1495 Heron Road Transportation Impact Assessment

Strategy Report

April 12, 2024

Prepared for:

Canada Lands Company.

Prepared by:

Stantec Consulting Ltd.

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[1] professional in good standing, whose field of expertise is either transportation engineering or transportation planning.

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

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[1] 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

Table of Contents

List of Tables

List of Figures

Appendices

1.0 SCREENING

1.1 SUMMARY OF DEVELOPMENT

Municipal Address	1495 Heron Road
Description of Location	North of the Heron Road and Baycrest Drive intersection at the existing Federal Study Centre
Land Use Classification	Residential, Commercial, Elementary School, Community Center
Development Size (units)	Proposed: 788 units (90 mixed use; retail + multifamily, 80 stacked houses, 618 multi-family housing) Existing: 60 multi-family units
Development Size (m^2)	Strip retail Plaza: 139 m^2 (1,496 ft^2) Community Center: 8,169 m^2 (87,930 ft^2) Elementary School: approximately 600 students
Number of Accesses and Locations	Existing 1 full-movement access from the north leg of the intersection of Heron Road and Baycrest Drive, and a proposed right-in-right-out access at the eastern limit of the site
Phase of Development	4 phases (25% of development in each phase)
Buildout Year	Assumed build-out and occupancy by 2032

If available, please attach a sketch of the development or site plan to this form.

1.2 TRIP GENERATION TRIGGER

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size	Triggered
Single-family homes	40 units	✗
Townhomes or apartments	90 units	✓
Office	3,500 m^2	✗
Industrial	5,000 m^2	✗
Fast-food restaurant or coffee shop	100 m^2	✗
Destination retail	1,000 m^2	✗
Gas station or convenience market	75 m^2	✗

** If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.

1.3 LOCATION TRIGGERS

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	✓	
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone? *		✘

**DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.

1.4 SAFETY TRIGGERS

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		✘
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		✘
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e., within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?		✓
Is the proposed driveway within auxiliary lanes of an intersection?		✘
Does the proposed driveway make use of an existing median break that serves an existing site?		✘
Is there a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		✘
Does the development include a drive-thru facility?		✘

If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.

1.5 SUMMARY

	Yes	No
Does the development satisfy the Trip Generation Trigger?	✓	
Does the development satisfy the Location Trigger?	✓	
Does the development satisfy the Safety Trigger?	✓	

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

2.0 SCOPING

2.1 EXISTING AND PLANNED CONDITIONS

2.1.1 Proposed Development

Canada Lands Company ("CLC") is preparing a development application for a Plan of Subdivision of a proposed development in the Playfair Park – Lynda Park – Guildwood Estates neighborhood of Ottawa, Ontario. The proposed development is located north of the Heron Road and Baycrest Drive intersection at the existing Federal Study Centre. The site is bound by Heron Road to the south, single-family homes to the east, an existing school to the west and parkland to the north.

Figure 1 illustrates the location of the subject development. The subject site is currently zoned as Minor Institutional Zone I1A [366] H (21) and I1A H (15); the purpose of the I1 Zone, according to the City of Ottawa Official Plan, is to:

- *permit a range of community uses, institutional accommodation and emergency service uses to locate in areas designated as General Urban Area or Central Area in the Official Plan; and*
- *minimize the impact of these minor institutional uses located in close proximity to residential uses by ensuring that such uses are of a scale and intensity that is compatible with neighbourhood character.*

The existing property is currently a heritage site whose buildings will be preserved and will be upgraded instead of demolished to meet the Ottawa building code. There is currently one existing access to the 1495 Heron property at the Heron Road and Baycrest Drive intersection.

It is proposed that the development will be constructed in 4 equal phases (25% of total development in each phase). Build-out and occupancy of the proposed site are anticipated to occur in 2032.

Table 1 outlines the proposed land uses assumed for the analysis which were obtained from the City's *TRANS Trip Generation Residential Trip Rates Study Report (October 2020)* and the *Institute of Transportation ("ITE") Trip Generation Manual 11th Edition*. The existing 60 units account for dormitory space in the existing buildings.

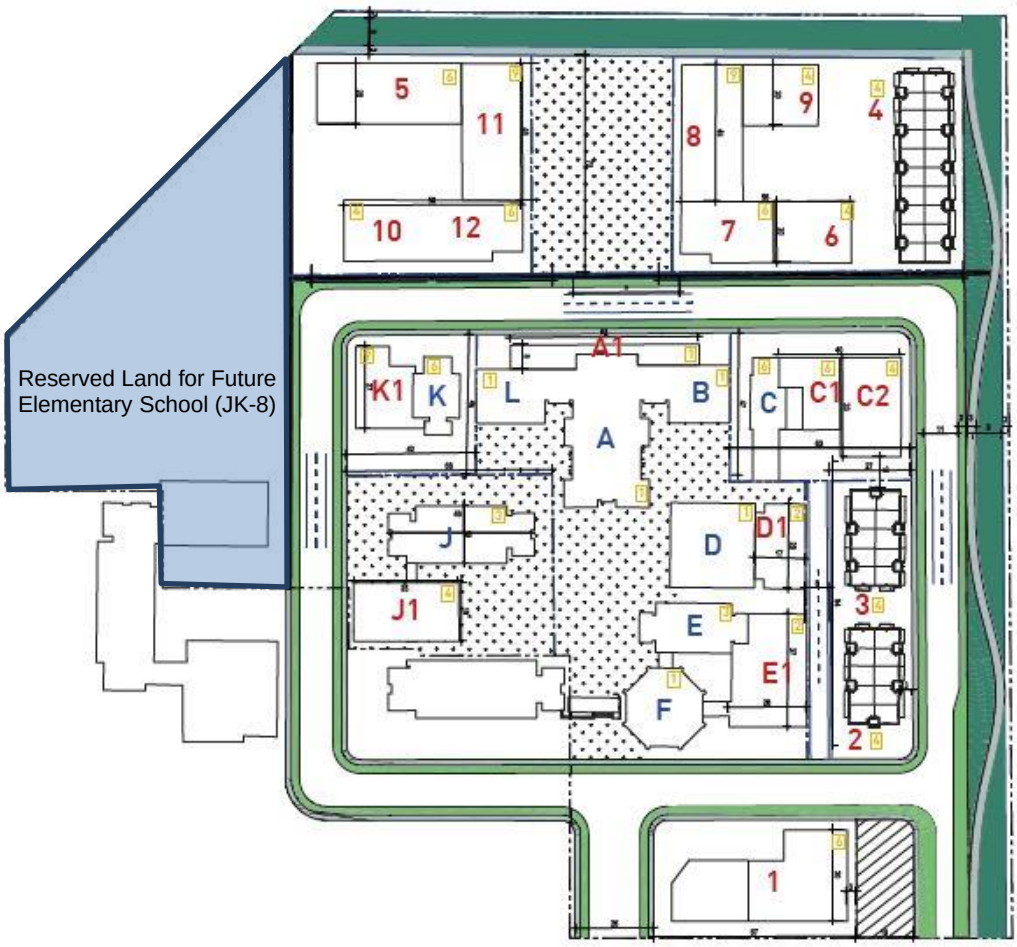
Figure 2 illustrates the proposed concept plan.

Figure 1 - Site Location

Table 1 - Proposed Land Uses / Land Use Codes

Land Use	Size	Land Use Code (LUC)
LUC 221 & LUC 222 & LUC 220 (City)	Proposed: 788 units Existing: 60 units	Multi-family Housing (Mid-Rise Apartments and Stacked Townhouses)
LUC 822 (ITE)	1,496 ft^2 GFA	Strip Retail Plaza
LUC 520 (ITE)	600 Students	Elementary School
LUC 495 (ITE)	87,930 ft^2 GFA	Recreational Community Center

Figure 2 – Proposed Concept Plan



BUILDING ID	STATUS	MAIN USE	HOUSING UNITS
1	New	M1	90
2	New	R1	20
3	New	R1	20
4	New	R1	40
5	New	R2	64
6	New	R2	29
7	New	R2	47
8	New	R2	109
9	New	R2	27
10	New	R2	30
11	New	R2	108
12	New	R2	47
J	Existing	R2	12
J1	New	R2	36
A	Existing	C	0
A1	New	C	0
B	Existing	C	0
L	Existing	C	0
K	Existing	R2	24
K1	New	R2	57
D	Existing	C	0
D1	New	C	0
E	Existing	C	0
E1	New	C	0
F	Existing	C	0
C	Existing	R2	24
C1	New	R2	29
C2	New	R2	35
TOTAL			***847***
TOTAL CIVIC AREAS			***8 169 M²***

New Building
Existing Building
Height (storey)

M1 - Mixed-use building (retail + multifamily)
R1 - Stacked townhouse
R2 - Multifamily building
C - Civic

Figure 3 – Existing Land Use

2.1.2 Existing Conditions

2.1.2.1 Roads and Traffic Control

The roadways under consideration in the study area are described as follows:

Heron Road

Abutting the subject site, Heron Road is a municipal four-lane divided arterial roadway with ROW protection width of 44.5m. The posted speed limit along Heron Road across the frontage of the subject site is 50 km/h. Sidewalks are provided along both sides of the road and a one-way on-street bicycle lane on the south side of the road. The roadway is designated as a Spine route as per the City of Ottawa's Ultimate Cycling Plan and designated as a truck route. On-street parking on Heron Road in the vicinity of the subject site is always prohibited.

Bank Street

Within the vicinity of the subject site, Bank Street is a municipal four-lane divided arterial roadway with ROW protection width of 37.5m. The posted speed limit along Bank Street is 50 km/h. Sidewalks are provided along both sides of Bank Street and there are no cycling facilities 700m north and south of the intersection with Heron Road and Bank Street. The roadway is designated as a Spine route as per the City of Ottawa's Ultimate Cycling Plan. On-street parking on Bank Street in the vicinity of the subject site is always prohibited.

Alta Vista Drive

Within the vicinity of the subject site, Alta Vista Drive is a municipal two-lane major collector roadway. The default speed limit along Alta Vista Drive in the vicinity of the subject site is 50 km/h. Sidewalks are provided along both sides of Alta Vista Drive and bike lanes on both sides of the roadway. The roadway is designated as a Spine route as per the City of Ottawa's Ultimate Cycling Plan. On-street parking on Alta Vista Drive in the vicinity of the subject site is always prohibited.

Baycrest Drive

Within the vicinity of the subject site, Baycrest Drive is a municipal two-lane collector roadway. The default speed limit along Baycrest Drive in the vicinity of the subject site is 50 km/h. Sidewalks are provided along both sides of Baycrest Drive and there are no cycling facilities along the roadway. On-street parking on Baycrest Drive in the vicinity of the subject site is always prohibited on the eastern side of the roadway.

Sandalwood Drive

Within the vicinity of the subject site, Sandalwood Drive is a municipal two-lane local roadway. The default speed limit along Sandalwood Drive across the frontage of the subject site is 50 km/h. Sidewalks are provided along both sides of Sandalwood Drive and there are no cycling facilities along the roadway. On-street parking on Sandalwood Drive in the vicinity of the subject site is always prohibited on the eastern side of the roadway.

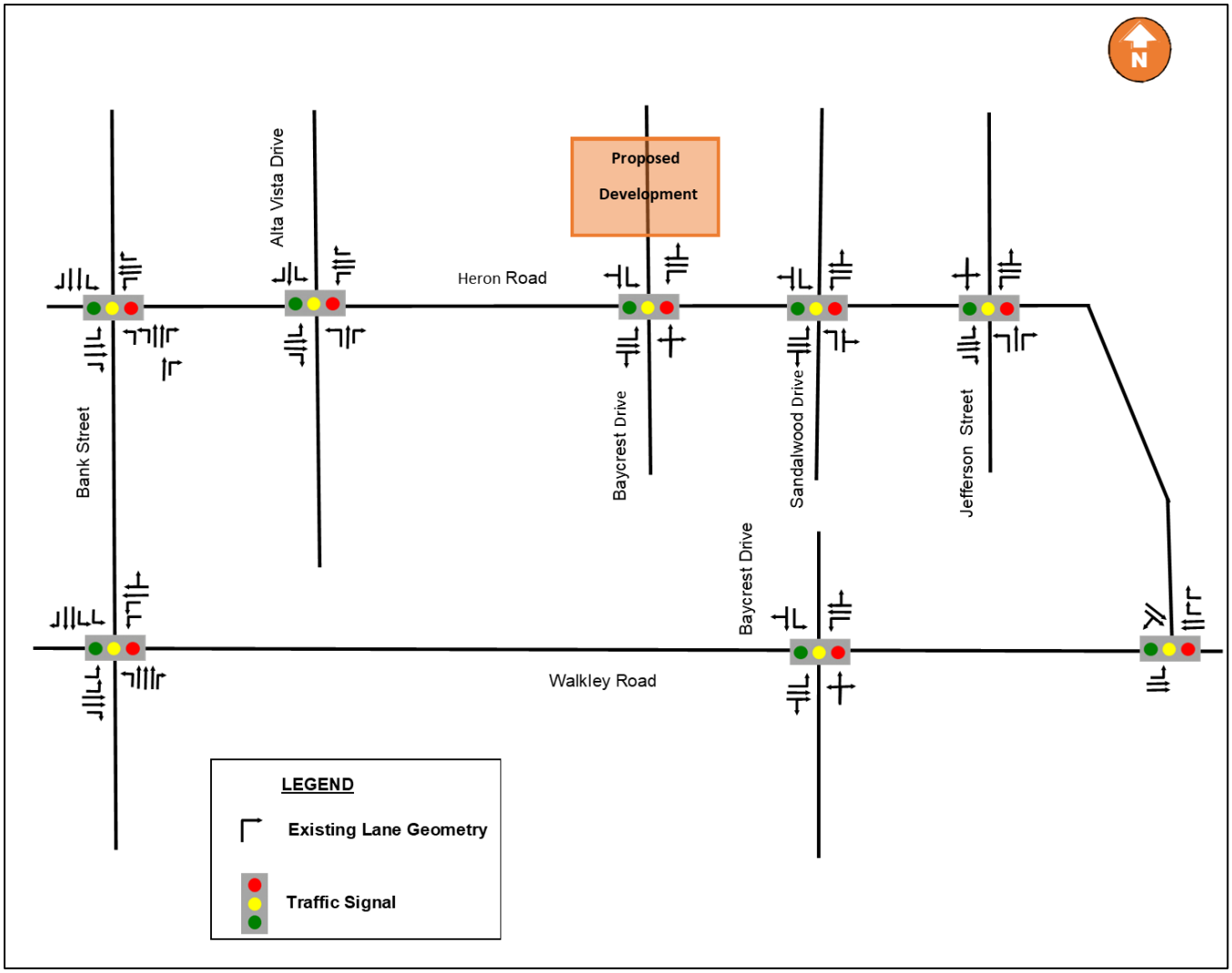
Walkley Road	Within the vicinity of the subject site, Walkley Road is a municipal four-lane divided arterial roadway. The posted speed limit along Walkley Road in the vicinity of the subject site is 50 km/h. Sidewalks are provided along both sides of Walkley Road but no cycling facilities within the vicinity of the subject size. The roadway is designated as a Spine route as per the City of Ottawa's Ultimate Cycling Plan and also designated as a truck route. On-street parking on Walkley Road in the vicinity of the subject site is always prohibited.

The intersection under consideration in the study area are described as follows:

Heron Road / Bank Street	The intersection Heron Road / Bank Street is signalized with dual left turn lanes in the northbound direction and auxiliary left-turn lanes in the eastbound, westbound, and southbound directions. In addition, there are channelized right-turn lanes in the eastbound, northbound, and southbound directions.
Heron Road / Alta Vista Drive	The intersection Heron Road / Alta Vista Drive is a signalized intersection with auxiliary left-turn lanes in all directions. In addition, the Heron Road and Alta Vista Drive intersection had channelized right-turn lanes in all directions.
Heron Road / Baycrest Drive	The intersection Heron Road / Baycrest Drive is signalized with left-turn auxiliary lanes in the eastbound, westbound, and southbound directions.
Heron Road / Sandalwood Drive	The intersection Heron Road / Sandalwood Drive is signalized with left-turn auxiliary lanes in all directions.
Heron Road / Jefferson Street	The intersection Heron Road / Jefferson Street is signalized with left-turn auxiliary lanes in the eastbound, westbound, northbound directions.
Heron Road / Walkey Road	The three-legged intersection Heron Road / Walkley Road is signalized with two free-flowing lanes westbound from Walkley Road to Heron Road.
Walkey Road / Baycrest Drive	The intersection Walkey Road / Baycrest Drive is signalized with left-turn auxiliary lanes in the eastbound, westbound, and southbound directions.
Bank Street / Walkley Road	The intersection Bank Street / Walkley Road is signalized with dual left-turn lanes in all directions, except northbound left-turn movements. In addition, there are channelized right-turn lanes in all directions.

Figure 4 illustrates the existing lane configuration and traffic control.

Figure 4 - Existing Lane Configuration and Traffic Control



Existing Driveways

Within 200 metres of proposed site driveway, driveways to parking lots, commercial buildings, and residential houses are located on Heron Road and Baycrest Drive.

Figure 5 illustrates the existing driveways.

Figure 5 - Existing Driveways within 200m of proposed site

Table 2 - Existing Driveways within 200m of proposed site

Driveway	Distance from Proposed Driveway	Associated Land Use
1	86 m on Heron Road	A parking lot for a Buddhist Monastery
2	145 m on Heron Road	A parking lot for an Elementary School
3	195 m on Heron Road	An Alley into the back of a School
4	186 m on Heron Road	A parking lot for a Commercial Building
5	134 m on Heron Road	A parking lot for a Community Center

6	94 m on Heron Road	A parking lot for a Community Center
7	75 m on Heron Road	A parking lot for a Commercial Building
8	65 m on Baycrest Drive	A parking lot for a Religious Community Building
9	107 m on Baycrest Drive	A parking lot for a Religious Community Building
10	146 m on Baycrest Drive	A parking lot for a Residential Apartment Building
11	174 m on Baycrest Drive	A parking lot for a Residential Apartment Building
12	142 m on Baycrest Drive	A parking lot for a Childcare Center
13	192 m on Baycrest Drive	An Alley for Residential Buildings
14	177 m on Heron Road	A parking lot for a Residential Building

2.1.2.2 Walking and Cycling

Within the vicinity of the subject site, sidewalks are provided on both sides of Heron Road and Baycrest Drive. Across the frontage of the subject site, there is a currently cycle track on south side of Heron Road and designated as a 'spine' cycling route in the City of Ottawa's Ultimate Cycling Network.

Figure 6 illustrates the existing and planned pedestrian and cycling facilities within the vicinity of the subject site.

Figure 6 - Existing and Planned Active Modes Facilities

Source: geoOttawa, accessed August 2022

2.1.2.3 Transit

Transit service is currently provided in the immediate vicinity of the proposed development via the following routes:

Route 44 — Route 44 is a Frequent Route that runs between Billings Bridge and Hurdman. Route 44 operates with 15-minute headways during the AM and PM peak periods, respectively.

Route 46 — Route 46 is a Local Route that runs between Hurdman and Billings Bridge Station. Route 46 operates with 15-minute headways during the AM and PM peak periods, respectively.

Route 140 — Route 140 is a Local Route that runs between Heron Park and Billings Bridge with limited service with a headway of 30 minutes during the day from 9 am to 3 pm

Route 291 — Route 291 is a Connection Route that runs between Hurdman and Herongate. It conveniently connects the O-Train during the AM and PM peak times. Route 291 operates with 25-minute headways during the AM peak hour and 30-minute headways during the PM peak periods, respectively.

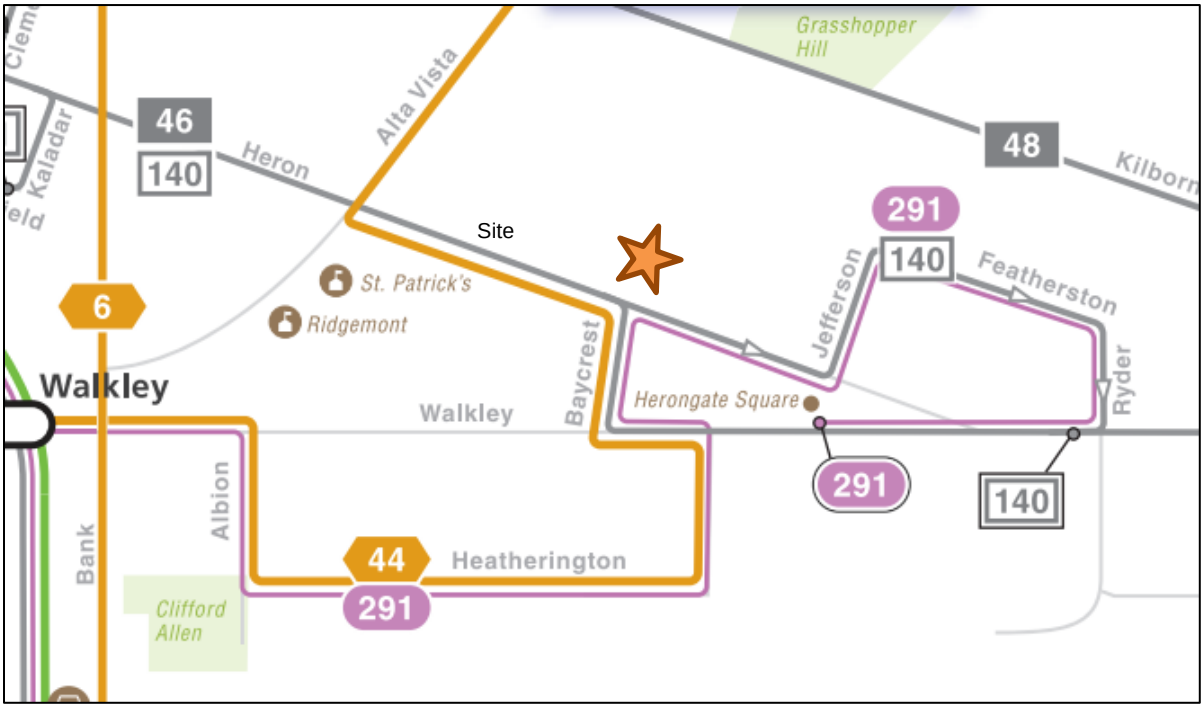
There are transit stops located at the intersection of Heron Road and Baycrest Drive that are serviced by all four transit routes.

West-Bound Heron/Baycrest — West-Bound Heron/Baycrest services Route 44, Route 46, and Route 140. It is an open bus stop with no shelter located on the sidewalk directly adjacent to the proposed site.

East-Bound Heron/Baycrest — East-Bound Heron/Baycrest services Route 140 and Route 291. It is an open bus stop with no shelter located on the sidewalk opposite side of the road from the proposed site.

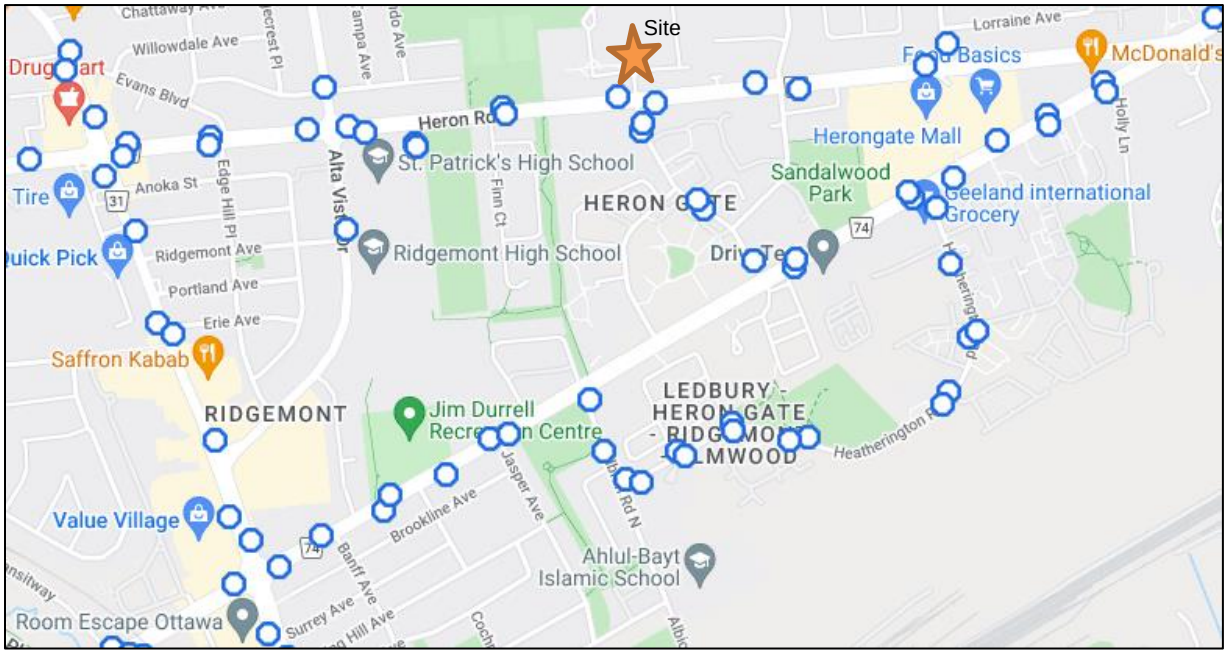
Figure 7 and **Figure 8** illustrate nearby transit routes and bus stop locations.

Figure 7 - Existing Study Area Transit Service



(Source: OC Transpo System Map, accessed March 3th, 2022)

Figure 8 - Existing Study Area Transit Stops



(Source: OC Transpo System Map, accessed March 3th, 2022)

2.1.2.4 Traffic Management Measures

No traffic management measures are currently provided near the subject site.

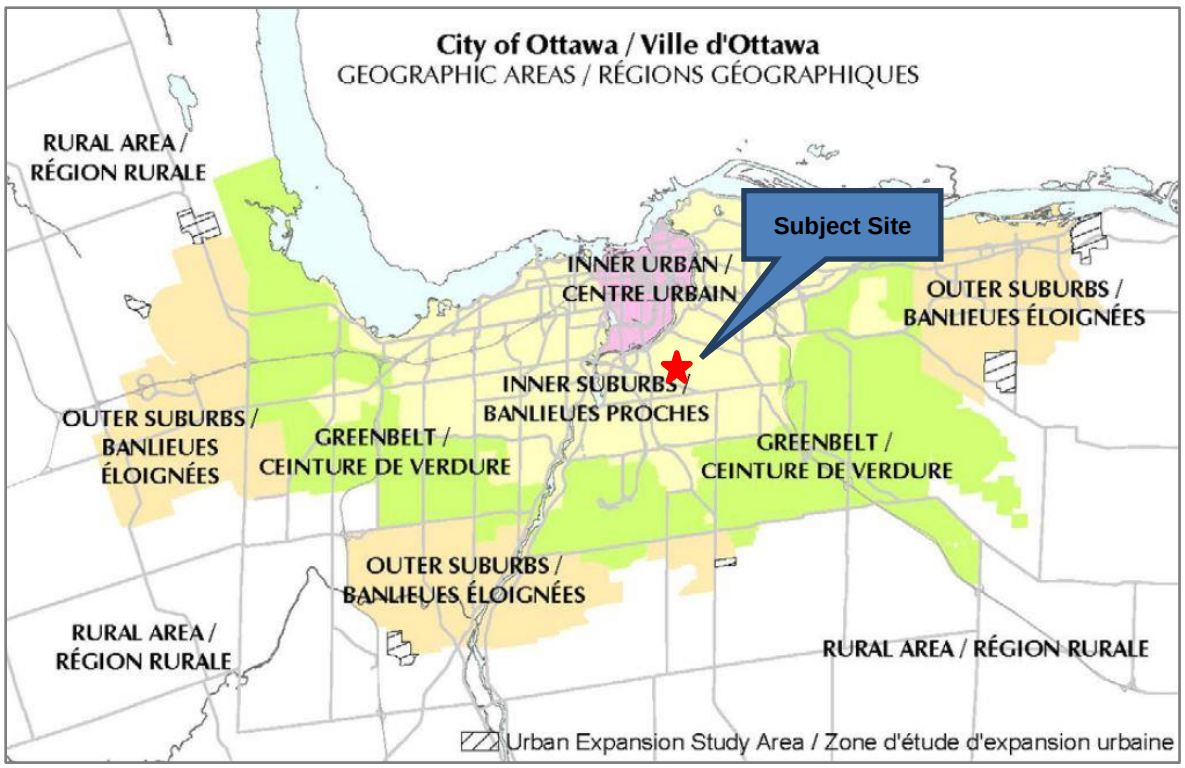
2.1.2.5 Traffic Volumes

Traffic volumes at the study area intersections were collected in 2022.

Based on the City's TMP, the subject development site is within the "Inner Suburbs" area, as shown in Figure 9.

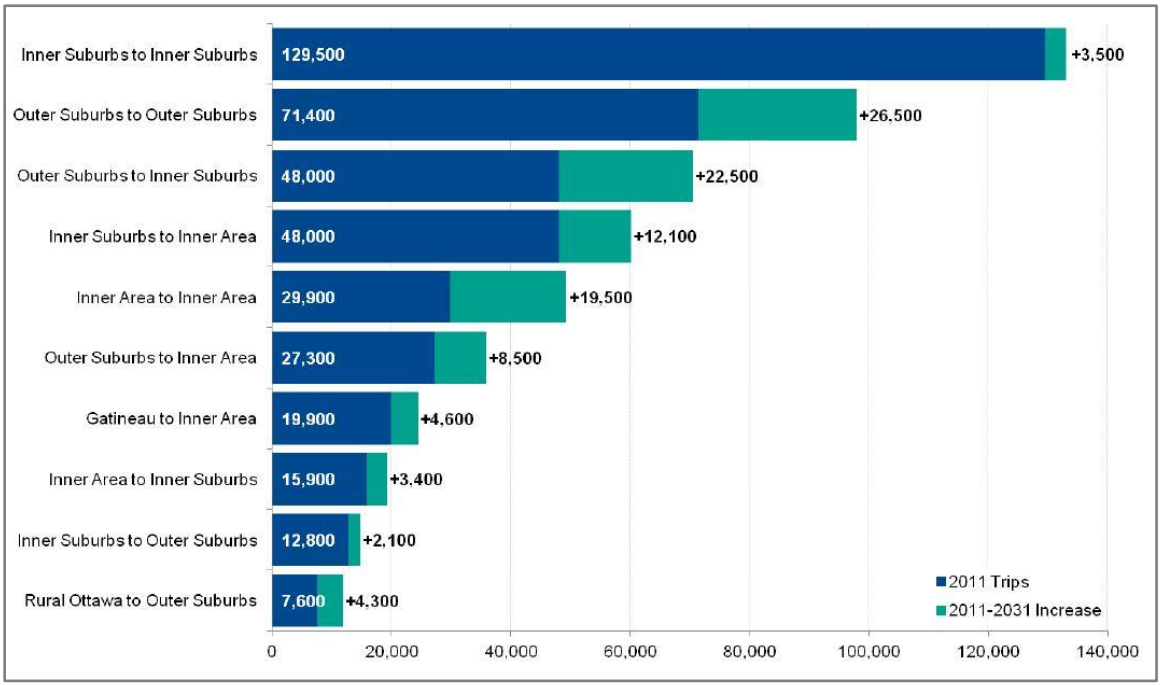
The City of Ottawa's TMP provided **Figure 12** below, which outlines the projected Growth in Key Travel Markets during the morning peak period. As illustrated in **Figure 10**, the 20-year traffic growth rates for Inner Suburbs Area were calculated and presented in **Table 3**.

Figure 9 - Location of Inner Suburbs



Source: City of Ottawa 2013 Transportation Maser Plan

Figure 10 - Projected growth in Key Travel Markets (morning peak period)



Source: City of Ottawa 2013 Transportation Master Plan

Table 3 - 20 Year Growth Rate Calculation (Inner Suburbs)

Travel Markets	2011 Trips	Trip Increase	2031 Trips	20yr Growth Rate
Inner Suburbs to Inner Suburbs	129,500	3,500	133,000	3%
Outer Suburbs to Inner Suburbs	48,000	22,500	70,500	47%
Inner Suburbs to Inner Area	48,000	12,100	60,100	25%
Inner Area to Inner Suburbs	15,900	3,400	19,300	21%
Inner Suburbs to Outer Suburbs	12,800	2,100	14,900	16%

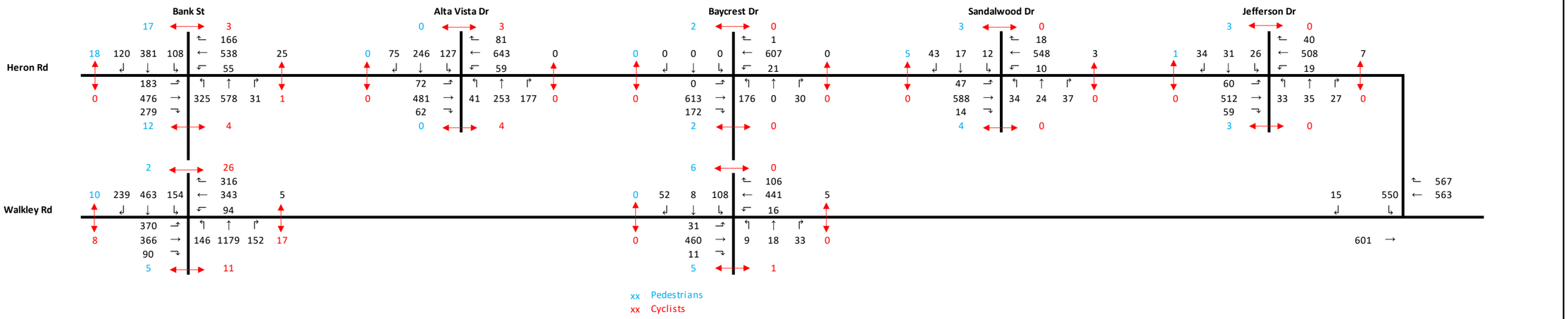
The following formula was used to calculate a weighted annual traffic growth rate for the roadway network of this study:

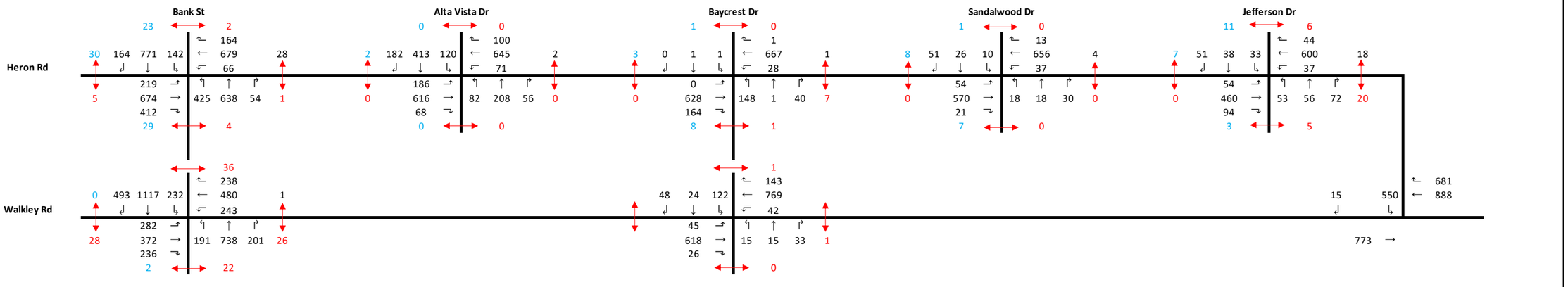
Annual Traffic Growth Rate = ((3%*129,500+47%*48,000+25%*48,000+21%*15,900+16%*12,800) / (129,000+48,000+48,000+15,900+12,800)) / 20 = 0.86%

Figure 11 illustrates the existing traffic volumes at the study area intersections.

Appendix A contains the traffic data and is provided for reference.

Figure 11 - Existing Traffic Volumes





2.1.2.6 Collision History

Collision data was provided by the City of Ottawa for the period 2016-2020 for the intersections and midblock locations in the vicinity of the subject site. The data was reviewed to determine if any intersections or road segments exhibited an identifiable collision pattern during the five (5) year period.

Overall, there were a total of 528 reported collisions between 2016 to 2020. It was found that 433 collisions (82%) resulted in property damage only, suggesting that they occurred at low speeds, thereby circumventing bodily harm. The analysis also found that 94 collisions (18%) resulted in non-fatal injuries, 0 collision (0%) resulted in a fatal injury, and 1 (0%) non-reportable collision. The collision statistics are shown in Table 4below.

At the intersection of Heron Road and Bank Street, a total of 129 collisions were reported, which accounts for 24% of the total collisions in the identified intersections and segments. Of these 129 collisions, 109 of them (84%) resulted in property damage only and 20 of them (16%) resulted in non-fatal injuries. Of these 129 collisions, most of them were rear-end collisions 58 (45%). These rear-end collisions were analyzed further to determine if there are any significant patterns in the rear-end collisions at this intersection, which can be seen in **Table** 7 - Rear End Collisions based Direction and Pavement Conditions below. It was found that 33% of the rear-end collisions occurred between vehicles traveling in the eastbound direction, 31% in the northbound direction and 28% in the southbound direction.

Further analysis of the rear-end collision at this intersection under pavement conditions found that 37 collisions (64%) occurred on a dry surface and 10 collisions (17%) occurred on a wet surface.

The Walkley Road and Bank Street intersection indicated a total of 130 collisions were reported, which accounts for 25% of the total collisions in the identified intersections and segments. Of these 130 collisions, 109 of them (84%) resulted in property damage only and 21 of them (16%) resulted in non-fatal injuries. Of these 130 collisions, most of them were rear-end collisions 73 (56%). These rear-end collisions were analyzed further to determine if there are any significant patterns in the rear-end collisions at this intersection, which can be seen in Table 4 - Table 8Table 8 - Rear End Collisions-based Direction and Pavement Conditions below. It was found that 33% of the rear-end collisions occurred between vehicles traveling in the northbound direction, 32% in the southbound direction and 21% in the westbound direction.

Further analysis of the rear-end collision at this intersection under pavement conditions found that 55 collisions (75%) occurred on a dry surface and 11 collisions (15%) occurred on a wet surface.

Appendix B contains the collision data and is provided for reference.

Table 4 - Collision Summary - Intersections

		Heron Road @ Baycrest Drive	Heron Road @ Sandalwood Drive	Heron Road @ Jeffers on Street	Heron Road @ Walkley	Heron Road @ Alta Vista Drive	Heron Road @ Bank Street	Walkley Road @ Baycrest Drive Street	Walkley Road @ Bank Street
Classification	Property Damage Only	19	9	12	18	35	109	23	109
	Non-Fatal Injury	2	5	1	6	10	20	7	21
	Fatal Injury	-	-	-	-	-	-	-	-
	Non-reportable	-	-	-	-	1	-	-	-
Collision Type	Sideswipe	3	1	2	7	6	28	6	23
	Approaching	-	1	-	1	-	-	-	-
	Angle / Turning	7	8	8	3	12	34	7	24
	Rear End	9	3	3	9	24	58	15	73
	Single Motor Vehicle	2	-	-	4	4	6	2	4
	Other	-	1	-	-	-	3	-	3
	SMV unattended vehicle	-	-	-	-	-	-	-	2
Environmental Condition	Clear	17	12	8	20	37	95	26	101
	Rain		1	1	1	4	19	2	10
	Snow	4	1	4	3	5	11	2	16
	Freezing Rain	-	-	-	-	-	3	-	3
	Fog, mist, smoke, dust	-	-	-	-	-	1	-	-

Table 5 - Collision Summary - Roadway Segments (1)

		HERON RD btwn ALTA VISTA DR & FINN CRT	HERON RD btwn BANK ST & EDGE HILL PL	HERON RD btwn BAYCREST DR & SANDALWOOD DR	HERON RD btwn EVANS BLVD & ALTA VISTA DR	HERON RD btwn FINN CRT & BAYCREST DR	HERON RD btwn JEFFERSON ST & TURN LANE	HERON RD btwn SANDALWOOD DR & JEFFERSON ST
Classification	Property Damage Only	5	10	2	2	8	11	5
	Non-Fatal Injury	1	1	1	1	3	2	1
	Fatal Injury	-	-	-	-	-	-	-
	Non-reportable	-	-	-	-	-	-	-
Collision Type	Sideswipe	3	2	2	-	-	3	2
	Approaching	-	-	-	-	-	-	-
	Angle / Turning	2	2	1	1	5	5	-
	Rear End	1	5	-	1	5	3	2
	Single Motor Vehicle	-	2	-	1	-	1	1
	Other	-	-	-	-	-	-	1
	SMV unattended vehicle	-	-	-	-	-	-	-
Environmental Condition	Clear	5	9	2	3	9	12	4
	Rain	-	-	1	-	1	-	1
	Snow	1	2	-	-	1	1	1
	Freezing Rain	-	-	-	-	-	-	-

Table 6 - Collision Summary - Roadway Segments (2)

		WALKLEY RD btwn 152 E OF HEATHERINGTON RD & HOLLY LANE	WALKLEY RD btwn AYERS AVE & HAMPSTEAD PL	WALKLEY RD btwn BANFF AVE & AYERS AVE	WALKLEY RD btwn BANK ST & BANFF AVE	WALKLEY RD btwn BAYCREST DR & HEATHERINGTON RD	WALKLEY RD btwn COLLISTON CRES & CEDARWOOD DR	WALKLEY RD btwn COLLISTON CRES & COLLISTON CRES	WALKLEY RD btwn HAMPSTEAD PL & JASPER AVE	WALKLEY RD btwn HEATHERINGTON RD & 152 E OF HEATHERINGTON RD	WALKLEY RD btwn HERON RD & HOLLY LANE	WALKLEY RD btwn HERON RD & TURN LANE	WALKLEY RD btwn JASPER AVE & COLLISTON CRES
Classification	Property Damage Only	8	2	6	11	9	4	1	1	3	7	2	2
	Non-Fatal Injury	1	-	-	1	2	4	-	-	-	4	-	-
	Fatal Injury	-	-	-	-	-	-	-	-	-	-	-	-
Collision Type	Sideswipe	-	-	2	2	-	2	-	1	1	3	2	-
	Angle / Turning	5	1	1	5	4	1	-	-	1	3	-	1
	Rear End	4	-	3	5	6	1	1	-	-	4	-	1
	Single Motor Vehicle	-	1	-	-	1	3	-	-	1	1	-	-
	Other	-	-	-	-	-	1	-	-	-	-	-	-
Environmental Condition	Clear	6	1	4	11	11	7	1	1	2	11	1	2
	Rain	3	1	1	-	-	1	-	-	-	-	-	-
	Snow	-	-	1	1	-	-	-	-	1	-	1	-
	Freezing Rain	-	-	-	-	-	-	-	-	-	-	-	-

Table 7 - Rear End Collisions based Direction and Pavement Conditions

Heron Road @ Bank Street Rear End Collisions based on Direction and Pavement Conditions Collisions		
Vehicle 1 Direction	North	18
	South	16
	East	19
	West	5
Pavement Condition	Dry	37
	Wet	10
	Ice	2
	Slush	5
	Loose Snow	3
	Packed Snow	1

Table 8 - Rear End Collisions-based Direction and Pavement Conditions

Walkley Road @ Bank Street Rear End Collisions based on Direction and Pavement Conditions Collisions		
Vehicle 1 Direction	North	24
	South	23
	East	11
	West	15
Pavement Condition	Dry	55
	Wet	11
	Ice	2
	Slush	0
	Loose Snow	5
	Packed Snow	0

Based on the collision data summarized in Table 4 - Table 8 above, it was found that Heron Road at Bank Street intersection and Walkley Road at Bank Street intersection experienced the highest number of collisions. It is recommended that a review of signal timing parameters be conducted by the City of Ottawa to determine if any adjustments are necessary to minimize the occurrences of rear-end collisions.

2.1.3 Planned Conditions

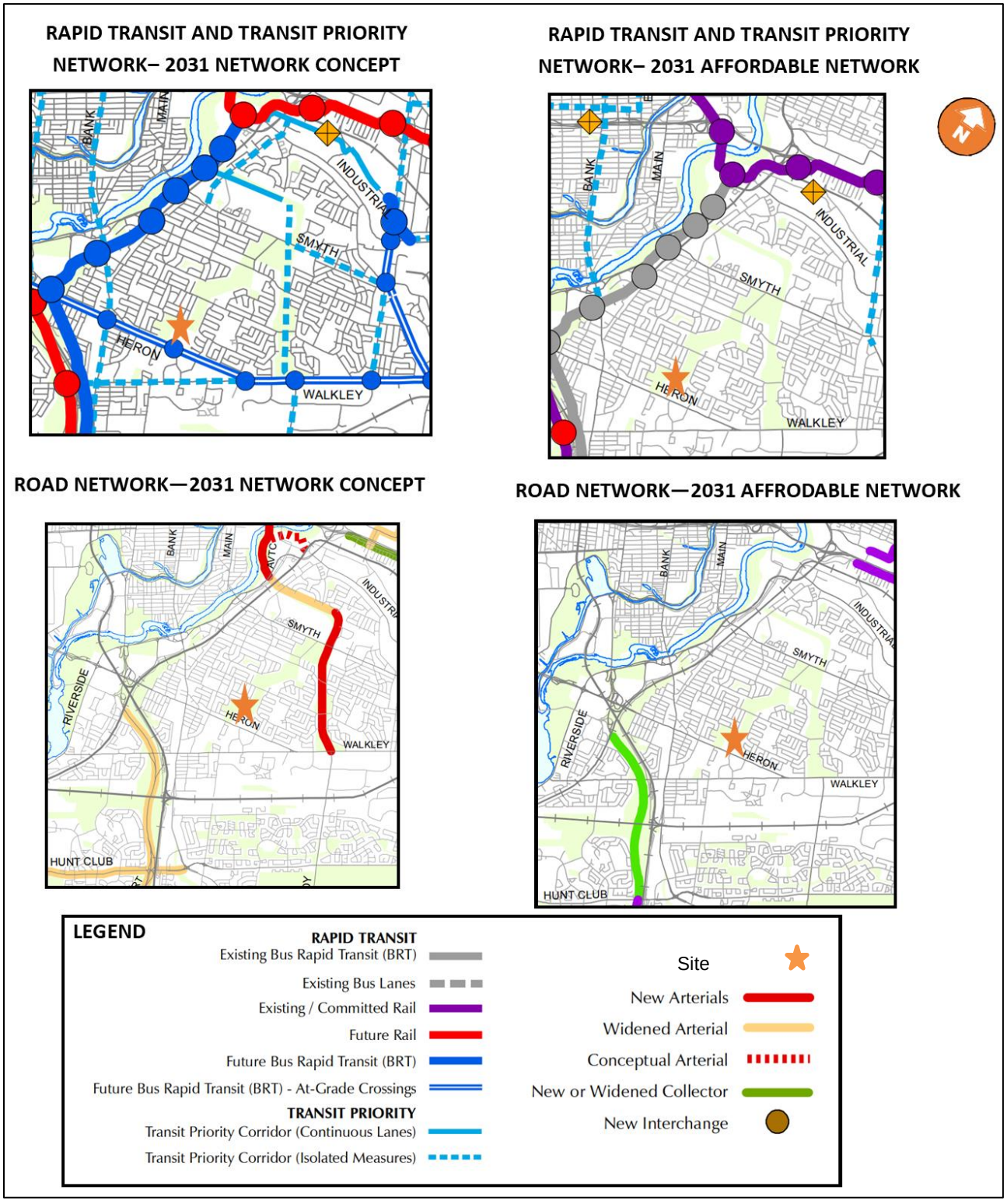
2.1.3.1 Road Network Modifications

Several transit improvements were outlined in the City of Ottawa's Transportation Master Plan ("TMP") and are summarized in **Table 9** below. All of them are included in the TMP's network concept plan and they may be scheduled to occur within the vicinity of the subject development.

Table 9 - City of Ottawa Transportation Master Plan Projects

Project	Description	TMP Phase
Baseline / Heron / Walkley / St. Laurent	At-grade Bus Rapid Transit connecting Baseline Station to Heron Station	Affordable Network (2031)
	At-grade Bus Rapid Transit connecting Bayshore Station to St. Laurent Station	Network Concept (i.e., beyond 2031)
Bank Street	Transit signal priority between Wellington Street and Highway 417. May also include parking lane conversion in the immediate vicinity of selected intersections	Affordable Network (2031)
	Transit signal priority between Highway 417 and Billings Bridge Station, including limited to installation of queue jump lanes at selected intersections (one lane only)	Affordable Network (2031)
	Transit signal priority and queue jump lanes between Billings Bridge Station and Hunt Club Road	Network Concept (i.e., beyond 2031)
Alta Vista Drive	Transit signal priority and queue jump lanes at selected intersections	Network Concept (i.e., beyond 2031)
Alta Vista Transportation Corridor	Bus/high occupancy vehicle lanes and transit signal priority between Riverside Drive and Ottawa Health Services Centre	Network Concept (i.e., beyond 2031)
	Transit signal priority and queue jump lanes between the Ottawa Health Sciences Centre and Walkley Road	Network Concept (i.e., beyond 2031)

Figure 12 - Transportation Master Plan for Roads and Transit



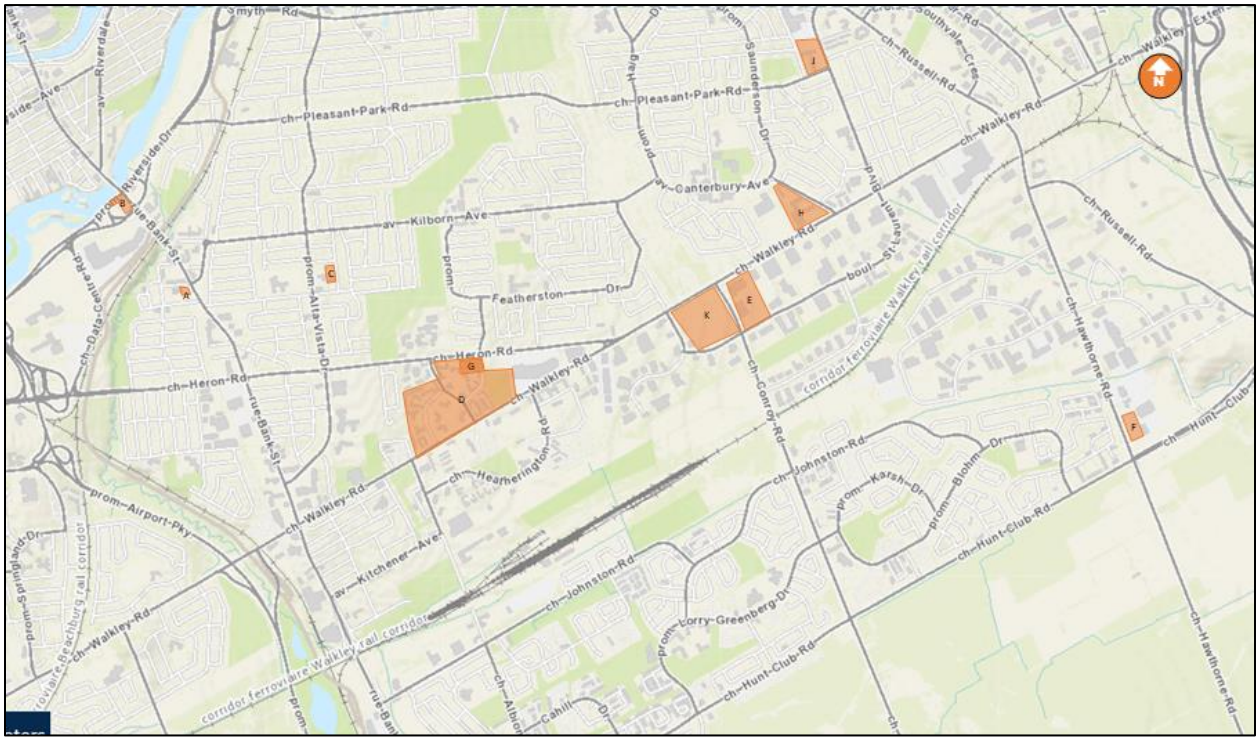
2.1.3.2 Future Background Developments

Several developments in the surrounding areas of the subject site were illustrated in Figure 13 and described in Table 10. Among those developments, there are two developments (i.e., Development D and Development G in Table 10) scheduled to occur within the vicinity of the subject site. Specifically, Development G, the 2851 Baycrest Drive Development, is a part of Development D, the Timbercreek Heron Development.

Table 10 - Background Developments

Key Plan Reference	Development	Location	Description	Build-Out Horizon
A	1400 Bank Street	Southwest quadrant of the intersection of Belanger Avenue and Bank Street	16-storey mixed-use building with 3,791 ft2 of commercial space and 5,365 ft2 of office space. A total of 160 apartment units and 66 underground parking	2026
B	1330,1340,1346 Bank Street and 2211 Riverside Drive	Southwest quadrant of the intersection with Riverside Dr WB and Bank Street, between Riverside Dr. EB and Riverside Dr. WB	27-storey building, 309 residential units and 3,603 ft2 commercial space 29-storey building with 228 residential units	2023 Bank Street, 2026 Riverside
C	2262 Braeside Avenue	North of Randal Avenue between Alta Vista Drive and Braeside Avenue	38 new units and net increase of 30 parking spaces	2023
D	Timbercreek Heron	South of Heron Road, North of Walkley area surrounding Baycrest Drive	Seven separate blocks. 118 low-rise, 2,047 mid-rise and 2,874 high rise units. A total of 3,850 parking spaces.	2030 Interim and 2040 Full build out
E	2020 Walkley Road & 2935 Convoy Road	Northeast quadrant of the intersection with Conroy Road and St. Laurent Boulevard	3 single-story warehouses of 265,836 ft2	2023
F	3455 Hawthorne Road	Northeast quadrant of the intersection with Hunt Club Road and Hawthorne Road	13,217 m2. 22 parking spots	2023
G	2851 Baycrest Drive	Southwest quadrant of the intersection with Heron Road and Sandalwood Drive	One 6-storey building and two 7-storey buildings with 305 residential units, 298 residential parking spaces, 58 visitor parking spaces and 153 bicycle parking spots	2024
H	2190 Halifax Drive	Northwest quadrant of the intersection with Walkley Road and Halifax Drive	202 new apartment units and 177 net new parking spots	2021
J	2025 Othello Drive	Northeast quadrant of the intersection with Pleasant Park and Othello	27-storey and 18-storey high-rise residential towers consisting of 563 units and 695 surface and underground parking	2023
K	2510 St-Laurent Boulevard	Bound by Walkley Rd to the North, Conroy Rd to the East, St-Laurent Boulevard to the South, and Don Reid Drive to the West	192 back-to-back townhomes and 36 standard town homes, and a park block dedicated to the city of Ottawa	2022

Figure 13 - Background Developments



2.2 STUDY AREA AND TIME PERIODS

2.2.1 Study Area

The proposed study area is limited to the following intersections:

1. Heron Road at Bank Street
2. Heron Road at Alta Vista
3. Heron Road at Baycrest Drive
4. Heron Road at Sandalwood Drive
5. Heron Road at Jefferson Street
6. Heron Road at Walkley Road
7. Bank Street at Walkley Road
8. Walkley Road at Baycrest

2.2.2 Time Periods

The proposed scope of the transportation assessment includes the following analysis time periods:

- Weekday AM peak hour of roadway; and
- Weekday PM peak hour of roadway.

2.2.3 Horizon Years

The scope of the transportation assessment proposes the following horizon years:

- 2023 Existing conditions;
- 2032 future background conditions;
- 2032 total future conditions (site build-out); and
- 2037 total future conditions (5 years beyond build-out)

2.3 EXEMPTIONS REVIEW

Table 11 summarizes the Exemptions Review table from the City of Ottawa's *2017 Transportation Impact Assessment Guidelines*.

Table 11 - Exemptions Review

Module	Element	Exemption Considerations	Exempted?
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Yes
	4.1.3 New Street Networks	Only required for plans of subdivision	No
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Yes
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Yes
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	No

4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighborhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Yes
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning	No
4.9 Intersection Design	All Elements	Not required if site generation trigger is not met.	No

3.0 FORECASTING

3.1 DEVELOPMENT GENERATED TRAVEL DEMAND

3.1.1 Trip Generation and Mode Shares

The *TRANS Trip Generation Manual (October 2020)* was used to forecast auto person trip generation for the multi-family mid-rise apartment and stacked townhouse land uses. The Institute of Transportation (ITE) Trip Generation Manual (11th Edition) was used to forecast auto trip generation for the proposed strip retail plaza, elementary school, and recreational community center land use. Land use codes 221 & 222 – Multi-Unit High-Rise Dwelling (TRANS), 220 – Stacked Townhouse (Multi-Unit Low-Rise Dwelling (TRANS), 822 – Strip Retail Plaza (ITE), 520 – Elementary School (ITE), and 495 – Recreational Community Centre (ITE) were thought to be the most representative of the proposed land uses.

Table 12 outlines the assumed land uses and the trip generation rates for each land use.

Table 12 - Land Uses and Trip Generation Rates

LUC	Land Use	Size	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Rate	In	Out	Rate
221 & 222	High-Rise Multi-Family Housing	708 Units	31%	69%	0.80	58%	42%	0.90
220	Stacked Townhouse (Low-Rise Multifamily Housing)	80 Units	30%	70%	1.35	56%	44%	1.58
822	Strip Retail Plaza	1,496 ft^2 GFA	60%	40%	2.36	50%	50%	6.59
520	Elementary School	600 Students	54%	46%	0.74	46%	54%	0.16
495	Recreational Community Centre	87,930 ft^2 GFA	66%	34%	1.91	47%	53%	2.50

The auto trip generation rates of strip retail plaza, elementary school, and recreational community center land uses were converted to person trips using a conversion factor of 1.28 as outlined in the *City of Ottawa's 2017 TIA Guidelines*. The person trips from the residential land uses were standardized by a peak period conversion factor for AM and PM peak periods using *Table 4 TRANS Trip Generation 2020* to adjust the residential trip generation rates from peak period to peak hour. **Table 13** outlines development-generated person trips for each land use.

Table 13 - Person Trips Generated by Land Use

LUC	Land Use	Trip Conversion	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
221 & 222	Multi-Family Housing High-Rise Apartment	Person Trips (Peak Period)	175	391	566	369	268	637
		Person Trips (Peak Hour 0.50 for AM 0.44 for PM)	88	196	283	162	118	280
224	Stacked Townhouse	Person Trips (Peak Period)	32	76	108	71	55	126
		Person Trips (Peak Hour 0.50 for AM 0.44 for PM)	16	38	54	31	24	55
822	Strip Retail Plaza	Auto Trips	2	2	4	5	5	10
		Person Trip Factor	1.28					
		Person Trips	3	3	6	6	6	12
520	Elementary School	Auto Trips	240	204	444	44	52	96
		Person Trip Factor	1.28					
		Person Trips	307	261	568	57	66	123
495	Recreational Community Center	Auto Trips	111	57	168	103	117	220
		Person Trip Factor	1.28					
		Person Trips	142	73	215	132	149	281
Total		**Person Trips**	596	744	1,340	540	450	990

To reflect local travel characteristics, the person trips were assigned to the four primary modal shares (i.e., auto driver, auto passenger, transit, and active modes) according to the *TRANS Trip Generation 2020 for* Alta Vista District. **Table 14** outlines Alta Vista District's existing average mode shares in this district.

Based on City of Ottawa Transportation Master Plan (November 2013) Future Network Concept (i.e., Beyond 2031), the subject site is located within the future Heron Road / Walkley Road at-grade Bus Rapid Transit (BRT) Corridor, with a BRT station located south of the site on Heron Road. Based on the discussion with the City, it was assumed that BRT will not be constructed along Heron Road by the future horizon years of 2032 and 2037 in this study.

As a result, the assumed modal shares did not take into account the proposed higher order transit facility on Heron Road. **Table 14** outlines the assumed modal shares used to estimate site traffic and establish site trip distribution and assignments in the following sections. The mode shares split percentages used were obtained from the TRANS Trip Generation Report 2020 as outlined for the Alta Vista region.

Table 14 - Trip Generated by Travel Mode – Existing Alta Vista Mode Shares

LUC	Land Use	Trip Conversion		Weekday AM Peak Hour			Weekday PM Peak Hour		
				In	Out	Total	In	Out	Total
221 & 222	Multi-Family Housing (High-Rise Apartment)	Auto Driver	41%	36	80	116	66	48	114
		Auto Passenger	14%	12	27	41	23	17	40
		Transit	35%	31	69	100	57	41	98
		Cycling	2%	2	4	6	3	2	5
		Walking	8%	7	16	23	13	9	22
224	Stacked Townhouse	Auto Driver	38%	6	14	20	12	9	21
		Auto Passenger	17%	3	6	9	5	4	9
		Transit	33%	5	13	18	10	8	18
		Cycling	2%	0	1	1	1	0	1
		Walking	10%	2	4	5	3	2	6
822	Strip Retail Plaza	Auto Driver	60%	2	1	3	4	4	8
		Auto Passenger	15%	0	1	1	1	1	2
		Transit	11%	0	1	1	1	1	2
		Cycling	1%	0	0	0	0	0	0
		Walking	13%	0	1	1	1	1	2
520	Elementary School	Auto Driver	22%	68	58	125	12	15	27
		Transit/ School Bus	54%	166	141	307	31	36	66
		Active Modes / Other	24%	74	63	136	14	16	29
495	Recreational Community Center	Auto	60%	85	44	129	79	90	169
		Auto Passenger	15%	21	11	32	20	23	42
		Transit	11%	16	8	24	15	17	31
		Cycling	1%	1	1	2	1	2	3
		Walking	13%	18	9	28	17	20	37
Total		**Auto Trips**		**197**	**197**	**394**	**173**	**165**	**338**
		Transit / School Bus Trips		**218**	**232**	**450**	**113**	**102**	**215**
		Passenger / Active Mode Trips		**105**	**99**	**204**	**53**	**52**	**105**

3.1.2 Internal Capture and Pass-By

Internal Trips are trips between different land uses within a multi-use development that do not access the external roadway network and have both and origin and destination that is within the development. For this study, no internal trips were considered due to the walkable distances on site between any two different land uses.

In addition, a portion of the auto trips generated by the proposed retail land use will be 'pass-by' in nature. Pass-by trips are considered intermediate stops between an origin and a destination. They are site trips that are drawn from existing traffic volumes on the road network that are "passing-by" the site. While the total number of trips generated by a given development remains the same, the turning movements at study area intersections and site accesses require adjustments to reflect pass-by traffic. The rate of pass-by traffic is based on the specific land use which was obtained from the ITE Trip Generation Manual. A pass-by rate of 34% for the PM peak hour only was used for the retail land use.

Table 15 outlines the pass-by trips and net new trips anticipated for the proposed development.

Table 15 - Future Pass-by and Net New Auto Trips

LUC / Land Use	Trip Conversion		Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
822 – Strip Retail Plaza	Auto Trips		2	1	3	4	4	8
	Pass-By	34%				1	1	2
	Net Auto Trips		1	1	2	3	3	6
495 – Recreational Community Center	Auto Person Trips		85	44	129	79	90	169
	Pass-By	34%	29	15	44	27	31	58
Net New Auto Trips								
223 – Multi Family Housing (Mid -Rise Apartment)			36	80	116	66	48	114
224 – Stacked Townhouse			6	14	20	12	9	21
822 – Strip Retail Plaza			2	1	3	3	3	6
520 – Elementary School			68	58	125	12	15	27
495 – Recreational Community Centre			85	44	129	79	90	169
Total Development								
Net New Auto Trips			**197**	**197**	**394**	**172**	**165**	**337**

The number of trips generated by the retail component is considered negligible as compared to the traffic volumes along Heron Road and as compared to the residential, school and community center components of the subject development. The retail component is projected to generate 2 vehicle trips during the AM peak hour and 6 vehicle trips during the PM peak hour. As such, pass-by reduction was not applied in this study.

3.1.3 Trip Distribution

The distribution of traffic to / from the proposed development was determined through examination of the TRANS Committee's 2011 Origin-Destination (O-D) Survey for the Alta Vista District.

Table 16 summarizes the estimated trip distribution for the proposed development.

Table 16 - Trip Distribution Assumptions

Direction		Via (to / from)					
		Bank Street (north)	**Alta Vista Drive (north)**	**Heron Road (west)**	**Bank Street (south)**	**Baycrest Drive (south)**	**Walkley Road (east)**
North	**28%**	10%	18%				
East	**14%**						14%
South	**5%**				5%		
West	**20%**			20%			
Internal (Alta Vista)	**33%**	8%	10%			5%	10%
Total	**100%**	18%	28%	20%	5%	5%	24%

3.1.4 Trip Assignment

Site generated trips were assigned to the study area road network based on the trip distribution assumptions outlined above in **Table 16**. **Figure 14** outlines the site assignment assumptions. It should be noted that the red value represents the outbound trips, and the black values represent the inbound trips.

Figure 15 illustrates the site generated trips for the proposed development during the AM and PM peak hours.

Figure 14 - Site Traffic Assignment Assumptions

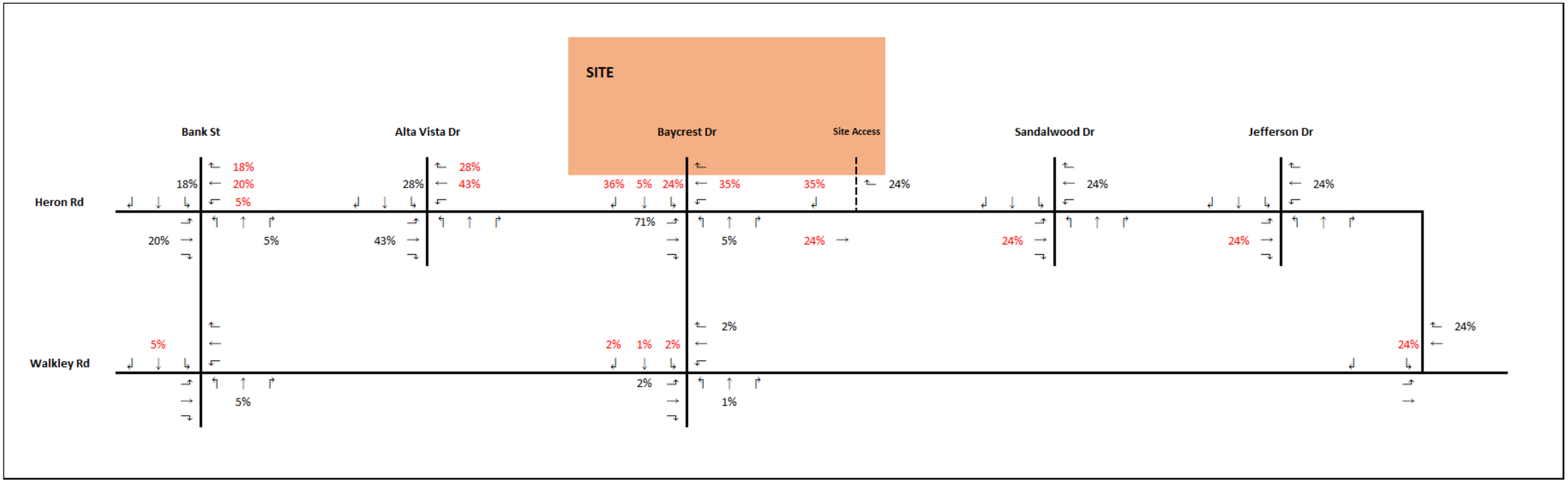
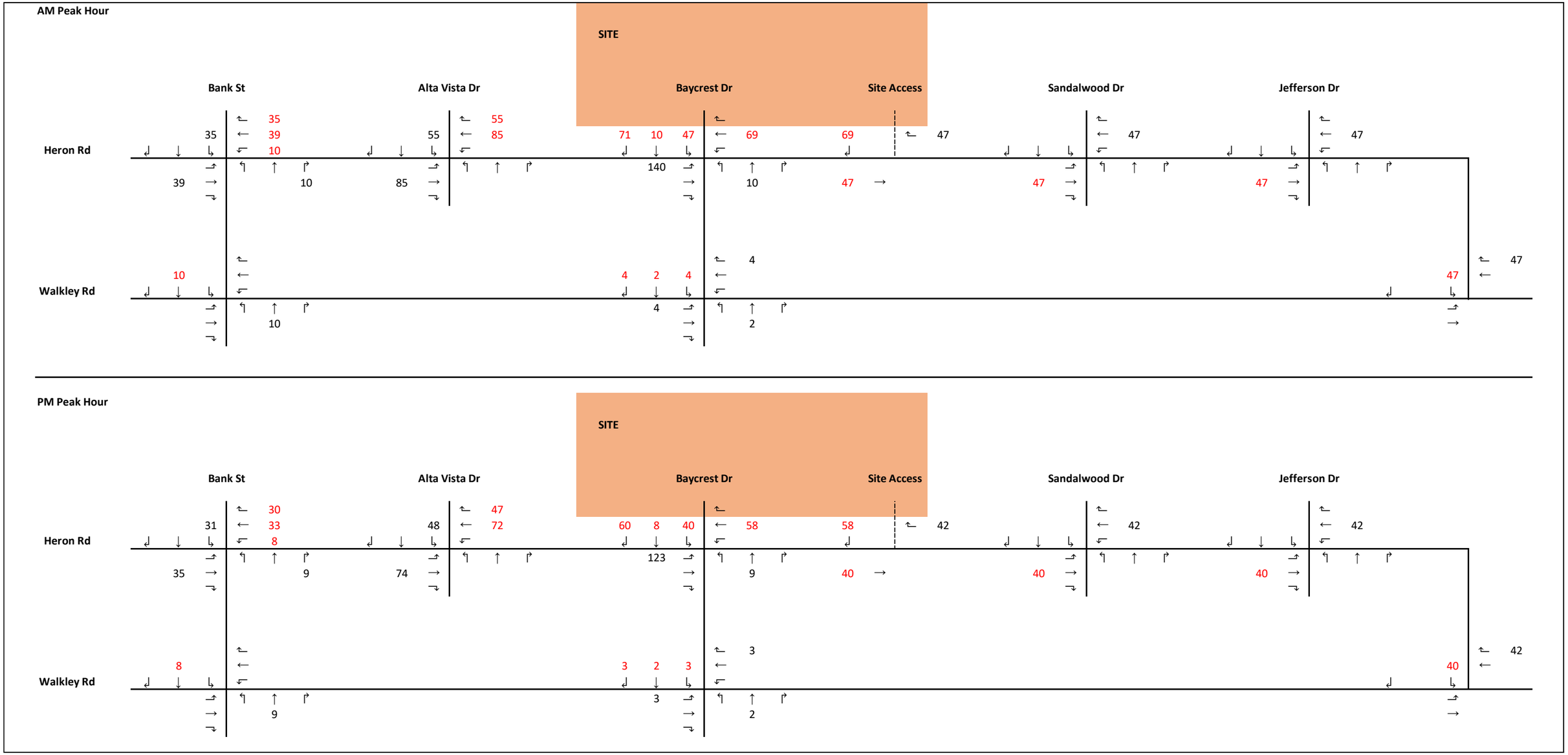


Figure 15 - Site Generated Traffic Volumes



3.2 BACKGROUND NETWORK TRAVEL DEMAND

3.2.1 Transportation Network Plans

As outlined in Table 9 in **Section 2.1.3.1** of the screening and scoping report, the roadway infrastructure projects that is included in the City's Transportation Master Plan ("TMP") within the vicinity of the subject site are the future Heron Road / Walkley Road BRT and Transit Signal Priority for both Bank Street and Alta Vista Drive. As there are no confirmed construction timelines for the proposed BRT facility on Heron Road, or the implementation of Transit Signal Priority projects, these improvements were not considered to occur within the time horizon of this study.

In addition, the City's Bank Street Renewal is currently in the design process and its geometric design was considered in this study. The timing for the City's Alta Vista Drive renewal project was not confirmed and it was not included in this study for future conditions.

3.2.2 General Background Growth

Based on **Section 2.1.2.5** the calculated annual traffic growth rate of 0.86% was applied to the Existing traffic volumes to project future background traffic volumes for the 2032 and 2037 time horizons.

3.2.3 Other Area Development

In addition to the background growth outlined in **Section 3.2.2** above, traffic growth associated with the nearby Timbercreek Heron Development was considered (Refer to **Table 10** - Background Developments).

Based on the Timbercreek Heron Gate Official Plan Amendment Transportation Impact Assessment (February 2021), Phase 2, 3 and 4 of the proposed development are anticipated to be completed by 2030, with full built-out anticipated to occur by 2040.

The site trips of Timbercreek Heron Development were obtained from this TIA report and explicitly added to the transportation network as future background traffic.

3.3 DEMAND RATIONALIZATION

Based on the aforementioned sections, the forecasted volumes along Heron Road in the future horizon years are in the range of 900– 1,400 vehicles per hour per directions. No further volume reduction was considered to account for demand rationalization.

3.3.1 2032 Future Background Traffic Volumes

2032 future background traffic volumes were derived by adding anticipated future background growth derived through the application of a general growth rate and the 2032 traffic volumes generated by nearby Timbercreek Heron Development.

Figure 16 illustrates the 2032 future background traffic volumes at the study area intersections.

3.3.2 2032 Total Future Traffic Volumes

2032 total future traffic volumes represent the sum of site generated traffic volumes for the subject site, in addition to 2032 future background growth.

Figure 17 illustrates the 2032 total future traffic volumes at the study area intersections.

3.3.3 2037 Ultimate Traffic Volumes

2037 ultimate traffic volumes represent projected 2037 traffic volumes that include site generated traffic demands and future background growth derived by applying an annual traffic growth rate of 0.87%.

Figure 18 illustrates the 2037 ultimate traffic volumes at the study area intersections.

Figure 16 - 2032 Future Background Volumes

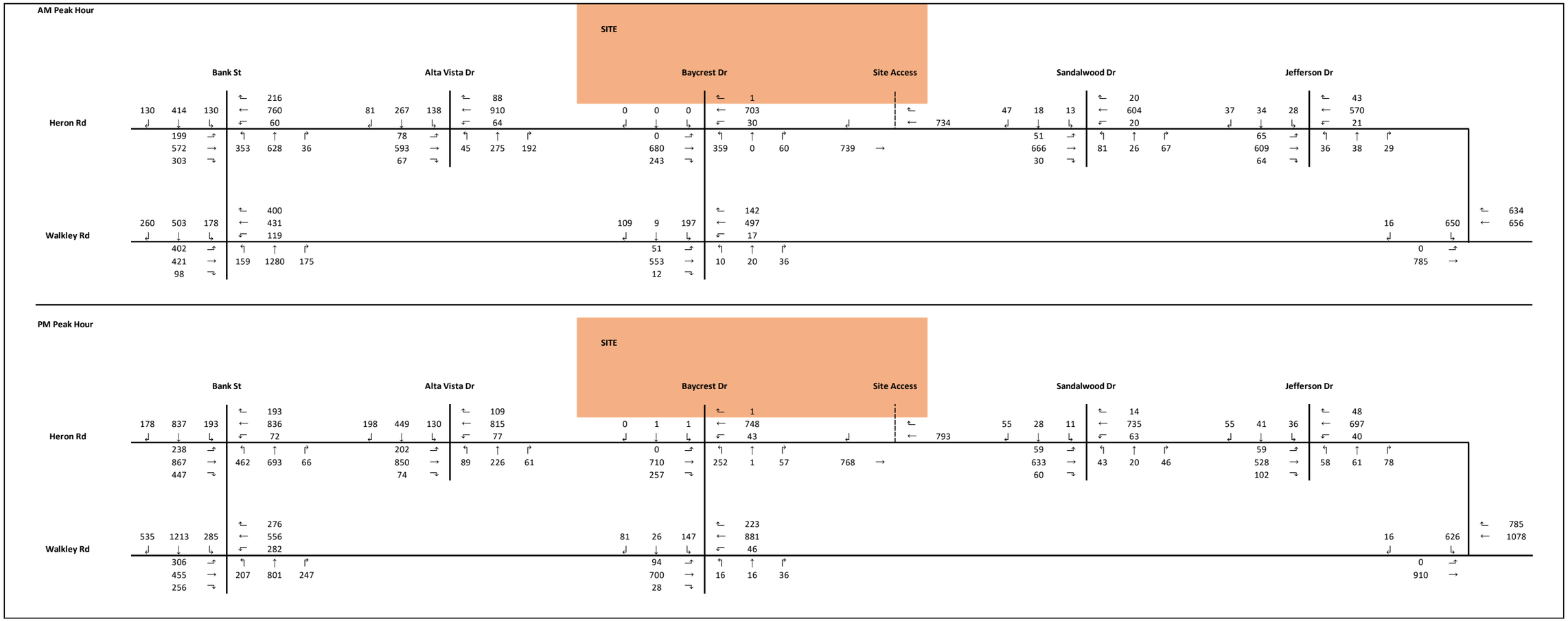


Figure 17 - 2032 Total Future Volumes

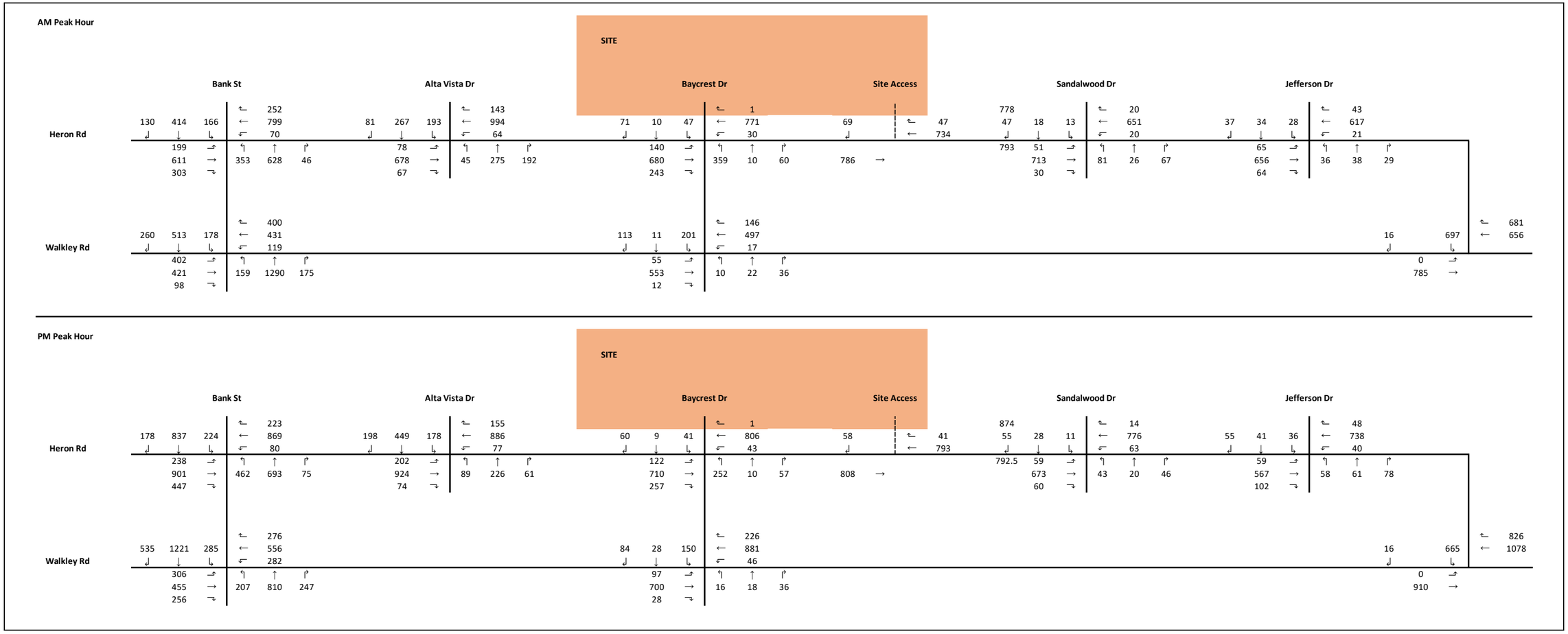
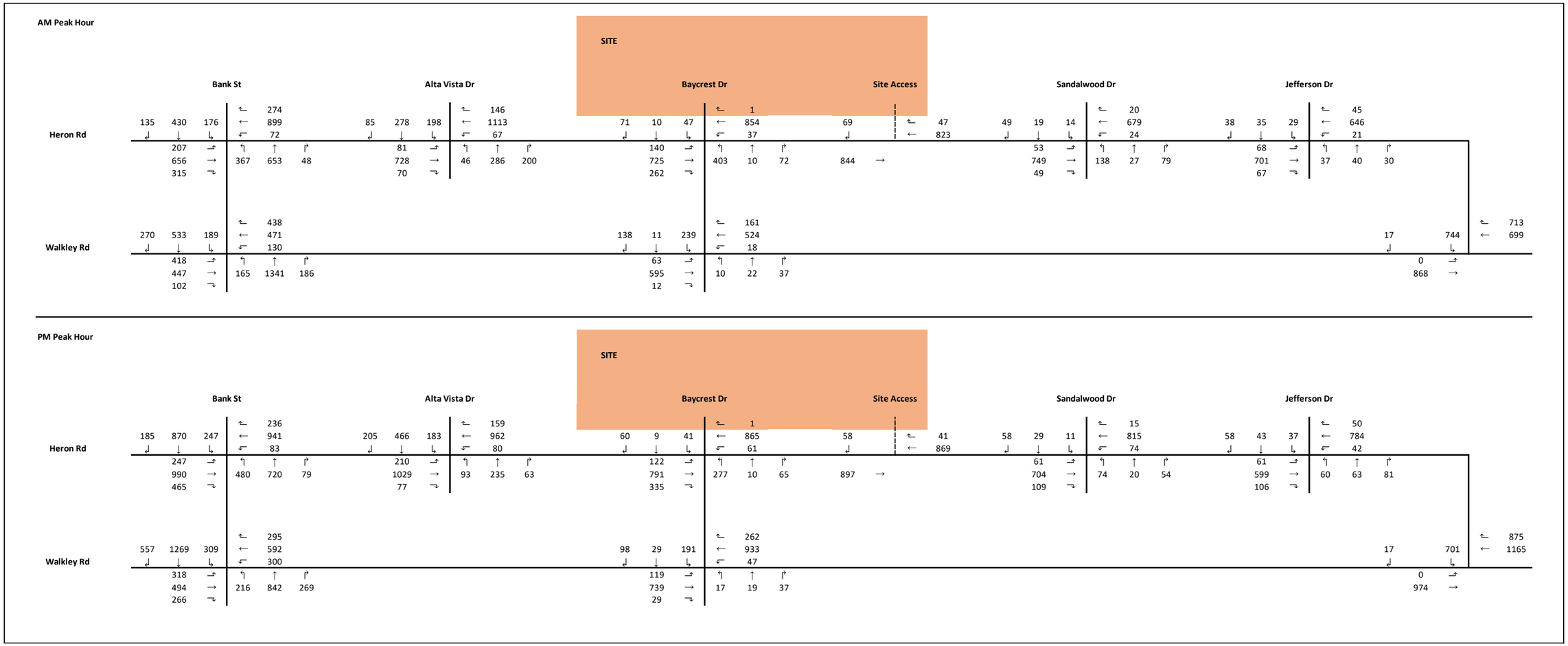


Figure 18 - 2037 Ultimate Volumes



4.0 STRATEGY REPORT

4.1 DEVELOPMENT DESIGN

4.1.1 Design for Sustainable Modes

Pedestrian facilities: Currently, both Heron Road and Baycrest Drive include sidewalks along both sides of the roads. Based on the proposed site plan, sidewalks are provided along both sides of internal roadways on site. pedestrian connections are included to connect the proposed building to the existing sidewalks along Heron Road and Baycrest Drive.

Bicycle facilities: Currently, there is a one-way on-street bicycle lane on the south side of the Heron Road. As per Cycling Network – Primary Urban from the City of Ottawa's 2013 Transportation Master Plan, Heron Road is designated as a spine route and a cross-town bikeway. Also, Walkley Road, Bank Street and Alta Vista Drive are all designated as spine routes. As the TIA is developed in support of a Plan of Subdivision, on-site bicycle parking facilities have not been identified. Based on the Bicycle Parking Space Rates and Provisions (Section 111) outlined in the City of Ottawa Zoning By-Law, a total of 438 bicycle parking spaces are estimated to be required. It is anticipated that parking facilities will be outlined in subsequent phases of development approvals.

Transit facilities: The subject site is presently well serviced by transit with four transit routes. There are several transit stops within 400m from all proposed buildings located at the intersection of Heron Road and Baycrest Drive that are serviced by all these four transit routes (mentioned in section 2.1.2.3). The existing sidewalks along both sides of Heron Road and Baycrest Drive. as well as four pedestrian crosswalks at the intersection of Heron Road and Baycrest Drive, provide the access two these transit stops. As per BRT 2031 network Concept from the City of Ottawa's 2013 Transportation Master Plan, across the frontage of the subject development, Heron Road will be updated with at-grade Bus Rapid Transit. In addition, transit priority (isolated measures) will be implemented along Bank Street and Walkley Road.

Parking areas: As the TIA is developed in support of a Plan of Subdivision, parking facilities and loading zones have not been identified. It is anticipated that parking facilities will be outlined in subsequent phases of development approvals.

Blue-Green Corridor: Based on the proposed site plan, the blue-green corridor is provided along the eastern and northern edges of the site, allows for sustainable stormwater management and includes a multipurpose trail leading to Wren's way. This linear park includes a dry creek that loads with water during heavy rains. This corridor creates a transition to the adjacent Guildwood Estate neighborhood and preserves the natural setting of Wren's way, while creating new connections to the trail system. An additional underground stormwater management infrastructure is planned along Heron Road and allows for the development of the ground space into public space.

4.1.2 Circulation and Access

Based on **Table 11**, This section is exempted during screening and scoping.

4.1.3 New Street Networks

Local Street: A new local street is built to serve the entire development site. This street provides two connections to Heron Road: a main access is planned in the center of the site and a right-in-right-out access is planned to the east of the site. Without restricting the fluidity of vehicular travel, the proposed street seeks to improve the pedestrian environment through greening measures that formally separate pedestrians from automobiles. The standard variable right-of-way is 18-20 meters two-way street with parking permitted both sides of the street to reduce vehicle speed. Sidewalks are 1.8 meters on each side of the street with medium sized tree planting.

Shared Street: A section of the local street is developed as a shared street. This is a portion of the public roadway where all transportation users (active, public, or vehicles) live together in a friendly and safe manner. This section of the street is continuation of the park to the heritage campus. It could be closed to traffic during community events. The shared street has a unique design, halfway between street and public space. It is a 20m right-of-way street which includes sidewalks, pavement, and planting/utility areas. It has a low vehicular traffic volume of 20km/h maximum.

4.2 PARKING

4.2.1 Parking Supply

Based on **Table 11**, This section is exempted during screening and scoping.

4.2.2 Spillover Parking

Based on **Table 11**, This section is exempted during screening and scoping.

4.3 BOUNDARY STREET DESIGN

4.3.1 Multi-Modal Level of Service

The multi-modal level of service (“MMLOS”) was evaluated for Heron Road from Alta Vista Drive to Sandalwood Drive to assist with developing a design concept that maximize the achievement of the MMLOS objectives.

The sections below outline the MMLOS summary for the roadway segments. **Appendix C** contains the detailed MMLOS analysis and is provided for reference.

Existing Conditions – Segments Intersections

Alta Vista Drive to Baycrest Drive (Heron Rd)

Heron Road, between Alta Vista Drive and Baycrest Drive, has a sidewalk width of 1.8 meters, and has a boulevard width greater than 2 meters, which indicates a good physical separation from passing traffic, therefore decreasing safety risks and increasing comfort for pedestrians. The AADT is greater than 3000, and speeds are moderately high as they range from over 50 km/h up to 60 km/h. With no on street parking,

and this segment being part of a truck route, the comfort of pedestrians is moderate to low. These factors in combination give rise to PLOS D, which is below the target of PLOS A. This street is of moderate concern for pedestrians.

This segment is a mixed traffic roadway with 2-3 lanes total, with a posted high speed limit of greater than or equal to 50 km/h, going up to 60 km/h. There is no dedicated biking facility present. With these factors in combination, the result is BLOS E.

The Vt/Vp ratio greater than or equal to 0.80. This classifies the road segment as TLOS D.

The truck lane width of this area is less than or equal to 3.5 meters, and there is more than one travel lane in each direction. These two factors give a TkLOS of A.

Of all modes evaluated on the Heron Road segment (between Alta Vista Drive to Baycrest Drive), cyclists and pedestrians are facing the lowest level of service. To address this some tradeoffs between truck and transit level of service may have to be made to accommodate for a better experience for other modes and increase PLOS and BLOS to meet targets.

Baycrest Drive to Sandalwood Drive (Heron Rd)

Heron Road, between Baycrest Drive and Sandalwood Drive, has a sidewalk width of 1.8 meters, and has a boulevard width greater than 2 meters, which indicates good physical separation from passing traffic therefore decreasing safety risks and increasing comfort for pedestrians. The AADT is greater than 3000, and speeds are moderately high as they range from over 50 km/h up to 60 km/h. With no on street parking, and this segment being part of a truck route, comfort of pedestrians is moderate to low. These factors in combination give PLOS D.

The segment is a curbside bike lane with 2 lanes in each direction (median present), and ahigh posted speed limit greater than 50 km/h up to 70 km/h. The bike lane (and parking lane) width ranges from greater than or equal to 1.5 meters up to 1.8 meters. The presence of a bike facility allows for a safe place for cyclists to travel along a segment. Bike lane blockages are rare throughout this segment. All these factors in combination give BLOS C, which describes an experience appropriate for most experienced adult cyclists.

The Vt/Vp ratio greater than or equal to 0.80, that is, the ratio of average transit travel speed to posted speed limit. This classifies the road segment as TLOS D.

The truck lane width of this area is less than or equal to 3.5 meters, and there is more than one travel lane in each direction. These two factors give a TkLOS of A.

Of all modes evaluated on Heron Road (between Baycrest Drive and Sandalwood Drive), pedestrians are facing the lowest level of service. Some tradeoffs between bicycle, truck and transit levels of service may have to be made to accommodate for a better experience for other modes and increase PLOS to meet targets.

Ultimate Conditions 2037 - Segments

All findings remain the same in the ultimate conditions segment analysis.

Figure 19: Existing Conditions MMLOS Targets and Results

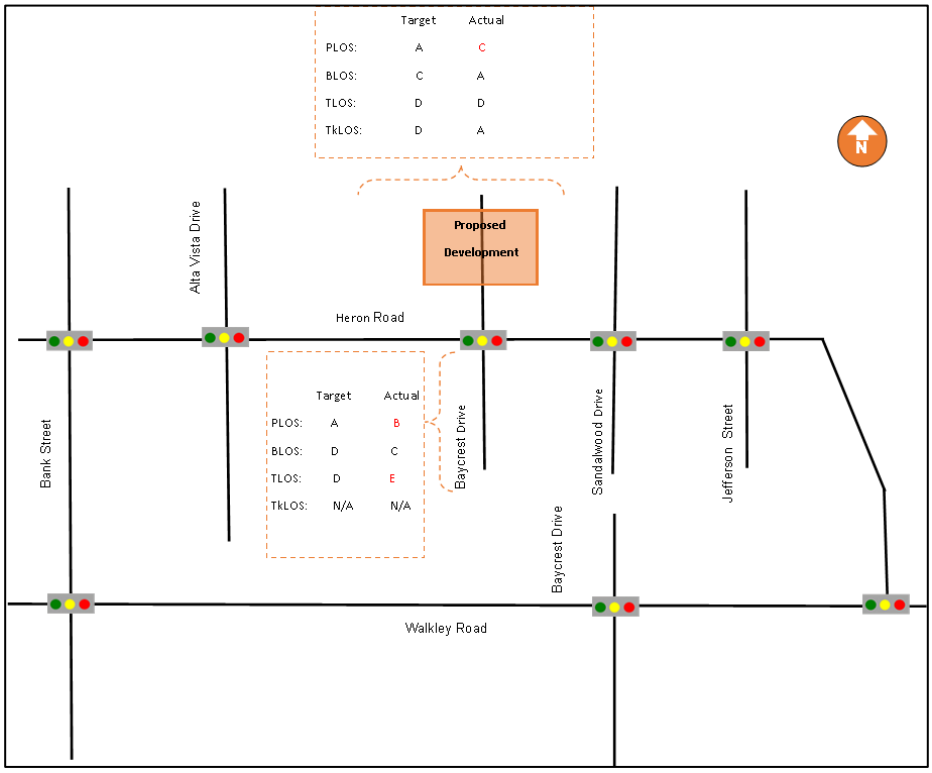


Table 17 - 2022 Existing Intersections Multimodal Level of Service (Segments)

Intersection		PLOS	BLOS	TLOS	TkLOS
Alta Vista to Baycrest (Heron Rd)	Model Output	D	E	D	A
	Target	C	C	D	D
Baycrest to Sandlewood (Heron Rd)	Model Output	D	C	D	A
	Target	C	C	D	D

Table 18 - 2032 Full Background Intersection Multimodal Level of Service (Segments)

Intersection		PLOS	BLOS	TLOS	TkLOS
Alta Vista to Baycrest (Heron Rd)	Model Output	D	E	D	A
	Target	C	C	D	D

Baycrest to Sandlewood (Heron Rd)	Model Output	D	C	D	A
	Target	C	C	D	D

Table 19 - 2032 Total Future Intersection Multimodal Level of Service (Segments)

Intersection		PLOS	BLOS	TLOS	TkLOS
Alta Vista to Baycrest (Heron Rd)	Model Output	D	E	D	A
	Target	C	C	D	D
Baycrest to Sandlewood (Heron Rd)	Model Output	D	C	D	A
	Target	C	C	D	D

Table 20 - 2037 Ultimate Intersection Multimodal Level of Service (Segments)

Intersection		PLOS	BLOS	TLOS	TkLOS
Alta Vista to Baycrest (Heron Rd)	Model Output	D	E	D	A
	Target	C	C	D	D
Baycrest to Sandlewood (Heron Rd)	Model Output	D	C	D	A
	Target	C	C	D	D

4.4 ACCESS INTERSECTION DESIGN

4.4.1 Access Location and Design of Access

As mentioned in **Section2.1.1**, the main site access is located at the intersection of Heron Road and Baycrest Drive. This access is from the north leg of this intersection, and it is a full access without any turning restrictions. The minor site access is a right-in-right-out access located on Heron Road, approximately 125m east of the main access intersection.

4.4.2 Intersection Control

The existing intersection at Heron Road and Baycrest Drive, which will provide the main access to the site, is a four-way signalized intersection. This intersection contains four crosswalks with pedestrian signal heads and pedestrian push buttons for all directions.

The minor right-in-right-out site access is a low-volume driveway and is anticipated to be a One Way Stop Control (OWSC) access.

4.4.3 Intersection Design

Section 4.9.2 contains the detailed intersection and MMLOS analyses under all horizons.

4.5 TRANSPORTATION DEMAND MANAGEMENT

4.5.1 Context of TDM

The proposed development site is currently owned by Canada Lands Company. The proposed development consists of mid-rise apartment units, stacked townhouses, strip retail plaza, elementary school, and recreational community center, which are all expected to be built out by the year 2032. The tenants for the retail component are not known yet. As outlined in **Section 3.1.1**, based on the TRANS Committee's 2011 Origin-Destination (O-D) Survey for the Alta Vista District, the subject area has an auto mode share of 60% and a transit share of 20%. However, after the implementation of the BRT corridor improvements along Heron Road, the auto modal share is expected to decrease to 35%, while the transit modal share is expected to increase to 35%. The proposed transit modal share was discussed and confirmed with City of Ottawa staff during the preparation of the Step 3 – Forecasting Report assumes that the Heron Road BRT would not be in place by the 2032 horizon. It is anticipated that the Heron BRT project will be implemented shortly after the horizon year of this study and will provide high-frequency service with a 5-6 minute headway during the AM peak, and a 7-8 minute headway during the PM peak, which is supportive of an increased transit modal share in the future.

To support the future pedestrian and bicycle modal share, the development is planned to include ample sidewalk connections from the proposed buildings onsite to the existing and future pedestrian and cycling network along both Heron Road and Baycrest Drive. It is anticipated that the Heron Road BRT will feature improved pedestrian and cycling facilities.

4.5.2 Need and Opportunity

In order to support the transit and active modal share targets outlined in **Table 9**, walking, cycling and transit modes will need to be supported. This includes the provision of bicycle parking as well as ensuring convenient pedestrian connections are provided to sidewalk facilities leading to bus stop locations. These facilities are expected to be identified on a future site plan as part of subsequent phases of development approvals.

4.5.3 TDM Program

The City of Ottawa's TDM Checklists is used to determine what TDM measures could be implemented based on the available information. As this TIA is developed in support of a Plan of Subdivision, a detailed site plan is currently not available. TDM measures will be identified and agreed upon with the developer(s) at subsequent phases of site design and development approvals.

4.6 NEIGHBOURHOOD TRAFFIC MANAGEMENT

Based on **Table 10**, This section is exempted during screening and scoping.

4.7 TRANSIT

4.7.1 Route Capacity

Assumed transit modal shares for the various land uses were adopted from the 2020 TRANS Trip Generation Manual based. Modal shares ranged from 33%-35% for residential land uses, 11% for commercial retail, and 54% for the proposed elementary school (i.e. school bus trips). The 2032 forecasted transit / school bus trips for the proposed development is 450 (predominately elementary school bus trips) and 215 total transit trips during the AM and PM peak hours, respectively.

There are four OC Transport transit routes provided in the immediate vicinity of the proposed site; routes 44, 46, 140 and 291. Route 44 is a frequent route that runs during peak periods between Billings Bridge and Hurdman with 15-minute headways. Route 46 is a local route that runs during peak periods with 15-minute headways between Hurdman and Billings Bridge Station. Route 140 is a local route that runs from 9am to 3pm with limited service between Heron Park and Billings Bridge. Route 291 is a frequent route that runs during peak periods with 25- to 30-minute headways between Hurdman and Herongate.

Standard and articulated buses have seated capacities of 40 and 70 people; respectively. Based on the current transit routes in the vicinity of the subject site, the hourly transit capacity is estimated between 400 and 700 people during the weekday AM and PM peak hours.

Once the BRT upgrades along Heron Road are implemented, the subject development's transit trips are expected to increase. Based on the Baseline Road Bus Rapid Transit Corridor Transit and Traffic Operations Assessment (2016) (which is Appendix B of the Baseline Road Bus Rapid Transit Planning and Environmental Assessment Study), the anticipated headways of the BRT corridor are approximately 5 minutes during the AM peak hour and approximately 7 minutes during PM peak hours. It has been assumed that once the BRT is operational, transit route 50 will continue to run with the same schedule as existing, whereas transit routes 81 and 88 will operate under the BRT headways, as previously described.

The anticipated capacity of the BRT corridor is 480 to 840 people during the weekday AM peak hour and 340 to 600 people during the weekday PM peak. The anticipated capacity of transit route 50 is expected to remain at 80 to 140 people during both the weekday AM and PM peak hours. The total transit capacity in the study area is therefore anticipated to be 560 to 920 people during the weekday AM peak hour and 480 to 745 people during the weekday PM peak hour. The proposed development is therefore anticipated to occupy between 8% to 13% of the transit capacity during the weekday AM peak hour and 12% to 18% during the weekday PM peak hour once the Baseline Road BRT is operational.

4.7.2 Transit Priority

Prior to the implementation of the BRT corridor upgrades along Heron Road, the proposed development will utilize the existing transit stops abutting the subject site and is therefore not expected to significantly impact the transit travel times of the existing routes or trigger the need for transit priority measures. It is

anticipated that the east-west transit service will run at a dedicated BRT Transitway on Heron Road with TSP measures implemented at intersections, these however are anticipated to occur beyond the study horizon year and therefore were not accounted for as part of this study.

4.8 REVIEW OF NETWORK CONCEPT

Based on **Table 10**, This section is exempted during screening and scoping.

4.9 INTERSECTION DESIGN

4.9.1 Intersection Control

The existing intersection control will be maintained as the default control for all study area intersections for existing and future horizon year assessments. It should be noted that the ultimate intersection design for intersections along the future Heron Road BRT corridor are not available, and as a result the existing intersection geometry was adopted as part of this study. Any intersection improvements triggered through the intersection level of service analysis will be highlighted and adopted accordingly.

4.9.2 Intersection Design

An assessment of the study area intersections was undertaken to determine the operational characteristics of the study area intersections under the horizons identified in the Screening and Scoping report. Intersection operational analysis was facilitated by Synchro 10.0™ software package and the MMLOS analysis was completed for the signalized intersection for all modes and compared against the City of Ottawa's MMLOS targets. The Highway Capacity Manual (HCM) 6th edition analysis method in Synchro was used to assess the study intersections. It should be noted that this method has some limitations which were addressed as follows:

- Unsignalized Movement Delays (Channelized Right turns with yield control): The HCM method does not report on unsignalized movements delays. Rather these movements were analyzed and reported on using Synchro's percentile method as a mean to approximate delays and queues experienced by right turning traffic.
- RTOR: HCM's implementation of right turns on red is conservative and assumes no vehicles performing RTOR. RTOR influence on signal operations was incorporated using the equations provided by Trafficware's white paper on HCM 6th edition implementation in Synchro2.

4.9.2.1 Multi-Modal Level of Service

The multi-modal level of service ("MMLOS") was evaluated for intersections along Heron Road from Alta Vista Drive to Sandlewood Drive to assist with developing a design concept that maximize the achievement of the MMLOS objectives.

The sections below outline the MMLOS summary for the roadway segments. **Appendix C** contains the detailed MMLOS analysis and is provided for reference.

Existing Conditions – Intersections

Intersection – Heron Road and Alta Vista Drive

North

This segment has the pedestrian travel across 5 lanes at intersections. Left turns are protected/permissive which minimizes conflict. There is a conventional right turn channel without a receiving lane, and the corner radius is large at 15 to 25m. The crosswalk type has zebra stripe high visibility markings. These factors combine to give A PESTI score of 42, which corresponds to PLOS E. The cycle length at intersections is 130 seconds, with effective walk time of 11 seconds, meaning that pedestrian delay is 54 seconds, or PLOS E.

This intersection has a pocket bike lane, so is therefore separated from traffic which creates safer conditions. If the cyclists turn left, they have to traverse more than or equal to 2 lanes, giving BLOS F.

The average signal delay for transit is greater than 40 seconds, giving a TLOS F.

Trucks have an effective corner radius greater than 15 meters, and the number of receiving lanes on departure from intersection is greater than or equal to 2. This demonstrates TkLOS A.

Automobiles have a volume to capacity between the bounds of 0.91 and 1, resulting in VLOS F.

South

This segment has the pedestrian travel across 5 lanes at intersections. Left turns are permissive which minimizes conflict. There is a conventional right turn channel without a receiving lane, and the corner radius is large at 15 to 25m. The crosswalk type has zebra stripe high visibility markings. These factors combine to give A PESTI score of 42, which corresponds to PLOS E. The cycle length at intersections is 130 seconds, with effective walk time of 11 seconds, meaning that pedestrian delay is 54 seconds, of PLOS E.

This intersection has a pocket bike lane, so is therefore separated from traffic. If the cyclists turn left, they have to traverse 1 lane, giving BLOS D.

The same analysis for moving north also applies for southward travel for the other modes.

East

This segment has the pedestrian travel across 7 lanes at intersections. Left turns are protected/permissive which minimizes conflict, however right turns are permissive or yield control. There is a conventional right turn channel with a receiving lane, and the corner radius is large at 15 to 25m. The crosswalk type has zebra stripe high visibility markings. These factors combine to give A PESTI score of 14, which corresponds to PLOS F. The cycle length at intersections is 130 seconds, with effective walk time of 11 seconds, meaning that pedestrian delay is 54 seconds, or PLOS E.

This intersection is mixed traffic composition, therefore there is no dedicated bicycle facility. There is a dedicated right turning lane, where traffic moves at a speed of less than 50 km/h, and turns at a speed of less than 25 km/h. If the cyclists turn left, they have to traverse greater than 2 lanes, giving BLOS F.

The same analysis for moving north also applies for eastward travel for the other modes.

West

The same analysis for moving East also applies for westward travel for the other modes.

Intersection – Heron Road and Baycrest Drive

North

This segment has the pedestrian travel across 3 lanes at intersections. Left turns are permissive but not protected which increases conflict There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type has the standard transverse markings. These factors combine to give a high PESTI score of 71, which corresponds to PLOS C. The cycle length at intersections is 90 seconds, with effective walk time of 19 seconds, meaning that pedestrian delay is 28 seconds, of PLOS C.

This intersection is mixed traffic composition, therefore there is no dedicated bicycle facility. If the cyclist turns left, they have to traverse 1 lane, and the posted speed limit ranges from 50 km/h to less than 60 km/h. This gives BLOS E.

The average signal delay for transit less than or equal to 30 seconds, giving a TLOS D.

Trucks have an effective corner radius less than 10 meters, and the number of receiving lanes on departure from intersection is greater than or equal to 2. This demonstrates TkLOS D.

Automobiles have a volume to capacity between the bounds of 0.61 and 0.70, resulting in VLOS F.

South

This road segment has the pedestrian travel across 0 – 2 lanes at intersections. Left turns are permissive which minimizes conflict. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type has the standard transverse markings. These factors combine to give a high PESTI score of 86, which corresponds to PLOS B. The cycle length at intersections is 90 seconds, with effective walk time of 19 seconds, meaning that pedestrian delay is 28 seconds, or PLOS C.

This intersection is mixed traffic, so there is no dedicated bicycle facility. If the cyclists turns left, they don’t have to traverse any lanes, giving BLOS C.

The same analysis for moving North also applies for southward travel for the other modes.

East

This segment has the pedestrian travel across 6 lanes at intersections. Left turns are permissive which minimizes conflict. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type is standard transverse markings. These factors combine to give a PESTI score of 21, which corresponds to PLOS F. The cycle length at intersections is 90 seconds, with effective walk time of 14 seconds, meaning that pedestrian delay is 32 seconds, or PLOS D.

This intersection has a Curb Bike Lane, Cycletrack of MUP, so is therefore separated from traffic. If the cyclists turn left, they have to traverse more than or equal to 2 lanes, giving BLOS F.

The average signal delay for transit is less than or equal to 20 seconds, giving a TLOS C.\

Trucks have an effective corner radius less than 10 meters, and the number of receiving lanes on departure from intersection is 1 lane. This demonstrates TkLOS F.

The same analysis for moving north also applies for eastward travel for the other modes.

West

This segment has the pedestrian travel across 7 lanes at intersections. Left turns are permissive which minimizes. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type is standard transverse markings. These factors combine to give a PESTI score of 5, which corresponds to PLOS F. The cycle length at intersections is 90 seconds, with effective walk time of 14 seconds, meaning that pedestrian delay is 32 seconds, or PLOS D.

The same analysis for moving east also applies for westward travel for the other modes.

Intersection – Heron Road and Sandalwood Drive

North

This segment has the pedestrian travel across 3 lanes at intersections. Left turns are permissive which minimizes conflict. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type is standard transverse markings. These factors combine to give A PESTI score of 71, which corresponds to PLOS C The cycle length at intersections is 90 seconds, with effective walk time of 11 seconds, meaning that pedestrian delay is 35 seconds, or PLOS D.

This intersection is mixed traffic composition, therefore there is no dedicated bicycle facility. If the cyclists turn left, they don't have to traverse any lanes, giving BLOS C.

The average signal delay for transit is less than or equal to 20 seconds, giving a TLOS C.

Trucks have an effective corner radius less than 10 meters, and the number of receiving lanes on departure from intersection is greater than or equal to 2. This demonstrates TkLOS D.

Automobiles have a volume to capacity between the bounds of 0.0 and 0.60, resulting in VLOS A.

South

This segment has the pedestrian travel across 3 lanes at intersections. Left turns are permissive which minimizes conflict. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type has the standard transverse markings. These factors combine to give A PESTI score of 71, which corresponds to PLOS C. The cycle length at intersections is 90 seconds, with effective walk time of 11 seconds, meaning that pedestrian delay is 35 seconds, of PLOS D

All conditions are the same for bicyclists as northward travel, except moving south cyclists have to traverse one lane, giving BLOS E.

The average signal delay for transit is less than or equal to 30 seconds, giving a TLOS D, below the targeted TLOS D.

Trucks have an effective corner radius of 10 to 15 meters. The other conditions remain the same for northward travel among other modes.

East

This segment has the pedestrian travel across 6 lanes at intersections, with no median present. Left turns are permissive which minimizes conflict. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type has the standard transverse markings. These factorS combine to give A PESTI score of 21, which corresponds to PLOS f. The cycle length at intersections is 90 seconds, with effective walk time of 12 seconds, meaning that pedestrian delay is 34 seconds, of PLOS D.

This intersection has a Curb Bike Lane, Cycletrack of MUP, so is therefore separated from traffic. If the cyclists turn left, they have to traverse more than or equal to 2 lanes, giving BLOS F.

The average signal delay for transit is less than or equal to 10 seconds, giving a TLOS D.

Trucks have an effective corner radius of 10 to 15 meters, and the number of receiving lanes on departure from intersection is 1. This demonstrates TkLOS E.

The same analysis for moving south also applies for eastward travel for the other modes.

West

This road segment has the pedestrian travel across 7 lanes at intersections. Left turns are permissive which minimizes conflict. There is no right turn channel, and the corner radius is large at 5 to 10m. The crosswalk type is standard transverse markings. These factors combine to give A PESTI score of 5, which corresponds to PLOS f. The cycle length at intersections is 90 seconds, with effective walk time of 12 seconds, meaning that pedestrian delay is 34 seconds, of PLOS D.

The same analysis for moving east also applies for westward travel for the other modes.

Ultimate Conditions 2037 – Intersections

All findings remain the same in the ultimate conditions segment analysis, with the exception of:

Heron Road and Alta Vista Drive

Automobiles have volume to capacity ratio greater than 1, resulting in VLOS F.

Heron road and Baycrest Drive

North

The cycle length at intersections is 120 seconds, with effective walk time of 19 seconds, meaning that pedestrian delay is 43 seconds, or PLOS E.

South

The cycle length at intersections is 120 seconds, with effective walk time of 19 seconds, meaning that pedestrian delay is 43 seconds, or PLOS E.

East

The cycle length at intersections is 120 seconds, with effective walk time of 14 seconds, meaning that pedestrian delay is 47 seconds, or PLOS E.

West

The cycle length at intersections is 120 seconds, with effective walk time of 14 seconds, meaning that pedestrian delay is 47 seconds, or PLOS E.

Intersection MMLOS Analysis

Table 21 summarizes the results of the MMLOS analysis under Existing conditions. All intersections are currently operating with LOS F for pedestrians (PLOS) and bicycling (BLOS) during the AM and PM peak hour. All other modes including transit (TLOS), trucks (TkLOS), and vehicular traffic (VLOS) generally operate acceptably with a few exceptions. As part of the Heron Road BRT project, opportunities to improve intersection treatments for pedestrians and cyclists should be explored and prioritized in the future.

Table 21 - 2022 Existing Intersections Multimodal Level of Service (Signalized Intersections)

Intersection		PLOS	BLOS	TLOS	TkLOS	VLOS
Heron Road @ Alta Vista Drive	Model Output	F	F	F	C	E
	Target	C	C	D	D	D
Heron Road @ Baycrest Drive	Model Output	F	F	E	F	B
	Target	C	C	D	D	D
Heron Road @ Sandalwood Drive	Model Output	F	F	D	E	A
	Target	C	C	D	D	D

Table 22 - 2032 Full Background Intersection Multimodal Level of Service (Signalized Intersections)

Intersection		PLOS	BLOS	TLOS	TkLOS	VLOS
Heron Road @ Alta Vista Drive	Model Output	F	F	F	C	F
	Target	C	C	D	D	D

Heron Road @ Baycrest Drive	Model Output	F	F	E	F	C
	Target	C	C	D	D	D
Heron Road @ Sandalwood Drive	Model Output	F	F	D	E	A
	Target	C	C	D	D	D

Table 23 - 2032 Total Future Intersection Multimodal Level of Service (Signalized Intersections)

Intersection		PLOS	BLOS	TLOS	TkLOS	VLOS
Heron Road @ Alta Vista Drive	Model Output	F	F	F	C	F
	Target	C	C	D	D	D
Heron Road @ Baycrest Drive	Model Output	F	F	E	F	C
	Target	C	C	D	D	D
Heron Road @ Sandalwood Drive	Model Output	F	F	D	E	A
	Target	C	C	D	D	D

Table 24 - 2037 Ultimate Intersection Multimodal Level of Service (Signalized Intersections)

Intersection		PLOS	BLOS	TLOS	TkLOS	VLOS
Heron Road @ Alta Vista Drive	Model Output	F	F	F	C	F
	Target	C	C	D	D	D
Heron Road @ Baycrest Drive	Model Output	F	F	F	F	D
	Target	C	C	D	D	D
Heron Road @ Sandalwood Drive	Model Output	F	F	D	E	A
	Target	C	C	D	D	D

4.9.2.2 Existing Conditions

Figure 11 illustrates Existing AM and PM Peak hour traffic volumes at the study area intersections.

Intersection Capacity Analysis

Table 25 summarizes the results of the Synchro analysis under Existing conditions. The intersection of Heron Road at Bank Street is currently operating at or above capacity with several individual movements operating at LOS F during the PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Walkey Road at Bank Street is currently operating with an overall v/c ratio about 1.00 during the PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

While the overall performance of the intersection of Heron Road at Alta Vista is performing acceptably, several movements are currently operating at or above theoretical capacity. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

All other study area intersections are currently operating acceptably.

Table 25 - Existing Conditions Intersection Level of Service

Intersection	Intersection Control	Approach / Movement		LOS	V/C	Delay (s)	Queue 95th (m)
Heron Road @ Bank Street	Traffic Signals	EB	Left	F(F)	1.22(1.03)	169.1(102.2)	#82.0(#102.7)
			Through	C(C)	0.47(0.58)	32.1(32.9)	60.2(96.7)
			Right	AM(A)	0.45(0.54)	4.8(4.8)	16.8(20.7)
		WB	Left	D(E)	0.3(0.43)	39(56.3)	22.3(m25.9)
			Through	D(E)	0.74(0.87)	46.9(64.7)	80.5(m125.4)
			Right	AM(C)	0.36(0.36)	4.7(25.6)	11.3(m32.9)
		NB	Left	E(E)	0.73(0.81)	57.7(63.1)	m38.8(77.5)
			Through / Right	B(D)	0.52(0.72)	16.4(44.2)	m67.9(#131.2)
		SB	Left	E(E)	0.66(0.7)	69.8(69.8)	#64.0(59.2)
			Through / Right	C(F)	0.5(1.11)	33.4(108.3)	80(#215.3)
		Overall Intersection		**D(E)**	**0.794(0.955)**	**39.7(60.6)**	
Heron Road @ Alta Vista	Traffic Signals	EB	Left	E(F)	0.56(1.16)	55.9(183.5)	#30.4(m#115.1)
			Through	C(B)	0.54(0.59)	26(19.7)	61.1(31.9)
		WB	Left	E(F)	0.47(0.63)	60.7(80.1)	m25.1(#37.1)
			Through	B(D)	0.63(0.64)	17.6(39.6)	49.6(102.3)
			Right	A(A)	0.17(0.2)	1.2(6.2)	m0.1(12.7)
		NB	Left	C(F)	0.19(0.83)	28(93.5)	15(#55.8)
			Through/Right	F(D)	1.05(0.54)	88(40.8)	#145.3(90.9)
		SB	Left	C(C)	0.62(0.36)	28.5(24.9)	#28.5(33.7)

			Through/Right	C(D)	0.5(0.89)	21.2(48.4)	66(#222.5)
		Overall Intersection		**D(D)**	**0.776(0.916)**	**35.6(47.2)**	
Heron Road @ Baycrest Drive	Traffic Signals	EB	Left	A(A)	0(0)	0(0)	0(0)
			Through/Right	A(A)	0.43(0.43)	6.2(9)	m25.0(56.4)
		WB	Left	B(B)	0.08(0.1)	12.4(17.6)	0(12.2)
			Through/Right	B(B)	0.32(0.35)	11.3(18.9)	35.9(82.1)
		NB	Left/Through/Right	D(D)	0.68(0.65)	38.3(37.7)	51.7(48)
		SB	Left	A(C)	0(0)	0(22)	0(1.2)
			Through/Right	A(C)	0(0)	0(23)	0(1.2)
		Overall Intersection		**B(B)**	**0.493(0.517)**	**12.3(16.3)**	
Heron Road @ Sandalwood Drive	Traffic Signals	EB	Left	A(A)	0.09(0.12)	2.6(6.8)	m1.0(m10.6)
			Through/Right	A(A)	0.27(0.26)	3(7.3)	7.3(52.2)
		WB	Left	A(A)	0.02(0.08)	4.3(5.7)	m1.8(9.9)
			Through/Right	A(A)	0.25(0.3)	4.4(6.9)	23.6(56.7)
		NB	Left	C(C)	0.16(0.09)	32.7(31.4)	13.8(8.8)
			Through/Right	B(B)	0.22(0.16)	17.7(17.2)	14.6(12.2)
		SB	Left	C(C)	0.06(0.05)	30.8(30.5)	6.7(5.9)
			Through/Right	B(B)	0.2(0.27)	15.2(16)	13.1(16)
		Overall Intersection		**A(A)**	**0.535(0.556)**	**5.7(8.3)**	
Heron Road @ Jefferson Street	Traffic Signals	EB	Left	A(B)	0.14(0.18)	2.8(18)	2.5(20.9)
			Through	A(B)	0.26(0.27)	2.2(17.2)	7(57.5)
			Right	A(B)	0.07(0.12)	0.2(10.4)	0(22)
		WB	Left	A(A)	0.04(0.09)	9.3(9.7)	4.9(7.9)
			Through/Right	A(B)	0.29(0.38)	9.4(11.3)	37.6(45.2)
		NB	Left	C(C)	0.1(0.16)	23.4(24.3)	11.4(16.4)
			Through	C(C)	0.07(0.12)	22.8(23.4)	11.8(16.6)
			Right	A(A)	0.07(0.16)	8.1(6.4)	5.6(9.5)
		SB	Left/Through/Right	B(B)	0.22(0.28)	17.1(18.1)	19.8(25.8)
		Overall Intersection		**A(B)**	**0.81(0.814)**	**7.2(14.3)**	
Heron Road @ Walkley	Traffic Signals	EB	Left/Right	C(C)	0.48(0.47)	24.1(25.6)	60.7(65.9)
		NB	Through	B(C)	0.41(0.53)	18.1(21.7)	56.1(84)
		SB	Through	B(C)	0.37(0.66)	17.6(24.4)	49.5(110.5)
			Right	A(A)	0.39(0.45)	2(2.1)	9.4(10.3)
		Overall Intersection		**B(B)**	**0.454(0.56)**	**15.4(18.8)**	
Walkley Road @ Baycrest Drive	Traffic Signals	EB	Left	A(A)	0.07(0.17)	8.1(9.6)	7.1(10.1)
			Through/Right	A(A)	0.23(0.33)	6.8(7.7)	31.3(42.4)
		WB	Left	A(A)	0.03(0.11)	7.8(8.1)	4.3(8.7)

			Through/Right	A(A)	0.28(0.48)	6.5(8.8)	34.4(65.1)
		NB	Left/Through/Right	B(B)	0.19(0.21)	12.2(14.6)	9.8(12.4)
		SB	Left	C(D)	0.47(0.64)	29(41.4)	22.4(32.1)
			Through/Right	A(B)	0.2(0.22)	8.4(12)	7.9(12)
		Overall Intersection		**A(B)**	**0.502(0.635)**	**8.9(10.9)**	
Walkley Road @ Bank Street	Traffic Signals	EB	Left	F(E)	1.23(0.75)	171.9(67)	#92.9(56)
			Through	D(D)	0.43(0.46)	36.9(41.8)	56(63.5)
			Right	A(A)	0.18(0.45)	0.7(9)	0(26.9)
		WB	Left	E(E)	0.41(0.69)	57.3(65.3)	20.7(48.7)
			Through/Right	D(E)	0.79(0.89)	38.1(55.7)	86.3(#132.4)
		NB	Left	E(F)	0.72(1.16)	67.1(166.2)	58.2(#119.3)
			Through	D(D)	0.79(0.57)	39.9(42.6)	121.3(85.9)
			Right	A(A)	0.28(0.39)	6.3(7)	16.2(19.9)
		SB	Left	E(E)	0.65(0.66)	61.6(63.7)	#36.3(46)
			Through	D(F)	0.53(1.21)	51.1(142.1)	82.5(#248.4)
			Right	B(C)	0.43(0.81)	19.6(26.1)	40.8(104.6)
		Overall Intersection		**D(E)**	**0.902(0.1033)**	**52(71.2)**	

Notes:

1. Table format: AM (PM)
2. v/c – represents the anticipated volume divided by the predicted capacity
3. * Estimated using Synchro's Percentile Method
4. # for v/c <1, queue requires multiple cycles to be cleared

Appendix D contains detailed intersection performance worksheets.

4.9.2.3 2032 Future Background Conditions

Figure 16 illustrates 2032 Future Background AM and PM Peak hour traffic volumes at the study area intersections.

Intersection capacity Analysis

Table 26 summarizes the results of the Synchro analysis under 2032 Future Background conditions.

The intersection of Heron Road at Bank Street is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Walkey Road at Bank Street is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations

is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Heron Road at Alta Vista is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as this as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

All other study area intersections are projected to operate acceptably.

Table 26 - 2032 Future Background Conditions Intersection Level of Service

Intersection	Intersection Control	Approach / Movement		LOS	V/C	Delay (s)	Queue 95th (m)
Heron Road @ Bank Street	Traffic Signals	EB	Left	F(F)	1.09(1.37)	119.4(235.4)	#96.9(#129.1)
			Through	C(D)	0.44(0.87)	25.2(50.4)	69.1(149.1)
			Right	A(B)	0.42(0.72)	3.9(18.7)	16.3(80.6)
		WB	Left	C(D)	0.3(0.68)	34.4(41.8)	24(m10.7)
			Through	D(D)	0.82(0.97)	45.4(41.7)	116.7(m#138.0)
			Right	A(A)	0.39(0.39)	5.5(1.9)	16.9(m3.8)
		NB	Left	E(F)	0.72(1.34)	55.4(203.1)	61.2(m#101.7)
			Through / Right	D(D)	0.76(0.89)	45(49.5)	109.3(m#127.8)
		SB	Left	E(E)	0.73(0.79)	72(73.2)	#54.7(78.6)
			Through / Right	D(F)	0.78(1.08)	49(92)	#98.6(#209.9)
		Overall Intersection		**D(E)**	**0.861(1.026)**	**42.8(75.8)**	
Heron Road @ Alta Vista	Traffic Signals	EB	Left	E(F)	0.65(1.25)	64.5(170.1)	#36.1(m#96.9)
			Through	C(C)	0.65(0.79)	28.7(31.2)	78.7(m167.2)
		WB	Left	D(E)	0.43(0.61)	54.5(75.9)	m21.6(#41.5)
			Through	C(D)	0.83(0.72)	23.7(38.3)	m#113.9(127.4)
			Right	A(A)	0.18(0.24)	1.1(5.7)	m0.3(12.3)
		NB	Left	C(F)	0.21(1.94)	28.5(514.6)	16.2(#75.7)
			Through/Right	F(D)	1.16(0.72)	123(53.3)	#162.0(#108.3)
		SB	Left	D(C)	0.73(0.5)	39.2(32.4)	#39.0(39.5)
			Through/Right	C(F)	0.56(1.08)	23.8(97.3)	75.6(#277.3)
		Overall Intersection		**D(E)**	**0.882(1.01)**	**43.4(69.9)**	
Heron Road @ Baycrest Drive	Traffic Signals	EB	Left	A(A)	0(0)	0(0)	0(0)
			Through/Right	B(B)	0.65(0.58)	11.3(12.9)	m33.1(76)
		WB	Left	B(B)	0.23(0.27)	15.8(11.9)	5.9(11.3)
			Through/Right	B(A)	0.48(0.44)	13.7(8.6)	36.3(55.8)
		NB	Left/Through/Right	D(D)	0.93(0.88)	53.2(53.4)	#128.5(#96.1)

		SB	Left	A(B)	0(0)	0(20)	0(1.2)
			Through/Right	A(B)	0(0)	0(20)	1(1.2)
		Overall Intersection		**C(B)**	**0.693(0.719)**	**20.7(17.4)**	
Heron Road @ Sandalwood Drive	Traffic Signals	EB	Left	A(B)	0.12(0.15)	4.2(10.2)	m5.0(m11.6)
			Through/Right	A(A)	0.34(0.32)	7.6(8.6)	m56.8(55.2)
		WB	Left	A(A)	0.06(0.16)	4.7(5.1)	3.4(6.7)
			Through/Right	A(A)	0.31(0.34)	5.2(4.4)	23.5(25.1)
		NB	Left	D(C)	0.45(0.24)	40.2(34.9)	27.7(16.7)
			Through/Right	B(B)	0.3(0.23)	14.5(15.4)	17(14.1)
		SB	Left	C(C)	0.06(0.05)	30.5(30.7)	6.9(6.2)
			Through/Right	B(B)	0.21(0.27)	14.7(15.7)	13.4(16.8)
		Overall Intersection		**A(A)**	**0.563(0.578)**	**9(8.1)**	
Heron Road @ Jefferson Street	Traffic Signals	EB	Left	A(B)	0.18(0.24)	3.7(11.7)	3.8(9.8)
			Through	A(B)	0.31(0.31)	2.8(11.5)	11.8(28.7)
			Right	A(A)	0.08(0.14)	0.3(4.2)	0(5.6)
		WB	Left	A(B)	0.06(0.13)	9.7(10.5)	5.4(8.8)
			Through/Right	A(B)	0.32(0.45)	9.7(12.1)	43(54.4)
		NB	Left	C(C)	0.1(0.18)	23.5(24.8)	12.1(17.6)
			Through	C(C)	0.08(0.12)	22.9(23.5)	12.3(17.8)
			Right	A(A)	0.07(0.18)	8.6(6.4)	6.2(9.9)
		SB	Left/Through/Right	B(B)	0.23(0.31)	17.5(19)	21.4(28.3)
		Overall Intersection		**A(B)**	**0.811(0.811)**	**7.5(12.5)**	
Heron Road @ Walkley	Traffic Signals	EB	Left/Right	C(C)	0.57(0.48)	25.8(22.7)	74.3(70.1)
		NB	Through	C(C)	0.54(0.69)	20.2(28.5)	78.4(113.6)
		SB	Through	B(C)	0.45(0.82)	18.8(33.3)	63(145)
			Right	A(A)	0.43(0.53)	2.1(2.6)	9.8(11.8)
		Overall Intersection		**B(C)**	**0.541(0.619)**	**17(23)**	
Walkley Road @ Baycrest Drive	Traffic Signals	EB	Left	B(C)	0.17(0.56)	11.4(26.4)	11.4(#37.3)
			Through/Right	A(A)	0.34(0.39)	9.8(8.5)	39.3(50.2)
		WB	Left	A(A)	0.05(0.15)	9.9(9.2)	4.7(9.9)
			Through/Right	A(B)	0.39(0.6)	9.4(10.6)	42.2(88)
		NB	Left/Through/Right	B(B)	0.17(0.22)	10.2(14.4)	10.2(12.9)
		SB	Left	D(D)	0.72(0.67)	36.2(41.3)	41.1(37.1)
			Through/Right	A(B)	0.27(0.29)	5.7(10.3)	10.3(14.3)
		Overall Intersection		**B(B)**	**0.617(0.736)**	**12.6(12.6)**	
Walkley Road @ Bank Street	Traffic Signals	EB	Left	F(F)	0.96(1.2)	84.6(168.8)	#85.9(#84.5)
			Through	C(D)	0.41(0.57)	31.7(44.7)	59(77.5)

			Right	A(B)	0.17(0.5)	0.6(10.8)	0(32.4)
		WB	Left	E(F)	0.55(1.22)	62.4(177.1)	25.8(#79.5)
			Through/Right	D(F)	0.95(1.09)	53.9(99.1)	#134.4(#174.1)
		NB	Left	E(F)	0.81(1.21)	78(181.3)	#73.4(#122.3)
			Through	E(D)	0.97(0.55)	59.7(37.6)	#153.5(83.9)
			Right	A(A)	0.33(0.42)	4.6(7.8)	12.5(25.7)
		SB	Left	F(E)	0.9(0.75)	95.3(65.4)	#47.3(m49.2)
			Through	D(F)	0.69(1.15)	47.4(125.3)	84.4(m#227.0)
			Right	A(D)	0.51(0.9)	7.8(52.7)	22.4(m127.7)
		Overall Intersection		**D(F)**	**0.934(0.1056)**	**52.5(87.8)**	

Notes:

1. Table format: AM (PM)
2. v/c – represents the anticipated volume divided by the predicted capacity
3. * Estimated using Synchro's Percentile Method
4. # for v/c <1, queue requires multiple cycles to be cleared

Appendix D contains detailed intersection performance worksheets.

4.9.2.4 2032 Total Future Conditions

Figure 17 illustrates 2032 Total Future Conditions AM and PM Peak hour traffic volumes at the study area intersections.

Intersection Capacity Analysis

Table 27 summarizes the results of the Synchro analysis under 2032 Total Future conditions.

The intersection of Heron Road at Bank Street is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Walkey Road at Bank Street is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Heron Road at Alta Vista is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The right-in-right-out site access is projected to operate at LOS A with a control delay of 10.6 seconds on southbound right turn during the AM peak hour and 10.6 seconds during PM peak hour.

All other study area intersections are projected to operate acceptably.

Table 27 - 2032 Total Future Conditions Intersection Level of Service

Intersection	Intersection Control	Approach / Movement		LOS	V/C	Delay (s)	Queue 95th (m)
Heron Road @ Bank Street	Traffic Signals	EB	Left	F(F)	1.24(1.47)	172.3(264.1)	#99.4(#132.5)
			Through	C(D)	0.47(0.9)	25.8(53.3)	74(#165.6)
			Right	A(B)	0.43(0.72)	3.9(18.9)	16.2(81.1)
		WB	Left	C(D)	0.36(0.72)	25.7(46)	m9.9(m11.5)
			Through	C(D)	0.84(0.99)	28.8(44.3)	m56.4(m#152.3)
			Right	A(A)	0.43(0.44)	4.3(3.2)	m14.8(m9.1)
		NB	Left	D(F)	0.73(1.34)	47.7(203.3)	m50.0(m#103.3)
			Through / Right	C(E)	0.79(0.95)	29.5(57.8)	m88.0(m#135.5)
		SB	Left	F(E)	0.86(0.84)	85.8(75)	#80.6(#94.6)
			Through / Right	D(F)	0.76(1.08)	47.7(92)	#91.0(#209.9)
		Overall Intersection		**D(E)**	**0.87(1.036)**	**38.8(78.6)**	
Heron Road @ Alta Vista	Traffic Signals	EB	Left	E(F)	0.73(1.29)	73.6(186.9)	m#37.7(m#94.9)
			Through	C(D)	0.65(0.82)	26(44.8)	75.5(m172.0)
		WB	Left	E(F)	0.49(0.67)	58.9(83)	m25.2(#42.5)
			Through	D(D)	0.87(0.76)	45.5(39)	m144.8(139.5)
			Right	B(A)	0.3(0.32)	13.3(5.3)	m19.7(14.2)
		NB	Left	C(F)	0.2(1.94)	35(511.8)	19.6(#75.8)
			Through/Right	F(E)	1.12(0.81)	115.3(62.8)	#201.7(#124.9)
		SB	Left	F(D)	1.12(0.69)	129.3(40.7)	#91.4(54.2)
			Through/Right	C(F)	0.55(1.11)	29.9(105.3)	96.7(#280.8)
		Overall Intersection		**D(E)**	**0.938(1.031)**	**54.2(74.8)**	
Heron Road @ Baycrest Drive	Traffic Signals	EB	Left	C(B)	0.43(0.4)	20.5(13.4)	m36.3(27.1)
			Through/Right	C(A)	0.52(0.51)	22.6(9.9)	m123.7(69.5)
		WB	Left	C(B)	0.15(0.21)	21.3(10.5)	12.5(10)
			Through/Right	C(A)	0.51(0.41)	22(9.7)	101.5(57.6)
		NB	Left	F(F)	1.14(0.98)	128.3(95)	#145.6(#120.1)
			Through/Right	B(B)	0.2(0.18)	11.8(12.4)	13.3(14)
		SB	Left	C(D)	0.19(0.15)	29.9(37.5)	16.2(18.6)
			Through/Right	B(B)	0.27(0.19)	12.9(11.9)	15(13.8)
		Overall Intersection		**D(B)**	**0.775(0.733)**	**37.4(19.7)**	

Heron Road @ RIRO Site Entrance	TWSC	SB	Right	B(B)	0.11(0.09)	10.6(10.6)	2.7(2.3)
Heron Road @ Sandalwood Drive	Traffic Signals	EB	Left	A(A)	0.13(0.16)	5.9(6.2)	7.8(8.9)
			Through/Right	A(A)	0.36(0.33)	6.4(5.4)	39.3(36.6)
		WB	Left	A(B)	0.06(0.17)	4.8(13)	m3.3(19.3)
			Through/Right	A(B)	0.33(0.36)	5.3(13.3)	25.3(83.7)
		NB	Left	D(C)	0.45(0.24)	40.1(34.9)	27.6(16.7)
			Through/Right	B(B)	0.3(0.23)	14.4(15.4)	16.9(14.1)
		SB	Left	C(C)	0.06(0.05)	30.4(30.7)	6.9(6.2)
			Through/Right	B(B)	0.21(0.27)	14.7(15.7)	13.4(16.8)
		Overall Intersection		**A(B)**	**0.577(0.59)**	**8.4(10.7)**	
Heron Road @ Jefferson Street	Traffic Signals	EB	Left	A(B)	0.19(0.26)	9.2(11.2)	8.7(16.2)
			Through	A(A)	0.33(0.33)	7.6(9.2)	28.9(46.6)
			Right	A(A)	0.08(0.14)	1.7(3.6)	2.5(12.7)
		WB	Left	A(B)	0.07(0.14)	9.8(10.7)	5.4(8.9)
			Through/Right	A(B)	0.34(0.47)	10(12.4)	47(58.4)
		NB	Left	C(C)	0.1(0.18)	23.5(24.8)	12.1(17.6)
			Through	C(C)	0.08(0.12)	22.9(23.5)	12.3(17.8)
			Right	A(A)	0.07(0.18)	8.6(6.4)	6.2(9.9)
		SB	Left/Through/Right	B(B)	0.23(0.31)	17.6(19.2)	21.5(28.4)
		Overall Intersection		**A(B)**	**0.811(0.811)**	**9.7(11.9)**	
Heron Road @ Walkley	Traffic Signals	EB	Left/Right	C(C)	0.61(0.5)	26.7(22.4)	80.8(73.7)
		NB	Through	C(C)	0.54(0.71)	20.2(29.6)	78.4(115.7)
		SB	Through	B(C)	0.45(0.84)	18.8(35)	63(147.6)
			Right	A(A)	0.46(0.56)	2.1(2.9)	10.1(13.1)
		Overall Intersection		**B(C)**	**0.555(0.631)**	**17.1(23.5)**	
Walkley Road @ Baycrest Drive	Traffic Signals	EB	Left	B(C)	0.19(0.58)	11.7(28.6)	12.2(#39.4)
			Through/Right	A(A)	0.34(0.39)	9.9(8.6)	39.3(50.1)
		WB	Left	A(A)	0.05(0.15)	9.9(9.3)	4.7(9.9)
			Through/Right	A(B)	0.4(0.61)	9.5(10.8)	42.2(88.2)
		NB	Left/Through/Right	B(B)	0.17(0.22)	10.3(14.6)	10.3(13.2)
		SB	Left	D(D)	0.73(0.68)	36.5(41.9)	41.8(38.1)
			Through/Right	A(B)	0.28(0.3)	5.7(10.1)	10.8(14.5)
		Overall Intersection		**B(B)**	**0.62(0.739)**	**12.7(12.9)**	
Walkley Road @ Bank Street	Traffic Signals	EB	Left	F(F)	1.01(1.2)	96.7(168.8)	#88.6(#84.5)
			Through	C(D)	0.41(0.57)	32.3(44.7)	59.6(77.5)

			Right	A(B)	0.18(0.5)	2.2(10.8)	5.1(32.4)
		WB	Left	E(F)	0.55(1.22)	62.4(177.1)	25.8(#79.5)
			Through/Right	D(F)	0.95(1.09)	55(99.1)	#136.1(#174.1)
		NB	Left	F(F)	0.92(1.21)	99.6(181.3)	#84.1(#122.3)
			Through	E(D)	0.95(0.56)	55.1(37.7)	#151.5(85.1)
			Right	A(A)	0.32(0.42)	4.4(7.8)	12.3(25.7)
		SB	Left	F(E)	0.95(0.75)	104.2(57.3)	m#44.7(m49.8)
			Through	E(F)	0.65(1.16)	56.2(124.3)	86.8(m#234.5)
			Right	B(D)	0.49(0.9)	19.1(47.3)	m36.3(m133.7)
		Overall Intersection		**E(F)**	**0.936(1.059)**	**55.3(86.6)**	

Notes:

1. Table format: AM (PM)
2. v/c – represents the anticipated volume divided by the predicted capacity
3. * Estimated using Synchro's Percentile Method
4. # for v/c <1, queue requires multiple cycles to be cleared

Appendix D contains detailed intersection performance worksheets.

4.9.2.5 2037 Ultimate Conditions

Figure 18 illustrates 2037 Ultimate Conditions AM and PM Peak hour traffic volumes at the study area intersections.

Intersection capacity Analysis

Table 28 summarizes the results of the Synchro analysis under 2037 Ultimate Conditions.

The intersection of Heron Road at Bank Street is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Walkey Road at Bank Street is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Heron Road at Alta Vista is projected to continue to operate at or above capacity with several individual movements operating at LOS F during the AM and PM peak hour. No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The intersection of Heron Road at Baycrest is projected to operate at capacity during the AM peak hour with only the westbound movement (on Heron Road) operating at LOS E during the AM hour (v/c ration of 1.02).

No improvements are recommended as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

The right-in-right-out site access is projected to operate at LOS A with a control delay of 10.6 seconds on southbound right turn during the AM peak hour and 10.8 seconds during PM peak hour.

All other study area intersections are projected to operate acceptably.

Table 28 - 2037 Ultimate Conditions Intersection Level of Service

Intersection	Intersection Control	Approach / Movement		LOS	V/C	Delay (s)	Queue 95th (m)
Heron Road @ Bank Street	Traffic Signals	EB	Left	F(F)	1.45(1.42)	257(243.8)	#108.3())
			Through	C(E)	0.5(0.95)	25.7(57.6)	80(#134.3)
			Right	A(C)	0.43(0.75)	3.9(22.1)	16.4(#186.4)
		WB	Left	D(D)	0.36(0.79)	53.4(45.3)	m22.9(95.3)
			Through	E(E)	0.89(1.04)	66.1(63.9)	m147.5(10.8)
			Right	C(A)	0.46(0.46)	28.7(7)	m50.0(m#168.9)
		NB	Left	D(F)	0.82(1.48)	50.4(263.6)	m39.8(21.7)
			Through / Right	C(E)	0.85(0.96)	28.2(57.3)	m83.3(m#106.6)
		SB	Left	F(F)	0.9(1.07)	91.7(127.9)	#87.9(m124.0)
			Through / Right	D(F)	0.78(1.15)	48.1(117.7)	#95.4(#131.3)
		Overall Intersection		**E(F)**	**0.908(1.079)**	**52.9(94)**	
Heron Road @ Alta Vista	Traffic Signals	EB	Left	F(F)	0.83(1.41)	113.9(229.8)	m#45.4(m#83.0)
			Through	C(D)	0.67(0.87)	22.1(36.7)	m43.8(m179.6)
		WB	Left	E(F)	0.51(0.74)	57.7(92.2)	m24.9(#48.7)
			Through	D(D)	0.91(0.79)	50.8(38.4)	m169.1(151)
			Right	B(A)	0.29(0.31)	14.2(4.9)	m19.7(13.9)
		NB	Left	D(F)	0.23(1.98)	37.1(537.4)	20.4(#77.9)
			Through/Right	F(E)	1.21(0.87)	149.4(69.8)	#217.1(#131.4)
		SB	Left	F(D)	1.24(0.78)	171.9(51.6)	#98.7(#61.1)
			Through/Right	C(F)	0.61(1.2)	33.1(139.3)	105.6(#303.3)
		Overall Intersection		**E(F)**	**0.987(1.083)**	**63.6(81.7)**	
Heron Road @ Baycrest Drive	Traffic Signals	EB	Left	C(A)	0.48(0.38)	23.8(10)	m34.8(17.6)
			Through/Right	C(B)	0.55(0.58)	25.3(10.6)	m109.4(88)
		WB	Left	C(C)	0.21(0.37)	22.9(22.6)	15.2(21.5)

			Through/Right	C(B)	0.56(0.51)	22.9(17.2)	114.3(89.6)
		NB	Left	F(F)	1.28(0.93)	178.8(83.7)	#179.2(#104.4)
			Through/Right	B(B)	0.23(0.2)	11(11.8)	14(14.5)
		SB	Left	C(D)	0.19(0.16)	29.9(37.6)	16.2(18.7)
			Through/Right	B(B)	0.27(0.19)	12.9(12)	15(13.8)
		Overall Intersection		**D(B)**	**0.821(0.778)**	**47.2(20)**	
Heron Road @ RIRO Site Entrance	TWSC	SB	Right	B(B)	0.11(0.09)	10.7(10.8)	2.8(2.4)
Heron Road @ Sandalwood Drive	Traffic Signals	EB	Left	A(A)	0.15(0.17)	7.7(6.4)	9.8(9.4)
			Through/Right	A(A)	0.41(0.38)	8(5.6)	51.4(41.3)
		WB	Left	A(A)	0.08(0.22)	6.4(7)	4.2(11.4)
			Through/Right	A(A)	0.36(0.38)	6.5(5.8)	31.7(43.8)
		NB	Left	D(D)	0.67(0.42)	46.7(39.9)	42(25.9)
			Through/Right	B(B)	0.3(0.25)	11.8(14.6)	16.5(14.6)
		SB	Left	C(C)	0.06(0.05)	27.1(30.7)	6.9(6.2)
			Through/Right	B(B)	0.2(0.28)	12.7(15.5)	12.8(17.1)
		Overall Intersection		**B(A)**	**0.606(0.601)**	**10.8(7.9)**	
Heron Road @ Jefferson Street	Traffic Signals	EB	Left	A(B)	0.21(0.26)	8.9(12.3)	8.3(13.9)
			Through	A(B)	0.36(0.33)	7.2(10.1)	28(41.4)
			Right	A(A)	0.08(0.13)	1.4(2)	2.1(6.5)
		WB	Left	A(A)	0.07(0.14)	10(9.8)	5.5(9.2)
			Through/Right	B(B)	0.36(0.47)	10.1(11.4)	49.6(61.8)
		NB	Left	C(C)	0.11(0.22)	23.5(30.4)	12.4(21)
			Through	C(C)	0.08(0.14)	22.9(28.4)	12.8(20.8)
			Right	A(A)	0.08(0.21)	8.5(7.4)	6.3(11.2)
		SB	Left/Through/Right	B(C)	0.24(0.36)	17.8(24.9)	22.3(34.9)
		Overall Intersection		**A(B)**	**0.811(0.811)**	**9.6(12.4)**	
Heron Road @ Walkley	Traffic Signals	EB	Left/Right	C(C)	0.64(0.54)	26.6(25.3)	86(86.2)
		NB	Through	C(C)	0.61(0.73)	22.2(31.6)	91.2(133.8)
		SB	Through	B(D)	0.49(0.87)	20(38.8)	69.5(174.6)
			Right	A(A)	0.48(0.59)	2.2(5.1)	10.4(27.1)
		Overall Intersection		**B(C)**	**0.594(0.667)**	**18.1(26.4)**	
Walkley Road @ Baycrest Drive	Traffic Signals	EB	Left	B(F)	0.24(1.02)	13.5(113.6)	14(#39.8)
			Through/Right	B(B)	0.38(0.46)	11.1(10.7)	41.5(55.2)
		WB	Left	B(B)	0.06(0.19)	10.6(11.7)	4.9(10.9)
			Through/Right	B(B)	0.44(0.72)	10.6(15)	44.1(#118.0)

		NB	Left/Through/Right	A(B)	0.16(0.19)	9.7(11.3)	10.7(11.4)
		SB	Left	D(D)	0.79(0.72)	39.7(37)	52.6(40.7)
			Through/Right	A(B)	0.3(0.32)	5.2(13.8)	11.9(18.8)
		Overall Intersection		**B(B)**	**0.649(0.809)**	**14.2(19.8)**	
Walkley Road @ Bank Street	Traffic Signals	EB	Left	F(F)	1.01(1.25)	95.6(184.9)	#91.3(#88.4)
			Through	C(D)	0.44(0.64)	32.6(47.2)	63.6(85.5)
			Right	A(B)	0.19(0.53)	2.5(12.5)	6(37.3)
		WB	Left	E(F)	0.56(1.18)	61.8(160.5)	27.5(#82.4)
			Through/Right	E(F)	1.03(1.16)	73.2(123.8)	#158.1(#191.8)
		NB	Left	F(F)	0.93(1.26)	100.9(199.4)	#86.3(#128.7)
			Through	E(D)	1.01(0.6)	68.8(39.1)	#164.9(89.9)
			Right	B(A)	0.37(0.47)	10.1(9.7)	25.8(33.3)
		SB	Left	F(E)	1(0.77)	109.6(56.3)	m#47.2(m51.8)
			Through	E(F)	0.7(1.21)	59.9(139.4)	93.4(m#240.3)
			Right	C(D)	0.52(0.93)	22.7(47.4)	m43.1(m#134.0)
		Overall Intersection		**E(F)**	**0.974(1.092)**	**63.7(94.8)**	

Notes:

1. Table format: AM (PM)
2. v/c – represents the anticipated volume divided by the predicted capacity
3. * Estimated using Synchro's Percentile Method
4. # for v/c <1, queue requires multiple cycles to be cleared

Appendix D contains detailed intersection performance worksheets.

5.0 SUMMARY AND CONCLUSIONS

This Transportation Impact Assessment (TIA) was prepared in support of a Plan of Subdivision for the proposed development at 1495 Heron Road in the Playfair Park – Lynda Park – Guildwood Estates neighborhood of Ottawa, Ontario. The proposed development is located north of the Heron Road and Baycrest Drive intersection at the existing Federal Study Centre. The site is bound by Heron Road to the south, single-family homes to the east, an existing school to the west and parkland to the north.

Primary access to the development is planned to be achieved via the existing signalized intersection of Heron Road and Baycrest Drive at the existing Federal Study Center. This primary access will be shared with the proposed Timbercreek redevelopment on the south side of Heron Road. A secondary right-in/right-out only access off of Heron Road is also provided. The development is planned to be built out by the year 2032.

The proposed development is anticipated to generate 394 and 337 net new auto trips (two-way) during the AM and PM peak hours, respectively. The trip generation accounted for transit modal shares were obtained from the TRANS 2020 Trip Generation Manual.

The City of Ottawa Transportation Master Plan identifies a number of transit improvements on key arterial and collector roadways within the vicinity of the study area:

- At-Grade Bus Rapid Transit (BRT) corridor on Heron Road, connecting Bayshore Station to St. Laurent Station (Network Concept, anticipated to occur beyond the 2031 horizon)
- Transit Signal Priority and queue jump lanes on Bank Street, between Billings Bridge Station and Hunt Club Road (Network Concept, anticipated to occur beyond the 2031 horizon)
- Transit Signal Priority and queue jump lanes between the Ottawa Health Sciences Centre and Walkley Road (Network Concept, anticipated to occur beyond the 2031 horizon)

As these improvements are identified within the TMP Network Concept, which is anticipated to occur beyond the 2031 horizon year, none of these improvements were accounted for within this TIA. However, it is anticipated that these improvements are likely be implemented at some point beyond the full-build out of the proposed development, thereby improving transit connectivity and increasing the transit modal share.

Intersection level of service analyses were completed as part of this study. The analysis of the study area intersections under Existing Conditions found that the following intersections are currently operating at or close to theoretical capacity:

- Heron Road at Bank Street (PM peak); and
- Walkley Road at Bank Street (PM peak).

No improvements are recommended to address existing operating conditions as implementing intersection treatments to address vehicular operations is expected to negatively impact the multi-modal traffic operations for other modes (transit, cycling, and pedestrian).

Under 2032 Future Background conditions, all study area intersections are projected to operate with acceptable levels of service with the exception of the following intersections:

- Heron Road at Bank Street (AM and PM peaks);
- Heron Road at Alta Vista Drive (AM and PM peaks); and
- Walkley Road at Bank Street (PM peak).

Under 2032 Total Future conditions, all study area intersections are projected to operate with acceptable levels of service with the exception of the following intersections:

- Heron Road at Bank Street (AM and PM peaks);
- Heron Road at Alta Vista Drive (AM and PM peaks); and
- Walkley Road at Bank Street (PM peak).

Intersection operations under 2032 Total Future conditions are projected to be similar to Future Background conditions with no additional traffic impacts attributed to site generated traffic. Specifically, the primary site access intersection of Heron Road and Baycrest Drive is projected to operate with overall acceptable levels of service.

Under the 2037 Ultimate traffic conditions, which represents five (5) years beyond the anticipated total build-out of the subject site, all study area intersections are projected to operate with acceptable levels of service with the exception of the following intersections:

- Heron Road at Bank Street (AM and PM peaks);
- Heron Road at Alta Vista Drive (AM and PM peaks);
- Heron Road at Baycrest Drive (AM peak)
- Walkley Road at Bank Street (AM and PM peak).

The primary access points at Heron Road and Baycrest Drive is projected to operate at or close to theoretical capacity under the 2037 Ultimate horizon. This is attributed to the westbound (WB) movement on Heron Road during the AM peak period. Intersection operations under the 2037 Ultimate horizon can be achieved by improving the intersection geometry of the Heron Road and Baycrest Drive intersection by modifying the south leg of the intersection, which currently features a single lane approach to a two-lane approach featuring a dedicated northbound left-turn lane and a shared northbound thru-right turn lane (i.e. to mirror and balance the existing north leg).

It is recommended that intersection design improvements for the Heron Road and Baycrest intersection to address future 2037 conditions should be explored and coordinated with the planning and design efforts of the proposed Heron Road BRT corridor project.

Based on the findings of this study, the proposed Plan of Subdivision for the proposed development can be supported from a transportation perspective and should proceed.