Transportation Impact Study

Exchange Place

Town of Herndon, Virginia

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Executive Summary

The following report presents the findings of a Transportation Impact Study (TIS) conducted for the proposed Exchange Place redevelopment in the Town of Herndon, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the Town of Herndon.

This study was prepared in accordance with the best professional practices and standards in order to assess the impact of the proposed redevelopment on the surrounding transportation systems and recommend improvements to lessen or negate those impacts. This study involves the evaluation of anticipated roadway conditions with and without the proposed redevelopment and recommends possible transportation improvements and strategies to offset both the impacts of the increase in future traffic demand and the changes in traffic operations and characteristics due to the redevelopment. This study serves to assist public officials and developers to balance interrelations between efficient traffic movements with necessary access.

3rd Submission Update: It is noted that in order to be consistent with the Transit-Related Growth Area (TRG) Small Area Plan, the road previously referred to as “Park Drive” will now be identified as “Parallel Street”. All instances of “Park Drive” within this TIS are referring to “Parallel Street” as identified on the TRG Small Area Plan Transportation Network.

Site Location and Study Area

The site is located north of Herndon Parkway and east of Exchange Place in the Town of Herndon, Virginia.

For the purposes of this study, the analysis presented herein includes 11 existing intersections and two (2) future intersections.

The study intersections are as follows:

1. Spring Street and Victory Drive
2. Herndon Parkway and Spring Street
3. Spring Street and Fairfax County Parkway Ramps
4. Herndon Parkway at Sunset District (Sunset Business Park)
5. Herndon Parkway and Fairbrook Drive
6. Herndon Parkway and Exchange Place
7. Exchange Place and Parallel Street
8. Herndon Parkway and 555 and 575 Herndon Parkway Entrance
9. Herndon Parkway and Pedestrian Signal
10. Herndon Parkway and Van Buren Street
11. Van Buren Street and Worldgate Drive
12. Herndon Parkway and Parallel Street/Worldgate Drive (Future)
13. Fairbrook Drive and Parallel Street (Future)
14. Fairbrook Drive and Private Road B (Future)

Description of Proposed Development

The existing site is currently occupied by a 108,402 SF office park that is to be removed. The proposed development includes 400 mid-rise multifamily dwelling units and up to 66 stacked townhouses. Total site build-out is planned for the year 2027.

Principal Findings and Conclusions

Discussions regarding the study assumptions and relevant background information were held with Town of Herndon staff during a scoping meeting on May 16, 2024. A copy of the signed scoping document is included in Appendix A.

Based on the above guidelines, the analysis presented in this report supports the following conclusions:

TIS Components

- As determined based on discussions with the Town, a growth rate of one (1) percent per year was applied to major movements to account for a regional increase in background traffic.
- The proposed development is anticipated to generate approximately 155 trips during the AM peak hour, 153 trips during the PM peak hour, and 1,770 trips on a typical weekday with reductions. It is noted that the Mid-Day peak hour was not analyzed as agreed upon at the scoping meeting.
- The following approved yet unbuilt background developments were assumed to be in place by 2027:
    - Woodland Park East Block E – 560,000 SF of office and 20,000 SF of retail
    - 555 Herndon Parkway – 435 residential units, 200,000 SF of office, and 10,000 SF of retail
    - Parkview at Herndon Metro – 675 residential units, 413,000 SF of office, and 10,000 SF of retail
    - Herndon Hotel – 250 room hotel
    - Fairbrook Business Park (Phase 1) – 1,080 residential units, a 10,000 SF daycare and 10,000 SF of retail

Infrastructure

- Existing vehicular access is provided via one (1) full-access entrance on Exchange Place and one (1) full-access entrance on Herndon Parkway.
- Site access will continue to be provided via Exchange Place and Herndon Parkway.
- **2nd Submission Update:** The conceptual development plan has been changed since the 1st submission. Future site access on Exchange Place will now be provided via two (2) full-access entrances at Parallel Street and Private Road B.

Non-Single Occupancy Vehicle (SOV) Elements

- Four (4) bus routes provide service in the vicinity of the site, providing regional access to the area.
- Sidewalks exist along both sides of Herndon Parkway. The intersection of Herndon Parkway and Van Buren Street has crosswalks, curb ramps, and pedestrian signal heads on all approaches. The intersection Spring Street and Herndon Parkway have crosswalks, curb ramps, and pedestrian signal heads on all approaches.
- The Herndon Metrorail Station on the Silver Line is located approximately 0.5 miles (walking distance) from the site and is accessible via existing sidewalk connections along Herndon Parkway and the mid-block signalized crosswalk at Herndon Metro Entrance North.

Analysis Results

- For the purpose of this analysis, it is desirable to achieve an overall level of service (LOS) of D or better for each intersection and LOS E or better for each lane group at an intersection within the study area.
- One (1) intersection has movements that operate below acceptable levels of service during the Existing Conditions (2024) peak hours:
    - Intersection #4: Herndon Parkway and Sunset District (PM Peak)

- Three (3) intersections have movements that operate below acceptable levels of service during the Future Conditions without Development (2027) peak hours:
    - Intersection #2: Herndon Parkway and Spring Street (PM Peak)
    - Intersection #4: Herndon Parkway and Sunset District (AM and PM Peak)
    - Intersection #10: Herndon Parkway and Van Buren Street (PM Peak)
- Two (2) intersections have movements that operate below acceptable levels of service during the Future Conditions with Development (2027) peak hours:
    - Intersection #4: Herndon Parkway and Sunset District (AM and PM Peak)
    - Intersection #10: Herndon Parkway and Van Buren Street (PM Peak)
- Two (2) intersections have movements that operate below acceptable levels of service during the Future Conditions with Development (2027) with 575 Herndon Parkway peak hours:
    - Intersection #4: Herndon Parkway and Sunset District (AM and PM Peak)
    - Intersection #10: Herndon Parkway and Van Buren Street (PM Peak)

Proposed Mitigation

- The proposed redevelopment does not cause any movements to begin to operate below acceptable levels of service; therefore, no mitigations are proposed at the study intersections.
- It is noted that the following transportation improvements are associated with the approved yet unbuilt Fairbrook Business Park development. These improvements are not anticipated to be in place by 2027.
    - Intersection #5: Herndon Parkway and Fairbrook Drive
        - Extend the existing left turning lane on southbound Herndon Parkway to a stacking length of 225 feet.
        - Construct a right turn lane on northbound Herndon Parkway.
- It is also noted that the Transit-Related Growth Small Area Plan proposes a new traffic signal at the intersection of Herndon Parkway and Sunset District.

Preliminary Signal Warrant Analysis – Herndon Parkway and Fairbrook Drive

- According to the proffer conditions for the Fairbrook Business Park development dated November 17, 2020, a traffic signal is to be installed prior to the issuance of a permanent certificate of occupancy for the New Building which generates the need for a signal.
- In order to determine if a signal is warranted at the intersection of Herndon Parkway and Fairbrook Drive (Intersection #5), a preliminary signal warrant analysis was conducted under future conditions for the following two (2) scenarios:
    - With Exchange Place and without Fairbrook Business Park (Phase 1)
    - With Fairbrook Business Park (Phase 1) and without Exchange Place
- A signal at Herndon Parkway and Fairbrook Drive would not be warranted with Exchange Place and without Fairbrook Business Park (Phase 1), but would be warranted with Fairbrook Business Park (Phase 1) and without Exchange Place.

- It is noted that the Exchange Place development site trips account for approximately 4.0 percent of the Future with Development (2027) intersection volume during the AM peak hour and approximately 3.1 percent of the intersection volume during the PM peak hour at Intersection #5.

Potential Mitigations – Herndon Parkway and Sunset District

- The intersection of Herndon Parkway and Sunset District (Intersection #4) currently operates below acceptable levels of service under Existing Conditions (2024). As requested by the Town, a potential mitigation scenario is provided for informational purposes.
- Intersection #4 currently operates under two-way stop control. The westbound left/through movement operates below acceptable levels of service during the PM peak hour under Existing Conditions (2024) and operates below acceptable levels of service during both peak hours under Future Conditions without Development (2027).
- The Exchange Place development's impact to the intersection is anticipated to be minimal:
    - The Exchange Place development's site trips do not cause the intersection to operate below acceptable levels of service.
    - During the AM peak hour, the delay increase for the westbound left/through movement between the Future without Development and Future with Development scenarios is 9.9 seconds.
    - During the PM peak hour, the delay increase for the westbound left/through movement between the Future without Development and Future with Development scenarios is 14.9 seconds.
- It is noted that the Exchange Place development site trips account for approximately 3.3 percent of the Future with Development (2027) intersection volume during the AM peak hour and approximately 2.5 percent of the intersection volume during the PM peak hour at Intersection #4.
- Intersection #4 was analyzed with a traffic signal as a potential mitigation measure:
    - The results indicate that with a traffic signal, all movements operate at acceptable levels of service during both peak hours.

Introduction

The purpose of this report is to present the findings of a Transportation Impact Study (TIS) conducted for the proposed Exchange Place redevelopment in the Town of Herndon, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the Town of Herndon.

The existing site is currently occupied by a 108,402 SF office park that is to be removed. The proposed development includes 400 mid-rise multifamily dwelling units and up to 66 stacked townhouses. Total site build-out is planned for the year 2027.

The following tasks were completed as part of this study effort:

- A scoping meeting was held with representatives from the Town of Herndon staff on May 16, 2024. A copy of the scoping document is provided in Appendix A.
- Field reconnaissance in the vicinity of the site was performed to collect information related to existing traffic controls, roadway geometry, and traffic flow characteristics.
- Turning movement counts were collected at the study area intersections on Tuesday, May 22, 2024 from 6:00 AM to 10:00 AM and from 3:30 PM to 7:30 PM. It is noted that the Mid-Day peak hour was not analyzed as agreed upon at the scoping meeting. The turning movement count data is included in Appendix B.
- Vehicular traffic analysis for the study intersections was performed using *Synchro 11* based on *Highway Capacity Manual* (HCM) 6th Edition methodology. HCM 2000 methodology was used for all intersections in lieu of HCM 6th Edition if the HCM 6th Edition methodology was not applicable.
- Intersection capacity analyses were performed for the existing year (2024) and build-out year (2027).
- Future traffic volumes were developed by accounting for regional growth in the area and approved yet unbuilt background developments and roadway improvements. A growth rate of one (1) percent per year was applied to major movements to account for a regional increase in background traffic.
- Proposed site traffic volumes were generated based on the methodology outlined in ITE *Trip Generation Manual*, 11th Edition.
- An assessment of the previous crashes has been conducted at existing study intersections.

Sources of data for this study include Institute of Transportation Engineers (ITE), the Town of Herndon, the Virginia Department of Transportation (VDOT), and the office files and field reconnaissance efforts by Gorove Slade.

Background Information: Proposed Development (Site and Nearby)

Description of the Existing Site

Site Location

The site is located north of Herndon Parkway and east of Exchange Place in the Town of Herndon, Virginia.

The geographic scope of the study area was developed in accordance with guidance from Town of Herndon staff. Figure 1 shows the location of the existing and future study intersections.



Figure 1: Site Location

Description of the Parcel

The site is approximately 9.42 acres and is comprised of one (1) parcel, which is identified as Tax Map #16-4 ((10)) 1B.

The existing site is currently occupied by a 108,402 SF office park that is to be removed. Site access is currently provided via Exchange Place and Herndon Parkway.

The terrain at the site location is fairly level with no major changes in elevation.

The parcel map is shown in Figure 2.

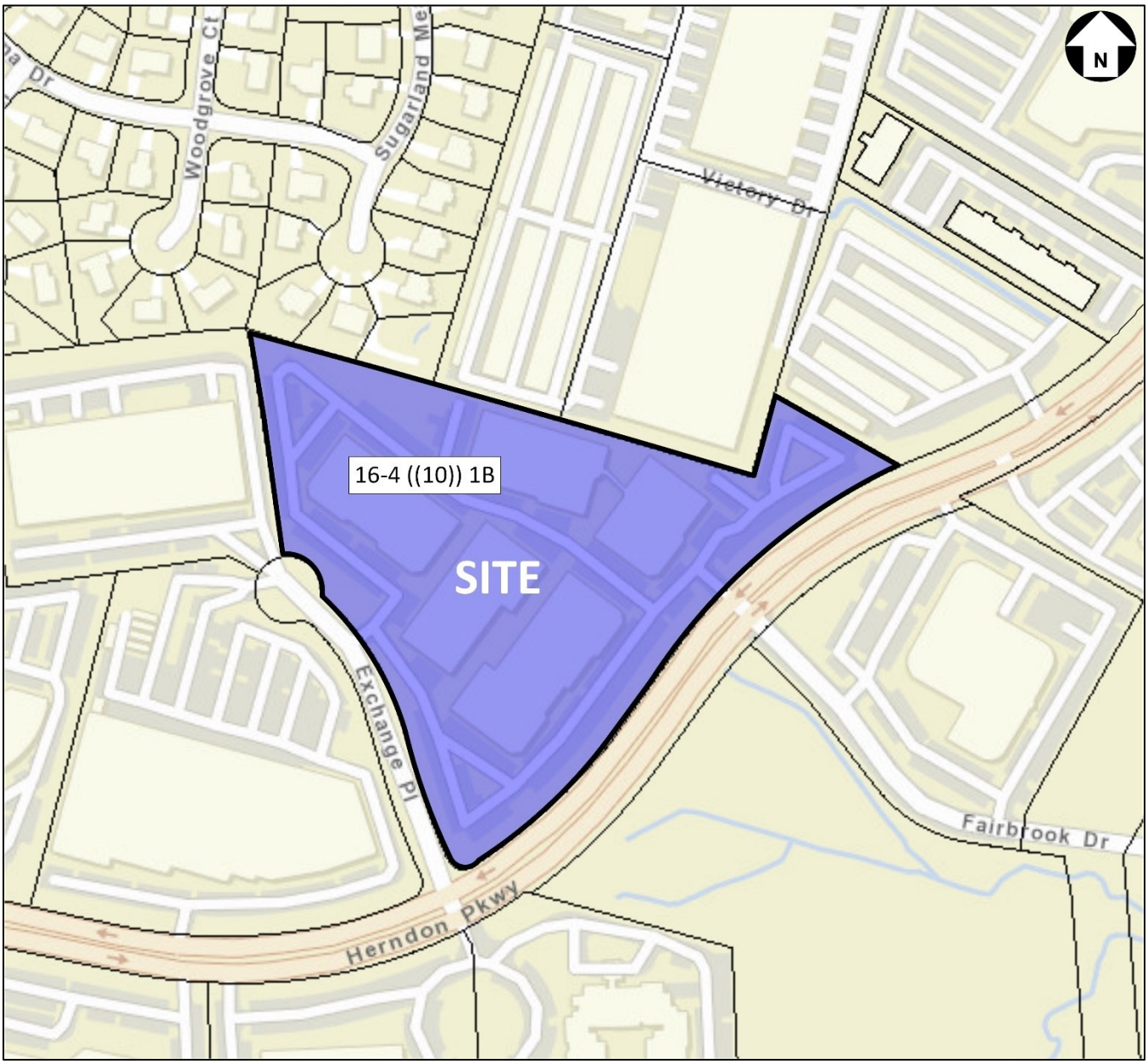


Figure 2: Parcel Map

Location within Jurisdiction and Region

The site is located within the Transit-Related Growth (TRG) Area of the Town of Herndon, Virginia. The site's regional location is shown in Figure 3.

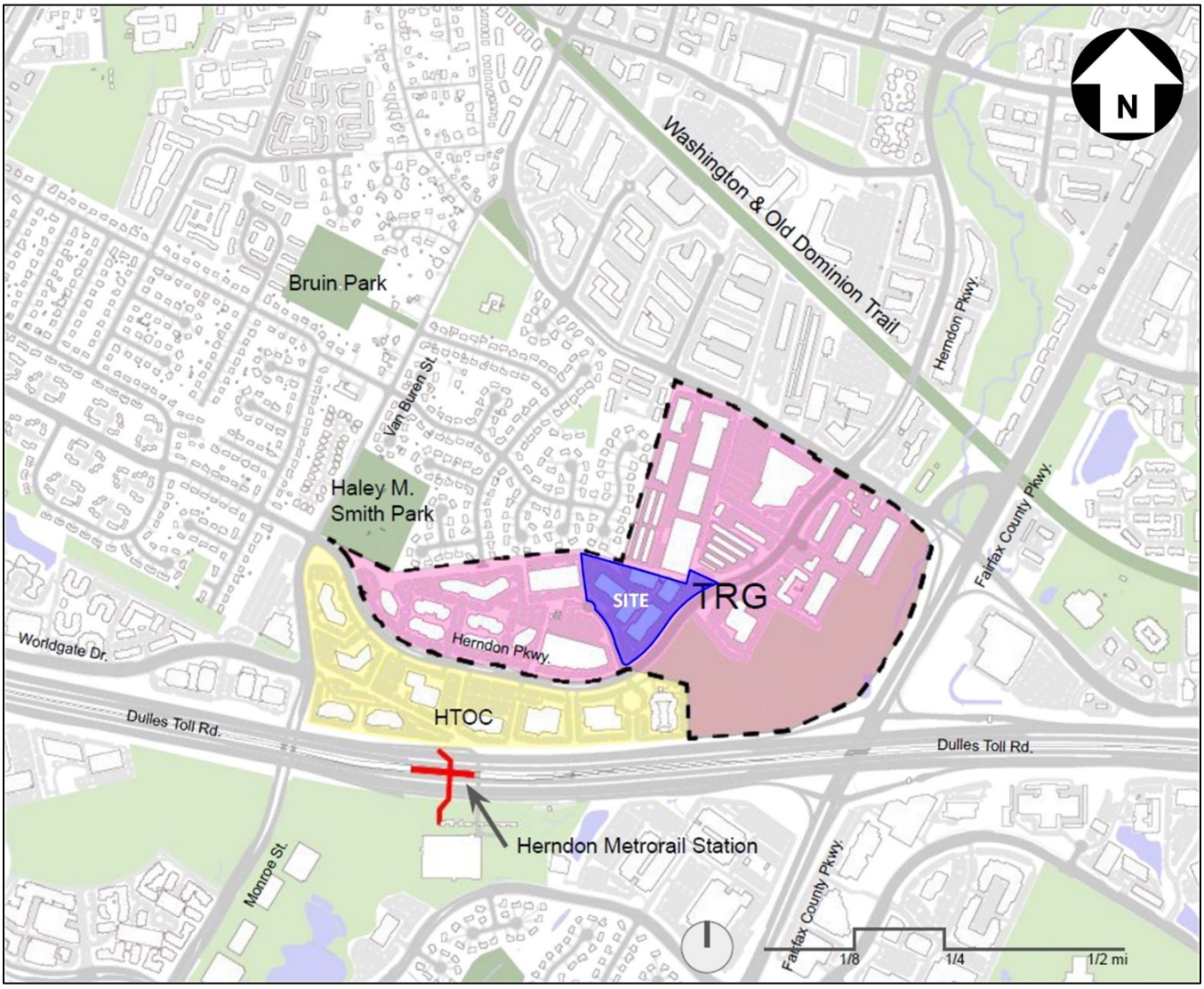


Figure 3: Jurisdiction Location (Source: Town of Herndon)

Transit-Related Small Area Plan Recommendations

The site is located within Area 2 and Area 3 of the Transit-Related Growth Area. Per the *Transit-Related Small Area Plan*, the Land Use Plan for the site includes Low Density Residential and Medium Density Residential. Low Density Residential includes townhomes and two-over-two units with garages along rear alleys and frontage along streets and mews. Medium Density Residential includes mid-rise apartment buildings with a parking garage.

The land use plan is shown in Figure 4.

Area	Use	Building (sf)	Units (RES/H)
Area 1	R-Multifamily	638,700	532
	Corporate	641,700	
	Restaurant Services	43,100	
Area 2	R-Multifamily	937,500	781
Area 3	R-TH	355,700	178
Area 4	R-TH	480,600	240
Area 5	R-Multifamily	673,500	561
	Corporate	480,900	
	Grocery	50,900	
	Restaurant Services	35,900	
Area 6	R-Multifamily	593,500	495
	Hotel	277,500	463
	Creative	66,800	
	Entertainment Fitness	74,400	
	Retail	89,000	
Grand Total		5,439,700 sf	

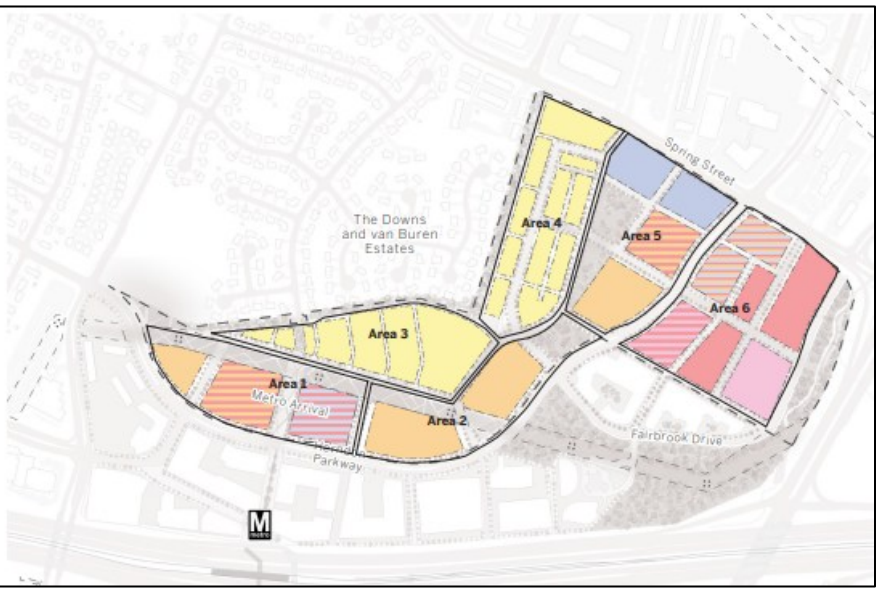


Figure 4: Transit-Related Growth Area Land Use Plan

Zoning for the Site and Nearby Uses

The existing zoning for the site is O & LI (Office and Light Industrial). Adjacent properties to the north of the site are zoned PD-B (Planning Development – Business) and R-10 (Single Family Residential). Nearby properties to the south of the site are zoned PD-TOC (Planned Development – Transit Oriented Core) as shown in Figure 5.

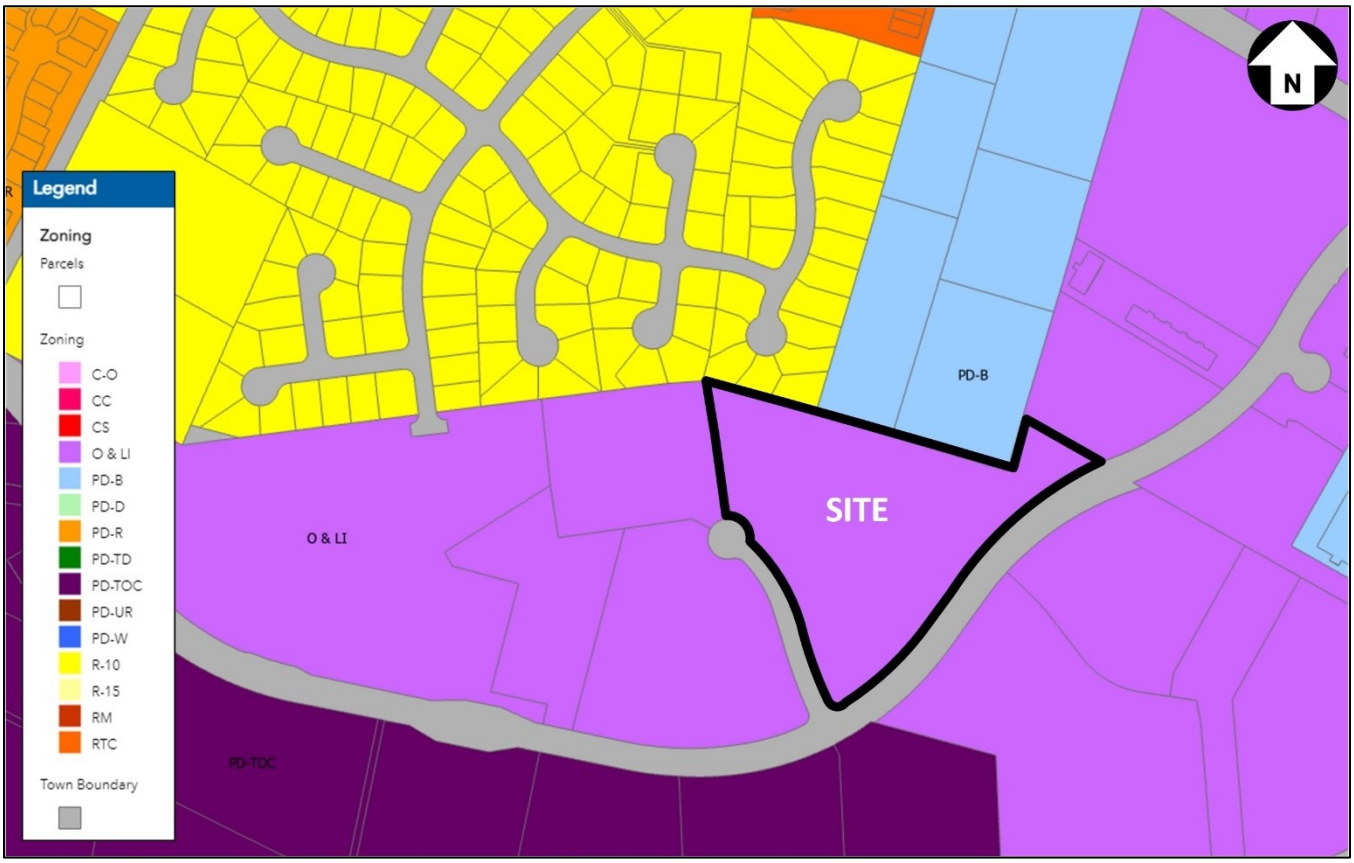


Figure 5: Zoning Map

Description of Geometric Scope and Limits of the Study Area

The geographic scope of the study area was developed in accordance with guidance from Town of Herndon staff.

Existing Roadways

The site is located north of Herndon Parkway and east of Exchange Place in the Town of Herndon, Virginia.

The existing study area consists of seven (7) intersections on Herndon Parkway, two (2) intersections on Spring Street, one (1) intersection on Exchange Place, one (1) intersection on Van Buren Street.

Detailed roadway descriptions are provided in the *Existing Conditions (2024)* section of this study.

The vehicular study area includes the following existing intersections:

1. Spring Street and Victory Drive
2. Herndon Parkway and Spring Street
3. Spring Street and Fairfax County Parkway Ramps
4. Herndon Parkway at Sunset District
5. Herndon Parkway and Fairbrook Drive
6. Herndon Parkway and Exchange Place
7. Exchange Place and Existing 250 Exchange Place Entrance (Future Parallel Street)
8. Herndon Parkway and 555 and 575 Herndon Parkway Entrance
9. Herndon Parkway and Pedestrian Signal
10. Herndon Parkway and Van Buren Street
11. Van Buren Street and Worldgate Drive

Planned Future Transportation Improvements

Herndon Metrorail Station Access Improvement Projects

Herndon area station access projects improve pedestrian, vehicle, and bicycle connections to and from the new Silver Line Metro stations. The majority of projects in the Herndon area are being constructed with Fairfax County Department of Transportation (FCDOT) funding to improve Metro station access. In the vicinity of the Exchange Place site, approximately 2,100 feet of two-way cycletrack will be added to the south side of Herndon Parkway.

East Spring Street Improvements Project

The East Spring Street Improvements Project enhances multi-modal service levels along Spring Street and Herndon Parkway at the intersection of those two roads, the approaches to the intersection, and on Spring Street between the intersection and the Fairfax County Parkway overpass. The project is intended to increase vehicular mobility and capacity and improve sidewalk connectivity and safety. It includes a new two-way cycle track along Herndon Parkway which would connect to the W&OD Regional Trail and Sugarland Run Regional Trail. Project highlights include the widening of the intersection with additional through and turn lanes, access management improvements, 2000-foot length of Herndon Parkway cycle track to connect with Sugarland Run Regional Trail, high visibility crosswalks, ADA compliant sidewalks and curb ramps, new sidewalk on the south side of Spring Street to connect with the County sidewalk under the Fairfax County Parkway, and new traffic signals as well as accessible pedestrian signals.

Worldgate Drive Extension

The Worldgate Drive Extension project includes extending Worldgate Drive from Van Buren Street to Herndon Parkway and new signalization at Herndon Parkway and the Worldgate Drive Extension. The improvements include LED traffic/bike/pedestrian signalization, dedicated turning lane capacity improvements, street-lighting, cycle tracks, ADA curb cuts/sidewalks, and paver crosswalks. The pedestrian crossings and improved traffic flow will provide additional safety measures for motorized and non-motorized traffic modes. Safety is a critical component for this project, emphasizing a seamless and safer multimodal environment for pedestrians and cyclists.

Transit Improvements

According to the Fairfax Connector Transit Strategic Plan (TSP), new transit routes and alignment changes are recommended in the vicinity of the site. The routes have been adjusted in accordance with the phased completion of the Dulles Corridor Metrorail Project. Figure 6 shows the local bus service recommendations in the vicinity of the site per the TSP.

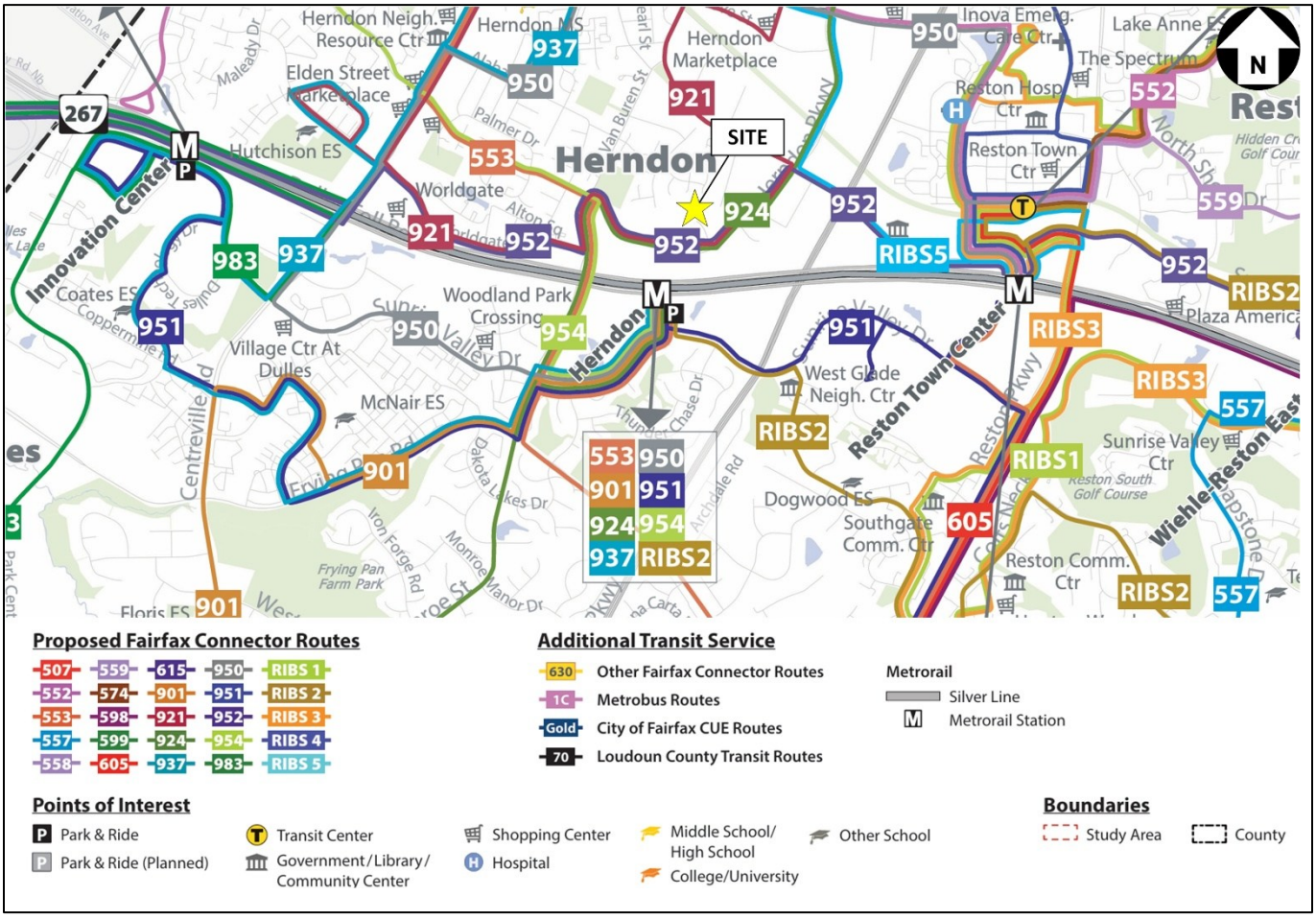


Figure 6: Fairfax Connector Transit Strategic Plan (Source: FCDOT)

Bicycle and Pedestrian Improvements

Fairfax County has adopted a *Countywide Bicycle Master Plan* and the Town of Herndon has adopted a *Bicycle Network Master Plan*. Figure 7 and Figure 8 show the existing and recommended bicycle facilities in the vicinity of the site. Both the Fairfax County and Town of Herndon bicycle master plans show a cycle track is recommended along Herndon Parkway in the vicinity of the site.

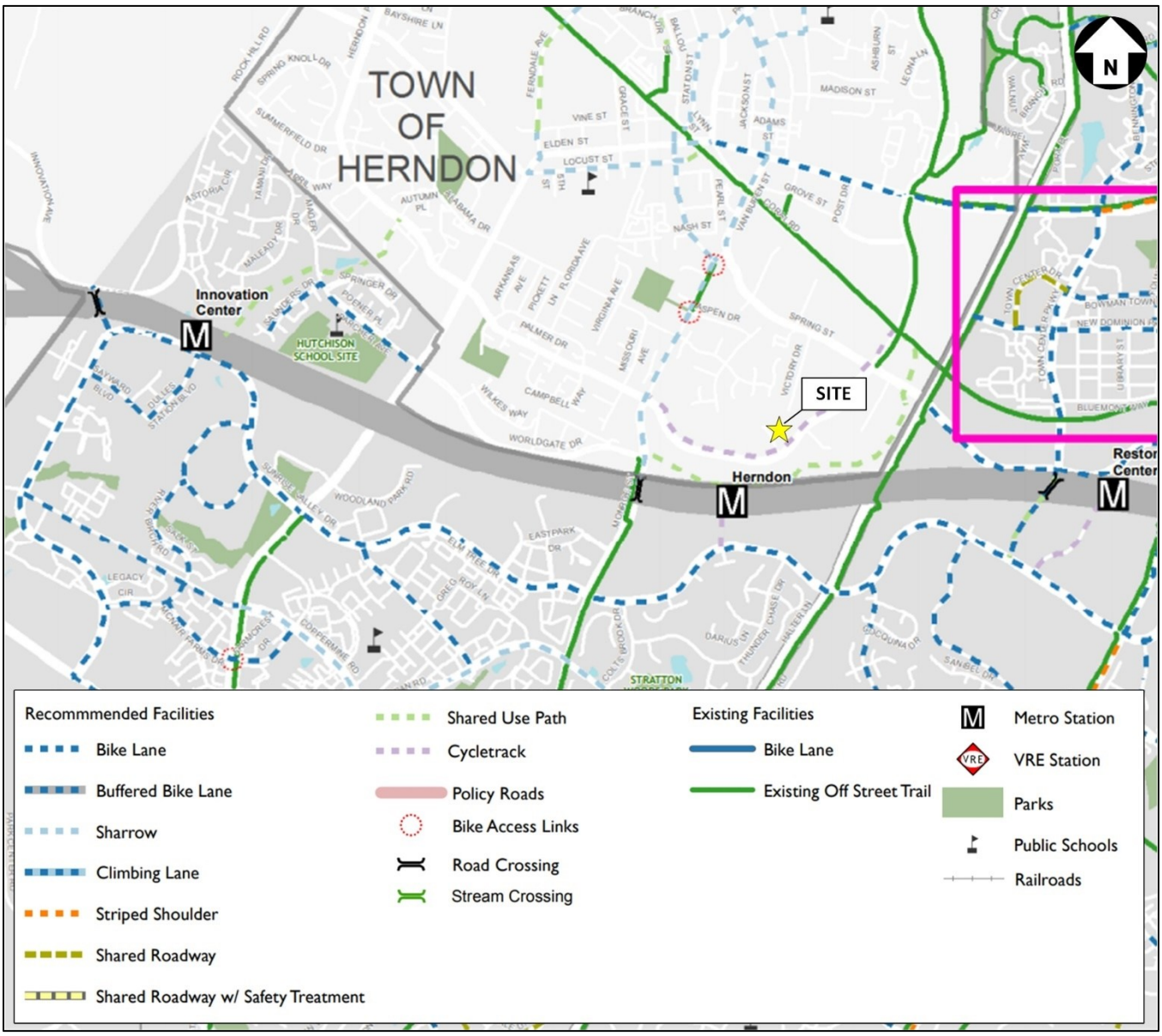


Figure 7: Recommended Bicycle Facilities (Source: Fairfax County Bicycle Master Plan)



Figure 8: Recommended Bicycle Facilities (Source: Town of Herndon Bicycle Network Master Plan)

Existing Conditions (2024)

Existing Transit Service

Four (4) bus routes currently serve the site area along Herndon Parkway. Bus service along Herndon Parkway is provided by Fairfax Connector Routes 921, 924, and 952 and OmniRide Route 618. The existing bus routes are shown in Figure 9. Bus stops are located on both sides of Herndon Parkway at Fairbrook Drive and Exchange Place in the vicinity of the site.

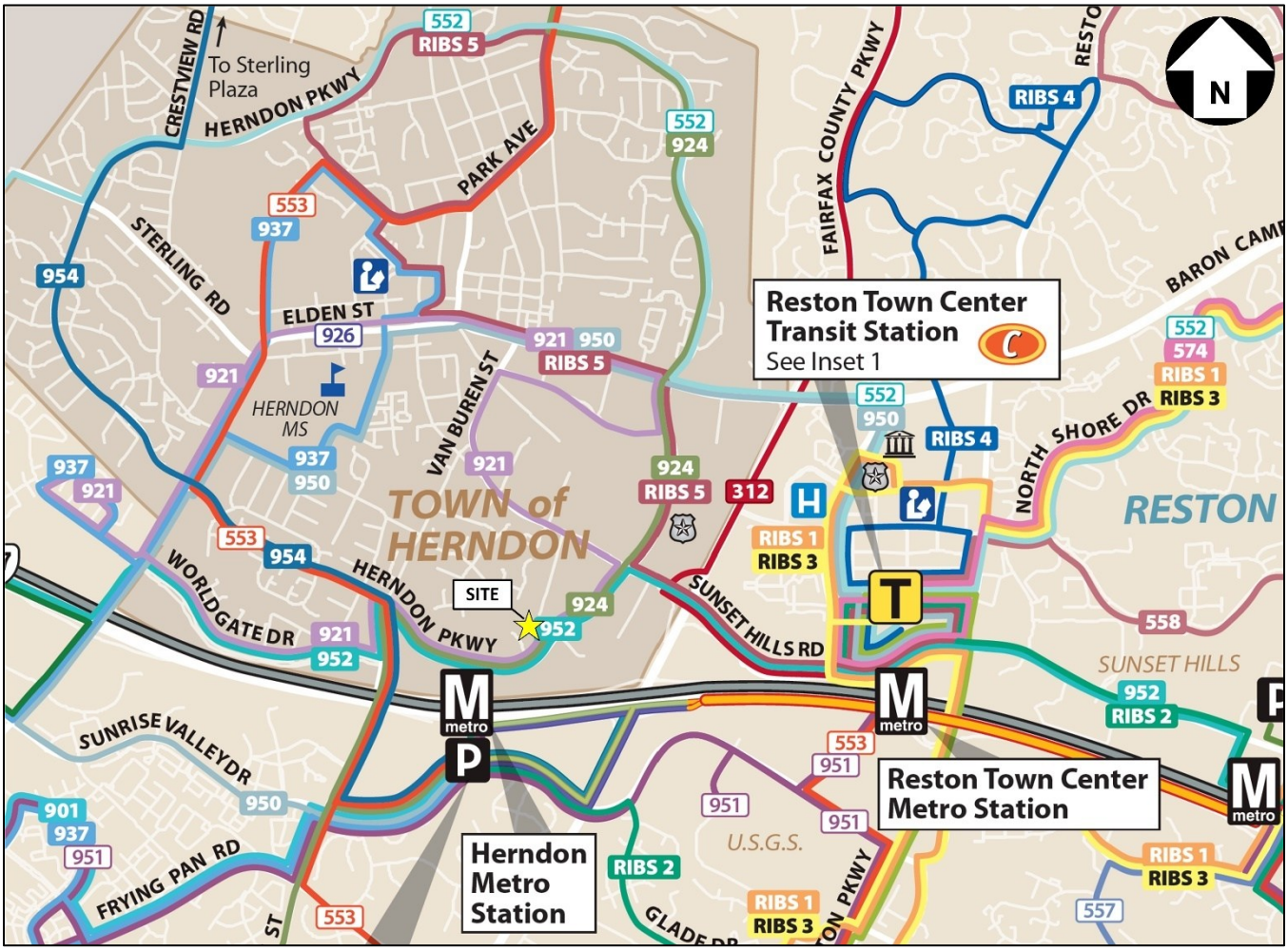


Figure 9: Existing Transit Service (Source: Fairfax Connector)

Existing Bicycle and Pedestrian Facilities

Sidewalks exist along both sides of Herndon Parkway. The intersection of Herndon Parkway and Van Buren Street has crosswalks, curb ramps, and pedestrian signal heads on all approaches. The intersection Spring Street and Herndon Parkway has crosswalks, curb ramps, and pedestrian signal heads on all approaches.

Herndon Parkway is considered “Less Comfortable” for bicycling as shown in Figure 10.

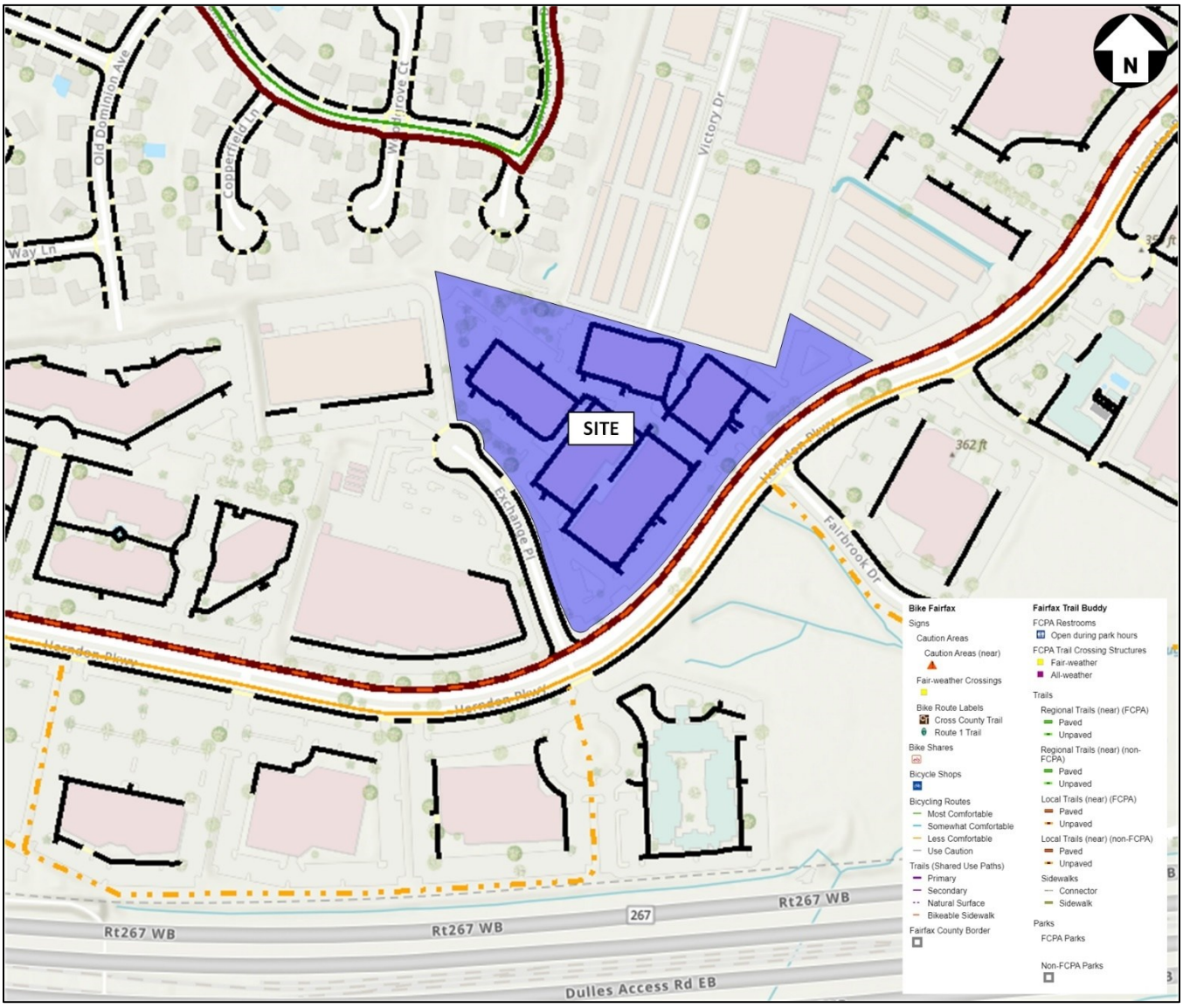


Figure 10: Bicycle and Trail Network (Source: Bike Fairfax Interactive Map)

Existing Roadway Network

A description of the major roadways within the study area is presented in Table 1. The existing roadway network, including lane configurations and traffic controls, is presented in Figure 11.

Table 1: Existing Roadway Network

Roadway	From	To	VDOT Classification	Lanes	Speed (mph)	On-Street Parking	2019 AADT (vpd)*	2022 AADT (vpd)*
Van Buren Street	SCL Herndon	Herndon Parkway	Major Collector	4	25/35	No	22,000	14,608
Van Buren Street	Herndon Parkway	Alabama Drive	Major Collector	2	25	No	8,400	6,405
Herndon Parkway	Elden Street	Sterling Road	Minor Arterial	4	35	No	21,000	16,695
Spring Street	Victory Drive	Herndon Parkway	Major Collector	4	30	No	11,000	9,698
Spring Street	Herndon Parkway	SCL Herndon	Minor Arterial	4	30	No	38,000	33,910

** VDOT Annual Average Daily Traffic (AADT) Data*

Van Buren Street is a two-lane undivided roadway north of Herndon Parkway and a four-lane divided roadway south of Herndon Parkway and is classified as a major collector. The posted speed limit within the vicinity of the site is 25 mph north of Worldgate Drive and is 35 mph south of Worldgate Drive.

Herndon Parkway is a four-lane divided roadway and is classified as a minor arterial. The posted speed limit in the vicinity of the site is 35 mph.

Spring Street is a four-lane divided roadway and is classified as a major collector west of Herndon Parkway and a minor arterial east of Herndon Parkway. The posted speed limit in the vicinity of the site is 30 mph.

Historical Crash Data

Historical crash data at the existing study intersections was obtained from TREDS (Traffic Records Electronic Data System) for the most recent five (5) years. The crash data is summarized in Table 2. The crash data provided by TREDS is included in Appendix C.

Table 2: Crash Data Summary (January 2019 – December 2023)

Intersection	Number of Crashes	Number of Property Damage Crashes	Number of Crashes Resulting in Injury	Number of Fatal Crashes	Crash Rate (Crashes per MEV)
Spring Street and Park Drive	3	2	1	0	0.16
Herndon Parkway and Spring Street	35	11	24	0	0.62
Spring Street and Fairbrook Drive/Fairfax County Parkway Ramps	14	7	7	0	0.22
Herndon Parkway at Sunset District	3	0	3	0	0.10
Herndon Parkway and Fairbrook Drive	2	2	0	0	0.07
Herndon Parkway and Exchange Place	3	1	2	0	0.11
Park Drive and Exchange Place	0	0	0	0	0.00
Intersection between 555 and 575 Herndon Parkway	0	0	0	0	0.00
Herndon Parkway and Pedestrian Signal	3	1	2	0	0.11
Herndon Parkway and Van Buren Street	33	7	26	0	0.60
Van Buren Street and Worldgate Drive	19	7	12	0	0.37

As shown in Table 2, the intersection of Herndon Parkway and Spring Street had the highest number of reported crashes (35) during the five-year study period.

The intersection of Herndon Parkway and Van Buren Street had the second highest number of reported crashes (33).

The crash rates shown for each intersection are calculated as crashes per one million entering vehicles (MEV), and were calculated based on the following formula:

$$Rate_{intersection} = \frac{1{,}000{,}000 * \#\ of\ Crashes}{\#\ of\ Years * 365\ \left(\frac{days}{year}\right) * ADT_{approach}}.$$

The approach ADT for an intersection is calculated as the sum of each leg, divided by 2. The Existing (2024) traffic volumes as shown in Figure 12 were used to calculate the approach ADT.

It should be noted that according to the Institute of Transportation Engineers' (ITE's) *Transportation Impact Analysis for Site Development*, a crash rate of 1.0 MEV or higher is an indication that further study is required. A crash rate over 1.0 MEV does not necessarily mean there is a significant problem at an intersection, but rather is a threshold used to identify which intersections may have elevated crash rates due to operational, geometric, or other deficiencies. All existing intersections have a crash rate of less than 1.0 crashes per MEV and are not considered high crash intersections.

Existing Traffic Volumes

Turning movement counts were collected at the study area intersections on Wednesday, May 22, 2024 from 6:00 AM to 10:00 AM and from 3:30 PM to 7:30 PM. It is noted that the Mid-Day peak hour was not analyzed as agreed upon at the scoping meeting. Analysis of the existing traffic data determined the following system peak hours:

- AM Peak Hour: 8:15 AM to 9:15 AM
- PM Peak Hour: 4:45 PM to 5:45 PM

The existing weekday peak hour traffic volumes for the existing study intersections are presented in Figure 12. The published k-factors from the VDOT's 2022 Traffic Data website were used to estimate daily volumes from the PM peak hour. A k-factor of 0.1 was used for the other streets and site entrances. The existing turning movement counts are included in Appendix B.

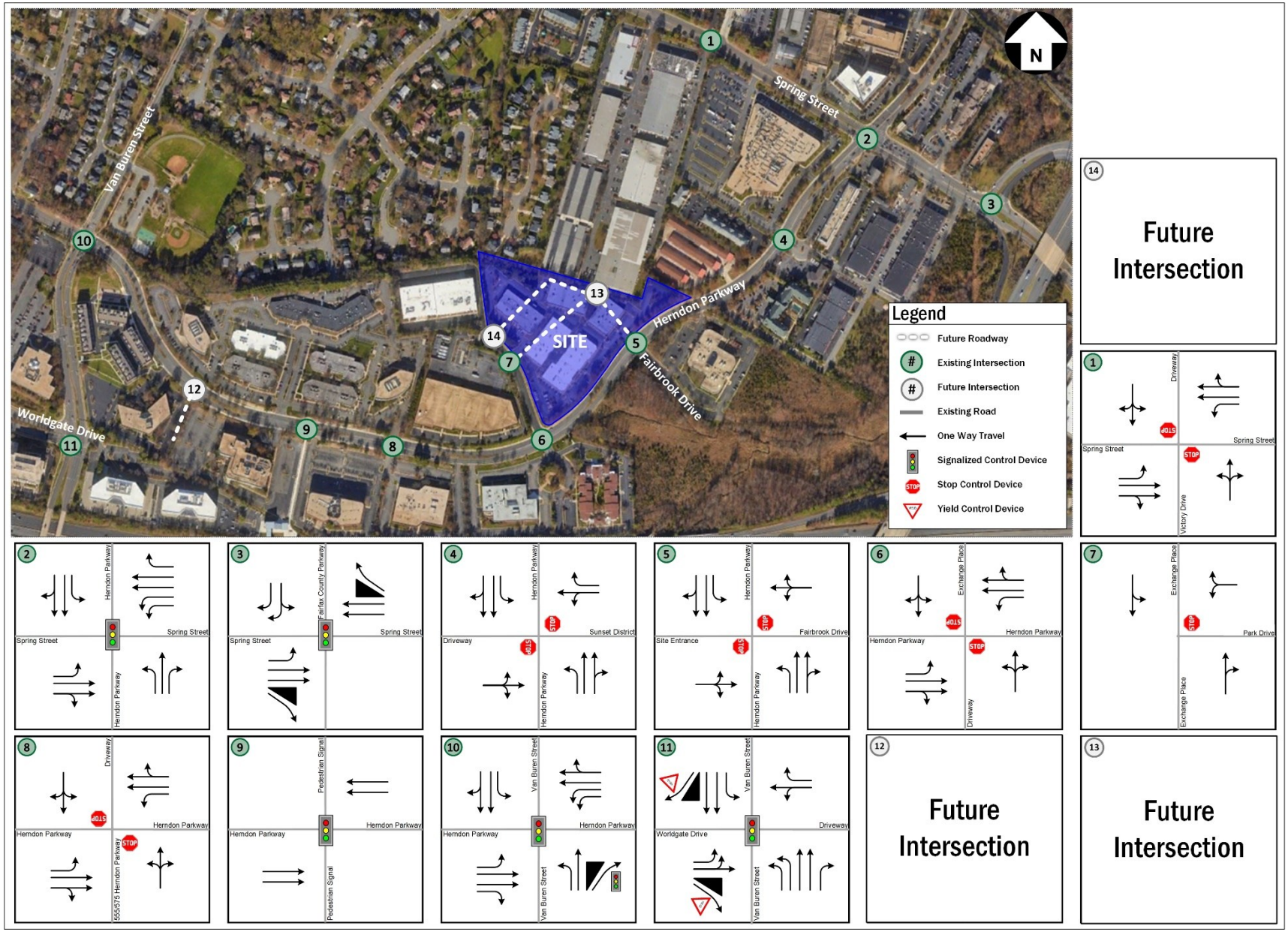


Figure 11: Existing (2024) Lane Configuration

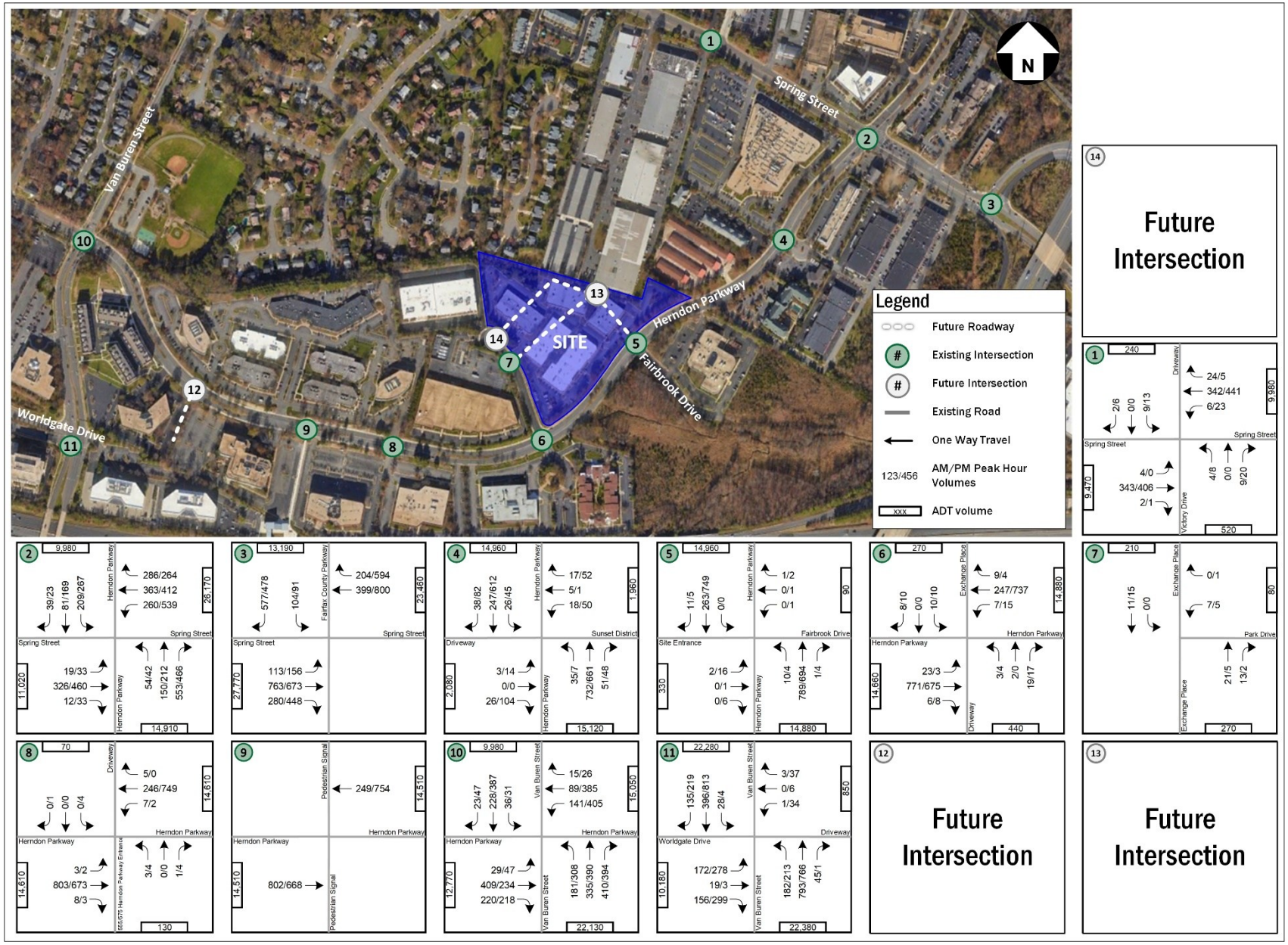


Figure 12: Existing (2024) Traffic Volumes

Existing (2024) Intersection Capacity Analysis

Intersection capacity analysis was performed at the intersections within the study area during the weekday AM and PM peak hours under Existing Conditions (2024). *Synchro Version 11* was used to analyze the study intersections and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

For the purposes of this analysis, HCM 2000 methodology was used for all intersections because HCM 6th Edition methodology prevented Synchro from producing results, in such cases as shared lane configurations and placement of loop detectors.

SimTraffic was used to run simulations for the analysis to determine the queue lengths. The same network files that were used for the Synchro analyses were used as input for the SimTraffic analyses. Consistent with the guidelines set forth in the VDOT *Traffic Operations and Safety Analysis Manual* (TOSAM), Version 2.0, Table 3 shows the parameters used for simulation. Per Section 7.6 of the TOSAM, all other parameters not addressed in the table should not be modified from the default value.

In accordance with TOSAM, a minimum of ten (10) initial SimTraffic runs were conducted separately for both the AM and PM peak hours. From each set of runs, four (4) randomly selected runs were used in the VDOT Sample Size Determination Tool. The tool was applied separately for the AM and PM peak hours, and in both cases, it confirmed that four (4) runs would be statistically sufficient. Therefore, the ten (10) simulation runs used in this study exceed the required number and provide a robust basis for evaluating queue lengths. The measure of effectiveness (MOE) used for the sample size verification was maximum queue length, and the completed worksheets are provided in Appendix K.

In accordance with TOSAM, the SimTraffic model was calibrated for the Existing (2024) traffic volumes using Simulated Traffic Volume (vehicles per hour) as the measure of effectiveness. Calibration was performed for outer network intersections based on the thresholds outlined in TOSAM 2.0 Table 5. Intersections with volumes between 1,000 and 5,000 vehicles per hour were evaluated using a ±10 percent threshold, and Intersection #1 (Spring Street at Victory Drive), with volumes between 100 and 1,000 vehicles per hour, was evaluated using a ±15 percent threshold. All intersections met the applicable criteria, confirming that the simulation results replicate observed field volumes and are considered calibrated per TOSAM 2.0 standards. Detailed calibration verification is provided in Appendix M.

Table 3: SimTraffic Analysis Input Parameters

SimTraffic (Version 11) Analysis Input Parameters	
Number of Intervals	One seeding interval and four 15 minute recording intervals
Seeding Interval Duration	15 minutes
PHF Adjust	• Selected "Yes" for one of the four, 15 minute recording intervals • Selected "No" for all other intervals
Anti-PHF Adjust	• Selected "Yes" for three, 15 minute recording intervals where PHF Adjust is set to "No" • Selected "No" for the recording interval where PHF Adjust is set to "Yes"
Number of Runs	10

A seeding period is necessary to ensure that the results obtained are not skewed because the network is void of any vehicles prior to seeding. Foregoing seeding would lead to lower travel times and delays for the traffic at the beginning of the simulation. The network reaches a normal state during the seeding period without affecting the results of the simulation.

Existing signal timings were provided by Town staff and used as a base for the existing analysis. The signal timings provided by the Town were field verified during the AM and PM peak periods. Consistent with VDOT analysis guidelines, the existing peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.85, were used in the analysis of existing conditions. Heavy vehicle percentages and pedestrian and bicycle volumes were also collected during the intersection traffic counts and included in the analysis.

The results of the intersection capacity analysis from Synchro are presented in Table 4 and are expressed in LOS and delay (seconds per vehicle) per lane group. The average and maximum queue results for each intersection from SimTraffic are also presented in Table 4 and are expressed in feet. Level of service results are also presented in Figure 13. The detailed analysis worksheets are included in Appendix D.

Table 4: Existing (2024) Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
1	**Spring Street (E/W) and Victory Drive**									
	Overall Intersection (TWSC)									
	Eastbound Left	50	A	8.2	1	13	A	0.0	0	6
	Westbound Left	195	A	8.5	1	12	A	8.4	0	3
	Northbound Left/Thru/Right		B	11.2	9	33	B	11.8	0	5
	Southbound Left/Thru/Right		B	14.4	8	30	B	14.9	19	44
2	**Herndon Parkway (N/S) and Spring Street (E/W)**									
	Overall Intersection (Signalized)		**C**	**28.7**			**D**	**41.1**		
	Eastbound Left	160	D	50.3	12	60	E	69.4	41	170
	Eastbound Thru/Right		C	32.2	95	173	D	47.4	179	316
	Westbound Left	260	D	37.9	69	146	D	53.1	175	283
	Westbound Thru		C	23.5	81	162	C	26.1	96	193
	Westbound Right	215	C	22.3	59	124	C	24.6	62	169
	Northbound Left	160	C	25.1	31	120	D	37.5	41	184
	Northbound Thru		C	33.0	85	240	D	51.8	146	312
	Northbound Right		C	32.8	202	466	D	46.3	185	405
	Southbound Left	160	B	17.2	95	181	C	30.6	140	184
	Southbound Thru/Right		C	23.3	26	103	C	32.3	45	168
3	**Spring Street (E/W) and Fairbrook Drive/Fairfax County Parkway Ramps (N/S)**									
	Overall Intersection (Signalized)		**B**	**10.6**			**B**	**11.2**		
	Eastbound Left	230	C	20.6	31	109	C	24.8	51	144
	Eastbound Thru		A	8.0	35	127	A	6.0	32	115
	Westbound Thru		B	15.5	47	106	B	18.2	97	124
	Southbound Left/Right		B	18.0	104	136	C	25.2	109	147
	Southbound Right		B	14.2	61	119	C	20.5	44	106
4	**Herndon Parkway (N/S) and Sunset District (E/W)**									
	Overall Intersection (TWSC)									
	Eastbound Left/Thru/Right		B	10.5	22	70	C	18.6	45	99
	Wesbound Left/Thru		D	31.6	17	48	F	103.2	32	74
	Westbound Right		B	11.5	14	52	B	11.6	27	64
	Northbound Left	140	A	8.0	9	39	A	9.3	3	27
	Southbound Left	205	A	9.7	13	54	A	9.7	18	69
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W)**									
	Overall Intersection (TWSC)									
	Eastbound Left/Thru/Right		C	16.6	1	25	D	34.2	17	53
	Westbound Left/Thru/Right		B	11.2	1	21	E	39.4	6	52
	Northbound Left	205	A	7.9	3	28	A	9.6	2	22
	Southbound Left	215	A	0.0	0	0	A	0.0	0	0
6	**Herndon Parkway (E/W) and Exchange Place/Courtyard Entrance (N/S)**									
	Overall Intersection (TWSC)									
	Eastbound Left	205	A	8.0	4	32	B	10.7	2	25
	Westbound Left	225	B	10.1	4	33	A	9.3	4	31
	Northbound Left/Thru/Right		C	15.8	19	63	C	15.2	14	40
	Southbound Left/Thru/Right		C	16.2	19	68	D	26.5	19	66
7	**Exchange Place (N/S) and Park Drive (E/W)**									
	Overall Intersection (TWSC)									
	Westbound Left/Right		A	8.9	7	48	A	8.8	8	49
	Southbound Left/Thru		A	0.0	0	0	A	0.0	0	0
8	**Herndon Parkway (E/W) and 555 Herndon Parkway/575 Herndon Pakway Entrance (N/S)**									
	Overall Intersection (TWSC)									
	Eastbound Left	185	A	8.3	1	21	A	9.5	1	18
	Westbound Left	185	A	9.7	2	37	A	8.9	1	18
	Northbound Left/Thru/Right		C	17.4	4	31	C	17.8	6	33
	Southbound Left/Thru/Right		A	0.0	0	0	C	24.4	4	32
9	**Herndon Parkway (E/W) and Pedestrian Signal (N/S)**									
	Overall Intersection (Signalized)		**A**	**3.6**			**A**	**3.7**		
	Eastbound Thru		A	3.8	84	239	A	3.6	85	210
	Westbound Thru		A	3.0	33	100	A	3.8	82	223

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
10	**Herndon Parkway (E/W) and Van Buren Street (N/S)**									
	Overall Intersection (Signalized)		**C**	**33.5**			**D**	**36.3**		
	Eastbound Left	125	C	31.3	37	141	C	31.6	38	149
	Eastbound Thru		D	45.9	144	270	D	46.2	69	185
	Eastbound Right	190	D	40.4	64	179	D	43.9	69	161
	Westbound Left	450	D	45.3	37	108	D	49.6	139	260
	Westbound Thru/Right		C	33.6	42	121	D	43.5	128	248
	Northbound Left		C	20.2	88	231	C	24.6	183	357
	Northbound Thru		D	35.6	207	572	D	35.6	222	482
	Northbound Right	275	B	15.7	86	300	B	12.9	91	300
	Southbound Left	100	C	27.3	33	124	C	26.9	37	124
	Southbound Thru/Right		D	37.2	67	187	D	39.3	134	195
11	**Van Buren Street (N/S) and Worldgate Drive (E/W)**									
	Overall Intersection (Signalized)		**B**	**17.3**			**C**	**25.0**		
	Eastbound Left		C	25.0	26	94	D	39.3	55	157
	Eastbound Left/Thru		C	25.0	70	151	D	39.5	103	196
	Eastbound Right		C	23.2	6	70	D	35.7	53	169
	Westbound Left/Thru		C	33.8	0	10	D	45.9	29	85
	Westbound Right		C	32.6	2	21	D	43.0	20	67
	Northbound Left	235	C	25.1	13	156	D	40.6	38	167
	Northbound Thru		B	13.0	77	250	B	13.6	88	262
	Northbound Right	225	A	9.6	13	158	B	10.3	0	5
	Southbound Left	155	D	36.0	25	94	E	55.9	6	62
	Southbound Thru		B	16.7	84	200	C	22.8	178	370
	Southbound Right		B	15.0	0	0	B	18.0	0	14
12	**Herndon Parkway (E/W) and Worldgate Drive (N/S)**	**Future Intersection**								
13	**Fairbrook Drive (N/S) and Parallel Street (E/W)**	**Future Intersection**								
14	**Exchange Place (N/S) and Road B (E/W)**	**Future Intersection**								

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

For the purpose of this analysis, it is desirable to achieve an overall level of service (LOS) of D or better for each intersection and LOS E or better for each lane group at an intersection within the study area.

The intersection capacity analysis results show that the following intersection has movements that operate below acceptable levels of service during one or more peak hours under Existing Conditions (2024):

- Intersection #4: Herndon Parkway and Sunset District – The westbound left/through lane operates at LOS F during the PM peak hour.

Two (2) intersections have maximum queue lengths that exceed the existing storage lengths during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street
- Intersection #10: Herndon Parkway and Van Buren Street

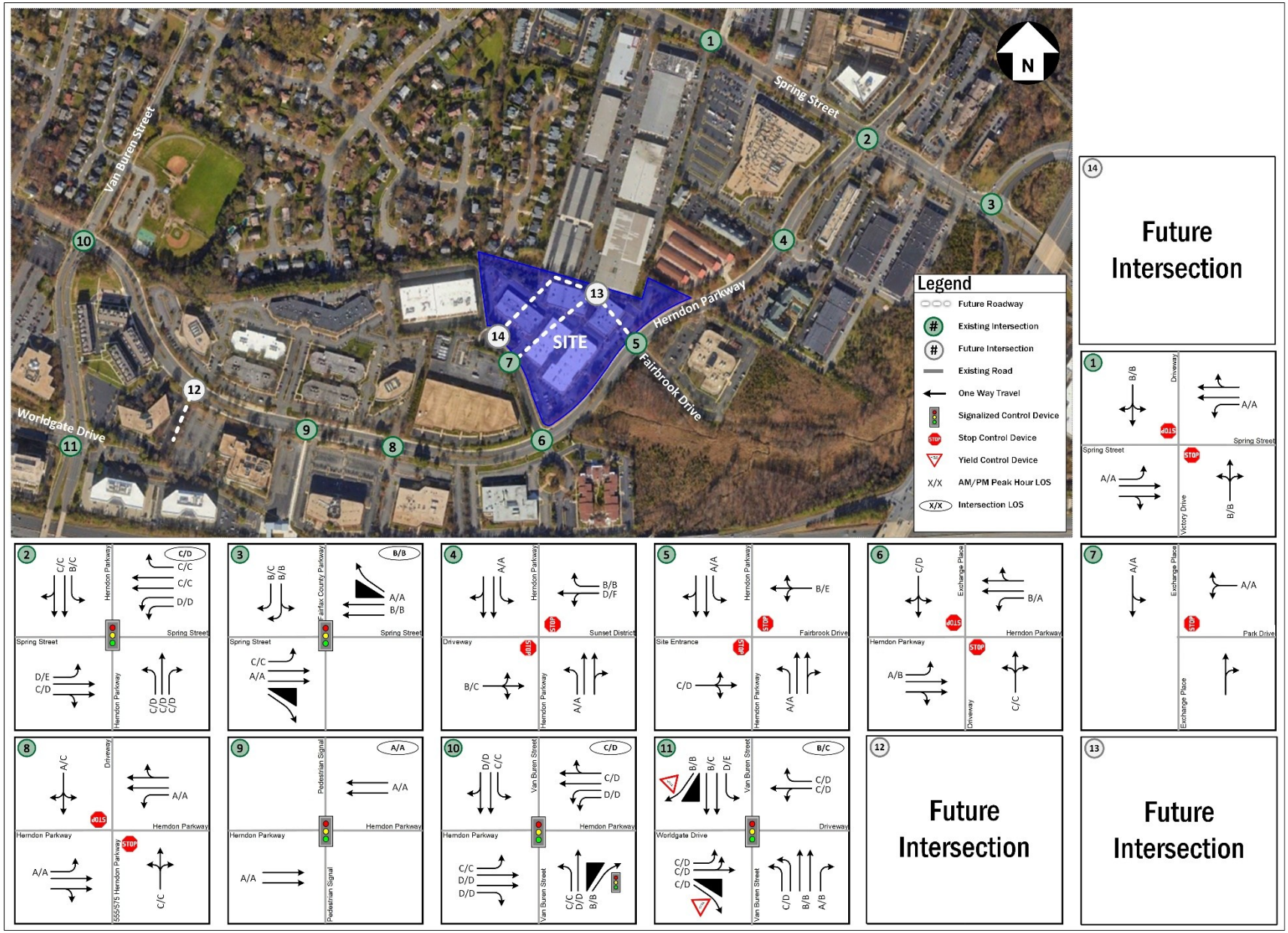


Figure 13: Existing (2024) Levels of Service and Lane Configuration

Future Conditions without Development (2027)

Future without Development (2027) Traffic Volumes

The anticipated project build-out year is 2027. The future traffic volumes were projected by increasing the existing volumes to 2027 using a background growth rate of one (1) percent per year.

Regional Growth

According to historical ADT data as shown in Table 5, there has been little growth along streets within the study area in recent years. As agreed, upon with Town of Herndon staff, a growth rate of one (1) percent per year was applied to the existing volumes between 2024 and 2027, as shown in Figure 14.

Table 5: Historical Growth Rate

			AADT							Annual % Change (2015-2019)	Annual % Change (2015-2021)	Annual % Change (2015-2022)
Route	From	To	2015	2016	2017	2018	2019	2021	2022			
Van Buren Street	SCL Herndon	Herndon Parkway	22,000	22,000	23,000	22,000	22,000	14,000	15,000	0.0%	-7.3%	-5.3%
Van Buren Street	Herndon Parkway	Alabama Drive	8,400	8,400	8,400	8,400	8,400	6,000	6,400	0.0%	-5.5%	-3.8%
Herndon Parkway	Elden Street	Sterling Road	21,000	21,000	21,000	21,000	21,000	16,000	17,000	0.0%	-4.4%	-3.0%
Spring Street	Victory Drive	Herndon Parkway	12,000	12,000	11,000	11,000	11,000	9,200	9,700	-2.2%	-4.3%	-3.0%
Spring Street	Herndon Parkway	SCL Herndon	35,000	35,000	36,000	38,000	38,000	32,000	34,000	2.1%	-1.5%	-0.4%

Source: VDOT Traffic Data (http://www.virginiadot.org/info/ct-trafficcounts.asp)



Figure 14: Background Growth (2024 to 2027) Traffic Volumes

Approved Background Developments

In addition to the regional background growth, five (5) approved yet currently unbuilt developments in the vicinity of the site were taken into consideration. As discussed at the scoping meeting, the following developments were included in the 2027 analysis:

- Woodland Park East Block E – 560,000 SF of office and 20,000 SF of retail
- 555 Herndon Parkway – 435 residential units, 200,000 SF of office, and 10,000 SF of retail
    - It is noted that a new traffic signal at the intersection of Herndon Parkway and 555 Herndon Parkway Entrance was assumed to be in place with build-out of the 555 Herndon Parkway development, consistent with the approved Transportation Impact Study.
- Parkview at Herndon Metro – 675 residential units, 413,000 SF of office, and 10,000 SF of retail
    - It is noted that a new traffic signal at the intersection of Herndon Parkway and Worldgate Drive was assumed to be in place with build-out of the Parkview at Herndon Metro development, consistent with the approved Transportation Impact Study.
- Herndon Hotel – 250 room hotel
- Fairbrook Business Park (Phase 1) – 1,080 residential units, a 10,000 SF daycare and 10,000 SF of retail
    - It is noted that a new traffic signal at the intersection of Herndon Parkway and Fairbrook Drive is proffered to be constructed and assumed to be in place with partial build-out of the Fairbrook Business Park development.
    - A preliminary signal warrant analysis was conducted for the intersection of Herndon Parkway and Fairbrook Drive under future conditions for the following two (2) scenarios:
        - With Exchange Place and without Fairbrook Business Park (Phase 1)
        - With Fairbrook Business Park (Phase 1) and without Exchange Place
    - The results of preliminary signal warrant analysis are provided in the *Preliminary Signal Warrant Analysis* section.

A map showing the background development locations is shown in Figure 15. Background development traffic volumes were determined using trip assignments provided in the approved Transportation Impact Studies for the background developments.



Figure 15: Background Development Locations

The total trips generated by the background developments is shown in Figure 16. Excerpts from the approved background development studies are provided in Appendix E.

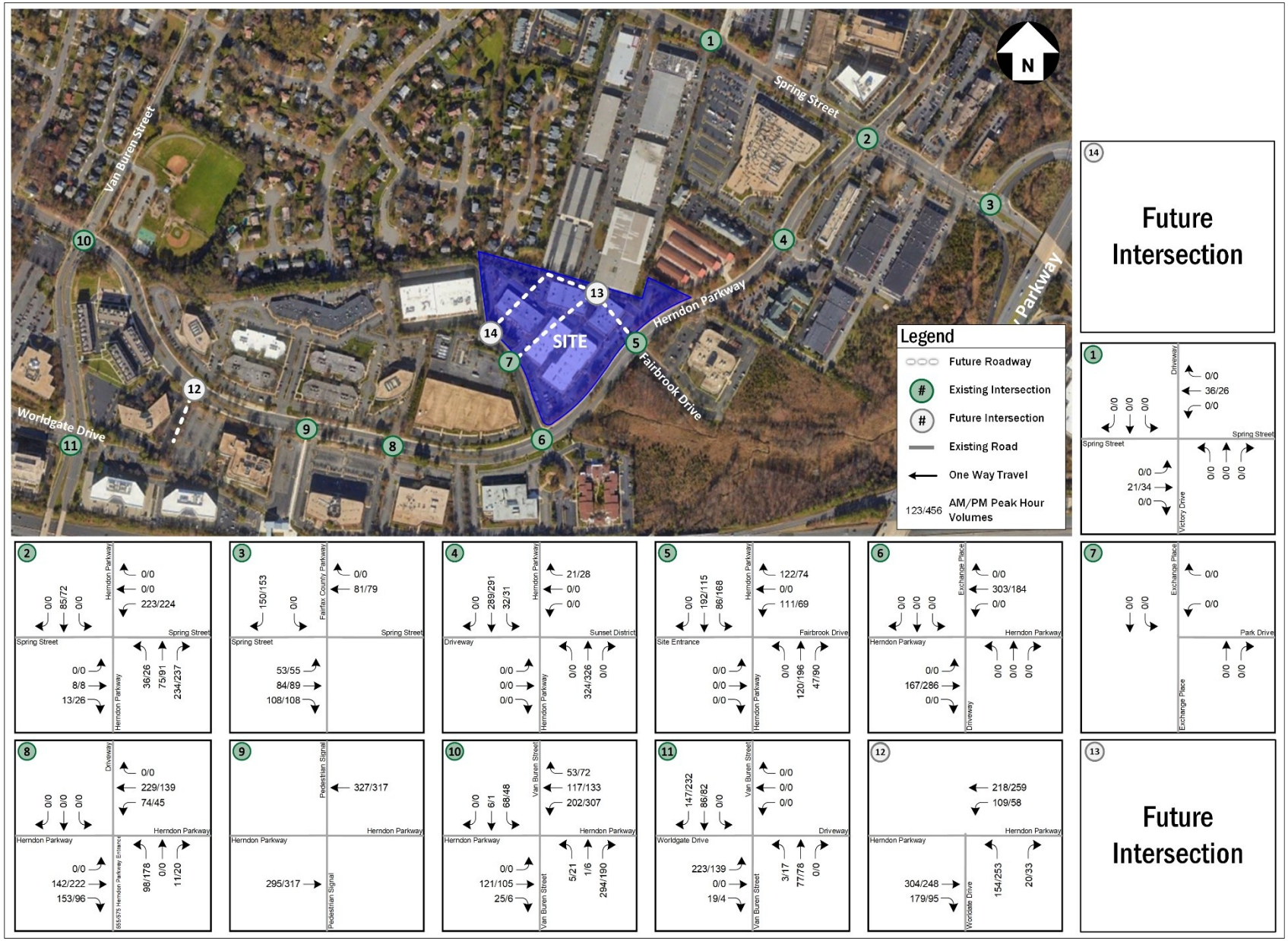


Figure 16: Background Development Total Traffic Volumes (2027)

Planned Future Transportation Improvements

Herndon Metrorail Station Access Improvement Projects

Herndon area station access projects improve pedestrian, vehicle, and bicycle connections to and from the new Silver Line Metro stations. The majority of projects in the Herndon area are being constructed with Fairfax County Department of Transportation (FCDOT) funding to improve Metro station access. In the vicinity of the Exchange Place site, approximately 2,100 feet of two-way cycletrack will be added to the south side of Herndon Parkway.

East Spring Street Improvements Project

The East Spring Street Improvements Project enhances multi-modal service levels along Spring Street and Herndon Parkway at the intersection of those two roads, the approaches to the intersection, and on Spring Street between the intersection and the Fairfax County Parkway overpass. The project is intended to increase vehicular mobility and capacity and improve sidewalk connectivity and safety. It includes a new two-way cycle track along Herndon Parkway which would connect to the W&OD Regional Trail and Sugarland Run Regional Trail. Project highlights include the widening of the intersection with additional through and turn lanes, access management improvements, 2000-foot length of Herndon Parkway cycle track to connect with Sugarland Run Regional Trail, high visibility crosswalks, ADA compliant sidewalks and curb ramps, new sidewalk on the south side of Spring Street to connect with the County sidewalk under the Fairfax County Parkway, and new traffic signals as well as accessible pedestrian signals.

Worldgate Drive Extension

The Worldgate Drive Extension project includes extending Worldgate Drive from Van Buren Street to Herndon Parkway and new signalization at Herndon Parkway and the Worldgate Drive Extension. The improvements include LED traffic/bike/pedestrian signalization, dedicated turning lane capacity improvements, street-lighting, cycle tracks, ADA curb cuts/sidewalks, and paver crosswalks. The pedestrian crossings and improved traffic flow will provide additional safety measures for motorized and non-motorized traffic modes. Safety is a critical component for this project, emphasizing a seamless and safer multimodal environment for pedestrians and cyclists.

Transit Improvements

According to the Fairfax County Transit Development Plan dated March 2016, new transit routes and alignment changes are recommended in the vicinity of the site. The routes will be adjusted in accordance with the phased completion of the Dulles Corridor Metrorail Project. Figure 6 shows the local bus service recommendations in the vicinity of the site per the Transit Development Plan.

Future without Development Traffic Volumes

The Future without Development (2027) lane configuration is shown in Figure 17. Background improvements and their associated background developments are listed below:

- Intersection improvements at Intersections 2 and 3 are associated with the East Spring Street Improvements Project.
- Intersection improvements at Intersection 5 are associated with the Fairbrook Business Park (Phase 1) development.
- Intersection improvements at Intersection 8 are associated with the 555 Herndon Parkway development.
- Intersection improvements at Intersection 12 are associated with the Parkview at Herndon Metro development.

In order to determine the Future without Development (2027) traffic volumes, the trips associated with the regional background growth (Figure 14) and background developments (Figure 16) were added to the Existing (2024) traffic volumes (Figure 12). The Future without Development (2027) traffic volumes are presented in Figure 18.

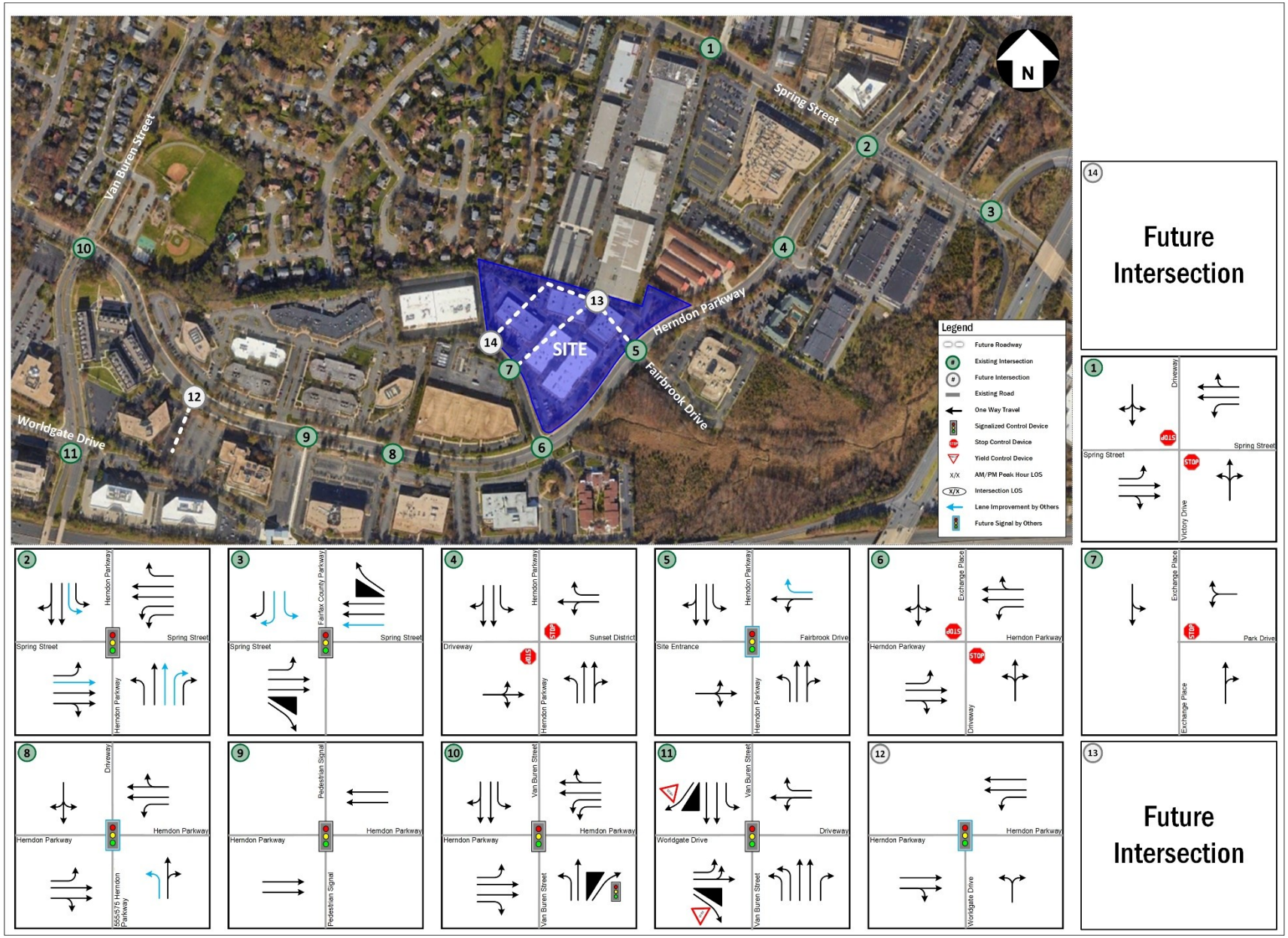


Figure 17: Future without Development (2027) Lane Configuration



Figure 18: Future without Development (2027) Traffic Volumes

Future without Development (2027) Intersection Capacity Analysis

Intersection capacity analysis was performed at the intersections within the study area during the weekday AM and PM peak hours under Future Conditions without Development (2027). *Synchro Version 11* was used to analyze the study intersections and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

For the purposes of this analysis, HCM 2000 methodology was used for all intersections because HCM 6th Edition methodology prevented Synchro from producing results, in such cases as shared lane configurations and placement of loop detectors.

Consistent with VDOT analysis guidelines, the peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions.

The results of the intersection capacity analysis from Synchro are presented in Table 6 and are expressed in LOS and delay (seconds per vehicle) per lane group. The average and maximum queue results for each intersection from SimTraffic are also presented in Table 6 and are expressed in feet. Level of service results and proposed lane configurations are also presented in Figure 19. The detailed analysis worksheets are included in Appendix F.

Table 6: Future without Development (2027) Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
1	**Spring Street (E/W) and Victory Drive (N/S)**									
	Overall Intersection (TWSC)									
	Eastbound Left	50	A	8.3	1	15	A	0.0	6	30
	Westbound Left	195	A	8.5	1	10	A	8.5	2	14
	Northbound Left/Thru/Right		B	11.2	10	30	B	12.3	22	73
	Southbound Left/Thru/Right		B	15.0	8	32	C	15.5	14	44
2	**Herndon Parkway (N/S) and Spring Street (E/W)**									
	Overall Intersection (Signalized)		**C**	**31.0**			**D**	**43.0**		
	Eastbound Left	160	D	52.3	16	96	F	87.1	29	183
	Eastbound Thru/Right		C	33.9	86	183	D	47.9	196	422
	Westbound Left	260	D	36.7	280	280	D	50.3	262	285
	Westbound Thru		C	20.6	108	210	C	22.0	238	570
	Westbound Right	215	B	19.8	70	159	C	21.0	63	187
	Northbound Left	160	C	24.9	45	121	D	39.5	41	145
	Northbound Thru		C	32.6	61	158	D	47.0	97	212
	Northbound Right		C	32.4	169	357	D	44.7	140	314
	Southbound Left	160	D	40.5	120	182	E	58.9	141	184
	Southbound Thru/Right		C	30.4	37	130	D	37.4	83	245
3	**Spring Street (E/W) and Fairbrook Drive/Fairfax County Parkway Ramps (N/S)**									
	Overall Intersection (Signalized)		**A**	**9.3**			**A**	**9.9**		
	Eastbound Left	230	B	18.6	54	140	C	20.7	82	193
	Eastbound Thru		A	5.6	58	151	A	4.4	44	140
	Westbound Thru		B	12.7	82	122	B	14.9	116	148
	Southbound Left		B	15.9	54	107	C	21.8	47	108
	Southbound Right		B	15.6	102	136	C	21.2	107	138
4	**Herndon Parkway (N/S) and Sunset District (E/W)**									
	Overall Intersection (TWSC)									
	Eastbound Left/Thru/Right		B	13.3	21	58	D	25.9	77	154
	Wesbound Left/Thru		F	79.3	15	48	F	249.0	32	52
	Westbound Right		A	9.7	23	63	A	9.7	30	72
	Northbound Left	140	A	8.9	12	51	B	10.6	2	29
	Southbound Left	205	B	10.9	31	89	B	10.5	32	90
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W)**									
	Overall Intersection (Signalized)		**B**	**11.7**			**B**	**11.7**		
	Eastbound Left/Thru/Right		C	20.5	2	26	C	26.1	20	58
	Westbound Left/Thru		C	23.5	60	139	C	28.6	68	132
	Westbound Right		C	20.9	53	121	C	26.0	52	160
	Northbound Left	205	A	7.8	6	32	A	8.9	2	20
	Northbound Thru/Right		B	12.3	125	318	B	14.9	162	396
	Southbound Left	215	A	0.0	45	126	A	0.0	64	195
	Southbound Thru/Right		A	6.4	30	138	A	6.0	200	404
6	**Herndon Parkway (E/W) and Exchange Place/Courtyard Entrance (N/S)**									
	Overall Intersection (TWSC)									
	Eastbound Left	205	A	9.0	8	57	B	11.1	1	27
	Westbound Left	225	B	10.0	3	31	A	9.6	11	102
	Northbound Left/Thru/Right		C	15.1	19	56	B	11.2	20	48
	Southbound Left/Thru/Right		C	17.2	21	69	C	15.0	47	141
7	**Exchange Place (N/S) and Site Entrance (E/W)**									
	Overall Intersection (TWSC)									
	Westbound Left/Right		A	8.7	7	40	A	8.7	45	45
	Southbound Left/Thru		A	0.0	0	0	A	0.0	0	0
8	**Herndon Parkway (E/W) and 555 Herndon Parkway/575 Herndon Pakway Entrance (N/S)**									
	Overall Intersection (Signalized)		**A**	**9.2**			**B**	**13.6**		
	Eastbound Left	185	A	5.2	1	30	A	8.9	0	9
	Easbound Thru/Right		A	9.2	133	364	B	14.5	132	348
	Westbound Left	185	A	5.0	46	118	A	8.5	56	164
	Westbound Thru/Right		A	4.8	39	126	B	11.2	369	674
	Northbound Left		C	32.4	55	136	C	20.7	186	272
	Northbound Thru/Right		C	23.6	8	37	B	17.7	26	133
	Southbound Left/Thru/Right		0	0.0	0	0	C	30.3	7	34
9	**Herndon Parkway (E/W) and Pedestrian Signal (N/S)**									
	Overall Intersection (Signalized)		**A**	**4.3**			**A**	**4.4**		
	Eastbound Thru		A	4.7	166	377	A	4.2	152	389
	Westbound Thru		A	3.5	96	220	A	4.5	334	415

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
10	**Herndon Parkway (E/W) and Van Buren Street (N/S)**									
	Overall Intersection (Signalized)		**D**	**50.2**			**D**	**53.7**		
	Eastbound Left	125	D	36.8	35	149	D	36.3	42	149
	Eastbound Thru		E	55.7	222	402	D	53.7	144	250
	Eastbound Right	190	D	47.4	122	215	D	48.5	85	213
	Westbound Left	450	E	56.0	164	289	F	96.5	468	475
	Westbound Thru/Right		D	35.1	95	197	D	46.8	872	920
	Northbound Left		C	31.4	238	764	D	36.9	272	640
	Northbound Thru		E	57.2	626	914	E	59.4	446	858
	Northbound Right	275	E	56.6	278	300	C	27.2	241	300
	Southbound Left	100	C	32.3	90	124	C	29.1	92	124
	Southbound Thru/Right		D	45.4	131	236	D	46.1	201	250
11	**Van Buren Street (N/S) and Worldgate Drive (E/W)**									
	Overall Intersection (Signalized)		**C**	**22.2**			**C**	**29.0**		
	Eastbound Left		C	30.8	105	206	D	50.2	111	191
	Eastbound Left/Thru		C	30.8	175	224	D	50.7	168	200
	Eastbound Right		C	24.9	6	58	D	39.2	52	177
	Westbound Left/Thru		D	41.7	0	8	D	53.8	29	92
	Westbound Right		D	40.2	2	21	D	50.0	21	75
	Northbound Left	235	C	32.5	121	232	D	48.4	136	239
	Northbound Thru		B	17.7	250	406	B	15.3	211	378
	Northbound Right	225	B	12.4	49	249	B	11.1	2	54
	Southbound Left	155	D	39.5	33	149	E	62.2	7	90
	Southbound Thru		C	20.1	134	286	C	25.6	207	418
	Southbound Right		B	18.2	0	0	C	21.1	3	82
12	**Herndon Parkway (E/W) and Worldgate Drive (N/S)**									
	Overall Intersection (Signalized)		**B**	**13.0**			**B**	**13.6**		
	Eastbound Thru/Right		B	13.9	190	396	B	15.6	182	364
	Westbound Left	160	B	11.1	63	150	A	8.9	69	171
	Westbound Thru		A	4.2	55	176	A	8.3	364	562
	Northbound Left/Right		C	26.5	99	214	C	26.5	250	303
13	**Fairbrook Drive (N/S) and Parallel Street (E/W)**	**Future Intersection**								
14	**Exchange Place (N/S) and Road B (E/W)**	**Future Intersection**								

NOTES:
[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.
[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.
[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

For the purpose of this analysis, it is desirable to achieve an overall level of service (LOS) of D or better for each intersection and LOS E or better for each lane group at an intersection. The results in the table above show that the following intersections have movements that operate below acceptable levels of service during one or more peak hours under Future Conditions without Development (2027). Intersections in **bold** also operate below acceptable levels of service under Existing Conditions (2024).

- Intersection #2: Herndon Parkway and Spring Street – The eastbound left lane operates at LOS F during the PM peak hour.
- **Intersection #4: Herndon Parkway and Sunset District** – The westbound left/through lane operates at LOS F during the AM and **PM** peak hours.
- Intersection #10: Herndon Parkway and Van Buren Street – The westbound left lanes operate at LOS F during the PM peak hour.

Two (2) intersections have an average queue length that exceeds the existing storage length during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street
- Intersection #10: Herndon Parkway and Van Buren Street

Four (4) intersections have maximum queue lengths that exceed the existing storage lengths during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street
- Intersection #10: Herndon Parkway and Van Buren Street
- Intersection #11: Van Buren Street and Worldgate Drive
- Intersection #12: Herndon Parkway and Worldgate Drive

It is noted that the signal timings for the intersections of Spring Street and Herndon Parkway and Spring Street and Fairfax County Parkway intersection were optimized to account for the East Spring Street Improvements Project.



Figure 19: Future without Development (2027) Levels of Service and Lane Configuration

Future Conditions with Development (2027)

Site Description

The existing site is currently occupied by a 108,402 SF office park that is to be removed. The proposed development includes 400 mid-rise multifamily dwelling units and up to 66 stacked townhouses. Total site build-out is planned for the year 2027.

Site Access

Existing vehicular access is provided via one (1) full-access entrance on Herndon Parkway and (1) full-access entrance on Exchange Place. Site access will continue to be provided via Herndon Parkway and Exchange Place.

2nd Submission Update: The conceptual development plan has been changed since the 1st submission. Future site access on Exchange Place will now be provided via two (2) full-access entrances at Parallel Street and Private Road B.

A conceptual development plan is shown in Figure 20.

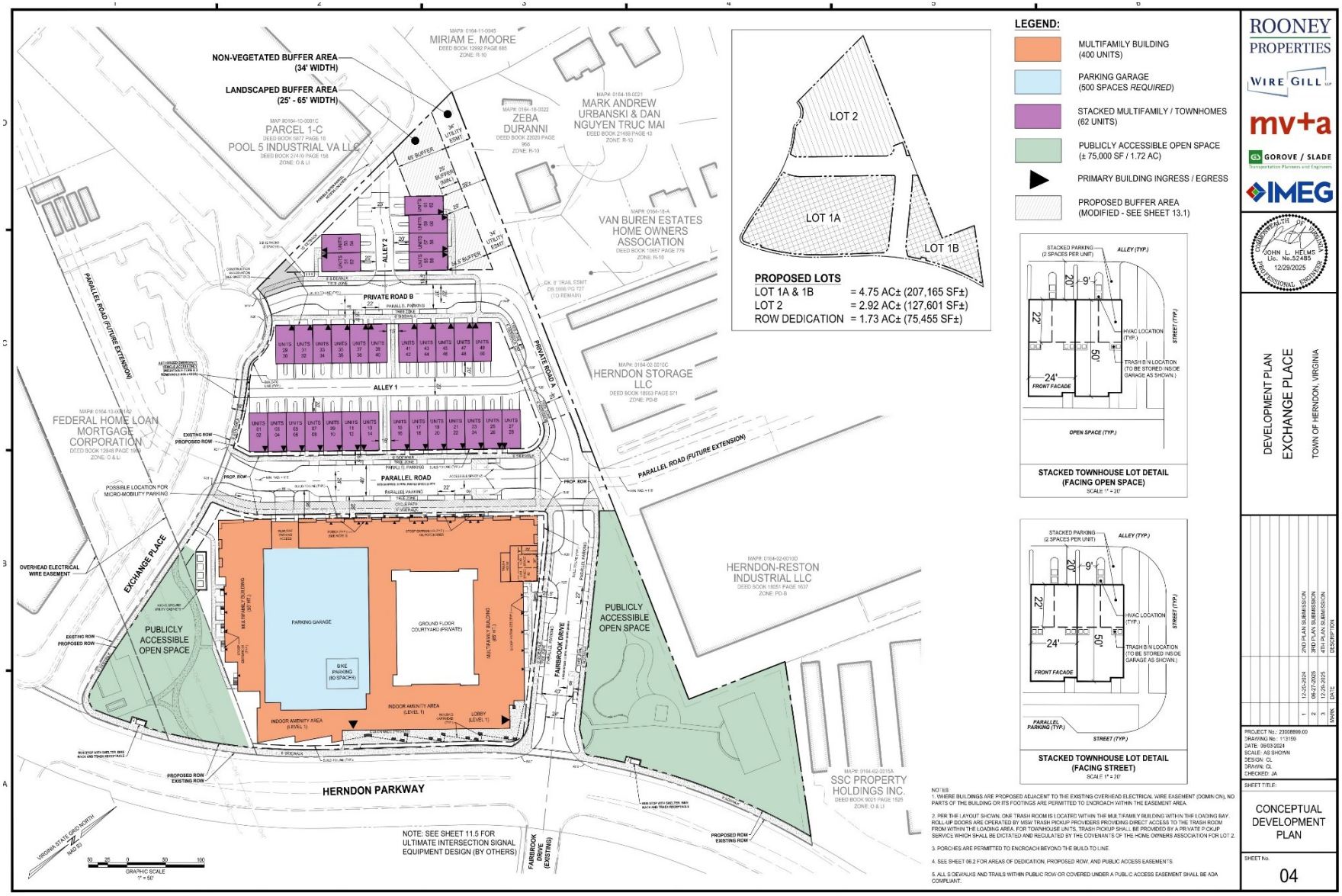


Figure 20: Conceptual Development Plan (Prepared by IMEG)

Transportation Demand Management Plan

The Exchange Place redevelopment provides an opportunity to create a low to medium residential density environment that increases pedestrian and bicycle accessibility in the Transit-Related Growth Area. The encouragement of non-SOV use, non-peak hour SOV trips, and non-automobile modes of transportation will result in less vehicular impacts to the surrounding roadway network.

Transportation Demand Management (TDM) involves many components that are tailored to accommodate a given facility with a goal of reducing peak hour vehicle trips by encouraging alternative forms of transportation. The proffered elements of the TDM Program will be implemented through a TDM Work Plan developed by the Applicant with input from and approval by the Town of Herndon Department of Community Development. The following strategies are anticipated to be considered:

- Appointment of a TDM Program Manager.
- Contributions to resident Metro fare cards and contributions to Fairfax Connector, WMATA, or other public transit service approved by the Town.
- Bicycle racks and bicycle share stations, bicycle storage rooms, and tenant incentives to participate in yearly transportation management surveys.
- Program monitoring to include surveys and/or vehicular traffic counts and yearly reporting to Town staff on utilization of TDM Funds.

Site Generated Volumes

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition was used to determine the future trips generated by the proposed development as shown in Table 7.

Table 7: Trip Generation

Land Use	ITE Code	Size	Weekday						
			AM Peak Hour			PM Peak Hour			Daily
Trip Generation, 11th Ed.			In	Out	Total	In	Out	Total	Total
Proposed Development									
Multifamily Housing (Low-Rise)	220	66 DU	10	33	43	31	18	49	498
Multifamily Housing (Mid-Rise)	221	400 DU	38	126	164	95	61	156	1,862
Residential Subtotal Without Reductions			*48*	*159*	*207*	*126*	*79*	*205*	*2,360*
	Mode Split/TDM Reduction	*25%*	*-12*	*-40*	*-52*	*-32*	*-20*	*-52*	*-590*
		Residential Subtotal	*36*	*119*	*155*	*94*	*59*	*153*	*1,770*
Proposed Development Site Trips With Reductions			**36**	**119**	**155**	**94**	**59**	**153**	**1,770**

As shown in Table 7, the proposed development is anticipated to generate approximately 155 trips during the AM peak hour, 153 trips during the PM peak hour, and 1,770 trips on a typical weekday with reductions.

A mode split/TDM reduction of 25 percent was applied to the residential uses, consistent with other studies in the area. Given the location of the Exchange Place site and its proximity to the Herndon Metro Station, access to transit, and the increased pedestrian and bicycle facilities in the Town, 25 percent is considered appropriate for the nature of the site development.

Site Trip Distribution and Assignment

The distribution of site trips was based on the anticipated travel patterns for the future roadway network, location of employment/retail areas within the region, and general engineering judgment with input from Town of Herndon staff. The direction of approach assumptions for traffic generated by the proposed development are shown in Table 8 and graphically in Figure 21.

The peak hour trips generated by the site are shown in Figure 22.

Due to the site being converted from office to residential, the trips associated with the existing office space were removed from the roadway network. The trips that were removed are based on field counts that were taken at the existing site entrances. The removed trips are shown in Figure 23.

Table 8: Directional Distribution Table

To/From	Distribution
West along Herndon Parkway	20%
East along Herndon Parkway	10%
North along Spring Street	5%
South along Spring Street	10%
North along Van Buren Street	5%
South along Van Buren Street	20%
North along Fairfax County Parkway	5%
South along Fairfax County Parkway	10%
West along Worldgate Drive	15%
Total	**100%**



Figure 21: Site Trip Distribution

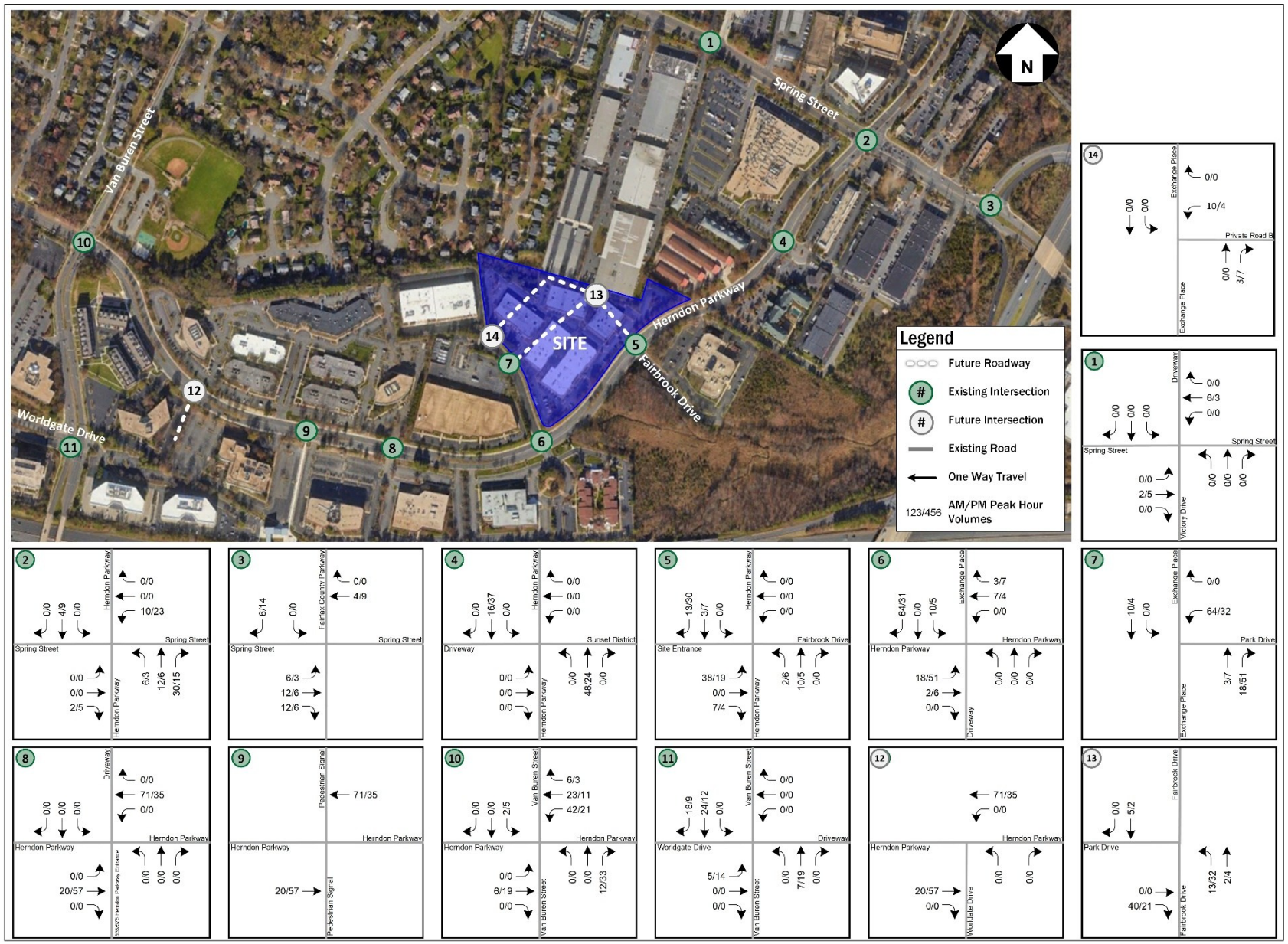


Figure 22: Site Trips (2027)



Figure 23: Removed Trips

Future with Development (2027) Traffic Volumes

In order to determine the Future with Development (2027) traffic volumes, the trips associated with the existing development (Figure 23) were removed and the site generated volumes for the proposed development (Figure 22) were added to the Future without Development (2027) traffic volumes (Figure 18). The Future with Development (2027) traffic volumes are presented in Figure 24.

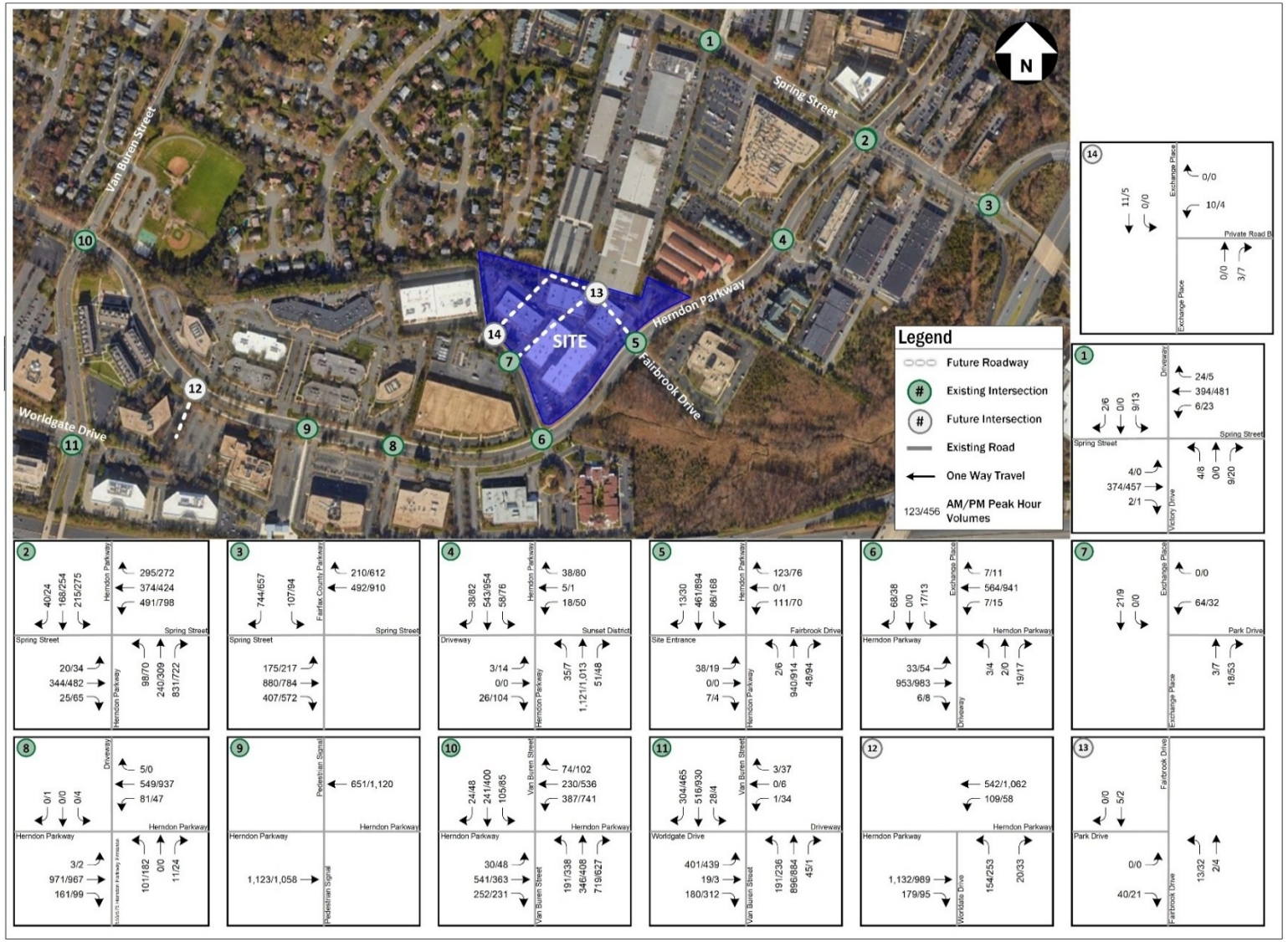


Figure 24: Future with Development (2027) Traffic Volumes

(Note: The one-vehicle difference observed in the eastbound through movement in the PM peak hour at Intersection 8 (968 vs. 967) is due to rounding within Vistro software. The volume projection methodology was verified to be correct, and this one-trip variation has a negligible impact on the analysis results.)

Future with Development (2027) Intersection Capacity Analysis

Intersection capacity analysis was performed in a manner consistent with the methodology used for the Future Conditions without Development (2027) analysis.

The results of the intersection capacity analysis from Synchro are presented in Table 9 and are expressed in LOS and delay (seconds per vehicle) per lane group. The average and maximum queue results for each intersection from SimTraffic are also presented in Table 9 and are expressed in feet. Level of service results and proposed lane configurations are also presented in Figure 25. The detailed analysis worksheets are included in Appendix G.

Table 9: Future with Development (2027) Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
1	**Spring Street (E/W) and Victory Drive**									
	Overall Intersection (TWSC)									
	Eastbound Left	50	A	8.3	1	20	A	0.0	0	0
	Westbound Left	195	A	8.5	1	15	A	8.5	3	16
	Northbound Left/Thru/Right		B	11.2	10	30	B	12.3	19	49
	Southbound Left/Thru/Right		C	15.0	9	33	C	15.5	13	40
2	**Herndon Parkway (N/S) and Spring Street (E/W)**									
	Overall Intersection (Signalized)		**C**	**31.3**			**D**	**43.3**		
	Eastbound Left	160	D	53.3	17	88	E	65.8	39	166
	Eastbound Thru/Right		C	34.5	114	196	D	49.0	200	393
	Westbound Left	260	D	37.5	175	320	D	50.3	457	627
	Westbound Thru		C	21.1	108	217	C	23.2	258	578
	Westbound Right	215	C	20.3	68	157	C	22.1	68	188
	Northbound Left	160	C	24.8	51	146	D	39.6	40	150
	Northbound Thru		C	32.5	60	156	D	47.1	107	230
	Northbound Right		C	32.5	192	364	D	44.8	137	310
	Southbound Left	160	D	41.1	126	184	E	58.9	148	184
	Southbound Thru/Right		C	30.2	78	251	D	37.5	182	302
3	**Spring Street (E/W) and Fairbrook Drive/Fairfax County Parkway Ramps (N/S)**									
	Overall Intersection (Signalized)		**A**	**9.5**			**A**	**10.0**		
	Eastbound Left	230	B	15.9	54	157	C	21.0	82	189
	Eastbound Thru		A	5.4	58	139	A	4.3	45	142
	Westbound Thru		B	14.0	78	123	B	14.8	117	140
	Southbound Left		B	16.7	50	106	C	22.0	42	103
	Southbound Right		B	16.3	102	135	C	21.3	108	134
4	**Herndon Parkway (N/S) and Sunset District (E/W)**									
	Overall Intersection (TWSC)									
	Eastbound Left/Thru/Right		B	13.4	20	58	D	27.3	70	161
	Wesbound Left/Thru		F	89.2	16	52	F	263.9	35	55
	Westbound Right		A	9.8	24	61	A	9.7	33	76
	Northbound Left	140	A	8.9	12	52	B	10.8	4	27
	Southbound Left	205	B	11.2	35	97	B	10.6	33	101
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W)**									
	Overall Intersection (Signalized)		**B**	**12.1**			**B**	**11.6**		
	Eastbound Left/Thru/Right		C	20.7	27	73	C	25.6	18	64
	Westbound Left/Thru		C	23.8	54	119	C	28.5	61	140
	Westbound Right		C	21.0	55	132	C	26.0	58	155
	Northbound Left	205	A	0.0	1	17	A	0.0	4	28
	Northbound Thru/Right		B	12.5	124	301	B	14.8	154	418
	Southbound Left	215	A	5.8	42	125	A	6.7	82	200
	Southbound Thru/Right		A	6.4	30	118	A	6.1	176	504
6	**Herndon Parkway (E/W) and Exchange Place/Courtyard Entrance (N/S)**									
	Overall Intersection (TWSC)									
	Eastbound Left	205	A	9.0	10	53	B	11.8	27	90
	Westbound Left	225	B	10.0	4	31	A	9.5	29	185
	Northbound Left/Thru/Right		C	16.3	17	60	B	12.4	19	55
	Southbound Left/Thru/Right		B	14.8	49	124	B	14.6	112	304
7	**Exchange Place (N/S) and Site Entrance (E/W)**									
	Overall Intersection (TWSC)									
	Westbound Left/Right		A	9.1	32	67	A	9.1	24	76
	Southbound Left/Thru		A	0.0	0	0	A	0.0	0	5
8	**Herndon Parkway (E/W) and 555 Herndon Parkway/575 Herndon Pakway Entrance (N/S)**									
	Overall Intersection (Signalized)		**A**	**9.1**			**B**	**13.7**		
	Eastbound Left	185	A	5.2	1	22	A	8.7	1	18
	Easbound Thru/Right		A	9.2	135	339	B	14.6	137	358
	Westbound Left	185	A	5.0	41	116	A	8.7	75	191
	Westbound Thru/Right		A	4.9	35	105	B	11.1	452	739
	Northbound Left		C	32.4	42	67	C	21.5	47	62
	Northbound Thru/Right		C	23.6	9	35	B	18.4	6	40
	Southbound Left/Thru/Right		A	0.0	0	0	C	31.0	8	36
9	**Herndon Parkway (E/W) and Pedestrian Signal (N/S)**									
	Overall Intersection (Signalized)		**A**	**4.3**			**A**	**4.5**		
	Eastbound Thru		A	4.7	168	372	A	4.4	134	346
	Westbound Thru		A	3.6	110	243	A	4.6	346	416

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
10	**Herndon Parkway (E/W) and Van Buren Street (N/S)**									
	Overall Intersection (Signalized)		**D**	**50.1**			**D**	**54.9**		
	Eastbound Left	125	D	35.4	41	149	D	36.2	46	149
	Eastbound Thru		D	53.5	218	386	D	54.1	148	275
	Eastbound Right	190	D	45.7	122	215	D	48.4	86	211
	Westbound Left	450	E	60.6	184	317	F	104.6	472	475
	Westbound Thru/Right		D	36.4	106	263	D	47.0	893	922
	Northbound Left		C	29.4	202	742	D	37.3	310	706
	Northbound Thru		D	53.9	566	914	E	59.7	529	906
	Northbound Right	275	E	59.0	273	300	C	24.1	260	300
	Southbound Left	100	C	30.2	90	124	C	29.5	92	124
	Southbound Thru/Right		D	43.2	131	229	D	46.4	196	241
11	**Van Buren Street (N/S) and Worldgate Drive (E/W)**									
	Overall Intersection (Signalized)		**C**	**22.2**			**C**	**29.3**		
	Eastbound Left		C	31.3	89	201	D	51.1	113	197
	Eastbound Left/Thru		C	31.3	164	224	D	51.7	175	212
	Eastbound Right		C	25.2	11	72	D	39.2	53	175
	Westbound Left/Thru		D	42.0	0	7	D	54.1	29	74
	Westbound Right		D	40.4	2	21	D	50.3	22	78
	Northbound Left	235	C	32.8	111	235	D	48.7	142	241
	Northbound Thru		B	17.6	229	410	B	15.5	238	400
	Northbound Right	225	B	12.4	31	210	B	11.2	2	56
	Southbound Left	155	D	39.8	26	91	E	62.5	7	74
	Southbound Thru		C	20.2	135	279	C	25.8	232	466
	Southbound Right		B	18.2	0	0	C	21.3	5	64
12	**Herndon Parkway (E/W) and Worldgate Drive (N/S)**									
	Overall Intersection (Signalized)		**B**	**12.7**			**B**	**13.9**		
	Eastbound Thru/Right		B	13.8	179	377	B	15.8	183	348
	Westbound Left	160	B	11.1	58	154	A	9.4	79	185
	Westbound Thru		A	4.3	63	184	A	8.4	433	578
	Northbound Left/Right		C	31.2	93	194	C	28.0	226	309
13	**Fairbrook Drive (N/S) and Parallel Street (E/W)**									
	Overall Intersection (AWSC)		**A**	**6.8**			**A**	**7**		
	Eastbound Left/Right		A	6.5	25	51	A	6.5	15	33
	Northbound Left/Thru		A	7.3	13	33	A	7.4	21	48
	Southbound Thru/Right		A	7.1	4	30	A	7.0	2	27
14	**Exchange Place (N/S) and Road B**									
	Overall Intersection (TWSC)									
	Westbound Left/Right		A	8.6	8	33	A	8.6	4	33

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

For the purpose of this analysis, it is desirable to achieve an overall level of service (LOS) of D or better for each intersection and LOS E or better for each lane group at an intersection. The results in the table above show that the following intersections have movements that operate below acceptable levels of service during one or more peak hours under Future Conditions with Development (2027). Intersections in **bold** also operate below acceptable levels of service under Future Conditions without Development (2027).

- **Intersection #4: Herndon Parkway and Sunset District** – The westbound left/through lane operates at LOS F during the **AM and PM** peak hours. It is noted that the TRG Small Area Plan proposes a new traffic signal at this intersection.
- **Intersection #10: Herndon Parkway and Van Buren Street** – The westbound left lanes operate at LOS F during the **PM** peak hour.

Two (2) intersections have an average queue length that exceeds the existing storage length during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street

- Intersection #10: Herndon Parkway and Van Buren Street

Five (5) intersections have maximum queue lengths that exceed the existing storage lengths during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street
- Intersection #8: Herndon Parkway and 555 Herndon Parkway/575 Herndon Parkway Entrance
- Intersection #10: Herndon Parkway and Van Buren Street
- Intersection #11: Van Buren Street and Worldgate Drive
- Intersection #12: Herndon Parkway and Worldgate Drive

It should be noted that free-flow movements at unsignalized intersections do not produce results in Synchro.

It is noted that the following transportation improvements are associated with the approved yet unbuilt Fairbrook Business Park development. These improvements are not anticipated to be in place by 2027.

- Intersection #5: Herndon Parkway and Fairbrook Drive
    - Extend the existing left turning lane on southbound Herndon Parkway to a stacking length of 225 feet.
    - Construct a right turn lane on the northbound Herndon Parkway.

Preliminary Signal Warrant Analysis – Herndon Parkway and Fairbrook Drive

The Fairbrook Business Park approval includes the following proffer condition:

> *The Applicant will install a traffic signal for the full signalization of the Fairbrook Drive and Herndon Parkway intersection. The traffic signal will include accessible pedestrian signals. The need for the traffic signal will be assessed with each site plan and will be installed prior to the issuance of a permanent certificate of occupancy for the New Building which generates the need for the signal.*

In order to determine if a signal is warranted at the intersection of Herndon Parkway and Fairbrook Drive, a preliminary signal warrant analysis was conducted under future conditions for the following two (2) scenarios:

- With Exchange Place and without Fairbrook Business Park (Phase 1)
- With Fairbrook Business Park (Phase 1) and without Exchange Place

The warrant analysis was conducted using the Traffic Signal Warrant Using Average Daily Traffic Estimate (Table 4C-V1) per the Virginia Supplement to the 2009 Manual on Uniform Traffic Control Devices (MUTCD).

As shown in Table 11 and Table 12, a signal at Herndon Parkway and Fairbrook Drive would not be warranted with Exchange Place and without Fairbrook Business Park (Phase 1), but would be warranted with Fairbrook Business Park (Phase 1) and without Exchange Place.

It is noted that the Exchange Place development site trips account for approximately 4.0 percent of the Future with Development (2027) intersection volume during the AM peak hour and approximately 3.1 percent of the intersection volume during the PM peak hour at Intersection #5.

Table 10: Preliminary Signal Warrant Analysis Summary

Development Included		Signal Warranted?
Exchange Place	Fairbrook Phase 1	
Yes	No	**No**
No	Yes	**Yes**

Table 11: Preliminary Signal Warrant Analysis (Intersection #5) – With Exchange Place and without Fairbrook Business Park (Phase 1)

Condition	Estimated ADT		Signal Warrant Requirements		Meets?	Signal Warrant Met?
	Major Street (Both Directions)	Minor Street (One Direction Only)	Major Street (Both Directions)	Minor Street (One Direction Only)		
100% Thresholds						
Condition A	19,000	335	9,600	2,400	No	**No**
Condition B			14,400	1,200	No	
80% Thresholds						
Condition A			7,680	1,920	No	
Condition B			11,520	960	No	

Notes: Herndon Parkway (major street) ADT based on VDOT 2023 Traffic Data Publications. Fairbrook Drive (minor street) ADT based on ITE weekday trip generation for proposed development.

Table 12: Preliminary Signal Warrant Analysis (Intersection #5) – With Fairbrook Business Park (Phase 1) and without Exchange Place

Condition	Estimated ADT		Signal Warrant Requirements		Meets?	Signal Warrant Met?
	Major Street (Both Directions)	Minor Street (One Direction Only)	Major Street (Both Directions)	Minor Street (One Direction Only)		
100% Thresholds						
Condition A	19,000	1,700	9,600	3,200	No	**Yes**
Condition B			14,400	1,600	Yes	
80% Thresholds						
Condition A			7,680	2,560	No	
Condition B			11,520	1,280	Yes	

Notes: Herndon Parkway (major street) ADT based on VDOT 2023 Traffic Data Publications. Fairbrook Drive (minor street) ADT based on ITE weekday trip generation for proposed development.

As requested by Town of Herndon staff, additional level of service, delay, and queuing analyses for Intersection #5 under future conditions without signalization have been provided. Table 13 presents the results for future conditions without Exchange Place and without Fairbrook Business Park (Phase 1), and Table 14 presents the results for future conditions with Exchange Place and without Fairbrook Business Park (Phase 1).

The traffic volumes and detailed analysis worksheets are included in Appendix F and Appendix H, respectively.

Table 13: Future (2027) without Exchange Place and without Fairbrook Business Park (Phase 1) Intersection Capacity Analysis Results – Intersection #5 (Unsignalized)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W) Overall Intersection (Unsignalized)**									
	Eastbound Left/Thru/Right		D	26.0	2	24	F	69.6	18	58
	Westbound Left/Thru/Right		B	12.2	1	21	F	154.4	2	44
	Northbound Left	205	A	8.5	3	32	B	10.4	1	60
	Southbound Left	215	A	0.0	0	0	A	0.0	0	0

NOTES:
[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.
[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.
[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

Table 14: Future (2027) with Exchange Place and without Fairbrook Business Park (Phase 1) Intersection Capacity Analysis Results – Intersection #5 (Unsignalized)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W) Overall Intersection (Unsignalized)**									
	Eastbound Left/Thru/Right		D	28.3	29	79	F	71.4	16	54
	Westbound Left/Thru/Right		B	12.3	1	22	F	166.5	5	57
	Northbound Left	205	A	8.5	0	14	B	10.6	0	13
	Southbound Left	215	A	0.0	0	0	A	0.0	6	91

NOTES:
[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.
[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.
[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

As shown in Table 13, without signalization and without Exchange Place, the eastbound and westbound (minor street) approaches operate below acceptable levels of service during the PM peak hour. As shown in Table 14, without signalization and with Exchange Place, the eastbound and westbound (minor street) approaches continue to operate below acceptable levels of service during the PM peak hour.

The results indicate that under two-way stop control, without Exchange Place and without Fairbrook Business Park (Phase 1), the intersection would still begin to operate below acceptable levels of service in future conditions due to regional growth and other approved background developments in the vicinity of the intersection.

The Exchange Place development's site trips do not cause the intersection to operate below acceptable levels of service.

Potential Mitigations

As noted previously, two (2) intersections have movements that operate below acceptable levels of service under Future Conditions with Development (2027). In order to raise the levels of service to the standards indicated, the following potential mitigations could be considered. It is noted that these mitigations are provided for informational purposes only and are not intended to be funded and implemented solely by this Applicant.

- Intersection #4: Herndon Parkway and Sunset District
    - It is noted that the TRG Small Area Plan proposes a new traffic signal at this intersection.
    - Intersection #4 currently operates under two-way stop control. The westbound left/through movement operates below acceptable levels of service during the PM peak hour under Existing Conditions (2024) and operates below acceptable levels of service during both peak hours under Future Conditions without Development (2027).
    - The Exchange Place development's impact to the intersection is anticipated to be minimal:
        - The Exchange Place development's site trips do not cause the intersection to operate below acceptable levels of service.
        - During the AM peak hour, the delay increase for the westbound left/through movement between the Future without Development and Future with Development scenarios is 9.9 seconds.
        - During the PM peak hour, the delay increase for the westbound left/through movement between the Future without Development and Future with Development scenarios is 14.9 seconds.
    - It is noted that the Exchange Place development site trips account for approximately 3.3 percent of the Future with Development (2027) intersection volume during the AM peak hour and approximately 2.5 percent of the intersection volume during the PM peak hour at Intersection #4.
    - Intersection #4 was analyzed with a traffic signal as a potential mitigation measure:
        - The results of the intersection capacity analysis from Synchro are presented in Table 15 and are expressed in LOS and delay (seconds per vehicle) per lane group. The average and maximum queue results for this intersection from SimTraffic are also presented in Table 15 and are expressed in feet.
        - The results indicate that with a traffic signal, all movements operate at acceptable levels of service during both peak hours.

Table 15: Future with Development (2027) Intersection Capacity Analysis Results – Potential Mitigation Scenario (Intersection #4)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
4	**Herndon Parkway (N/S) and Sunset District (E/W)**									
	Overall Intersection (Signalized)		**A**	**6.6**			**B**	**10.0**		
	Eastbound Left/Thru/Right		C	22.3	20	68	C	23.7	51	133
	Wesbound Left/Thru		C	23.3	14	44	C	25.1	26	52
	Westbound Right		C	22.4	24	57	C	23.2	33	68
	Northbound Left	140	A	3.5	16	58	A	6.3	3	33
	Northbound Thru/Right		A	6.8	107	405	B	10.4	128	390
	Southbound Left	205	A	3.5	37	108	A	5.2	39	118
	Southbound Thru/Right		A	4.2	34	184	A	6.7	103	307

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

- Intersection #10: Herndon Parkway and Van Buren Street
    - Intersection #10 is a signalized intersection that recently had major geometric improvements completed in 2023. The westbound left lanes operate below acceptable levels of service during the PM peak hour under Future Conditions without Development (2027).
    - The Exchange Place development's impact on the intersection is anticipated to be minimal:
        - The Exchange Place development's site trips do not cause the intersection to operate below acceptable levels of service.
        - During the PM peak hour, the delay increase for the westbound left movement between the Future without Development and Future with Development scenarios is 8.1 seconds.
    - Signal timing modifications are recommended, not as a result of this development and not intended to be funded and implemented solely by this Applicant, as a potential mitigation measure to improve the level of service for the westbound left movement during the PM peak hour.
    - As noted previously, major geometric improvements were recently completed at this intersection including adding an additional westbound turn lane. To maintain pedestrian safety and convenience adjacent to the Herndon Transit-Oriented Core (HTOC), no additional geometric improvements are recommended.



Figure 25: Future with Development (2027) Levels of Service and Lane Configuration

Future Conditions with Development (2027) with 575 Herndon Parkway

There is a nearby proposed redevelopment, referred to in this study as "575 Herndon Parkway", located at 575 Herndon Parkway in the Town of Herndon, Virginia. The site is comprised of one (1) parcel identified as Tax Map #16-4 ((10)) 6A. The existing site is currently occupied by a 139,200 SF office building and surface parking. The proposed redevelopment includes 525 mid-rise multifamily dwelling units and a 16,900 SF high-turnover sit-down restaurant. Site access is planned to be provided via Herndon Parkway.

At the request of Town of Herndon staff, a Future with Development (2027) scenario with 575 Herndon Parkway was evaluated for informational purposes.

575 Herndon Parkway Site Generated Volumes

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition was used to determine the future trips generated by the proposed development as shown in Table 16. A TDM Reduction/Mode Spilt of 45 percent was applied to the residential use based on proximity to Herndon Metro, and a TDM Reduction/Mode Split of 25 percent was applied to the commercial use, consistent with the 575 Herndon Parkway TIS.

Table 16: 575 Herndon Parkway Site Trip Generation with Reductions

Land Use	ITE Code	Size	------ Weekday ------						
			AM Peak Hour			PM Peak Hour			Daily
Trip Generation, 11th Ed.			In	Out	Total	In	Out	Total	Total
Proposed Development									
Multifamily Housing (Mid-Rise)	221	525 DU	51	169	220	126	80	206	2,458
Mode Split/TDM Reduction		*45%*	*-23*	*-76*	*-99*	*-56*	*-36*	*-92*	*-1,106*
		Residential Subtotal	*28*	*93*	*121*	*70*	*44*	*114*	*1,352*
High-Turnover (Sit-Down) Restaurant	932	17 KSF	89	73	162	93	60	153	1,812
Mode Split/TDM Reduction		*25%*	*-22*	*-18*	*-40*	*-23*	*-15*	*-38*	*-453*
		Commercial Subtotal	*67*	*55*	*122*	*70*	*45*	*115*	*1,359*
Proposed Development Site Trips With Reductions			**94**	**148**	**242**	**139**	**89**	**228**	**2,711**

As shown in Table 16, the proposed 575 Herndon Parkway development is anticipated to generate approximately 242 trips during the AM peak hour, 228 trips during the PM peak hour, and 2,711 trips on a typical weekday with reductions.

Future with Development (2027) with 575 Herndon Parkway Traffic Volumes

In order to determine the Future with Development (2027) with 575 Herndon Parkway traffic volumes, the trips associated with the 575 Herndon Parkway development (Figure 26) were added to the Future with Development (2027) traffic volumes (Figure 24). The Future with Development (2027) with 575 Herndon Parkway traffic volumes are presented in Figure 27.



Figure 26: 575 Herndon Parkway Site Trips (2027)

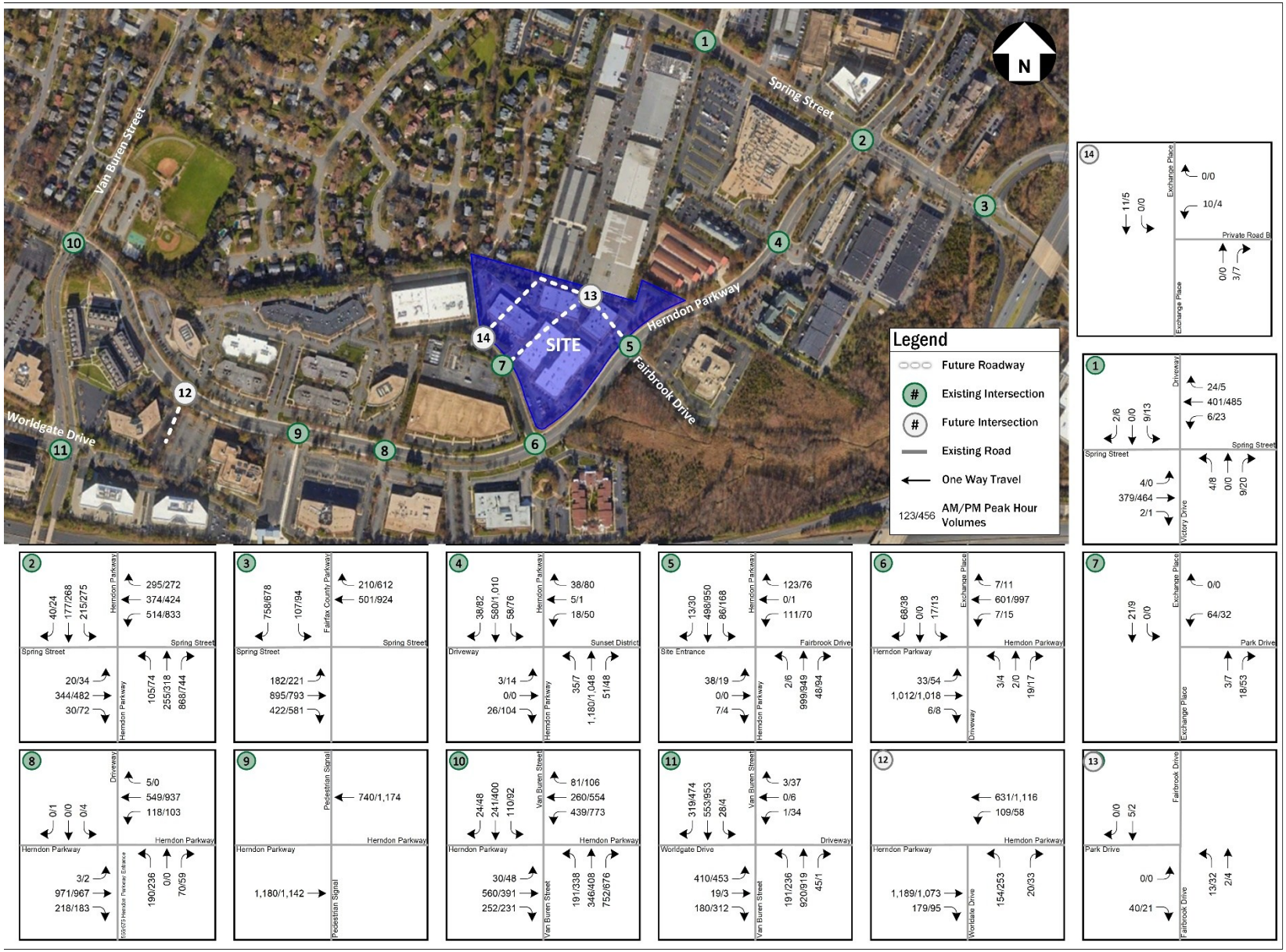


Figure 27: Future with Development (2027) with 575 Herndon Parkway Traffic Volumes

Future with Development (2027) with 575 Herndon Parkway Intersection Capacity Analysis

Intersection capacity analysis was performed in a manner consistent with the methodology used for the Future Conditions without Development (2027) analysis.

The results of the intersection capacity analysis from Synchro are presented in Table 17 and are expressed in LOS and delay (seconds per vehicle) per lane group. The average and maximum queue results for each intersection from SimTraffic are also presented in Table 17 and are expressed in feet. Level of service results and proposed lane configurations are also presented in Figure 28. The detailed analysis worksheets are included in Appendix H.

Table 17: Future with Development (2027) with 575 Herndon Parkway Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
1	**Spring Street (E/W) and Victory Drive**									
	Overall Intersection (TWSC)									
	Eastbound Left	50	A	8.3	1	15	A	0.0	0	0
	Westbound Left	195	A	8.5	0	9	A	8.5	2	22
	Northbound Left/Thru/Right		B	11.2	10	28	B	12.4	17	46
	Southbound Left/Thru/Right		C	15.0	9	31	C	15.7	14	42
2	**Herndon Parkway (N/S) and Spring Street (E/W)**									
	Overall Intersection (Signalized)		**C**	**32.5**			**D**	**43.8**		
	Eastbound Left	160	E	56.0	16	72	E	66.2	33	169
	Eastbound Thru/Right		D	36.1	117	208	D	49.2	186	375
	Westbound Left	260	D	39.0	196	355	D	49.9	545	627
	Westbound Thru		C	21.7	107	212	C	22.3	334	617
	Westbound Right	215	C	20.8	71	177	C	21.3	74	194
	Northbound Left	160	C	25.4	63	170	D	39.4	46	167
	Northbound Thru		C	33.1	73	202	D	49.0	104	209
	Northbound Right		C	33.7	215	420	D	46.2	143	279
	Southbound Left	160	D	43.1	138	184	E	59.0	160	184
	Southbound Thru/Right		C	30.7	94	271	D	40.7	192	306
3	**Spring Street (E/W) and Fairbrook Drive/Fairfax County Parkway Ramps (N/S)**									
	Overall Intersection (Signalized)		**A**	**9.6**			**B**	**10.2**		
	Eastbound Left	230	B	16.1	68	183	C	21.5	93	204
	Eastbound Thru		A	5.4	60	143	A	4.4	48	160
	Westbound Thru		B	14.2	84	124	B	15.0	121	142
	Southbound Left		B	17.0	59	111	C	22.3	48	107
	Southbound Right		B	16.6	105	134	C	21.6	110	136
4	**Herndon Parkway (N/S) and Sunset District (E/W)**									
	Overall Intersection (TWSC)									
	Eastbound Left/Thru/Right		B	14.0	19	61	D	29.5	68	156
	Wesbound Left/Thru		F	110.3	17	51	F	294.9	37	63
	Westbound Right		A	9.7	24	60	A	9.8	36	64
	Northbound Left	140	A	9.1	10	54	B	11.1	3	30
	Southbound Left	205	B	11.5	39	114	B	10.7	39	126
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W)**									
	Overall Intersection (Signalized)		**B**	**12.2**			**B**	**11.7**		
	Eastbound Left/Thru/Right		C	21.9	26	70	C	26.2	17	66
	Westbound Left/Thru		C	25.2	62	134	C	29.2	59	150
	Westbound Right		C	22.2	58	149	C	26.6	59	153
	Northbound Left	205	A	0.0	1	16	A	0.0	4	28
	Northbound Thru/Right		B	12.6	131	320	B	15.0	152	385
	Southbound Left	215	A	6.1	43	120	A	7.2	85	217
	Southbound Thru/Right		A	6.3	28	94	A	6.2	161	674
6	**Herndon Parkway (E/W) and Exchange Place/Courtyard Entrance (N/S)**									
	Overall Intersection (TWSC)									
	Eastbound Left	205	A	9.1	13	73	B	12.2	26	109
	Westbound Left	225	B	10.2	3	38	A	9.7	28	207
	Northbound Left/Thru/Right		C	16.8	17	57	B	12.6	20	60
	Southbound Left/Thru/Right		B	14.6	50	128	B	14.9	110	289
7	**Exchange Place (N/S) and Site Entrance (E/W)**									
	Overall Intersection (TWSC)									
	Westbound Left/Right		A	9.1	30	66	A	9.1	25	74
	Southbound Left/Thru		A	0.0	0	0	A	0.0	1	12
8	**Herndon Parkway (E/W) and 555 Herndon Parkway/575 Herndon Pakway Entrance (N/S)**									
	Overall Intersection (Signalized)		**B**	**15.5**			**B**	**14.8**		
	Eastbound Left	185	A	6.5	1	24	A	8.6	1	39
	Easbound Thru/Right		B	12.1	200	396	B	15.4	180	401
	Westbound Left	185	A	7.6	65	152	B	10.0	120	210
	Westbound Thru/Right		A	5.5	29	125	A	9.7	422	736
	Northbound Left		E	66.9	52	74	C	32.6	50	67
	Northbound Thru/Right		C	25.5	28	60	C	22.4	13	58
	Southbound Left/Thru/Right		A	0.0	0	0	D	35.2	4	34
9	**Herndon Parkway (E/W) and Pedestrian Signal (N/S)**									
	Overall Intersection (Signalized)		**A**	**4.5**			**A**	**4.8**		
	Eastbound Thru		A	4.9	173	381	A	4.7	135	403
	Westbound Thru		A	3.7	109	236	A	4.8	349	413

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]	LOS	Delay (sec/veh)	Average Queue (ft.) [3]	Ave. Max Queue (ft.) [2]
			Synchro		SimTraffic		Synchro		SimTraffic	
10	**Herndon Parkway (E/W) and Van Buren Street (N/S)**									
	Overall Intersection (Signalized)		**D**	**49.7**			**E**	**60.2**		
	Eastbound Left	125	D	35.8	36	149	D	36.0	49	149
	Eastbound Thru		D	54.8	234	446	D	54.2	163	288
	Eastbound Right	190	D	46.5	136	215	D	48.1	91	214
	Westbound Left	450	E	62.9	214	347	F	128.0	472	475
	Westbound Thru/Right		D	36.2	120	222	D	47.0	886	927
	Northbound Left		C	30.9	247	838	D	39.0	400	826
	Northbound Thru		E	56.7	659	918	E	61.1	585	918
	Northbound Right	275	D	51.9	285	300	C	27.8	273	300
	Southbound Left	100	C	32.0	98	124	C	30.4	99	124
	Southbound Thru/Right		D	45.0	99	194	D	47.3	158	195
11	**Van Buren Street (N/S) and Worldgate Drive (E/W)**									
	Overall Intersection (Signalized)		**C**	**22.6**			**C**	**29.8**		
	Eastbound Left		C	32.3	111	203	D	53.0	135	204
	Eastbound Left/Thru		C	32.3	179	226	D	53.3	183	223
	Eastbound Right		C	25.7	11	108	D	39.5	40	172
	Westbound Left/Thru		D	42.6	1	18	D	54.7	29	89
	Westbound Right		D	41.2	2	19	D	50.8	21	71
	Northbound Left	235	C	33.8	123	249	D	49.2	156	249
	Northbound Thru		B	17.9	278	421	B	15.8	262	411
	Northbound Right	225	B	12.4	63	250	B	11.2	3	58
	Southbound Left	155	D	40.6	27	113	E	63.0	6	76
	Southbound Thru		C	20.4	139	286	C	26.3	224	449
	Southbound Right		B	18.3	0	0	C	21.4	2	64
12	**Herndon Parkway (E/W) and Worldgate Drive (N/S)**									
	Overall Intersection (Signalized)		**B**	**12.9**			**B**	**14.5**		
	Eastbound Thru/Right		B	14.3	200	400	B	16.5	200	366
	Westbound Left	160	B	12.3	64	166	B	10.4	88	185
	Westbound Thru		A	4.4	71	216	A	8.6	493	570
	Northbound Left/Right		C	32.8	100	206	C	29.9	244	318
13	**Fairbrook Drive (N/S) and Parallel Street (E/W)**									
	Overall Intersection (AWSC)		**A**	**6.8**			**A**	**7**		
	Eastbound Left/Right		A	6.5	23	56	A	6.5	15	33
	Northbound Left/Thru		A	7.3	13	31	A	7.4	21	41
	Southbound Thru/Right		A	7.1	5	31	A	7.0	2	25
14	**Exchange Place (N/S) and Road B**									
	Overall Intersection (TWSC)									
	Westbound Left/Right		A	8.6	10	33	A	8.6	4	32

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] Max queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

[3] Average queues are based on results from SimTraffic. Per TOSAM guidelines, the queues are based on the average to 10 simulations.

For the purpose of this analysis, it is desirable to achieve an overall level of service (LOS) of D or better for each intersection and LOS E or better for each lane group at an intersection. The results in the table above show that the following intersections have movements that operate below acceptable levels of service during one or more peak hours under Future Conditions with Development (2027) with 575 Herndon Parkway. Intersections in **bold** also operate below acceptable levels of service under Future Conditions without Development (2027).

- **Intersection #4: Herndon Parkway and Sunset District** – The westbound left/through lane operates at LOS F during the **AM and PM** peak hours. It is noted that the TRG Small Area Plan proposes a new traffic signal at this intersection.
- **Intersection #10: Herndon Parkway and Van Buren Street** – The westbound left lanes operate at LOS F during the **PM** peak hour.

Two (2) intersections have an average queue length that exceeds the existing storage length during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street

- Intersection #10: Herndon Parkway and Van Buren Street

Six (6) intersections have maximum queue lengths that exceed the existing storage lengths during one or more peak hours:

- Intersection #2: Herndon Parkway and Spring Street
- Intersection #5: Herndon Parkway and Fairbrook Drive/Site Entrance
- Intersection #8: Herndon Parkway and 555 Herndon Parkway/575 Herndon Parkway Entrance
- Intersection #10: Herndon Parkway and Van Buren Street
- Intersection #11: Van Buren Street and Worldgate Drive
- Intersection #12: Herndon Parkway and Worldgate Drive

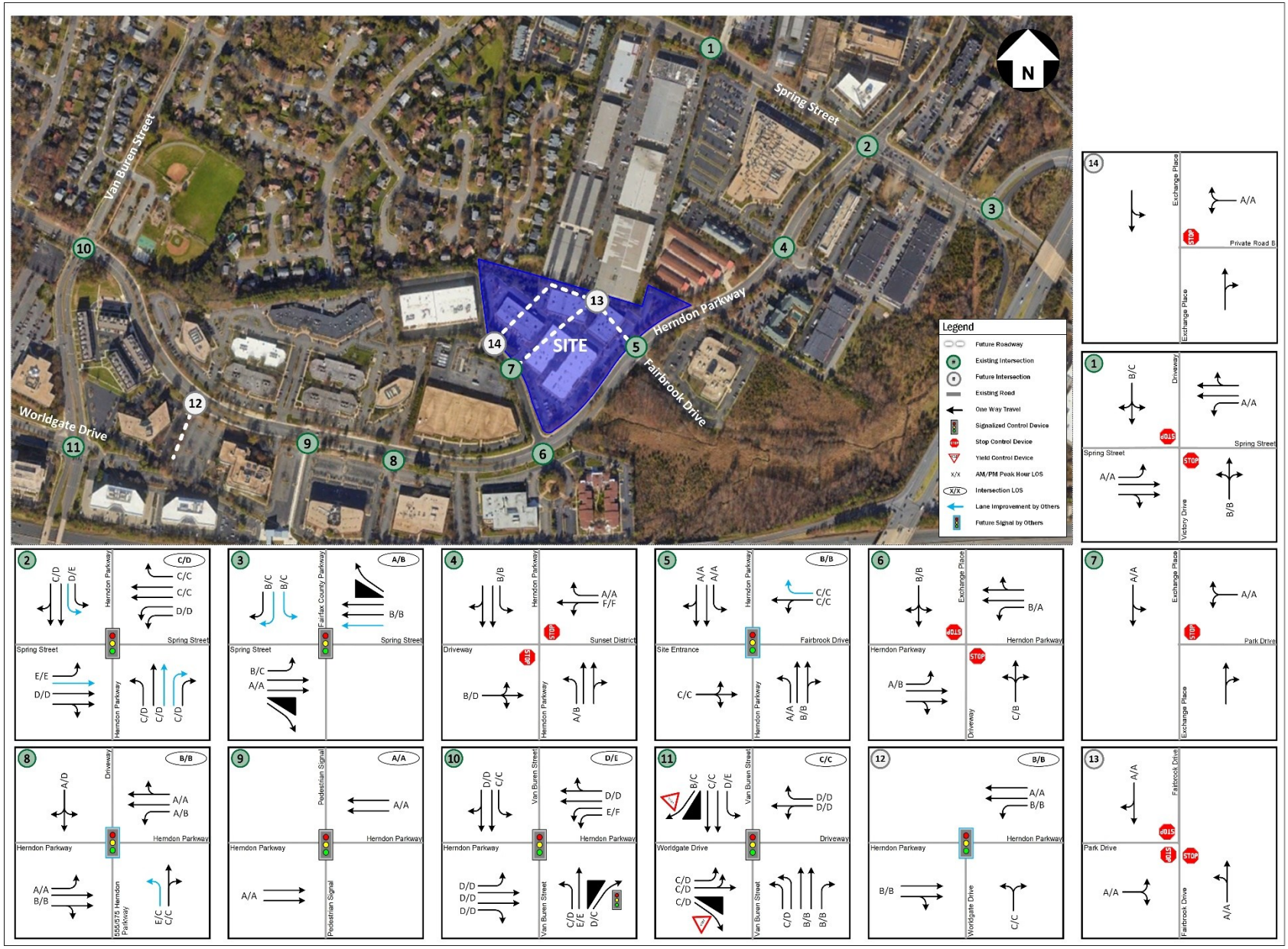


Figure 28: Future with Development (2027) with 575 Herndon Parkway Levels of Service and Lane Configuration

Intersection Analysis Summary

As described in the previous sections, vehicular capacity analysis was performed for the following four (4) scenarios:

- **Existing (2024) –** based on existing turning movement traffic volumes.
- **Future without Development (2027)** – assumes existing traffic plus additional traffic due to a 1.0 percent annual growth rate plus traffic due to approved yet unbuilt background developments.
- **Future with Development (2027)** – assumes existing traffic plus additional traffic due to a 1.0 percent annual growth rate plus traffic due to approved yet unbuilt background developments plus future traffic generated by the Exchange Place redevelopment.
- **Future with Development (2027) with 575 Herndon Parkway** – assumes existing traffic plus additional traffic due to a 1.0 percent annual growth rate plus traffic due to approved yet unbuilt background developments plus future traffic generated by the Exchange Place redevelopment and 575 Herndon Parkway redevelopment.

Level of service and queue comparisons for all four (4) scenarios are presented in Table 18, and a queue comparison for all four (4) scenarios is presented in Table 19.

Table 18: LOS and Delay Comparison

No.	Intersection (Movement)	Level of Service (LOS) (Sec./Veh.)							
		AM Peak Hour				PM Peak Hour			
		2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575
1	**Spring Street (E/W) and Park Drive (N/S)**								
	Overall Intersection (TWSC)								
	Eastbound Left	A (8.2)	A (8.3)	A (8.3)	A (8.3)	A (0.0)	A (0.0)	A (0)	A (0)
	Westbound Left	A (8.5)	A (8.5)	A (8.5)	A (8.5)	A (8.4)	A (8.5)	A (8.5)	A (8.5)
	Northbound Left/Thru/Right	B (11.2)	B (11.2)	B (11.2)	B (11.2)	B (11.8)	B (12.3)	B (12.3)	B (12.4)
	Southbound Left/Thru/Right	B (14.4)	B (15)	C (15)	C (15)	B (14.9)	C (15.5)	C (15.5)	C (15.7)
2	**Herndon Parkway (N/S) and Spring Street (E/W)**								
	Overall Intersection (Signalized)	**C (28.7)**	**C (31)**	**C (31.3)**	**C (32.5)**	**D (41.1)**	**D (43.0)**	**D (43.3)**	**D (43.8)**
	Eastbound Left	D (50.3)	D (52.3)	D (53.3)	E (56)	E (69.4)	F (87.1)	E (65.8)	E (66.2)
	Eastbound Thru/Right	C (32.2)	C (33.9)	C (34.5)	D (36.1)	D (47.4)	D (47.9)	D (49)	D (49.2)
	Westbound Left	D (37.9)	D (36.7)	D (37.5)	D (39)	D (53.1)	D (50.3)	D (50.3)	D (49.9)
	Westbound Thru	C (23.5)	C (20.6)	C (21.1)	C (21.7)	C (26.1)	C (22.0)	C (23.2)	C (22.3)
	Westbound Right	C (22.3)	B (19.8)	C (20.3)	C (20.8)	C (24.6)	C (21.0)	C (22.1)	C (21.3)
	Northbound Left	C (25.1)	C (24.9)	C (24.8)	C (25.4)	D (37.5)	D (39.5)	D (39.6)	D (39.4)
	Northbound Thru	C (33)	C (32.6)	C (32.5)	C (33.1)	D (51.8)	D (47.0)	D (47.1)	D (49)
	Northbound Right	C (32.8)	C (32.4)	C (32.5)	C (33.7)	D (46.3)	D (44.7)	D (44.8)	D (46.2)
	Southbound Left	B (17.2)	D (40.5)	D (41.1)	D (43.1)	C (30.6)	E (58.9)	E (58.9)	E (59)
	Southbound Thru/Right	C (23.3)	C (30.4)	C (30.2)	C (30.7)	C (32.3)	D (37.4)	D (37.5)	D (40.7)
3	**Spring Street (E/W) and Fairbrook Drive/Fairfax County Parkway Ramps (N/S)**								
	Overall Intersection (Signalized)	**B (10.6)**	**A (9.3)**	**A (9.5)**	**A (9.6)**	**B (11.2)**	**A (9.9)**	**A (10)**	**B (10.2)**
	Eastbound Left	C (20.6)	B (18.6)	B (15.9)	B (16.1)	C (24.8)	C (20.7)	C (21)	C (21.5)
	Eastbound Thru	A (8)	A (5.6)	A (5.4)	A (5.4)	A (6.0)	A (4.4)	A (4.3)	A (4.4)
	Westbound Thru	B (15.5)	B (12.7)	B (14)	B (14.2)	B (18.2)	B (14.9)	B (14.8)	B (15)
	Southbound Left/Right (EX), Southbound Left (FB, TF, TF w/ 575 Herndon Pkwy)	B (18)	B (15.9)	B (16.7)	B (17)	C (25.2)	C (21.8)	C (22)	C (22.3)
	Southbound Right	B (14.2)	B (15.6)	B (16.3)	B (16.6)	C (20.5)	C (21.2)	C (21.3)	C (21.6)
4	**Herndon Parkway (N/S) and Sunset District (E/W)**								
	Overall Intersection (TWSC)								
	Eastbound Left/Thru/Right	B (10.5)	B (13.3)	B (13.4)	B (14)	C (18.6)	D (25.9)	D (27.3)	D (29.5)
	Wesbound Left/Thru	D (31.6)	F (79.3)	F (89.2)	F (110.3)	F (103.2)	F (249.0)	F (263.9)	F (294.9)
	Westbound Right	B (11.5)	A (9.7)	A (9.8)	A (9.7)	B (11.6)	A (9.7)	A (9.7)	A (9.8)
	Northbound Left	A (8)	A (8.9)	A (8.9)	A (9.1)	A (9.3)	B (10.6)	B (10.8)	B (11.1)
	Southbound Left	A (9.7)	B (10.9)	B (11.2)	B (11.5)	A (9.7)	B (10.5)	B (10.6)	B (10.7)
4	**Herndon Parkway (N/S) and Sunset District (E/W) - Mitigated**								
	Overall Intersection (Signalized)	**-**	**-**	**A(6.6)**	**-**	**-**	**-**	**B(10)**	**-**
	Eastbound Left/Thru/Right	-	-	C(22.3)	-	-	-	C(23.7)	-
	Wesbound Left/Thru	-	-	C(23.3)	-	-	-	C(25.1)	-
	Westbound Right	-	-	C(22.4)	-	-	-	C(23.2)	-
	Northbound Left	-	-	A(3.5)	-	-	-	A(6.3)	-
	Northbound Thru/Right	-	-	A(6.8)	-	-	-	B(10.4)	-
	Southbound Left	-	-	A(3.5)	-	-	-	A(5.2)	-
	Southbound Thru/Right	-	-	A(4.2)	-	-	-	A(6.7)	-
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W)**								
	Overall Intersection (EX: TWSC, FB, TF, TF w/ 575: Signalized)	**-**	**B (11.7)**	**B (12.1)**	**B (12.2)**	**-**	**B (11.7)**	**B (11.6)**	**B (11.7)**
	Eastbound Left/Thru/Right	C (16.6)	C (20.5)	C (20.7)	C (21.9)	D (34.2)	C (26.1)	C (25.6)	C (26.2)
	Westbound Left/Thru/Right (EX), Westbound Left/Thru (FB, TF, TF w/ 575)	B (11.2)	C (23.5)	C (23.8)	C (25.2)	E (39.4)	C (28.6)	C (28.5)	C (29.2)
	Westbound Right	-	C (20.9)	C (21.0)	C (22.2)	-	C (26.0)	C (26)	C (26.6)
	Northbound Left	A (7.9)	A (7.8)	A (0)	A (0)	A (9.6)	A (8.9)	A (0)	A (0)
	Northbound Thru/Right	-	B (12.3)	B (12.5)	B (12.6)	-	B (14.9)	B (14.8)	B (15)
	Southbound Left	A (0)	A (0)	A (5.8)	A (6.1)	A (0)	A (0)	A (6.7)	A (7.2)
	Southbound Thru/Right	-	A (6.4)	A (6.4)	A (6.3)	-	A (6.0)	A (6.1)	A (6.2)
6	**Herndon Parkway (E/W) and Exchange Place/Courtyard Entrance (N/S**								
	Overall Intersection (TWSC)								
	Eastbound Left	A (8)	A (9)	A (9)	A (9.1)	B (10.7)	B (11.1)	B (11.8)	B (12.2)
	Westbound Left	B (10.1)	B (10)	B (10)	B (10.2)	A (9.3)	A (9.6)	A (9.5)	A (9.7)
	Northbound Left/Thru/Right	C (15.8)	C (15.1)	C (16.3)	C (16.8)	C (15.2)	B (11.2)	B (12.4)	B (12.6)
	Southbound Left/Thru/Right	C (16.2)	C (17.2)	B (14.8)	B (14.6)	D (26.5)	C (15.0)	B (14.6)	B (14.9)
7	**Exchange Place (N/S) and Site Entrance (E/W)**								
	Overall Intersection (TWSC)								
	Westbound Left/Right	A (8.9)	A (8.7)	A (9.1)	A (9.1)	A (8.8)	A (8.7)	A (9.1)	A (9.1)
	Southbound Left/Thru	A (0)	A (0)	A (0)	A (0)	A (0.0)	A (0.0)	A (0)	A (0)

No.	Intersection (Movement)	Level of Service (LOS) (Sec./Veh.)							
		AM Peak Hour				PM Peak Hour			
		2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575
8	**Herndon Parkway (E/W) and 555 Herndon Parkway/575 Herndon Pakway Entrance (N/S)**								
	Overall Intersection (EX: TWSC, FB, TF, TF w/ 575: Signalized)	**-**	**A (9.2)**	**A (9.1)**	**B (15.5)**	**-**	**B (13.6)**	**B (13.7)**	**B (14.8)**
	Eastbound Left	A (8.3)	A (5.2)	A (5.2)	A (6.5)	A (9.5)	A (8.9)	A (8.7)	A (8.6)
	Eatbound Thru/Right	-	A (9.2)	A (9.2)	B (12.1)	-	B (14.5)	B (14.6)	B (15.4)
	Westbound Left	A (9.7)	A (5.0)	A (5.0)	A (7.6)	A (8.9)	A (8.5)	A (8.7)	B (10)
	Westbound Thru/Right	-	A (4.8)	A (4.9)	A (5.5)	-	B (11.2)	B (11.1)	A (9.7)
	Northbound Left/Thru/Right (EX), Northbound Left (FB, TF, TF w/ 575 Herndon Pkwy)	C (17.4)	C (32.4)	C (32.4)	E (66.9)	C (17.8)	C (20.7)	C (21.5)	C (32.6)
	Northbound Thru/Right	-	C (23.6)	C (23.6)	C (25.5)	-	B (17.7)	B (18.4)	C (22.4)
	Southbound Left/Thru/Right	A (0)	0 (0)	A (0)	A (0)	C (24.4)	C (30.3)	C (31.0)	D (35.2)
9	**Herndon Parkway (E/W) and Pedestrian Signal (N/S)**								
	Overall Intersection (Signalized)	**A (3.6)**	**A (4.3)**	**A (4.3)**	**A (4.5)**	**A (3.7)**	**A (4.4)**	**A (4.5)**	**A (4.8)**
	Eastbound Thru	A (3.8)	A (4.7)	A (4.7)	A (4.9)	A (3.6)	A (4.2)	A (4.4)	A (4.7)
	Westbound Thru	A (3)	A (3.5)	A (3.6)	A (3.7)	A (3.8)	A (4.5)	A (4.6)	A (4.8)
10	**Herndon Parkway (E/W) and Van Buren Street (N/S)**								
	Overall Intersection (Signalized)	**C (33.5)**	**D (50.2)**	**D (50.1)**	**D (49.7)**	**D (36.3)**	**D (53.7)**	**D (54.9)**	**E (60.2)**
	Eastbound Left	C (31.3)	D (36.8)	D (35.4)	D (35.8)	C (31.6)	D (36.3)	D (36.2)	D (36)
	Eastbound Thru	D (45.9)	E (55.7)	D (53.5)	D (54.8)	D (46.2)	D (53.7)	D (54.1)	D (54.2)
	Eastbound Right	D (40.4)	D (47.4)	D (45.7)	D (46.5)	D (43.9)	D (48.5)	D (48.4)	D (48.1)
	Westbound Left	D (45.3)	E (56)	E (60.6)	E (62.9)	D (49.6)	F (96.5)	F (104.6)	F (128)
	Westbound Thru/Right	C (33.6)	D (35.1)	D (36.4)	D (36.2)	D (43.5)	D (46.8)	D (47)	D (47)
	Northbound Left	C (20.2)	C (31.4)	C (29.4)	C (30.9)	C (24.6)	D (36.9)	D (37.3)	D (39)
	Northbound Thru	D (35.6)	E (57.2)	D (53.9)	E (56.7)	D (35.6)	E (59.4)	E (59.7)	E (61.1)
	Northbound Right	B (15.7)	E (56.6)	E (59)	D (51.9)	B (12.9)	C (27.2)	C (24.1)	C (27.8)
	Southbound Left	C (27.3)	C (32.3)	C (30.2)	C (32)	C (26.9)	C (29.1)	C (29.5)	C (30.4)
	Southbound Thru/Right	D (37.2)	D (45.4)	D (43.2)	D (45)	D (39.3)	D (46.1)	D (46.4)	D (47.3)
11	**Van Buren Street (N/S) and Worldgate Drive (E/W)**								
	Overall Intersection (Signalized)	**B (17.3)**	**C (22.2)**	**C (22.2)**	**C (22.6)**	**C (25.0)**	**C (29.0)**	**C (29.3)**	**C (29.8)**
	Eastbound Left	C (25)	C (30.8)	C (31.3)	C (32.3)	D (39.3)	D (50.2)	D (51.1)	D (53)
	Eastbound Left/Thru	C (25)	C (30.8)	C (31.3)	C (32.3)	D (39.5)	D (50.7)	D (51.7)	D (53.3)
	Eastbound Right	C (23.2)	C (24.9)	C (25.2)	C (25.7)	D (35.7)	D (39.2)	D (39.2)	D (39.5)
	Westbound Left/Thru	C (33.8)	D (41.7)	D (42)	D (42.6)	D (45.9)	D (53.8)	D (54.1)	D (54.7)
	Westbound Right	C (32.6)	D (40.2)	D (40.4)	D (41.2)	D (43.0)	D (50.0)	D (50.3)	D (50.8)
	Northbound Left	C (25.1)	C (32.5)	C (32.8)	C (33.8)	D (40.6)	D (48.4)	D (48.7)	D (49.2)
	Northbound Thru	B (13)	B (17.7)	B (17.6)	B (17.9)	B (13.6)	B (15.3)	B (15.5)	B (15.8)
	Northbound Right	A (9.6)	B (12.4)	B (12.4)	B (12.4)	B (10.3)	B (11.1)	B (11.2)	B (11.2)
	Southbound Left	D (36)	D (39.5)	D (39.8)	D (40.6)	E (55.9)	E (62.2)	E (62.5)	E (63)
	Southbound Thru	B (16.7)	C (20.1)	C (20.2)	C (20.4)	C (22.8)	C (25.6)	C (25.8)	C (26.3)
	Southbound Right	B (15)	B (18.2)	B (18.2)	B (18.3)	B (18.0)	C (21.1)	C (21.3)	C (21.4)
12	**Herndon Parkway (E/W) and Worldgate Drive (N/S)**								
	Overall Intersection (Signalized)		**B (13)**	**B (12.7)**	**B (12.9)**	**-**	**B (13.6)**	**B (13.9)**	**B (14.5)**
	Eastbound Thru/Right		B (13.9)	B (13.8)	B (14.3)	-	B (15.6)	B (15.8)	B (16.5)
	Westbound Left		B (11.1)	B (11.1)	B (12.3)	-	A (8.9)	A (9.4)	B (10.4)
	Westbound Thru		A (4.2)	A (4.3)	A (4.4)	-	A (8.3)	A (8.4)	A (8.6)
	Northbound Left/Right		C (26.5)	C (31.2)	C (32.8)	-	C (26.5)	C (28)	C (29.9)
13	**Fairbrook Drive (N/S) and Park Drive (E/W)**								
	Overall Intersection (AWSC)			**A (6.8)**	**A (6.8)**			**A (7)**	**A (7)**
	Eastbound Left/Right	-	-	A (0)	A (0)	-	-	A (0)	A (0)
	Northbound Left/Thru	-	-	A (0)	A (0)	-	-	A (0)	A (0)
	Southbound Thru/Right	-	-	A (7.1)	A (7.1)	-	-	A (7)	A (7)
14	**Exchange Place (N/S) and Road B (E/W)**								
	Overall Intersection (TWSC)								
	Westbound Left/Right	-	-	A (8.6)	A (8.6)	-	-	A (8.6)	A (8.6)

As shown in Table 18, no movements degrade to below acceptable levels of service under Future Conditions with Development (2027) that were previously acceptable under Future Conditions without Development (2027).

Table 19: Queue Comparison

No.	Intersection (Movement)	Effective Storage Length (ft.)	Average Queue								Maximum Queue							
			AM Peak Hour				PM Peak Hour				AM Peak Hour				PM Peak Hour			
			2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575
1	**Spring Street (E/W) and Park Drive (N/S)**																	
	Overall Intersection (TWSC)																	
	Eastbound Left	50	1	1	1	1	0	6	0	0	13	15	20	15	6	30	0	0
	Westbound Left	195	1	1	1	0	0	2	3	2	12	10	15	9	3	14	16	22
	Northbound Left/Thru/Right		9	10	10	10	0	22	19	17	33	30	30	28	5	73	49	46
	Southbound Left/Thru/Right		8	8	9	9	19	14	13	14	30	32	33	31	44	44	40	42
2	**Herndon Parkway (N/S) and Spring Street (E/W)**																	
	Overall Intersection (Signalized)																	
	Eastbound Left	160	12	16	17	16	41	29	39	33	60	96	88	72	170	183	166	169
	Eastbound Thru/Right		95	86	114	117	179	196	200	186	173	183	196	208	316	422	393	375
	Westbound Left	260	69	280	175	196	175	262	457	545	146	280	320	355	283	285	627	627
	Westbound Thru		81	108	108	107	96	238	258	334	162	210	217	212	193	570	578	617
	Westbound Right	215	59	70	68	71	62	63	68	74	124	159	157	177	169	187	188	194
	Northbound Left	160	31	45	51	63	41	41	40	46	120	121	146	170	184	145	150	167
	Northbound Thru		85	61	60	73	146	97	107	104	240	158	156	202	312	212	230	209
	Northbound Right		202	169	192	215	185	140	137	143	466	357	364	420	405	314	310	279
	Southbound Left	160	95	120	126	138	140	141	148	160	181	182	184	184	184	184	184	184
	Southbound Thru/Right		26	37	78	94	45	83	182	192	103	130	251	271	168	245	302	306
3	**Spring Street (E/W) and Fairbrook Drive/Fairfax County Parkway Ramps (N/S)**																	
	Overall Intersection (Signalized)																	
	Eastbound Left	230	31	54	54	68	51	82	82	93	109	140	157	183	144	193	189	204
	Eastbound Thru		35	58	58	60	32	44	45	48	127	151	139	143	115	140	142	160
	Westbound Thru		47	82	78	84	97	116	117	121	106	122	123	124	124	148	140	142
	Southbound Left/Right (EX), Southbound Left (FB, TF, TF w/ 575 Herndon Pkwy)		104	54	50	59	109	47	42	48	136	107	106	111	147	108	103	107
	Southbound Right		61	102	102	105	44	107	108	110	119	136	135	134	106	138	134	136
4	**Herndon Parkway (N/S) and Sunset District (E/W)**																	
	Overall Intersection (TWSC)																	
	Eastbound Left/Thru/Right		22	21	20	19	45	77	70	68	70	58	58	61	99	154	161	156
	Wesbound Left/Thru		17	15	16	17	32	32	35	37	48	48	52	51	74	52	55	63
	Westbound Right		14	23	24	24	27	30	33	36	52	63	61	60	64	72	76	64
	Northbound Left	140	9	12	12	10	3	2	4	3	39	51	52	54	27	29	27	30
	Southbound Left	205	13	31	35	39	18	32	33	39	54	89	97	114	69	90	101	126
4	**Herndon Parkway (N/S) and Sunset District (E/W) - Mitigated**																	
	Overall Intersection (Signalized)																	
	Eastbound Left/Thru/Right		-	-	18	-	-	-	43	-	-	-	49	-	-	-	155	-
	Wesbound Left/Thru		-	-	13	-	-	-	20	-	-	-	52	-	-	-	48	-
	Westbound Right		-	-	28	-	-	-	33	-	-	-	76	-	-	-	52	-
	Northbound Left		-	-	17	-	-	-	5	-	-	-	53	-	-	-	41	-
	Northbound Thru/Right		-	-	84	-	-	-	129	-	-	-	286	-	-	-	394	-
	Southbound Left		-	-	42	-	-	-	51	-	-	-	117	-	-	-	115	-
	Southbound Thru/Right		-	-	42	-	-	-	76	-	-	-	200	-	-	-	320	-
5	**Herndon Parkway (N/S) and Fairbrook Drive/Site Entrance (E/W)**																	
	Overall Intersection (EX: TWSC, FB, TF, TF w/ 575: Signalized)																	
	Eastbound Left/Thru/Right		1	2	27	26	17	20	18	17	25	26	73	70	53	58	64	66
	Westbound Left/Thru/Right (EX), Westbound Left/Thru (FB, TF, TF w/ 575)		1	60	54	62	6	68	61	59	21	139	119	134	52	132	140	150
	Westbound Right		-	53	55	58	-	52	58	59	-	121	132	149	-	160	155	153
	Northbound Left	205	3	6	1	1	2	2	4	4	28	32	17	16	22	20	28	28
	Northbound Thru/Right		-	125	124	131	-	162	154	152	-	318	301	320	-	396	418	385
	Southbound Left	215	0	45	42	43	0	64	82	85	0	126	125	120	0	195	200	217
	Southbound Thru/Right		-	30	30	28	-	200	176	161	-	138	118	94	-	404	504	674
6	**Herndon Parkway (E/W) and Exchange Place/Courtyard Entrance (N/S**																	
	Overall Intersection (TWSC)																	
	Eastbound Left	205	4	8	10	13	2	1	27	26	32	57	53	73	25	27	90	109
	Westbound Left	225	4	3	4	3	4	11	29	28	33	31	31	38	31	102	185	207
	Northbound Left/Thru/Right		19	19	17	17	14	20	19	20	63	56	60	57	40	48	55	60
	Southbound Left/Thru/Right		19	21	49	50	19	47	112	110	68	69	124	128	66	141	304	289
7	**Exchange Place (N/S) and Site Entrance (E/W)**																	
	Overall Intersection (TWSC)																	
	Westbound Left/Right		7	7	32	30	8	45	24	25	48	40	67	66	49	45	76	74
	Southbound Left/Thru		0	0	0	0	0	0	0	1	0	0	0	0	0	0	5	12

No.	Intersection (Movement)	Effective Storage Length (ft.)	Average Queue								Maximum Queue							
			AM Peak Hour				PM Peak Hour				AM Peak Hour				PM Peak Hour			
			2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575	2024 EX	2027 FB	2027 TF	2027 TF W/ 575
8	**Herndon Parkway (E/W) and 555 Herndon Parkway/575 Herndon Pakway Entrance (N/S)**																	
	Overall Intersection (EX: TWSC, FB, TF, TF w/ 575: Signalized)																	
	Eastbound Left	185	1	1	1	1	1	0	1	1	21	30	22	24	18	9	18	39
	Eatbound Thru/Right		-	133	135	200	-	132	137	180	-	364	339	396	-	348	358	401
	Westbound Left	185	2	46	41	65	1	56	75	120	37	118	116	152	18	164	191	210
	Westbound Thru/Right		-	39	35	29	-	369	452	422	-	126	105	125	-	674	739	736
	Northbound Left/Thru/Right (EX), Northbound Left (FB, TF, TF w/ 575 Herndon Pkwy)		4	55	42	52	6	186	47	50	31	136	67	74	33	272	62	67
	Northbound Thru/Right		-	8	9	28	-	26	6	13	-	37	35	60	-	133	40	58
	Southbound Left/Thru/Right		0	0	0	0	4	7	8	4	0	0	0	0	32	34	36	34
9	**Herndon Parkway (E/W) and Pedestrian Signal (N/S)**																	
	Overall Intersection (Signalized)																	
	Eastbound Thru		84	166	168	173	85	152	134	135	239	377	372	381	210	389	346	403
	Westbound Thru		33	96	110	109	82	334	346	349	100	220	243	236	223	415	416	413
10	**Herndon Parkway (E/W) and Van Buren Street (N/S)**																	
	Overall Intersection (Signalized)																	
	Eastbound Left	125	37	35	41	36	38	42	46	49	141	149	149	149	149	149	149	149
	Eastbound Thru		144	222	218	234	69	144	148	163	270	402	386	446	185	250	275	288
	Eastbound Right	190	64	122	122	136	69	85	86	91	179	215	215	215	161	213	211	214
	Westbound Left	450	37	164	184	214	139	468	472	472	108	289	317	347	260	475	475	475
	Westbound Thru/Right		42	95	106	120	128	872	893	886	121	197	263	222	248	920	922	927
	Northbound Left		88	238	202	247	183	272	310	400	231	764	742	838	357	640	706	826
	Northbound Thru		207	626	566	659	222	446	529	585	572	914	914	918	482	858	906	918
	Northbound Right	275	86	278	273	285	91	241	260	273	300	300	300	300	300	300	300	300
	Southbound Left	100	33	90	90	98	37	92	92	99	124	124	124	124	124	124	124	124
	Southbound Thru/Right		67	131	131	99	134	201	196	158	187	236	229	194	195	250	241	195
11	**Van Buren Street (N/S) and Worldgate Drive (E/W)**																	
	Overall Intersection (Signalized)																	
	Eastbound Left		26	105	89	111	55	111	113	135	94	206	201	203	157	191	197	204
	Eastbound Left/Thru		70	175	164	179	103	168	175	183	151	224	224	226	196	200	212	223
	Eastbound Right		6	6	11	11	53	52	53	40	70	58	72	108	169	177	175	172
	Westbound Left/Thru		0	0	0	1	29	29	29	29	10	8	7	18	85	92	74	89
	Westbound Right		2	2	2	2	20	21	22	21	21	21	21	19	67	75	78	71
	Northbound Left	235	13	121	111	123	38	136	142	156	156	232	235	249	167	239	241	249
	Northbound Thru		77	250	229	278	88	211	238	262	250	406	410	421	262	378	400	411
	Northbound Right	225	13	49	31	63	0	2	2	3	158	249	210	250	5	54	56	58
	Southbound Left	155	25	33	26	27	6	7	7	6	94	149	91	113	62	90	74	76
	Southbound Thru		84	134	135	139	178	207	232	224	200	286	279	286	370	418	466	449
	Southbound Right		0	0	0	0	0	3	5	2	0	0	0	0	14	82	64	64
12	**Herndon Parkway (E/W) and Worldgate Drive (N/S)**																	
	Overall Intersection (Signalized)																	
	Eastbound Thru/Right		-	190	179	200	-	182	183	200	-	396	377	400	-	364	348	366
	Westbound Left	160	-	63	58	64	-	69	79	88	-	150	154	166	-	171	185	185
	Westbound Thru		-	55	63	71	-	364	433	493	-	176	184	216	-	562	578	570
	Northbound Left/Right		-	99	93	100	-	250	226	244	-	214	194	206	-	303	309	318
13	**Fairbrook Drive (N/S) and Park Drive (E/W)**																	
	Overall Intersection (AWSC)																	
	Eastbound Left/Right		-	-	0	0	-	-	0	0	-	-	0	0	-	-	0	0
	Northbound Left/Thru		-	-	0	0	-	-	0	0	-	-	0	0	-	-	0	0
	Southbound Thru/Right		-	-	4	5	-	-	2	2	-	-	30	31	-	-	27	25
14	**Exchange Place (N/S) and Road B (E/W)**																	
	Overall Intersection (TWSC)																	
	Westbound Left/Right		-	-	8	10	-	-	4	4	-	-	33	33	-	-	33	32

As shown in Table 19, the intersection of Herndon Parkway and 555 Herndon Parkway/575 Herndon Parkway has one (1) movement with a maximum queue that extends beyond the available storage that was previously contained under Future Conditions without Development (2027). The movement that begins to extend beyond the available storage exceeds the capacity by less than one (1) car length. It is noted that the average queue for this movement remains within the available storage.

Access Management Standards

Herndon Parkway is classified as a minor arterial with a posted speed limit of 35 mph. For the purposes of this assessment, Exchange Place was considered a local street with a posted speed limit of 25 mph. The required spacing for commercial accesses, intersections, and median crossovers as shown in Table 2-2 of VDOT's *Road Design Manual*, Appendix F are shown in Table 20.

It is noted that Herndon Parkway and Exchange Place are within the Town limits and are not maintained by VDOT. The access management and minimum spacing evaluation for the site entrances is presented for informational purposes only in Figure 29.

The spacing between Private Road B and the adjacent commercial entrance on Exchange Place does not meet the 50-foot minimum requirement between entrance radii. As such, a waiver request for the access spacing requirement for Private Road B will be submitted.

As shown on the Conceptual Development Plan, Alley 1 on Exchange Place will function as an emergency access only and will include removable bollards.

Table 20: Minimum Spacing Standards for Commercial Entrances, Intersections and Median Crossovers

Functional Classification	Design Speed (See Note 2)	Minimum Spacing (Distance) in Feet			
		Type 1 (Signalized)	Type 2 (Unsignalized/ Full Crossover)	Type 3 (Full Access /Directional Crossover)	Type 4 (Partial Access)
Principal Arterial	≤ 30 mph	1,050	880	440	250
	35 to 45 mph	1,320	1,050	565	305
	≥ 50 mph	2,640	1,320	750	495
Minor Arterial	≤ 30 mph	880	660	355	200
	35 to 45 mph	1,050	660	470	250
	≥ 50 mph	1,320	1,050	555	425
Collector	≤ 30 mph	660	440	225	200
	35 to 45 mph	660	440	335	250
	≥ 50 mph	1,050	660	445	360
Local Street	See Note 1				

Notes to Table 2-2:

1. **Local Street Spacing** – No commercial entrance shall be allowed within the functional area of an intersection without prior approval from the Engineer at the Residency or District. For commercial entrances on local streets (not individual private entrance driveways to homes), a spacing distance of 50 feet between entrance radii is specified to assure a minimum separation between such entrances (illustrated in Figure 4-11).

No commercial entrance shall be within 115 feet minimum measured from the outer edge of the inscribed circle of a Roundabout, without prior approval from the Engineer at the Residency or District. If an entrance is approved within the 115 feet of the outer edge of the inscribed circle it shall be "Right-In, Right-Out" Only (115' feet minimum is based on the stopping sight distance for 20 mph).



Figure 29: Intersection Spacing

Conclusions

The analysis presented in this report supports the following major findings:

TIS Components

- As determined based on discussions with the Town, a growth rate of one (1) percent per year was applied to major movements to account for a regional increase in background traffic.
- The proposed development is anticipated to generate approximately 155 trips during the AM peak hour, 153 trips during the PM peak hour, and 1,770 trips on a typical weekday with reductions. It is noted that the Mid-Day peak hour was not analyzed as agreed upon at the scoping meeting.
- The following approved yet unbuilt background developments were assumed to be in place by 2027:
    - Woodland Park East Block E – 560,000 SF of office and 20,000 SF of retail
    - 555 Herndon Parkway – 435 residential units, 200,000 SF of office, and 10,000 SF of retail
    - Parkview at Herndon Metro – 675 residential units, 413,000 SF of office, and 10,000 SF of retail
    - Herndon Hotel – 250 room hotel
    - Fairbrook Business Park (Phase 1) – 1,080 residential units, a 10,000 SF daycare and 10,000 SF of retail

Infrastructure

- Existing vehicular access is provided via one (1) full-access entrance on Exchange Place and one (1) full-access entrance on Herndon Parkway.
- Site access will continue to be provided via Exchange Place and Herndon Parkway.
- **2nd Submission Update:** The conceptual development plan has been changed since the 1st submission. Future site access on Exchange Place will now be provided via two (2) full-access entrances at Parallel Street and Private Road B.

Non-SOV Elements

- Four (4) bus routes provide service in the vicinity of the site, providing regional access to the area.
- Sidewalks exist along both sides of Herndon Parkway. The intersection of Herndon Parkway and Van Buren Street has crosswalks, curb ramps, and pedestrian signal heads on all approaches. The intersection Spring Street and Herndon Parkway have crosswalks, curb ramps, and pedestrian signal heads on all approaches.

Analysis Results

- For the purpose of this analysis, it is desirable to achieve an overall level of service (LOS) of D or better for each intersection and LOS E or better for each lane group at an intersection within the study area.
- One (1) intersection has movements that operate below acceptable levels of service during the Existing Conditions (2024) peak hours:
    - Intersection #4: Herndon Parkway and Sunset District (PM Peak)
- Three (3) intersections have movements that operate below acceptable levels of service during the Future Conditions without Development (2027) peak hours:
    - Intersection #2: Herndon Parkway and Spring Street (PM Peak)
    - Intersection #4: Herndon Parkway and Sunset District (AM and PM Peak)

- Intersection #10: Herndon Parkway and Van Buren Street (PM Peak)

- Two (2) intersections have movements that operate below acceptable levels of service during the Future Conditions with Development (2027) peak hours:
  - Intersection #4: Herndon Parkway and Sunset District (AM and PM Peak)
  - Intersection #10: Herndon Parkway and Van Buren Street (PM Peak)
- Two (2) intersections have movements that operate below acceptable levels of service during the Future Conditions with Development (2027) with 575 Herndon Parkway peak hours:
  - Intersection #4: Herndon Parkway and Sunset District (AM and PM Peak)
  - Intersection #10: Herndon Parkway and Van Buren Street (PM Peak)

Proposed Mitigation

- The proposed redevelopment does not cause any movements to begin to operate below acceptable levels of service; therefore, no mitigations are proposed at the study intersections.
- It is noted that the following transportation improvements are associated with the approved yet unbuilt Fairbrook Business Park development. These improvements are not anticipated to be in place by 2027.
  - Intersection #5: Herndon Parkway and Fairbrook Drive
    - Extend the existing left turning lane on southbound Herndon Parkway to a stacking length of 225 feet.
    - Construct a right turn lane on northbound Herndon Parkway.
- It is also noted that the Transit-Related Growth Small Area Plan proposes a new traffic signal at the intersection of Herndon Parkway and Sunset District.

Preliminary Signal Warrant Analysis – Herndon Parkway and Fairbrook Drive

- According to the proffer conditions for the Fairbrook Business Park development dated November 17, 2020, a traffic signal is to be installed prior to the issuance of a permanent certificate of occupancy for the New Building which generates the need for a signal.
- In order to determine if a signal is warranted at the intersection of Herndon Parkway and Fairbrook Drive (Intersection #5), a preliminary signal warrant analysis was conducted under future conditions for the following two (2) scenarios:
  - With Exchange Place and without Fairbrook Business Park (Phase 1)
  - With Fairbrook Business Park (Phase 1) and without Exchange Place
- A signal at Herndon Parkway and Fairbrook Drive would not be warranted with Exchange Place and without Fairbrook Business Park (Phase 1), but would be warranted with Fairbrook Business Park (Phase 1) and without Exchange Place.
- It is noted that the Exchange Place development site trips account for approximately 4.0 percent of the Future with Development (2027) intersection volume during the AM peak hour and approximately 3.1 percent of the intersection volume during the PM peak hour at Intersection #5.

Potential Mitigations – Herndon Parkway and Sunset District

- The intersection of Herndon Parkway and Sunset District (Intersection #4) currently operates below acceptable levels of service under Existing Conditions (2024). As requested by the Town, a potential mitigation scenario is provided for informational purposes.
- Intersection #4 currently operates under two-way stop control. The westbound left/through movement operates below acceptable levels of service during the PM peak hour under Existing Conditions (2024) and operates below acceptable levels of service during both peak hours under Future Conditions without Development (2027).
- The Exchange Place development's impact to the intersection is anticipated to be minimal:
    - The Exchange Place development's site trips do not cause the intersection to operate below acceptable levels of service.
    - During the AM peak hour, the delay increase for the westbound left/through movement between the Future without Development and Future with Development scenarios is 9.9 seconds.
    - During the PM peak hour, the delay increase for the westbound left/through movement between the Future without Development and Future with Development scenarios is 14.9 seconds.
- It is noted that the Exchange Place development site trips account for approximately 3.3 percent of the Future with Development (2027) intersection volume during the AM peak hour and approximately 2.5 percent of the intersection volume during the PM peak hour at Intersection #4.
- Intersection #4 was analyzed with a traffic signal as a potential mitigation measure:
    - The results indicate that with a traffic signal, all movements operate at acceptable levels of service during both peak hours.