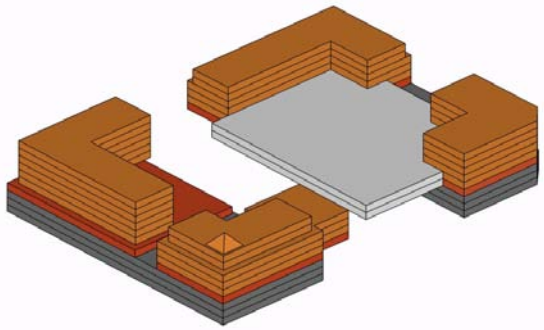


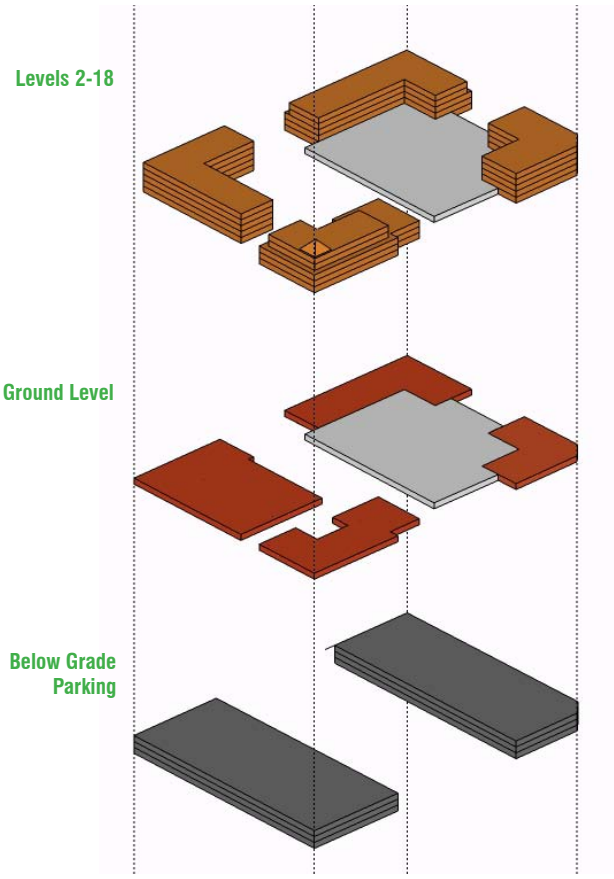
block 15

Located at the center of the study area, Block 15 is comrpised of four perimeter buildings, all 6 storeys high. The proposed built form allows for mid-block connections in both north-south and east-west directions. An architectural feature at the corner of Oak Park Blvd and Hays Blvd emphasizes the importance of the corner, and retail uses are located at the ground level for all buildings.

Block Statistics

Site Area	1.99 ha
Residential	302 units
Retail	7,920 sq.m
Employment	n/a
Parking Provision	811 spaces; 3 levels underground for residential; parking structure for retail;
Height	6 storey buildings

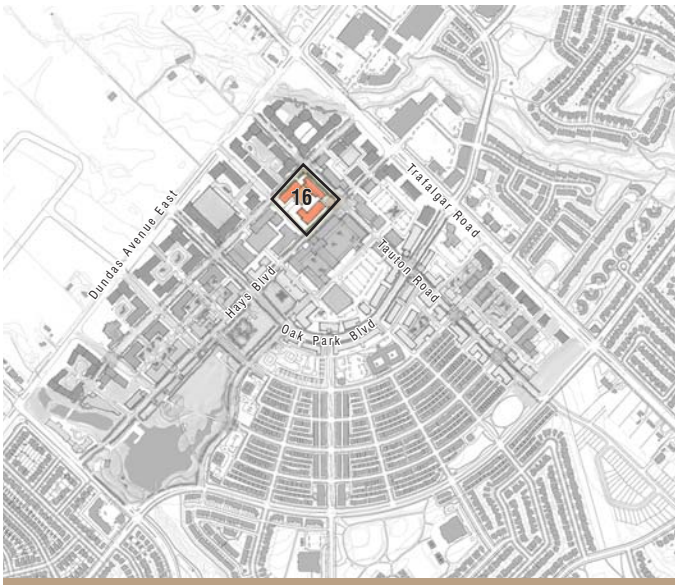




Residential
Retail
Parking Structure
Underground Parking

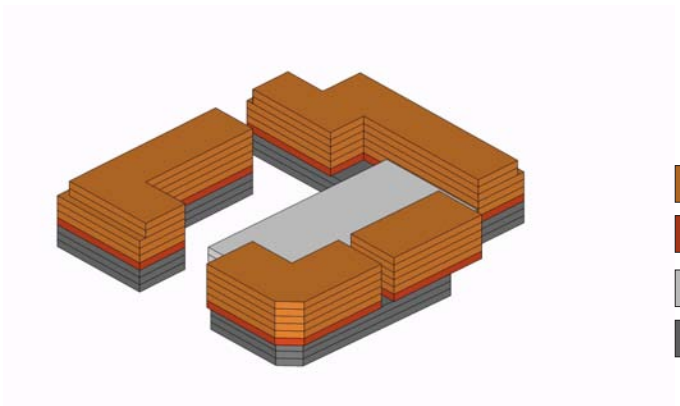
block 16

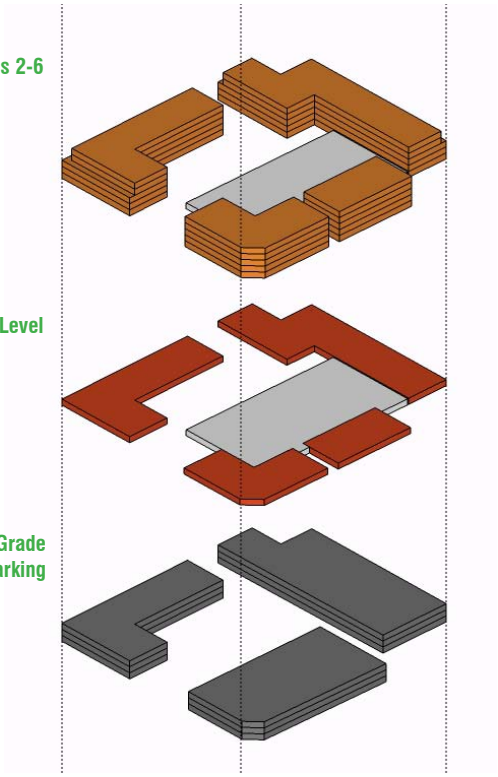
Block 16 is part of the Centre District. All buildings are 6 storeys high, and have at-grade retail uses with residential units above. All parking for residents are accommodated in underground parking, and a 2 storey parking structure provides parking for the proposed retail uses.



Block Statistics

Site Area	1.90 ha
Residential	222 units
Retail	4,620 sq.m
Employment	n/a
Parking Provision	554 spaces; 3 levels underground for residential; parking structure and on-street parking for retail
Height	6 storey buildings

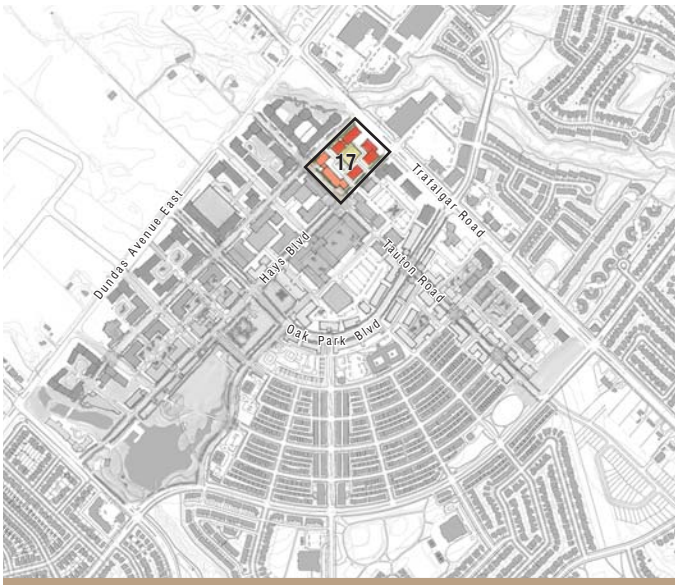




- Residential
- Retail
- Parking Structure
- Underground Parking

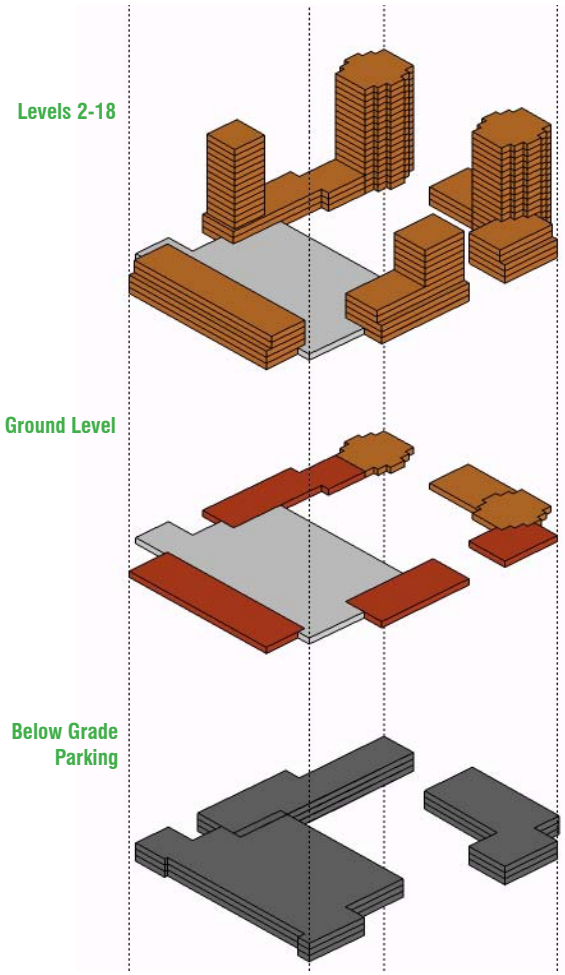
block 17

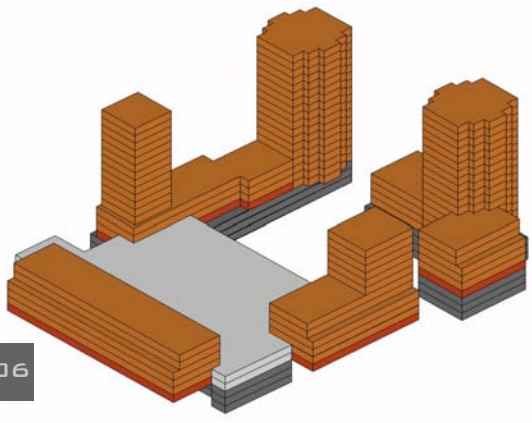
Situated in the Core District, Block 17 is comprised of buildings that range in height from 4 storeys along interior streets, to 18 storey towers along Trafalgar Road. Retail uses are located at ground level for all buildings, with the exception of those along the arterial road. Residents park underground, while a 2 storey parking structure satisfies parking requirements for retail uses.



Block Statistics

Site Area	2.15 ha
Residential	568 units
Retail	6,420 sq.m
Employment	n/a
Parking Provision	1,222 spaces; 3 levels underground for residential; parking structure and on-street parking for retail
Height	4 to 18 storey buildings





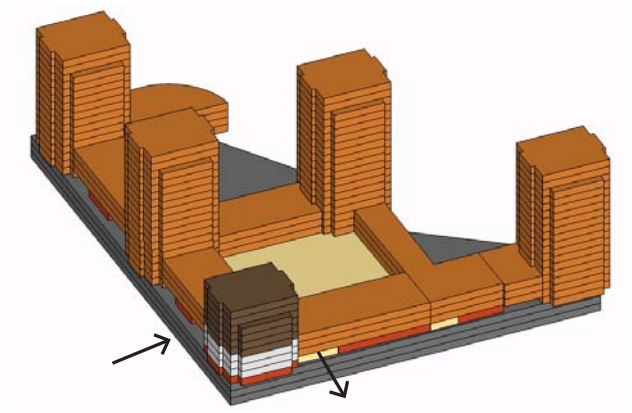
Residential
Retail
Parking Structure
Underground Parking

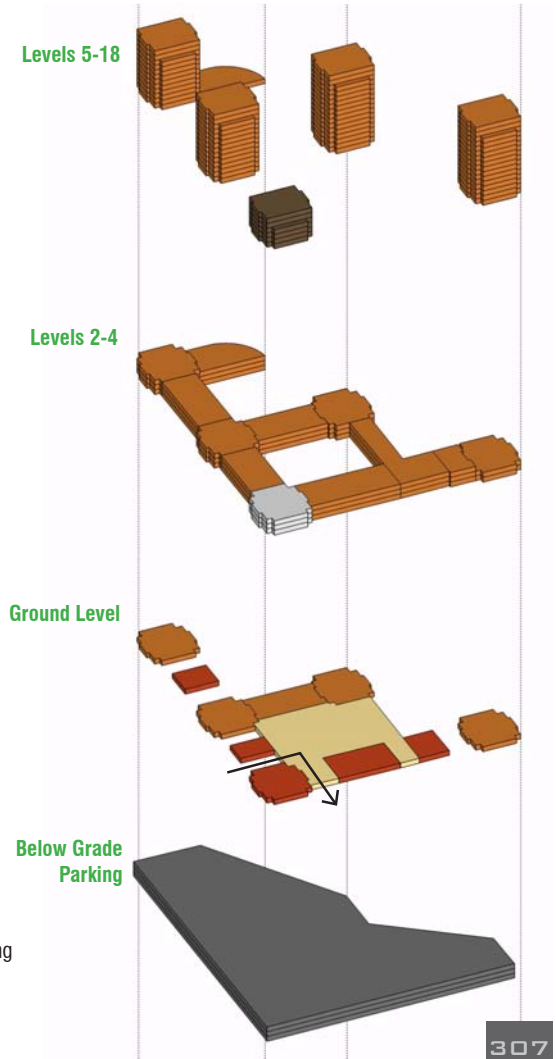
block 18

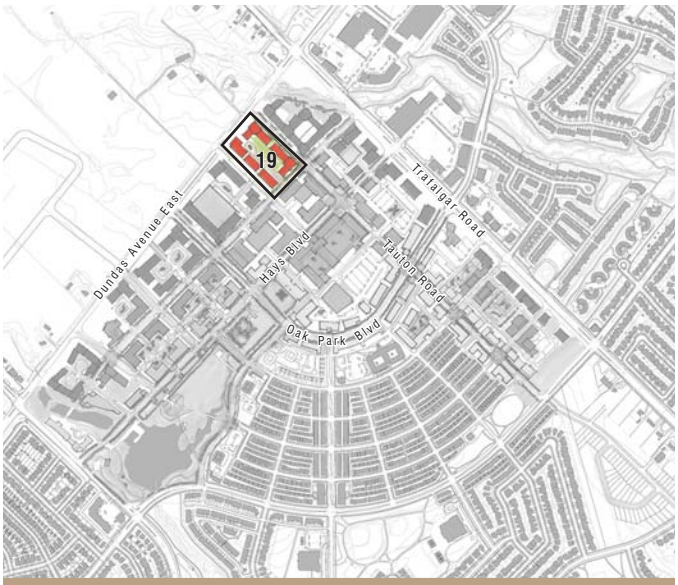
Block 18 is located in the northern apex of the study area, at the intersection of Dundas Ave East and Trafalgar Road. The proposal is a medium to high density block, with mainly residential towers up to 18 storeys, and retail uses at grade. A strategic transit terminal station, integrated into the built form of the development, has been completed at the corner of Oak Walk Blvd. and Tauton Road. Passenger amenities, such as bicycle lockers, should also be integrated into the full built out design as a private/public enterprise or partnership. Also envisioned at the corner is a 3 storey parking garage to provide parking for office uses above. It is important to note that land shown as office use distribution is for proforma use only. Office use has been incorporated into scheme as being on top of the transit station, but is not prescribed.

Block Statistics

Site Area	2.26 ha
Residential	629 units
Retail	5,085 sq.m
Employment	3,750 sq.m
Parking Provision	1,398 spaces; 3 levels underground for residential; parking structure and on-street parking for retail; parking structure for employment
Height	4 to 18 storey buildings





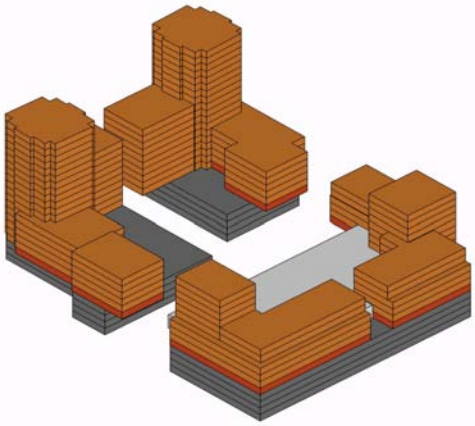


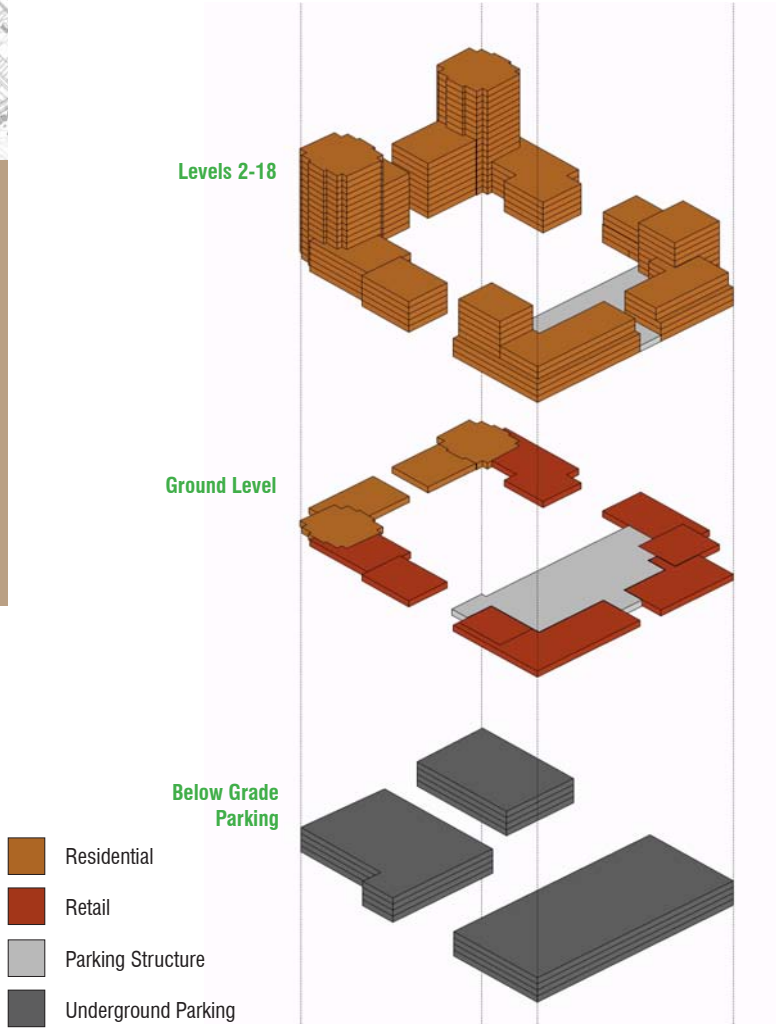
block 19

Block 19 is envisioned as a medium to high density block, comprised of 18 storey towers along Dundas Ave East, and buildings up to 10 storeys along interior streets which are lined with retails uses at grade. Residents park underground and share an interior courtyard, while shoppers park on-street or in a 2 storey structure located in behind the built form, hidden from the street.

Block Statistics

Site Area	2.97 ha
Residential	528 units
Retail	5,080 sq.m
Employment	n/a
Parking Provision	1,104 spaces; 4 levels underground for residential; parking structure and on-street parking for retail
Height	6 to 18 storey buildings



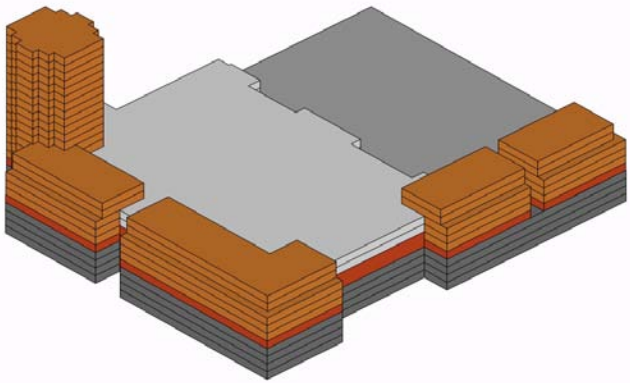


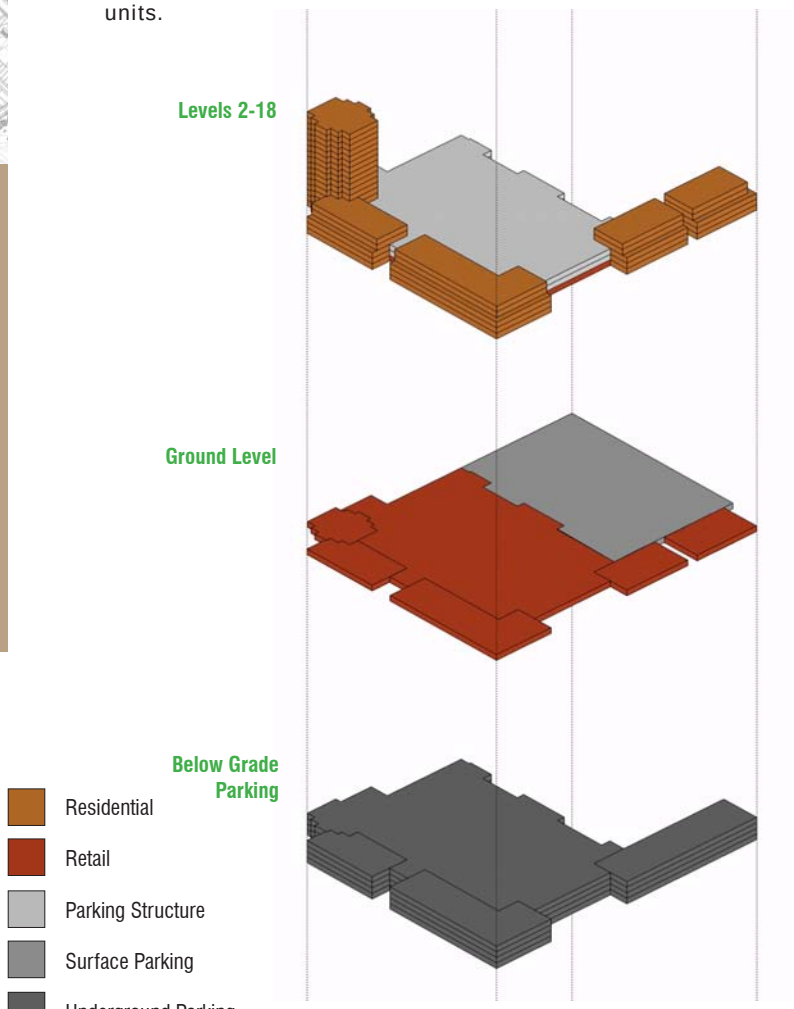
block 20

Block 20 is located in the north-west part of the study area, partially within the Main Street District and the Core District. This block is envisioned as a mixed-use block, with an 18 storey tower located along Dundas Ave East, and both large and small format retail uses on the ground floor. A 2 storey parking structure is proposed above the large scale retail unit, as residential units are proposed above the smaller scale retail units.

Block Statistics

Site Area	2.59 ha
Residential	462 units
Retail	14,180 sq.m
Employment	n/a
Parking Provision	1,376 spaces; 4 levels underground for residential; surface parking, parking structure and on-street parking for retail
Height	6 to 18 storey buildings





UPTOWN
Town of Oakville CORE REVIEW

Appendix IX

development strategy

table of contents

1.0 Uptown Core Development Strategy

Refer to FIGURE "P" - Land Use Districts, FIGURE "P1" - Height, FIGURE "P2" – Height Subject to Bonusing, and FIGURE "P2" - Road Network

1.1 General

a) Location

The Uptown Core is bounded by Dundas Street on the north; Sixth Line on the west; Glenashton Drive on the south; and Trafalgar Road on the east. The Uptown Core is approximately 109 hectares in size. The boundaries of this area are outlined in Figure "P".

b) Development Framework

The Uptown Core will be comprised of higher density and higher intensity land uses that will complement the emerging urban structure of the Greater Golden Horseshoe. The Uptown Core is to become a regional transit oriented mixed-use urban centre.

The Uptown Core will develop into a crucial component of the Town of Oakville's urban structure of centres and corridors. It is envisioned as a complete community that will provide appropriate job opportunities and community facilities for the resident population. Mixed use development will be encouraged, either in single use buildings within a development block or in mixed use and/or live-work building forms. The Uptown Core will include opportunities for an array of medium and higher density housing forms, as well as a robust mixture of retail and commercial office uses.

The Plan recognizes the important contribution of the recreational, cultural and institutional uses in the Uptown Core. As a self-contained urban community and an urban centre for the residential communities north of the Queen Elizabeth Way, the Uptown Core will encourage a comprehensive range of local and district community facilities to ensure a desirable level of amenities and promote social interaction. This area will also have a significant civic and public presence with various government, institutional, cultural, recreational and public open space uses.

c) Evolution of the Uptown Core

The Uptown Core has been developing over a number of years, and it is anticipated that the initial phases of development may evolve into more intensive development in subsequent phases.

It is anticipated that the Uptown Core will evolve over a very long period of time, but that at full build out, the Uptown Core has the potential capacity to accommodate approximately 22,000 residents and 3,000 jobs, achieving a gross density of approximately 200 persons and jobs per hectare. It is expected that this level of development will establish the critical mass necessary to support a rich, diverse and pedestrian and transit oriented urban community within the Town of Oakville.

As in other areas of the Town of Oakville, the Uptown Core will be influenced by changing economic, social and demographic conditions. Development in the Uptown Core will respond to these influences. Development and implementation policies are to allow for phased flexibility that permits change over time within certain parameters.

d) Land Use Concept

The Uptown Core Development Strategy sets out the long-term planning objectives and broad development framework within which the detailed site-specific layout and zoning controls will be prepared and designs for infrastructure, access, road and transit development will be detailed.

The proposed land uses and a combined radial-grid circulation pattern are indicative of the general relationship to be maintained between the different land use components and may be subject to minor adjustments in the detailed design and zoning stage.

e) Road and Block Pattern

The road and development block pattern is a fundamental component of this Plan. The Uptown Core provides a network of major and minor collector roads and local roadways in a combined modified radial and grid pattern connecting to the adjacent arterials. This road system is intended to provide a range of alternative routes into the Uptown Core. The specific road network is illustrated in FIGURE "P3" Road Network.

The road pattern also establishes the development block pattern. It is considered crucial to the achievement of an urban environment that the scale of development blocks be appropriate to urban development, rather than more suburban forms of development. This requires that development blocks within the Uptown Core be moderately scaled and clearly defined by the public road network. The maximum size for any development block within the Uptown Core Area shall be approximately 2.6 hectares (120 metres wide by 220 metres deep). The preferred development block size shall be approximately 2.0 hectares (120 metres wide by 166 metres deep).

1.2 Design Principles

The design principles for the Uptown Core are as follows:

a. To promote high quality design of the Area's streetscapes, open spaces, public buildings and infrastructure and private buildings that create a comfortable, accessible, usable, understandable and memorable urban community;

b. To provide a sensitive transition between the concentration, mix and massing of buildings within the Uptown Core and the lower density residential neighbourhoods within, and adjacent to the Area;

c. To ensure that new developments within the Uptown Core are physically compatible and complementary to each other;

d. To ensure the development of a full range and mix of medium and higher density housing types, including housing that has the opportunity to be more affordable;

e. To create an attractive public realm and to ensure that retail commercial development is planned to support a fully accessible street related, pedestrian-friendly environment;

f. To support the viability of transit by promoting higher density forms of development and by coordinating land use, transportation infrastructure and urban design in a mutually supportive manner that encourages the use of transit and modes of transportation other than automobiles; and,

g. To promote a social, economic and environmentally sustainable community within the Uptown Core.

1.3 Development Plan

a) Land Use Districts

This section outlines the land use planning and urban design parameters for housing, employment, commercial, retail and community facilities which will be accommodated within the boundaries of the Uptown Core.

The Uptown Core Area is divided into five land use districts as shown on FIGURE P - Land Use Districts. The intent of these land use districts is to ensure that the Uptown Core develops into a dynamic mixed use, pedestrian friendly and transit supportive urban centre. Further, the districts are organized to provide an appropriate transition in terms of land use and built form between existing residential development and future development and redevelopment within the Core. The five Land Use Districts include:

i) Neighbourhood District;

ii) Urban Neighbourhood District;

iii) Centre District;

iv) Main Street District; and,

v) Green District.

The following strategy outlines the land use and built form requirements for each of the five districts.

1.3.1 Neighbourhood District

a) Intent

The intent of the Neighbourhood District designation is to ensure the preservation of existing land uses within the District. The full build out of this District is close to completion and is comprised of low and medium density lane based residential uses.

b) Permitted Uses

The following uses are permitted within the Neighbourhood District:

i) Low and medium density residential uses including Street, Block and Stacked Townhouses, Low Rise Apartments.
ii) Open Space, parks and/or urban squares.
iii) Public and/or private utilities/facilities.

c) Development Standards

The following Development Standards apply within the Neighbourhood District:

i) Height - Building heights shall not exceed four storeys. The building heights for the Neighbourhood District are identified on FIGURE "P1" Height.

ii) Build-Within Zones - The implementing zoning by-law will establish a build within zone which may vary depending on the street type. Generally, the front yard and exterior side yard build-within zones shall be between 2.0 and 4.5 metres.

iii) Parking Location - Parking for all residential units shall be prohibited from locating in the front of buildings and shall utilize alternate means such as below grade parking or garages at the rear of the dwellings accessed off laneways.

iv) Urban Design/Sustainability - In addition to the preceding development standards, all new development within the Neighbourhood District shall comply with the

Urban Design and Environmental Sustainability Policies in Section 1.4 of this Development Strategy.

1.3.2 Urban Neighbourhood District

a) Intent

The Urban Neighbourhood District is intended as a primarily residential area with permission for office and high density residential uses and/or mixed use buildings. It is expected that any retail uses will be permitted at grade within a mixed use building, with residential and/or office uses above the first floor. Residential and/or office uses are permitted in stand alone, single use buildings.

b) Permitted Uses

The following uses are permitted within the Urban Neighbourhood District:

i) Medium and high density residential uses including Street and Block Townhouses, Stacked Townhouses units in combination with Apartments units. These uses can be in stand-alone buildings or part of a mixed use or live/work building.

ii) Office uses of all types. These uses can be in stand-alone buildings or part of a mixed use building.

iii) Recreational, educational, cultural and institutional uses. These uses can be in stand-alone buildings or part of a mixed use building.

iv) Small scale retail and/or service commercial uses on the ground floor of a mixed use building. Small scale retail uses shall not exceed 1,000 square metres.

v) Open space, parks and/or urban squares.

vi) Public and/or private utilities/facilities.

The implementing zoning by-law shall establish the list of permitted uses on each individual development block, in accordance with the direction provided in this Development Strategy.

c) Prohibited Uses

The following uses are specifically prohibited within the Urban Neighbourhood District:

i) Low density residential uses including Single-Detached, and Semi-Detached units.

ii) Medium density residential uses including Street and Block Townhouses and Live/work units as the only residential built form.

iii) Stand-alone retail facilities.

iv) Drive-through facility of any type.

v) Automobile related uses (sales, service, gas bars, and car washes).

vi) Entertainment uses.

The implementing zoning by-law shall establish the list of prohibited uses on each individual development block, in accordance with the direction provided in this Development Strategy.

d) Development Standards

The following Development Standards apply within the Urban

Neighbourhood District:

i) Height - Building heights shall include both a minimum and a maximum as identified on FIGURE "P1" Height.

ii) Height Bonus - On sites within the Urban Neighbourhood District that are identified as an Area Subject to Height Bonus Policy 1 as identified on FIGURE "P2" Height Subject to Bonusing, additional building height up to a maximum of 12 storeys may be considered by the Town through the application of Section 37 of the Planning Act.

On sites within the Urban Neighbourhood District that are identified as an Area Subject to Height Bonus Policy 2 as identified on FIGURE "P2" Height Subject to Bonusing, additional building height up to a maximum of 18 storeys may be considered by the Town through the application of Section 37 of the Planning Act.

Additional height will be allowed in return for the provision by the owner of community benefits. This benefits shall provide public benefits within the Uptown Core community area in which the contributing development project is located. Public benefits considered appropriate for the application of increased height and/or density may include, but are not limited to:

- The provision of affordable housing units and/or rental housing units;
- Community service/facility space and/or improvements to transit facilities;
- Non-profit child care facilities;
- Public art;
- Enhanced streetscape/public open space improvements; and,
- Enhanced green building and energy conservation technology.

Notwithstanding the bonus provision, buildings that incorporate at least 50 percent of their Gross Floor Area for office uses shall be permitted to achieve the additional height as-of-right, without the provision of any additional public benefits.

The provisions of the height bonus provision shall be applied through the implementing zoning by-law.

iii) Build-Within Zones - The implementing zoning by-law will establish a build within zone which may vary depending on the street type as follows:

- For Local Roads - For any yard abutting a Local Road, the build within zone shall be between 0.0 and 2.5 metres. In addition, if residential uses are located at grade, the front door shall be a maximum of 1.0 metre above grade.
- For the Local Road adjacent to Public Open Space - For any yard abutting the Local Road adjacent to any public open space, the build within zone shall be between 0.0 and 5.0 metres. In addition, if residential uses are located at grade, the front door shall be a maximum of 1.0 metre above grade.
- For Dundas Street - For any yard abutting Dundas Street, the build within zone shall be between 6.0 and 12.0 metres. In addition, if residential uses are located at grade, the front door shall be a minimum of 1.0 metre above grade.
- For Trafalgar Road - For any yard abutting Trafalgar

Road, the build within zone abutting Trafalgar Road shall be between 0.0 and 4.0 metres. In addition, if residential uses are located at grade, the front door shall be a minimum of 1.0 metre above grade.

iv) Parking Location - Parking for all uses shall be accommodated in parking structures, preferably below grade.

Notwithstanding the preceding policy, limited at on-site at-grade parking may be permitted to accommodate short-term visitor parking for residential and/or office users, and/or for any permitted retail facility. The maximum size of any on-site, at-grade parking lot shall be 15 percent of the total lot area, and shall not be located adjacent to any public street.

v) Access from Arterial Roads - Direct vehicular access from any one property to Trafalgar Road or Dundas Street will not be permitted. Public roads shall provide access to Trafalgar Road or Dundas Street.

vi) Urban Design/Sustainability - In addition to the preceding Development Standards, all new development within the Urban Neighbourhood District shall comply with the Urban Design and Environmental Sustainability Policies in Section 1.0.4 of this study.

1.3.3 Centre District

a) Intent

The intent of the Centre District is as a primarily retail and office commercial district that includes permission for residential uses in a mixed use format. It is the intent of this plan to enable this District to evolve from its existing focus on large format, stand-alone retail uses into a pedestrian oriented and transit supportive mixed use lifestyle centre.

Over time, it is intended that the Centre District will incorporate a mix of uses with retail commercial uses at grade with medium and high density residential and/or office uses above the first floor.

b) Permitted Uses

The following uses are permitted within the Centre District:

i) Retail and/or service commercial uses. All retail uses must be incorporated into a mixed use building where at least 25 percent of the Gross Floor Area is available for non-retail uses.

ii) Entertainment uses.

iii) Hotels.

iv) Office uses. Office uses must be within a mixed use building that includes retail uses at grade.

v) Medium and high density residential uses that are in apartment buildings. These uses must be within a mixed use or live/work building that includes retail uses at grade with the exception of buildings fronting onto Trafalgar Road and Dundas Street in which case these uses can be in stand-alone buildings.

vi) Recreational, educational, cultural and institutional uses.

vii) Open space, parks and/or urban squares.

viii) Public and/or private utilities/facilities, including transit facilities.

The implementing zoning by-law shall establish the list of permitted uses on each individual development block, in accordance with the direction provided in this study.

c) Prohibited Uses

The following uses are specifically prohibited within the Centre District:

i) Low to medium density residential uses including Single-Detached, Semi-Detached and Street or Block Townhouse units.

ii) Drive-through facilities of any type.

iii) Automobile related uses (sales, service, gas bars, and car washes).

The implementing zoning by-law shall establish the list of prohibited uses on each individual development block, in accordance with the direction provided in this study.

d) Development Standards

The following Development Standards apply within the Centre District:

i) Height- Building heights shall include both a minimum and a maximum as identified on FIGURE "P1".

ii) Height Bonus - On sites within the Centre District that are identified as an Area Subject to Height Bonus Policy 3 as identified on FIGURE "P2" Height Subject to Bonusing, additional building height up to a maximum of 18 storeys may be considered by the Town through the application of Section 37 of the Planning Act.

On sites within the Centre District that are identified as an Area Subject to Height Bonus Policy 4 as identified on FIGURE "P2" Height Subject to Bonusing, additional building height up to a maximum of 6 storeys may be considered by the Town through the application of Section 37 of the Planning Act.

Additional height will be allowed in return for the provision by the owner of community benefits. Community benefits shall provide public benefits within the Uptown Core community area in which the contributing development project is located. Public benefits considered appropriate for the application of increased height and/or density may include, but are not limited to:

- The provision of affordable housing units and/or rental housing units;
- Community service/facility space and/or improvements to transit facilities;
- Non-profit child care facilities;
- Public art;
- Enhanced streetscape/public open space improvements; and,
- Enhanced green building and energy conservation technology.

Notwithstanding the bonus provision, buildings that incorporate at least 50 percent of their Gross Floor Area for office uses shall be permitted to achieve the additional height as-of-right, without the provision of any additional public benefits.

The provisions of the height bonus provision shall be applied through the implementing zoning by-law.

iii) Build-Within Zones - The implementing zoning by-law will establish a build within zone which may vary depending on the street type as follows:

- For Local Roads - For any yard abutting a Local Road,

the build within zone shall be between 0.0 and 2.5 metres. In addition, if residential access spaces are located at grade, such as lobbies and vestibules, the front door shall be a minimum of 1.0 metre above grade.

- For Dundas Street - For any yard abutting Dundas Street, the build within zone shall be between 6.0 and 12.0 metres. In addition, if residential uses are located at grade, the front door shall be a minimum of 1.0 metre above grade.

- For Trafalgar Road - For any yard abutting Trafalgar Road, the build within zone abutting Trafalgar Road shall be between 0.0 and 4.0 metres. In addition, if residential uses are located at grade, the front door shall be a minimum of 1.0 metre above grade.

iv) Parking Location - Parking for all residential uses shall be accommodated in parking structures, preferably below grade. Parking for all non-residential uses shall, in the long-term, be accommodated in parking structures.

Notwithstanding the preceding policy, on-site, at-grade parking may be permitted to accommodate non-residential uses, subject to the urban design policies provided in Section 1.0.4 of this Development Strategy.

The implementing zoning by-law will restrict the development potential of properties where more than 50 percent of the required parking is provided as at-grade surface parking and will regulate the scale, location and screening of surface parking areas.

v) Access from Arterial Roads - Direct vehicular access from any one property to Trafalgar Road or Dundas Street will not be permitted. Public roads shall provide access to Trafalgar Road or Dundas Street.

vi) Urban Design/Sustainability - In addition to the preceding Development Standards, all new development within the Centre District shall comply with the Urban Design and Environmental Sustainability Policies in Section 1.0.4 of this Development Strategy.

1.3.4 Main Street District

a) Intent

The Main Street District is intended to become the focal point of pedestrian and community activity in the Uptown Core. It will include a fine grained and active mixture of retail and service commercial uses at grade, and medium density residential and office uses above the first floor. The Main Street District will be mid-rise in scale with an emphasis on the development of a high quality public realm that is pedestrian-friendly.

b) Permitted Uses

The following uses are permitted within the Main Street District:

i) Retail and/or service commercial uses, where the maximum Gross Floor Area of any single retail use does not exceed 4,000 square metres. All retail uses must be incorporated into a mixed use building where at least 25 percent of the Gross Floor Area is available for non-retail uses.

ii) Entertainment uses.

iii) Hotels.

iv) Office uses that are within a mixed use building that includes retail uses at grade.

v) Residential apartments that are within a mixed use or live/work building that include retail uses at grade with the exception of buildings located at the intersection with Dundas Street and Trafalgar in which case these uses can be in stand-alone buildings.

vi) Recreational, educational, cultural and institutional uses.

vii) Open space, parks and/or urban squares.

viii) Public and/or private utilities/facilities, including transit facilities.

The implementing zoning by-law shall establish the list of permitted uses on each individual development block, in accordance with the direction provided in this Development Strategy.

c) Prohibited Uses

The following uses are specifically prohibited within the Main Street District:

i) Low to medium density residential uses including Single-Detached, Semi-Detached and Street, Block or Stacked Townhouse units.

ii) At grade residential uses.

iii) Stand-alone retail facilities.

iv) Drive-through facilities of any type.

v) Automobile related uses (sales, service, gas bars, and car washes).

The implementing zoning by-law shall establish the list of prohibited uses on each individual development block, in accordance with the direction provided in this Development Strategy.

d) Development Standards

The following Development Standards apply within the Main Street District:

i) Height - Building heights shall include both a minimum and a maximum as identified on FIGURE "P1" Height.

ii) Height Bonus - On sites within the Main Street District that are identified as an Area Subject to Height Bonus Policy 5 as identified on FIGURE "P2" Height Subject to Bonusing, additional building height up to a maximum of 12 storeys, may be considered by the Town through the application of Section 37 of the Planning Act.

On sites within the Main Street District that are identified as an Area Subject to Height Bonus Policy 6 as identified on FIGURE "P2" Height Subject to Bonusing, additional building height up to a maximum of 18 storeys, may be considered by the Town through the application of Section 37 of the Planning Act.

Additional height will be allowed in return for the provision by the owner of community benefits. Community benefits shall provide public benefits within the Uptown Core community area in which the contributing development project is located. Public benefits considered appropriate for the application of increased height and/or density may include, but are not limited to:

- The provision of affordable housing units and/or rental housing units;

- Community service/facility space and/or improvements to transit facilities;
- Non-profit child care facilities;
- Public art;
- Enhanced streetscape/public open space improvements; and,
- Enhanced green building and energy conservation technology.

Notwithstanding the bonus provision, buildings that incorporate at least 50 percent of their Gross Floor Area for office uses shall be permitted to achieve the additional height as-of-right, without the provision of any additional public benefits.

The provisions of the height and density bonus provision shall be applied through the implementing zoning by-law.

iii) Build-Within Zones - The implementing zoning by-law will establish a build within zone which may vary depending on the street type as follows:

- For Oak Park Boulevard - For any yard abutting Oak Park Boulevard, the build within zone shall be between 0.0 and 2.0 metres.

iv) Parking Location - Parking for all uses within the Main Street District shall, in the long-term, be accommodated in parking structures, preferably below grade.

Notwithstanding the preceding policy, on-site, at-grade parking may be permitted to accommodate non-residential uses, subject to the urban design policies provided in Section 1.4 of this Development Strategy.

The implementing zoning by-law will restrict the development potential of properties where more than 50 percent of the required parking is provided as at-grade surface parking and will regulate the scale, location and screening of surface parking areas.

v) Access from Arterial Roads - Direct vehicular access from any one property to Trafalgar Road or Dundas Street will not be permitted. Public roads shall provide access to Trafalgar Road or Dundas Street.

vi) Urban Design/Sustainability - In addition to the preceding Development Standards, all new development within the Main Street District shall comply with the Urban Design and Environmental Sustainability Policies in Section 1.4 of this Development Strategy.

1.3.5 Green District

a) Existing Major Parkland

This Development Strategy includes a comprehensive park system that will allow for a complete diversity of open space uses to be available in the Uptown Core. The park system includes a natural ravine-based setting along the Morrison Creek East and West Branches, and a large park with opportunities for passive recreational activities, such as strolling, running, and picnicking as well as a ceremonial square located on the Uptown Core west side know as Memorial Park.

In addition to the above, the parkland may also include institutional, cultural and government uses/buildings.

The small amount of tableland located between the Morrison Creek East Branch and Trafalgar Road and Dundas Street will be acquired as parkland to function as an open space forecourt to the Uptown Core.

b) Proposed Civic Plaza

Within the Green District, and identified symbolically, is a site identified as a Civic Plaza. This area is owned by the Town and is expected to be used as a primary community focal point.

The Civic Plaza site is anticipated to develop as an urban gathering area, with hard surfaced and landscaped elements appropriate for an array of uses including concerts, presentations/ speeches, a farmer's market and/or any other unorganized or organized public events.

The Civic Plaza site may also incorporate public buildings for cultural, educational, institutional, recreational and/or administrative purposes. The development of a building or buildings on the Civic Plaza site shall be subject to the following criteria:

i) The building shall be a landmark within the Uptown Core, and shall be designed to the highest standards of quality, signifying the importance of the Civic Plaza site within the community.

ii) There shall be an open, outdoor gathering space of at least 3,000 square metres, where the configuration of the site is approximately square.

iii) The building shall be designed to the highest LEED standard reflecting the Uptown Core's relevance within the region's broader context and the Town's support of green technology.

c) Natural Area

The 'Valley Lands/Watercourse' designation on Figure F1 of the Official Plan has been refined to be within the Green District. Where the lands are designated 'Valley Lands/Watercourse' on Figure F1 of the Official Plan, the policies of the Official Plan that apply to that designation shall apply.

The East and West branches of the Morrison Creek are identified as the Natural Areas within the Green District. The extent of these Natural Aras will be determined by the greater of the existing top-of-bank conditions or Regional storm limits plus a 7.5 metre allowance from the limit of the greatest hazard. All hazardous and allowance lands associated with the east and west branches of the Morrison Creek are to be place into public ownership.

The Morrison Creek West branch is characterized by man-made ponds south of Dundas Street. The ponds do not necessarily reflect the natural valley system that would have existed if the ponds were not created. As part of the detailed drainage study for the Morrison Creek West Branch, the extent of the natural area will be determined by the greater of the existing stable top of bank or regional storm limits and a 7.5 metre allowance from the limit of the greatest hazard.

The balance of the lands, which may include part of the existing pond areas, will be considered part of the park area to be acquired by the municipality under normal practices. Generally, the extra land required for ponds may be incorporated into the calculation for required parkland dedication provided that the ponds are designed as aesthetically pleasing features and as a public use resource.

Notwithstanding the location of the limits of the natural system, it is the intent of the Town to retain the existing ponds as a water feature which will be enhanced by the adjacent parkland.

1.4 Urban Design/Sustainability Policies

The Uptown Core Review report shall form the basis for subsequent submissions of implementing Development Concept Reports, draft plans of subdivision, zoning and site plan approvals. The Town may also adopt other statutory and non-statutory planning, engineering and design documents that further clarify the direction and intent of policies in this study.

To provide flexibility in the design process, other comparable design arrangements, which achieve the principles and objectives of this Development Strategy, satisfactory to the Town, may be utilized without further amendment to this Development Strategy.

a) Built Form Policies

i) General

The following policies apply to built form throughout the Uptown Core:

- Buildings shall be sited and organized to create a street space scaled to the pedestrian, and organized to present an appropriate façade to all adjacent streets, internal drive aisles, parking and amenity areas to provide interest and comfort at ground level for pedestrians.
- Commercial uses and their main entrances shall be oriented toward an adjacent public street to provide convenient access to pedestrians.
- Buildings, and their main public entrances, shall be located close to the front property line, on-street parking, and public transit facilities and be directly accessible from public sidewalks.
- This study shall establish build-within zones.
- Buildings shall be sited to ensure adequate sunlight, sky views, and wind conditions on sidewalks, streets, parks and open spaces.
- Buildings shall be sited and organized so that streets and parks are overlooked by active building faces.
- Buildings are to be generally sited parallel to the public street and along the edges of parks and open spaces. The public faces of these buildings are to align with neighbouring buildings in a manner that defines these spaces in a consistent building face lining the street.

ii) Semi-Public Space

The area between the building wall and the public street serves as the transition zone between the public and private realms, and constitutes an important social and visual element of the street image.

In the case of residential development, this semi-public space creates a buffer zone between the public and the private domains, which enhances the visual appearance of the street edge and provides outdoor spaces for casual social interaction. Planted and constructed elements in the semi-public space - low hedges, trees, masonry and decorative metal fences and gates - shall be designed to provide a transition from the public sidewalk to the finished floor level of adjacent residences.

For commercial and mixed use developments, connections to the street - by proximity, by the location of windows and entranceways and the level of architectural detail - are fundamental to the animation of the streets and in achieving the desired urban character. As such, buildings shall address the street, through the

provision of active façades that include windows, entry features and, where appropriate, outdoor cafés and restaurants.

iii) Build-Within Zones

In addition to providing a connecting link, a relatively consistent building edge is important to provide spatial definition and containment to the street.

Build-within zones are recommended for all properties within the Uptown Core, requiring buildings to locate their front and exterior side walls within a defined zone on the lot. The build-within zones essentially set both a minimum and maximum setback, and are identified within each of the District policies found in Section 1.0.3 of this Development Strategy.

iv) Minimum Built Frontage

A street wall or part of the building that is closest to the public street provides important spatial definition and a sense of enclosure for that street. This is critically important to ensure pedestrian comfort. A minimum amount of building wall located within the build-within zone shall be required, and will be articulated on a block by block basis within the implementing zoning by-law.

v) Space Between Buildings

In order that appropriate spacing is achieved between buildings on the same block, light, view and privacy setbacks may be used to provide the appropriate relationship. The implementing zoning by-law will establish the appropriate relationship between buildings on a block by block basis.

vi) Corner Buildings

The advantages of better visibility, light and view, make corner sites good locations for landmark buildings. Corner sites are consequently often occupied by prestigious buildings, or by buildings of community status. In the Uptown Core, corner sites will play a particularly significant role in defining landmarks. It is therefore important that the treatment of the corner sites be consistent throughout the Development Strategy Area. The following policies apply to corner sites:

- Corner building designs shall articulate, define and enhance the intersection at which it is located by enhancing the building's presence at each corner.
- Corner buildings shall incorporate vertical elements such that they are, or appear taller than adjacent, mid-block buildings.
- Buildings shall 'turn' the corner, i.e. they shall have primary, articulated facades towards both streets and shall be visually different from adjacent development.
- Corner buildings shall have the highest level of architectural detailing and a distinct architectural appearance.

vii) Building Step-Back

A building step-back defines the podium and tower components of a building and articulates a consistent building wall adjacent to the street. Throughout the Uptown Core, the following building step-backs shall be required:

- For development within the Uptown Core that abuts Dundas Street or Trafalgar Road, the podium component of the building may be 6 storeys, with a step-back of 1 to 3 metres to the tower component at the top of the 6th floor.
- For all other development within the Uptown Core, the podium component of the building may be 4 storeys, with a step-back of 1 to 3 metres to the tower component at the top of the 4th floor.

viii) Architectural Variation

Architectural variety is crucial in creating a visually stimulating urban environment and an interesting and varied skyline. Street walls composed of buildings of similar style and form can succeed through subtle variations in the façade treatment and building mass in projecting an image of architectural richness, variety, and building articulation. The following policies shall apply throughout the Uptown Core:

- Continuous areas of similar building height are monotonous and repetitive and shall be avoided. A more interesting skyline can be achieved by introducing variation in height and rooftop detail throughout each Land Use District.

- Large areas and continuous streets of monotonous and repetitive facades shall be avoided. A more textured architectural quality can be achieved by introducing variation in certain elements of the façade treatment.

- Variation in three-dimensional elements, such as balconies, bay windows and porches, cornices, window trim, entrances and the articulation of the building mass, shall be used to create a dynamic façade.

- An interesting architectural feature/treatment shall be added to all rooftops of taller buildings to prevent typical box shaped building forms.

- Variation and articulation in the building mass including horizontal and vertical setbacks, such as setbacks at the upper storeys, shall be established in the implementing zoning by-law.

b) Public Realm Policies

i) General

The following policies apply to the pedestrian realm throughout the Uptown Core:

- A grid of arterial, primary and local streets and associated public open spaces shall provide the organizing framework for the development of the Uptown Core.

- Sidewalks shall be required on both sides of all streets and shall form a connected system of optional routes for pedestrians within the Uptown Core, and connect to pedestrian systems in surrounding communities.

ii) Service Facilities

Parking facilities, service access points and any visible mechanical or utility-related equipment are to be located in a manner that has a minimal physical impact on public sidewalks and accessible open spaces. Shared driveways, service courts at the side and rear of buildings are encouraged to provide for these functions.

iii) Pedestrian Comfort

To promote the comfortable pedestrian use of streets, parks and open spaces, development is to provide:

- Well-designed, coordinated streetscapes with sidewalks and boulevards on important pedestrian and publicly accessible open spaces including walkways and setbacks adjacent to the public sidewalks that promote access, orientation and confidence of personal safety.

- Appropriate landscape treatments shall be provided, including trees and pedestrian lighting throughout parking lots and along their edges. This is intended to improve their appearance and to contribute to the visual continuity of the street edge, while encouraging the safe use of these spaces.

- High quality usable open spaces which are physically and visually linked to streets, parks and mid-block pedestrian routes.

- Buildings with primary windows and signage facing onto the street.

- Barrier free design of buildings, streets and publicly accessible open spaces.

- Street tree planting shall form a continuous canopy along the street. Generally, street trees shall be spaced approximately 10.0 to 12.0 metres apart (on centre).

- Streets shall incorporate the subsurface integrated tree and stormwater Silva Cell system for tree planting. This system holds unlimited amount of soil while supporting traffic loads beneath paving and hardscapes.

- Street tree species shall be selected to reinforce the role of the various street hierarchies within the Uptown Core and to visually and thematically distinguish the streets from one another. New development shall incorporate street trees with a minimum 60 millimetre caliper.

- Transformers and other above ground utilities, shall be located within the building, or on private property located away from public view and appropriately screened subject to the satisfaction of the Town.

- Open space links shall be planned and designed to facilitate continuous, uninterrupted movement through, and enhance the use of the open space systems within the Uptown Core. These open space links shall also be connected to the adjacent communities and may include but not be limited to: utility easements, greenway corridors, parks, courtyards, urban squares, valleys, storm ponds and expanded boulevards within the road right-of-way.

- Lighting shall be designed to promote pedestrian comfort, safety and provide a high quality ambiance suitable for the Uptown Core. The design of lighting, as an urban design feature, helps to define the sense of place and pedestrian scale of the Uptown Core. In addition, accent lighting is required to emphasize built form and landscape elements. Pedestrian scale lighting shall be provided adjacent to streets, walkways, public squares, and pedestrian routes and in parks and courtyards.

- Signage in the Uptown Core will conform to a signage by-law prepared by the Town, which address the amount and type of illumination, size, materials, typography and design. The signage by-law shall ensure that signage is incorporated into the building.

- Within the Main Street and Centre Districts, a pedestrian weather protection system including awnings, canopies, colonnades, or front porches along the sidewalk edge of important pedestrian streets or edges throughout the Uptown Core, and adjacent to the urban squares and at entrances to buildings.

iv) Parking, Service Entrances and Driveways

In order to reinforce streets as primary public spaces, the locations of parking, driveways and service entrances need to be carefully considered and coordinated with the locations for pedestrian entrances.

- No individual site access shall be provided from Dundas Street or Trafalgar Road.
- Parking and servicing shall have the least possible impact on the streetscape and public open spaces.
- Parking is encouraged to be provided below grade but, alternatively, may be provided in above grade structures faced with active uses, or in landscaped surface lots to the rear or side of buildings.
- Entrances to below grade or structured parking and service areas shall be incorporated within the design of the building.
- Large surface parking areas are generally discouraged and, in the long term, parking is encouraged to be located below grade. Where surface parking is provided, the visual impact of large surface lots shall be mitigated by a combination of setbacks, and significant landscaping including: pavement treatments, low walls or decorative fencing, landscape materials, trees and lighting throughout parking lots and along the edges.
- Surface parking lots or spaces shall be set back 3.0 metres from the property line. The setback shall be substantially landscaped with decorative fencing and coniferous and deciduous planting providing seasonal interest in order to continue to define the street edge and provide an enhanced environment for pedestrians and drivers alike.
- Access to parking and servicing areas shall occur off local streets or service lanes and to the side or rear of buildings.

v) Loading Areas

Loading areas are not permitted in any yard facing a street, unless they can be adequately screened from view, to the satisfaction of the Town. The location of loading areas will be controlled in the zoning by-law.

vi) Outdoor Storage

No outdoor storage is permitted within the Uptown Core, with the exception of seasonal garden centres established in conjunction with a permitted retail use within the Centre District.

vii) Courtyards

Courtyards will be formed in many of the commercial, residential and mixed-use blocks. Their primary role will be to provide on-site, at-grade open space amenity for occupants of that block.

The functional and spatial characteristics of the courtyard vary depending on building typology and size of the block. The following policies apply throughout the Uptown Core:

- During subsequent site plan review, development applications will be expected to present coordinated design concepts for courtyards that provide appropriate grading, pedestrian and landscape facilities, coordinated servicing and automobile access to maximize usable landscaped open space.

- To be most effective, courtyards shall have a unified landscape design that ensures that gardens and play areas, on individual sites, can be shared with those living or working on the block as a whole.

viii) Grade Related Uses

In the Uptown Core, the provision of community services, restaurants, cafés, stores and display windows at grade provides visual interest, encourages the use of sidewalks, promotes retail continuity and viability, and contributes to a safer and more vibrant pedestrian environment.

- Buildings shall, to the greatest extent possible, front onto public streets, be flush with grade and provide an active use at grade in order to promote pedestrian activity.

- It is expected that ground floor uses will change over time to adapt to a variety of community needs. As a result, the floor-to-ceiling height of ground floors for all buildings shall be sufficient to adapt to all permitted uses.

- Principal pedestrian entrances shall provide direct access to the public sidewalk.

ix) Mid-Block Connections

The provision of publicly accessible, privately-owned, mid-block urban squares and/or walkways is encouraged on individual sites in order to complement the public open space system. These will be provided on an incremental basis as development occurs. Mid-block pedestrian connections shall:

- Be provided within larger development parcels. These are intended to be designed as pedestrian landscaped mews and shall be lit, landscaped and maintained for public use.
- Provide a fine grain of pedestrian circulation and an important connection between two streets.

- Lead to public destinations such as schools, parks and public transit.

- Provide an address to individual residential or business frontages along their lengths.

c) Open Space System

An urban centre typically requires smaller park spaces, distributed strategically throughout the centre to enhance adjacent development. It is the intention of the Town to promote this type of public open space features as key aesthetic and functional components to complement the anticipated urban development, based on the following policies:

i) Where an Urban Square is Required - All development applications on sites equal to or greater than 1.0 hectare in size shall include a location for an urban square. Urban squares are intended as formal pedestrian spaces, in support of the adjacent higher density, mixed use development.

ii) Parkland Dedication - Lands shall be set aside for an urban square as follows:

- For all mixed use development, where there is no residential component, or for any stand-alone non-residential development, the land requirement for an urban square shall constitute 2 percent of the net developable site area. The Town may also require 1 hectare of land for every 300 residential dwelling units that are produced within the existing as-of-right height.

- For all mixed use development where there is a residential component, the land requirement shall be based on the percentage of Gross Floor Area assigned to residential multiplied by 5 percent of the net developable site area, plus the percentage of Gross Floor Area assigned to non-residential multiplied by 2 percent of the net developable site area.

- For all stand-alone residential development that is within the as-of-right permitted height, the land requirement for an urban square shall constitute 5 percent of the net developable site area.

- For dwelling units produced in excess of the existing as-of-right permission for height, the Town shall not apply the alternative parkland dedication standard of 1 hectare for every 300 units for any new development within the Uptown Core.

- Where a development is unable, or does not wish to provide all of the required parkland, the Town may accept cash-in-lieu of parkland. The cost of parkland shall be established by the Town, and may be waived for any specific development, at the discretion of the Town. The funds raised through this provision shall be utilized by the Town solely for the enhancement of the parkland supply or improvements to existing parks within the Uptown Core.

iii) Urban squares shall be developed on the basis of the following:

- An urban square shall have a minimum frontage on the abutting sidewalk of 15 metres, and a depth of at least 15 metres.

- Large sites may include a single, large scale Urban Square/Plaza and/or a series of smaller Urban Squares/Plazas.

- Urban squares shall be designed to reinforce a high quality formalized relationship with its adjacent building use and streetscape.

- Hard and soft landscape elements and features within the urban square shall be designed to define and articulate activity areas, circulation, entry points, seating and gathering areas.

- Urban squares may be dedicated to the Town, or may remain in private ownership. Where an urban square is to remain in private ownership it shall be built and maintained by the landowner to the satisfaction of the Town and an easement with the Town shall ensure that the urban square is open and accessible to the public at all times, or as identified in the easement agreement.

iv) The Town may waive any requirement for parkland deduction for any stand-alone office building, or for the office component of a mixed use building.

d) Environmental Sustainability and Energy Conservation

Development within the Uptown Core shall strive to reflect the most current understanding and knowledge of environmental sustainability and energy conservation through an integrated design process. Specifically, environmental sustainability and energy conservation measures within the Uptown Core shall:

i) Encourage the use of District Energy throughout the Uptown Core to provide for heating and cooling through one or more centralized energy plants that can produce energy with high efficiency and with low environmental impacts.

ii) Encourage development that is consistent with programs to reduce energy consumption and promote waste reduction. Energy conservation will be encouraged through appropriate site planning, urban design and the use of energy efficient materials and landscaping.

iii) Ensure that all new buildings that are constructed within the Uptown Core adhere in design, construction and operation to a minimum standard of Energy Star certification or equivalent certification system.

iv) Require that all public buildings within the Uptown Core adhere in design, construction and operation to a minimum standard of LEED Gold certification or equivalent certification system.

v) Require that the Town undertake a review of available energy certification and rating systems, such as LEED-NC and LEED-ND, on an annual basis to ensure that development within the Uptown Core complies with the most current environmental and energy conservation standards and programs.

vi) The Town may, through Section 37 of the Planning Act, or through an incentive program established through a Community Improvement Plan, provide financial or other incentives to the private sector to assist them in achieving appropriate sustainability and/or energy conservation programs. Suitable programs may include, but are not limited to:

ENERGY
Geothermal - Communal / Individual
Wind Turbine - Communal / Individual
Solar Power
- Passive Solar Orientation (Including strategic planting of deciduous, and coniferous trees)
- Photovoltaic's
- Solar Thermal

WATER MANAGEMENT
Bio-swale / alternative service methods
Constructed Wetlands
Greywater System (park irrigation, communal car wash)
At-source infiltration methods (driveways, trenches, directing to open space)
Cisterns and Rain Barrels
Porous paving materials

LANDSCAPING / PARKS / OPEN SPACE
Xeriscaping
Green Roofs
Centrally located recreational opportunities
Conservation Lots / Green fencing (3m rear yard planted buffer between lots)
Protection/enhancement/connection to natural environment
Heat island reduction - tree canopy closure on local streets

TRANSPORTATION
Designated bikeway / walkway on arterial ROW
Regional trail system
Night sky opportunity - lower (light emission) street lights
Car Sharing / Car Pool Network
5 minute (400m) walking community
Pedestrian friendly traffic calming measures (curbed roads, traffic circles, etc.)
Pedestrian connectivity
Reduced ROW standards

GREEN BUILDINGS
Energy Star 'Green'
R-2000
LEED-H
Local Materials and Resources
SOCIAL
Sustainable Community Agriculture / Organic Farmer's Market / Garden plots
Live / Work Opportunities
Higher Densities
- Lifecycle Community
- Diversity of Housing Forms
Community Centre (for health and recreational opportunities)
- Senior's Centre
- Daycare
Zero garbage target (Composting, higher diversion rate in recycling)

1.5 Circulation System

a) Transportation

The road and development block pattern is a fundamental component of this study. The Uptown Core Plan provides a network of major and minor collector roads and local roadways in a modified radial grid pattern connecting to the adjacent arterials. This road system is intended to provide a range of alternative routes into the Uptown Core. The specific road network is illustrated in FIGURE "P3" Road Network.

i) Objectives

Efforts will be made within the Uptown Core to achieve the following transportation objectives:

- Ensure accessibility.
- Ensure a basic level of mobility for all residents of the Town of Oakville.
- Examine means of reducing peak hour automobile travel, and maximizing the modal split to walking, cycling and transit.
- Minimize the environmental impact of traffic through the encouragement of transit usage.

ii) Transit

A major transit terminal facility is located in the Uptown Core, as identified on FIGURE "P3" Road Network. The existing transit terminal configuration and capacity is expected to grow over a long period of time and its future design is expected to be integrated into a mixed use building.

The Town shall encourage a high degree of transit usage. In the long term the Town will give consideration to the implementation of a coordinated parking policy which may include a public parking program, a transit priority policy and optimization of access between the land uses and the transit system.

A Transit Functional Study will be undertaken by the Region of Halton and the Town of Oakville to determine the linkages between the Regional and Local transit systems, the level of service to be provided within the Uptown Core, the space needs of the transit terminal, the design parameters of the transit terminal and the transit routes within the Uptown Core.

iii) Road System

The Uptown Core road system shall provide for a safe and convenient internal circulation system for vehicles, including transit vehicles, pedestrians and cyclists and shall be complementary to the adequate functioning of abutting arterial roads.

The use of grade separations for vehicles and pedestrians at key intersections with Trafalgar Road and Dundas Street shall be considered only as a last resort. The Town will seek to avoid grade-separated intersections by encouraging:

- Public transit and Transit Oriented Development.
- The appropriate physical design of the road system in the context of the urban design objectives.
- Appropriate traffic management provisions.

The Uptown Core will provide a network of major and minor collector roads and local roadways in a modified radial grid pattern connecting to the adjacent arterials. This road system is intended to provide a range of alternative routes into the Uptown Core. The specific road network is illustrated in FIGURE "P3" Road Network.

Section II. B. 6 Streetscapes identifies the road cross sections for each of the various roads identified within the road hierarchy identified on FIGURE "P3" Road Network. The right-of-way widths and design parameters identified on these road cross sections may be modified without an amendment to this study, subject to approval by Council. The introduction of Alternative Design Standards (ADS) such as reduced daylight triangles and reduced curb radii is strongly encouraged.

Road connections to Dundas Street and Trafalgar Road which have been approved by the appropriate governmental authority will be permitted without further amendment to the Official Plan.

It is the requirement of this Plan that all roads identified within the Uptown Core shall be built and maintained to an operational standard satisfactory to the Town, and shall provide for permanent public access for traffic through the Uptown Core. The Town may require the development and/or dedication of some or all of such roads at any time, at Council's discretion. In the meantime, roads may remain in private ownership. However, the Town may take ownership of one or more of such roads at any time at its discretion.

Where the lands have been identified through the development approval process for the development of a public road, and where such lands form part of a development site, it is the policy of Council to require the dedication, or to secure the acquisition by other means, of such land before permitted the development/redevelopment of the site.

From time to time, at the discretion of Council, lands for planned road or transit improvements may be directly purchased or expropriated by the Town, in order to foster the planned and orderly development of the Uptown Core. It is Council's intention that the funds for such acquisition of land and for the construction of planned road improvements be provided to the greatest

extent practical through a charge against developments in the Uptown Core and/or the Town and/or the Region under the provisions of the Development Charges Act, or by other means available to the Town.

iv) Parking General

The parking policy for the Uptown Core shall form a vital part of the integrated transportation policy. The Town may consider the development of a public parking program. Parking will generally be provided in underground or deck structures.

On-Street parking will be permitted throughout the Uptown Core, with the exception of Dundas Street and Trafalgar Road. It is the objective that on-street parking shall be permitted at all times, but where that is not possible, on-street parking shall be permitted at off-peak hours.

Surface parking will be restricted within the Central District. It is anticipated that overtime, surface parking areas within the Central District will redevelop with parking provided in underground or deck structures in order to assist in the creation of a lively and animated urban environment.

Zoning by-laws will restrict development potential of properties where surface parking is included on the site and may prohibit or regulate the location and screening of surface parking areas.

Notwithstanding any of the preceding parking policies, all developments within the Uptown Core shall comply with the parking lot design policies found in Section 1.4 of this study.

v) Parking Requirements

To assist with the reduction in large surface parking areas and to recognize that planned urban context for the Uptown Core will require less parking, the following parking standards will be used in calculating the required parking spaces for all development proposals:

- For all retail and service commercial uses, including restaurants - a minimum of 2.0 and a maximum of 4.0 spaces/100 square metres of Gross Leaseable Floor Area. Reductions in current parking standards to this minimum shall be graduated over time unless alternate shared parking arrangements are proposed.

- For hotels/inns - 1.0 spaces per room.

- For all office uses - a minimum of 2.0 and a maximum of 3.0 spaces/100 square metres of Gross Leaseable Floor Area. Reductions in current parking standards to this minimum shall be graduated over time unless alternate shared parking arrangements are proposed.

- For all condominium-based residential uses, a minimum of 1.25 and a maximum of 1.75 spaces per unit, inclusive of visitor parking.

Where a public parking facility is developed, developments within 100 metres the Town may reduce the minimum parking requirement, in recognition of the enhanced public parking supply.

Parking requirements for any individual development do not necessarily need to be provided on the same parcel, or on a parcel contiguous to the development. Required parking for any development may be provided on any parcel within 100

metres of the development that is being served by the parking facility.

Where a development is unable to provide all of the required parking spaces, the Town may accept cash-in-lieu of the parking spaces. The minimum parking requirement shall be used to calculate any parking space deficiency. The cost of each parking space shall be established by the Town, and may be waived for any specific development, at the discretion of the Town. The funds raised through this provision shall be utilized by the Town solely for the purchase of property for public parking and/or the building of public parking structures within the Uptown Core.

vi) Cycling Policy

Development of infrastructure within the Uptown Core shall give consideration to the encouragement of cycling as a mode of transportation. In this regard, Council shall consider the formulation of an appropriate cycling policy so as to achieve this objective.

vii) Pedestrian Linkages

Pedestrian linkages shall be established throughout the Uptown Core. Major pedestrian circulation shall be encouraged on sidewalks along major streets within the Uptown Core.

Pedestrian linkages are to be landscaped to high urban standards with street trees, paving and other appropriate street furniture. A strong connection between the Uptown Core and the community park in the neighbourhood immediately south of the Uptown Core will be established along all streets leading to the park. Pedestrian linkages will also be established along the utility corridors and along the TransCanada Pipeline.

1.6 Implementation

a) General

The Uptown Core will be developed over a number of years, and the existing initial phases of development may evolve into more intensive development in subsequent phases. As in other areas of the Town, the Uptown Core will be influenced by changing economic, social and demographic conditions and the Core area will respond to these influences.

The implementation policies are developed to allow for both the phased development of all major land use components within the Core area and to allow for flexibility to change over time within certain parameters.

b) Requirements for New Development

i) All New Development

Prior to any development being permitted within the Uptown Core, a number of conditions must be met, including:

- An Urban Design Study, prepared by the proponent and approved by the Town. This Urban Design Study will identify the full build-out of an individual development block and will illustrate how the objectives and policies of this Development Strategy will be achieved.

- The Urban Design Study will examine, among other things, streetscape details, massing of buildings, setbacks of the buildings from the street, the provision

of parking, landscaping, stepping of buildings along the vertical plane, height, pedestrian and vehicular access, provisions of private open space, possible location for secondary streets and lanes, and details of the street hierarchy system as further explained in Section 1.0.4 (viii) of this report.

- The individual sites intended for development are created by means of plans of subdivision or land division applications.

- The Urban Design Study will form the basis of the implementing zoning by-law and future site plan approvals.

- A Traffic and Transit Impact and Operations Study, prepared by the proponent and approved by the Town in consultation with the Region which reviews the effect of the proposed development on the functioning of the transportation network. The Traffic and Transit Impact and Operations Study shall be prepared on a development block by development block basis. The Traffic and Transit Impact and Operations Study shall ensure that:

- All access points to public roads servicing the parcel have been determined to the satisfaction of the Town.

- Any transportation network infrastructure required to accommodate the proposed development or a phase of the development shall be constructed prior to or coincident with the development of the lands.

- Any roads and other transportation infrastructure requirements identified within this Development Strategy have been secured by the Town, to the satisfaction of the Town.

- A Functional Servicing Plan, prepared by the proponent and approved by the Town which will examine how sanitary sewer, water, and storm sewer services will be extended into the block, and to ensure that all properties within the Block can be appropriately developed. The Functional Servicing Plan shall be prepared on a development block by development block basis. The Functional Servicing Plan shall ensure that:

  - Full municipal services are available, or can be made available, to the serve the proposed development.

  - All development conforms to the Town's "Storm Drainage Criteria Manual".

ii) New Retail Development

In addition to all of the requirements identified above, a detailed economic impact study may be required for any retail commercial development in accordance with the Regional Official Plan; the study shall be approved by the Town and the Region.

c) Zoning

Zoning for the Uptown Core may be established substantially in advance of development. The zoning may be passed under Sections 34 and 35 of the Planning Act, and a holding designation may be placed on the lands. This holding designation will be removed upon completion of the studies previously referred to in this Section of the Development Strategy. The Town of Oakville may also initiate zoning changes within the Uptown Core in order to implement provisions of the Official Plan.

For the lands east and west of Trafalgar Road in the Uptown Core, zoning may be subject to an "H" or "Holding" provision. This holding provision will be removed when all the require-

ments in the preceding paragraph have been met, all the necessary studies have been completed, and when the following specific requirements have been satisfied.

d) Site Plan Control

All development within the Uptown Core shall be subject to the Site Plan Control provisions of the Planning Act.

Site Plan applications within the Uptown Core will be reviewed taking into consideration matters relating to site landscaping, grading, access and site development. The Town may also review matters relating to exterior building design, including the character, scale, appearance, colour, building materials and design features of buildings and their sustainable design.

The Site Plan Control By-law will specify the appropriate level of detail of design to be reviewed through the Site Plan Approval process.

e) Community Improvement Policies

The entire Uptown Core Area shall be considered for designation as a Community Improvement Project Area and the Town shall consider the preparation of a Community Improvement Plan.

The intent of the Community Improvement Plan will be primarily to identify key public realm improvement projects and to identify potential development incentive programs to assist the private sector in the achievement of the Town's urban vision for the Uptown Core.

The establishment of a Community Improvement Project Area, and the preparation of a Community Improvement Plan by the Town shall be contingent upon the establishment of a Business Improvement Area within the Uptown Core Development Strategy Area.

f) Sustainable Development Policies

The Uptown Core Area shall develop Sustainable Community Guidelines that give the Town of Oakville a suitable framework for the development of a sustainable community. Sustainable Community guidelines should include basic sustainable information, plans and policies needed to develop and implement sustainable communities. An understanding of the provincially available funding for different programs should be part of the guidelines to further encourage public and private development support.

g) Utility Corridors

Traversing the Uptown Core Development Strategy Area are linear utility corridors - Ontario Hydro, TransCanada Pipelines, and InterProvincial Pipelines. These existing utility corridors are permitted uses and adjacent development will be required to recognize the constraints associated with these utilities.

Subject to approval from the appropriate authority, the utility corridors will also be used for open space purposes and as part of the pedestrian and bicycle trail system.

h) Status of Existing Developments and Developments Permitted Under Previous Amendments to the Official Plan/Zoning By-law

i) Deemed to Conform

Existing developments throughout the Uptown Core are expected to continue to exist in the short to mid-term, and in some cases, in the long-term. Therefore, uses permitted under previously approved amendments shall be deemed to conform to this Plan.

ii) Minor Extensions/Expansions

Minor extensions or expansions of such developments shall be permitted without amendment to this Plan, provided that the intent of this Development Strategy is not compromised and the tests prescribed below, are met. In consideration of such matters, particular attention shall be given to ensuring that:

- The road pattern and transit routes envisioned by this Development Strategy are not compromised or precluded in the long-term by the expansion or change; and,
- The expansion or change improves an existing and identified problem.
- Before making any decision on an application, the following requirements (or any of them, as considered relevant to each specific application) shall be fulfilled tot safeguard the wider interests of the general public:
- That the proposed expansion or enlargement of the existing development shall not unduly aggravate the situation created by its existence, especially in regard to the requirements of the zoning by-law;
- That the characteristics of the existing development and the extension or enlargement shall be examined with regard to noise, vibration, fumes, smoke, dust, odor, lighting, parking and traffic generation;
- That the neighbouring developments will be protected where necessary by the provisions of area for landscaping, buffering or screening, devices and measures to reduce nuisances and, where necessary, by regulations for alleviating adverse effects caused by outside storage, lighting or advertising signs;

Such provisions and regulations shall be applied to the proposed extension or enlargement and, where feasible, shall also be extended to the existing use in order to improve its compatibility with the surrounding area.

Notwithstanding that, in all cases where an existing use adversely affects the amenity of the surrounding area, consideration shall be given to the possibility of ameliorating such conditions, as a condition of approving an application for extension or enlargement of the existing use, especially where public health and welfare are directly affected.

Figure P • Land Use Districts

Town of Oakville • Uptown Core Community

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Figure P1 • Height
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Figure P2
Height Subject to Bonusing
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December 19, 2008

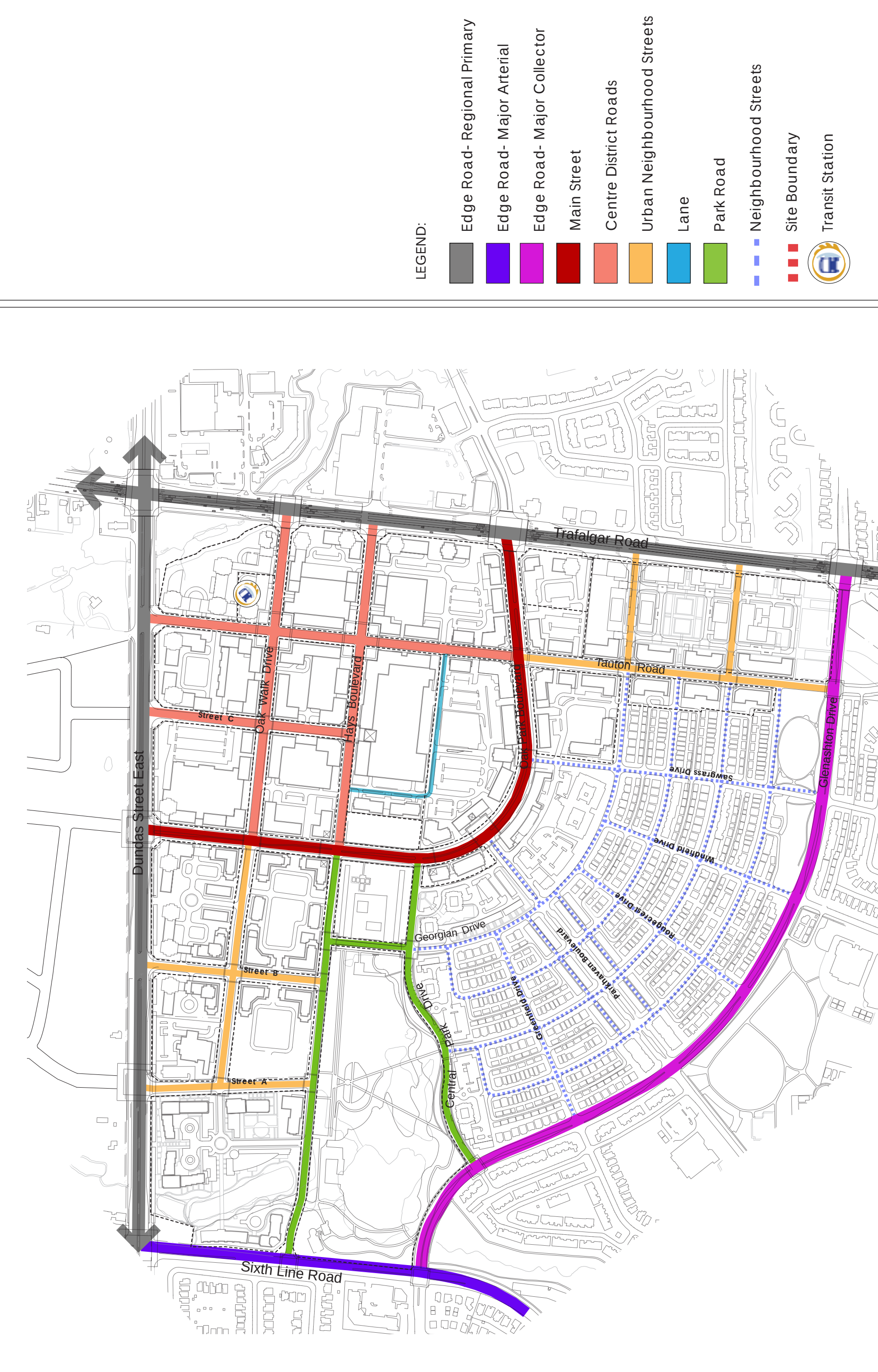

Figure P3 • Road Network
Town of Oakville • Uptown Core Community
December 19, 2008