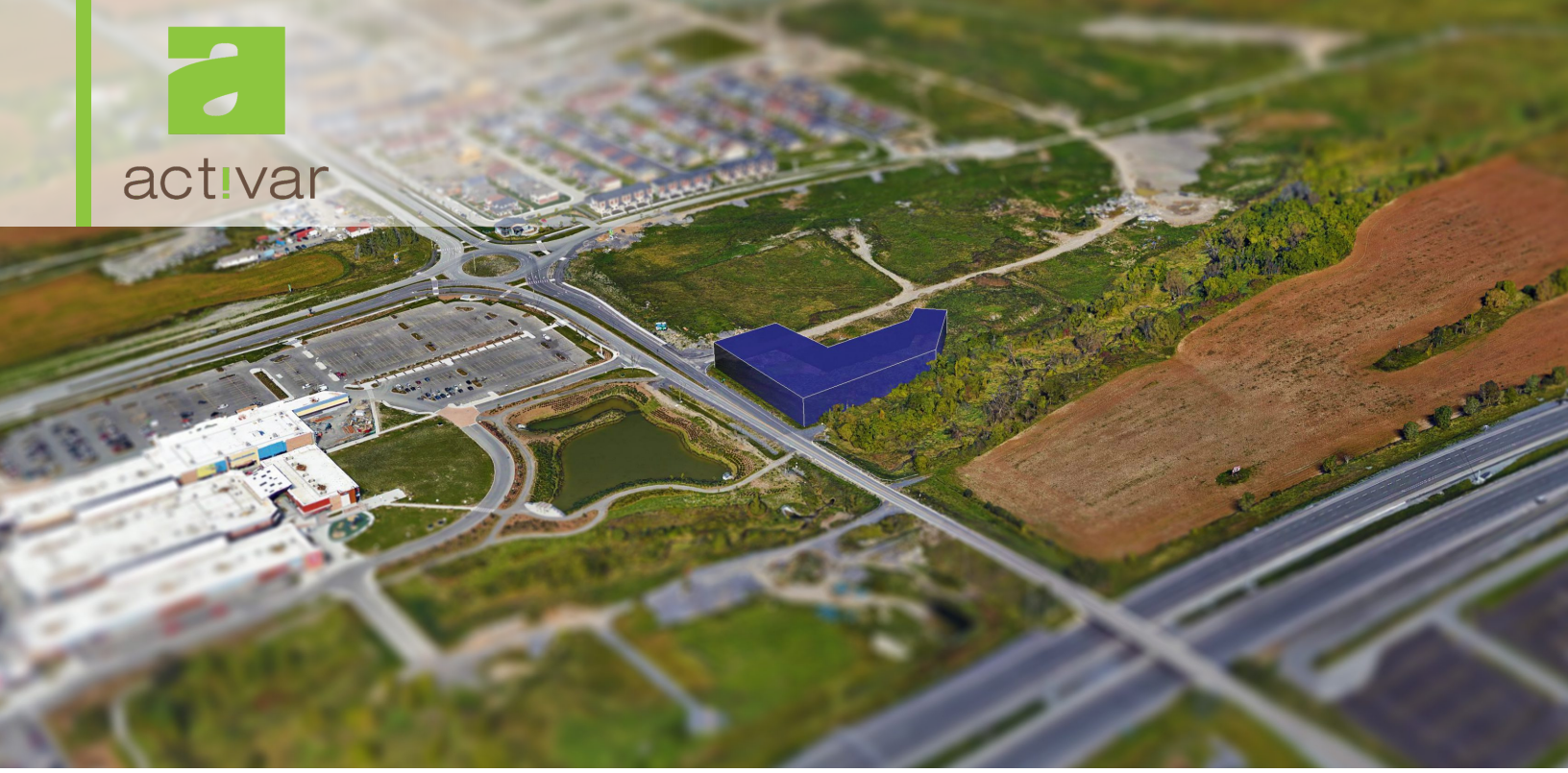
activar



340 Huntmar Drive

Transportation Impact Assessment Strategy Report

APRIL 2018

PARSONS

340 Huntmar Drive

TIA Strategy Report

prepared for:
Activar
2-107 Fourth Avenue
Ottawa, ON K1S 2L1

prepared by:
PARSONS
1223 Michael Street North
Suite 100
Ottawa, ON K1J 7T2

April 27, 2018

476531-01000

TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise [check ✓ appropriate field(s)] is either transportation engineering ☑ or transportation planning ☐.

[1,2] **License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.**

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d 'infrastructure et Viabilité des collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at Ottawa this 27 day of April, 2018.
(City)

Name: Christopher Gordon
(Please Print)

Professional Title: Senior Project Manager

Signature of Individual certifier that s/he meets the above four criteria

Office Contact Information (Please Print)
Address: 1223 Michael Street
City / Postal Code: Ottawa K1J 7T2
Telephone / Extension: 613 – 299 - 6977
E-Mail Address: Christopher.Gordon@Parsons.com

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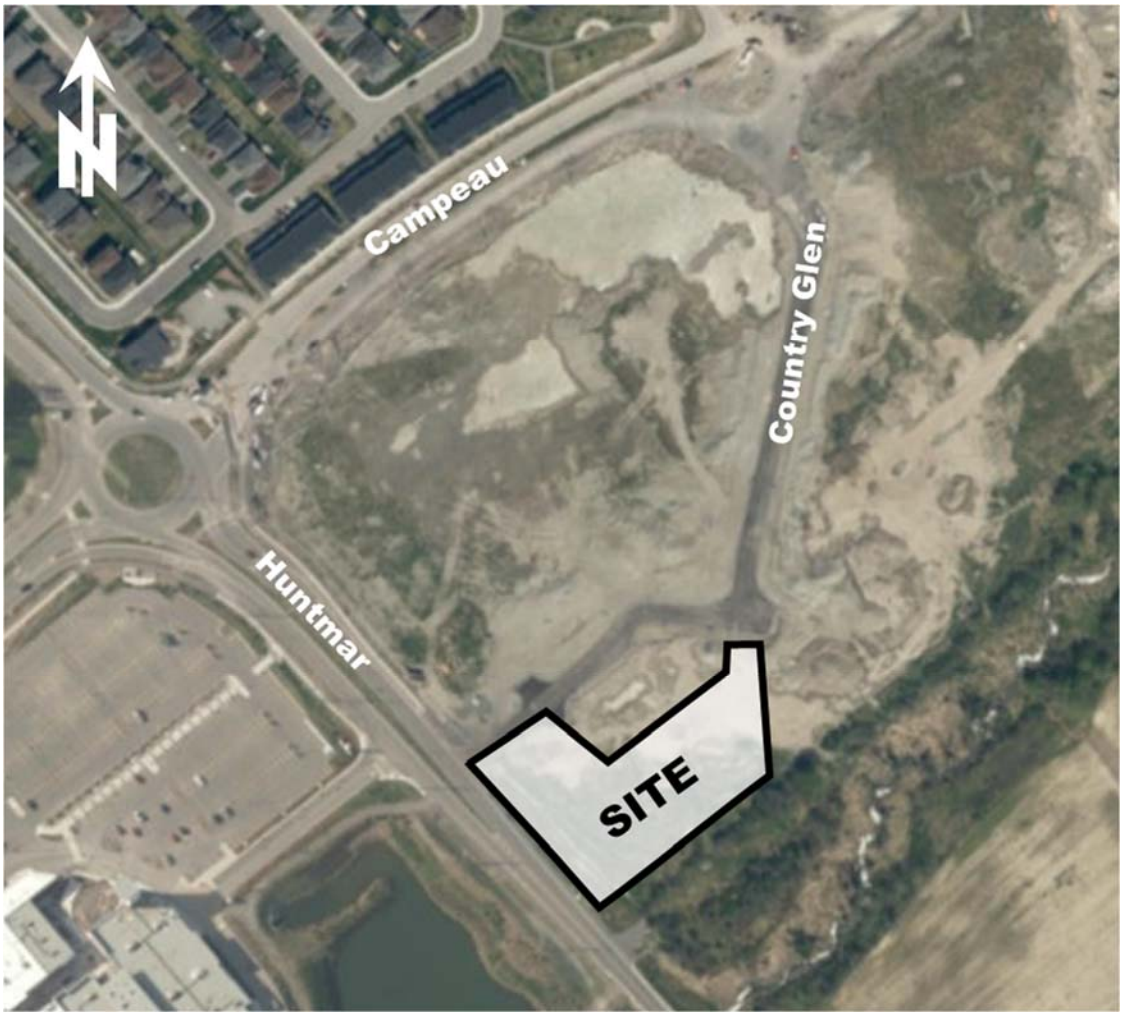
TIA Strategy Report

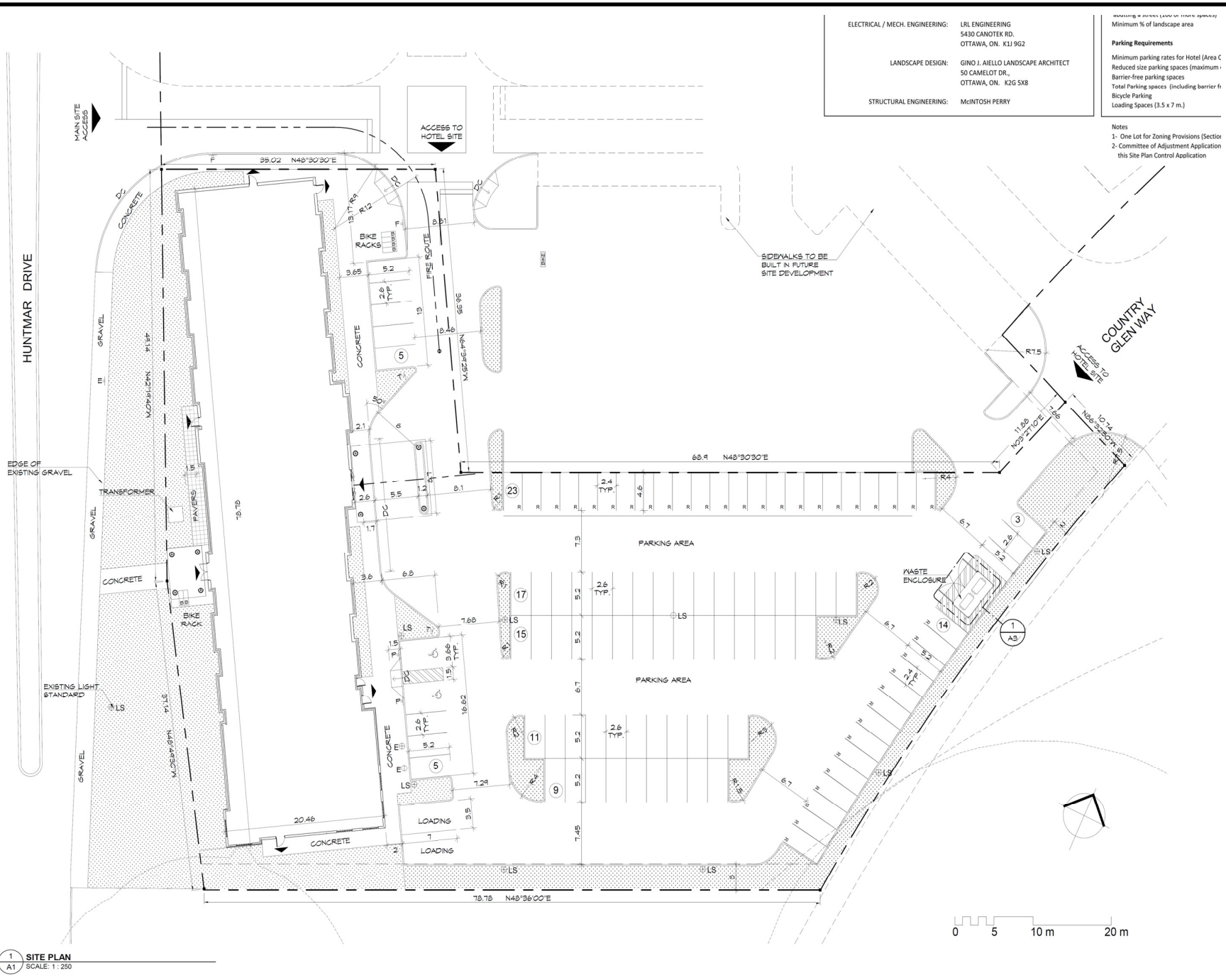
1. INTRODUCTION

From the information provided, it is our understanding that the proponent is proposing to construct a hotel development located at 340 Huntmar Drive with an estimated date of occupancy in 2020. The 4-storey development will be constructed in a single phase and consist of approximately 108 rooms with a surface parking lot comprised of 102 parking spaces proposed for the site. The subject lands are currently unoccupied and zoned for mixed-use centre. Accesses to the development are proposed on Huntmar Drive (right-in/right-out driveway) and on Country Glen Way (full movement driveway). The local context of the site is provided as Figure 1 and the proposed Site Plan is provided as Figure 2.

Figure 1: Local Context



As part of the Site Plan Approval process, the City of Ottawa requires a submission of a formal Transportation Impact Assessment (TIA) consistent with their updated 2017 guidelines. With respect to these guidelines, the Scoping, Forecasting and Strategy Reports have been prepared and are included herein.



PARSONS

Figure 2: Proposed Site Plan

A Transportation Impact Study (TIS) was prepared for the subject site (and the lands to the north) in November 2013, by Parsons. At the time, the lands were planned to be developed by Minto to be a shopping centre consisting of approximately 110,000 ft^2 of retail. The total projected amount of traffic generated by the proposed shopping centre was approximately 90 and 350 veh/h during the weekday morning and afternoon peak hours. According to the Minto Arcadia Retail TIS, "there has been considerable planning work completed for this area to assist in establishing the future road network. This planning work includes the traffic generated by the subject lands."[1] As part of the conclusions of the TIS, "the future transportation network will have sufficient capacity to accommodate the projected traffic generated by the subject site and area developments."[2] No capacity analysis was required at the study area intersections (Huntmar/Campeau and Campeau/Country Glen) to account for the increase in traffic volumes, as this had already been completed during the planning stages for the area road network.

In addition to the Minto Arcadia Retail Development TIA, a more recent study has been completed for the lands directly adjacent to the north, referred to as Minto Arcadia Stages 3 and 4. The TIA was completed by Parsons in January 2017. Similar to the Arcadia Retail TIA, the conclusions in this report state "As the recently constructed two-lane roundabout at the Huntmar/Campeau intersection has a great amount of spare capacity, and was designed to accommodate planned development of all Kanata West, no analysis of this roundabout is required."[3] In addition, it states "As roundabouts will soon (2020/2021) be constructed at the Campeau/Country Glen Way and Campeau/Riverchase intersections, no analysis is required of these two interim connections to the two lane Campeau Drive (that currently does not extend across the Carp River)."[4]

Following the two previously submitted studies, the capacity at the two study area intersections, Huntmar/Campeau and Campeau/Country Glen is sufficient to accommodate the traffic generated by the subject lands, as this development was accounted for in Kanata West planning. A review of the change in traffic generation from the previously proposed retail centre and the currently proposed hotel are included herein in Section 3.

2. SCOPING

The TIA and ensuing analysis includes the Huntmar/Campeau and Campeau/Country Glen roundabout intersections and the signalized Huntmar/Cyclone Taylor intersection.

2.1. EXISTING AND PLANNED CONDITIONS

2.1.1. PROPOSED DEVELOPMENT

The proponent is proposing to construct a hotel development located at 340 Huntmar Drive with an estimated date of occupancy in 2020. The 4-storey development will be constructed in a single phase and consist of approximately 108 rooms with a surface parking lot comprised of 102 parking spaces proposed for the site. The subject lands are currently unoccupied and zoned for mixed-use centre. Accesses to the development are proposed on Huntmar Drive (right-in/right-out driveway) and on Country Glen Way (full movement driveway). The local context of the site is provided as Figure 1 and the proposed Site Plan is provided as Figure 2.

[1] Delcan. *Arcadia Retail Development: Transportation Impact Study*. 2013. P. 11
[2] Delcan. *Arcadia Retail Development: Transportation Impact Study*. 2013. P. 11
[3] Parsons. *Arcadia Subdivision, Kanata: Stages 3 and 4 – Transportation Brief*. 2017. P. 8
[4] Parsons. *Arcadia Subdivision, Kanata: Stages 3 and 4 – Transportation Brief*. 2017. P. 9

2.1.2. EXISTING CONDITIONS

Area Road Network

Huntmar Drive is a north-south city-owned arterial, which extends from the March Road in the north to Hazeldean Road in the south, where it continues south as Iber Road. Within the study area, Huntmar Drive has a two-lane cross section, south of the site, which transitions into a four-lane cross-section north of the site. The posted speed limit is 50 km/h.

Campeau Drive is an east-west city-owned arterial, which extends from the Palladium Drive in the west to Country Glen Way in the east. Campeau Drive is planned to be extended to the east to Didsbury Road, across the Carp River. Within the study area, Campeau Drive has a four-lane divided cross section with auxiliary turn lanes provided at major intersections. The posted speed limit is 60 km/h.

Country Glen Way is an east-west city-owned local roadway with a two-lane cross section. The posted speed limit is 40 km/h.

Trans-Canada HWY/HWY 417 is an east-west provincial highway with a divided eight-lane cross section. The closest access point is on Palladium Drive, approximately 800m from the subject site. The posted speed limit is 100 km/h.

Existing Driveways

There are two existing driveways within close proximity to the subject development which are located on the west side of Huntmar Drive. One is located directly across from the proposed site driveway and is a right-in/right-out driveway given the existing median. The other is a proposed signalized intersection located approximately 190m south of the proposed site driveway. Both driveways are access point for Tanger Outlets.

Pedestrian/Cycling Network

With respect to pedestrians, sidewalk facilities in the vicinity of the site are provided along both sides of Campeau Drive, Country Glen Way and Huntmar Drive (north of the site).

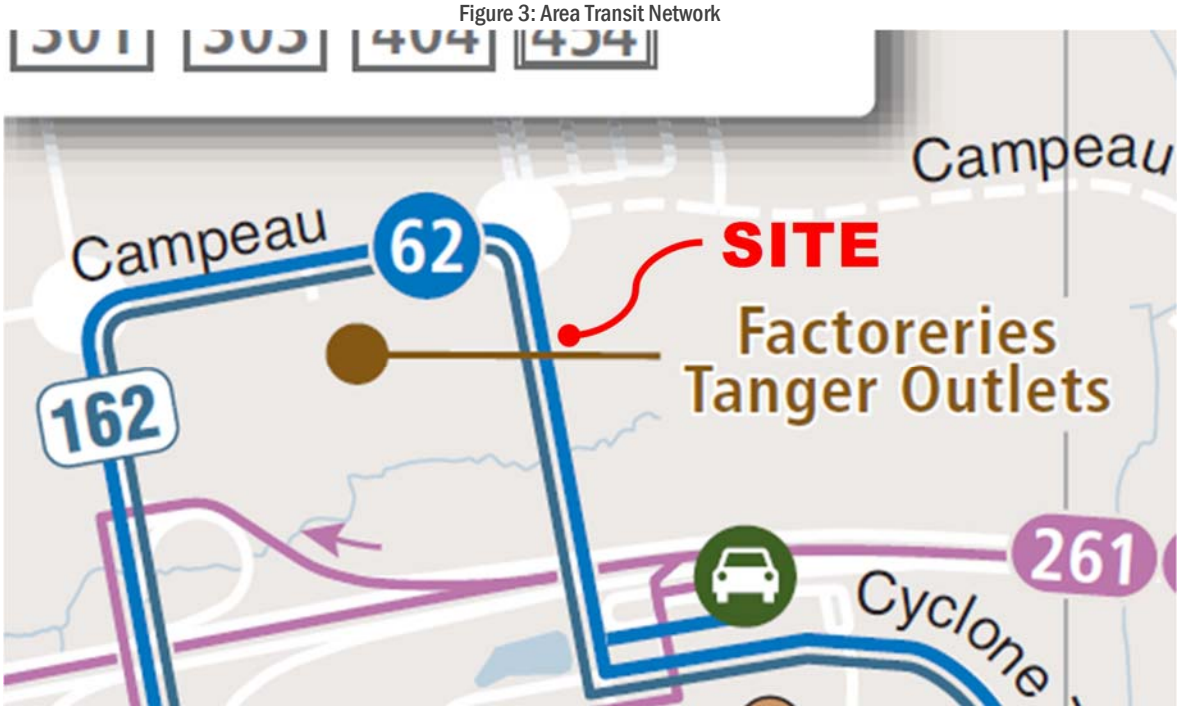
With respect to cyclists, according to the Ottawa Cycling Plan, Huntmar Drive and Campeau Drive are classified as a “Spine” routes. Cycle tracks are currently provided along both sides of Huntmar Drive (north of the site to the Campeau Drive roundabout), on the south side of Campeau Drive, west of Huntmar and along both sides of Campeau Drive east of Huntmar.

According to the Cycling Plan, a ‘major pathway’ is planned along the southern border of the site, towards Campeau Drive.

Transit Network

Transit service within the vicinity of the site is currently provided by OC Transpo Local Routes #62 and 162. Local Route #62 provides frequent all-day service and Local Route #162 provides weekday afternoon/evening service and all-day service on weekends. The closest transit stops are located approximately 70 m north of the site on both sides of Huntmar Drive.

Figure 3: Area Transit Network



Existing Area Traffic Management Measures

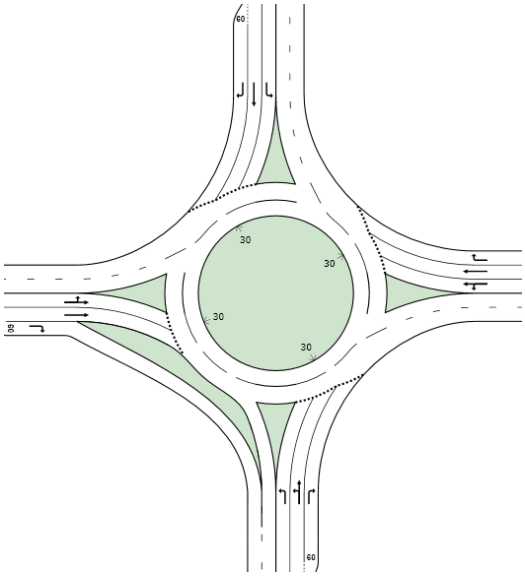
Identified in the City of Ottawa's Area Traffic Management (ATM) Guidelines, the following ATM measures for arterial roadways have been implemented on Campeau Drive and Huntmar Drive:

- Median barriers;
- Streetscaping;
- Sidewalks; and
- Roundabouts.

Existing Study Area Intersection

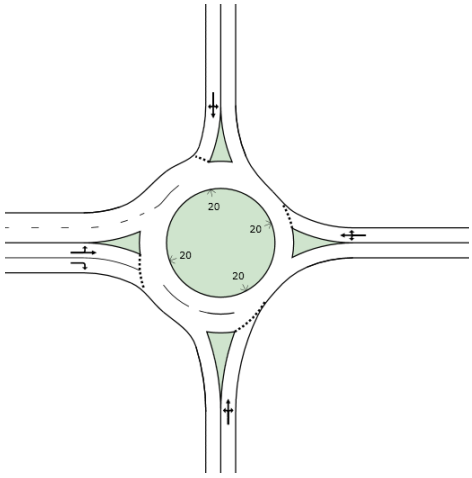
Campeau/Huntmar

The Campeau/Huntmar intersection is a four-legged multi-lane roundabout intersection. The eastbound approach consists of a shared through-left lane, a through lane, and a channelized right-turn lane. The westbound approach consists of a shared through-left lane, a through lane, and a right-turn lane. The northbound approach consists of a left-turn lane, a shared through-left lane, and a right-turn lane. The southbound approach consists of a left-turn lane, a through lane, and a right-turn lane. All movements are permitted at this location.



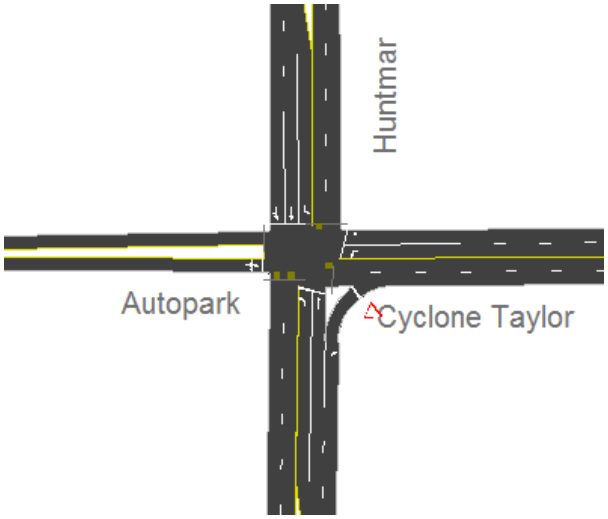
Campeau/Country Glen

The Campeau/Country Glen intersection is a four-legged multi-lane roundabout intersection. The eastbound approach consists of a shared through/left-turn lane and a future right-turn lane. The southbound approach consists of single full movement lane. The westbound approach of the roundabout is currently a service road only and the northbound approach of the roundabout is currently under construction and will serve the proposed subject development.



Huntmar/Cyclone Taylor/Autopark

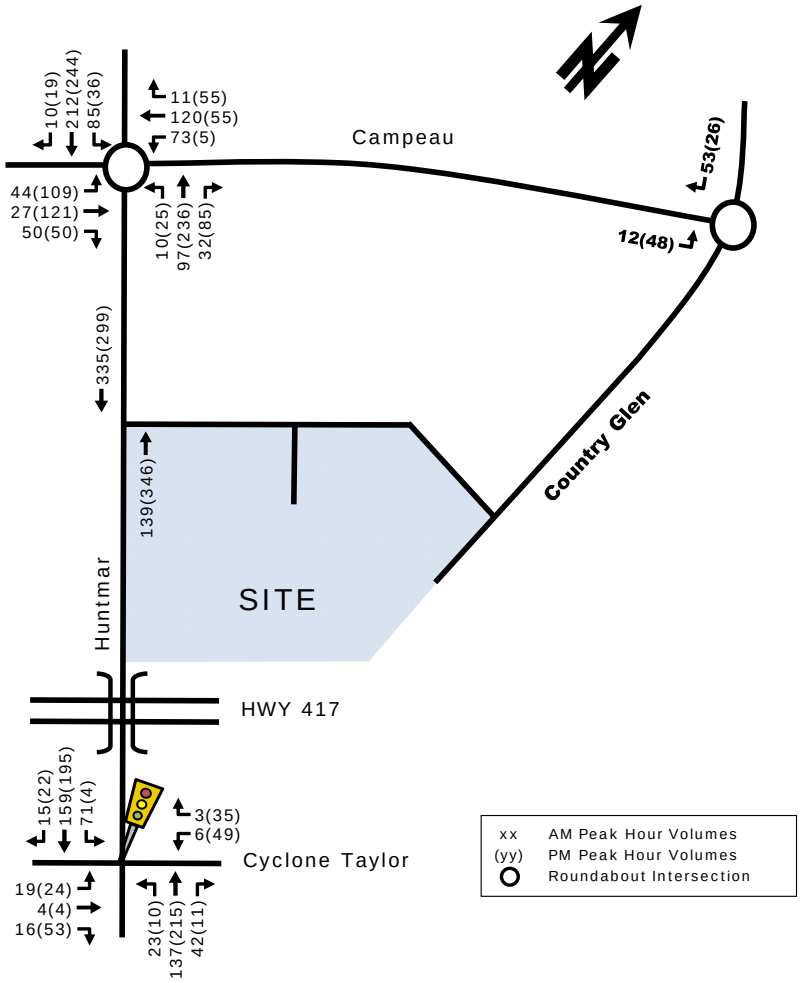
The Huntmar/Campeau/Autopark intersection is a four-legged intersection. The eastbound approach is a private approach that consists of a single full-movement lane. The westbound approach consists of a left-turn lane and a right-turn lane. The northbound approach consists of a left-turn lane, a through lane, and a channelized right-turn lane. The southbound approach consists of a left-turn lane, a through lane, and a shared through/right-turn lane.



Based on the Arcadia Retail Development TIS (by Parsons) and the Arcadia Subdivision, Kanata: Stages 3 and 4 Transportation Brief (by Parsons), it is understood that the Campeau/Huntmar roundabout intersection has been built to support the proposed development and surrounding community. As such, no capacity analysis is required for the Huntmar/Campeau intersection. In addition, the Campeau/Country Glen roundabout is planned for the Kanata West developments and given the significant spare capacity, no capacity analysis is required for the traffic generated from the subject development.

Illustrated as Figure 4, are the most recent weekday morning and afternoon peak hour traffic volumes obtained from the City of Ottawa at the Huntmar/Campeau and Huntmar/Cyclone Taylor intersections. Note that the most recent count for the Huntmar/Campeau intersection is in 2011, prior to the construction of the roundabout. As such, turning movements were derived from the aforementioned Minto Arcadia Stages 3 and 4 TIA Report. These peak hour traffic volumes are included as Appendix A.

Figure 4: Existing Peak Hour Traffic Volumes



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Existing Road Safety Conditions

Collision history for the study area (2012 to 2016, inclusive) was obtained from the City of Ottawa for the Huntmar/Campeau and Huntmar/Cyclone Taylor intersections, and along Huntmar Drive, north of Cyclone Taylor. The total number of reported collisions in the 5-year period was 17 collisions, which equates to approximately 3 to 4 collisions per year. Most collisions (88%) involved only property damage, indicating low impact speeds, and 12% involved personal injuries. The primary causes of collisions cited by police include; sideswipe (29%), angle (29%), rear end (18%) and single vehicle (18%) type collisions.

A standard unit of measure for assessing collisions at an intersection is based on the number collisions per million entering vehicles (MEV). At intersections within the study area, reported collisions have historically take place at a rate of:

- 0.58/MEV at the Campeau/Huntmar intersection; and
- 0.11/MEV at the Cyclone Taylor/Huntmar intersection.

It is noteworthy that within the 5-years of recorded collision data there was 1 collision involving a pedestrian and none involving cyclists. The collision involving a pedestrian occurred at the Cyclone Taylor/Huntmar intersection in 2012 and resulted in non-fatal injuries.

The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix B.

2.1.3. PLANNED CONDITIONS

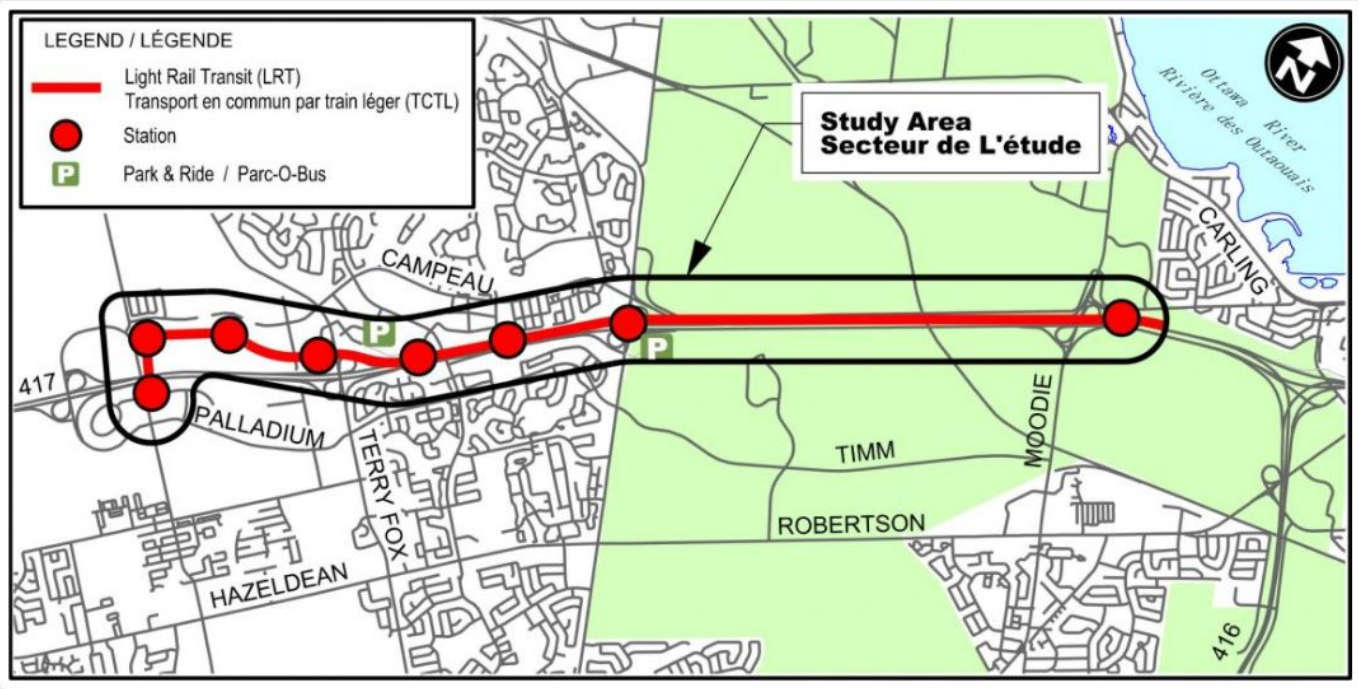
Planned Study Area Transportation Network Changes

Transit Priority Projects

Identified in the City's 2013 Transportation Master Plan (TMP) is Bus Rapid Transit (BRT) along HWY 417 to Huntmar Drive, which continues south, parallel to Huntmar Drive. This is identified in the 2031 Network Concept, but is not identified on the 2031 Affordable Network. Transit priority (isolated measures) is proposed along the same corridor, south of Palladium, in the Affordable Network.

The Kanata LRT Planning and EA Study, currently underway, has been initiated to develop a Recommended Plan for the LRT extension past March Road. It has identified Campeau Drive and Palladium Drive as potential LRT station locations. The study is expected to be completed by December 2018.

Figure 5: Kanata LRT Planning and EA Study Area



Source: https://ottawa.ca/en/kanata-light-rail-transit-planning-and-environmental-assessment-study

Road Projects

A notable road network change is the extension of Campeau Drive, identified as a Phase 1 City project, expected to be completed in 2020 or 2021. Campeau Drive is planned to be extended from Huntmar Drive to Didsbury Road. This will provide continuity within Kanata North and help alleviate parking issues in the Kanata Town Centre[5].

The widening of Huntmar Drive is identified as a Phase 3 (2026 – 2031) City Project within the Affordable Network Concept. Huntmar Drive is planned to be widened from two to four lanes between Campeau Drive and Cyclone Taylor Boulevard to accommodate the Kanata West Development.

Other Area Development

According to the City's development application search tool, the following developments are planned within the vicinity of the subject site.

[5] City of Ottawa. *Transportation Master Plan*. 2013. P. 109

333 Huntmar Drive
Riocan is proposing to construct Phase 2 of Tanger Outlets consisting of a hotel and approximately 30,000 ft^2 of restaurant type land uses at the above noted address. A Transportation Impact Assessment (TIA), prepared by Parsons, projected an increase in vehicle traffic of approximately 60 and 300 veh/h during the weekday morning and afternoon peak hours, respectively. The site has a proposed signalized access to Huntmar Drive, located approximately 350 m south of the Huntmar/Campeau roundabout intersection.

425 Huntmar Drive, 3001 Palladium Drive
Taggart Realty Management is proposing the construction of a business/retail park in three (3) phases, located at the above noted address. Phase 1 of the project has been constructed (Tanger Outlets) and part of Phase 2 has been completed (Cabela's). As part of the transportation work completed for this development, the traffic volumes at the Campeau/Palladium roundabout, Palladium/HWY 417 Off-Ramp intersection and the site driveways have been extensively analyzed and discussed with the City.

450 Huntmar Drive
Minto Communities is proposing the construction of Stages 3 and 4 of the Minto Arcadia subdivision, located at the above-noted address, north of Campeau Drive. The subdivision is planned to consist of approximately 400 residential units, with access provided via the Campeau/Country Glen and Campeau/Riverchase intersections, as well as a full movement access to Huntmar Drive at Paine Avenue. The Transportation Brief, prepared by Parsons, projected an increase in vehicle volumes of approximately 175 and 215 veh/h during the morning and afternoon peak hours, respectively.

8560 Campeau Drive
A 2-storey office building is proposed at the above noted address. A Transportation Overview was completed by Parsons, which projected an increase in vehicle traffic of approximately 50 and 80 veh/h during the morning and afternoon peak hours.

2.2. STUDY AREA AND TIME PERIODS

2.2.1. STUDY AREA

The proposed study area is outlined below and highlighted in Figure 5.

- Campeau/Huntmar intersection;
- Campeau/Country Glen intersection;
- Huntmar Drive;
- Campeau Drive; and
- Country Glen Drive.

Figure 6: Study Area

2.2.2. TIME PERIODS

Given the trips generated by this development will be trips to/from a hotel, the weekday peak hours are expected to be the heaviest traffic times within the subject area. It is noteworthy that the number of vehicle trips generated by a 108-room hotel are low and will not significantly impact the traffic operations within the study area.

The expected build-out date for the proposed development is assumed to be 2020. Depending on the growth rate of the study area, the horizon year 2025 will be assessed for 5-years beyond site build out.

2.3. EXEMPTION REVIEW

Based on the City's TIA guidelines and the subject site, the following sections of the TIA process are exempt.

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	Not required for applications involving site plans.

4.2 Parking	4.2.2 Spillover Parking	There are 102 spaces proposed to serve the subject site. This is 6 spaces lower than the City's By-Law requirements. However, given there is no on-street parking located within the area, there is parking for the site's occupants to use off-site. A Minor Variance application was granted by the Committee of Adjustment February 7, 2018 for a reduction in required parking spaces.
4.5 Transportation Demand Management	All elements	Non-residential site plan projected to have fewer than 60 employees at any one time.
4.6 Neighbourhood Traffic Management	All elements	Access is provided along two arterial roadways, Huntmar Drive and Campeau Drive.
4.8 Review of Network Concept	All elements	This development is not expected to generate 200 person-trips more than the permitted zoning for the site.

3. FORECASTING

3.1. DEVELOPMENT-GENERATED TRAVEL DEMAND

3.1.1. TRIP GENERATION

Appropriate trip generation rates for the proposed development consisting of a 108 room hotel were obtained from the ITE Trip Generation Manual (9th Edition). These rates are summarized in Table 1.

Table 1: ITE Trip Generation Rates

Land Use	ITE Land Use Code	Trip Rates	
		AM Peak	PM Peak
Hotel	ITE 310	T = 0.53(rm)	T = 0.60(rm)
Notes: *T = Average Vehicle Trip Ends* *rm = rooms*			

The hotel trip generation is based on the ITE trip generation rates, outline in Table 1. As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the study area context were applied to attain estimates of person trips for the proposed development.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Based on the TIA Guidelines and our review of available literature, a combined factor of approximately 1.28 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit/non-motorized modal shares of 10%. As such, the person trip generation for the proposed retail development is summarized in Table 2.

Table 2: Modified Person Trip Generation

Land Use	Area	AM Peak (Person Trip/h)			PM Peak (Person Trip/h)		
		In	Out	Total	In	Out	Total
Hotel	108 rooms	43	30	73	42	41	83

The person trips shown in Table 2 for the proposed hotel development were then reduced by modal share values based on the site's location and proximity to adjacent communities, employment, shopping uses and transit availability. Modal share values the proposed development are summarized in Table 3.

Table 3: Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	26	18	44	26	25	51
Auto Passenger	15%	7	5	12	6	6	12
Transit	15%	6	4	10	6	6	12
Non-motorized	10%	4	3	7	4	4	8
Total Person Trips	**100%**	43	30	73	42	41	83
Total 'New' Auto Trips		**26**	**18**	**44**	**26**	**25**	**51**

As shown in Table 3, the total number of person trips expected to be generated by this development is approximately 70 and 80 persons/h during the weekday commuter peak hours. The total amount of 'new' vehicle traffic to the study area is projected to be 45 to 50 veh/h during the peak hours. This amount of traffic equates to less than 1 new vehicle every minute during peak hours.

As mentioned in the Introduction, a Transportation Impact Study (TIS) was prepared for the subject site (and the lands to the north) in November 2013, by Parsons. At the time, the lands were planned to be developed by Minto to be a shopping centre consisting of approximately 110,000 ft^2 of retail. The total projected amount of traffic generated by the proposed shopping centre was approximately 90 and 350 veh/h during the weekday morning and afternoon peak hours. As the revised Site Plan and land use are projected to only generate 40 to 60 veh/h during the peak hours, this is less than previously assessed in the Minto Arcadia Retail Development TIA. As such, the recommendations and analysis related this the previously studied site, remain valid in terms of traffic impact to the road network.

3.1.2. MODE SHARES

The existing mode shares outlined in Table 3 above were derived from the 2011 OD Survey for the Kanata/Stittsville area, which are shown below.

Table 4: OD Survey Trips by Primary Travel Mode – Kanata/Stittsville

Time Period	24 Hours			AM Peak Hour			PM Peak Hour			Average	Selected Split
Mode	From District	To District	Within District	From District	To District	Within District	From District	To District	Within District		
Driver	67%	67%	57%	59%	74%	45%	73%	61%	57%	62%	60%
Passenger	16%	16%	20%	9%	7%	17%	17%	15%	23%	16%	15%
Transit	13%	13%	3%	24%	8%	4%	7%	21%	2%	11%	15%
Bike/Walk	0%	0%	14%	0%	1%	20%	0%	0%	13%	5%	10%
Other	4%	4%	7%	7%	10%	15%	3%	3%	6%	7%	-

These existing modal shares are used to calculate the projected traffic to/from the proposed development for the build-out year 2020 and 2025 (five years beyond buildout). For beyond the 2031 Affordable Network Plan, the following future mode share are forecasted. These mode shares reflect the addition of a new LRT Transit Stations within close proximity of the development, including the Campeau and Palladium LRT Station, which will be located within 600 m of the proposed development.

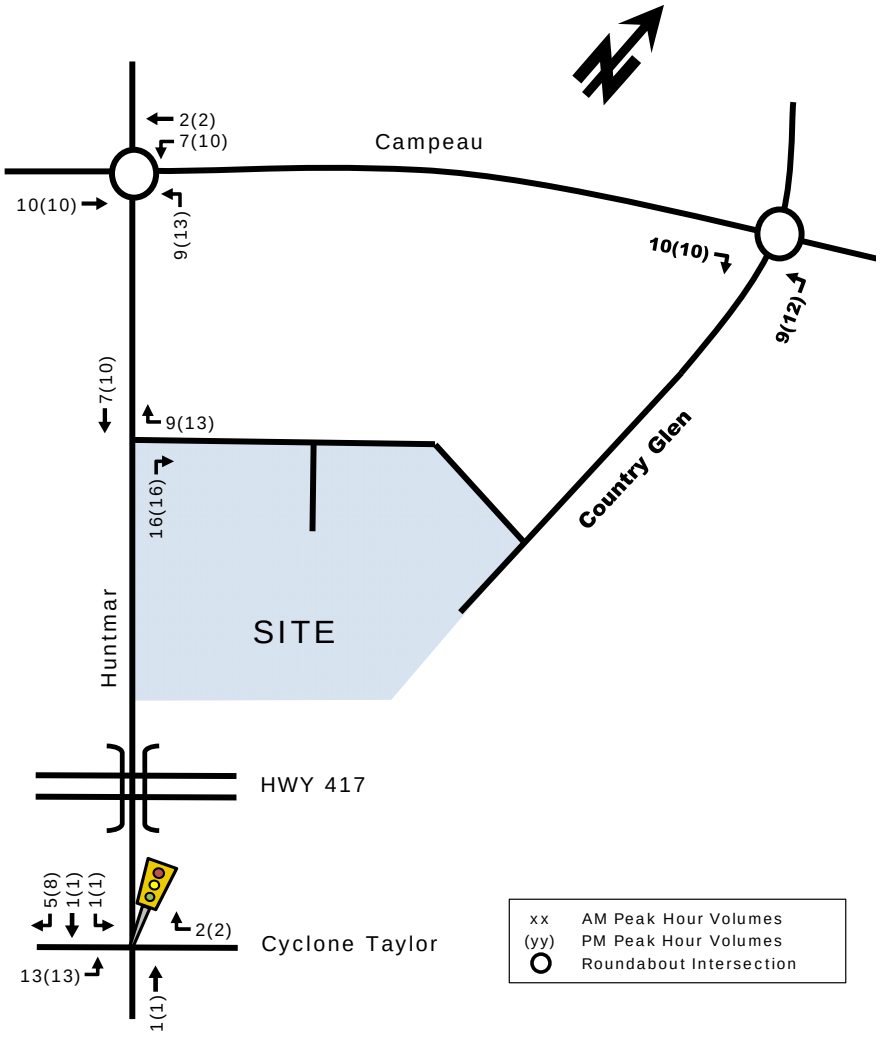
Table 5: Future Mode Share Targets for the Development

Travel Mode	Mode Share Target	Rationale
Transit	65%	Development is located within 600 m of a future LRT station, making it a Transit-Oriented Development (TOD) which have transit targets of 65%.
Walking	10%	This is consistent with the City's TMP, TOD areas and the existing OD-survey.
Biking	5%	This is consistent with the City's TMP, TOD areas and the existing OD-survey.
Auto Passenger	15%	This is consistent with TOD targets.
Auto Driver	5%	This is consistent with TOD targets.

3.1.3. TRIP DISTRIBUTION AND ASSIGNMENT

Given the low projected number of vehicle trips projected to be generated by the proposed development, the future roadway network impact is considered negligible. However, a review of the number of vehicles projected to enter/exit the site at the proposed site driveways is provided as Figure 7.

Figure 7: Site-Generated Vehicle Trips



3.2. BACKGROUND NETWORK TRAVEL DEMANDS

3.2.1. TRANSPORTATION NETWORK PLANS

See Section 2.1.3.

3.2.2. BACKGROUND TRAFFIC GROWTH

The following background traffic growth through the immediate study area (summarized in Table 7) was calculated based on historical traffic count data (years 2009, 2010, 2012, and 2014) provided by the City of Ottawa at the Huntmar/Palladium intersection. Detailed background traffic growth analysis is included as Appendix C.

Table 6: Huntmar/Palladium Historical Background Growth (2009 – 2014)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	3.62%	25.31%	19.85%	26.59%	**22.25%**
AM Peak	0.74%	23.68%	16.69%	24.64%	**20.01%**
PM Peak	1.14%	19.83%	17.35%	24.05%	**18.85%**

As shown in Table 7, the Huntmar/Palladium intersection has experienced considerable growth in the past years given the significant development within the area. Growth in this area is expected to continue given the Kanata West development plans. As shown in Table 6, along the north leg of the intersection, Huntmar Drive has experienced a 1% to 4% annual growth rate within recent years. To account for the historic and future increases in traffic volumes and to account for the traffic generated by the previously identified area developments, a 4% per annum growth factor was applied to the 2011 and 2013 traffic count volumes along Huntmar Drive, Campeau Drive and Cyclone Taylor Boulevard to obtain background traffic volumes for the 2020 built-out horizon year and 2025 (5-years beyond site build-out). The resultant 2020 and 2025 background traffic volumes are depicted as Figures 8 and 9, respectively.

Figure 8: 2020 Background Traffic Volumes

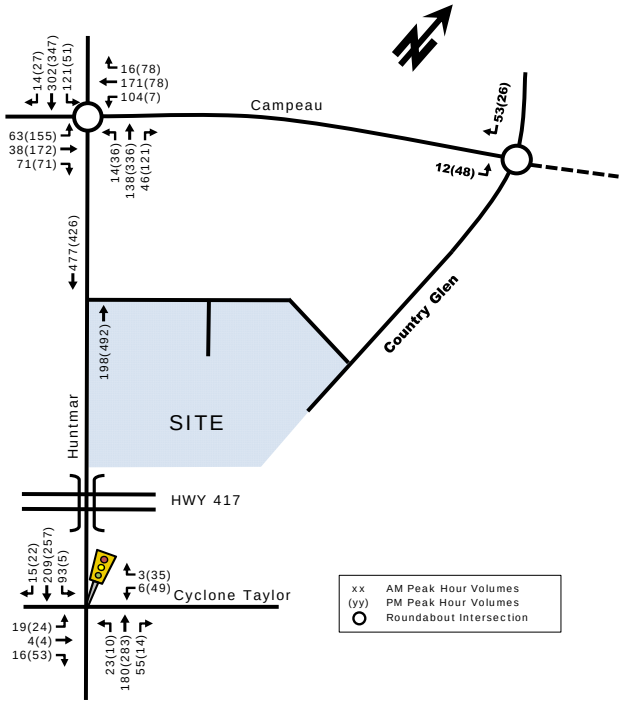
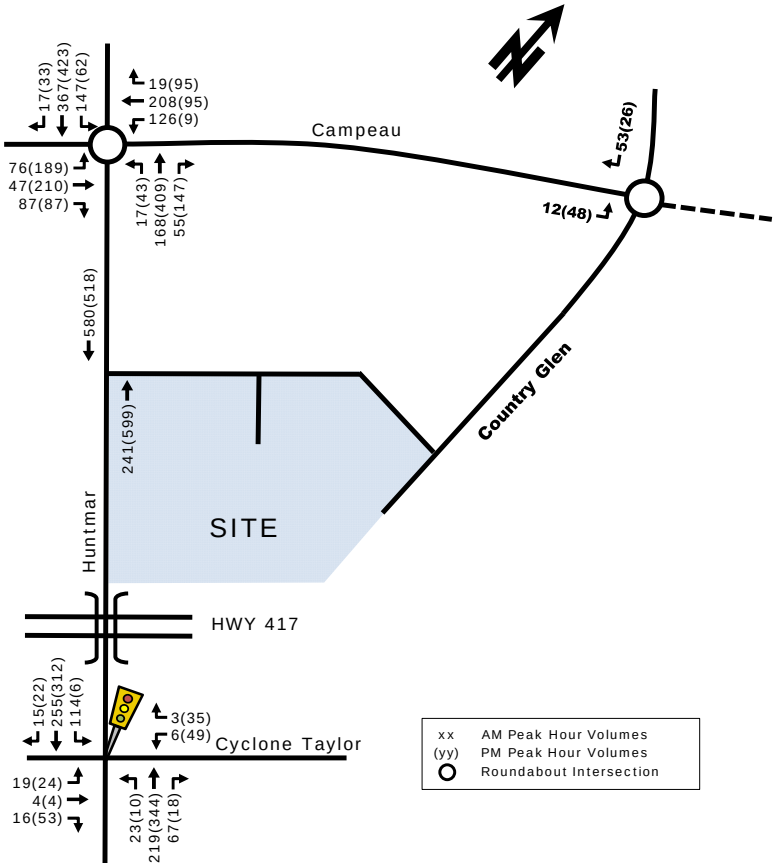


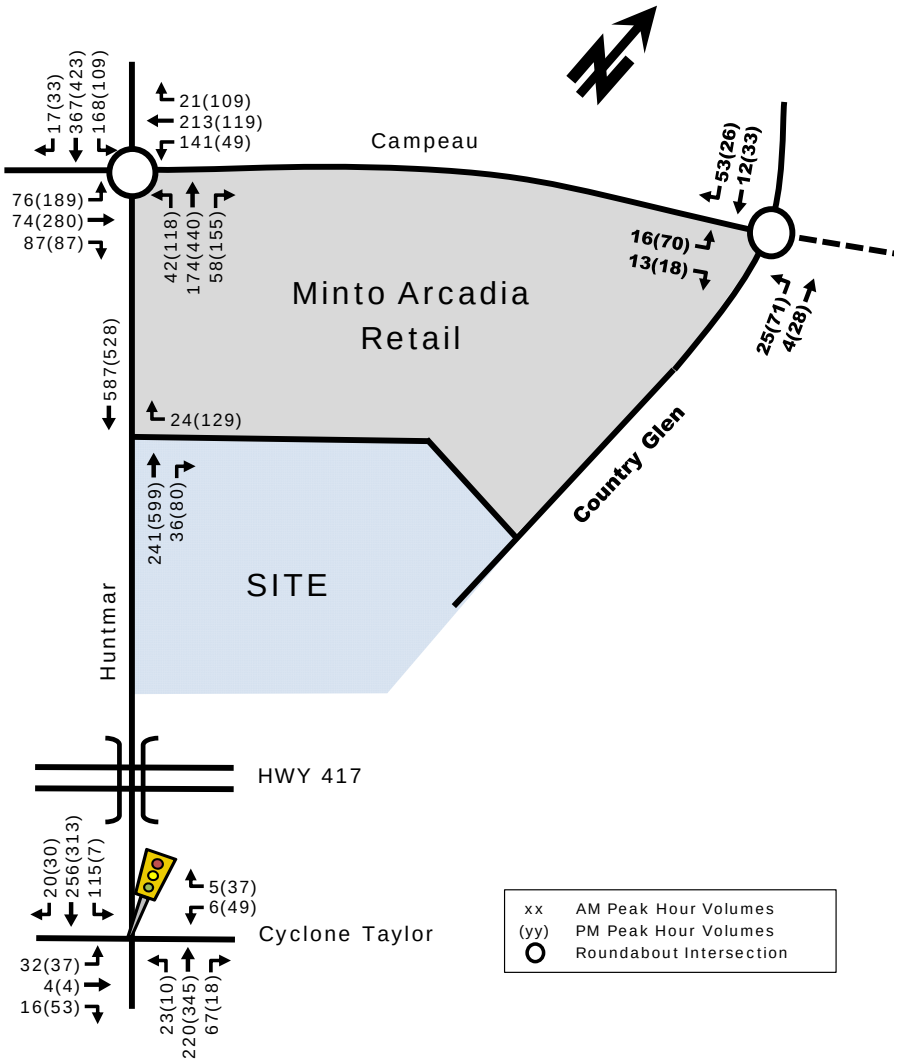
Figure 9: 2025 Background Traffic Volumes



3.3. DEMAND RATIONALIZATION

Based on the foregoing analysis of trip-generation and background traffic growth, the site-generated traffic volumes are considered negligible as only 1 vehicle is projected every 1 to 2 minutes. Furthermore, Huntmar Drive, Campeau Drive, and the Huntmar/Campeau and Campeau/Country Glen roundabout intersections have been built to accommodate the projected traffic from the Kanata West developments, including the subject site. As such, no vehicle LOS is required for this analysis, however, the following total projected traffic volumes are provided (sum of Figure 7 and Figure 9) with the addition of the total Minto Arcadia retail development (to the north) traffic superimposed onto these volumes.

Figure 10: Total Projected 2025 Traffic Volumes



4. ANALYSIS

4.1. DEVELOPMENT DESIGN

4.1.1. DESIGN FOR SUSTAINABLE MODES

Vehicle and Bicycle Parking

Vehicle parking is proposed in a surface parking lot with access to Huntmar Drive and Country Glen Way. A total of 102 vehicle parking spaces are planned to serve the hotel development. With regard to bicycle parking, a total of 6 bicycle parking spaces are proposed to serve the hotel development. A concrete sidewalk is proposed along the frontage of the building connecting pedestrians to the development's doors. Bicycle parking is located at the north end of the building, on the curb bulb-out, connected to the proposed sidewalks.

Transit

Transit service within the vicinity of the site is currently provided by OC Transpo Local Routes #62 and 162. Local Route #62 provides frequent all-day service and Local Route #162 provides weekday afternoon/evening service and all-day

service on weekends. The closest transit stops are located approximately 70 m north of the site on both sides of Huntmar Drive.

To connect pedestrians and cyclists to the existing network, a 2.0 m sidewalk is provided north of the development along Huntmar Drive and a 2.0 m cycle track is provided along Huntmar Drive, north of the development. A 3.0 m wide pedestrian link is also proposed between Huntmar Drive and the hotel building.

4.1.2. CIRCULATION AND ACCESS

Trucks can access the site from Huntmar Drive and proceed to the south or east ends of the site to access the loading/garbage areas. All loading or short-stay delivery is expected to occur on-site and not on public streets. The drive aisle widths are noted to range between 6.7 m and 8.46 m, which satisfies the City's By-Law requirements and is sufficient for two-way vehicle traffic. Truck turning templates are provided as Appendix D.

The site driveways are proposed to Huntmar Drive and Country Glen Way. The Huntmar Drive site access is proposed as right-in/right-out only, controlled by the existing median on Huntmar Drive. Based on the projected traffic volumes illustrated in Figure 10, the traffic volumes expected to access/egress the site ranges between 25 to 130 veh/h during the peak hours. This represents approximately 2 vehicles per minute during the busiest time of day, which is acceptable for a right-in/right-out driveway. The Country Glen Way access is full movement and links to Campeau Drive via the new Campeau/Country Glen roundabout intersection.

The driveway connection to Huntmar Drive has an approximate 20 m throat length, measured from the end of the curb radii. TAC guidelines recommend a 25 m throat length for a motel driveway connecting to an arterial roadway. The distance from STOP bar to STOP bar along the access is approximately 30 m, however, the curb radii are large to allow truck movements, reducing the throat length distance by 10 m. Given this is a right-in/right-out driveway the vehicle volumes, delays and queues will be less than those experienced for a full-movement driveway, and given the 30 m distance between the STOP bars and the additional access to the site via Country Glen Way, this 20 m throat length is considered acceptable. The throat length at the Country Glen Way driveway access is approximately 5 m.

4.2. PARKING

4.2.1. PARKING SUPPLY

Vehicle Parking

A total of 102 vehicle parking spaces are proposed to serve the subject development. This amount of parking does not meet the City's By-Law requirements for hotel land use and is deficient by 6 spaces. A Minor Variance application was granted by the Committee of Adjustment February 7, 2018 for a reduction in required parking spaces. The majority (65 spaces) of parking space dimensions are noted to be 5.2 m in length and 2.6 m in width, which meets the City's By-Law requirements. 14 spaces are noted to be 5.2 m in length and 2.4 m in width and 23 are noted to be 4.6 m in length and 2.4 m in width. According to the City's By-Law requirements, up to 40% of the required parking spaces may be reduced to 2.4 m in width and 4.6 m in length. Given the number of proposed parking spaces, these reduced dimensions meet the City's By-Law requirement and the parking spots should be marked for 'small cars only'.

Bicycle Parking

A total of 6 bicycle parking spaces are proposed to serve the subject development, which meets the City's By-Law requirements. The bike rack is located adjacent to the sidewalk, on the curb bulb-out at the north end of the site.

4.3. BOUNDARY STREET DESIGN

The boundary street for the development is Huntmar Drive. At this time, there has not been any complete street concepts prepared for Huntmar Drive. The existing roadway's geometry consists of the following features:

- 2 vehicle travel lanes in each direction;
- More than 3,000 vehicles per day;
- Posted speed limit of 50 km/h, assumed operating speed of 50 to 60 km/h;
- 3.5 m wide centre lanes and 3.7 m wide curb lanes;
- No dedicated transit facilities; and
- No on-street parking.

The multi-modal level of service analysis for the road segment along Huntmar Drive adjacent to the site is summarized in Table 7, with detail analysis provided in Appendix E.

Table 7: MMLOS – Projected Huntmar Drive Segment (East Side of Roadway, Adjacent to Site)

Road Segment	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Huntmar Dr.	F	C	E	C	D	No target	A	E

Given the development's location within a mixed-use centre area along a spine bicycle route and an arterial roadway, the target levels of service for pedestrians and cyclists are PLoS 'C' and BLoS 'C'. There are no transit priority plans for Huntmar Drive and as such there is no transit level of service target. Huntmar Drive does not form part of the truck route, and as such has a truck level of service target of TkLoS'E'.

As shown in Table 7, the pedestrian and cycling level of service targets are met along the east side of Huntmar Drive, adjacent to the site.

4.4. ACCESS INTERSECTION DESIGN

4.4.1. LOCATION AND DESIGN OF ACCESS

The site driveways are proposed to Huntmar Drive and Country Glen Way. The driveway connection to Huntmar Drive is proposed as right-in/right-out only with an approximate 20 m throat length. The Country Glen Way driveway connection is a full movement driveway that connects to Campeau Drive via the Campeau/Country Glen roundabout intersection. Driveway widths are noted to be 7.66 to 8.15 m. Both driveways will be controlled by STOP signs on the minor approach only.

The driveway connection to Huntmar Drive is located approximately 140 m south of the adjacent Huntmar/Campeau roundabout intersection, which meets the City's Private Approach By-Law requirements. There are two driveway connections to Huntmar Drive located on the west side of the roadway, serving Tanger Outlets. One is a right-in/right-out located approximately 10 m north of the site's right-in/right-out driveway (on the other side of the roadway) and the other is a planned signalized intersection located approximately 100 m south of the subject site driveway.

4.4.2. INTERSECTION CONTROL AND DESIGN

Based on the projected volumes, the driveways should be controlled with STOP signs on the minor approach only.

4.4.3. INTERSECTION DESIGN

All access intersections are unsignalized, as such no MMLoS analysis can be provided for these intersections (MMLoS intersection analysis is for signalized intersections).

4.5. TRANSPORTATION DEMAND MANAGEMENT

Exempt – Refer to Section 2.3.

4.6. NEIGHBOURHOOD TRAFFIC MANAGEMENT

Exempt – Refer to Section 2.3.

4.7. TRANSIT

Transit service within the vicinity of the site is currently provided by OC Transpo Local Routes #62 and 162. Local Route #62 provides frequent all-day service and Local Route #162 provides weekday afternoon/evening service and all-day service on weekends. The closest transit stops are located approximately 70 m north of the site on both sides of Huntmar Drive.

Identified in the City's 2013 Transportation Master Plan (TMP) is Bus Rapid Transit (BRT) along HWY 417 to Huntmar Drive, which continues south, parallel to Huntmar Drive. This is identified in the 2031 Network Concept, but is not identified on the 2031 Affordable Network. Transit priority (isolated measures) is proposed along the same corridor, south of Palladium, in the Affordable Network.

The Kanata LRT Planning and EA Study, currently underway, has been initiated to develop a Recommended Plan for the LRT extension past March Road. It has identified Campeau Drive and Palladium Drive as potential LRT station locations. The study is expected to be completed by December 2018.

The proposed development is projected to generate approximately 10 to 12 new transit users per hour during the peak hours. During the peak hours there are approximately 2 busses along Local Route #62 in each direction (total of 4 two-way busses). This equates to an average increase of 2 to 3 new riders per bus, which can be accommodated on the existing routes.

4.8. REVIEW OF NETWORK CONCEPT

Exempt – Refer to Section 2.3.

4.9. INTERSECTION DESIGN

As stated previously, a Transportation Impact Study (TIS) was prepared for the subject site (and the lands to the north) in November 2013, by Parsons. At the time, the lands were planned to be developed by Minto to be a shopping centre consisting of approximately 110,000 ft^2 of retail. The total projected amount of traffic generated by the proposed shopping centre was approximately 90 and 350 veh/h during the weekday morning and afternoon peak hours. According to the Minto Arcadia Retail TIS, "there has been considerable planning work completed for this area to assist in establishing the future road network. This planning work includes the traffic generated by the subject lands."[6] As part of the conclusions of the TIS, "the future transportation network will have sufficient capacity to accommodate the projected traffic generated by the subject site and area developments."[7] No capacity analysis was required at the study area intersections

[6] Delcan. *Arcadia Retail Development: Transportation Impact Study*. 2013. P. 11
[7] Delcan. *Arcadia Retail Development: Transportation Impact Study*. 2013. P. 11

(Huntmar/Campeau and Campeau/Country Glen) to account for the increase in traffic volumes, as this had already been completed during the planning stages for the area road network.

In addition to the Minto Arcadia Retail Development TIA, a more recent study has been completed for the lands directly adjacent to the north, referred to as Minto Arcadia Stages 3 and 4. The TIA was completed by Parsons in January 2017. Similar to the Arcadia Retail TIA, the conclusions in this report state "As the recently constructed two-lane roundabout at the Huntmar/Campeau intersection has a great amount of spare capacity, and was designed to accommodate planned development of all Kanata West, no analysis of this roundabout is required."[8] In addition, it states "As roundabouts will soon (2020/2021) be constructed at the Campeau/Country Glen Way and Campeau/Riverchase intersections, no analysis is required of these two interim connections to the two lane Campeau Drive (that currently does not extend across the Carp River)."[9]

Following the two previously submitted studies, the capacity at the two study area intersections, Huntmar/Campeau and Campeau/Country Glen is sufficient to accommodate the traffic generated by the subject lands, as this development was accounted for in Kanata West planning.

5. CONCLUSIONS

Based on the results summarized herein the following transportation related conclusions are offered:

- The transportation network north of the site includes sidewalks, cycle tracks, and bus routes;
- The newly constructed Campeau/Huntmar roundabout was designed to accommodate traffic related to Kanata West development, including the proposed site;
- The net increase in vehicle demand generated by the proposed development is approximately 45 and 50 veh/h during the morning and afternoon peak hours, respectively. This represents an increase of less than 1 additional vehicle per hour, which will have minimal impact on the adjacent transportation network;
- The net increase in transit ridership is approximately 10 to 12 persons per hour during the commuter peak hours, which can be accommodated by the existing transit routes;
- Based on local area developments and the historic traffic data, a 4% per annum growth rate was applied to the study area roadways and intersections;
- Based on the forecasted traffic volumes and previous studies within the area, the study area intersections will be able to accommodate the increase in vehicle traffic;
- The multi-modal levels of service targets for pedestrians and bicycles are not met along the site's frontage to Huntmar Drive, however, north of the site driveway the targets are met;
- The site has good pedestrian connections to Huntmar Drive and to the north of the site and a pedestrian connection is provide mid-block adjacent to the site;
- Bicycle parking is located at the north end of the site connecting to the proposed sidewalks. The amount of propose bicycle parking meets the City's By-Law requirements;
- Two site driveways are proposed for the development; one right-in/right-out driveway to Huntmar Drive and one full-movement driveway to Country Glen Way. Both site driveways meet the City's By-Law requirements in terms of location and dimensions. The throat length for the site driveway connection to Huntmar Drive is approximately 20 m;

[8] Parsons. *Arcadia Subdivision, Kanata: Stages 3 and 4 – Transportation Brief*. 2017. P. 8
[9] Parsons. *Arcadia Subdivision, Kanata: Stages 3 and 4 – Transportation Brief*. 2017. P. 9

- A total of 102 vehicle parking spaces are proposed to serve the development, which does not meet the City's minimum By-Law requirement of 108 spaces. A Minor Variance application was granted by the Committee of Adjustment February 7, 2018 for a reduction in required parking spaces; and
- No RMA or monitoring plan is required for this development.

Based on the foregoing, the proposed hotel development at 340 Huntmar Drive is recommended from a transportation perspective.

Prepared By:

André Jane Sponder, P.Eng.
Transportation Engineer

Reviewed By:

Christopher Gordon, P.Eng.
Senior Project Manager

Appendix A

Traffic Count Data

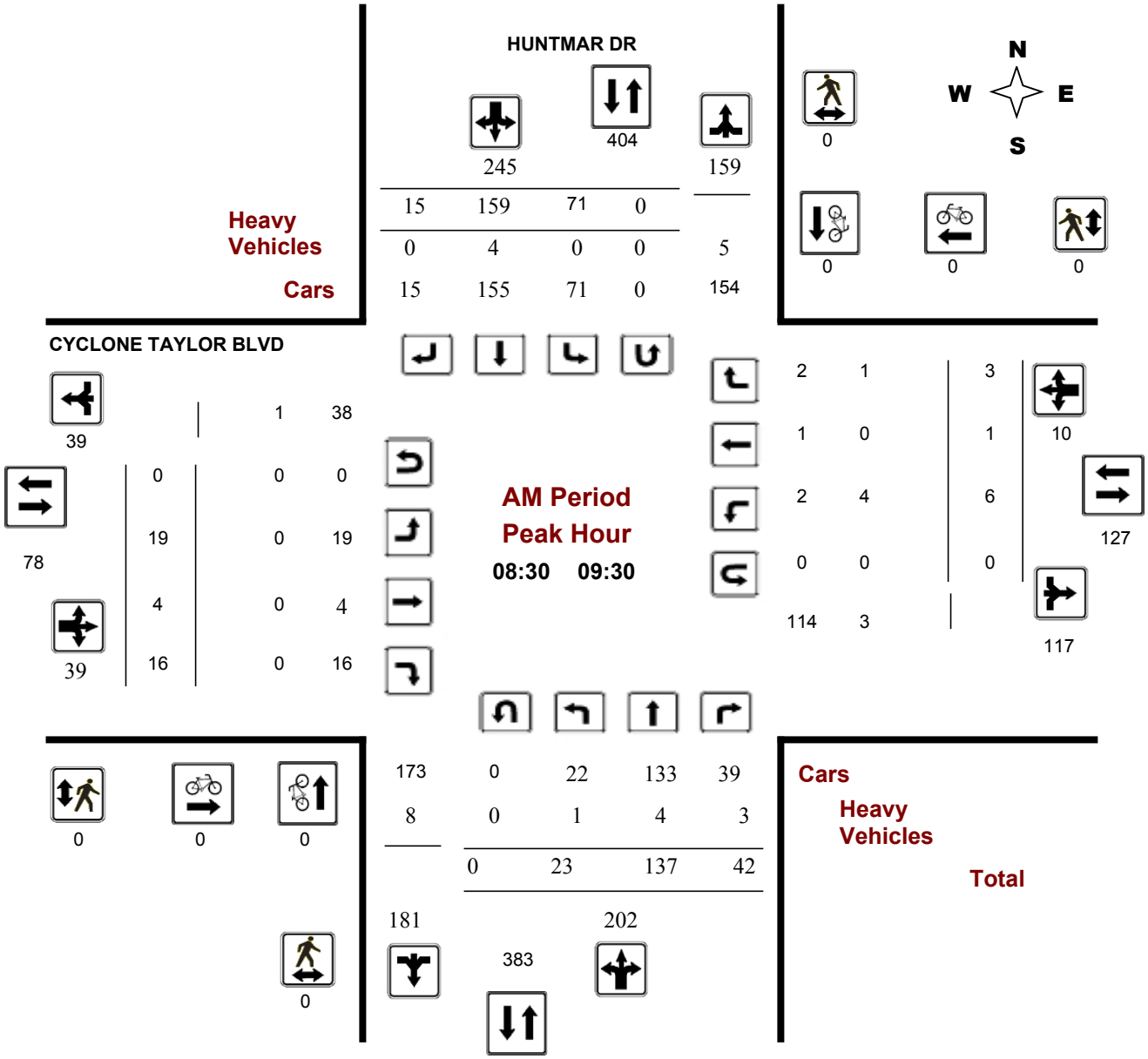
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

CYCLONE TAYLOR BLVD @ HUNTMAR DR

Survey Date: Friday, May 24, 2013 **WO No:** 31236

Start Time: 07:00 **Device:**



Comments

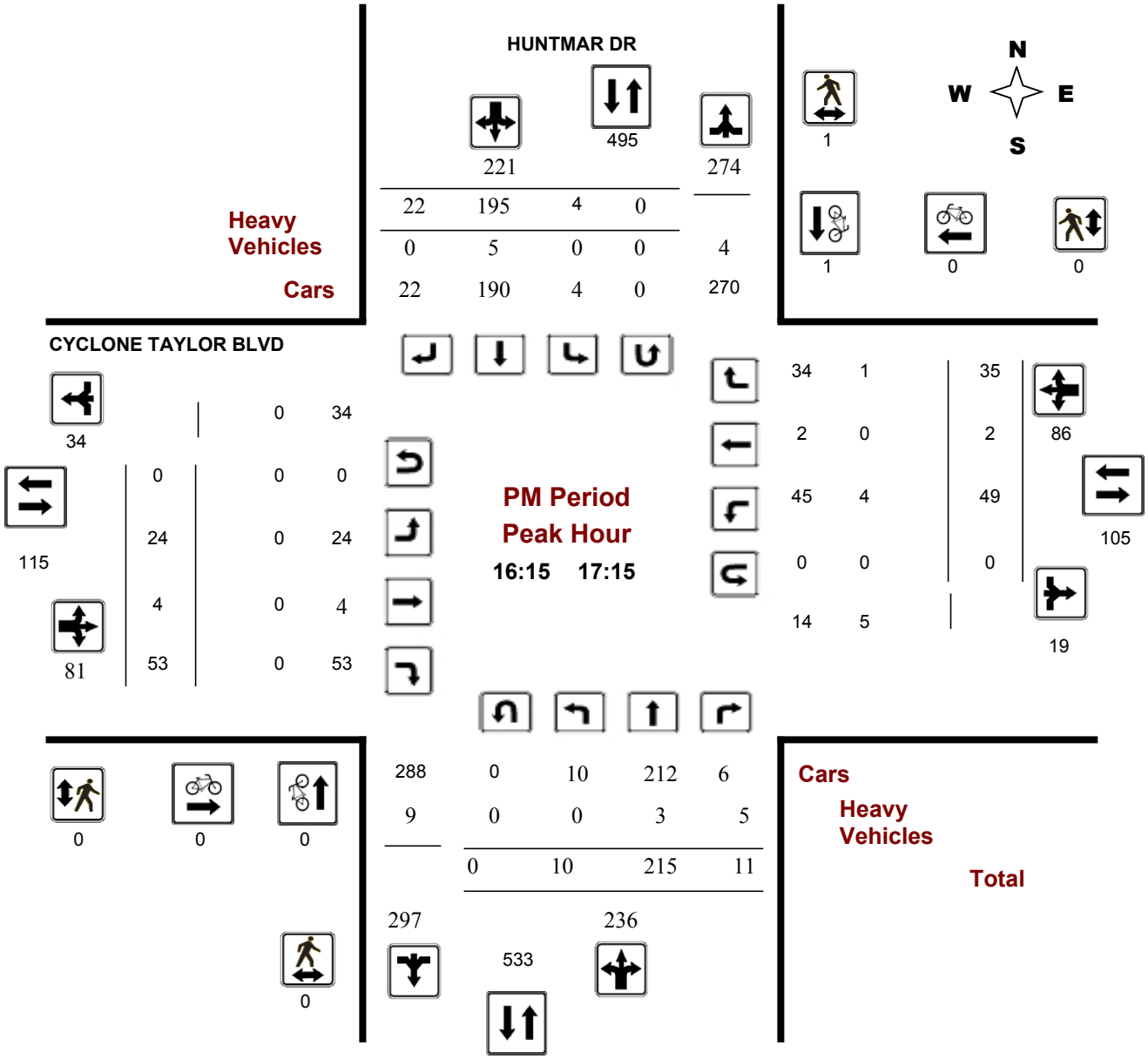
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

CYCLONE TAYLOR BLVD @ HUNTMAR DR

Survey Date: Friday, May 24, 2013 **WO No:** 31236

Start Time: 07:00 **Device:**

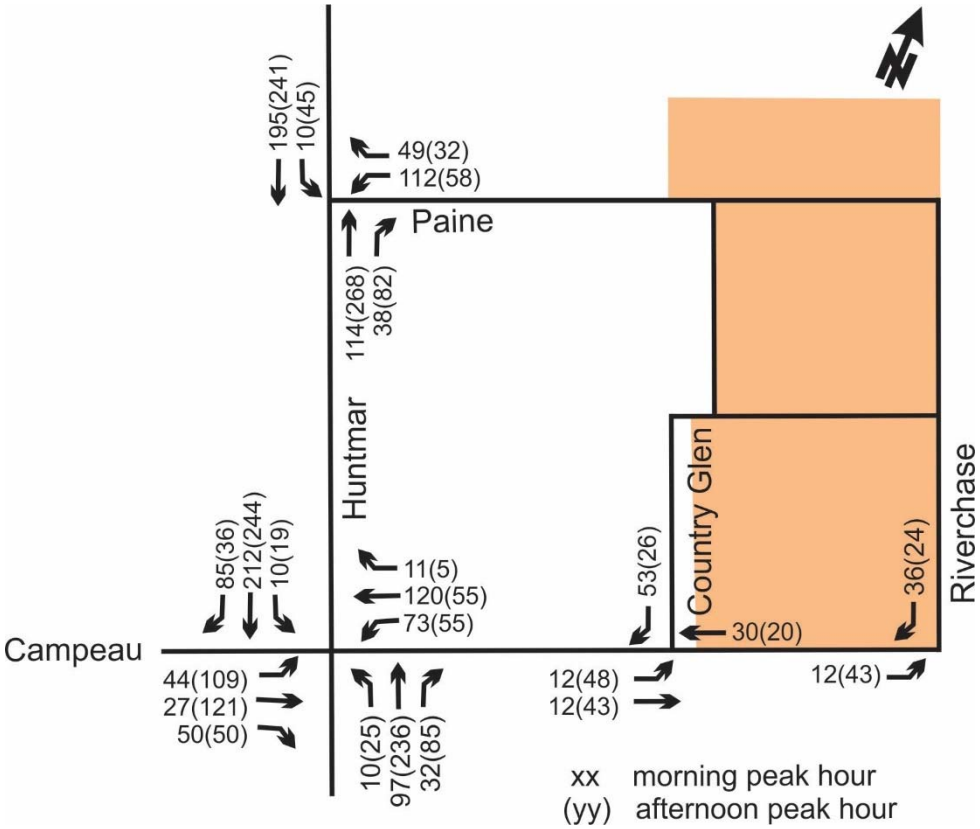


Comments

5.3 ASSESSMENT OF PROJECTED CONDITIONS

Projected conditions at full build-out of Stages 3 and 4 are depicted in Figure 5 which is comprised of Figure 3 volumes plus Figure 4 volumes (existing + site-generated).

Figure 5: Total Projected Peak Hour Traffic (Existing + Stages 3 and 4)



As the Huntmar/Campeau roundabout was built as a two-lane roundabout, there is no question that it has more than sufficient capacity to accommodate the interim traffic volumes from full build-out of Stages 3 and 4. As such, the analysis focus is on the Huntmar/Paine intersection, not the Campeau/Huntmar roundabout.

The previously approved Stage 2 Transportation Brief recommended the following with regard to the Huntmar/Paine intersection. Signals were not warranted, the Paine approach to Huntmar should be STOP sign controlled, a southbound left-turn lane was not warranted and a northbound right-turn lane was warranted (subsequently constructed). Each of these previous recommendations will now be revisited when accounting for peak hour traffic from Stages 3 and 4.

Analysis of the total projected peak hour volumes following full build-out of Stages 3 and 4 (Figure 5) for the Huntmar/Paine intersections revealed the following, with the warrant analysis included as Appendix B:

- Traffic signal warrants 52%
- Northbound right-turn lane..... 30 m plus taper (recently built at 35 m plus taper)
- Southbound left-turn lane ..... not warranted

Appendix B

Collision Data and Analysis

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	1	4	5	0	3	0	0	15	88%
Non-fatal injury	1	0	1	0	0	0	0	0	2	12%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**3**	**1**	**5**	**5**	**0**	**3**	**0**	**0**	**17**	100%
	#3 or 18%	#5 or 6%	#1 or 29%	#1 or 29%	#6 or 0%	#3 or 18%	#6 or 0%	#6 or 0%		

CYCLONE TAYLOR BLVD / HUNTMAR DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	1	5,103	1825	**0.11**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	1	0	0	0	0	0	0	0	1	100%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

CAMPEAU DR / HUNTMAR DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	11	10,400	1825	**0.58**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	1	3	5	0	0	0	0	10	91%
Non-fatal injury	0	0	1	0	0	0	0	0	1	9%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**1**	**4**	**5**	**0**	**0**	**0**	**0**	**11**	100%
	9%	9%	36%	45%	0%	0%	0%	0%		

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2016

Location: CAMPEAU DR @ HUNTMAR DR

Traffic Control: Roundabout **Total Collisions:** 11

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Oct-17, Fri,10:50	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	
2014-Oct-17, Fri,14:04	Rain	Sideswipe	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Dec-06, Sat,10:00	Clear	Angle	P.D. only	Dry	South	Merging	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-May-12, Tue,07:38	Clear	Angle	P.D. only	Dry	East	Going ahead	Delivery van	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Mar-14, Sat,13:27	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-29, Wed,18:22	Clear	Turning movement	P.D. only	Dry	North	Making "U" turn	Automobile, station wagon	Other motor vehicle	

					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-04, Sun,22:34	Freezing Rain	Sideswipe	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-26, Fri,13:11	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-14, Tue,09:09	Clear	Angle	P.D. only	Dry	South	Merging	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-May-24, Tue,17:27	Clear	Sideswipe	P.D. only	Dry	North	Overtaking	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Farm tractor	Other motor vehicle
2016-Sep-12, Mon,18:14	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

Location: HUNTMAR DR btwn HUNTMAR DR & AUTOPARK PRIV

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-13, Fri,23:10	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	

Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2012-01-01 TO: 2014-01-01

CYCLONE TAYLOR BLVD & HUNTMAR DR

Former Municipality: **Kanata** Traffic Control: **Traffic signal** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
1	2012-01-02	Mo	19:40	Clear	Dark	Rear end	Non-fatal	V1 W	Dry	Turning left	Automobile, station	Other motor vehicle	1
								V2 W	Dry	Turning left	Automobile, station	Other motor vehicle	

HUNTMAR DR, CYCLONE TAYLOR BLVD to HIGHWAY 417

Former Municipality: **Kanata** Traffic Control: **No control** Number of Collisions: **4**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
2	2012-03-20	Tue	12:30	Clear	Daylight	Single vehicle	P.D. only	V1 S	Dry	Going ahead	Passenger van	Animal - wild	0
	COMMENTS: EXACT LOCATION UNKNOWN												
3	2012-11-07	We	17:20	Clear	Dusk	Single vehicle	P.D. only	V1 N	Dry	Going ahead	Automobile, station	Animal - wild	0
4	2012-11-16	Fri	17:15	Clear	Dark	Single vehicle	P.D. only	V1 N	Dry	Going ahead	Pick-up truck	Animal - wild	0
5	2013-11-09	Sat	17:05	Snow	Dark	Sideswipe	P.D. only	V1 N	Wet	Merging	Pick-up truck	Other motor vehicle	0
								V2 N	Wet	Merging	Automobile, station	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

Appendix C

Traffic Growth Analysis

Huntmar / Palladium
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2009	Wednesday 5 August	991	900	1606	1834	1794	1865	1941	1733	12664
2010	Wednesday 14 July	1363	1013	1673	1921	2019	2131	2066	2056	14242
2012	Monday 25 June	1393	1386	2292	2576	2241	2135	2557	2386	16966
2014	Friday 16 May	1252	1066	4946	4276	4220	4412	4918	5582	30672

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2009	900	991	1891	12664				
2010	1013	1363	2376	14242	12.6%	37.5%	25.6%	12.5%
2012	1386	1393	2779	16966	36.8%	2.2%	17.0%	19.1%
2014	1066	1252	2318	30672	-23.1%	-10.1%	-16.6%	80.8%

Regression Estimate	2009	988	1165	2153
Regression Estimate	2014	1218	1353	2571
Average Annual Change		**4.28%**	**3.03%**	**3.62%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2009	1941	1733	3674	12664				
2010	2066	2056	4122	14242	6.4%	18.6%	12.2%	12.5%
2012	2557	2386	4943	16966	23.8%	16.1%	19.9%	19.1%
2014	4918	5582	10500	30672	92.3%	133.9%	112.4%	80.8%

Regression Estimate	2009	1575	1312	2887
Regression Estimate	2014	4454	4929	9383
Average Annual Change		**23.11%**	**30.31%**	**26.59%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2009	1865	1794	3659	12664				
2010	2131	2019	4150	14242	14.3%	12.5%	13.4%	12.5%
2012	2135	2241	4376	16966	0.2%	11.0%	5.4%	19.1%
2014	4412	4220	8632	30672	106.7%	88.3%	97.3%	80.8%

Regression Estimate	2009	1587	1543	3130
Regression Estimate	2014	3917	3822	7740
Average Annual Change		**19.81%**	**19.90%**	**19.85%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2009	1606	1834	3440	12664				
2010	1673	1921	3594	14242	4.2%	4.7%	4.5%	12.5%
2012	2292	2576	4868	16966	37.0%	34.1%	35.4%	19.1%
2014	4946	4276	9222	30672	115.8%	66.0%	89.4%	80.8%

Regression Estimate	2009	1162	1559	2721
Regression Estimate	2014	4422	3987	8409
Average Annual Change		**30.63%**	**20.66%**	**25.31%**

Huntmar / Palladium
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2009	Wednesday 5 August	136	133	258	157	108	313	288	183	1576
2010	Wednesday 14 July	202	117	269	207	146	356	271	208	1776
2012	Monday 25 June	173	221	408	244	138	281	299	272	2036
2014	Friday 16 May	132	138	752	352	318	604	558	666	3520

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2009	133	136	269	1576				
2010	117	202	319	1776	-12.0%	48.5%	18.6%	12.7%
2012	221	173	394	2036	88.9%	-14.4%	23.5%	14.6%
2014	138	132	270	3520	-37.6%	-23.7%	-31.5%	72.9%

Regression Estimate	2009	137	171	308
Regression Estimate	2014	171	148	319
Average Annual Change		**4.51%**	**-2.76%**	**0.74%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2009	288	183	471	1576				
2010	271	208	479	1776	-5.9%	13.7%	1.7%	12.7%
2012	299	272	571	2036	10.3%	30.8%	19.2%	14.6%
2014	558	666	1224	3520	86.6%	144.9%	114.4%	72.9%

Regression Estimate	2009	236	124	360
Regression Estimate	2014	498	587	1084
Average Annual Change		**16.08%**	**36.40%**	**24.64%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2009	313	108	421	1576				
2010	356	146	502	1776	13.7%	35.2%	19.2%	12.7%
2012	281	138	419	2036	-21.1%	-5.5%	-16.5%	14.6%
2014	604	318	922	3520	114.9%	130.4%	120.0%	72.9%

Regression Estimate	2009	278	93	372
Regression Estimate	2014	523	281	804
Average Annual Change		**13.46%**	**24.65%**	**16.69%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2009	258	157	415	1576				
2010	269	207	476	1776	4.3%	31.8%	14.7%	12.7%
2012	408	244	652	2036	51.7%	17.9%	37.0%	14.6%
2014	752	352	1104	3520	84.3%	44.3%	69.3%	72.9%

Regression Estimate	2009	199	158	357
Regression Estimate	2014	693	340	1034
Average Annual Change		**28.30%**	**16.63%**	**23.68%**

Huntmar / Palladium
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2009	Wednesday 5 August	178	137	196	398	390	216	314	301	2130
2010	Wednesday 14 July	243	226	259	445	493	278	383	429	2756
2012	Monday 25 June	276	268	329	507	545	335	425	465	3150
2014	Friday 16 May	218	130	678	744	730	646	828	934	4908

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2009	137	178	315	2130				
2010	226	243	469	2756	65.0%	36.5%	48.9%	29.4%
2012	268	276	544	3150	18.6%	13.6%	16.0%	14.3%
2014	130	218	348	4908	-51.5%	-21.0%	-36.0%	55.8%

Regression Estimate	2009	195	213	408
Regression Estimate	2014	184	248	432
Average Annual Change		**-1.15%**	**3.06%**	**1.14%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2009	314	301	615	2130				
2010	383	429	812	2756	22.0%	42.5%	32.0%	29.4%
2012	425	465	890	3150	11.0%	8.4%	9.6%	14.3%
2014	828	934	1762	4908	94.8%	100.9%	98.0%	55.8%

Regression Estimate	2009	272	272	545
Regression Estimate	2014	750	850	1600
Average Annual Change		**22.47%**	**25.56%**	**24.05%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2009	216	390	606	2130				
2010	278	493	771	2756	28.7%	26.4%	27.2%	29.4%
2012	335	545	880	3150	20.5%	10.5%	14.1%	14.3%
2014	646	730	1376	4908	92.8%	33.9%	56.4%	55.8%

Regression Estimate	2009	187	399	585
Regression Estimate	2014	591	711	1303
Average Annual Change		**25.95%**	**12.28%**	**17.35%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2009	196	398	594	2130				
2010	259	445	704	2756	32.1%	11.8%	18.5%	29.4%
2012	329	507	836	3150	27.0%	13.9%	18.8%	14.3%
2014	678	744	1422	4908	106.1%	46.7%	70.1%	55.8%

Regression Estimate	2009	160	375	535
Regression Estimate	2014	617	705	1322
Average Annual Change		**30.95%**	**13.47%**	**19.83%**

Appendix D

Truck Turning Templates

HUNTMAR DRIVE

COUNTRY GLEN WAY

MAIN SITE ACCESS

ACCESS TO HOTEL SITE

BIKE PATH TO BE CONNECTED TO EXISTING PATH

BIKE RACKS

SIDEWALKS TO BE BUILT IN FUTURE SITE DEVELOPMENT

CONCRETE

TRANSFORMER

EXISTING LIGHT STANDARD

PARKING AREA

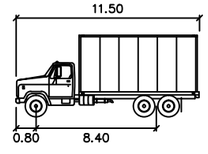
WASTE ENCLOSURE

LOADING

LOADING

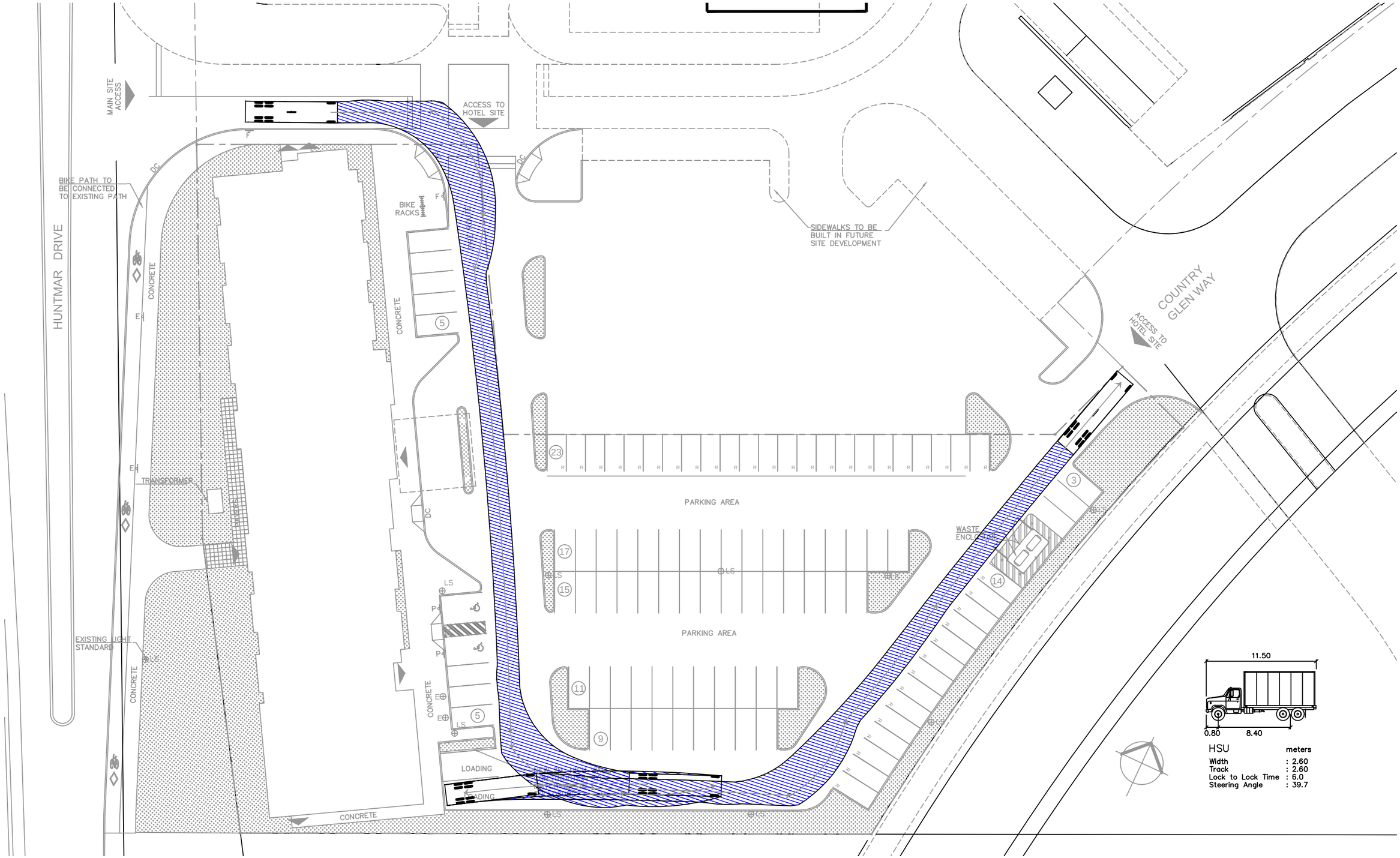
NEW 2M. HIGH WALL, CONSTRUCTION TO MATCH WASTE ENCLOSURE

CONCRETE



HSU meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 39.7


HUNTMAR DRIVE
MAIN SITE ACCESS
ACCESS TO HOTEL SITE
BIKE PATH TO BE CONNECTED TO EXISTING PATH
BIKE RACKS
SIDEWALKS TO BE BUILT IN FUTURE SITE DEVELOPMENT
COUNTRY GLEN WAY
ACCESS TO HOTEL SITE
CONCRETE
TRANSFORMER
EXISTING LIGHT STANDARD
PARKING AREA
PARKING AREA
WASTE ENCLOSURE
LOADING
LOADING
CONCRETE
CONCRETE
CONCRETE
11.50
0.80
8.40
HSU
meters
Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 39.7

Appendix E

Multi-Modal Level of Service Analysis

Multi-Modal Level of Service - Segments Form

Consultant	**Parsons**	**Project**	**340 Huntmar**
Scenario	**Future**	**Date**	**Feb-18**
Comments			

SEGMENTS		Street A	Section 1	Section 2	Section 3
Pedestrian	Sidewalk Width Boulevard Width	-	no sidewalk n/a		
	Avg Daily Curb Lane Traffic Volume		> 3000		
	Operating Speed On-Street Parking		> 60 km/h no		
	Exposure to Traffic PLoS		**F**	-	-
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		-	-	-
	Level of Service		**-**	**-**	**-**
Bicycle	Type of Cycling Facility	-	Mixed Traffic		
	Number of Travel Lanes		2-3 lanes total		
	Operating Speed		≥ 50 to 60 km/h		
	# of Lanes & Operating Speed LoS		**E**	-	-
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS		-	-	-
	Bike Lane Blockages				
	Blockage LoS		-	-	-
	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	Unsignalized Crossing - Lowest LoS		-	-	-
	Level of Service		**-**	**-**	**-**
Transit	Facility Type	D	Mixed Traffic		
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8		
	Level of Service		**D**	**-**	**-**
Truck	Truck Lane Width	A	> 3.7 m		
	Travel Lanes per Direction		> 1		
	Level of Service		**A**	**-**	**-**