2/28/2012
ADOPTED BY THE TOWN COUNCIL
TOWN OF HERNDON, VIRGINIA

HERNDON METRO STATION AREA STUDY

PREPARED FOR

Town of Herndon, Virginia

PREPARED BY

Vanasse Hangen Brustlin, Inc.
Looney Ricks Kiss
BBP & Associates, LLC

TOWN OF HERNDON, VIRGINIA

HERNDON METRO STATION AREA STUDY

ACKNOWLEDGEMENTS

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The project staff wishes to thank the Herndon community and to acknowledge the many valuable contributions during the public process to draft the Herndon Metro Station Area Study.

This report is included by reference in the Herndon 2030 Comprehensive Plan. For more context and guidance about the Herndon Transit-Oriented Core, please see the Land Use and Transportation Sections of the comprehensive plan.

SUMMARY

The Herndon Metro Station Area Study provides for significant redevelopment in a "Transit Oriented Core" that corresponds with the Metrorail Station Urban Development Area (UDA) designated in the Herndon 2030 Comprehensive Plan, as amended on February 28, 2012. The Core is confined to 9 land parcels south of Herndon Parkway in the general vicinity of the Metro station entrance. The Area Study horizon extends to the year 2035 and the plan focuses on major mixed use redevelopment with acceptable traffic performance. The Area Study finds that the core parcels are financially feasible to redevelop at densities that range from 3.8 to 4.3 FAR. The highest densities would be anticipated in the areas where developers may achieve infrastructure such as major pedestrian promenades, the extension of Worldgate Drive to Herndon Parkway and various interparcel connections for pedestrians, bicycles and vehicles.

The study also recognizes the potential for long-term redevelopment in a larger area beyond the core, which is the Transit Related Growth (TRG) area. However, redevelopment in this area is contingent upon major regional transportation improvements that will require cooperation and support from Fairfax County and the Virginia Department of Transportation. Additional analysis of other infrastructure components would also precede any designation for redevelopment in the TRG area.

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LIST OF ACRONYMS AND TERMINOLOGY

ACRONYMS

ADT..... Average Daily Traffic

BBP..... BBP & Associates LLC

BMP ..... Best Management Practices

CIP ..... Capital Improvements Program

CTPP ..... Census Transportation Planning Package

DPW..... Herndon Department of Public Works

FAR ..... Floor Area Ratio

FEMA..... Federal Emergency Management Agency

HERCP ..... Horizontal Elliptical Reinforced Concrete Pipe

HTOC..... Herndon Transit-Oriented Core

ITE ..... Institute of Transportation Engineers

kV ..... Kilovolt

LED ..... Light-Emitting Diode

LEED ..... Leadership in Environmental and Energy Design

LID ..... Low Impact Design

LOS ..... Level of Service

LRK..... Looney Ricks Kiss

MGD..... Million Gallons per Day

MWAA ..... Metropolitan Washington Airports Authority

MWCOG ..... Metropolitan Washington Council of Governments

NA ..... Not Applicable

NRCS..... National Resources Conservation Services

NVSWCD ..... Northern Virginia Soil and Water Conservation District

O&LI ..... Office and Light Industrial zone

PD-B..... Planned Development–Business zone

PD-W..... Planned Development–Worldgate zone

R10..... Residential zone

RCP ..... Reinforced Concrete Pipe

ROW..... Right-of-Way

RPA ..... Chesapeake Bay Resource Protection Area

SF ..... Square Feet

TAZs..... Traffic Analysis Zones

TBD..... To Be Determined

TDM..... Transportation Demand Management

TOD ..... Transit-Oriented Development

TRG..... Potential Transit Related Growth Area

UDA..... Urban Development Area

VDRPT..... Virginia Department of Rail and Public Transportation

VHB ..... Vanasse Hangen Brustlin, Inc.

W/S..... Water/Sewer

W&OD ..... Washington and Old Dominion Railroad Regional Trail

WMATA..... Washington Metropolitan Area Transit Authority

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EXECUTIVE SUMMARY

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INTRODUCTION

Beginning in May 2010, the Town of Herndon embarked on a comprehensive planning effort aimed at developing a long-range plan that will guide future redevelopment in the area north of the proposed Herndon-Monroe Metro station scheduled to begin operating in 2017 (the "Metro Station"). The introduction of Metrorail service in Herndon offers a unique opportunity to not only connect the town to the broader metropolitan Washington DC region, but to also consider the next generation of land uses and development patterns for land in close proximity to the Metro Station. Across the country, towns, and municipalities like Herndon have led "smart growth" planning efforts, such as Transit-Oriented Development (TOD) around their transportation centers or hubs. TOD best utilizes existing and/or planned infrastructure by encouraging a mix of land uses at high densities, such as residential, office, support retail, and restaurants within walking distance of a transit hub. The Town had the foresight to plan ahead and to set the vision for this important part of its community in order to capture the unique opportunities that transit and TOD will bring to Herndon.

The result of these efforts is a plan that will encourage and guide new development as a means of translating the community's and Town's vision for the Metro Station area (the "Area Plan"). The planning process included an evaluation of existing conditions, research of other TOD projects, development and evaluation of potential development alternatives, traffic, infrastructure, financial and fiscal impact analyses, and an extensive public outreach effort, including interviews with property owners and public workshops. The Area Plan identifies new prospects for economic growth and outlines recommendations for future development and public improvements.

AREA PLAN BACKGROUND AND PLANNING PROCESS OVERVIEW

The Dulles Corridor Metrorail Project is one of the key initiatives that spurred interest for the Town to consider potential TOD within Herndon. The Metro Station is one of 11 new stations planned as part of this project (Figure ES.1). The Town recognized this opportunity and incorporated goals and objectives for TOD as part of its *2030 Comprehensive Plan* adopted in August of 2008. This lead to the identification of this study.

WHAT IS TRANSIT-ORIENTED DEVELOPMENT?

TOD creates mixed-use, higher density communities that encourage people to live, work, and shop near transit; thereby, decreasing their dependence on driving. There are certain characteristics that successful TOD projects have in common. A key characteristic is that there must be a mix of uses, generally at high densities, that includes retail, office, and housing with those land uses arranged to concentrate activity in close proximity to the transit station. The land use mix falls into two categories: (i) housing and employment – uses that generate transit ridership; (ii) and convenience retail and service – uses that support the riders and area residents.

TOD promotes and supports transit use, which has the effect of reducing automobile dependence. TOD promotes a more efficient use of land and infrastructure through its compact design, and encourages infill and redevelopment opportunities that can revitalize a community. TOD fosters a sense of place through the creation of mixed-use centers that combine residential uses with economic activity. By requiring high quality urban design and safe, attractive pedestrian connections between uses, TOD creates a vibrant sense of place. TOD that combines a variety of housing alternatives with diverse economic activity provides both employment and living options for a wide range of people.[1]

INITIATING THE AREA PLAN PLANNING PROCESS

Consistent with the *2030 Comprehensive Plan*, the Town was proactive in establishing a planning study area and a process to set a vision for development north of the new Metro Station. The following sections identify the Area Plan study area and describe the three-phased planning process.

STUDY AREA

The study area changed during the course of the planning process. Initially, it consisted of 183 acres and was divided into two sub-areas, in part due to the goals and objectives that were identified in the *2030 Comprehensive Plan* for the Herndon Metro Station Area (the "Initial Study Area"). With that in mind, the Initial Study Area included: the Immediate Station Study Area; and the Abutting Study Area. Refer to Figure ES.2 for the context area map and Figure ES.3 for the two-part Initial Study Area in relation to the Metro Station. As part of the planning process, it was determined that the Herndon Metro Station Area would be reduced to focus efforts on the land that is in close proximity to the Metro Station. The Initial Study Area was eventually reduced from 183 to 110 acres (referred to herein as the

1. http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-tod.html

Figure ES.1 | Regional Context Area Map

Source(s): City of Herndon GIS, ESRI

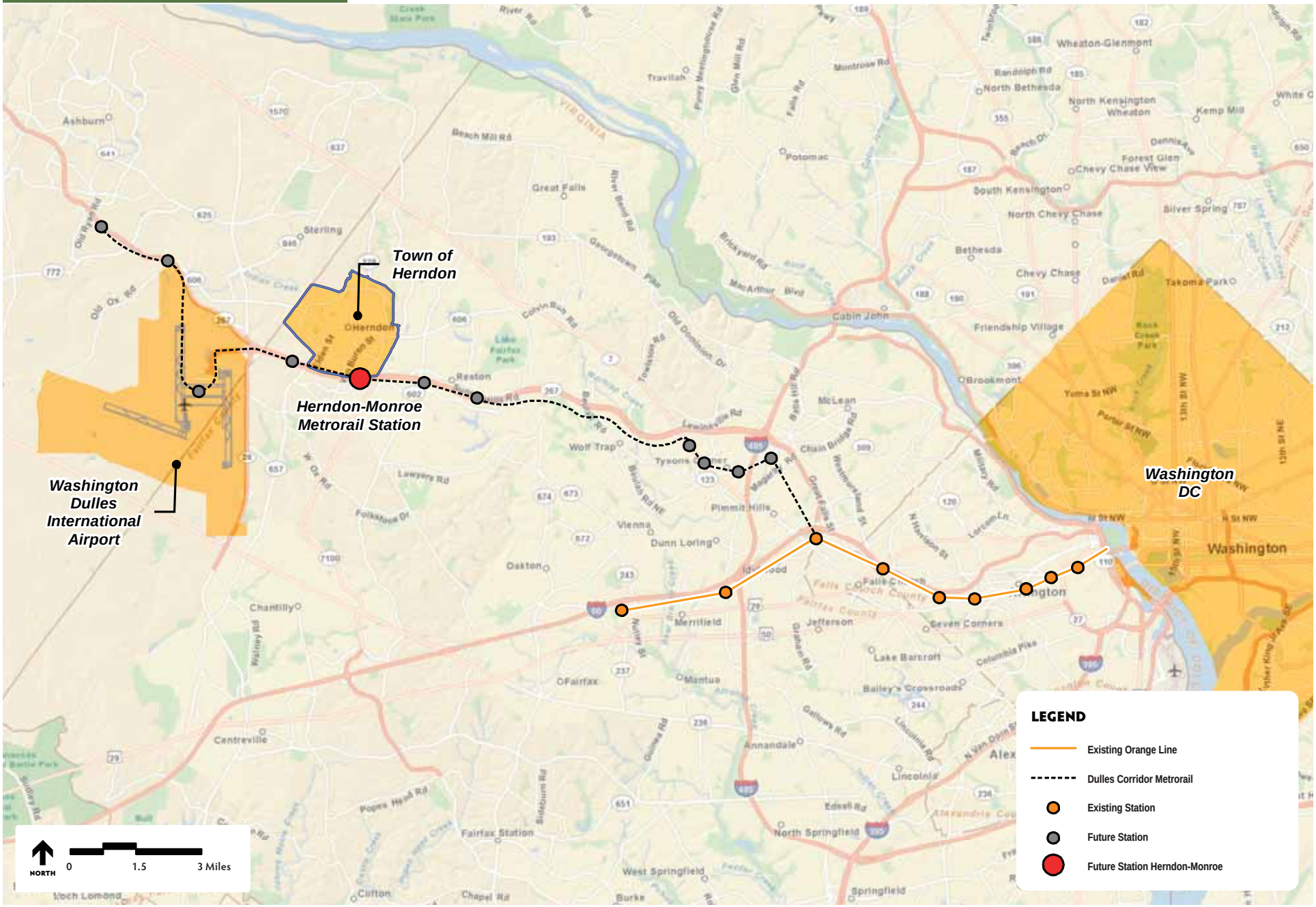


Figure ES.2 | Context Area Map

Source(s): City of Herndon GIS, ESRI

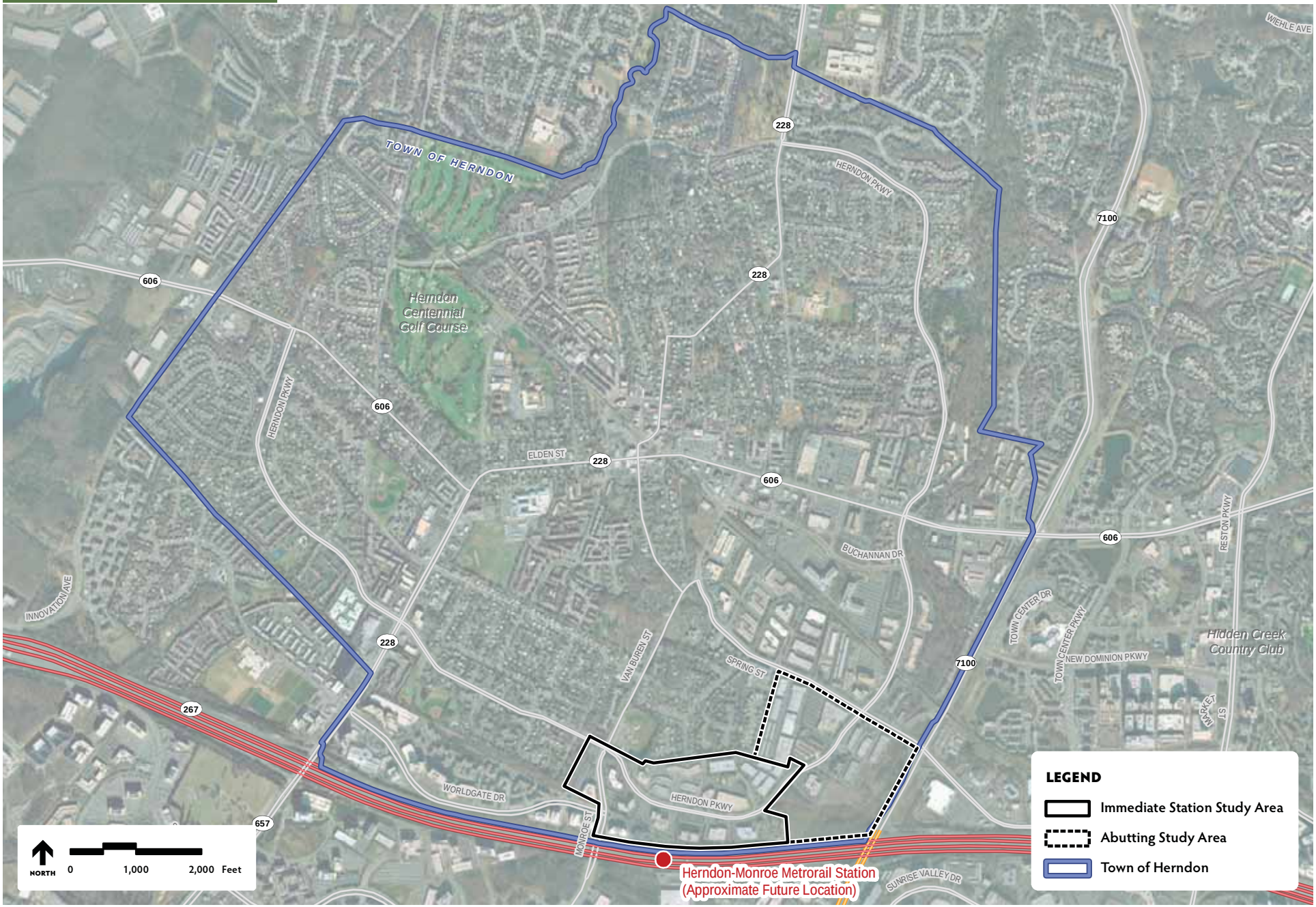
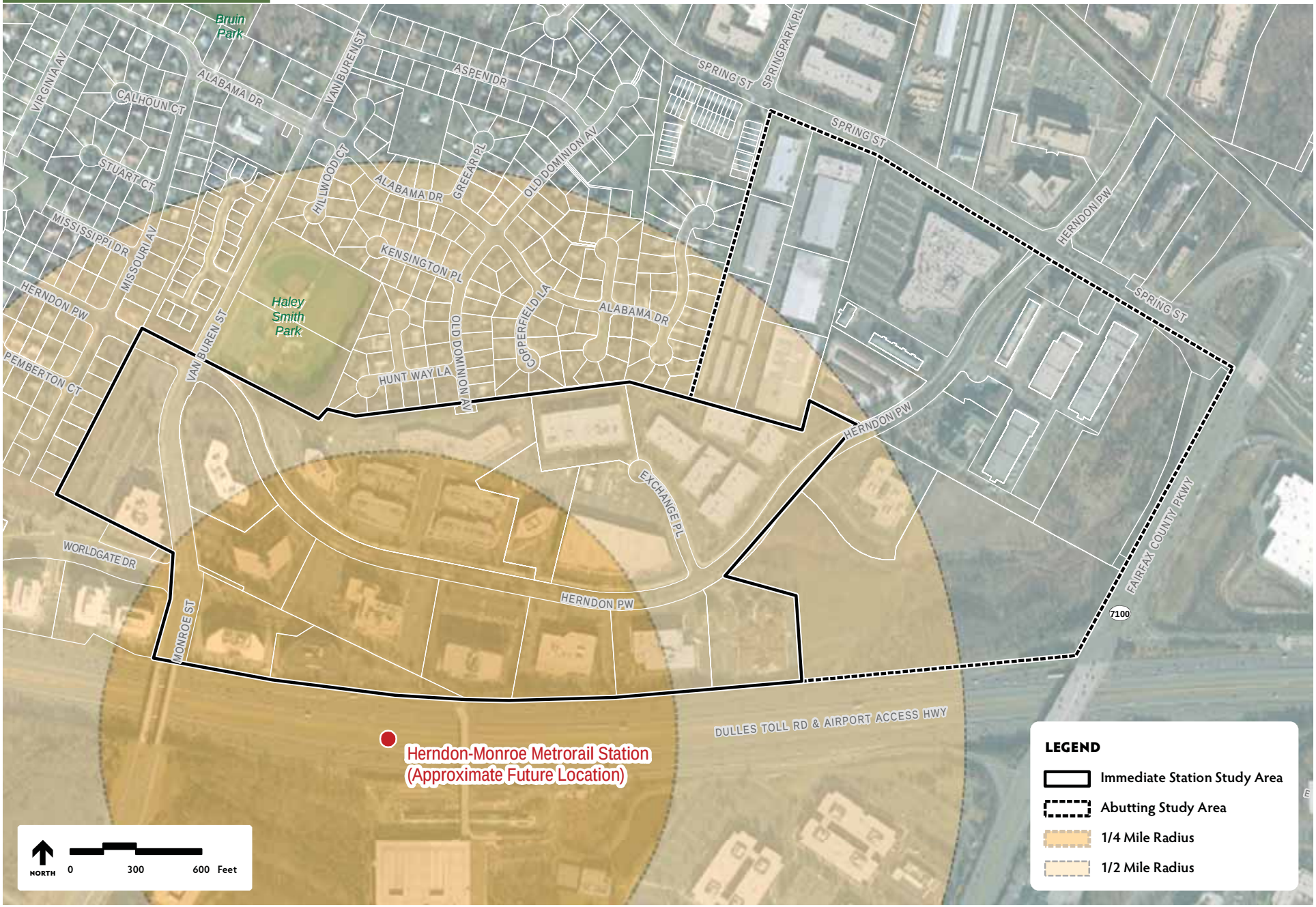


Figure ES.3 | Initial Study Area

Source(s): City of Herndon GIS, ESRI



"Refined Study Area") and then again to approximately 38 acres to include properties closest to the Metro Station –the Herndon Transit-Oriented Core (referred to herein as the "HTOC" or "Core").

THE AREA PLAN PLANNING PROCESS

Preparation of the Plan was done in three key phases:

- The "Discovery" phase, which included an analysis of the regulatory context (i.e., zoning) and existing physical conditions to identify potential constraints or challenges to development in the Initial Study Area. Another component of the Discovery phase entailed gaining a comprehensive understanding of TOD from an economic standpoint to determine the densities and land uses appropriate to support transit ridership, promote a sense of place, and provide synergies between land uses;
- The "Options" phase, which included the development of two preliminary Area Plan alternatives based on the findings from the "Discovery" phase as well as input received from the Planning Commission and participants at the first public workshop; and
- The "Decision" phase, which involved the process of selecting, refining, documenting, and analyzing the final Area Plan which evolved from the alternatives developed as part of the "Options" phase (the "Herndon Transit-Oriented Core Plan", or "HTOC Plan").

Integral to all three key phases was the public outreach effort. This effort was critical in understanding the key issues and opportunities as well as gaining acceptance of the Area Plan from local residents and business owners.

PUBLIC PROCESS

Extensive community outreach was conducted throughout the comprehensive planning process in an effort to involve the community in the planning process and to solicit input and feedback on the development of the Area Plans. Outreach efforts included public workshops held in July and November of 2010, numerous neighborhood meetings, and the creation of a project website. Additionally, numerous Town Council and Planning Commission meetings and work sessions were held to discuss aspects of the Area Plans and the planning process. Together, these efforts resulted in ideas that helped shape the creation of the HTOC Plan.

A VISION FOR THE AREA PLAN

During the course of the planning process, the town and Planning Commission met to establish a Vision Statement, guiding principles as well as specific goals and objectives to guide development in the Herndon Metro Station Area. Associated goals and objectives are presented in Chapter 1, *Project Background* and Goals while additional principles and guidelines are included in Chapter 6, *Herndon Transit-Oriented Core Plan*.

VISION STATEMENT

The Herndon Transit-Oriented Core is a distinctive potential employment center and residential neighborhood characterized by concentrated development that is vibrant, mixed use, transit-oriented and pedestrian friendly. Emerging development is interwoven with and strengthens the town's cultural fabric and sense of identity.

GUIDING PRINCIPLES

- There should be no decrease in employment, value of development, or commercial floor area existing in 2011.[2]
- Concentrated development in the HTOC should reinforce the quality of life, sense of community, engagement of citizens, economic prosperity of other commercial areas, and other features that comprise the character and fabric of the town.
- Redevelopment to create TOD must be facilitated over the long term and is likely to involve phases of development and capital improvements.
- The HTOC should complement reinvestment in the Downtown and other parts of town.
- Future redevelopment in the HTOC should be viewed as a means to support the existing comprehensive plan goals to enable Herndon to be a leader in environmental stewardship for the region.

GOALS FOR THE HERNDON TRANSIT-ORIENTED CORE

The HTOC should:

- Reflect Herndon's unique identity and be distinct from other Metro stations.
- Enable land uses that will help optimize for the town the investment in transit.
- Balance protection of surrounding neighborhoods with the need for mobility connections from the HTOC to the rest of Herndon and the region.
- Enhance and encourage use of non-auto modes of travel within the town.
- Enable the town's internal system of sidewalks, streets, and trails to connect to mass transit.

2. Pertains to Dulles Corridor Metrorail Phase Two Transportation Improvement District, as adopted by the Town of Herndon and Fairfax County.

- Provide housing choices within the TOD for those attracted to compact, mixed-use, walkable neighborhoods with nearby transit availability.
- Recognize the need for interjurisdictional collaboration as the HTOC is predicted to serve a community larger than the Town of Herndon alone.
- Promote redevelopment and design that will enhance the aesthetic qualities of the town.

OBJECTIVES FOR THE HERNDON TRANSIT-ORIENTED CORE

- Enable only the amount of development that can be served by street improvements that are (a) within the type of street features currently used by town (excluding grade-separated interchanges, displaced left turn lanes, triple left turn lanes, or flyovers) and (b) of a cost reasonable for funding in the foreseeable future when development is anticipated to occur. This objective is not intended to restrict the Mayor and Town Council in requesting any type of street improvement through the regioanl transportation planning precess.
- Minimize traffic impacts of TOD development on nearby neighborhoods. Elicit restricted parking (residential permit parking) requests from neighborhoods in an effort to preclude commuter parking in those neighborhoods.
- Provide access improvements to the HTOC with priority given to: (i) pedestrians; (ii) bicyclists; (iii) transit users (buses); and (iv) private vehicles (single occupancy vehicles and carpools).
- Improve bus, bicycle, and pedestrian connectivity for those using the Metro Station; include links to Herndon neighborhoods as well as to areas outside the town limits.
- Participate in multi-jurisdictional Transportation Demand Management (TDM) program to monitor the achievement of regional and individual TDM measures.
- Link the Metro Station Area to other parts of Herndon by:
  - Encouraging Fairfax County to provide enhanced local bus and trolley service.
  - Enhancing the pedestrian and bicycle environment.
  - Providing direct trail linkages to the Metro Station.
- Distinguish the Metro Station Area with unique architecture, streetscape and landscape of the highest caliber and conforming to the design criteria, such as:
  - Avoid uniformity of building mass, style, and appearance.
  - Establish an urban street edge with wide multi-purpose sidewalks for core streetscapes.
  - Require multi-story parking structures otherwise visible at street level to enhance the pedestrian street experience, by such methods as being wrapped with buildings.
  - Present a pedestrian friendly and inviting image with no unadorned parking structures or vehicle areas clearly visible from streets or pathways.
- Create active streetscapes and storefronts, including incorporation of storefronts and building entrances on the ground floor of podium parking decks and other parking facilities.
- Incorporate street level landscaping, green roofs, and improved storm water management systems to assist the town's goals of achieving increased tree canopy and meeting Chesapeake Bay stormwater management requirements.
- Forge collaborative relationships between representatives of the town and affected properties including adjacent neighborhoods to help achieve the vision for the Metro Station Area.
- Establish a system in which prospective developers within the Metro Station Area provide an evaluation of community benefits to reveal how proposed development will aid other commercial areas in town (such as by a multiplier effect), improve the quality of life in the town, and create more revenue than expenses to the local jurisdictions.
- Develop a classification of features and public amenities required for redevelopment to achieve densities approaching the maximum Floor Area Ratio (FAR) permitted within the HTOC.

EXISTING CONDITIONS AND DEVELOPMENT OPPORTUNITIES

As part of the "Discovery" phase, an analysis of the regulatory context and existing physical conditions was undertaken to identify potential constraints or challenges to development in the Herndon Metro Station Area. Existing physical conditions evaluated included: soil types and stormwater runoff conditions; natural resources; water and sewer infrastructure; utilities; transportation system and traffic conditions; and urban design conditions. Existing zoning and other land use regulations were also evaluated and documented. Figure ES.4 illustrates the urban design issues and opportunities, such as gateways, connections to Downtown Herndon, land elevation, environmental resources, views, future connections to the Metro Station, and noise and transitional areas/residential buffers.

Figure ES.4 | Urban Design Issues and Opportunities

Source(s): City of Herndon GIS, ESRI

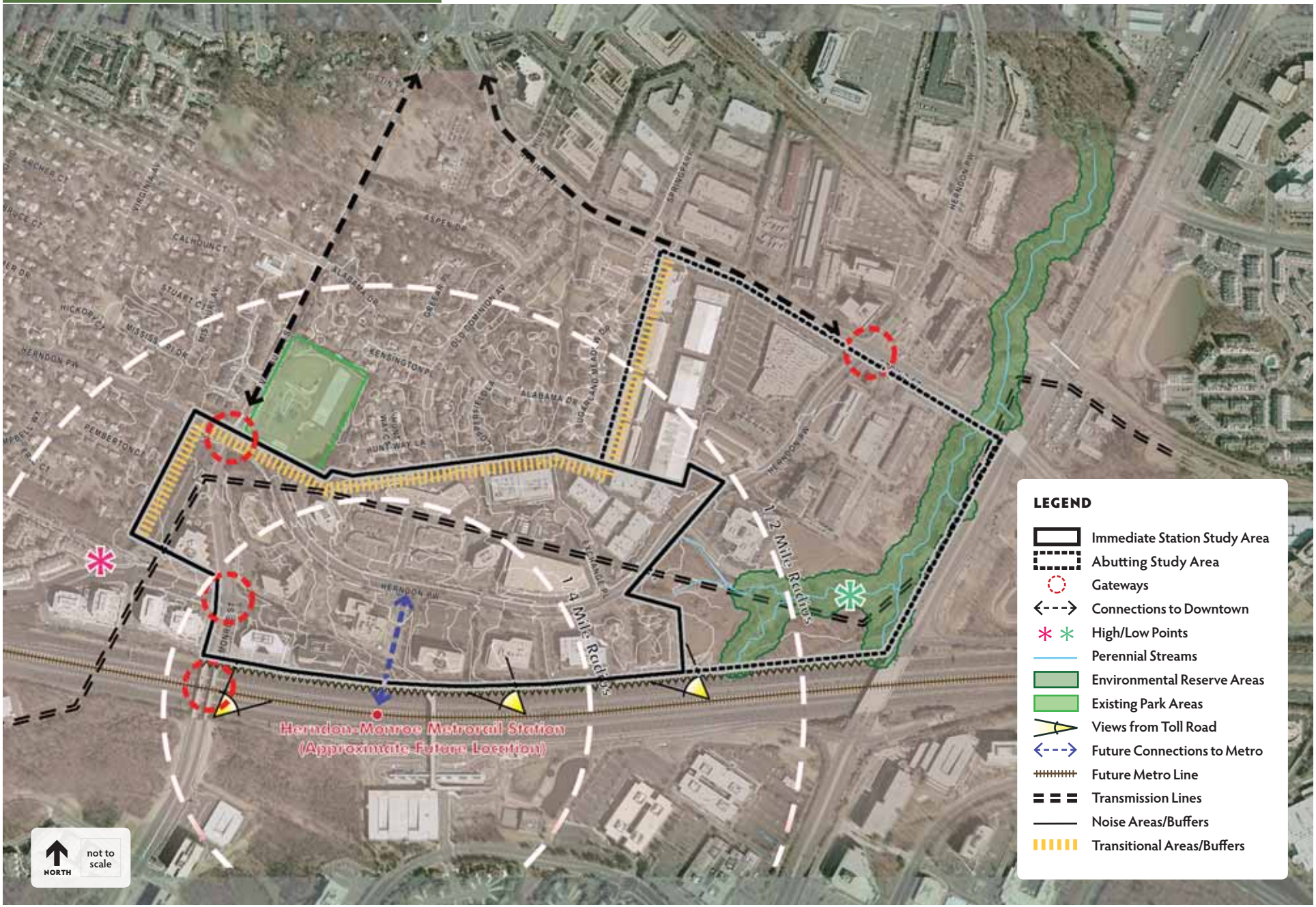


Table ES-1 | Area Plan 1 and 2–Land Use Mix

Land Use	PERCENT OF OVERALL DEVELOPMENT Area Plan 1	PERCENT OF OVERALL DEVELOPMENT Area Plan 2
Retail	1.7%	1.8%
Office	38.7%	38.5%
Residential	49.6%	49.2%
Hotel	9.5%	9.6%
Civic	0.5%	0.9%

Table ES-2 | Area Plan 1 and 2–Target FARs

Area	FAR Area Plan 1	FAR Area Plan 2
Buffer	0.7 (per current zoning)	0.7 (per current zoning)
Transition	2.5	3.0
Herndon Metro Station Core	2.5	4.5

Refer to Figures ES.5 and ES.6

The "Discovery" phase also included the identification of development opportunities and recommendations for TOD in Herndon. Best practices from TOD industry literature, the lessons learned from the case studies, and input received from the property owners were considered along with the project team's general experience with TOD to provide observations about future densities and land uses in the station area. The four existing station area case studies that were evaluated included: Clarendon, Virginia; Silver Spring, Maryland; Prince George's Plaza, Maryland; and Wheaton, Maryland. Eight major commercial property owners or their representatives were interviewed in an effort to understand the likelihood of redevelopment of commercial properties in the area closest to the Metro Station.

Based upon the review of industry literature, case study evaluations, and property owner interviews, observations and recommendations were identified that helped guide the formulation of the Area Plan. The observations and recommendations for which the alternative area plans are based are as follows:

- It is important that densities and land uses allowed in the Herndon Metro Station Area support transit ridership, promote a sense of place, and provide synergies in that each additional use supports other uses in the vicinity.
- Densities should be considerably higher than current average densities (a minimum average FAR of 3.0 to 4.0 was recommended prior to financial and fiscal testing of the viability of redevelopment given such densities).
- A mix of land uses is recommended, including residential, retail and office. This mix could be expanded with related uses such as hotel or civic uses.
- A specific percentage mix of uses is not prescribed based upon the assumption that the future market will dictate that mix. (Note: No market study was conducted as part of the economic analysis.)
- Herndon will likely continue to maintain the Herndon Metro Station Area's identity as a strong choice for office-based companies with office spaces, but will expand to offer housing, retail shops, and restaurants.
- Herndon's position for retail and restaurant development will be best met through development of neighborhood-oriented rather than regionally-oriented retail and restaurant uses. The minimum square feet of retail and restaurant uses typically found in a neighborhood shopping center is 30,000 square feet, although most are between 30,000 to 100,000 square feet.
- No minimum thresholds for housing or office development are recommended to create critical mass.

AREA PLAN ALTERNATIVES

The "Options" phase entailed the creation of two preliminary alternative Area Plans. These alternatives (Area Plan 1 and Area Plan 2) were based on the findings from the existing conditions and development opportunities identified during the "Discovery" phase as well as input received from the Planning Commission and participants at the first public workshop. A Framework Diagram was prepared to establish the "framework" of what was to be included in each alternative. Each Framework Diagram identifies goals for densities, or FAR, throughout the Herndon Metro Station Area.

In addition, mixes of land uses were identified based on the findings from the development opportunities analysis.

The goals for FARs and land uses were discussed with the Planning Commission in a work session in September 2010 where two Framework Diagrams were presented. Each Framework Diagram identified target FARs for three sub-areas of the Herndon Metro Station Area. The sub-areas included:

- **Herndon Metro Station Core Area** – For the area closest to the Metro Station, consider a higher density (a target of average FAR of 2.5 for Area Plan 1 and average FAR of 4.5 for Area Plan 2).
- **Transition Area** – For the area to the north and east of the Metro Station, consider an area of transitional density and height between the higher density area and the area where currently permitted zoning would be retained along the northern edge of the Herndon Metro Station Area (a target maximum FAR of 2.5 for Area Plan 1 and FAR of 3.0 for Area Plan 2).
- **Buffer Area** – For the area along the northern edge of the Herndon Metro Station Area, retain currently permitted zoning for any land that abuts residentially zoned land (FAR of 0.7).

Based on the Framework Diagrams, the Area Plan alternatives were developed. Tables ES-1 and ES-2 summarize the framework recommendations for land uses mix and FAR for the Area Plan alternatives and Figures ES.5 and ES.6 show the Illustrative Plans for Area Plan 1 and 2, respectively.

Area Plans 1 and 2 were presented at the November 8, 2010 public workshop. Over 100 participants were in attendance. Based on the group break-out discussions and report backs, a series of common themes emerged which included:

- Ensure pedestrian connectivity internally and to surrounding community
- Higher densities along Toll Road while scaling back density adjacent to residential neighborhoods.
- Minimize noise impacts on adjacent residential neighborhoods
- Extend Worldgate Drive
- Incorporate additional bicycle accommodations/facilities
- Green connections/buffers are important

FINANCIAL AND FISCAL IMPACT ANALYSIS

After extensive community input—which included neighborhood and business owners meetings—Area Plans 1 and 2 were dismissed. In January 2011, a joint meeting was held with the Planning Commission and Town Council to review the comments received on Area Plans 1 and 2 with the goal of providing direction on creating a revised Framework Diagram with a new targeted mix of land uses and FARs. The Town decided to investigate the financial viability and fiscal impact of this revised land use mix and FARs, which included a Financial and Fiscal Impact Analysis.

KEY FINDINGS

The financial analysis revealed that, dependent on the rate of return, from two to nine properties assumed to be redeveloped by 2035 would be incentivized to redevelop, given assumptions made in the analysis. The positive residual equity generated by the development of the nine properties was found to have the potential to fully fund public infrastructure costs associated with redevelopment. By comparison, if only two properties redevelop, the positive residual equity they generate could potentially cover 20 percent of estimated infrastructure costs.

Table ES-3 | Herndon Transit-Oriented Core Plan–Land Use Mix

Land Use	By 2035
Retail	3%
Office	50%
Residential	41%
Hotel	6%

The fiscal analysis used the same development program assumptions used for the financial analysis. It was determined that fiscal balance was achieved under this redevelopment scenario, with annually recurring net revenues in excess of expenditures. Annually recurring public expenditures were found to be covered by public revenues, resulting in net revenues in excess of expenditures of nearly $6.7 million cumulatively based on development of all nine properties assumed to occur by 2035. If all nine properties redevelop, an estimated $32.7 million in potential proffers was estimated, which could fully cover the estimated infrastructure costs of $12.8 million. If only two properties redevelop, 20 percent of the $12.8 million in infrastructure costs could be covered by an estimated $2.5 million in associated potential proffers. Alternatively, approximately 15 percent of the $6.7 million in net revenues in excess of expenditures could finance the $12.8 million in infrastructure costs through the issuance of bonds.

Figure ES.5 | Area Plan 1—Proposed Plan and Land Use

Illustrative Plan

LEGEND

- Building
- Parking Structure
- Parking Lot

Land Use

LEGEND

- Residential
- Residential over Retail
- Retail
- Office over Retail
- Office
- Hotel
- Civic
- Parking Structure

Figure ES.6 | Area Plan 2—Proposed Plan and Land Use

Illustrative Plan

LEGEND

- Building
- Parking Structure
- Parking Lot

Land Use

LEGEND

- Residential
- Residential over Retail
- Retail
- Office over Retail
- Office
- Hotel
- Civic
- Parking Structure

HERNDON TRANSIT-ORIENTED CORE PLAN

The last and final phase of the planning process, the "Decision" phase, involved the process of selecting, refining, and documenting the final TOD plan (the HTOC Plan). The HTOC Plan emerged from the analysis of several alternatives. The process was guided by public input and Town Council and Planning Commission direction including the Commission's directive to further analyze the land use mix and possible land use intensity by undertaking a financial impact analysis. After considerable study, roadway capacity was used to establish a target density, which was then tested for financial viability. The resulting plan factored in the capacity of the existing and proposed roadway, transit improvements, the land use mix developed through guidance from the public, current and previous Town Councils, the Planning Commission, and data from the study of successful TODs, and a revised financial impact analysis. The HTOC represents a significantly reduced development area of approximately 38 acres consisting of nine properties concentrated around the Herndon Metro Station North Entrance Pavilion.

The Framework Diagram for the HTOC Plan is illustrated in Figure ES-7. This revised Framework Diagram, which range in FARs (3.8 to 4.3) and mix of uses. It is anticipated that the highest density (FAR 4.3) would be closest to the Metro Station or on sites associated with high infrastructure costs (i.e., new roads). Lower densities would be further away from the Metro Station and closer to the edge of the Core. It should be noted that parking garages are not counted towards the calculation of FAR. The gross building floor area of land uses as a share of total floor area in the HTOC assumed for study purposes is presented in Table ES-3. This mix is not intended to be required of individual projects. Based on the target FAR range, in 2035, the average FAR will be 4.1 resulting in potentially 3.7 million square feet of commercial floor area and 2,357 mid-rise or high-rise dwelling units.

This potential development program was then analyzed in terms of financial feasibility and fiscal impact. The financial and fiscal analysis considered infrastructure needs and transportation improvements based on infrastructure demand and traffic impact analyses, respectively. While this plan accepts the influence of market demand on the mix of uses, the area should have a balance of uses to ensure its vibrancy. Neither 100 percent residential nor 100 percent non-residential uses would be appropriate in the area as it transforms from its current development pattern. The HTOC Plan, as shown in Figure ES.8, represents a conceptual vision for TOD in the Herndon Metro Station Area. Specifically, the plan depicts the broad goals for the Herndon Transit-Oriented Core. A three-dimensional computer massing model was also created for the HTOC land is presented as Figure ES.9. The illustration is based on the urban design concepts and density assumptions in the plan, focusing on the HTOC (a range of FAR 3.8 to 4.3). Figure ES.9 shows how the buildings of the HTOC Plan could be accommodated within 12 to 15 stories throughout the HTOC (based on the assumption that lot coverage could be as high as 70 percent, or more). The frontage along the south side of the Herndon Parkway is urbanized with a street wall and bicycle and pedestrian improvements. The building massing shows how each building will have a lower tier that frames the public space and how they generally utilize setbacks at the at the four- and eight-story levels to give a more open feel to the streets and public areas.

The HTOC Plan is intended to be used as a guide when considering future development. It functions as a resource to set general parameters for urban design, including building heights, setbacks, public spaces, pedestrian and vehicular access, and parking. It is anticipated that the Town will update its zoning standards to reflect the parameters included in the HTOC Plan; thereby, guiding the Town and developers towards implementing the Plan.

TRANSPORTATION IMPACTS AND IMPROVEMENTS

In order to provide inputs to the cost estimating and financial models, a transportation analysis of the HTOC Plan was conducted to identify the required roadway infrastructure improvements. This analysis also helped evaluate the compatibility of the resulting road network with the urban design character and the overall TOD goals.

Results of the transportation analysis indicate that the HTOC Plan can be accommodated with intersection-focused road improvements of moderate scope. Mobility for drivers could be maintained without significant impacts to pedestrian, bicycle, or bus operations; however, the Area Plan establishes a priority for access to the HTOC with the highest priority going to pedestrians and bicyclists. Figures ES.10 and ES.11 illustrate the proposed transportation improvements.

Figure ES.7 | Herndon Transit-Oriented Core Plan—Floor Area Ratio Framework Diagram

Source(s): City of Herndon GIS, ESRI

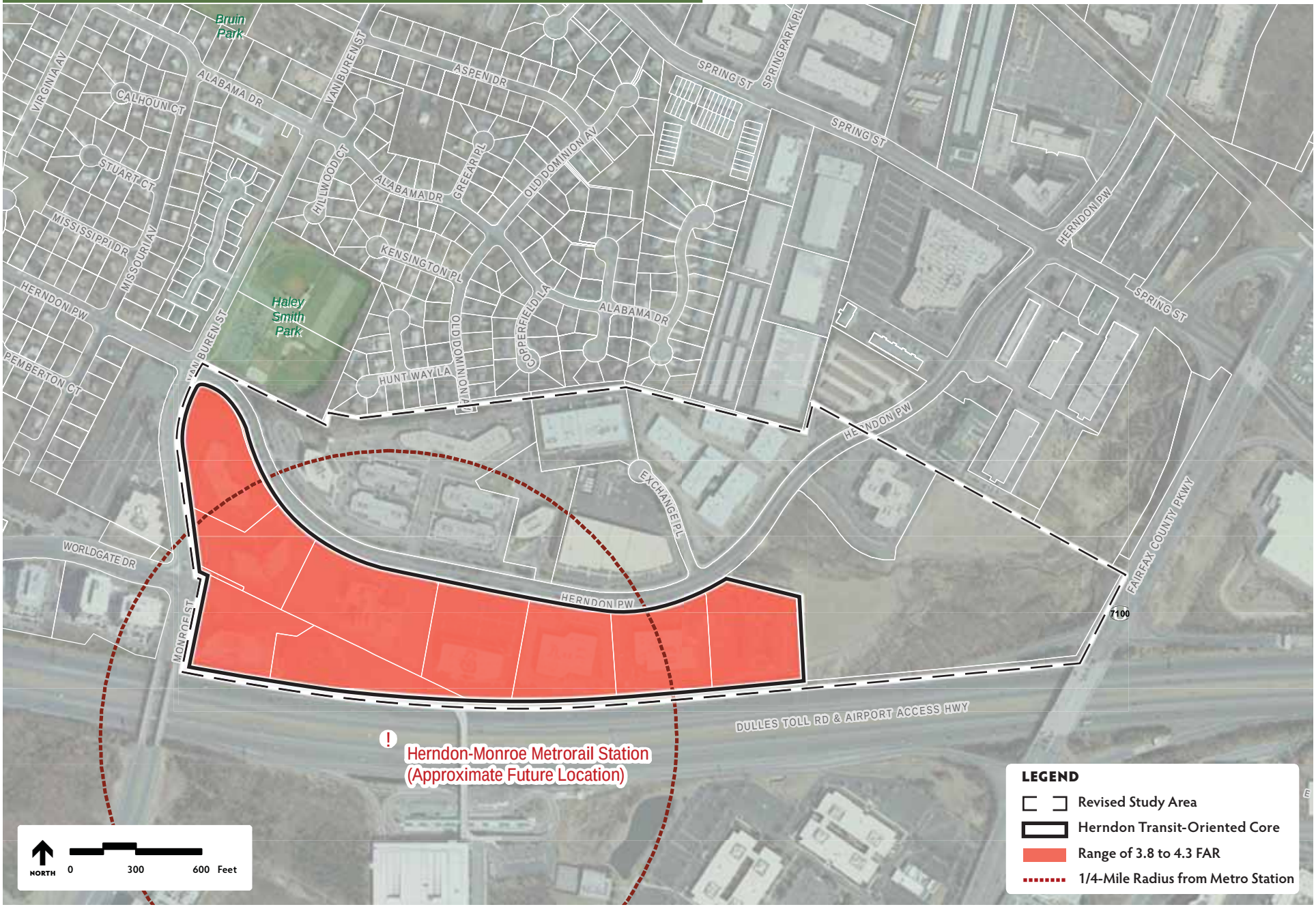


Figure ES.8 | Herndon Transit-Oriented Core Plan

Figure ES.9 | Herndon Transit-Oriented Core Plan—Conceptual Massing

Looking east along Worldgate Drive

Looking north along Herndon Metro Promenade

Figure ES.10 | Herndon Transit-Oriented Core Plan—Transportation Improvements (West)

Source(s): City of Herndon GIS, ESRI

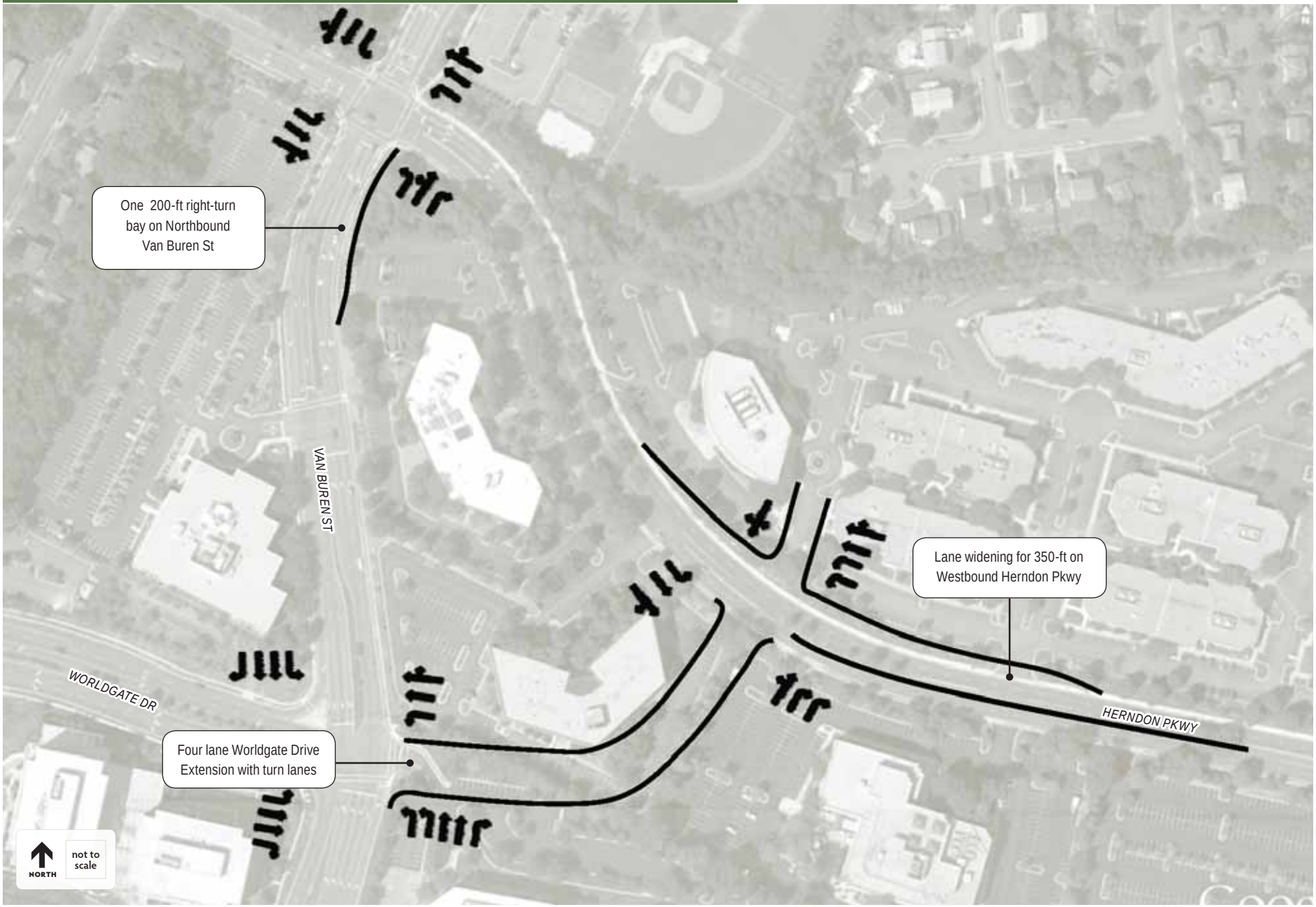


Figure ES.11 | Herndon Transit-Oriented Core Plan—Transportation Improvements (East)

Source(s): City of Herndon GIS, ESRI

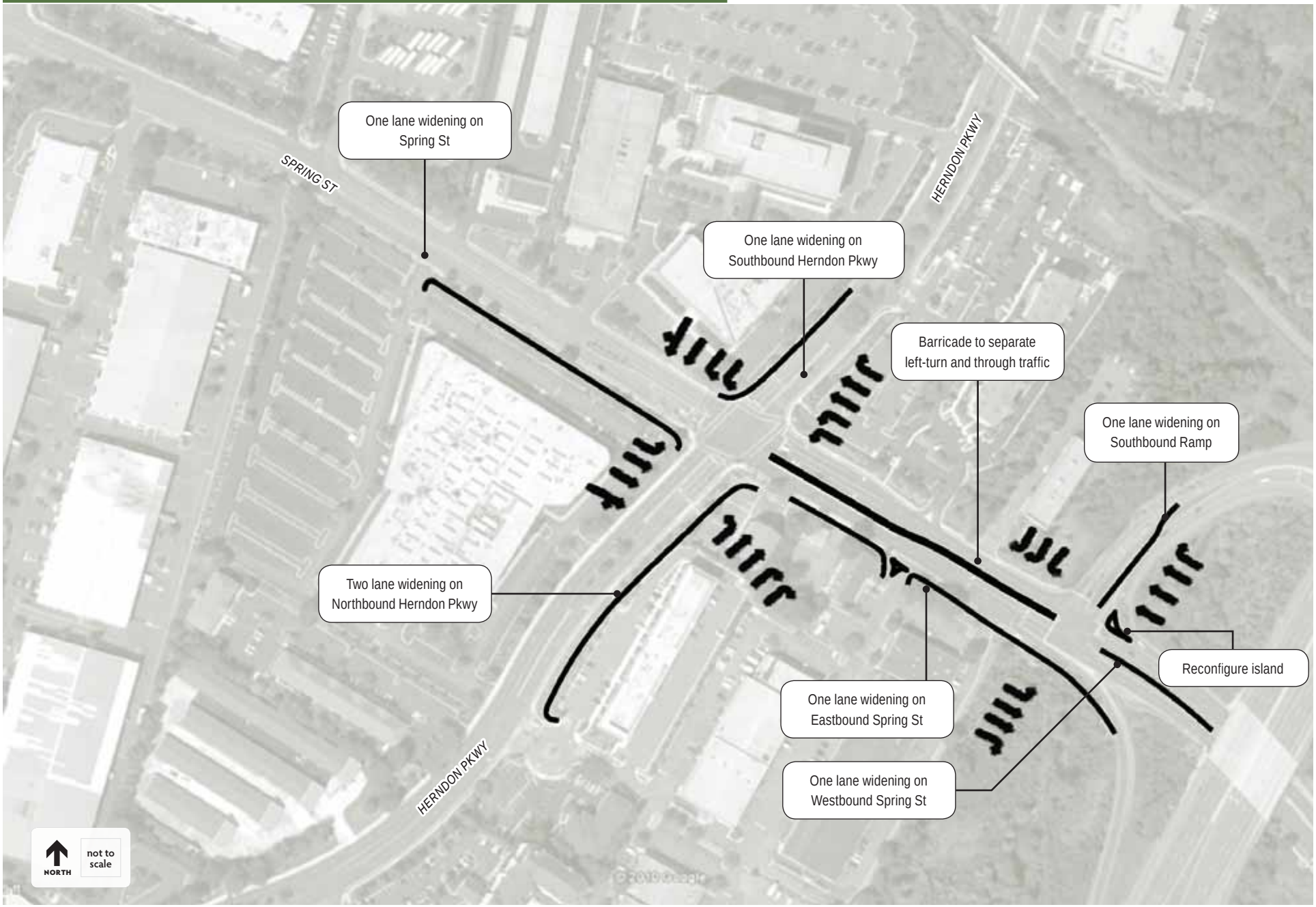
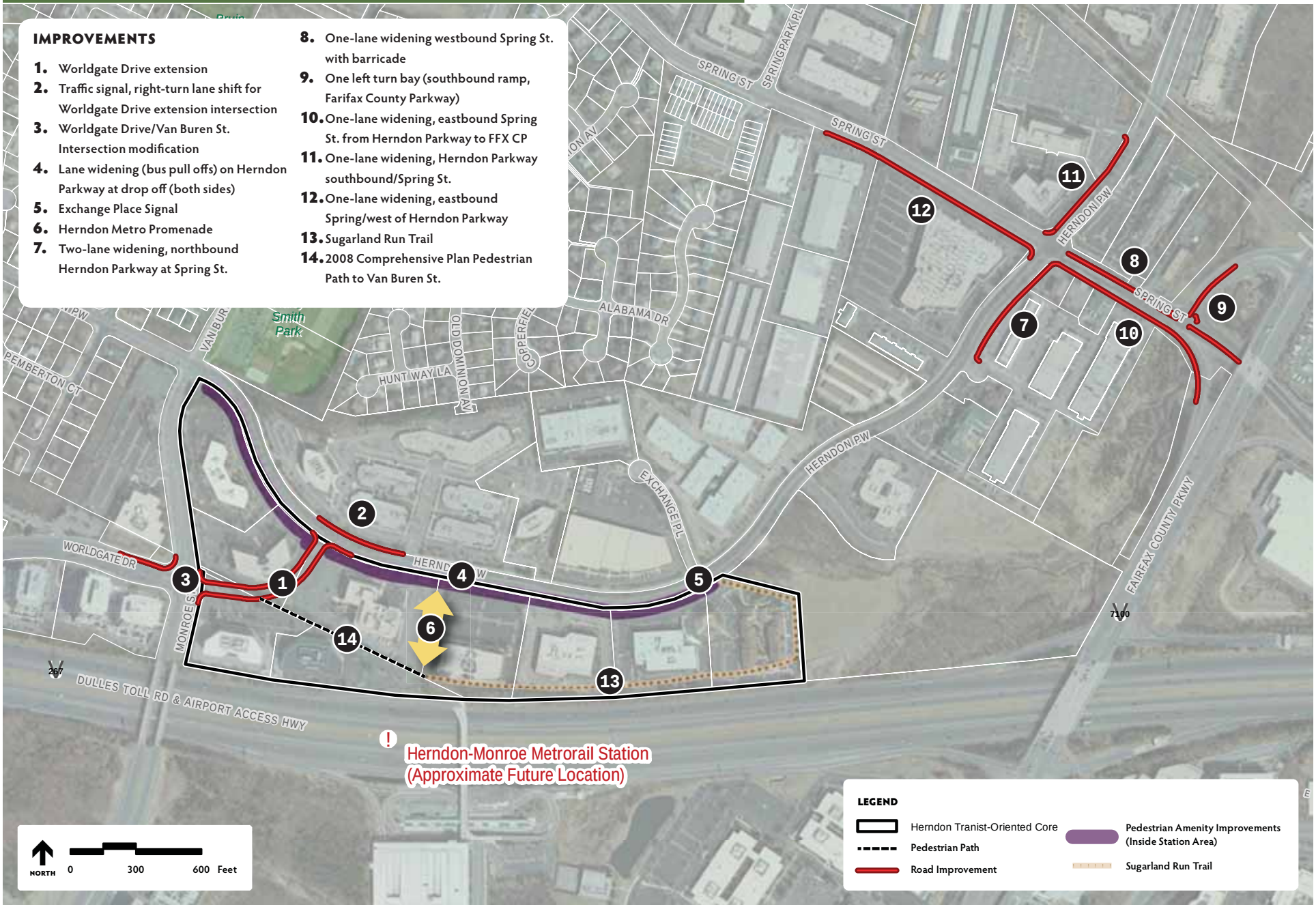


Figure ES.12 | Herndon Transit-Oriented Core Plan— Conceptual Infrastructure Improvements



INFRASTRUCTURE NEEDS

Capital improvements necessary to meet the densities identified in the HTOC Plan were identified as part of the financial feasibility and fiscal impact analysis. The proposed capital improvements include vehicle infrastructure, such as additional turn lanes or roads, pedestrian improvements such as sidewalks, trails, station access, and water and sewer improvements (including additional sewer and water capacity, sewer trunk line upgrades and new waterline extensions). The intent is that these capital improvements will support and encourage development; thereby, meeting the town's goals and objectives. Table ES-4 lists the proposed capital improvements and the estimated cost for each improvement and Figure ES.12 shows an illustration of the proposed capital improvements. The estimated costs were used for planning purposes only and are expected to be updated as projects are implemented.

REPORT OVERVIEW

This report is comprised of seven chapters each providing an overview of the key elements of the development of the Area Plan.

- Chapter 1, *Project Background and Goals* provides an overview of the Area Plan background and goals and objectives.
- Chapter 2, *Public Process* describes the community engagement process, including the public workshops and Town meetings held.
- Chapter 3, *Existing Conditions* identifies the regulatory context and existing physical constraints for potential development.

Table ES-4 | Capital Improvements and Order of Magnitude Estimated Costs

	CAPITAL IMPROVEMENT	ESTIMATED COST*
Transportation Improvements		
PEDESTRIAN AND PUBLIC REALM IMPROVEMENTS		
	Herndon Parkway – pedestrian improvements (inside)	$ 2,700,000
6	Herndon Metro Promenade	$ 2,552,000
13	Sugarland Run Trail	$ 218,500
14	2008 Comprehensive Plan Pedestrian Path to Van Buren Street	$ 185,400
TRANSPORTATION IMPROVEMENTS OUTSIDE THE REFINED STUDY AREA		
3	Worldgate Drive/Van Buren Street Intersection Modification	$ 384,500
7	Two-Lane Widening Northbound on Herndon Parkway at Spring Street	$ 813,900
10	One-Lane Widening Eastbound Spring Street from Herndon Parkway to FFX CP	$ 476,500
9	One Left Turn Bay (Southbound Ramp, Fairfax County Parkway)	$ 366,700
8	One Lane Westbound Spring with barricade	$ 190,500
12	One Lane Widening Eastbound Spring Street/West of Herndon Parkway	$ 364,100
11	One Lane Widening Southbound Herndon Parkway at Spring Street	$ 171,400
TRANSPORTATION IMPROVEMENTS INSIDE THE REFINED STUDY AREA		
1	Worldgate Drive Extension	$ 3,020,000
2	Herndon Parkway – Lane Widening (Worldgate Extension intersection)	$ 503,500
4	Lane Widening (Bus Pull-Offs) on Herndon Parkway at Drop-Off	$ 1,616,200
5	New Signal at Exchange Place	$ 384,200

Refer to Figure 7.1
MGD = Million Gallons per Day
* Costs include in this table are order of magnitude and are meant for planning purposes only. It is anticipated that these preliminary costs will be updated as projects are advanced further and implemented.

Table ES-4 | Capital Improvements and Order of Magnitude Estimated Costs (cont'd)

CAPITAL IMPROVEMENT	ESTIMATED COST*
Utilities	
WATER	
System engineering and preliminary design for capacity analysis and capacity purchases	$ 96,000
Water main from Van Buren St to Worldgate to Alabama Drive	$ 568,500
Purchase additional 1.3 MGD of water capacity	$ 5,908,500
SEWER	
System engineering and preliminary design for capacity analysis and capacity purchases	$ 150,000
Construct a trunk line and meter station for the Refined Study Area	$ 465,750
Purchase additional 0.8 MGD sewer capacity	$ 6,464,000
Refined Study Area trunk line	$ 186,300
Sugarland trunk line from Spring Downs Station to Sunset station	$ 338,700
Sugarland trunk line in the town from 24-inch to 27-inch (50% Town's share)	$ 604,500

Refer to Figure 7.1
MGD = Million Gallons per Day
* Costs include in this table are order of magnitude and are meant for planning purposes only. It is anticipated that these preliminary costs will be updated as projects are advanced further and implemented.

- Chapter 4, *Development Opportunities* presents the observations and recommendations regarding TOD economics (i.e., appropriate densities and land uses), which were drawn from best practices from TOD industry literature, the lessons learned from the case studies, and the input from the property owners were considered along with the project team's general experience with TOD.
- Chapter 5, *Alternative Area Plans* presents the preliminary alternative Area Plans, which were based on the findings from the existing conditions and development opportunities, and input received from the Planning Commission and participants at the first public workshop.
- Chapter 6, *Herndon Transit-Oriented Core Plan* describes the evolution and elements of the selected Area Plan, or the HTOC Plan.
- Chapter 7, *Capital Improvements* Guide presents the capital improvements necessary to meet the densities identified in the HTOC Plan.

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PROJECT BACKGROUND AND GOALS

1

INTRODUCTION

Beginning in May 2010, the Town of Herndon embarked on a comprehensive planning effort to develop a long-range plan to guide future redevelopment in the area north of the proposed Herndon-Monroe Metro Station (the "Metro Station"). The introduction of Metrorail service in Herndon offers a unique opportunity to not only connect the town to the broader metropolitan Washington DC region, but to also consider the next generation of land uses and development patterns for portions of the town that are in close proximity to the future Metro Station. Across the country, towns and municipalities like Herndon have led efforts to plan for Transit-Oriented Development (TOD) around their transportation centers or hubs. It is anticipated that the Metro Station will be operating in 2017. The Town had the foresight to plan ahead and to set the vision for this important part of its community in order to capture the unique opportunities that transit and TOD will bring to Herndon.

To assist in preparing a plan for the area surrounding the Metro Station (the "Area Plan"), the Town of Herndon engaged a team of planning and engineering consultants. Vanasse Hangen Brustlin, Inc. (VHB), working with Looney Ricks Kiss (LRK), led the community outreach and master planning efforts as well as considered the traffic impacts and infrastructure needs. BBP & Associates LLC (BBP) conducted the economic and financial feasibility analyses.

The planning process included an evaluation of existing conditions, research on other TOD projects, development and evaluation of potential development alternatives, traffic, infrastructure, financial impact analyses, and an extensive public outreach effort, including interviews with property owners and public workshops. The Area Plan identifies new prospects for economic growth and outlines recommendations for future development and public improvements.

BACKGROUND

The Dulles Corridor Metrorail Project is one of the key initiatives that spurred interest for potential TOD within Herndon. The Town recognized this opportunity and incorporated goals and objectives for TOD as part of its *2030 Comprehensive Plan* adopted in August of 2008. This lead to the identification of the need for this study. The following sections describe these actions as background for the Area Plan. Figure 1.1 shows the context map of Herndon, the study area, and the Metro Station.

DULLES CORRIDOR METRORAIL PROJECT

The Metropolitan Washington Airports Authority (MWAA), in cooperation with the Virginia Department of Rail and Public Transportation (DRPT), Washington Metropolitan Transit Authority (WMATA), and the counties of Fairfax and Loudoun, is working to construct a 23.1-mile extension of the Metrorail system. The extension will originate from a point located along the Orange Line between the existing East and West Falls Church Metro stations and will pass through the Tysons Corner area, Reston, Herndon, Dulles Airport and into Loudoun County. Eleven new stations are planned as part of the project. Once completed, Herndon will be linked by transit to both Dulles International Airport and the Metrorail system serving the greater metropolitan Washington DC area.

The Metro Station is planned to be built in the median of the Dulles Airport Access and Toll Road, adjacent to the existing Herndon-Monroe park and ride garage, with an entrance pavilion (the "North Entrance Pavilion") and pedestrian bridge connecting the new Metro Station to Herndon. Figure 1.2 shows MWAA's proposed station site plan for the new Metro Station.

TOWN OF HERNDON

The Town of Herndon is located in Fairfax County in Northern Virginia roughly 22 miles from downtown Washington, DC. The town is located less than five miles from Washington Dulles International Airport and has direct access to the Dulles Airport Access and Toll Road. More than 23,000 people live in Herndon, making it the third largest town in Virginia. The town boundaries are shown on Figure 1.1.

Herndon is unique in that it is the only incorporated and historic town along the Dulles Corridor. It has an established identity as a location for offices, and companies have enjoyed the visibility and access to the region afforded by the area's location along the Dulles Toll Road. The town's access to the regional base of companies and labor pool will support the Metro Station; thereby, strengthening its position as a destination for office-based companies.

TOWN'S 2030 COMPREHENSIVE PLAN

Based on the MWAA's Metro expansion project, the Town recognized the opportunities for TOD based on its proximity to existing and planned transportation infrastructure. The Town's *2030 Comprehensive Plan* was updated in August 2008 (and amended in February 2011) and sets policy for TOD by establishing two new land use designations within the vicinity of the Metro

Figure 1.1 | Context Map

Source(s): City of Herndon GIS, ESRI

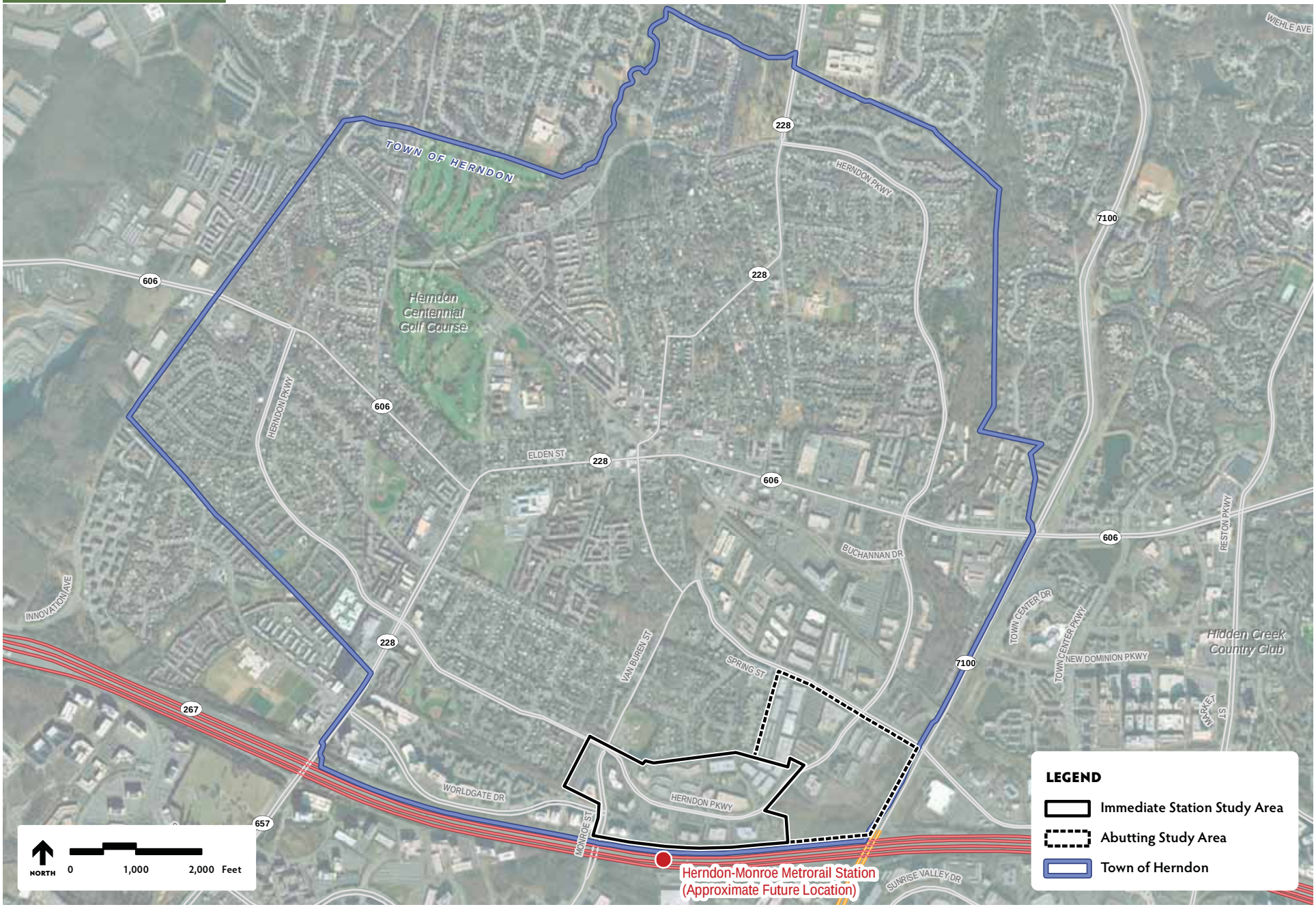
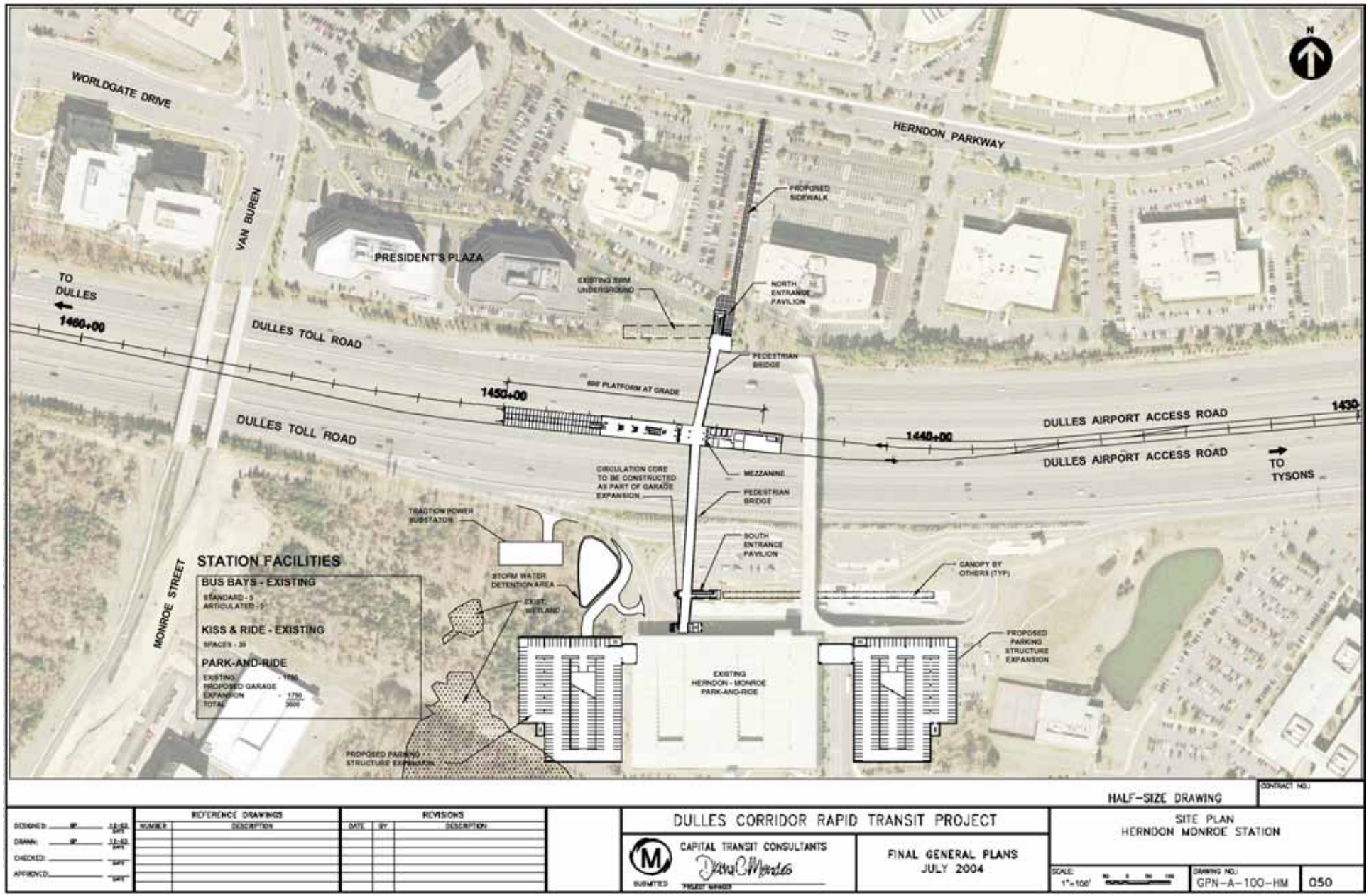


Figure 1.2 | MWAA's Herndon Monroe Station Plan

Source(s): Dulles Corridor Metrorail Project MWAA Final EIS, Dec. 2004



Station: the Regional Corridor Mixed Use area; and the Metrorail Station Urban Development Area. The Comprehensive Plan calls for the consideration of such issues as pedestrian and vehicular access to the Metro Station and identifies the potential for increased densities in portions of the Metrorail Station Urban Development Area as well as protection of nearby residential areas. Refer to Figure 1.3 for the *2030 Comprehensive Plan* goals for the area surrounding the future Metro Station.

INITIATING THE AREA PLAN PLANNING PROCESS

Consistent with the 2030 Comprehensive Plan, the Town was proactive in establishing a planning study area and a process to set a vision for development north of the new Metro Station. The following sections identify the study area and describe the three-phased planning process.

STUDY AREA

The study area changed during the course of the planning process. Initially, the study area consisted of 183 acres and was divided into two sub-areas, in part due to the goals and objectives that were identified in the *2030 Comprehensive Plan* for the Herndon Metro Station Area (the "Initial Study Area"). With that in mind, the Initial Study Area included: the Immediate Station Study Area; and the Abutting Study Area. Refer to Figure 1.4 for an illustration of the Initial Study Area and its proximity to the Metro Station.

During the planning process, the Town opted to reduce the Initial Study Area (183 acres) to 110 acres—an area more confined to the Metro Station (the "Refined Study Area"). The Refined Study Area consists of 17 privately held real estate parcels, 11 parcels of which lie partially or entirely within the ¼-mile radius of the Metro Station. Currently, the average FAR in the Refined Study Area is approximately 0.34. In the later stages of the planning process the study area was reduced further to focus on parcels south of Herndon Parkway – Herndon Transit-Oriented Core (referred herein as the "HTOC" or "Core").

The Herndon Metro Station Area itself lies in a highly visible location at the northwest quadrant of the Dulles Toll Road and the Fairfax County Parkway. It has traditionally hosted a major share of the town's economic engine and has been a prosperous location for the development that occurred immediately after the opening of the Dulles Toll Road in the mid-1980s. Through this study, the Town seeks to mold the development anticipated in response to the advent of the Dulles Metrorail extension project into a more intense employment destination within a vibrant mixed use neighborhood.

THE PLANNING PROCESS

Preparation of the Area Plan was done in three key phases:

- The "Discovery" phase;
- The "Options" phase; and
- The "Decision" phase.

Integral to all three key phases of this study was the public outreach effort. This effort was critical in understanding the issues and opportunities as well as gaining participation from local residents and business owners to help shape the Area Plan. The outreach effort included two public workshops and the creation of a project website to disseminate information about the project as well as neighborhood meetings with residents and local business owners. Additionally, numerous Planning Commission work sessions and other town department meetings were held throughout the planning process. Chapter 2, *Public Process* provides more information about public outreach.

"DISCOVERY" PHASE

The "Discovery" phase included an analysis of the regulatory context (i.e., zoning) and existing physical conditions to identify potential constraints or challenges to development in the Initial Study Area. Existing physical conditions that were evaluated include: soil types and stormwater runoff conditions; natural resources; water and sewer infrastructure; utilities; transportation system and traffic conditions; and urban design conditions. This phase also included the identification of development opportunities for TOD in Herndon.

Another component of the "Discovery" phase entailed gaining a comprehensive understanding of TOD from an economic standpoint to determine the densities and land uses allowed in the Herndon Metro Station Area are appropriate to support transit ridership, promote a sense of place, and provide synergies between land uses. The project team conducted a literary review, evaluated case studies, and interviewed local property owners. Best practices from TOD industry literature were considered along with the project team's extensive experience with TOD to provide observations about future densities and land uses in the station area. The case studies included four existing station areas: Clarendon, Virginia; Silver Spring, Maryland; Prince George's Plaza, Maryland; and Wheaton, Maryland. Eight major commercial property owners (or their representatives) were interviewed in an effort to understand the likelihood of redevelopment of commercial properties in the area closest to the Metro Station.

Figure 1.3 | Town of Herndon Comprehensive Plan

Note(s): This figure is based on the Town of Herndon Comprehensive Plan.

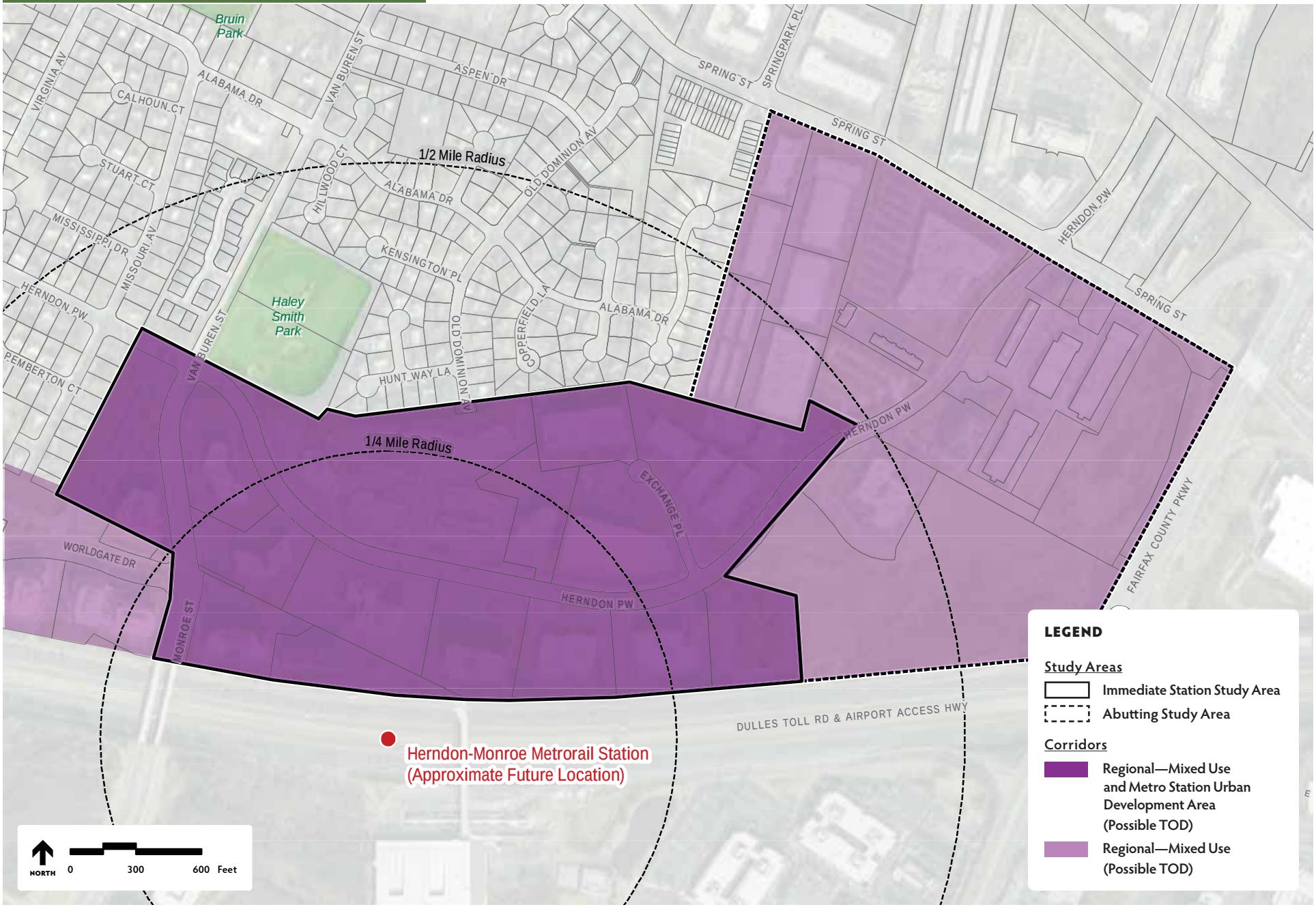
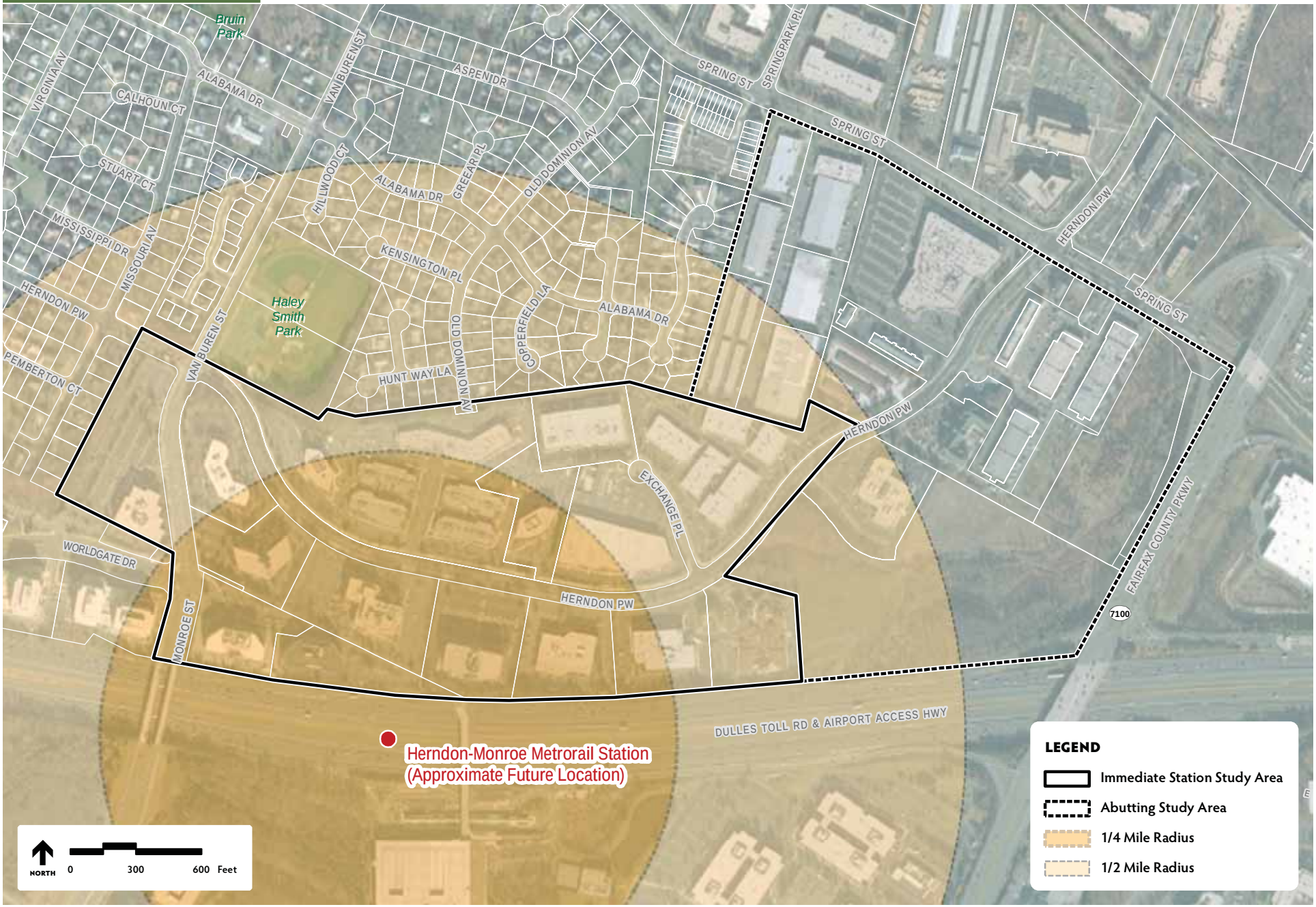


Figure 1.4 | Initial Study Area

Source(s): City of Herndon GIS, ESRI



Chapter 3, *Existing Conditions*, and Chapter 4, *Development Opportunities* of this report present the findings of the "Discovery" phase.

"OPTIONS" PHASE

The next step in the planning process was the "Options" phase, which entailed creating two alternatives for the Herndon Metro Station Area. These alternatives (Area Plan 1 and Area Plan 2) were based on findings from the existing conditions and development opportunities identified as part of the "Discovery" phase as well as input received from the Planning Commission and participants at the first public workshop. A Framework Diagram was prepared to establish the "framework" of what was to be included in each alternative. Each Framework Diagram identifies goals for densities (Floor Area Ratios, or FAR) for the Herndon Metro Station Area. In addition, mixes of land uses (office, retail, residential, etc.) were identified based on the findings from the development opportunities analysis. The process for developing the planning frameworks and preliminary Area Plans (Area Plans 1 and 2) is discussed in further detail in Chapter 5, *Alternative Area Plans*.

"DECISION" PHASE

The "Decision" phase involved the process of selecting and documenting the Herndon Transit-Oriented Core Plan (the "HTOC Plan"). Area Plans 1 and 2 were presented to the community as part of the second public workshop. Following extensive community input, those plans were dismissed. In addition, a preliminary evaluation of feasibility revealed numerous constraints to redevelopment. A revised Framework Diagram was developed with the goal of reducing the size of the Herndon Metro Station Area to focus on the areas that are in closest proximity to the future Metro station location. The HTOC Plan represents a conceptual vision and depicts the broad goals for TOD at the future Metro Station. It functions as a resource to set general parameters for urban design including building heights, setbacks, public spaces, pedestrian and vehicular access, and parking. The Town plans to update its zoning provisions to reflect the parameters included in the HTOC; thereby, guiding the Town and developers towards implementing the HTOC. A vision, guiding principles, goals and objectives and a list of principles, guidelines were developed by the Town and are shown in this report:

- Vision, Guiding Principles, Goals and Objectives (refer to Chapter 1, *Project Background and Goals*); and
- Principles and Guidelines (refer to Chapter 6, *Herndon Transit-Oriented Core Plan*).

Refer to Chapter 6, *Herndon Transit-Oriented Core Plan* for a detailed description of the Plan and Chapter 7, *Capital Improvement* Guide for a summary of the proposed capital improvements and cost estimates needed to support the Plan.

WHAT IS TRANSIT-ORIENTED DEVELOPMENT (TOD)?

TOD creates mixed-use, higher density communities that encourage people to live, work, and shop near transit; thereby, decreasing their dependence on driving. Generally, there are certain characteristics that successful TOD projects have in common. A key characteristic is that there must be a mix of uses that includes retail, office, and housing with those land uses arranged to concentrate activity in close proximity to the transit station. The land use mix falls into two categories: (i) housing and employment—uses that generate transit ridership; and (ii) convenience retail and service—uses that support the riders and area residents.

TOD promotes and supports transit use, which has the effect of reducing automobile dependence. TOD promotes a more efficient use of land and infrastructure through its compact design, and encourages infill and redevelopment opportunities that can revitalize a community. TOD fosters a sense of place through the creation of mixed-use centers that combine residential uses with economic activity. By requiring high-quality urban design and safe, attractive pedestrian connections between uses, TODs create a vibrant sense of place. TODs that combine a variety of housing alternatives with diverse economic activity provide both employment and living options for a wide range of people.[1]

The HTOC Plan envisions TOD with an increase in density above current levels. The addition of the Metro Station will provide a new form of access to the regional jobs market. A choice location for office-based companies, the Town is able to promote uses (such as services, retail shops, restaurants and housing) that support office development. Through re-zoning, the Town has the opportunity to allow for greater density and encourage a mix of uses, including residential, retail, and office as well as related uses, such as hotels or civic uses.

1. http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-tod.html

AREA PLAN GOALS AND OBJECTIVES

During the course of the planning process, the Town Council and Planning Commission met to establish a vision statement and guiding principles as well as identify specific goals and objectives to guide redevelopment north of the Metro Station.

THE 2035 VISION STATEMENT

The Herndon Transit-Oriented Core is a distinctive potential employment center and residential neighborhood characterized by concentrated development that is vibrant, mixed use, transit-oriented and pedestrian friendly. Emerging development is interwoven with and strengthens the town's cultural fabric and sense of identity.

GUIDING PRINCIPLES

- There should be no decrease in employment, value of development, or commercial floor area existing in 2011.
- Concentrated development in the HTOC should reinforce the quality of life, sense of community, engagement of citizens, economic prosperity of other commercial areas, and other features that comprise the character and fabric of the town.
- Redevelopment to create TOD must be facilitated over the long term and is likely to involve phases of development and capital improvements.
- The HTOC should complement reinvestment in the Downtown and other parts of town.
- Future redevelopment in the HTOC should be viewed as a means to support the existing comprehensive plan goals to enable Herndon to be a leader in environmental stewardship for the region.

GOALS FOR THE HERNDON TRANSIT-ORIENTED CORE

The HTOC should:

- Reflect Herndon's unique identity and be distinct from other Metro stations.
- Enable land uses that will help optimize for the town the investment in transit.
- Balance protection of surrounding neighborhoods with the need for mobility connections from the HTOC to the rest of Herndon and the region.
- Enhance and encourage use of non-auto modes of travel within the town.
- Enable the town's internal system of sidewalks, streets, and trails to connect to mass transit.
- Provide housing choices within the TOD for those attracted to compact, mixed-use, walkable neighborhoods with nearby transit availability.
- Recognize the need for interjurisdictional collaboration as the HTOC is predicted to serve a community larger than the Town of Herndon alone.
- Promote redevelopment and design that will enhance the aesthetic qualities of the town.

OBJECTIVES FOR THE HERNDON TRANSIT-ORIENTED CORE

- Enable only the amount of development that can be served by street improvements that are (a) within the type of street features currently used by town (excluding grade-separated interchanges, displaced left turn lanes, triple left turn lanes, or flyovers) and (b) of a cost reasonable for funding in the foreseeable future when development is anticipated to occur. This objective is not intended to restrict the Mayor and Town Council in requesting any type of street improvement through the regional transportation planning precess.
- Minimize traffic impacts of TOD development on nearby neighborhoods. Elicit restricted parking (residential permit parking) requests from neighborhoods in an effort to preclude commuter parking in those neighborhoods.
- Provide access improvements to the HTOC with priority given to: (i) pedestrians; (ii) bicyclists; (iii) transit users (buses); and (iv) private vehicles (single occupancy vehicles and carpools).
- Improve bus, bicycle, and pedestrian connectivity for those using the Metro Station; include links to Herndon neighborhoods as well as to areas outside the town limits.
- Participate in multi-jurisdictional Transportation Demand Management (TDM) program to monitor the achievement of regional and individual TDM measures.

- Link the HTOC to other parts of Herndon by:
  - Encouraging Fairfax County to provide enhanced local bus and trolley service.
  - Enhancing the pedestrian and bicycle environment.
  - Providing direct trail linkages to the Metro Station.
- Distinguish the TOD with unique architecture, streetscape and landscape of the highest caliber and conforming to the design criteria, such as:
  - Avoid uniformity of building mass, style, and appearance.
  - Establish an urban street edge with wide multi-purpose sidewalks for core streetscapes.
  - Require multi-story parking structures otherwise visible at street level to enhance the pedestrian street experience, by such methods as being wrapped with buildings.
  - Present a pedestrian friendly and inviting image with no unadorned parking structures or vehicle areas clearly visible from streets or pathways.
- Create active streetscapes and storefronts, including incorporation of storefronts and building entrances on the ground floor of podium parking decks and other parking facilities.
- Incorporate street level landscaping, green roofs, and improved storm water management systems to assist the town's goals of achieving increased tree canopy and meeting Chesapeake Bay stormwater management requirements.
- Forge collaborative relationships between representatives of the town and affected properties including adjacent neighborhoods to help achieve the vision for the TOD.
- Establish a system in which prospective developers within the HTOC explain how proposed development will reinforce the quality of life, sense of community, engagement of citizens, economic prosperity of other commercial areas, and other features that comprise the fabric of the town.
- Develop a classification of features and public amenities required for redevelopment to achieve densities approaching the maximum Floor Area Ratio (FAR) permitted within the HTOC.

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PUBLIC PROCESS

2

INTRODUCTION

Extensive community outreach was conducted throughout the comprehensive planning process in an effort to involve the community in the planning process and to solicit input and feedback on the development of the Area Plans. Outreach efforts included public workshops, neighborhood meetings, and the creation of a public project website. Numerous Town Council and Planning Commission work sessions were also held to discuss aspects of the Area Plans and the planning process. Together, these efforts resulted in ideas that helped shape the creation of the HTOC Plan. The public process is outlined in this chapter.

PUBLIC OUTREACH

Two public workshops were held in July and November of 2010, and neighborhood meetings were held in addition to these larger workshops in an effort to reach as much of the local community as possible. Additionally, a project website was created to disseminate information on the project and inform the public of scheduled public meetings/workshops as well as receive feedback.

The public was also notified of the public meetings through flyers that were posted throughout the town and via announcements on the project website. Appendix A documents the various public meeting materials, including flyers and meeting agendas. Public comments and feedback were obtained through email, telephone calls, project website, comment letters, surveys, and report backs in public workshops and petitions.

MEETING FLYERS

PUBLIC WORKSHOP 1

The first public workshop was held on July 19, 2010 from 6:00 PM to 10:00 PM. The workshop began with a presentation that provided an overview of the Herndon Metro Station Area, including site issues and constraints related to urban design, transportation, and infrastructure. The presentation also discussed the economics of TOD and lessons learned from four case studies of station areas.

Following the presentation, participants answered a series of overview questions by voting electronically. Results of the voting exercise were not intended to represent consensus, the views of a majority of town residents, or any position of the Town of Herndon. A summary of the results follows:

- Approximately 60 percent of workshop attendees who participated in the survey appeared to want more housing in the Herndon Metro Station Area
- More than 75 percent of workshop attendees who participated in the survey appeared to want more retail shops and restaurants
- More than 65 percent of workshop attendees who participated in the survey appeared to want more arts, entertainment, and recreational uses
- More than 50 percent of workshop attendees who participated in the survey appeared not to want more office
- More than 75 percent of workshop attendees who participated in the survey appeared to think TOD around the Metro Station is an opportunity to create a unique identity for the area and a signature statement for the community
- 31 percent of workshop attendees who participated in the survey appeared to believe the biggest opportunity for Herndon, as a result of having a future Metro Station, is being connected to Tysons Corner and the District of Columbia
- 55 percent of workshop attendees who participated in the survey appeared to believe the biggest disadvantage is possible traffic congestion near the Metro Station
- 48 percent of workshop attendees who participated in the survey appeared to believe the biggest strength in Herndon having the Metro Station is its great location and development potential to take advantage of Metrorail service
- 32 percent of workshop attendees who participated in the survey appeared to believe the biggest weakness is downtown Herndon not being near the Metro Station

The remainder of the workshop was set up as an open house where participants were provided with an opportunity to learn more about urban design, transportation, and infrastructure issues as well as the four case studies and transit-oriented economics. A Community Vision Survey was also held during the open house. The survey asked participants their opinions about

design, densities, architectural styles, parking and streetscape in the Herndon Metro Station Area. Key results of the visual survey found that participants:

Favored more hardscaped plaza treatments with seating/café space at the station

Had a negative reaction to mid-rise densities (six stories and above), though these densities were more palatable with better quality architectural design and public spaces

Had mixed reactions to architectural style, but had a tendency toward more variety over more uniform buildings

Preferred urban street edge, but with wide, multi-purpose sidewalks for TOD streetscapes,

Wanted parking structures to have some active street-level uses

Preferred more traditional-looking residential uses for transition zones, especially when there are great setbacks and green areas

PUBLIC WORKSHOP 2

A second public workshop was held on November 8, 2010 from 7:00 PM to 10:00 PM. The goal of this workshop was to present and obtain feedback on the preliminary Area Plans 1 and 2. A slide presentation included an overview of the Area Plan. Considerations for developing the Area Plan alternatives was then discussed, including the 2030 Comprehensive Plan, TOD economics, and the existing conditions/constraints. The framework for which Area Plans 1 and 2 were developed (including recommended densities, land use, and urban design improvements) as well as illustrations of projected building heights and massing and preliminary transportation impacts based on full build-out was presented for public comment. Group break-out discussions and report backs on Area Plans 1 and 2 followed the presentation.

The public comment period on the November 8, 2010 presentation ended on January 28, 2011. Common themes for both Area Plans 1 and 2 included:

- Ensure pedestrian connectivity internally and to the surrounding community
- Provide higher densities along Toll Road while scaling back density adjacent to residential neighborhoods.
- Minimize noise impacts on adjacent residential neighborhoods
- Extend Worldgate Drive
- Incorporate additional bicycle accommodations/ facilities
- Green connections/buffers are important

NEIGHBORHOOD MEETINGS

In addition to the Public Workshops, Town staff-led a series of neighborhood meetings were held with residents and business owners:

- November 17, 2010 – Neighborhood meeting
- December 1, 2010 – Meeting with representatives of affected commercial properties.
- December 1, 2010 – Neighborhood meeting
- January 21, 2011 – Meeting with representatives of affected commercial properties.

PROJECT WEBSITE

PROJECT WEBSITE

A project website was developed to disseminate information to the public as well as gather feedback throughout the process. The website provided the project schedule and posted announcements for upcoming public workshops and meetings. As documents were developed, such as the existing conditions findings and meeting presentation materials, they were posted on the website. The website also includes a Frequently Asked Questions page with links to additional information, such as the town's website as well as contact information.

The project website address is: http://www.vhb.com/herndonmetrorail/, which was operational through the end of the project's planning process. The town then hosted its own webpage dedicated to the Area Plan and referred visitors to the project website. The town's webpage, http://herndon-va.gov/, continues to be a resource for those interested in the Area Plan.

TOWN MEETINGS

The Area Plan alternatives were discussed at numerous Planning Commission and Town Council public meetings held throughout the planning process between April 2010 and December 2011. Numerous Planning Commission technical work sessions were held. These work sessions were open to the public and discussed the project schedule and scope, goals and objectives, public workshops, alternative area plans, potential impacts and required improvements (i.e., transportation), and findings of the financial analysis.

Four Public Hearings have been held to present the draft Preferred Area Plan. These hearings were held during the months of September, October, and November, 2011. Additional Public Hearings were held in January and February 2012.

A joint work session of the Planning Commission and Town Council was held on January 21, 2011. Based on the results from this joint meeting and related adjustments to the Area Plan, the Town Council and Planning Commission decided to reduce the size of the Initial Study Area under study to focus on the areas that are in closest proximity to the future train station location (discussed further in Chapter 6, Herndon Transit-Oriented Core Plan of this report). The planning effort was expanded to include a financial and fiscal impact analysis. Through further analysis after initial Planning Commission and Town Council reviews, the redevelopment focus area was reduced to the HTOC.

CONCLUSION

Through the various meetings and outreach methods listed above, the Town was able to receive a great deal of public input throughout the planning process. Public comments were reviewed by the Town, which in part lead to the creation of Area Plan alternatives (Area Plans 1 and 2), described in Chapter 5, Alternative Area Plans and the HTOC, described in Chapter 6, Herndon Transit-Oriented Core Plan.

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EXISTING CONDITIONS

3

INTRODUCTION

An initial step in preparing this study, as part of the "Discovery" phase, was to identify existing regulatory context and physical constraints that may affect redevelopment of the Herndon Metro Station Area. Consideration of existing conditions (i.e., traffic congestion, natural resources, etc.) allowed the project team to identify the opportunities and challenges for redevelopment, and provide recommendations for improvements that may be required in order to support the Area Plan.

The summaries of existing conditions contained in this chapter were developed early in the planning process, and as such, are summarized in consideration of the Initial Study Area.

EXISTING ZONING

The majority of the Initial Study Area is zoned Office and Light Industrial (O&LI). Part of the Abutting Study Area is zoned Planned Development–Business (PD-B). The western edge of the Immediate Station Study Area (west of Monroe Street) is zoned Residential (R10) and Planned Development–Worldgate (PD-W); halfway through the planning process the area west of Van Buren Street was eliminated from the Initial Study Area.

No residential uses exist in the Herndon Metro Station Area. For the planning process of this study , it was assumed that the entire Herndon Metro Station Area would be rezoned to accommodate the uses and vision depicted in the Area Plan. Refer to Figure 3.1 for the existing zoning of the Initial Study Area.

O&LI DISTRICT

DIMENSIONAL REQUIREMENTS

- Maximum height is 75 feet or five stories, whichever is less. For any development within 1,500 feet of the northern boundary of the Dulles Toll Road, a maximum height of 100 feet is permitted by special exception.
- Minimum setback is 35 feet or building height (height of the tallest building where the setback is required), whichever is greater.
- Maximum FAR is 0.7. For any development within 1,500 feet of the northern boundary of the Dulles Toll Road, a maximum FAR of 1.0 is permitted by special exception.
- Minimum open space is 20 percent. For sites using a 1.0 FAR and lying within 1,500 feet of the northern boundary of the Dulles Toll Road, the minimum open space requirement is 50 percent.

PERMITTED USES

Permitted uses include offices, financial institutions, health care facilities and laboratories, schools of special instruction, product repair and services, artists' studios, mailing and packaging services, drycleaning pickup and drop-off, electronic warehousing, scientific research and development, and other light manufacturing uses. Many other uses are permitted by special exception such as childcare centers, restaurants, indoor entertainment, animal hospitals and vehicle sales.

PD-B DISTRICT

DIMENSIONAL REQUIREMENTS

- Maximum height is 45 feet.
- Maximum FAR is 0.4.
- The Town Council may permit an increase in height by up to 50 percent and in the FAR by up to 100 percent if the development includes several provisions such as additional open space and structured/underground parking.
- There is no setback requirement in the PD-B district.
- A minimum of 20 percent of the gross land area must be open space.

In Herndon, planned development zoning constitutes conditional zoning, as authorized by Code of Virginia, § 15.2-2303, involving the proffer of a predetermined plan of development in return for more flexible development regulations in certain instances.

PERMITTED USES

A variety of uses are allowed in the PD-B district, including government facilities, institutional uses, restaurants, offices, personal services, pet/animal services, retail sales, scientific research and industrial services.

Figure 3.1 | Existing Zoning

Note(s): This figure is for illustrative purposes only. Please refer to the Town of Herndon's official Zoning Map.

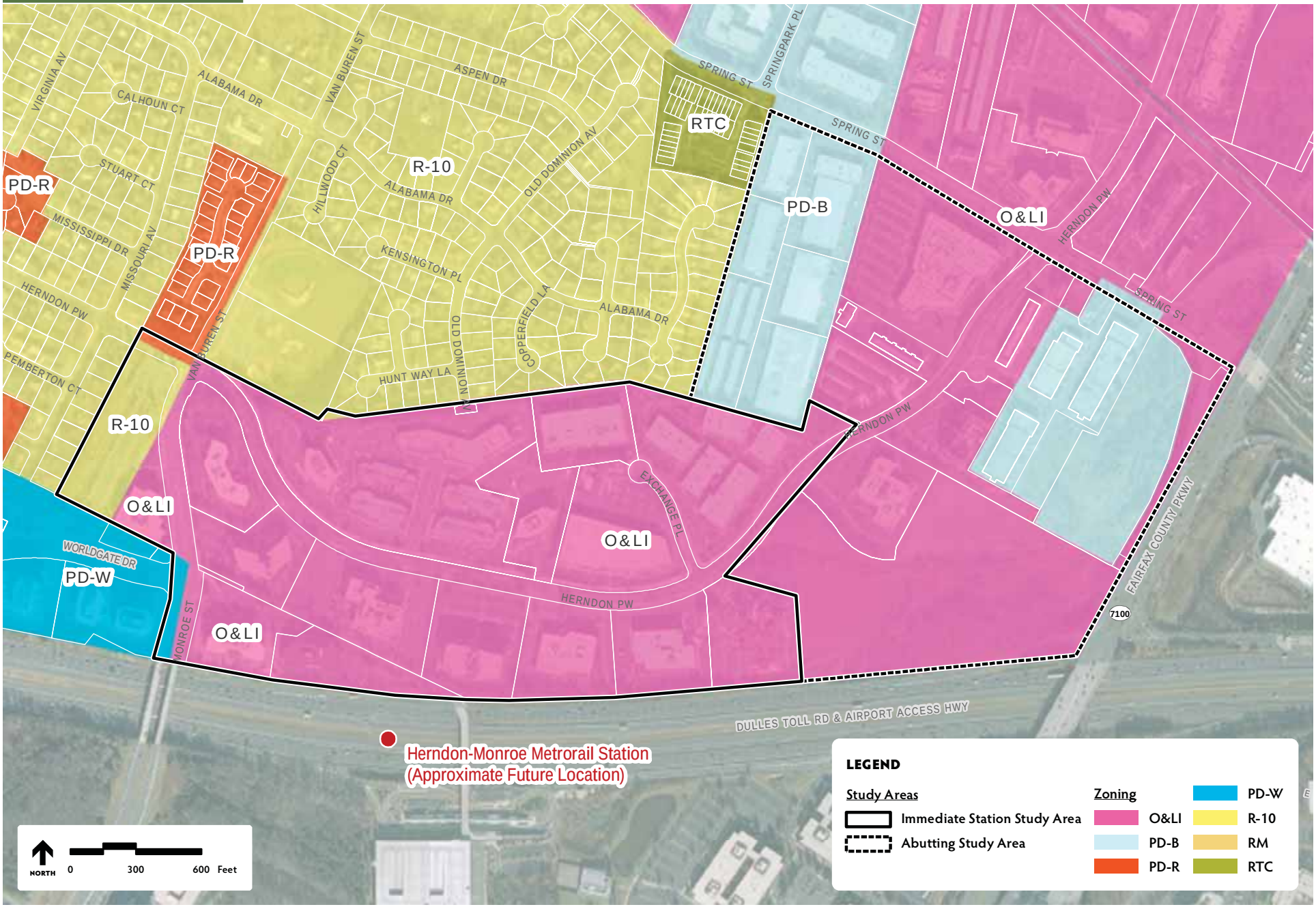
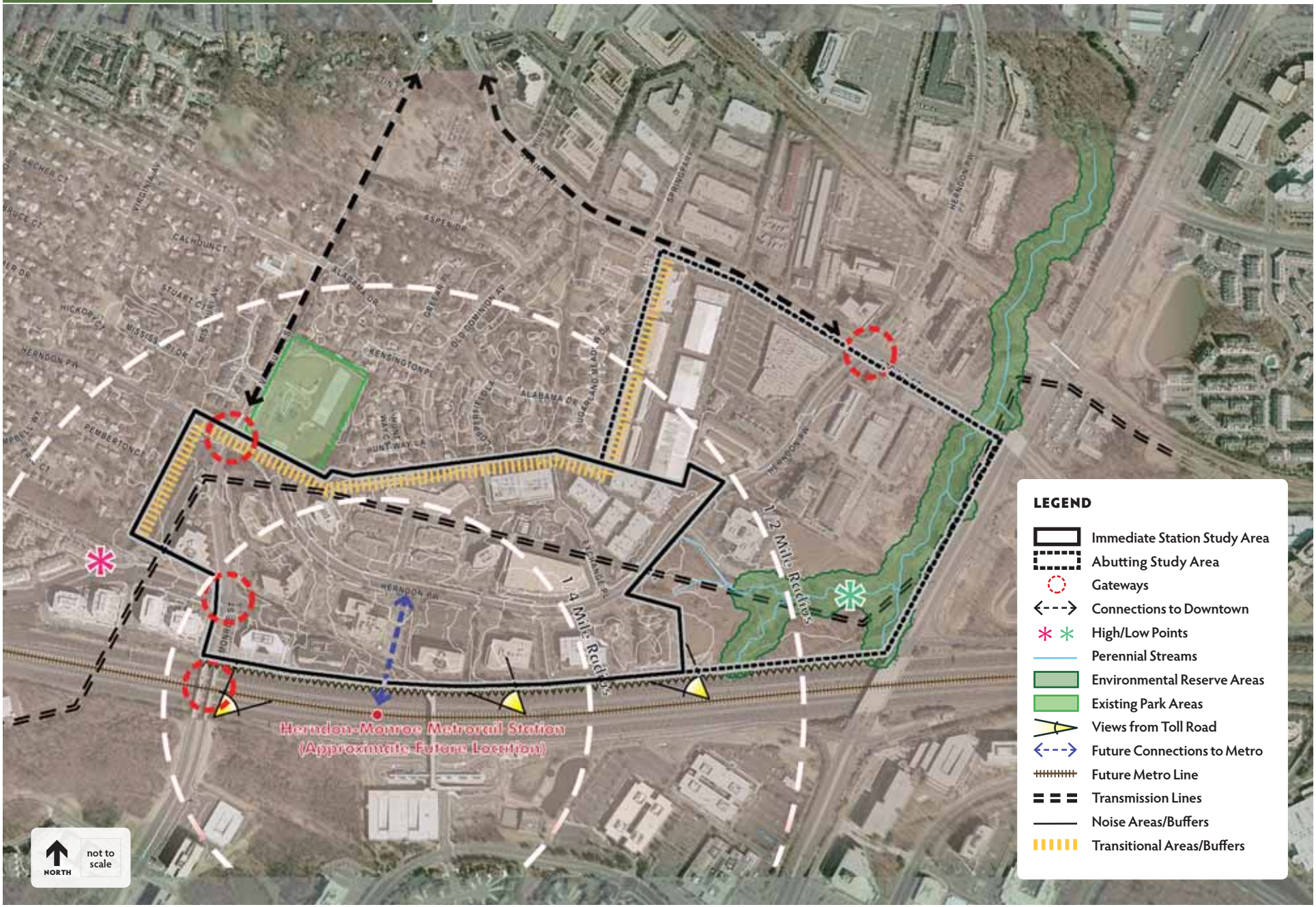


Figure 3.2 | Urban Design Issues and Opportunities

Source(s): City of Herndon GIS, ESRI



URBAN DESIGN

Site design opportunities and challenges for TOD were identified in a series of over-arching themes. These themes are illustrated in Figure 3.2 and were presented at the July 19th, 2010 workshop.

Urban design refers to the way in which the built environment relates to people and the natural environment, rather than the design of specific buildings. The scale and arrangement of streets, parking lots, utility areas and buildings contribute to a local community's sense of harmony and identity.

The Initial Study Area is divided into two sections. The 95-acre Immediate Station Study Area primarily consists of the office park parcels on either side of Herndon Parkway from Van Buren Street east toward Exchange Place. It is bounded by the Dulles Toll Road to the south. This area would include the connection point for the Metro Station and would be the primary location for any TOD in the Herndon Metro Station Area. Virtually all of the area on the north side of the toll road within a ¼-mile radius (roughly a five minute walk) is in the Immediate Station Study Area, and all points are within ½-mile (roughly a ten minute walk) of the Metro Station.

The 88-acre Abutting Study Area includes properties to the northeast of the Immediate Station Study Area. These are less intense office park uses and include the proposed Fairbrook Business Park, as well as some environmentally-constrained lands. This area has some possible TOD development potential as a later phase of redevelopment, but most improvements will be limited to the Immediate Station Study Area.

Herndon Parkway makes a loop around the entire town and runs through the Herndon Metro Station Area. It is a suburban-style parkway with varying median, sidewalk and landscape/streetscape conditions. Within the Initial Study Area, buildings are primarily one- to five-story offices setback from the parkway with a consistent 25-foot green area and surface parking. The buildings have a range of architectural character and most were built in the last 25 years.

TRANSMISSION LINES

High-tension electrical transmission lines run across the Herndon Metro Station Area east to west, which requires a series of six stanchions. From a functional standpoint, land around the stanchions is needed and uses directly under the wires themselves are limited to parking. Careful consideration will need to be paid to the uses located around these wires and the views and visibility to them from other parts of the Herndon Metro Station Area and surroundings. More information about the transmission lines is provided below under "Environmental Conditions."

HALEY M. SMITH PARK

Haley M. Smith Park is located north west of the Herndon Metro Station Area and is a valuable community amenity. Any master planning for the station area should build upon this park space as part of open space and trail planning. Connections to the park from the Herndon Metro Station Area and the neighborhood will need to be included in the plan alternatives.

TRANSITION AREAS/BUFFERS

Given the proximity of the new Metro Rail Station to the surrounding neighborhoods, there needs to be consideration given to what occurs along the perimeter of the Initial Study Area. A transitional zone containing development, as indicated in Figure 3.2, might have some more significant landscaping and reduced building heights. The challenge is providing enough of a buffer to transition, but still maintaining the development density needed to generate an active and successful TOD.

SITE VISIBILITY

Visibility is important in establishing an identity for a place. The Initial Study Area's frontage along the Toll Road and proposed rail line has a significant grade change, which gives the Immediate Station Study Area high visibility and prominence. Buildings in this location will have an opportunity to make an architectural statement and landmark of the Metro Station.

NOISE AREAS

The Dulles Toll Road provides excellent access and visibility to the Herndon Metro Station Area; however, the highway is a significant generator of noise. Future buildings and uses located along the Toll Road frontage, specifically residential will need to take this into consideration. Strategies for addressing noise impacts on future development include: locating residential uses in upper floors and in buildings north of Herndon Parkway; using heavy buffering and enhanced landscaping for sound attenuation; and positioning lower tier/podium parking decks of mixed-use buildings along the highway frontage. Sound barrier walls are not envisioned as a noise mitigation measure as part of any future development.

GATEWAYS AND ACCESS

There are several key locations on the perimeter of the Herndon Metro Station Area that serve as primary access points to the new Metro Station. Gateways include: the entrance to Herndon Parkway at Van Buren Street, the intersection of Van Buren Street and Worldgate Drive, and the intersection of Herndon Parkway and Spring Street to the east. These are places to establish gateways to the Metro Station, marking the Herndon Metro Station Area to passers-by. These are also locations where pedestrian access and transit connections will need to be improved to help to service a truly walkable TOD and give commuters other options to get to the station. Pedestrian safety is a key issue at these access points, particularly the challenges with crossing Monroe Street.

ENVIRONMENTAL CONDITIONS

Figure 3.3 highlights the existing environmental conditions and constraints, which are described in the following sections.

SOIL TYPES AND CONDITIONS

Soil conditions within the Initial Study Area were evaluated by reviewing existing data sources including Fairfax County, National Resources Soil Conservation Services (NRCS), and the Northern Virginia Soil and Water Conservation District (NVSWCD). In addition, as-built plans and site plans for existing development were reviewed for soil information that may impact future development potential.

The Town of Herndon and the Herndon Metro Station Area are located in what is called the Triassic (Culpeper) Basin. The geology consists largely of red sedimentary (sandstone, siltstone, shale and conglomerate) rocks. The hilltops are wide and gently rolling, with long gently sloping side slopes and nearly level areas. The soils over the red sedimentary rocks are often shallow (2 to 10 feet deep to bedrock). Large flat areas are often slowly permeable and poorly drained. Soils forming over the igneous bedrock have a distinct plastic clay layer.

Approximately 80 percent of the Initial Study Area soils are categorized as Iredell-Mecklenburg, Elbert and Kelly Silt Loam. Small amounts of other soils exist, including: Croton, Mixed Alluvial, and Very Rock Iredell complex. While the information presented below is not based on soil borings on potential sites, the issues identified should be considered in the planning and eventual construction of higher density uses and structures such as parking garages or structure over three stories.

- Excavation for underground parking will be impacted by potential shallow bedrock within most of the Herndon Metro Station Area especially between the Herndon Parkway and Dulles Toll Road. Construction of such structures will result in premium construction cost.
- Foundations for multi-story structures may require piles or other structural premiums necessary to overcome the poor foundation characteristics of the underlying soils. Development of high rise structures within the Herndon Metro Station Area should anticipate construction cost above what may be typical.
- Development must accommodate the need for a premium construction cost for drainage control especially in excavations.

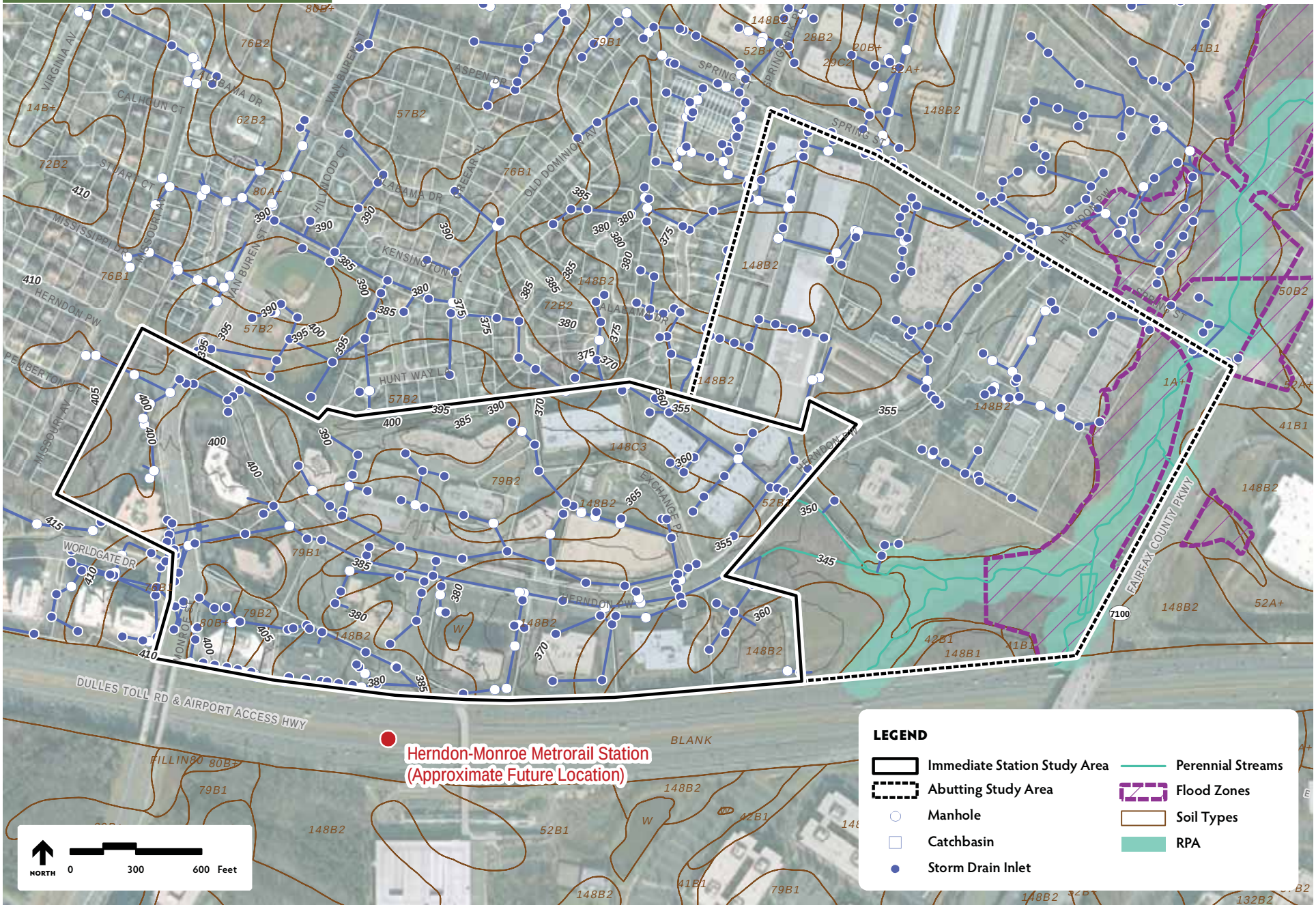
Iredell-Mecklenburg (Soil Number 148) is equally distributed within the Initial Study Area, but is located in the area where the Herndon Metro Promenade would touch down in the Herndon Metro Station Area. This soil is highly plastic and poses considerable foundation challenges because footings must extend below the soft sticky plastic clays, generally to bedrock to ensure competent building support. This soil type also presents the challenge of perched seasonal high water table and shallow depth to bedrock. Excavations may require blasting in hard bedrock.

Elbert /Iredell Group (Soil Number 52) is generally located in the center of the Initial Study Area, Herndon Parkway generally follows this soil. Elbert is wet plastic clay with seasonal high water table and depth to bedrock from three to 15 feet. Foundations and footings must extend below the soft plastic clay layer to bedrock. Similar to Iredell-Mecklenburg, Elbert is challenged by the presence of perched seasonal high water table and shallow depth to bedrock and excavations my require blasting. This soil can be hydric (containing water) and has the potential for non-tidal wetlands.

Kelly Silt Loam (Soil Number 79) is found mainly in the western part of the Initial Study Area. As with the other predominate soils, Kelly Silt Loam is has a thin plastic clay layer overlying bedrock, seasonally high water table and a rather shallow depth to bedrock of two to eight feet. Its foundation support is rather poor because the bedrock disintegrates rapidly if used in engineered fill.

Figure 3.3 | Environmental Constraints

Source(s): City of Herndon GIS, ESRI



NATURAL RESOURCES, WETLANDS, AND DRAINAGE

The Town of Herndon recognizes that natural resources within the Herndon Metro Station Area are limited and must be protected and enhanced whenever possible. These areas are identified as the wetlands and floodplain areas in the eastern portion of the Initial Study Area. Because most of the Initial Study Area drains to these features, it is important to understand their current conditions and how the potential development will impact these areas. The watershed is considered an urban development with a significantly high impervious percentage. As the Herndon Metro Station Area is redeveloped the impervious area is not expected to be reduced. However, the redevelopment will present opportunities to improve water quality leaving the watershed including Best Management Practices (BMP) and sustainable features, such as Low Impact Development (LID).

The most significant environmental feature is located in the easternmost portion of the Initial Study Area. In this location, a watershed of 470 acres flows to the confluence of Sugarland Run and the main drainage pipes from the Herndon Metro Station Area. Approximately 275 acres of development drains from the south side of the Dulles Toll Road and meets the 195 acres from the Initial Study Area. Stormwater drains through a 60-inch Reinforced Concrete Pipe (RCP) pipe from the south side of Herndon Parkway and a 48-inch by 76-inch Horizontal Elliptical Reinforced Concrete Pipe (HERCP) pipe under Herndon Parkway from the north to where an unnamed tributary converges with Sugarland Run then parallels the west side of Fairfax County Parkway. Conditions on the site of the undeveloped Fairbrook site are well documented by a Water Quality Impact Assessment prepared by Wetland Studies and Solutions, Inc. dated June 5, 2000, for a Fairbrook development application. The development plan includes the creation of on-site wetlands to compensate for the wetlands impacts associated with the new construction.

Site plans from the Herndon Metro Rail study were reviewed by the project team. Through this review, it was determined that much of the Herndon Metro Station Area flows to the Sugarland Run outfall unmitigated for water quality for the most part and only limited water quantity. The Town of Herndon has undertaken an effort to model the existing storm drainage system; the findings of this study will be published at a later date by the Town.

The FEMA Flood Insurance Rate Map (FIRM) 5100520001B shows the 100-year flood plain (Figure 3.3). The flood plain is not present within the Herndon Metro Station Area; however, floodplain is present within the Abutting Study focused on Sugar-land Run. Zone A8 (100-year floodplain) begins at the confluence of the unnamed tributary from Herndon Parkway and the Dulles Toll Road with approximate elevations of 341.5 feet in this area. A Zone B floodplain exists upstream of the confluence and south of Herndon Parkway. Zone B defines the 500-year flood plain. Approved site plans for the Fairbrook development project include a floodplain analysis and an elevation of 349.44 feet at Herndon County Parkway under developed conditions. The floodplain area is comprised mainly of the following three parcels:

TAX MAP/OWNER	CURRENT USE	COMMENT
Fairbrook Office Park	Existing two-story building	Zoned O&LI
Fairbrook Office Park	Three proposed multi-story buildings w/ parking garages	Approved Site Plan Zoned O&LI
Sunset Ventures LP	Vacant	Zoned PDB

According to documents provided by the Town of Herndon, the Fairbrook development defined the limits of the Chesapeake Bay Resource Protection Area (RPA based on a field survey of Jurisdictional Wetlands area and Jurisdictional Determination (Project Number 97-B601) issued by the U.S. Army Corps of Engineers on August 7, 1997. The Town of Herndon's Chesapeake Bay Preservation Ordinance requires a 100 foot RPA buffer landward of U.S. Army Corps of Engineers jurisdictional wetlands. According to approved record plans and subsequent revisions through December 2006, the proposed Fairbrook development encroaches onto the wetlands and the RPA, but proposes mitigation, water quality, and stormwater management. Upstream stormwater management must be mitigated for water quality and quantity as new development is considered. The floodplain impacts are limited to the easternmost portion of the Initial Study Area mainly impacting the Fairbrook development.

EXISTING UTILITIES

Refer to Figure 3.4 for the existing infrastructure serving the Herndon Metro Station Area. As a whole, the Initial Study Area has adequate utility infrastructure for existing development with no known deficiencies. Public water and sewer infrastructure information was provided by the Town of Herndon Public Works department. The information presented below for the Dominion Transmission Line, Dominion Power Distribution System, and Washington Gas was provided by the utility provider.

WATER

The Town of Herndon's water system is a water distribution system that is connected to the Fairfax Water distribution system at three connection points located at Spring Street, Worldgate Drive, and Bennett Street. The Town of Herndon purchases water from Fairfax Water through a water service agreement, which was initiated in 1985 and revised in several supplemental agreements. The maximum purchase allowable capacity is 4.7 million gallons per day (MGD). The Herndon water distribution system is supported by three water towers located on Alabama Drive at Van Buren Street (0.4 MG), Spring Knoll Street (1.0 MG), and on Third Street near Van Buren Street (1.0 MG). The Alabama Drive tank is the closest in proximity to the Initial Study Area.

A 12-inch waterline in Herndon Parkway provides service to the Initial Study Area from Van Buren Street to Sunset Hills Road. The distribution system is comprised of 8-inch and 10-inch waterline taps along the Parkway with redundant feeder connections to Spring Street and Van Buren Street (Figure 3.4). The current residual pressure along Herndon Parkway is between 40–50 psi.

SEWER

The Herndon Metro Station Area has two sewer branches. One sewer branch is located in Herndon Parkway and collects sewer from the commercial parcels along Herndon Parkway east of Van Buren Street. This branch is an 8-inch line. The second branch services the residential developments north of Herndon Parkway and south of Spring Street. Refer to Figure 3.4 for the sewer lines that serve the Herndon Metro Station Area. The two branches converge on the south side of the Parkway on the Fairbrook development. This section of sewer is typically referred to as Spring Downs Sewer Shed and metered by the Spring Downs sewer station. The Spring Downs Sewer trunk line is 12 inches at the confluence and becomes a 15-inch line before collecting flows from Fairfax County at the Sunset Station collection point along the eastern town boundary. The sanitary sewer main follows Sugarland Run north and increases in size from 24 inches to 27 inches. Under average rainfall conditions the sewer flows are estimated at 1.5 MGD.

The Town of Herndon has recently completed sewer modeling using field verified data for this area. This model was used by the Public Works Department to determine future impacts to the system and identify capital improvement projects necessary to support densification scenarios. The sewer modeling study considers the current sewerage service agreement between the Town of Herndon and Fairfax County. The current agreement allows for a rate of flow up to three MGD on an annual average basis. The peak flow is calculated differently considering the two major trunk lines separately. The allowable peak maximum rate of flow for Sugarland trunk line is 5.64 MGD or the Town/Fairfax County maximum allocation is 12 MGD. The allowable peak maximum rate of flow for the Horsepen Run trunk line is 0.2 MGD. The entire sanitary sewer for the Herndon Metro Station Area is discharged to the Sugarland Run trunk line and will not affect the Horsepen Run trunk line.

TRANSMISSION LINE

The 240 Kilovolt (kV) Dominion Transmission Lines presents a significant feature in the Herndon Metro Station Area. These lines generally run east-west from Fairfax County Parkway and the environmental feature west to a point they cross Monroe Street and turn and head south in the direction of the Dulles Toll Road and out of the Initial Study Area. Generally, the lines are located within a 100-foot easement that Dominion has obtained through an easement agreement with the property owner. The Transmission Line is aerially and ground patrolled periodically.

While Dominion allows development to encroach on the easement with approvals, these encroachments must be approved by Dominion and generally follow these requirements:

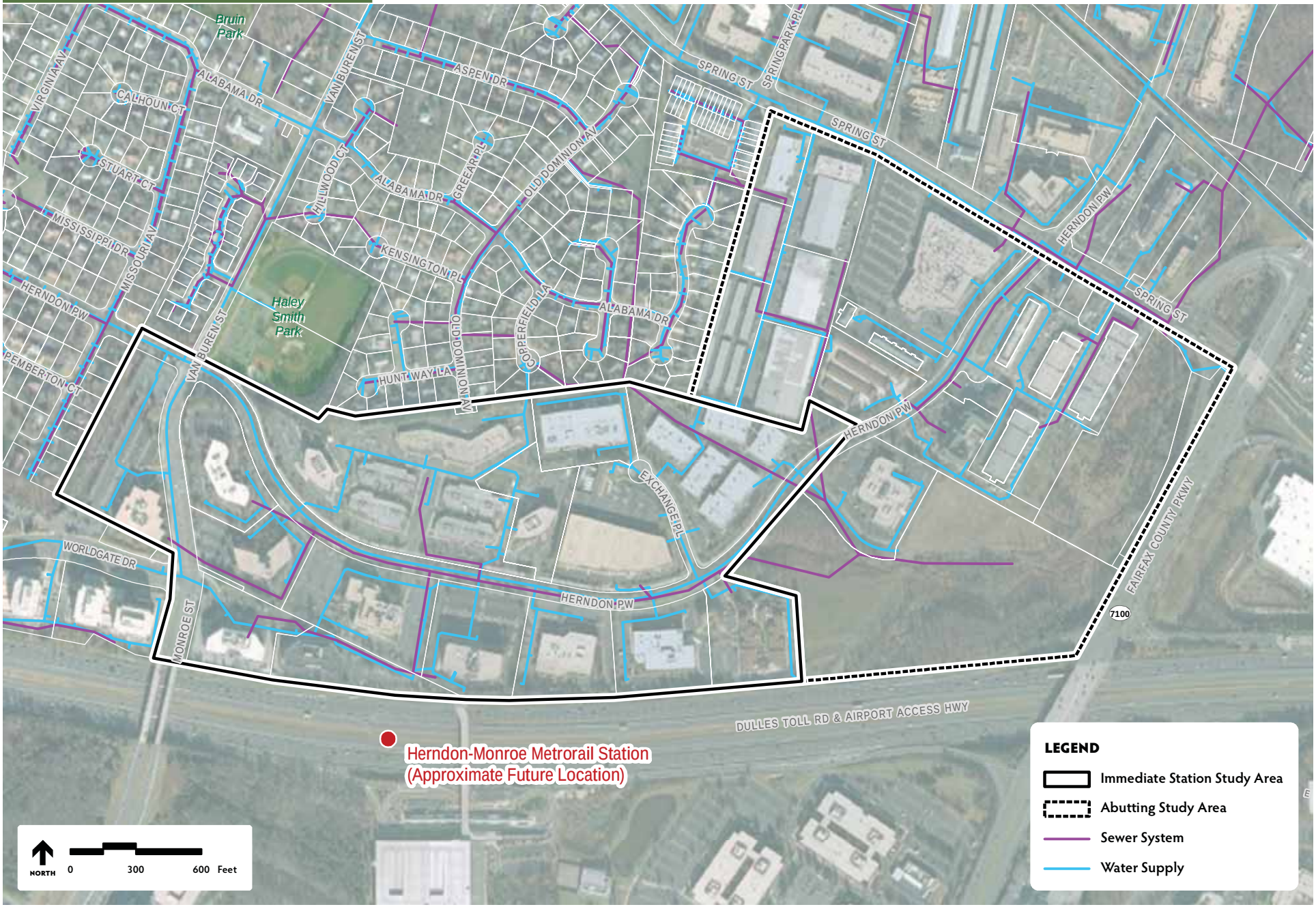
- Parking lots are generally allowed for transient vehicles not exceeding 13-feet and 6-inches in height.
- Athletic and park facilities are permitted
- Roads, culverts, pipes and trees no taller than ten feet are generally allowed
- Above-ground permanent structures, no closer than 20-foot horizontal clearance

POWER DISTRIBUTION SYSTEM

Dominion Power provides local power to the Herndon Metro Station Area. Based on conversations with Dominion Power, there is no indication that there are capacity limitations on the system in this area. The

Figure 3.4 | Sewer and Water Infrastructure

Source(s): City of Herndon GIS, ESRI



HTOC Plan and long-term vision for the area should be reviewed with Dominion Power's planning division to understand impacts to the system and potential cost impacts if significant portions of the system need to be upgraded or relocated.

GAS

Washington Gas provides gas to the Herndon Metro Station Area. There is no indication that there are capacity limitations on the system in this area, but the HTOC Plan and long-term vision plan should be reviewed with Washington Gas' planning division to understand impacts to the system and potential cost impacts if significant portions of the system need to be upgraded or relocated.

TELECOMMUNICATIONS

Based on our review of record drawings and site plans, there is evidence that telecommunication infrastructure was built to serve server farms in the area. Limited information is currently available but should be evaluated further. These cables may need to be protected, abandoned or replaced to meet the redevelopment goals of the Herndon Metro Station Area. These costs may result in a premium for private development and must be considered.

TRAFFIC AND TRANSPORTATION

This section discusses the existing conditions of the transportation system in and around the Herndon Metro Station Area. It highlights the traffic levels of service for key intersections and identifies several problem areas.

Figure 3.5 shows the transportation system context for this study. Ten critical intersections were identified for the existing and future traffic operations analyses:

- Herndon Parkway/Van Buren Street
- Van Buren Street/Worldgate Drive
- Van Buren Street/Alabama Drive
- Herndon Parkway/Commercial Access
- Herndon Parkway/Exchange Place
- Herndon Parkway/Fairbrook Drive
- Spring Street/Fairfax County Parkway Ramps
- Spring Street/Herndon Parkway
- Elden Street/Monroe Street
- Elden Street/Van Buren Street

These intersections are highlighted in the red dashed circles. The map also shows existing bus routes in the area. It is important to note that the bus routes will be modified by the service providers once the new station is in place and operational.

EXISTING TRAFFIC AND PEDESTRIAN CONDITIONS

Morning (AM) and evening (PM) peak hour traffic and pedestrian counts at each of the ten intersections were conducted during September 2010. Figure 3.6 summarizes the existing traffic counts and lane configurations for each of the study intersections. Appendix D includes detailed traffic count information. Average Daily Traffic (ADT) volumes were estimated for the major roadways assuming that the PM peak hour represents 10 percent of the daily volume (Figure 3.6).

Existing traffic operations were analyzed using VISSIM, a state-of-the-art traffic flow simulation program. This program is capable of analyzing vehicle, bus and pedestrian flows; in addition, this program also generates high-quality visualizations of traffic flows.

Figure 3.7 shows the existing AM and PM peak hour levels of service at the ten intersections in the Initial Study Area. Traffic Level-of-Service (LOS) is characterized by letter grades, with LOS A representing good traffic operations and LOS F representing over-capacity congested operations. Grades of LOS A through LOS D are generally considered to be acceptable operating conditions; LOS E is considered to represent an intersection operating at full capacity; and LOS F represents heavily-congested operating conditions.

As shown in the graphic, all of the intersections in the Initial Study Area are currently operating at LOS D or better during the AM and PM peak hours (Figure 3.7). Additionally, the intersections in Downtown Herndon are currently operating at acceptable levels of service.

It is important to note that, while the overall intersection LOS may be in the acceptable range, there may be certain movements or approaches that experience queues and congestion. This is the case at several of the intersections in the Initial Study Area. These existing problem areas are shown in Figure 3.8. Some sections of Spring Street to the east and Monroe Street/Van Buren Street to the west, as well as their intersections with Herndon Parkway, are congested during the AM and PM peak periods. For example, the northbound Monroe Street approach to the Herndon Parkway intersection often gets backed up southward through the intersection with Worldgate Drive. Herndon Parkway, itself, between these two intersections operates acceptably under existing conditions. Appendix D includes detailed capacity analysis summaries for each intersection, including level-of-service and vehicular delay by turning movement.

Figure 3.5 | Transcription Context

Source(s): City of Herndon GIS, ESRI

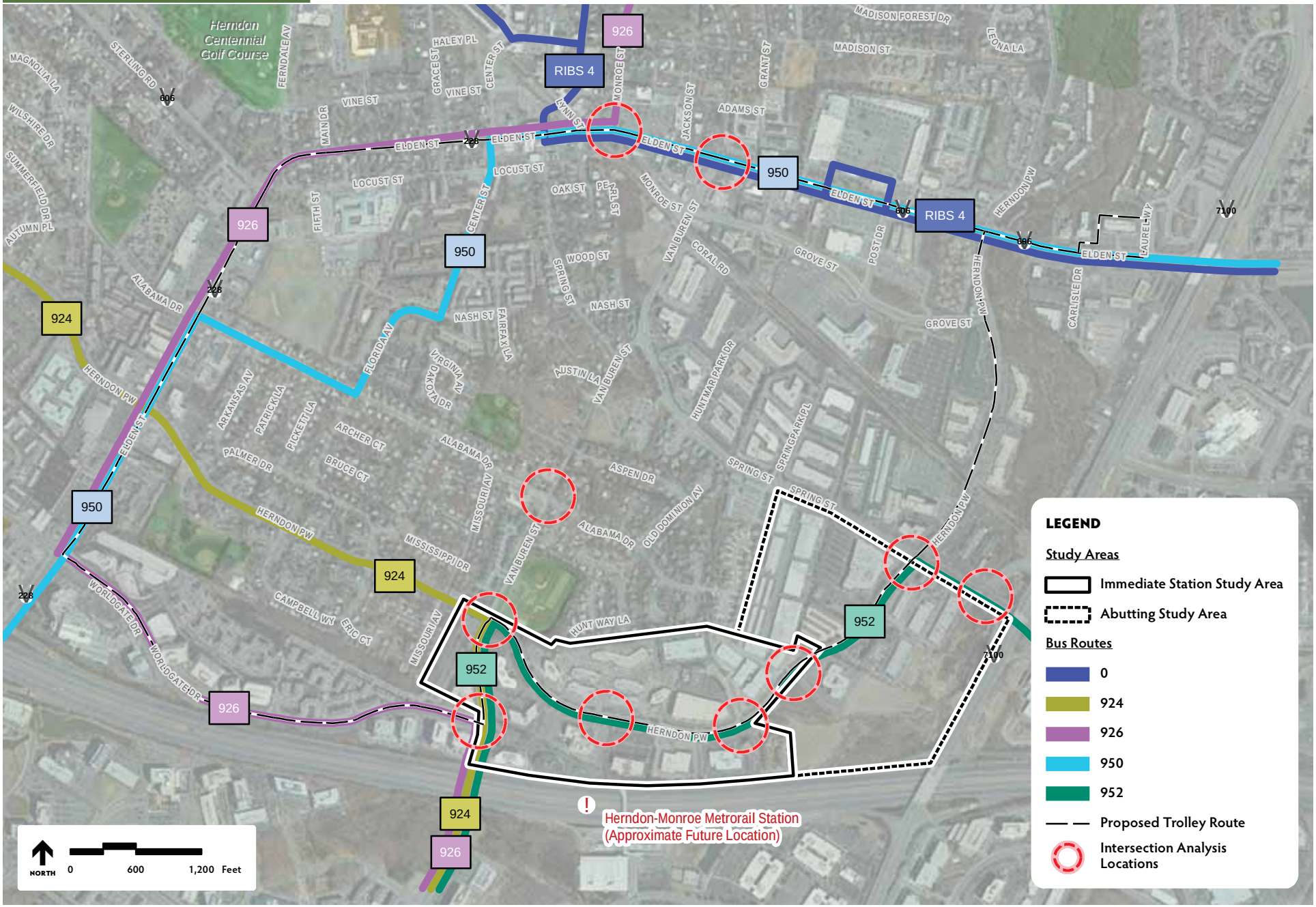


Figure 3.6 | Existing Traffic Counts and Lane Configurations

Source(s): City of Herndon GIS, ESRI

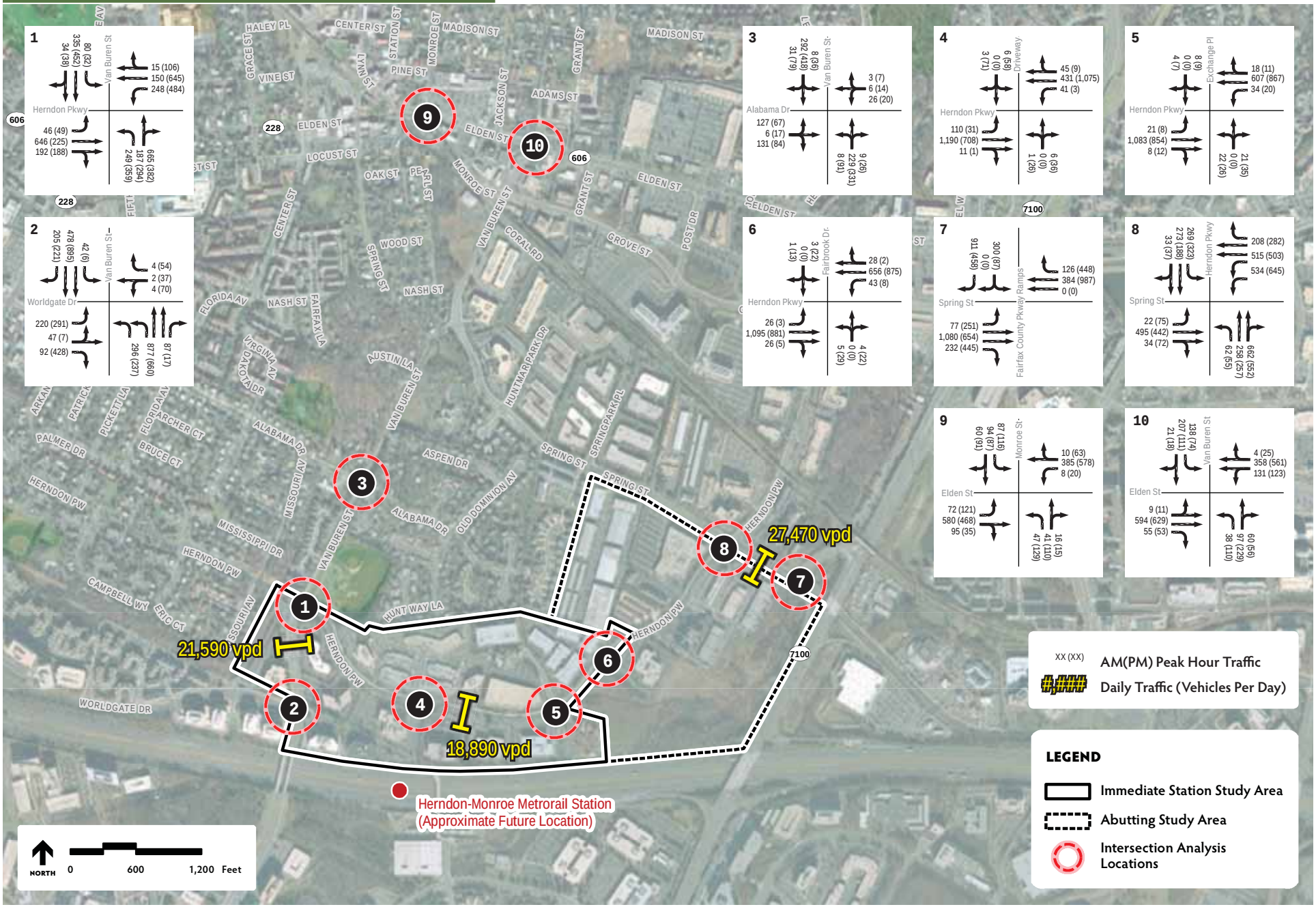


Figure 3.7 | 2010 Intersection Levels of Service

Source(s): City of Herndon GIS, ESRI

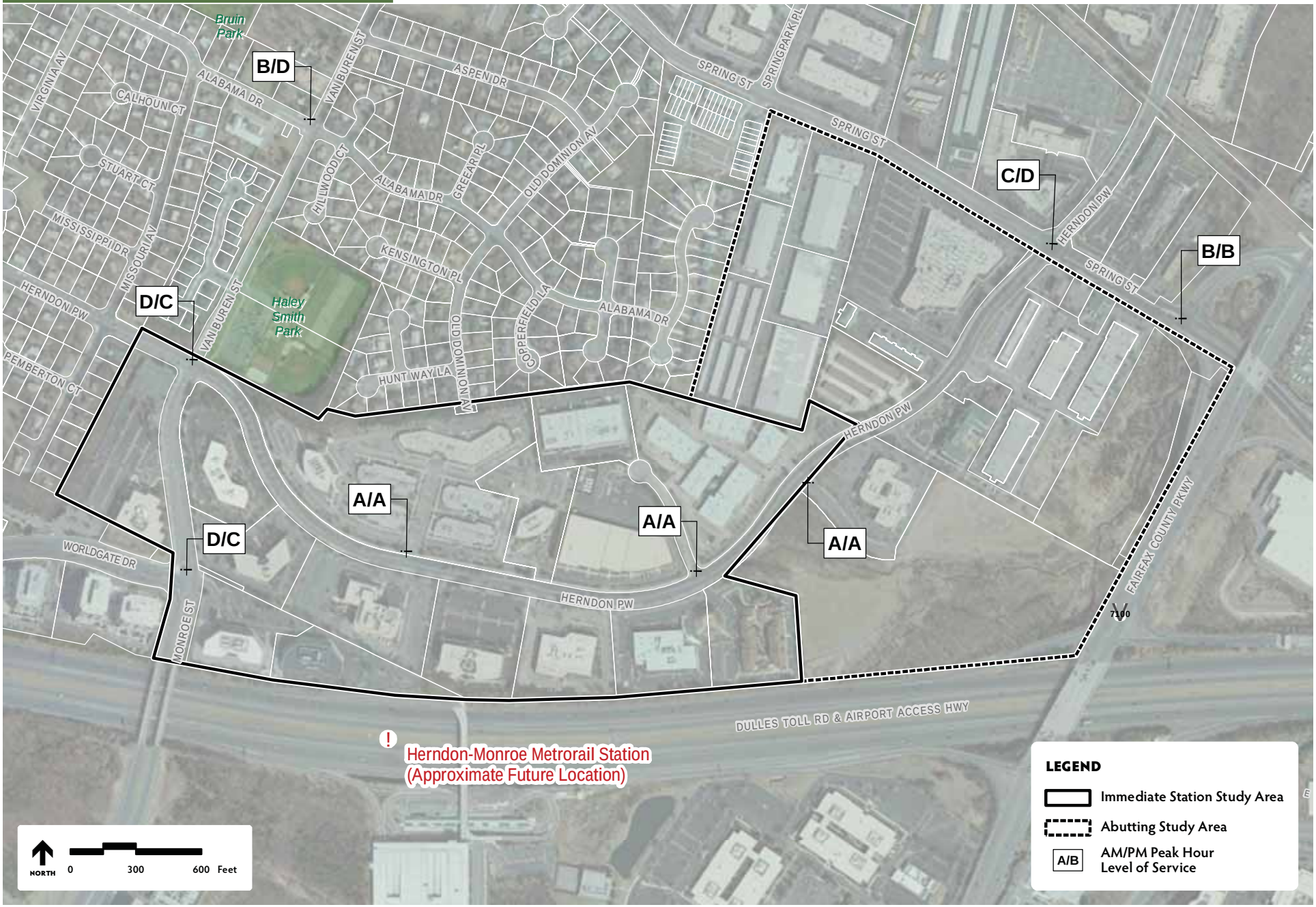
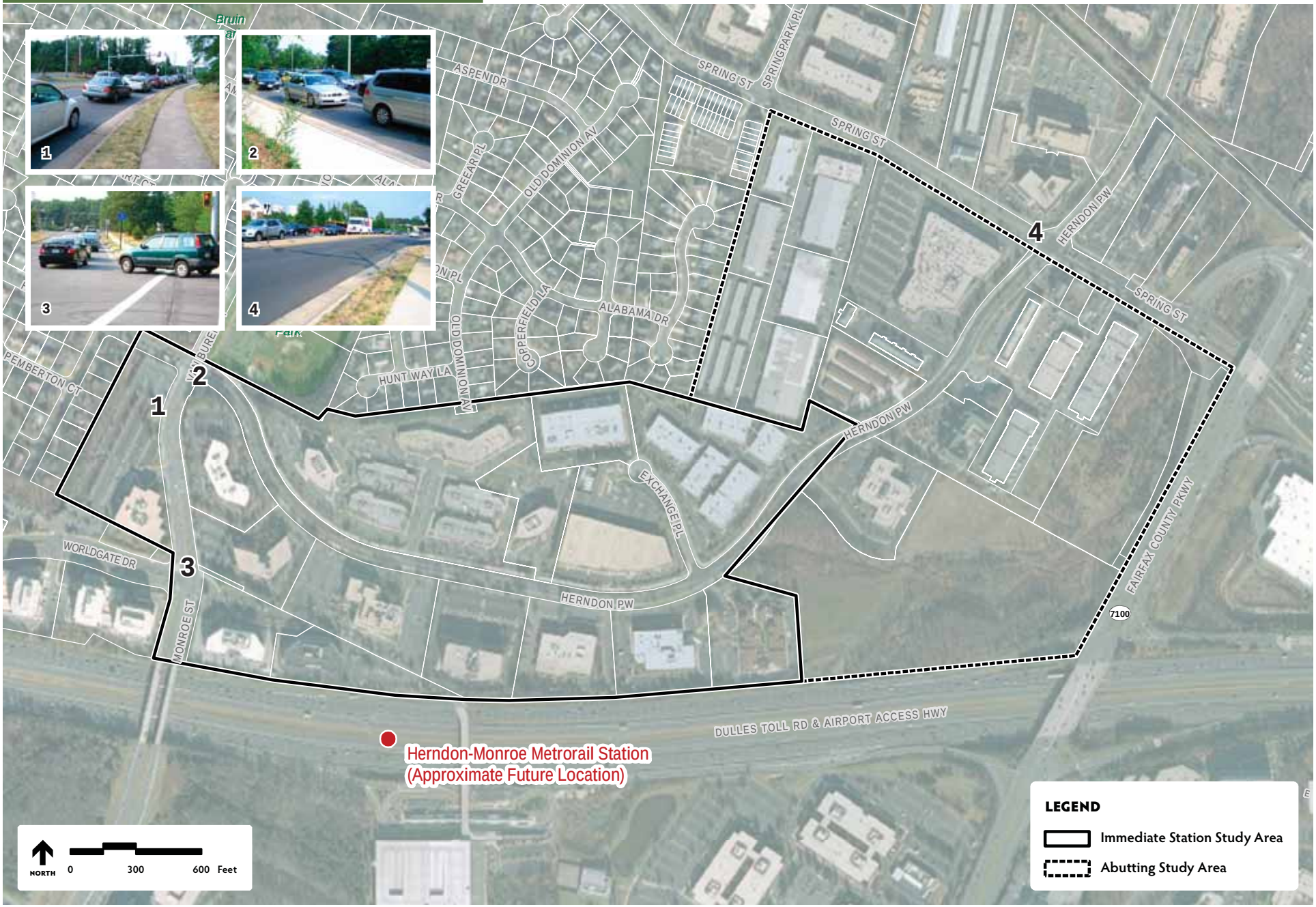


Figure 3.8 | Transportation Challenges and Opportunities

Source(s): City of Herndon GIS, ESRI



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DEVELOPMENT OPPORTUNITIES

4

INTRODUCTION

An important component of the "Discovery" phase was gaining an understanding of TOD from an economic standpoint. The densities and land uses allowed in a TOD help in setting the framework for development, supporting transit ridership, promoting a sense of place, and providing synergies that supports the development of other uses in the area.

Observations that informed the identification of development opportunities and, thus, the evolution of the HTOC Plan were drawn from multiple sources, including:

- An industry literature review;
- Case study evaluations; and
- Interviews with existing property owners.

Best practices from TOD industry literature, the lessons learned from the case studies, and the input from the property owners were considered along with the project team's general experience with TOD to provide observations about future densities and land uses in the Herndon Metro Station Area. Four existing station area case studies were evaluated. These included: Clarendon, Arlington, Virginia; Silver Spring, Maryland; Prince George's Plaza, Maryland; and Wheaton, Maryland. Eight major commercial property owners or their representatives were interviewed in an effort to understand the likelihood of redevelopment of commercial properties in the area closet to the Metro Station. An overview of the process related to each of these tasks is provided below. The technical memoranda prepared as part of these tasks are provided in Appendix B.

TRANSIT-ORIENTATED DEVELOPMENT ECONOMICS

LITERARY SEARCH AND GENERAL EXPERIENCE

From an economic standpoint, it is important that the densities and land uses allowed in the Herndon Metro Station Area generate transit riders, contribute to a sense of place, and synergistically support one another. To provide observations about future densities and land uses in the station area, the project team reviewed guidance from leading TOD organizations as well as utilized its past experience.

TOP SOURCES CONSULTED

The following industry leaders in real estate devel-opment and TOD were consulted:

- Urban Land Institute
- Transportation Research Board
- Center for Transit-Oriented Development
- Federal Transit Administration
- American Public Transportation Association

The project team's institutional knowledge of TOD, gained from experience in the field, was also utilized in order to provide recommendations to the Town.[1]

1. BBP is a recognized leader in TOD investment. The firm has conducted economic and market evaluation on behalf of the public sector, and facilitated retail-oriented TOD throughout the nation.

DENSITY

TOD industry literature suggests a range of threshold densities to support transit ridership. Such threshold densities include 12 to 30 dwelling units per acre and a FAR of 1.0 to 3.0. The range of TOD densities documented in the case study evaluation (discussed further below) includes FARs of 0.5 to 6.5 (with the 0.5 FAR equal to approximately 15 dwelling units per acre).

While threshold densities can be achieved through by-right zoning, they can also be reached through bonus density provisions. Local governments often provide bonus density in exchange for the provision of uses in the public benefit. For example, several jurisdictions offer density bonuses in exchange for affordable housing; these density bonuses generally range from 25 to 35 percent above base allowable density.

Land Uses and Critical Mass

Having different uses – especially residential, retail, and office – will result in more activity at different times of the day as well as more activity on both weekdays and weekends. The synergies of a mix of uses can also result in opportunities for shared parking; for example, an office use that is busy during weekdays but not on nights and weekends might share parking with a retail use that is mainly patronized in the evenings and weekends.

A mix of uses can also contribute to a sense of place and the creation of a destination more readily than an area dominated by a single use. The presence of retail shops and restaurants can serve as an amenity for office uses, making an area more attractive for employers and their employees. Such amenities are also important to attracting residents to a transit area.

OBSERVATIONS AND RECOMMENDATIONS RELEVANT TO HERNDON (PRIOR TO THE FINANCIAL AND FISCAL IMPACT ANALYSIS)

The following discusses lessons drawn and recommendations for Herndon based on industry literature, case study research, and discussions with property owners.

Density

Based on the industry literature, the case study research, and a general review of existing conditions in the station area, it was recommended that the Town consider a minimum average for the area between 3.0 to 4.0 FAR and refine these FARs through financial and fiscal testing. This range of densities represented an increase of approximately ten times higher than current average densities.

As discussed in Chapter 3, Existing Conditions, currently two zoning districts apply to the Initial Study Area: O & LI; and PD. The maximum FAR permitted in these districts is 0.7 in the O & LI district and 0.4 in the PD-B district. Actual densities are generally less dense than those allowed in these districts, though a range of densities is apparent in the Initial Study Area.

This range (3.0 to 4.0 FAR) was specified prior to a financial feasibility evaluation for the Initial Study Area. This range of densities was identified as a starting point prior to such analysis, providing the following general observations about future densities along with this recommended range:

- Densities will have to increase at least above their current levels for redevelopment to occur.
- Properties with more intense existing development will require higher densities to redevelop than those with less intense existing development.
- Actions that reduce developable acreage – such as public plazas, public parking, public right-of-ways, etc. – will require allowance for even more intense development to account for the lost development potential.

It was recommended that the Town also consider density bonuses for public amenities such as public plazas, public parking, etc., and may consider modeling such density bonuses after local governments that have successfully offered such bonuses for another type of public amenity (for example, affordable housing) with a bonus from 25 to 35 percent.

Land Use

In terms of land uses, it is recommended that a mix of uses that includes residential, retail, and office be sought (although this mix could be expanded with related uses such as hotels or civic uses). Herndon should continue to maintain its identity as a strong choice for office-based companies with office spaces but will expand to offer housing, retail shops, and restaurants.

Residential

The addition of the Metro Station will provide a new form of access to the regional jobs market. As such, adding housing to the Herndon Metro Station Area can tap into existing regional labor pools and attract households seeking a place to live within walking distance of transit. There is no critical mass requirements of a minimum number of residential developments needed to make an area marketable.

Office

The Herndon Metro Station Area has already established an identity as a location for offices, and companies have enjoyed the visibility and access to the region afforded by the area's location along the Dulles Toll Road. The Herndon Metro Station Area's access to the regional base of companies and labor pool will increase with the new Metro Station; thereby, strengthening its position as a destination for office-based companies. Therefore, the Herndon Metro Station Area should continue to serve as an area with many spaces for such companies, although these office spaces would be joined with retail, restaurant, and residential uses. There is no minimum critical mass level of space for office development.

Retail & Restaurant

Herndon offers strong demographics supportive of retail and restaurant development. Nearly 16,000 residents live within one mile of the proposed station with an average household income of over $90,000. Within three miles, over 120,000 residents with a median household income of nearly $110,000 reside. Herndon is also a job center with nearly 17,000 employees working within one mile of the proposed station and nearly 84,000 employees with-in three miles. These residents and employees, as well as future residents and employees of the TOD, could offer support for retail goods and services in the transit area.

Herndon's position for retail and restaurant development will be best met through developing with neighborhood-oriented rather than regionally-oriented retail and restaurant uses due to the competition with other established regionally-serving destinations nearby (i.e., Reston Town Center). Though there is no critical mass requirement of a minimum number of housing units or office square feet in a transit district, there is evidence that there are minimum sizes for retail clusters. For example, according to the Urban Land Institute, the minimum size of a neighborhood shopping center (a center providing locally-oriented goods and services) is 30,000 square feet. Most neighborhood centers are between 30,000 and 100,000 square feet.

Hotel

To support commercial development as well as guests of residents at the new Metro Station, a mix of additional hotel rooms should be considered. The mix should include typical properties used by short-term commercial travelers, extended stay hotels for longer-term commercial use, and rooms for short-term stays by visitors. Meeting space should be built as well to accommodate business, social, military, educational, religious, and fraternal events that would also support retail space and restaurants in Herndon.

EVALUATION OF CASE STUDIES

As input to the TOD observations provided above, the project team reviewed case studies of TOD areas. Communities in the Washington, DC metropolitan area and beyond have experienced redevelopment in their Metrorail or other heavy rail station areas. For some communities, station areas are largely "built-out" and redevelopment achieved, while in others, redevelopment is underway but is being guided by recent planning efforts.

The following four station areas, all within the DC metropolitan area, have been selected as models in TOD planning for Herndon:

- Clarendon in Arlington, Virginia;
- Silver Spring, Maryland;
- Prince George's Plaza, Maryland; and
- Wheaton, Maryland.

Refer to Figure 4.1 for the locations of these stations.

SELECTION CRITERIA

Each station area meets most, but not all, of the set of selection criteria developed by the Town of Herndon and the project team. Table 4-1 lists the selection criteria used.

The matrix presented in Table 4-2 provides an illustration of how the case studies meet some of the criteria identified above. As the matrix shows, each of these case studies meets the majority of criteria listed, but no case study is a perfect match.

The case studies include at least one that is partially built and has been the subject of recent planning efforts (Wheaton). With respect to the 'town-scale setting' criteria, many of the case studies include a range of heights, including towers taller than eight stories, but also lower-density properties (such as one-story retail centers and three-story town homes). In response to another criterion – commercial orientation – while each of the areas contained primarily commercial uses prior to redevelopment, many now include a mix of uses that includes residential. Each of the station areas contain completed TODs that are considered success stories, although some station areas as a whole have been more successful than others. For Wheaton's case, the station area is being master planned and still emerging.

CLARENDON, ARLINGTON, VA

Part of the Rosslyn-Ballston Corridor (the orange line), the Clarendon Metro Station area has certainly contributed to the corridor's status as a TOD success story with a history of redevelopment and infill spanning the past forty years. In the 1970s, when Metrorail service began operating in Arlington, the Clarendon station area was characterized by low-density, automobile oriented uses, including used automobile lots, automotive parts stores, and department stores. Surrounding the station area were single-family neighborhoods which remain intact today. Clarendon has since been transformed with new retail, restaurants, housing, office and civic space, and has become the type of livable, walkable community termed an "Urban Village" by Arlington County planners.

LESSONS LEARNED

Many lessons can be taken from the Clarendon experience, including:

- Master planning can provide developers with the clarity and certainty to move forward with development proposals that reinforce the local vision for TOD. By-right zoning of 3.5 FAR, with density bonuses up to 6.0 FAR, gave developers clarity regarding the potential density of their projects – and enabled lending to make projects a reality.
- Updates to plans and policies are often needed over time to address unforeseen challenges that emerge over time.
- TOD – particularly redevelopment – is a long term prospect. Though Metrorail service was introduced to Clarendon in the 1970s, forty years later TOD is still being added to the community.

SILVER SPRING, MD

Situated on the Red Line in eastern Montgomery County, Silver Spring was a low-density suburban commercial area until catalytic developments ten years ago ushered in TOD that is still being added in the station area. Originally developed in the 1920s and 1930s, Silver Spring was home to many one-story, Art Deco style commercial buildings and garden apartments (many of which are still present in the community), and is surrounded by single-family residential neighborhoods.

Figure 4.1 | Case Studies

Source(s): City of Herndon GIS, ESRI

Station	Clarendon	Silver Spring	Prince George's Plaza	Wheaton
State	Virginia	Maryland	Maryland	Maryland
Town-Scale Setting	1.0 to 6.0 FAR	0.5 to 6.5 FAR	1.0 to 4.0 FAR	0.4 to 1.5 FAR (up to 6.0 planned)
Suburban Context		X	X	X
Commercially-oriented	Mixed	Mixed	Mixed	Mixed
Redevelopment and Infill	X	X	X	X
Major Transit Corridor	X	X	X	X
Major Vehicular Artery		X	X	X
Perpendicular Commuter Flows		X	X	X
On a Single Corridor	X	X	X	X
Outside of Downtown/Town Center	X	X	X	X
Built	Still Underway	Still Underway	X	Beginning

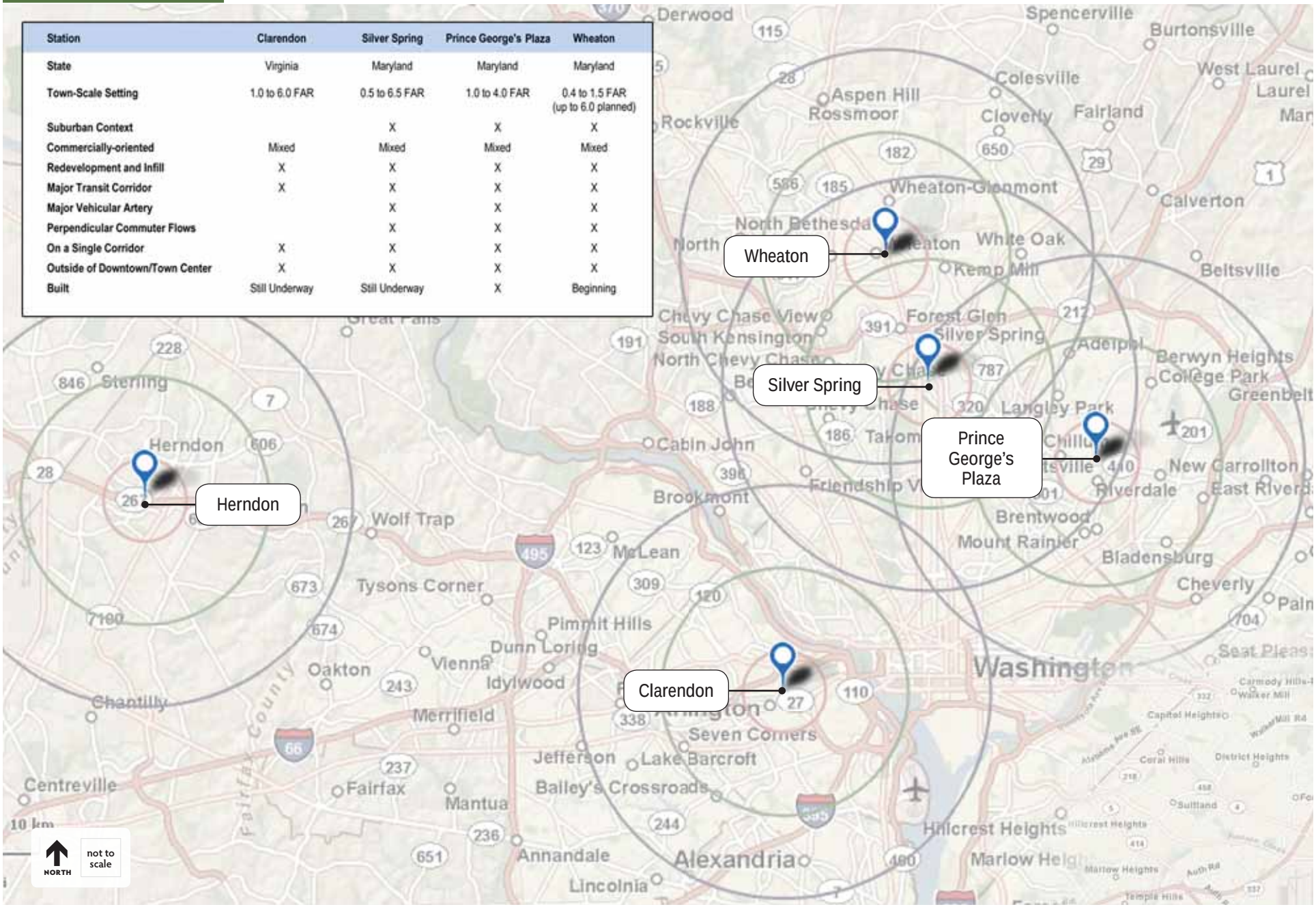

Table 4-1 | Case Study Selection Criteria

Criteria Category	Criteria Description
Town-Scale Setting	• A commercial floor area ratio (FAR) with an average of between 1.0 to 2.5 • Roughly corresponding to 4 to 8 stories in development (with the recognition that some developments may be more dense or taller, and some less dense and shorter, particularly as one moves further from the station)
Suburban Context	Town setting situated in a populated suburban County, with lower-density residential areas nearby
Commercially-Oriented	Primarily non-residential uses (although multi-family residential may be a minor component of the overall mix of uses)
Redevelopment and Infill	Existing lower-intensity properties or parking lots were redeveloped or experienced infill development
Major Transit Corridor	Station area located along major corridor (especially those with a destination similar to Dulles International Airport)
Major Vehicular Artery	Transit line coincides with a major vehicular artery between two landmark destination points (and competes with the use of the cars on the artery): • Perpendicular commuter flows: principal commuter flows are not necessarily in the direction of the transit line, but also perpendicular to it • On a single corridor: station should be along a single corridor rather than at the intersection of two or more lines • Outside of downtown or town center

Source: Town of Herndon, in collaboration with consultant team.

Table 4-2 | Case Study Evaluation Findings

Station	Clarendon	Silver Spring	Prince George's Plaza	Wheaton
State	Virginia	Maryland	Maryland	Maryland
Town-Scale Setting	1.0 to 6.0 FAR	0.5 to 6.5 FAR	1.0 to 4.0 FAR	0.4 to 1.5 FAR (up to 6.0 planned)
Suburban Context		×	×	×
Commercially-Oriented	Mixed	Mixed	Mixed	Mixed
Redevelopment and Infill	×	×	×	×
Major Transit Corridor	×	×	×	×
Major Vehicular Artery		×	×	×
Perpendicular Commuter Flows		×	×	×
On a Single Corridor	×	×	×	×
Outside of Downtown/Town Center	×	×	×	×
Built	Still Underway	Still Underway	×	Beginning

The area faced challenges in the 1970s, when development of new shopping malls such as Wheaton Plaza drew customers away from older retail centers. Despite the addition of Metrorail service, Silver Spring remained in decline until the development of a few catalytic projects – most notably Downtown Silver Spring and the headquarters for Discovery Communications – which brought new vibrancy to the community. Today, Silver Spring has emerged as an Arts and Entertainment district with a cluster of theaters as well as regionally-oriented retail and restaurants, office uses, and residential uses.

LESSONS LEARNED

Lessons from Silver Spring's experience with TOD include:

- Anchors can be crucial to setting the tone for the area, as Silver Spring's experience with AFI Silver Theater and Discovery Communications demonstrates.
- Public involvement in facilitating TOD can include a broad range of activities, from streamlined permitting to parking district creation and operation to land assemblage.
- Identifying the right mix of uses and vision for critical sites like the Downtown Silver Spring redevelopment area can take time and significant community involvement.

PRINCE GEORGE'S PLAZA, MD

Prince George's Plaza is one of Prince George's County's first Metro station areas to experience TOD. The latest developments, which include mixed-use as well as residential multi-family uses, add a new form of development to a previously suburban, automobile-oriented retail and office area. First developed in the 1960s, Prince George's Plaza was developed with a suburban mall (for which the area was named), office towers surrounded by large surface parking lots, and garden apartments. Surrounding neighborhoods contain low-density, single-family homes.

Notable projects, including University Town Center and Mosaic at Metro, are changing the landscape of the station area and spurring other proposed higher-density, pedestrian-friendly developments. However, these recent projects come after some challenges in achieving the type of development envisioned in the County's 1992 Transit District Development Plan. In response to the requests of developers, the county loosened its requirements for the area, eliminating mixed-use requirements and allowing for suburban retail development. As a result, in the late 1990s Prince George's Plaza developed not with mixed-use, higher-density TOD, but with suburban retail uses (including big box stores and neighborhood shopping centers). Prince George's Plaza's moderate success through the years in achieving TOD provides lessons in terms of establishing and maintaining a strong vision for TOD.

LESSONS LEARNED

Several lessons can be drawn from Prince George's Plaza's ongoing experience with TOD. These include lessons related to the following points:

- Establishing and maintaining a vision with associated development requirements is critical to avoiding the introduction of non-TOD forms of development with a long lifespan. Preventing inappropriate uses (such as the natural gas facility that was at one time proposed in Prince George's Plaza) is an activity for public sector involvement.
- Pedestrian access is a particularly important consideration for station areas like Prince George's Plaza and Herndon, which include major arterial roadways.

WHEATON, MD

Two Metro stops north of Silver Spring on the Red Line, Wheaton is another area targeted for transit-friendly redevelopment by Montgomery County. Currently, Wheaton primarily contains suburban-style, lower-density retail and commercial buildings, including Wheaton Plaza (a suburban shopping mall) and many single-story strip-style retail centers. The area also includes a few lower-intensity suburban office buildings, and is known for its diverse and internationally-inspired restaurants and shops. Higher-intensity, pedestrian-friendly redevelopment has begun in Wheaton with the introduction of several residential developments. More TOD is proposed.

Unlike the other case study communities profiled, Wheaton is still very much in the planning stages. Montgomery County has published a draft sector plan for the community that envisions a higher-density central business district and a transition of less-intense (yet still transit-oriented) developments surrounding this district towards surrounding single-family neighborhoods. The plan is similar to that of Silver Spring, with its emphasis on a core higher-intensity CBD and less-intense transitional uses, but different in that the County is embracing a more residentially-led redevelopment in Wheaton as compared to the arts-and-entertainment and more corporate-led redevelopment of Silver Spring. The County is also taking proactive steps to preserve Wheaton's unique collection of small, diverse restaurants and shops.

LESSONS LEARNED

Though Wheaton is still in the planning stages, some of the topics addressed in Montgomery County's planning serve as lessons for TOD. These lessons include those related to:

- Interim uses are often desirable to activate a property after a business is closed or relocated prior to re-development. Interim uses can include flea markets, festivals, outdoor movies, and many other activities.
- Defining a use mix vis-à-vis surrounding communities can be helpful to differentiate areas from one another. Whereas Silver Spring has flourished as an arts and entertainment destination, Wheaton's redevelopment will likely be driven by new residents.
- Property assemblage is often difficult in areas that are already built out like Wheaton, and requirements for assemblage as a pre-condition to redevelopment may dissuade developers from development.

SUMMARY OF OBSERVATIONS/ LESSONS LEARNED

The case studies illustrate a range of potential uses and densities, public sector activities, outcomes and challenges related to TOD. They also provide a variety of lessons for Herndon as it undertakes its planning process for the Herndon Metro Station Area. While no station area represents a perfectly analogous situation to Herndon, each station area meets (or partially meets) many of the criteria considered important in their selection. For example, in terms of:

- Scales of uses: each station area includes at least a few developments that are of 'town-scale' (1.0 to 2.5 FAR, or four to eight stories, generally speaking). Some notable developments that meet this definition in terms of FAR include: Clarendon's Market Common; Silver Spring's Downtown Silver Spring, Lofts 24, Cameron Hills and 8045 Newell Street; and all of the TODs that have occurred to date in both Prince George's Plaza and Wheaton.
- Suburban context: each station area is surrounded at least in part by older, lower-density residential neighborhoods. Silver Spring, Wheaton and Prince George's Plaza are all part of suburban counties analogous to Fairfax; only Clarendon is part of an urban county.
- Commercially-oriented: while the station areas all now contain a broader mix of uses, each was dominated by commercial uses prior to TOD, similar to Herndon.
- Redevelopment and infill: since Herndon is largely built out, redevelopment is the likely route for TOD to occur in the station area. Clarendon, Silver Spring, Prince George's Plaza and Wheaton have all experienced redevelopment and infill, and in each station area additional redevelopment projects are proposed.
- Major transit corridor: each station area is located on a major Metro line, but none contains a major destination quite like Dulles International Airport – which is an asset unique to the Silver Line.
- Major vehicular artery: Silver Spring, Prince George's Plaza, and Wheaton are all located along major state highways, which are somewhat analogous to Herndon's location on the Dulles Toll Road, but different given the larger scale of the Toll Road and its more limited access nature.
- Perpendicular commuter flows: in the cases of Silver Spring and Wheaton, while the transit line runs north-south, commuter traffic in these areas also runs east-west. In Prince George's Plaza, the transit line follows a northeast-southwest route while East-West Highway follows an east-west alignment.
- On a single corridor: like Herndon's future Metro Station, each of the case study stations is located on a single corridor rather than at the intersection of multiple lines.
- Outside of a downtown or town center: in Herndon, the Metro Station will be located outside of Herndon's historic downtown area. Each of the case study communities profiled is not situated in a historic downtown or existing center of town though some of the areas did (and still do) contain older, in some cases historic, properties (i.e. Clarendon and Silver Spring).

Even though no case study is a perfect fit, lessons learned from the group of case studies still provide insight to TOD planning. Summary observations by theme are provided below.

PLANNING AND TIMING OF DEVELOPMENT

- Master planning is a critical part of facilitating TOD. Some important elements of the process—all relating to a strong, publicly supported vision for the area—include: defining the types of uses and densities, identifying transitional uses and densities, planning for interim uses, planning for open space and planning for access.
- Planning doesn't stop with the publication of the master plan. Updates and amendments are often needed to address unforeseen challenges over time.

- TOD takes time. It may take decades from the establishment of a plan to realize TOD.
- Property assemblage is often difficult in areas that are already built out, and requirements for assemblage could dissuade TOD from occurring.

USES

- Identifying the right mix of uses and vision requires significant community involvement, understanding of market conditions, and awareness of how an area should be differentiated from nearby areas.
- Anchors can be crucial to setting the tone for an area.
- Uses in addition to density can serve as buffers to lower-density areas nearby. For example, confining "edge" uses to residential and limited retail may be a way to buffer residential communities from higher-density core areas.
- Preventing inappropriate uses may be just as important as encouraging desired uses.
- Interim uses are often desirable to activate redevelopment sites between their prior and future uses. Interim uses can include such uses as festivals, outdoor movies, dances, performances, art exhibits, etc.

PUBLIC SECTOR ROLES

The public sector can take many roles in encouraging TOD, from more indirect actions such as offering streamlined permitting, to more active involvement such as operating a parking district, to even stronger direct involvement in public-private partnerships.

PROPERTY OWNER INTERVIEWS

Since Herndon, like the case study communities profiled above, faces the prospect of redevelopment rather than greenfield TOD, an important element of the development opportunities analysis was discussion with Herndon property owners to understand their thoughts on TOD redevelopment. At the Town's request, eight major commercial property owners or their representatives were interviewed in an effort to understand the likelihood of redevelopment of commercial properties in the area closet to the Metro Station. In general, property owners' responses were positive but guarded about redevelopment, and a summary finding is that full redevelopment of the future TOD area is likely to take decades, even in generally good economic conditions. The following describes the interview process, including questions asked and observations/themes from the interviews.

Interview Process

The property owners and/or representatives were interviewed for the following properties:

- 196 and 198 Van Buren Street
- 466 Herndon Parkway
- 535 Herndon Parkway
- 555 Herndon Parkway
- 560 to 620 Herndon Parkway
- 575 Herndon Parkway
- 593 Herndon Parkway
- 607 Herndon Parkway

Additionally, representatives of 533 Herndon Parkway and 544 Herndon Parkway were contacted several times but did not participate in the interview process.

Appendix B provides the specific survey questions and actual responses provided by the participants.

THEMES FROM INTERVIEWS

OVERALL UNDERSTANDING OF TRANSIT-ORIENTED DEVELOPMENT

Property owners defined TOD in many terms. The most commonly repeated definitions included: higher densities, a mix of uses, and pedestrian orientation/walkability. Several also noted that to property owners, TOD means enhanced marketability/value of their properties given the expanded attractiveness afforded by rail access to the regional market. In addition, several comments related to TOD's promise of reducing car usage (i.e. promoting alternative means of transportation and reducing/managing parking).

All of the property owners suggested there was not a better option than TOD in the Herndon Metro Station Area. Several respondents noted that if TOD does not occur, the alternative will be continuation of the status quo, which was not generally viewed as a good alternative.

CHALLENGES/OBSTACLES TO DEVELOPMENT

In general, most property owners suggested the Herndon Metro Station Area has been moderately successful. They noted several challenges that have constrained its success, including: oversupply of office space, limited aesthetic appeal of existing buildings, lack of retail and restaurant amenities, and limited access to and from the Toll Road.

A variety of least attractive attributes were noted in the Herndon Metro Station Area. Several of these attributes related to a lack of offerings – particularly lack of retail, restaurant, residential and full-service hotels. One respondent noted the lack of an inviting place to gather and socialize as a drawback. Though the area's general access to the airport and other regional destinations was noted as an attractive attribute, some respondents suggested access is limited getting to the Herndon Metro Station Area from the Toll Road, and others noted the area's traffic congestion was a weakness. The unattractiveness of existing buildings and power lines was noted. Finally, though some property owners noted local residents as a top strength in response to the prior question, some property owners suggested local residents could be a challenge in terms of those residents that may oppose higher-density and taller developments. Another property owner suggested crime was a weakness in the Herndon Metro Station Area.

OPPORTUNITIES FOR FUTURE DEVELOPMENT

Generally speaking, property owners suggested they had no immediate plans for expanding/enhancing properties that would conflict with future redevelopment. They also by and large suggested they would consider redevelopment if the Metro Station is built.

Many of the most attractive attributes noted by respondents related to location, transportation, and access, particularly as they relate to Dulles International Airport. Other strengths noted include:

- Visibility of the Herndon Metro Station Area to the Toll Road;
- Higher-income and educated residents;
- Proximity of Reston Town Center;
- Proximity of downtown Herndon;
- Secure dark fiber cables along the Toll Road;
- Quality schools; and
- Business-friendly governments.
- Property owners raised a number of factors that would make redevelopment more feasible. The most common responses related to increasing allowable densities. Other factors noted included:
- Zoning and allowable land uses (including allowing mixed use development);
- Infrastructure improvements linking people between the Initial Study Area and Metro Station (i.e., a pedestrian footbridge);
- Incentives and/or flexibility regarding height (i.e., bonus density), green space, and open space;
- A lack of requirements to consolidate parcels/lack of minimum site size; and
- Streamlined/expedited permitting.

Several property owners suggested they would be willing to work together to make the area more transit-friendly, but a few noted that they would probably not be interested if that involvement meant property assemblage.

PUBLIC ACTIONS

Many suggested the new station will stimulate TOD, and several noted other areas in the region and nation where the introduction of a new station has led to TOD. However, several others commented that the station alone would not be enough to stimulate development.

These respondents noted that key public sector actions will be needed to make the area more attractive for TOD, particularly related to increasing allowable densities and allowing a broader mix of uses. Other suggestions for public sector activities included master planning efforts, providing public parking, providing strong access between the Initial Study Area and Metro Station, community outreach, streamlining the permitting process, and maintaining the visibility of properties along the Toll Road. On the private sector side, it was suggested that property owners with frontage along the Toll Road make the area attractive by investing in high-quality architecture.

While some respondents suggested public and private actions could be taken to make the area more of a destination, others cautioned that they did not believe the area could become a destination (or at least not a destination in the sense of a regional attraction like Reston Town Center). Individuals that suggested actions could be taken to make the area more of a destination provided the following recommendations: adding a mix of uses (especially including retail and restaurants), allowing for higher-density development, providing public outdoor spaces and fountains, linking to walking and biking trails, linking downtown and the Herndon Metro Station Area, making the area more walkable, and providing incentives for development.

DENSITY

Many respondents suggested high rises would be most suited for transit-friendly development. However, one respondent recommended low- to mid-rise over high-rises for the area. Another respondent cautioned that taller buildings are not necessarily more attractive than

shorter buildings (and this latter respondent emphasized higher density as the most important element of development rather than height). One respondent suggested that high-rises be located at the center of the area and mid-rise residential in the area closer to existing lower-density housing.

PROPOSED USES

Consistent with previous comments suggesting a mix of uses would be required for TOD, many property owners suggested they would like to see the Herndon Metro Station Area develop with multiple uses. The types and scale of uses suggested varied by respondent. Some suggested a mix of mostly office with retail and hotel uses (particularly along the Toll Road); others favored a mix with more residential uses suggesting that the area already has a substantial level of office space. The scale of retail was a point of contention for some respondents, who cautioned that a large-scale, regionally-serving retail center would not be a good fit for the area. Several noted that industrial development was not appropriate for the area. First floor retail was a common suggestion as was structured parking. In terms of parking, a few respondents noted that parking should be wrapped with retail or somehow made to seamlessly blend in with its surroundings.

TIMEFRAME FOR REDEVELOPMENT

Different opinions were expressed on how and when the area may change in the future. Some respondents felt that redevelopment will begin occurring within the next ten years, particularly with the redevelopment of properties closer to the Metro Station, and that additional redevelopment would occur in the following ten years for an almost complete transformation over a 20 year timeframe. Others felt that most of the transformation would occur between 10 to 20 years—or even later, as one respondent felt it would take 30 years for a true transformation. Respondents noted that various factors would attribute to the timing of redevelopment, including the health of the economy, regulatory changes (increasing density and expanding allowable land uses), providing good access between the Metro Station and the Initial Study Area, and providing bonus density incentives for redeveloping earlier. One respondent noted that if the federal government were to decide to relocate an agency to Herndon, such a move would help accelerate redevelopment.

CONCLUSION

Based upon the review of industry literature, case study evaluations, and property owner interviews, observations and recommendations were identified that helped guide the formulation of the HTOC Plan. Chapter 5, Alternative Area Plans of this report describes the evolution of the Area Plan alternatives. Chapter 6, Herndon Transit-Oriented Core Plan describes and evaluates the HTOC Plan. The observations and recommendations for which the alternative area plans are based included:

It is important that densities and land uses allowed in the Herndon Metro Station Area support transit ridership, promote a sense of place, and provide synergies in that each additional use supports other uses in the vicinity.

Densities should be considerably higher than current average densities (a minimum average FAR of 3.0 to 4.0 was recommended prior to financial testing).

A mix of land uses is recommended, including residential, retail, and office. This mix could be expanded with related uses such as hotel or civic uses.

A specific percentage mix of uses is not prescribed based upon the assumption that the future market will dictate that mix. (Note: No market study was conducted as part of the economic analysis.)

Herndon will likely continue to maintain the Herndon Metro Station Area's identity as a strong choice for office-based companies with office spaces but will expand to offer housing, retail shops, and restaurants.

Herndon's position for retail and restaurant development will be best met through development of neighborhood-oriented rather than regionally-oriented retail and restaurant uses. The minimum square feet of retail and restaurant uses typically found in a neighborhood shopping center is 30,000 square feet, although most are between 30,000 to 100,000 square feet.

No minimum thresholds for housing or office development are recommended to create critical mass.

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ALTERNATIVE AREA PLANS

5

INTRODUCTION

The "Options" phase entailed the creation of two alternatives for the Herndon Metro Station Area. The alternatives were based on the findings from the existing conditions and development opportunities (as identified in Chapters 3 and 4 of this study), and input received from the Planning Commission and participants at the first public workshop. To establish the "framework" of what was to be included in each alternative, a Framework Diagram was prepared for each Area Plan alternative. Each Framework Diagram identifies goals for densities (or FARs) throughout the Herndon Metro Station Area.[1] In addition, mixes of land uses (office, retail, residential, etc.) were identified based on general guidance from the development opportunities analysis.

The Framework Diagrams set the stage for the creation of illustrative concept plans for Area Plan 1 and Area Plan 2. The illustrative plans show the potential character of future redevelopment by indicating conceptual building footprints, locations for parking, streetscape, urban plazas and other amenities. The illustrative plans were supplemented with conceptual computer massing models that illustrate the scale of redevelopment and how it would fit within the Herndon Metro Station Area's surrounding context. In addition, both Area Plan alternatives were analyzed in terms of the transportation network that would be needed to support the densities and land uses depicted in each Plan. These items were presented at the second public workshop in November 2010 and at subsequent meetings for affected neighborhoods and property owners.

The framework diagrams, Area Plan alternatives, and transportation analysis are summarized in this chapter.

1. A 0.5 FAR means that the floor area of that building equals one half the land area of the lot.

AREA PLAN 1 – FRAMEWORK DIAGRAM

The Framework Diagram for Area Plan 1 identifies three areas with 'Targeted Floor Area Ratios.' The locations of these three areas are identified in Figure 5.1. The specific boundaries for each area are meant to be flexible, such that their location could be adjusted slightly during subsequent steps of the planning process. The goals for these three areas were discussed with the Planning Commission in a work session in September 2010, and include:

- **Herndon Metro Station Core Area** – For the area closest to the Metro Station, consider a higher density, targeting an average 2.5 FAR for the gross land area.
- **Transition Area** – For the area to the north and east of the Metro Station, consider an area of transitional density and height between the higher density area and the area where currently permitted zoning would be retained along the northern edge of the Initial Study Area. Target a maximum FAR of 2.5.
- **Buffer Area** – For the area along the northern edge of the Initial Study Area, retain currently permitted zoning for any land that abuts residentially zoned land.

In addition to the target FARs, a mix of land uses was assigned to the total Initial Study Area, based on the findings from the development opportunities in Chapter 4, *Development Opportunities*. Tables 5-1 and 5-2 summarize the framework recommendations for land uses mix and FAR.

AREA PLAN 2 – FRAMEWORK DIAGRAM

Similar to the first Framework Diagram, the Framework Diagram for Area Plan 2 identifies three areas with 'Targeted Floor Area Ratios.' The locations of these three areas are identified in Figure 5.2. The specific boundaries for each area are meant to have flexibility so that their location could be adjusted slightly during subsequent steps of the planning process. This Framework Diagram increases the amount of FAR in two of the three areas and suggests that the FAR in the "Transition Area" be based on a gross land area average. The goals for these three areas were discussed with the Planning Commission in a work session in September 2010, and include:

- **Herndon Metro Station Core Area** – For the area closest to the Metro Station, consider a higher density, targeting an average 4.5 FAR for the gross land area.
- **Transition Area** – For the area to the north and east of the Metro Station, consider an area of transitional density and height between the higher density area and the area where currently permitted zoning would be retained along the northern edge of the Initial Study Area. Target a maximum FAR of 3.0 – gross land average.
- **Buffer Area** – For the area along the northern edge of the Initial Study Area, retain currently permitted zoning for any land that abuts residentially zoned land.

In addition to the target FARs, a mix of land uses were assigned to the total Initial Study Area, based on the findings from the development opportunities in Chapter 4, *Development Opportunities*. Tables 5-1 and 5-2 summarize the framework recommendations for land uses mix and target FARs.

Figure 5.1 | Area Plan 1—Framework Diagram

Source(s): City of Herndon GIS, ESRI

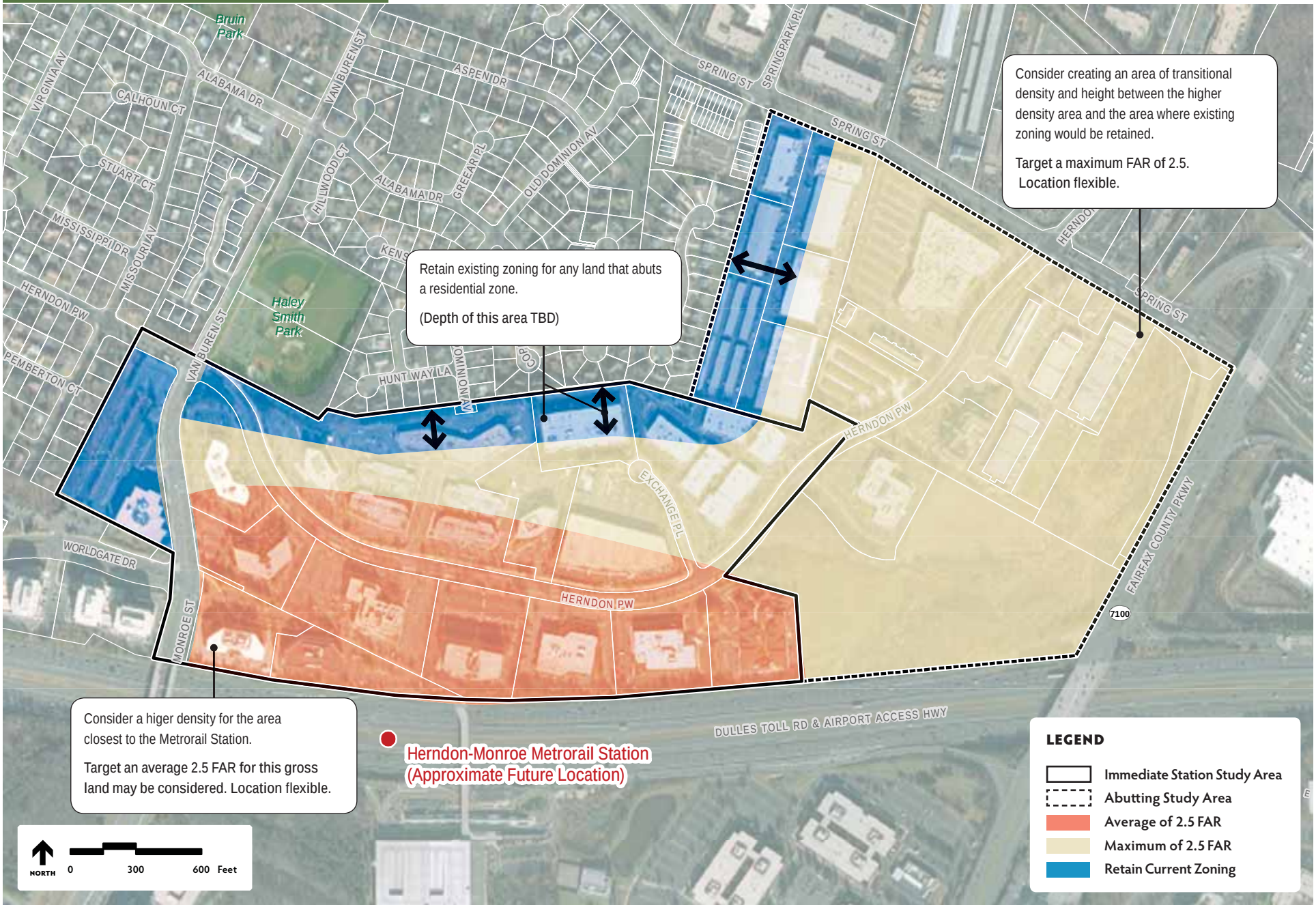
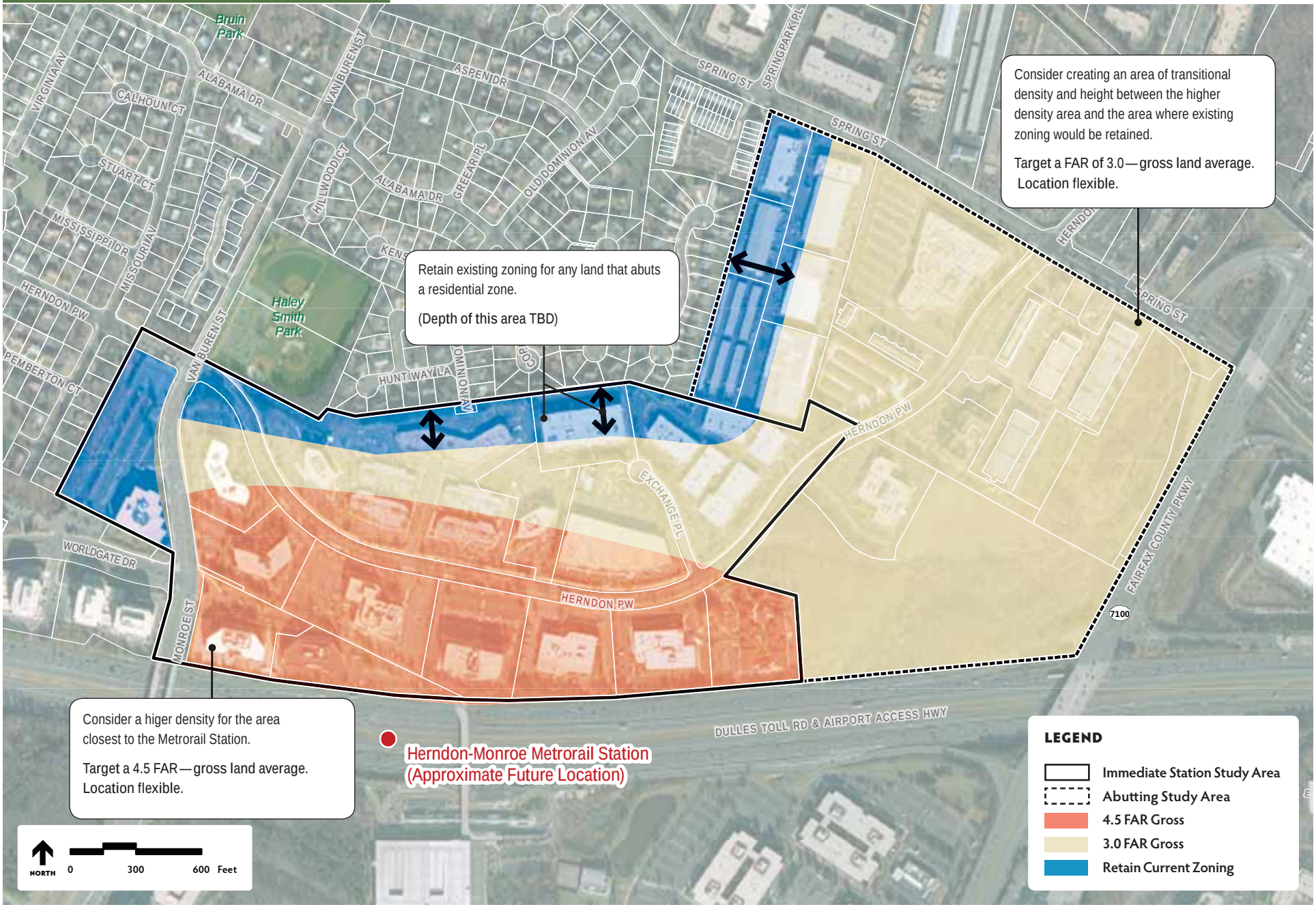


Figure 5.2 | Area Plan 2—Framework Diagram

Source(s): City of Herndon GIS, ESRI



AREA PLANS 1 AND 2

Area Plans 1 and 2 are conceptual in nature and focus primarily on alternatives for land use and development program mix, access, parking and public space configurations. They are based on information from the site analysis, market analysis, and public feedback from the outreach process.

The Area Plans alternatives:

- Include conceptual-level locations for mixed-use, residential and commercial elements in varying degrees
- Integrate the Metro Station to be a primary component of a new active neighborhood center with conceptual public space elements
- Address opportunities for parking
- Create a conceptual circulation network to balance transit/vehicular/bike/pedestrian users
- Integrate traffic calming concepts around Herndon Parkway and the Metro Station

Table 5-1 | Area Plan 1 and 2 - Land Use Mix

Land Use	PERCENT OF OVERALL DEVELOPMENT Area Plan 1	PERCENT OF OVERALL DEVELOPMENT Area Plan 2
Retail	1.7%	1.8%
Office	38.7%	38.5%
Residential	49.6%	49.2%
Hotel	9.5%	9.6%
Civic	0.5%	0.9%

Table 5-2 | Area Plan 1 and 2–Target FARs

Area	FAR Area Plan 1	FAR Area Plan 2
Buffer	0.7 (per current zoning)	0.7 (per current zoning)
Transition	2.5	3.0
Herndon Metro Station Core	2.5	4.5

Refer to Figures 5.1 and 5.2

AREA PLAN 1

Area Plan 1 assumes individual parcels will develop independently of others, which creates some challenges for building design, parking, and development yield. The street network includes a new street extension, the Worldgate Connector, to create an additional relief for Herndon Parkway offering more connectivity to Van Buren Street and Worldgate Drive.

FARs include 0.7 (the Buffer Area) along the adjacent residential neighborhood; 2.5 (the Transition Area) north of Herndon Parkway and toward the eastern portion of the Initial Study Area; and also 2.5 (the Herndon Metro Station Core Area) south of Herndon Parkway around a public space leading down to the future North Entrance Pavilion of the Metro Station. The Herndon Metro Station Core Area will have the greatest mix of uses and includes more office and public uses and amenities than the other 2.5 FAR areas. The primary streets of the plan feature true mixed-use buildings with ground floor commercial and upper floor office and apartments. Commercial anticipates specialty/convenience retail and entertainment uses including restaurants and nightclubs, primarily on the ground floor space along Herndon Parkway and the Worldgate Connector. Two hotels are envisioned in the Herndon Metro Station Core Area. Buildings range from under four stories in the 0.7 FAR zone; primarily five to eight stories in the 2.5 FAR zones; and a limited number of nine to 15 stories. Public spaces include the large public space between the station and Herndon Parkway. Other public space includes some small pocket parks and some pedestrian trails and amenities. Table 5-3 presents a summary of the potential overall development program for Area Plan 1, which includes an anticipated maximum build-out. Based on this hypothetical build-out, Table 5-3 outlines a summary of potential employees and residents using the identified conversions rates in the table.

The Area Plan 1 Illustrative Plan, presented as Figure 5.3, shows the items identified above and depicts the potential character of future redevelopment by indicating conceptual building footprints, locations for parking, streetscape, urban plazas and other amenities. The Illustrative Plan is supplemented with a land use diagram that shows the potential uses within each building footprint.

Figure 5.3 | Area Plan 1— Proposed Plan and Land Use

Illustrative Plan

LEGEND

- Building
- Parking Structure
- Parking Lot

Land Use

LEGEND

- Residential
- Residential over Retail
- Retail
- Office over Retail
- Office
- Hotel
- Civic
- Parking Structure

Table 5-3 | Summary of Potential Development for Area Plan 1

Land Use	Building Area (Square Feet)	Assumed "Conversion Rate"	Total Employees
Office	5,383,363	1 per 250 sq.ft.	21,533
Retail	228,799	1 per 500 sq.ft.	458
Hotel (Square Feet)	1,318,779	1 per 625 sq.ft.	2,110
Residential (Square Feet)	6,903,933	N/A	N/A
Total Building Area	13,834,874	Total Employees	24,101

Land Use	Units (1,200 SF/Unit)	Assumed "Conversion Rate"	Total Residents
Residential	5,753	2 per Household	11,506

Note: Based on the total land area of 183 acres (the "Initial Study Area"). The items included in this table are approximate and are based on assumed conversion rates, land areas, and FARs. They are meant for planning purposes only.
N/A = Not Applicable

Figure 5.4 includes before and after conceptual massing models that illustrate the scale of redevelopment for Area Plan 1 and how it would fit within the Herndon Metro Station Area's surrounding context. Figure 5.4 also includes a building height diagram which indicates the potential number of stories for each building. A three-dimensional study diagram was created for each of the Area Plan alternatives. The diagrams were constructed based on the urban design concepts and the basic density assumptions for the Area Plans. The diagrams illustrate the relative heights required to meet the various FAR targets and give an overall sense of the scale differences between each plan and the existing conditions. Buildings in the Area Plan 1 diagram illustrate the range from: under four stories in the Buffer Area (0.7 FAR); primarily five to eight stories in the Transition Area (2.5 FAR); and a limited number of nine to 15 stories in the Herndon Metro Station Core Area.

TRANSPORTATION

In order to evaluate future transportation system operations and identify required roadway capacity improvements, a traffic analysis of future conditions with Area Plan 1 was conducted. The results of this traffic analysis informed decisions about the balance between transportation infrastructure and overall TOD goals.

Forecasts of future traffic volumes included existing traffic counts, regional traffic growth, other approved development traffic, and traffic generated by redevelopment within the Herndon Metro Station Core. Regional annual traffic growth rates for the various roads within the Herndon Metro Station Area were computed based on the 2010 and 2030 traffic volumes for those roads included in the Metropolitan Washington Council of Governments (MWCOG) Round 7.2 long-range travel-demand forecasting model. These growth rates were applied to the existing traffic counts presented in Chapter 3, *Existing Conditions*. Vehicle trip assignments at the study intersections associated with the approved but incomplete development of the Fairbrook Business Park were determined based on previous traffic studies. The aggregate of the existing, growth, and other development traffic represents future conditions without the implementation of Area Plan 1.

The total numbers of vehicle-trips that would be generated by each land use within the Herndon Metro Station Core area were determined based on data published by the Institute of Transportation Engineers (ITE) in the Trip Generation manual, 8th Edition. Trip generation for the ground-floor retail space was not calculated as a separate land use. The ITE trip rates do not account for transit availability or trips between adjacent land uses prevalent in high-density TOD. Estimates of the proportions of trips using transit were based on Fairfax County guidelines for transit reduction (25 percent). In addition, the 2005 Development-Related Ridership Survey, sponsored by the *Washington Metropolitan Area Transit Authority* (WMATA) was used. The transit mode shares for each land use are listed below:

- 25 percent for office uses
- 25 percent for hotel uses
- 25–35 percent for residential uses (depending on unit type)

Internal trips are those made between proximate uses that do not add vehicle trips to the road network such as: walking trips, bicycle trips, shuttle/circulator trips, or auto trips between adjacent parking facilities. While these interactions are expected within mixed-use developments, internal trip capture was conservatively excluded from this analysis. A summary of the trips by land use is included in Table 5-4.

Figure 5.4 | Area Plan 1—Massing

Future Massing

Existing Massing

▲
LEGEND

Proposed Building
Proposed Parking Structure
Existing Building

LEGEND ▸

1–4-Story Building
5–6-Story Building
7–8-Story Building
9–12-Story Building
13–15-Story Building

Table 5-4 | Area Plan 1 Trip Generation Summary

Land Use Type	Land Use Code	Unit Type	Units	AM Distribution Total	In	Out	PM Distribution Total	In	Out
Townhomes	230	Dwelling Units	310	128	22	106	152	102	50
Mid-Rise Apartments	223	Dwelling Units	3,545	1,440	447	994	1,691	981	710
High-Rise Apartments	232	Dwelling Units	1,898	579	110	469	661	410	251
Hotel	310	Rooms	1,860	1,533	935	598	1,097	582	516
Office	710	1000 Sq. GFA	3,426	3,169	2,789	380	3,916	666	3,250
SITE GENERATED TRIPS				6,850	4,302	2,547	7,517	2,741	4,777

Transit Reductions	Land Use Code	Unit Type	Units	AM Distribution Total	In	Out	PM Distribution Total	In	Out
Townhomes	230	Dwelling Units	310	32	5	26	38	25	13
Mid-Rise Apartments	223	Dwelling Units	3,545	360	112	248	423	245	178
High-Rise Apartments	232	Dwelling Units	1,898	203	39	164	231	143	88
Hotel	310	Rooms	1,860	383	234	149	274	145	129
Office	710	1000 Sq. GFA	3,426	634	558	76	783	133	650
Total Transit Reductions				1,612	947	665	1,749	693	1,057
Residential Subtotal				1,553	423	1,130	1,811	1,078	733
Office Reductions				3,685	2,932	753	3,956	969	2,987
TOTAL SITE GENERATED TRIPS				5,238	3,335	1,883	5,767	2,047	3,720

Existing Land Uses			
Hotel	310	Rooms	250
Office	710	1000 Sq. GFA	1,957

Total 2035 Land Uses (Existing + New)	Land Use Code	Unit Type	Units
Townhomes	230	Dwelling Units	310
Mid-Rise Apartments	223	Dwelling Units	3,545
High-Rise Apartments	232	Dwelling Units	1,898
Hotel	310	Rooms	2,110
Office	710	1000 Sq. GFA	5,383

The vehicle trips for Area Plan 1 were distributed across the road network according to the following trip percentages, accounting for current traffic trends and volumes in the area and workflow routes from the Census Transportation Planning Package (CTPP) data for the Traffic Analysis Zones (TAZs) within the Herndon Metro Station Area:

- 45 percent from the east on Spring Street (including Fairfax County Parkway)
- 25 percent from the west on Herndon Parkway and Worldgate Drive
- 10 percent from the north on Herndon Parkway
- 10 percent from the north on Van Buren Street (through the downtown area)
- 5 percent from the west on Alabama Drive
- 5 percent from the south on Van Buren Street

The resulting traffic assignments were added to the existing, regional growth, and other development traffic volumes to yield the future traffic forecasts with the implementation of Area Plan 1.

Future traffic conditions at the following critical intersections were analyzed using Synchro capacity analysis software and the future traffic forecasts:

- Van Buren Street/Herndon Parkway
- Van Buren Street/Worldgate Drive
- Spring Street/Herndon Parkway
- Spring Street/Fairfax County Parkway Ramps

Synchro was used for the analysis of plan options in order to minimize network coding and analysis time, while maintaining reliable results.

In order to accommodate the Area Plan 1 traffic forecasts, several roadway improvements would be required:

- The addition of a northbound right turn lane on Van Buren Street at Herndon Parkway
- The extension of Worldgate Drive from Van Buren Street to Herndon Parkway as a four-lane road
- The one-lane widening along westbound Herndon Parkway at the Worldgate Drive extension to accommodate dual left turn lanes
- The one-lane widening of Spring Street in each direction between the Fairfax County Parkway Ramps and Spring Park Place
- The widening of the Fairfax County Parkway off-ramp at Spring Street to accommodate four southbound lanes
- The channelization of westbound left turning traffic on Spring Street at Herndon Parkway through a raised median
- The addition of two northbound lanes on Herndon Parkway at Spring Street
- The addition of a second southbound left turn lane on Herndon Parkway at Spring Street
- The reconfiguration of the Spring Street/Herndon Parkway intersection and the reconstruction of the traffic signal
- The construction of a new four-lane access road on the south side of Spring Street, west of Herndon Parkway

Refer to Figures 5.5 and 5.6 for the proposed transportation improvements for Area Plan 1. The levels of service and vehicular delays at the critical intersections with these improvements are summarized in Table 5-5.

The results of the analysis indicate that Area Plan 1 could be accommodated with intersection-focused road improvements of moderate scope. The new access street linking Spring Street to the Herndon Metro Station Core Area is key to this finding. Mobility for drivers could be maintained without significant impacts to pedestrian, bicycle, or bus operations.

AREA PLAN 2

Area Plan 2 is a denser version of Area Plan 1 showing additional development, more connectivity, and greater public amenities. This plan assumes more parcel consolidation to allow for more efficient building and site design, including larger parking structures shared among multiple buildings and parcels. The street network includes a further extension of the Worldgate Connector to create a new road to the north of Herndon Parkway offering more connectivity to the east.

FARs include 0.7 (the Buffer Area) along the adjacent residential neighborhood; 3.0 (the Transition Area) north of Herndon Parkway and toward the eastern portion of the Herndon Metro Station Area; and 4.5 (the Herndon Metro Station Core Area) south of Herndon Parkway around the Herndon Metro Promenade and future North Entrance Pavilion of the Metro Station. The distributions of uses are similar to Area Plan 1, only with more development density/intensity and more multi-story parking structures. With these densities, buildings range from under four stories in the Buffer Area; primarily five to eight stories in the Transition Area; and nine to 15 stories in the Herndon Metro Station Core Area.

Figure 5.5 | Area Plan 1— Transportation Improvements (West)

Source(s): City of Herndon GIS, ESRI

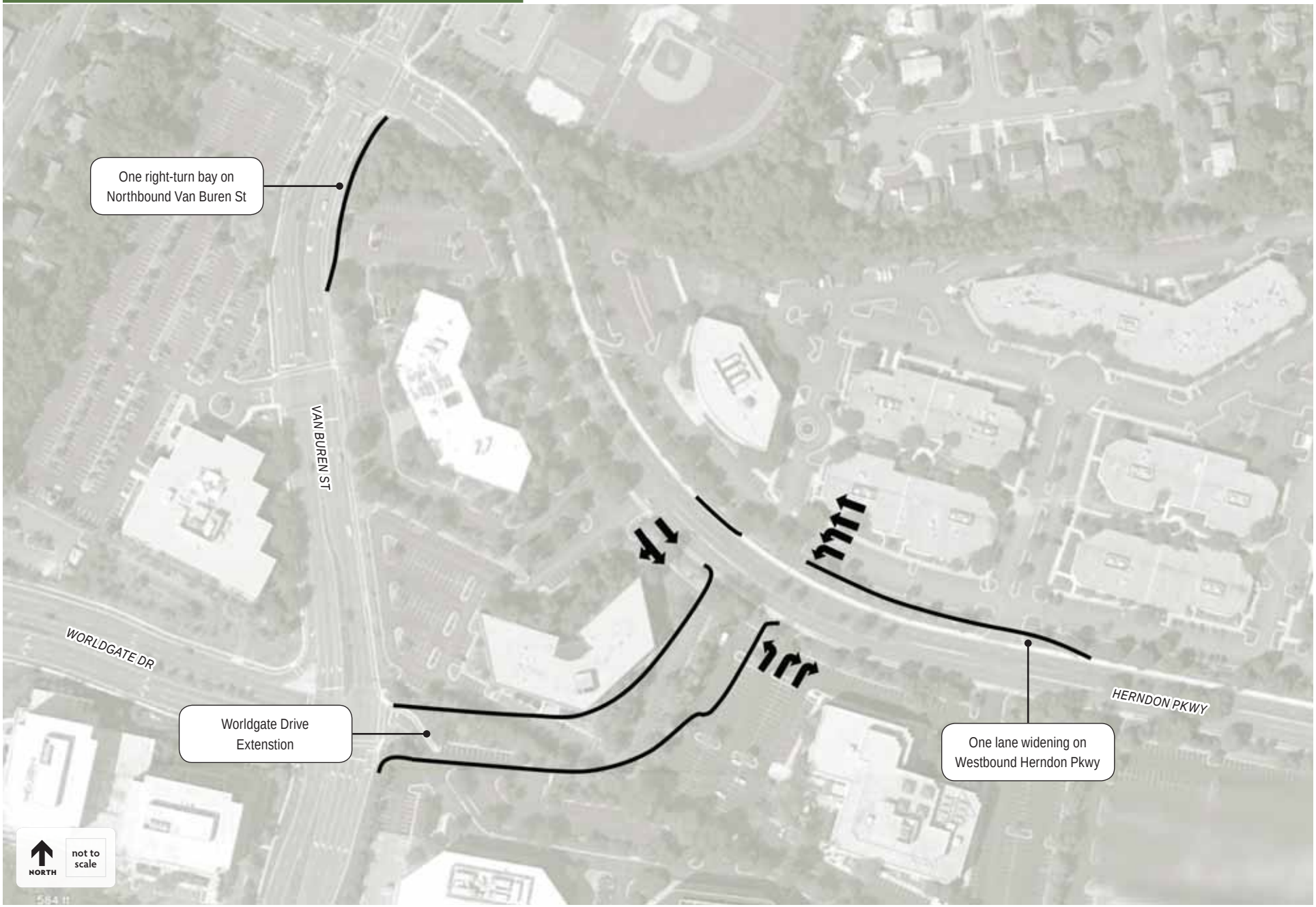


Figure 5.6 | Area Plan 1—Transportation Improvements (East)

Source(s): City of Herndon GIS, ESRI

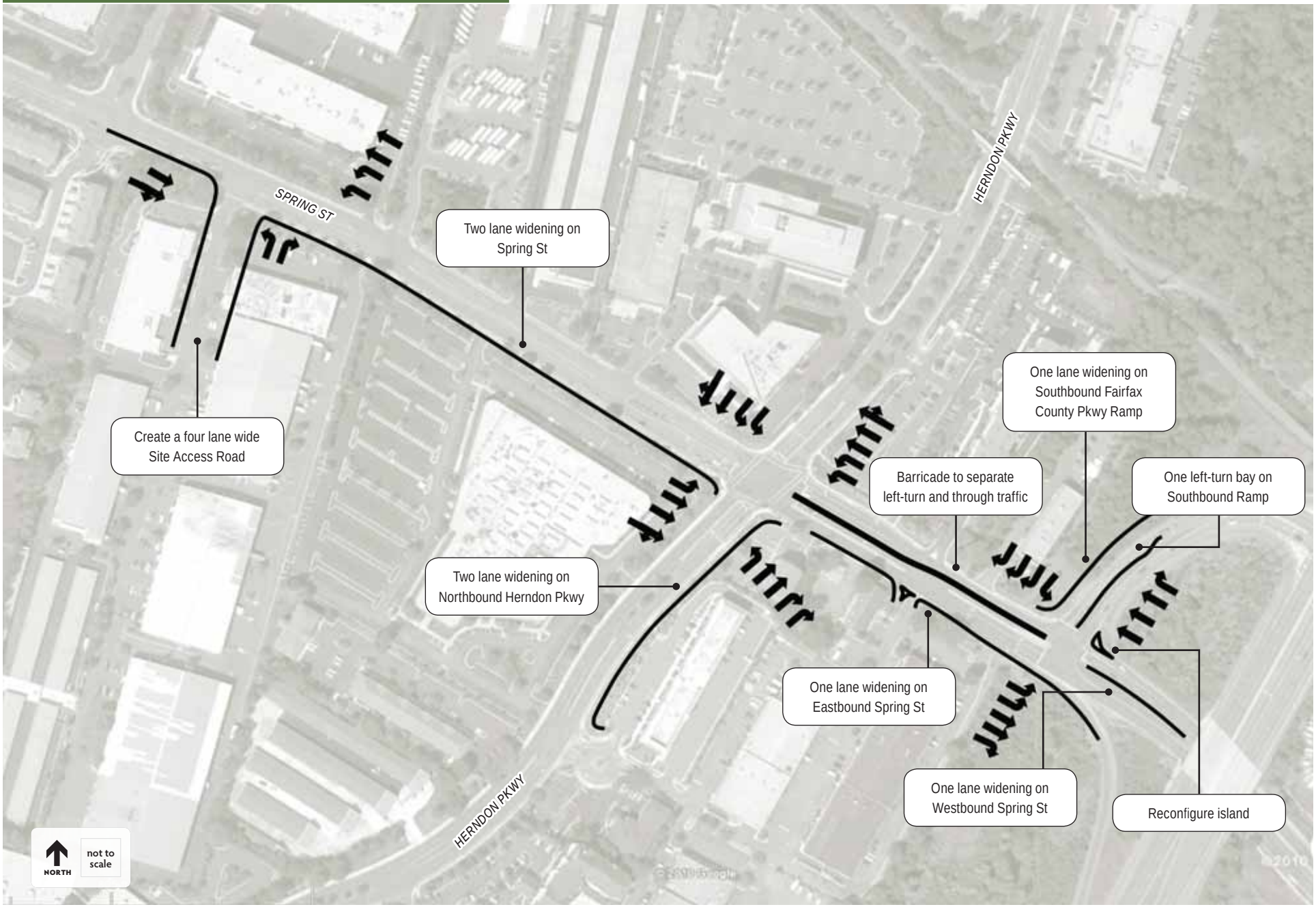


Figure 5.7 | Area Plan 2— Proposed Plan and Land Use

Illustrative Plan

LEGEND

- Building
- Parking Structure
- Parking Lot

Land Use

LEGEND

- Residential
- Residential over Retail
- Retail
- Office over Retail
- Office
- Hotel
- Civic
- Parking Structure

Figure 5.8 | Area Plan 2—Massing

Future Massing

Existing Massing

LEGEND

Proposed Building

Proposed Parking Structure

Existing Building

LEGEND

1–4-Story Building

5–6-Story Building

7–8-Story Building

9–12-Story Building

13–15-Story Building

Building Heights

Table 5-5 | Area Plan 1 Level of Service Summary

Intersection	AM Peak DELAY	AM Peak LOS	PM Peak DELAY	PM Peak LOS
Spring St and Herndon Pkwy	47.0	D	76.0	E
Spring St and Fairfax County Pkwy Ramps	33.7	C	28.1	C
Herndon Pkwy and Van Buren St	35.2	D	46.5	D
Worldgate Dr and Van Buren St	38.8	D	44.0	D

Table 5-6 | Summary of Potential Development for Area Plan 2

Land Use	Building Area (Square Feet)	Assumed "Conversion Rate"	Total Employees
Office	7,490,534	1 per 250 sq.ft.	29,962
Retail	361,788	1 per 500 sq.ft.	724
Hotel (Square Feet)	1,873,298	1 per 625 sq.ft.	2,997
Residential (Square Feet)	9,576,906	N/A	N/A
Total Building Area	19,302,525	Total Employees	33,683

Land Use	Units (1,200 SF/Unit)	Assumed "Conversion Rate"	Total Residents
Residential	7,981	2 per Household	15,962

Note: Based on the total land area of 183 acres (the "Initial Study Area"). The items included in this table are approximate and are based on assumed conversion rates, land areas, and FARs. They are meant for planning purposes only.
N/A = Not Applicable

Public spaces in Area Plan 2 are enhanced with additional density. The main public space would include higher quality plaza treatments and textured pavement, streetscape amenities, and enhanced community gathering spaces. Other amenities could include additional pocket parks and smaller plaza spaces, textured paved crosswalks, and more pedestrian trails and amenities. Table 5-6 presents a summary of the potential overall development program for Area Plan 2, which includes an anticipated maximum build-out. Table 5-6 outlines a summary of potential employees and residents using the identified conversions rates.

The Area Plan 2 Illustrative Plan shows the items identified above and depicts the potential character of future redevelopment by indicating conceptual building footprints, locations for parking, streetscape, urban plazas and other amenities. The Illustrative Plan is included in Figure 5.7 and is supplemented with a land use diagram that shows the potential uses within each building footprint.

Figure 5.8 includes before and after conceptual massing models that illustrate the scale of redevelopment for Area Plan 2 and how it would fit within the Herndon Metro Station Area's surrounding context. Figure 5.8 also includes a building height diagram which indicates the potential number of stories for each building. Buildings in the Area Plan 2 model, illustrate the range from: under four stories in the Buffer Area (0.7 FAR); primarily five to eight stories in the Transition Area (3.0 FAR); and nine to fifteen stories in the Herndon Metro Station Core Area (4.5 FAR).

TRANSPORTATION

A traffic analysis of future conditions with Area Plan 2 was also conducted to evaluate future operations and identify required roadway improvements for use in the fiscal and financial models and decision making processes.

Similar to the Area Plan 1 analysis, forecasts of future traffic volumes included existing traffic counts, regional traffic growth, other approved development traffic, and traffic generated by redevelopment within the Herndon Metro Station Core. Forecasts of future conditions without the implementation of Area Plan 2 were identical to those presented for Area Plan 1.

The same trip generation and transit mode share methodologies were utilized to determine the number of trips that would result from the redevelopment under Area Plan 2. A summary of the trips by land use is included in Table 5-7.

These trips were assigned to the road network according to the same distributions used for Area Plan 1 and added to the existing, growth, and other development trips to yield the future traffic forecasts with the implementation of Area Plan 2.

Table 5-7 | Area Plan 2 Trip Generation Summary

Land Use Type	Land Use Code	Unit Type	Units	AM Distribution Total	In	Out	PM Distribution Total	In	Out
Townhomes	230	Dwelling Units	310	128	22	106	152	102	50
Mid-Rise Apartments	223	Dwelling Units	4,254	1,731	537	1,194	2,031	1,178	853
High-Rise Apartments	232	Dwelling Units	3,416	1,020	194	826	1,177	730	447
Hotel	310	Rooms	2,747	2,487	1,517	970	1,621	859	762
Office	710	1000 Sq. GFA	5,533	4,651	4,093	558	6,276	1067	5,209
SITE GENERATED TRIPS				10,016	6,362	3,654	11,257	3,935	7,321

Transit Reductions	Land Use Code	Unit Type	Units	AM Distribution Total	In	Out	PM Distribution Total	In	Out
Townhomes	230	Dwelling Units	310	32	5	26	38	25	13
Mid-Rise Apartments	223	Dwelling Units	4,254	433	134	299	508	294	213
High-Rise Apartments	232	Dwelling Units	3,416	357	68	289	412	255	157
Hotel	310	Rooms	2,747	622	379	242	405	215	190
Office	710	1000Sq. GFA	4,533	930	819	112	1,255	213	1,042
Total Transit Reductions				2,373	1,405	968	2,618	1,003	1,615
Residential Subtotal				2,057	545	1,512	2,402	1,434	968
Office Reductions				5,586	4,412	1,174	6,236	1,498	4,739
TOTAL SITE GENERATED TRIPS				7,642	4,957	2,686	8,638	2,932	5,707

Existing Land Uses			
Hotel	310	Rooms	250
Office	710	1000 Sq. GFA	1,957

Total 2035 Land Uses (Existing + New)	Land Use Code	Unit Type	Units
Townhomes	230	Dwelling Units	310
Mid-Rise Apartments	223	Dwelling Units	4,254
High-Rise Apartments	232	Dwelling Units	3,416
Hotel	310	Rooms	2,997
Office	710	1000 Sq. GFA	7,491

Figure 5.9 | Area Plan 2—Transportation Improvements (West)

Source(s): City of Herndon GIS, ESRI

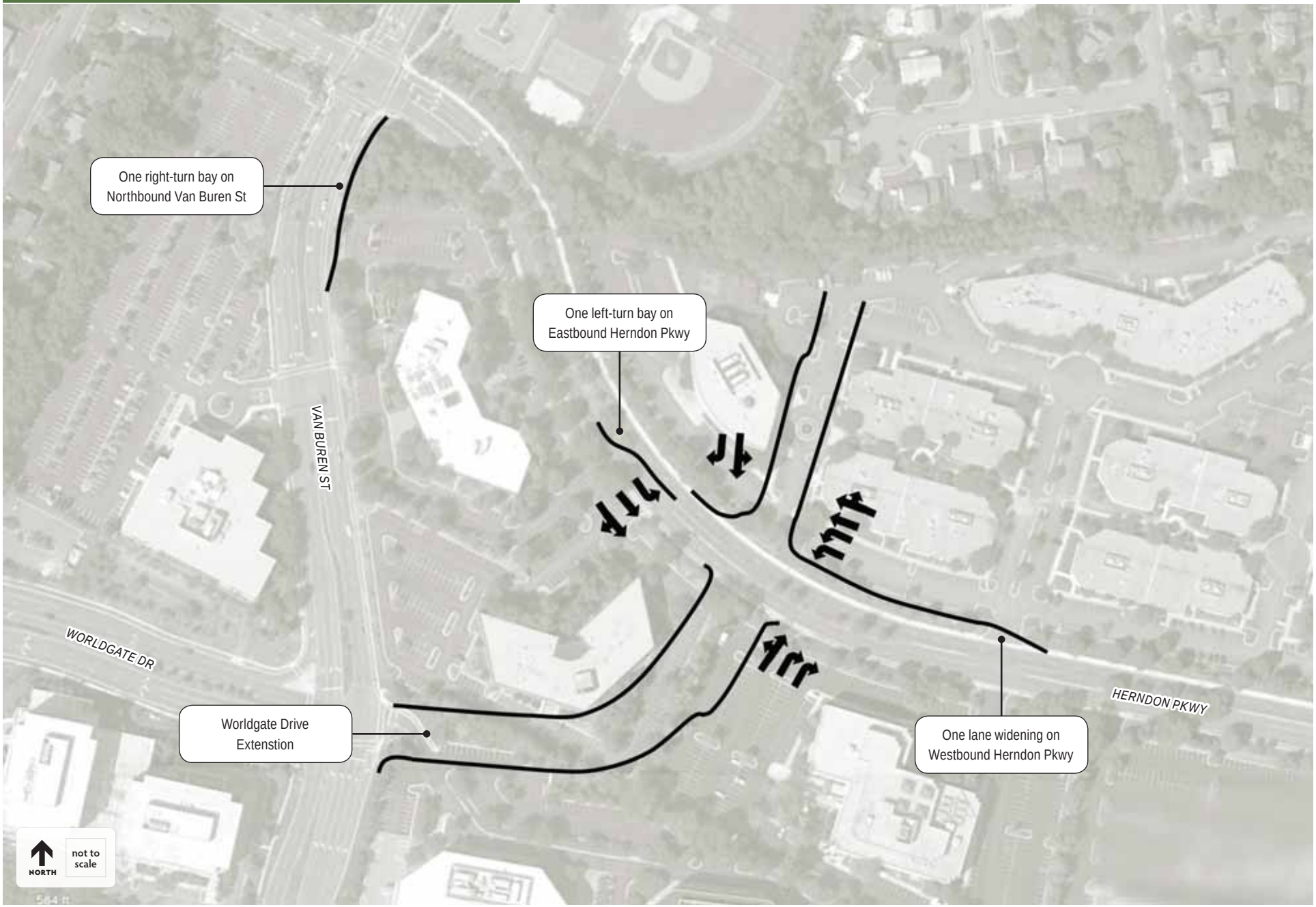


Figure 5.10 | Area Plan 2—Transportation Improvements (East)

Source(s): City of Herndon GIS, ESRI

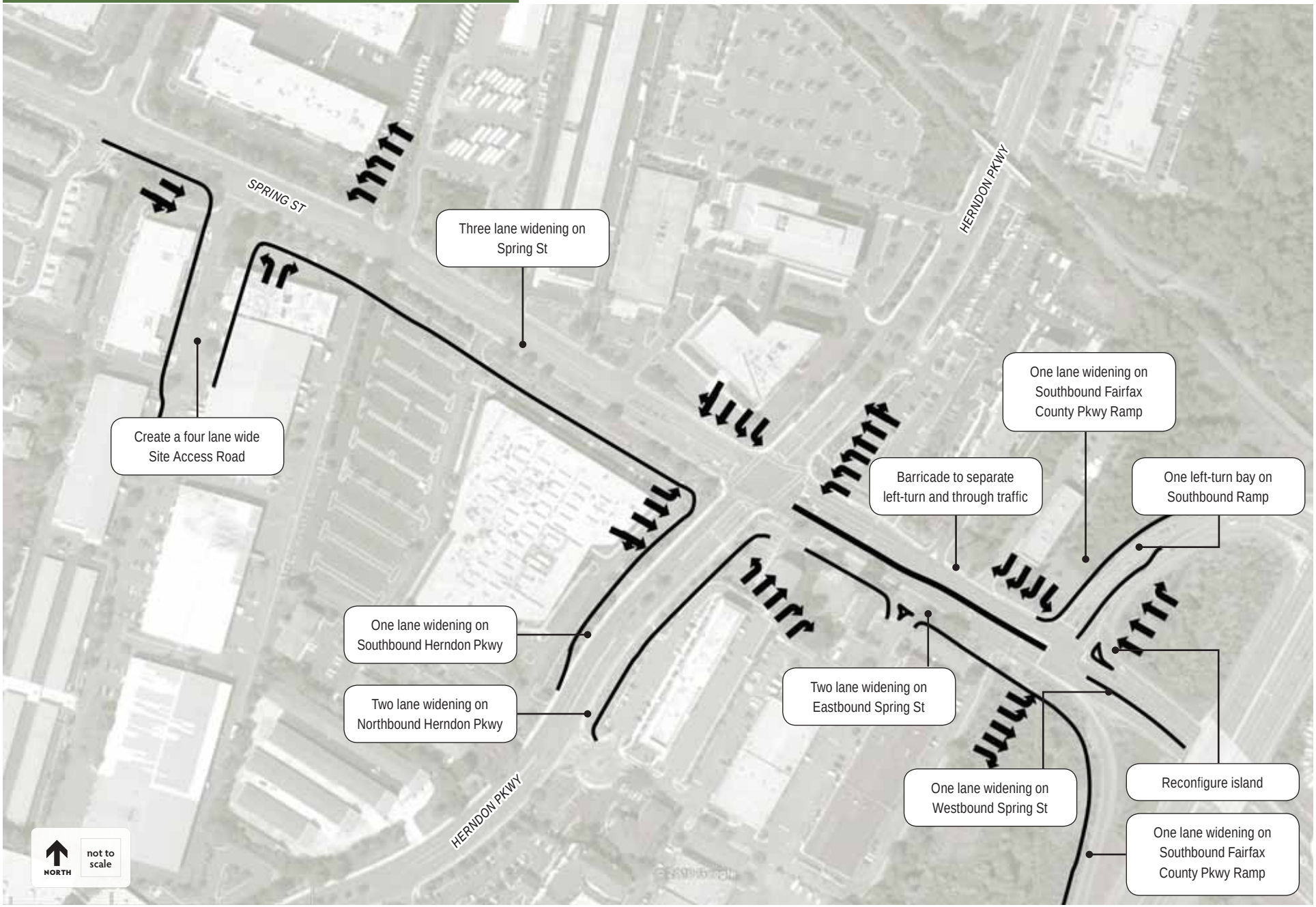


Table 5-8 | Area Plan 2 Level of Service Summary

Intersection	AM Peak		PM Peak	
	DELAY	LOS	DELAY	LOS
Spring St and Herndon Pkwy	60.4	E	112.6	F
Spring St and Fairfax County Pkwy Ramps	39.2	D	47.8	D
Herndon Pkwy and Van Buren St	36.7	D	64.8	E
Worldgate Dr and Van Buren St	42.5	D	68.1	E

The four critical intersections were analyzed using the future traffic forecasts and the Synchro software.

In order to accommodate the Area Plan 2 traffic forecasts, several roadway improvements would be required:

- The addition of a northbound right-turn lane on Van Buren Street at Herndon Parkway
- The extension of Worldgate Drive from Van Buren Street to Herndon Parkway as a four-lane road
- The one-lane widening along westbound Herndon Parkway at the Worldgate Drive extension to accommodate dual left turn lanes
- The addition of an eastbound left turn lane on Herndon Parkway
- The one-lane widening of westbound Spring Street between the Fairfax County Parkway Ramps and Spring Park Place, including a third westbound left turn lane at Herndon Parkway
- The two-lane widening of eastbound Spring Street between the Fairfax County Parkway Ramps and Spring Park Place
- The widening of the Fairfax County Parkway off-ramp at Spring Street to accommodate four southbound lanes
- The one-lane widening of the southbound on-ramp to Fairfax County Parkway
- The channelization of westbound left turning traffic on Spring Street at Herndon Parkway through a raised median
- The addition of two northbound lanes on Herndon Parkway at Spring Street
- The one-lane widening of southbound Herndon Parkway to accommodate triple left turn lanes from westbound Spring Street
- The reconfiguration of the Spring Street/Herndon Parkway intersection and the reconstruction of the traffic signal
- The construction of a new four-lane access road on the south side of Spring Street, west of Herndon Parkway with three inbound lanes to accommodate triple left-turn lanes from Spring Street

Refer to Figures 5.9 and 5.10 for the proposed transportation improvements for Area Plan 2.

The levels of service and vehicular delays at the critical intersections with these improvements are summarized in Table 5-8.

The analysis results indicate that significant roadway improvements, of a suburban nature, would be required to accommodate the Area Plan 2 densities. These improvements would make several key intersections at the gateways to the Herndon Metro Station Core significantly less friendly to pedestrians and bicyclists, and may negatively impact bus operations.

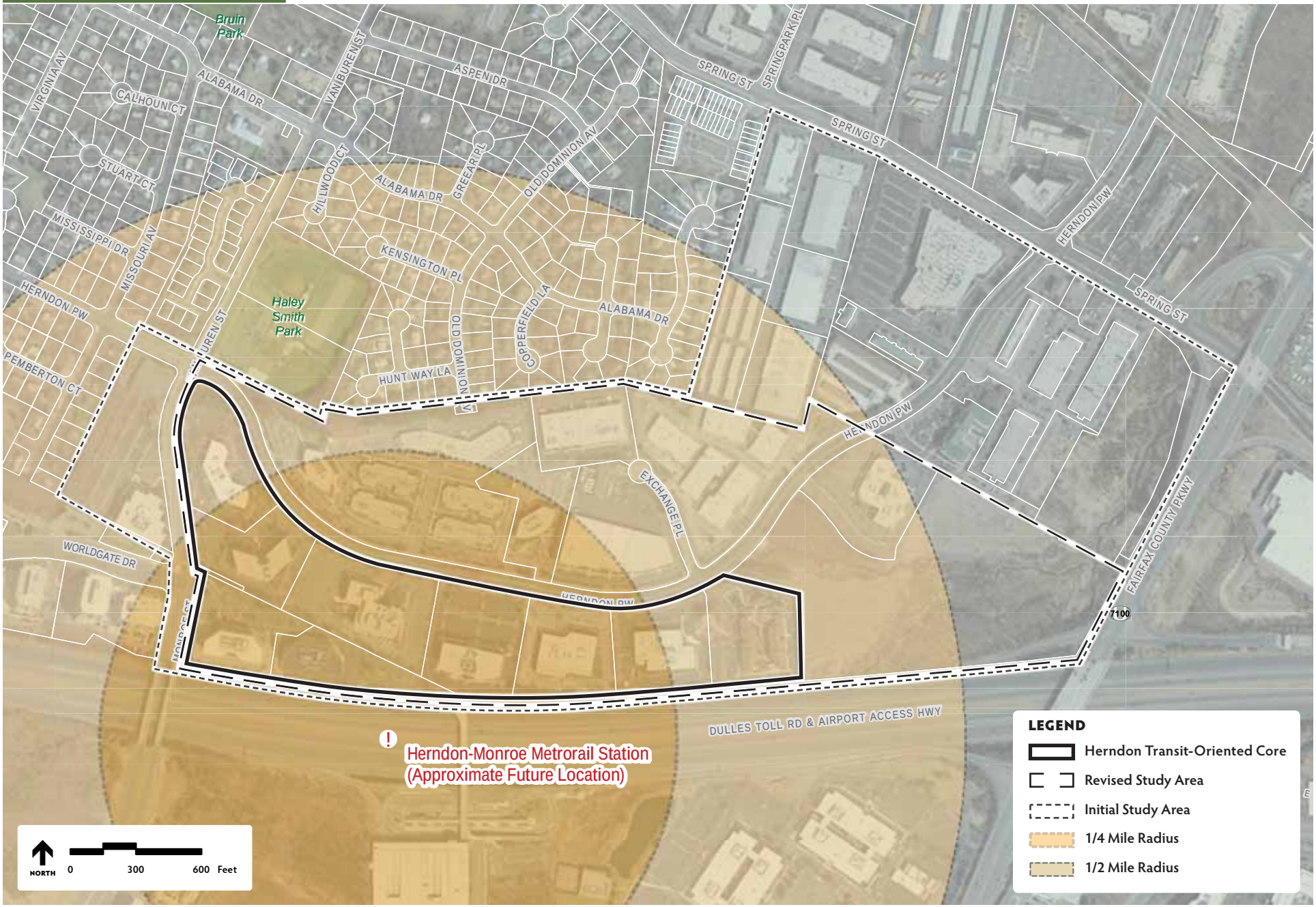
FINANCIAL AND FISCAL IMPACT ANALYSIS

Area Plans 1 and 2 were presented at the second public workshop in November of 2010, where over 100 participants attended. After extensive community input, which included additional neighborhood and business owners' meetings, Area Plans 1 and 2 were dismissed. In January 2011, a joint meeting was held with the Planning Commission and Town Council to review the comments received on Area Plans 1 and 2 with the goal of providing direction on creating a revised Framework Diagram with a new targeted mix of land uses and FARs. As a result of this meeting, the Initial Study Area was reduced from 183 acres to 110 acres to focus planning efforts on the land that is in close proximity to the Metro Station (the "Refined Study Area"). In addition, the joint meeting identified the need to make adjustments to the mix of uses and FARs that were to be analyzed in the Refined Study Area Plan. Eventually, the study area was reduced again (see Figure 5.11) to the "Herndon Transit-Oriented Core" (properties closest to the Metro Station). The Town also elected to undertake financial impact analyses. The revised study area (see Figure 6.1 in Chapter 6, *Herndon Transit-Oriented Core Plan*) and a new Framework Plan formed the basis for the financial analyses.

This section outlines the process for the financial analysis and fiscal impact analysis and the transportation and infrastructure assessments that were undertaken in support of those analyses. The final Framework Diagram, Illustrative Plan, and transportation analysis developed for the HTOC Plan are discussed in Chapter 6, *Herndon Transit-Oriented Core Plan*.

Figure 5.11 | Revised Study Area

Source(s): City of Herndon GIS, ESRI



With the creation of a framework, the project team was tasked to investigate the financial viability and fiscal impact of redevelopment and worked to address the following questions:

- Are the densities and land uses identified in the HTOC Plan enough to incentivize redevelopment?
- How much of the cost of public infrastructure can be covered by financially viable redevelopment projects?
- Will redevelopment result in fiscal balance, such that the town's public expenditures do not exceed public revenues?
- Would any net revenues in excess of expenditures result from redevelopment?
- How does the TOD redevelopment scenario compare to non-TOD development in the affected area under the Town's 2030 Comprehensive Plan?

Given these questions, the project team undertook financial pro forma analysis and fiscal impact analysis to test the HTOC Plan.

KEY ASSUMPTIONS USED

Certain assumptions were made to determine the financial viability and the fiscal impacts of redevelopment. Assumptions were made in the following areas (the assumptions for estimating the capital improvement costs are described in detail in Chapter 7, *Capital Improvements Guide* of this report):

- Lot size
- Lot coverage
- Building area by use
- Floor plate per building
- Timeframe for redevelopment
- Timeframe for demolition of existing uses
- Height limits
- Infrastructure costs
- Sale of properties
- Building asking rents and vacancies
- Operating expenses
- Capitalization rate
- Building unit costs
- Lease-up period
- Office and retail rents
- Apartment rents
- Parking requirements
- Parking type
- Parking construction cost
- Hotel characteristics
- Conversion factor of hotel square feet to rooms
- Conversion factor of residential square feet to number of units
- Rate of return
- Financing terms
- Associated infrastructure needs

The financial viability and fiscal impact analysis used several key calculations, which are described below.

CALCULATION OF VALUE

An income valuation method was used to estimate the potential value of existing properties. The income valuation is calculated using certain assumptions with regard to an existing building's operating characteristics (rents, vacancies and expenses) and prevailing capitalization rates.

CALCULATION OF RESIDUAL EQUITY

A pro forma analysis of individual parcels was conducted to determine "residual equity," the amount in excess of the amount of equity a project could support, based on a 30 percent equity baseline assumption and an anticipated return on equity rate ranging from 10 to 11 percent. In simpler terms, residual equity is the dollar amount leftover once the developer has met their equity requirement and target rate of return.

DETERMINATION OF FINANCIAL VIABILITY

Financial viability was based upon whether or not a project had positive residual equity. Those projects with positive equity were considered to show financial viability for redevelopment.

ESTIMATION OF ASSESSMENT VALUE

For the fiscal impact analysis, office, retail and hotel assessments were derived from the replacement value of the property improvements plus land, which equaled total development costs minus demolition costs. Residential assessments were calculated using the replacement value as the basis plus an additional 20 percent to more accurately approximate market value. For the fiscal impact analysis, a Comprehensive Plan scenario was used as a baseline for comparison and actual assessed values were used for existing development under this scenario.

CALCULATION OF PUBLIC REVENUES AND PUBLIC EXPENDITURES

Revenues using prevailing tax rates and fees were estimated. Public expenditures were estimated using methods contained in *A Practitioners Guide to Fiscal Impact*, a widely recognized reference source in the realm of fiscal

analysis. Expenditures (cost of services) were estimated under this method using a range of percentages of property taxes paid by households and commercial property owners within a given area. These methods assumed residential land uses require higher levels of government services than commercial uses.

These methods are presented in greater detail in Appendix C.

TRANSPORTATION

In order to identify the required transportation infrastructure improvements, traffic analysis was performed to support the conceptual cost estimating effort described below. Traffic forecasts were developed according to the procedures outlined for Area Plans 1 and 2. Intersection capacity analysis was performed using the Synchro software for the four critical locations:

- Van Buren Street/Herndon Parkway
- Van Buren Street/Worldgate Drive
- Spring Street/Herndon Parkway
- Spring Street/Fairfax County Parkway Ramps

The resulting roadway improvements are listed in the following infrastructure section and serve as inputs to the cost estimate models.

INFRASTRUCTURE

In an effort to understand the general level of investment needed for the development of the HTOC Plan and in support of the financial analysis that was being undertaken, a conceptual cost estimate for infrastructure was developed The formulation of the infrastructure estimate was completed in concert with the traffic analysis and financial analysis and included:

Identification of necessary road infrastructure.

- Preparation of a water and sewer capacity study and preliminary planning document by Town of Herndon Department of Public Works engineers. This included demand projections and preliminary cost estimates.
- Identification of Metro Station-related infrastructure and amenities by the Town to be included.

The infrastructure items were identified either as public or private; inside or outside the Refined Study Area for 2035. For the financial model, frontage improvement costs were assumed to be shared at 25 percent public and 75 percent private. Additionally, for purpose of the financial model, no costs for pedestrian improvements were included on Herndon Parkway outside the Refined Study Area unless required in conjunction with a road improvement, such as a turn lane or signal modification. The results of the infrastructure cost estimate were used in the financial analyses presented below.

2008 COMPREHENSIVE PLAN (BASELINE) INFRASTRUCTURE COSTS

The cost estimate of the projected development that would occur as part of the *2030 Comprehensive Plan* (no redevelopment anticipated) was prepared as a baseline to compare to the costs related to the revised Framework Diagram. The following assumptions were used to create this estimate:

- Most of the Refined Study Area is built out and, therefore, existing conditions represent future conditions because redevelopment is unlikely to occur under existing zoning.
- Assumes that the passenger drop-off/pick-up facility will only be on Herndon Parkway.
- Minimal impact to water and sewer
- Transportation Improvements (confirmed through traffic analysis using the methodologies described previously):
- Herndon Parkway Intersection Modifications at Van Buren Street– right-turn lane
- Spring Street from Herndon Parkway to southbound Fairfax County Parkway Ramp include a widening in the eastbound lanes and include the barricade to prevent left and right-turning traffic from Sunset Business Park
- One right lane from northbound Herndon Parkway to east Spring Street
- Sugarland Run Trail

2008 Comprehensive Plan Pedestrian Path to Van Buren Street

The Town of Herndon Department Public Works (DPW) provided Capital Improvement Program (CIP) estimates, which are presented in Table 5-9. Water and sewer costs were considered "break even" by the town such that revenues are anticipated to cover costs. As a result, water and sewer costs were not included in the financial modeling except for on-site development costs, which were attributed to the developer in the financial model.

Estimates for private utility improvements (power, gas, and teledata/fiber) were assumed to be only those necessary to accommodate road improvements. Estimates do not include ROW costs or relocation of existing Dominion Virginia Power towers or impacts to easements.

Table 5-9 | 2008 Comprehensive Plan Infrastructure Costs

Infrastructure Element	2035
Public – Road Infrastructure	$1,928,411
Public – Utility (W/S)	$740,000
Public – Pedestrian /Station Amenity	$1,860,269
Private – Pedestrian/Station Amenity	N/A
Private – Utility (W/S)	N/A
Total	$4,528,680

N/A = Not Applicable
W/S = Water/Sewer

Table 5-10 | Herndon Transit-Oriented Core Plan Infrastructure Costs

Infrastructure Element	2035
Public – Road Infrastructure	$7,550,586
Public – Utility (W/S)	$15,678,240*
Public – Pedestrian /Station Amenity	$5,227,026
Private – Pedestrian/Station Amenity	$2,429,492
Private – Utility (W/S)	$10,000,000
Total	$40,885,344

* paid for by utility revenue
W/S = Water/Sewer

RESULTS OF FINANCIAL AND FISCAL IMPACT ANALYSIS

Table 5-10 presents the estimated infrastructure costs for the Herndon Transit-Oriented Core Plan. The financial analysis found that, dependent on the rate of return, from two to nine properties assumed to be redeveloped by 2035 would be incentivized to redevelop, given assumptions made in the analysis. The positive residual equity generated by the development of the nine properties was found to have the potential to fully fund public infrastructure costs associated with redevelopment. By comparison, if only two properties redevelop, the positive residual equity they generate could potentially cover 20 percent of estimated infrastructure costs.

The fiscal analysis used the same development program assumptions used for the financial analysis. It was determined that fiscal balance was achieved under this redevelopment scenario, with annually recurring net revenues in excess of expenditures. Annually recurring public expenditures were found to be covered by public revenues, resulting in net revenues in excess of expenditures of nearly $6.7 million cumulatively based on development of all nine properties assumed to occur by 2035. If all nine properties redevelop, an estimated $32.7 million in potential proffers was estimated, which could fully cover the estimated$12.8 million in infrastructure costs. If only two properties redevelop, 20 percent of the $12.8 million in infrastructure costs could be covered by an estimated $2.5 million in associated potential proffers. Alternatively, approximately 15 percent of the $6.7 million in net revenues in excess of expenditures could finance the $12.8 million in infrastructure costs through the issuance of bonds.

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HERNDON TRANSIT-ORIENTED CORE PLAN

6

INTRODUCTION

The HTOC Plan emerged from the analysis of several alternatives. The process was guided by public input and Town Council and Planning Commission direction including the Commission's directive to further analyze the land use mix and possible land use intensity by undertaking a financial and fiscal impact analysis. After considerable study, roadway capacity was used to establish a target density, which was then tested for financial viability. The resulting plan factored in the capacity of the existing and proposed roadway, transit improvements, the land use mix developed through guidance from the public, current and previous Town Councils, the Planning Commission, and data from the study of successful TODs, and a revised financial impact analysis. The HTOC represents a significantly reduced development area of approximately 38 acres consisting of nine properties concentrated around the Herndon Metro Station North Entrance Pavilion.

The HTOC Plan represents a conceptual vision for future TOD at the new Metro Station in Herndon. The Plan depicts the broad goals for the 38-acre HTOC (also referred to herein as "the Core"). It functions as a resource to set general parameters for urban design, including: maximum floor area ratios; building heights; setbacks; public spaces; pedestrian and vehicular access; and parking. It is anticipated that the Town of Herndon will update its zoning standards using these parameters. The resulting code language in combination with the HTOC will guide the Town and developers when implementing the conceptual vision on a project-by-project basis. Future code language will provide provisions for graduated floor area ratios based upon proximity to the Herndon Metro Station Pavilion and incentives.

Table 6-1 | Herndon Transit-Oriented Core Plan–Land Use Mix Assumption for the Study Purposes

Land Use	By 2035
Retail	3%
Office	50%
Residential	41%
Hotel	6%

Table 6-2 | Summary of Potential Development for the Herndon Transit- Oriented Core Plan

Land Use	Displaced 2010 Floor Area*	Additional New Floor Area by 2035	Total Area (Square Feet)	Assumed "Conversion Rate"	Total Employees
Office	805,281	2,644,200	3,449,481	1 per 250 sq.ft.	13,797
Retail	0	206,969	206,969	1 per 500 sq.ft.	414
Hotel (Square Feet)	75,280	338,658***	413,938	1 per 625 sq.ft.	662
				Total Employees	14,833
				Approx. Net New Employees**	13,425

Land Use	Units (1,200 SF/Unit)	Assumed "Conversion Rate"	Total Residents
Residential	2,357	2 per Household	4,714

Note: The items included in this table are approximate and are based on assumed conversion rates, land areas, and FARs. They are meant for planning purposes only.
* Displaced floor area refers to buildings (existing in 2010) that will be demolished and replaced as part of redevelopment. Trips and employees existing in 2010 for that floor area are included in the totals for 2035.
** Employees associated with the additional new floor area emerging between 2010 and 2035. Does not include employment in floor area in 2010.
*** The additional new floor area for hotel varies slightly due to the difference created by using the 625 sq.ft. conversion ratio for the existing hotle square footage.

HERNDON TRANSIT-ORIENTED CORE - FRAMEWORK DIAGRAM

The Framework Diagram for the HTOC Plan is illustrated in Figure 6.1. The Framework Diagram identifies the area that has become the focus of the Plan. Targeted FARs ranging from 3.8 to 4.3 have been applied to the Core. It is anticipated that the highest density (FAR 4.3) would be closest to the Metro Station or on sites associated with high infrastructure costs (i.e., new roads). Lower densities would be further away from the Metro Station and closer to the edge of the Core. It should be noted that parking garages are not counted towards the calculation of FAR.

The gross building floor area of land uses as a share of total floor area in the HTOC assumed for study purposes is presented in Table 6-1. Table 6-2 identifies the

Figure 6.1 | Herndon Transit-Oriented Core Plan—Floor Area Ratio Framework Diagram

Source(s): City of Herndon GIS, ESRI

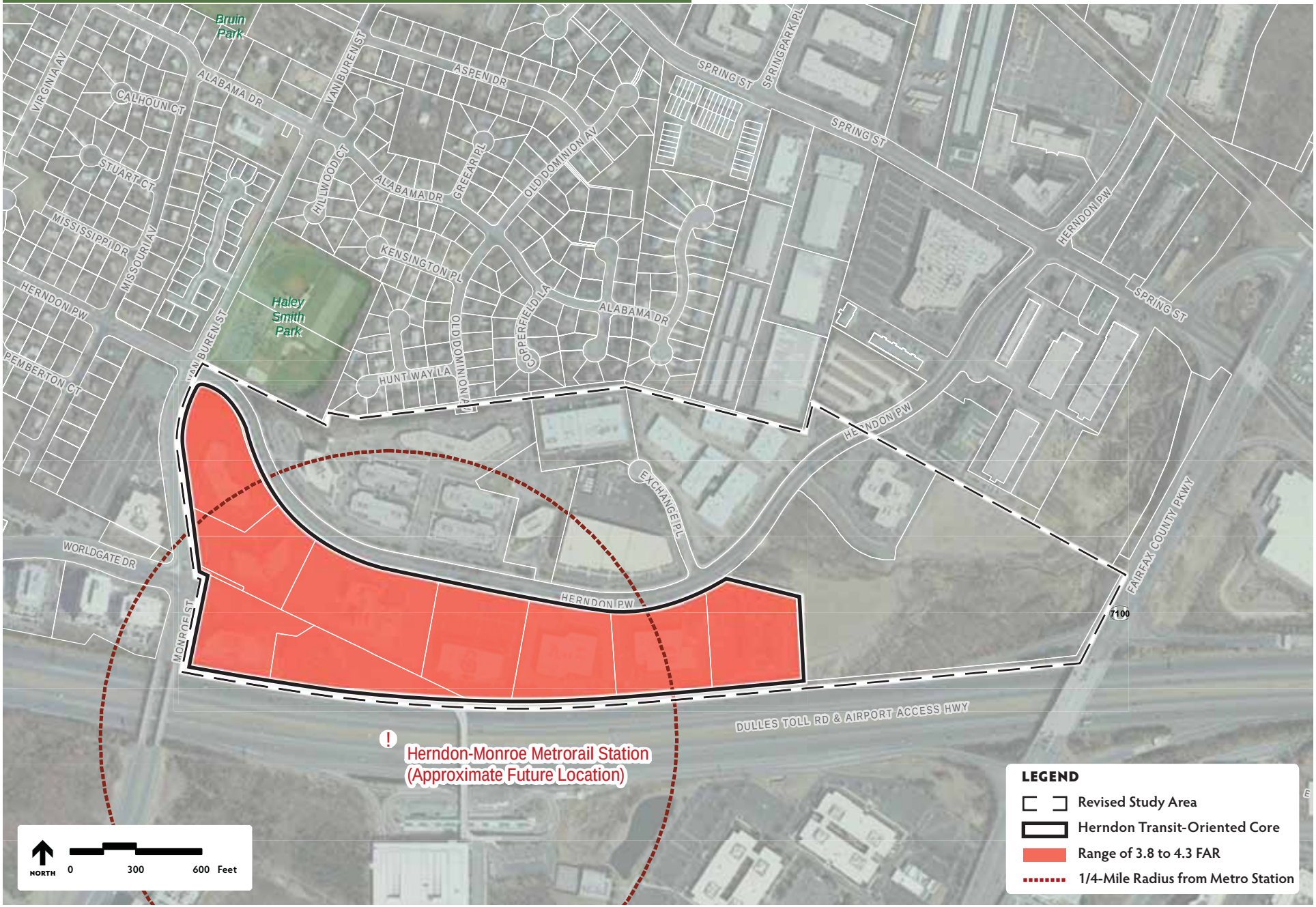

Figure 6.2 | Herndon Transit-Oriented Core Plan

assumed gross building floor area as a share of the total floor area in the HTOC. This land use mix and potential development program were assumed for analysis purposes.

HERNDON TRANSIT-ORIENTED CORE PLAN

The HTOC is depicted in the Illustrative Plan, shown in Figure 6.2, is described further in the sections below. The graphic shows the HTOC (with a FAR range of 3.8 to 4.3) in greater detail with buildings, parking structures, public spaces, and streetscape amenities illustrated. Based on the target FAR range, in 2035, the average FAR will be 4.17 resulting in potentially 4.1 million square feet of commercial floor area (retail/office/hotel) and 2,357 dwelling units. The frontage along the south side of the Herndon Parkway is urbanized with a street wall and bicycle and pedestrian improvements.

The HTOC Plan, as illustrated in Figure 6.2, is to be used as a guide when considering future development and redevelopment. It is intended to set a standard for quality development and does not prescribe specific building shapes and locations. The Town welcomes inventive solutions by developers and encourages the use of new urbanist principles (especially avoidance of suburban-type office buildings and superblocks) and an appealing street level environment oriented to pedestrian activity.

CONCEPTUAL DESIGN APPROACH

For redevelopment closest to the new Metro Station, the HTOC Plan envisions a mixed use TOD. The TOD will give Herndon a new neighborhood and economic engine providing employment, housing, shopping, dining and community activities. Future HTOC residents will be able to live in an active and lively neighborhood with a short walk to the Metro Station. Herndon residents will benefit from new neighborhood retail and services as well as public space amenities. Workers will have the flexibility of commuting by train or living near their place of employment.

The HTOC Plan follows principles of Smart Growth and best practices for TOD planning by:

- Providing a mix of uses that reinforce each other, shops, services, employment, recreation and residences, framing public spaces.
- Promoting a walkable community where people have choices, and the opportunities to live, work, shop, and play without having to use a vehicle.
- Supporting transportation alternatives, including walking, biking, and mass transit.
- Incorporating higher-density housing that supports transit use, adds vitality to employment and commercial areas, and meets a need in the market.
- Creating a variety of daytime and evening activities.
- Integrating a comprehensive parking strategy that includes the sharing of peak and off-peak parking demand.

A three-dimensional massing diagram, presented as Figure 6.3, was also created to illustrate the HTOC Plan. The diagram is based on the urban design concepts and the basic density assumptions in the Plan focusing on the Core with a 3.8 to 4.3 FAR range. The model shows how the buildings of the HTOC could be accommodated within 12 to 15 stories throughout the Core (based on the assumption that lot coverage could be as high as 70 percent, or more). The buildings will utilize setbacks on upper floors and cornice lines on lower floors to promote superior pedestrian scale, and increase light at the sidewalk level. The buildings will form the edges of public spaces designed for the public's use and enjoyment.

NORTH OF HERNDON PARKWAY

The HTOC involves only nine properties, all of which are south of the Herndon Parkway. For properties north of the Herndon Parkway and east of the Core refer to the section titled 'Long-Term Vision' at the end of this chapter. The Long-Term Vision envisions a time beyond 2035 when transit use and the full benefits of TOD have been realized and significant regional transportation infrastructure improvements have been made to facilities within and adjacent to the town.

Beyond 2035, when such improvements occur and additional capacity makes redevelopment north of the Herndon Parkway desirable, it is crucial that any redevelopment is harmonious with the HTOC development south of the Herndon Parkway. Additional guidance concerning the form and substance of development beyond 2035 is found at the end of this chapter.

PUBLIC SPACES

Public spaces allowing for flexible programming and variety in design are the key to creating an active community. A series of public places should be connected throughout the Core to provide choices for traversing the TOD and to encourage residents, commuters, shoppers, and office workers to explore and experience the entire center. Elements such as park benches, street trees, courtyards, fountains and unique landscape fea-

Figure 6.3 | Herndon Transit-Oriented Core Plan— Conceptual Massing

Looking east along Worldgate Drive

Looking north along Herndon Metro Promenade

tures should be dispersed throughout the Core, serving retail, service, employment, community facilities and residential uses. The public space elements must be of superb design and high-quality materials that blend visual appeal with function. The quality and design of these public spaces, such as incorporating unique artistic elements, will help give the Herndon Metro Station Area a highly recognizable sense of place. It is envisioned that these special places will be linked through a common design vocabulary of textured paving materials, ornamental landscaping, and street furniture.

There are two major public spaces within the HTOC each with their own focus, the Herndon Parkway and the Herndon Metro Promenade.

Herndon Parkway

The Herndon Parkway is a boulevard with a landscaped median forming a loop through the town. In the HTOC, the Herndon Parkway lies along the northern edge of the Core, between Van Buren Street and Fairbrook Drive. The HTOC envisions the south side of the parkway lined by a rich mix of street life, restaurants, retail, entertainment, office and residences, providing an appealing edge and entry to the Herndon Metro Station Area. The streetscape along the south side of the Herndon Parkway will feature a cycle track as well as a conventional sidewalk. Both facilities will connect to the regional trails, creating a pleasant walking loop for visitors and residents of the Core. Wide sidewalks will allow ample room for planting areas with potential for café space and appropriate outdoor display areas. As redevelopment occurs, design should include focal points and opportunities for people to stop, shop, and dine. Figures 6.4 and 6.5 show perspectives of Herndon Parkway as envisioned in the HTOC.

The Herndon Metro Promenade

The signature open space within the HTOC will be the Herndon Metro Promenade. Crucial to the success of the Herndon Metro Station Area, the Herndon Metro Promenade must make arrival in Herndon a unique experience among Metro stations.

The Herndon Metro Promenade is located in front of the Metro Station's North Entrance Pavilion and extends north to Herndon Parkway for Metrorail passengers visiting or departing from Herndon (Figure 6.2). It will also serve as a hub for the TOD community. This community space will feature a mix of plaza spaces and planted areas with sculptural elements and seating areas. The surface of the Herndon Metro Promenade will feature appealing, high quality, durable pavers that are ADA compliant. This public space, augmenting other town venues, could be used for community events. Pedestrian traffic to and from the North Entrance Pavilion will be served by uses that enable them to stop and eat or get take-out food, purchase a newspaper, drop-off dry cleaning or exercise at the fitness center.

Linear parks lead to the Herndon Metro Promenade along the southern edge of the Core. These connect with a larger trail system in Herndon and the region. A wide path traverses this area, which will also provide emergency vehicle access.

LAND USE

Herndon Parkway, Worldgate Drive Extension, and the Herndon Metro Promenade feature mixed-use buildings with ground-floor commercial and office or residential on the upper floors. These buildings could be 15 stories tall or less (including the parking decks) assuming a 70 percent or more lot coverage. Taller buildings could occur with less lot coverage, but should not exceed 20 stories, inclusive of embedded parking decks. As stated previously, the buildings will utilize setbacks on upper floors and provide cornice lines on lower levels, promoting superior pedestrian scale and bringing more light to the streets and public spaces. Retail commercial will feature specialty/convenience retail and entertainment uses including restaurants, primarily on the ground floor space fronting Herndon Parkway, Worldgate Drive Extension, and the Promenade

Some of the mixed-use buildings should include rental apartments and/or owner occupied condominiums. These housing units could be a mix of one-, two-, and three-bedroom units. Higher density housing in communities adjacent to transit options can be attractive to the growing number of households interested in living in a vibrant mixed-use community. Furthermore, the inclusion of multifamily residential optimizes the benefits of TOD.

The office component of the HTOC includes highest quality Class A space located primarily on the middle and upper floors of mixed-use buildings. The office buildings have convenient access to both the Metro station and the Dulles Toll Road. A portion of the structured parking under and behind the buildings will be shared with other adjacent uses.

There should be at least one high-end, full-service hotel with banquet and conference facilities. The hotel buildings should be designed and programmed to encourage the use of the nearby retail and recreational facilities within the Core. This will ensure that the hotel component is functionally integrated into the community and help activate the streetscape during non-office hours.

Figure 6.4 | Herndon Transit-Oriented Core Plan—Perspective

Figure 6.5 | Herndon Transit-Oriented Core Plan—Perspective/Cross-Section

PARKING

Implementation of the plan should include a strategy for sharing peak and off-peak parking capacity among the different uses, consistent with the sharing provisions in the Town of Herndon Zoning Code. The combination of parking decks and on-street spaces offer both short-term and long-term parking opportunities. Because of the urban style of development and the high visibility of all sides of buildings, parking decks will be wrapped entirely by building floor area or decorative façade treatments. Based on public feedback (specifically property owners), this is particularly important for views along the Dulles Toll Road. Additionally, TDM techniques directly related to reductions in parking could be allowed and encouraged by the Town.

TRANSPORTATION

Realizing that the local street system serving the HTOC was extremely constrained, the Town requested a transportation analysis that would evaluate the capacity of the most constrained portions and identify the amount of development that could be served by the street system. The Town directed that street improvements be: (a) within the type of street features currently used by town (excluding grade-separated interchanges, displaced left turn lanes, triple left turn lanes, or flyovers); and (b) of a cost reasonable for funding in the foreseeable future when development is anticipated to occur. The fiscal and financial models reflect that anticipated development at the levels projected has the ability to fund recommended street improvements described below.

As described in Chapter 5, *Alternative Plans*, the roadway improvements necessary to support redevelopment across the larger station area, particularly Area Plan 2, were not consistent with these requirements.

In order to determine the maximum level of development in the Core that could be supported at acceptable intersection levels of service, an iterative transportation analysis was performed. A roadway network similar to Area Plan 1, but excluding the new connector road from Spring Street, was assumed. Applying the land use mix presented in Table 6-1, traffic forecasts associated with varying levels of development were computed. Similar to the analysis for Area Plans 1 and 2, these forecasts were tested at the key intersections using Synchro. This sensitivity analysis indicated that approximately seven million square feet of total land area could be accommodated in the Core. Given the 880,561 square feet of existing uses that would be replaced, approximately six million square feet of additional development could be accommodated in the Core, while maintaining acceptable overall intersection operations.

An appropriate FAR range consistent with this level of development was then determined. The resulting densities and land uses, consistent with Table 6-2, were then carried forward for further analysis.

As with the existing conditions analysis presented in Chapter 3, *Existing Conditions*, operational analysis of ten key intersections in and around the Herndon Metro Station Area was performed using VISSIM, including:

- Herndon Parkway/Van Buren Street
- Van Buren Street/Worldgate Drive
- Van Buren Street/Alabama Drive
- Herndon Parkway/Commercial Access
- Herndon Parkway/Exchange Place
- Herndon Parkway/Fairbrook Drive
- Spring Street/Fairfax County Parkway Ramps
- Spring Street/Herndon Parkway
- Elden Street/Monroe Street
- Elden Street/Van Buren Street

Forecasts of future traffic conditions were analyzed for 2035 (full build-out) and are presented in Figure 6.6. Future traffic volumes include existing traffic counts, regional traffic growth, other approved development traffic and traffic generated by the implementation of the HTOC Plan.

Regional annual traffic growth rates for the various roads within the Herndon Metro Station Area were computed based on the existing traffic conditions (2010) and future (2030) traffic conditions for those roads included in the MWCOG Round 7.2 long-range travel-demand forecasting model. These growth rates were applied to the existing traffic counts taken in 2010 and presented in Chapter 3, *Existing Conditions*. Adjustments were then made to the through traffic volumes along the major roadways. These adjustments generally represent between one and nine percent of the volume on the particular traffic movement and were necessary to maintain a balance in traffic volume between intersections after the application of different growth rates on the various road segments. Vehicle trip assignments at the study intersections associated with the approved,

but incomplete development of the Fairbrook Business Park were determined based on previous traffic studies. The aggregate of the existing, growth, and other development traffic represents future conditions without redevelopment in the TOD area.

The total numbers of vehicle trips that would be generated by each land use within the Core were determined based on data published by the ITE in the Trip Generation manual, 8th Edition. The ITE trip rates do not account for transit availability or trips between adjacent land uses prevalent in high-density, mixed-use TOD. Fairfax County guidelines for transit reduction (25 percent) were used as a basis. In addition, estimates of the proportions of trips using transit were based on the 2005 Development-Related Ridership Survey sponsored by the WMATA. The transit mode shares for each land use are listed below:

- 25 percent for office uses
- 25 percent for hotel uses
- 25–35 percent for residential uses (depending on unit type)

Internal trips are those made between proximate uses that do not add vehicle trips to the road network, such as walking trips, bicycle trips, shuttle/circulator trips, or auto trips between adjacent parking facilities. While these interactions are expected within mixed-use developments, internal trip capture was conservatively excluded from this analysis. Table 6-3 summarizes the numbers of trips associated with the redevelopment levels assumed by 2035. For clarity, existing land use (2010), future land use (2035), and redevelopment totals (change from 2010 to 2035) are provided in Table 6-3.

The vehicle trips for the analysis year were distributed across the road network according to the following trip percentages, based on current traffic trends and volumes in the area and workflow routes from the TPP data for the TAZs within the Refined Study Area, and accounting for the refined redevelopment area and associated roadway improvements:

- 20 percent from the east on Spring Street (including Fairfax County Parkway)
- 35 percent from the west on and Worldgate Drive
- 15 percent from the west on Herndon Parkway
- 10 percent from the north on Herndon Parkway
- 10 percent from the north on Van Buren Street and Monroe Street
- 10 percent from the south on Van Buren Street

In addition, trips generated by existing land uses and the approved Fairbrook development were redistributed to take advantage of the added roadway capacity provided by the Worldgate Drive Extension. The regional origins and destinations of these trips remain consistent with the Census information presented above.

The resulting traffic assignments were added to the existing, regional growth, and other development traffic volumes to yield the future traffic forecasts for 2035 conditions (Figure 6.6). Average Daily Traffic (ADT) volumes were estimated for the major roadways assuming that the PM peak hour represents 10 percent of the daily volume (Figure 6.6). Future traffic conditions at the ten study intersections were analyzed using the detailed VISSIM network and the future traffic forecasts.

In order to accommodate the 2035 traffic forecasts, several roadway improvements would be required:

- The addition of a northbound right turn lane on Van Buren Street at Herndon Parkway.
- The extension of Worldgate Drive from Van Buren Street to Herndon Parkway as a four-lane road with turn lanes ("Worldgate Drive Extension").
- The reconfiguration of the median and channelizing island on Worldgate Drive at Van Buren Street to add a second eastbound through lane.
- The one-lane widening and median modification along westbound Herndon Parkway at the Worldgate Drive Extension to accommodate a second left turn lane
- The one-lane widening of Spring Street eastbound between the Fairfax County Parkway Ramps and Herndon Parkway, continuing approximately 650 feet west of Herndon Parkway.
- The one-lane widening for approximately 400 feet westbound on Spring Street from the Fairfax County Parkway Ramps to the point where the existing right-turn lane begins.
- The reconfiguration of the Fairfax County Parkway off-ramp at Spring Street to accommodate an exclusive southbound left turn lane.
- The addition of two northbound lanes on Herndon Parkway at Spring Street.
- The addition of a second left turn lane on southbound Herndon Parkway at Spring Street.
- The addition of traffic signals at Worldgate Extension and Exchange Place along Herndon Parkway.
- The reconfiguration of the existing traffic signals at the Herndon Parkway/Van Buren Street, Worldgate Drive/Van Buren Street, Herndon Parkway/Spring Street, and Spring Street/Fairfax County Parkway Ramps intersections to accommodate the above lane use changes.

Figure 6.6 | 2035 Traffic Counts and Lane Configurations

Source(s): City of Herndon GIS, ESRI

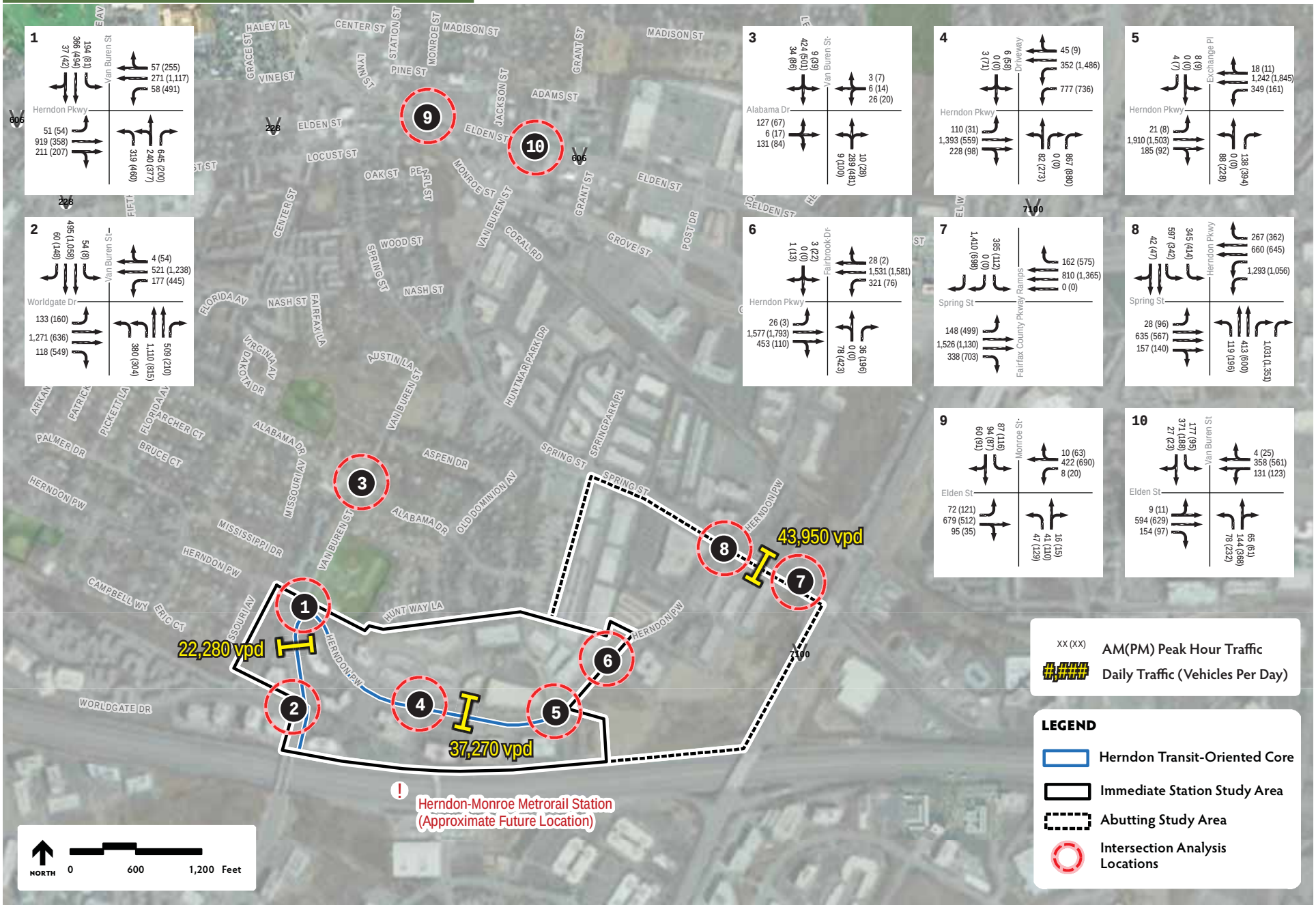

Figure 6.7 | Herndon Transit-Oriented Core Plan—Transportation Improvements (West)

Source(s): City of Herndon GIS, ESRI

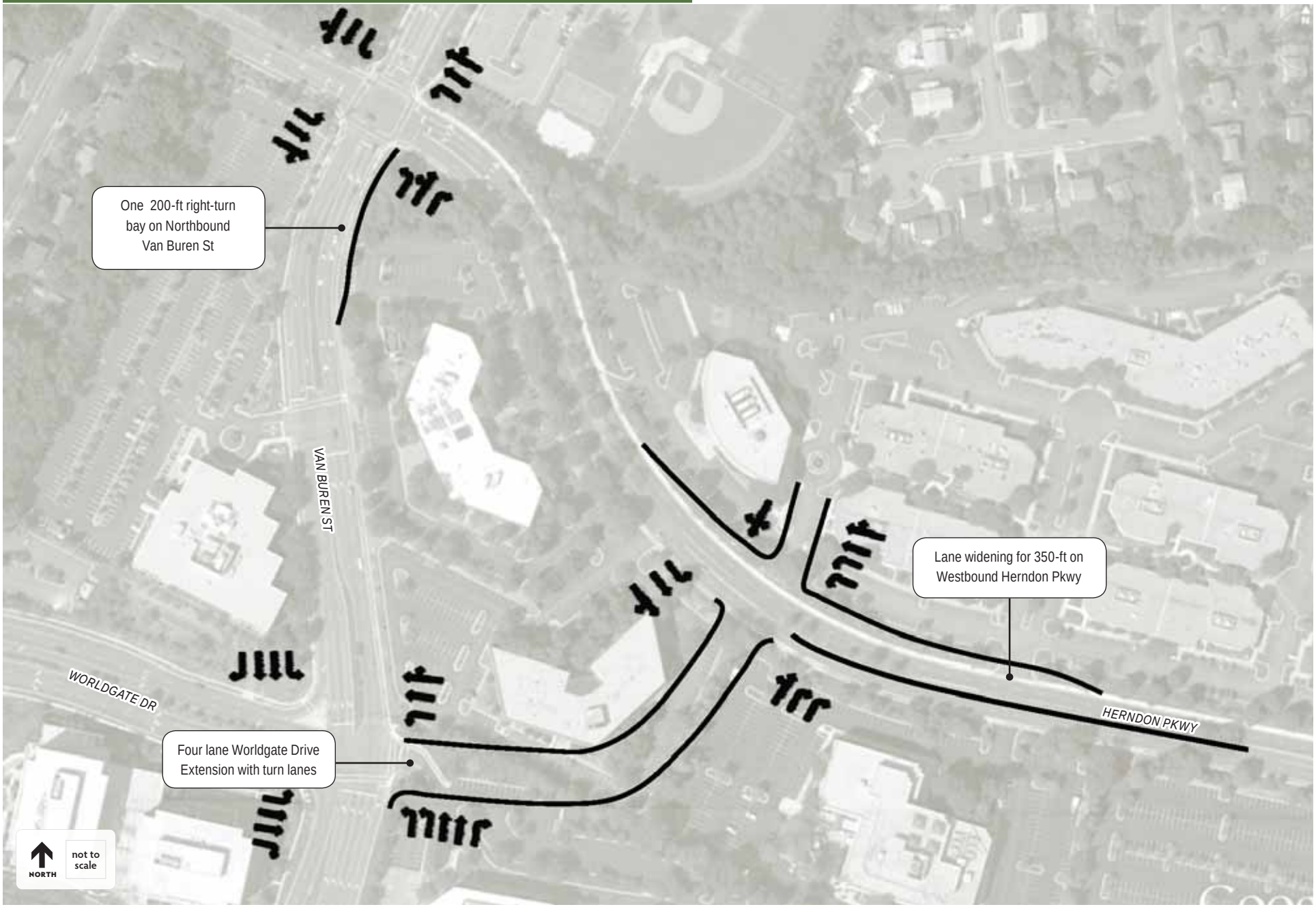

Figure 6.8 | Herndon Transit-Oriented Core Plan—Transportation Improvements (East)

Source(s): City of Herndon GIS, ESRI

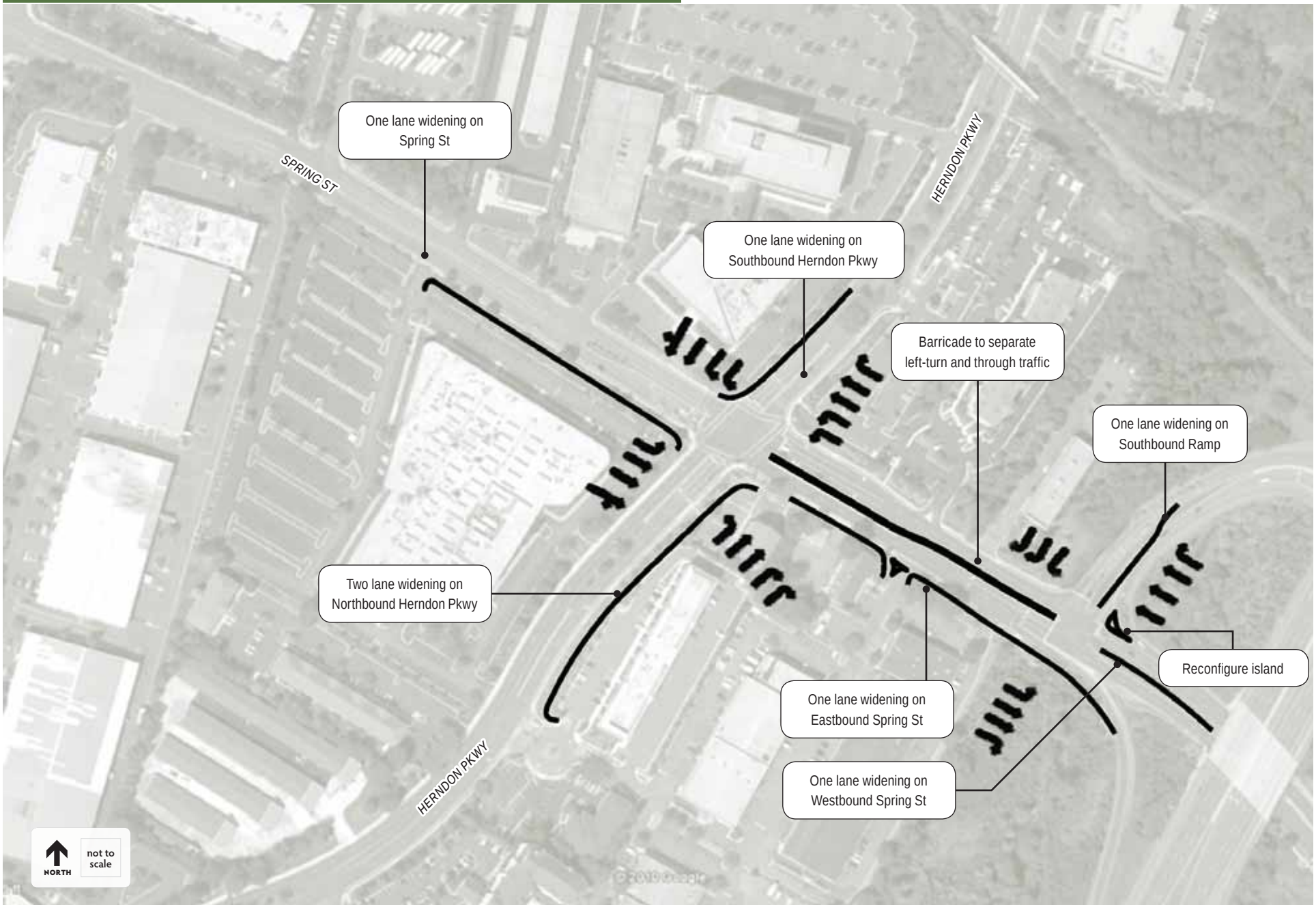

Table 6-3 | Herndon Transit-Oriented Core Plan Trip Generation Summary 2035

Part A Land Use Type	Land Use Code	Unit Type	2010* Units	New Units 2035	AM Distribution Total	Trips added as part of Redevelopment In	Out	PM Distribution Total	In	Out
Townhomes	230	Dwelling Units	0	0	0	0	0	0	0	0
Mid-Rise Apartments	223	Dwelling Units	0	707	277	86	191	328	190	138
High-Rise Apartments	232	Dwelling Units	0	1,650	507	96	411	576	357	219
Hotel	310	Rooms	146	516	313	191	122	304	161	143
Office	710	1000Sq. GFA	805	2,644	2,576	2,267	309	3,040	517	2,523
SITE GENERATED TRIPS					3,673	2,640	1,033	4,249	1,226	3,023

Part B Transit Reductions	Land Use Code	Unit Type	Units	AM Distribution Reductions	In	Out	PM Distribution Reductions	In	Out
Townhomes	230	Dwelling Units	0	0	0	0	0	0	0
Mid-Rise Apartments	223	Dwelling Units	707	69	21	48	82	48	34
High-Rise Apartments	232	Dwelling Units	1,650	178	34	144	202	125	77
Hotel	310	Rooms	516	78	48	30	76	40	36
Office	710	1000Sq. GFA	2,644	644	567	77	760	129	631
Total Transit Reductions				969	670	299	1,120	342	778
Residential Subtotal				537	127	410	621	375	246
Office Reductions				2,167	1,843	323	2,508	509	2,000
TOTAL SITE GENERATED TRIPS (PART A MINUS PART B)				2,704	1,970	734	3,129	884	2,246

Existing Land Uses*	Land Use Code	Unit Type	Units
Hotel	310	Rooms	146
Office	710	1000Sq. GFA	805

Total 2035 Land Uses (Existing + New)	Land Use Code	Unit Type	Units
Townhomes	230	Dwelling Units	0
Mid-Rise Apartments	223	Dwelling Units	707
High-Rise Apartments	232	Dwelling Units	1,650
Hotel	310	Rooms	662
Office	710	1000Sq. GFA	3,449

Refer to Figure 6.7 and 6.8 for the proposed transportation improvements for 2035.

The levels of service and vehicular delays at the critical intersections with these improvements are summarized in Table 6-4. Each of the study intersections would operate at LOS D or better during both the AM and PM peak hours with the HTOC plan, with the exception of the Van Buren Street/Alabama Drive intersection. During the PM peak hour, this intersection would experience significant delays, assuming the current intersection configuration and all-way stop sign control remain in place. The Town has identified this segment of Van Buren Street for the potential application of measures to improve pedestrian and bicycle accommodations and reduce the priority of automobiles. The feasibility and appropriateness of modifications to Van Buren Street will be studied under a separate effort.

TRANSPORTATION ANALYSIS FINDINGS

The results of the analysis indicate that the traffic generated by the HTOC could be accommodated with intersection-focused road improvements of moderate scope. Mobility for drivers is projected to be maintained without significant impacts to pedestrian, bicycle, or bus operations. Furthermore, this plan establishes access to the Herndon Metro Station Area with the highest priority going to pedestrians, bicyclists, and transit users.

NEIGHBORHOOD TRAFFIC AND PARKING

The street and block network has been designed to limit vehicular interaction between the Herndon Metro Station Area and the nearby residential communities. No new street connections are planned with the single-family neighborhoods to the north, and the majority of traffic is focused on major corridors into and out of the Herndon Metro Station Area. However, if cut-through traffic or speeding issues develop in residential areas in the future, traffic calming measures could be considered for implementation. Examples of effective traffic calming methods to address specific issues include:

Cut-through Traffic

- Partial street closures
- Full street closures
- Diversions

Speeding

- Speed humps/raised crosswalks/raised intersections
- Roundabouts/neighborhood traffic circles
- Neck downs/chokers/chicanes

It is not anticipated that these measures would be required, but they could be evaluated for implementation if the need arises.

Table 6-4 | Herndon Transit-Oriented Core Plan Level of Service Summary – 2035

Intersection	AM PEAK		PM PEAK	
	Delay	LOS	Delay	LOS
Van Buren St & Worldgate Dr	54.7	D	42.8	D
Van Buren St & Herndon Pkwy	44.7	D	52.4	D
Van Buren St & Alabama Dr	28.3	D	165.7	F
Herndon Pkwy & Spring St	51.8	D	48.1	D
Spring St & Ramp to Fairfax County Pkwy	51.9	D	23.8	C
Elden St & Monroe St	20.8	C	27.1	C
Elden St & Van Buren St	32.3	C	34.0	C
Herndon Pkwy & Worldgate Extension/Driveway	32.5	C	29.4	C
Herndon Pkwy & Exchange Place/Courtyard Hotel	20.4	C	27.2	C
Herndon Pkwy & Van Buren Office Park/Fairbrook Drive	10.4	B	22.9	C

Given the proximity of existing residential communities to the Herndon Metro Promenade, the potential exists for Metro riders to park in the adjacent neighborhoods. To preclude this, a Residential Permit Parking Zone may be designated by the Town Council. Such a zone could allow registered residents and short-term visitors to park, while prohibiting commuter parking.

INFRASTRUCTURE

The infrastructure and capital improvements that are associated with the HTOC are outlined in Chapter 7, *Capital Improvements Guide*.

PRINCIPLES AND GUIDELINES FOR THE HERNDON TRANSIT-ORIENTED CORE PLAN

As presented in Chapter 1, *Goals and Objectives*, during the course of the planning process, the Planning Commission established a Vision Statement, guiding principles, and goals and objectives for development in the Herndon Metro Station Area.

The Town also developed principles and guidelines to address specifically open space, public and semi-public space, and private development features.

PROVISIONS FOR PASSENGER DROP-OFF AND PICK-UP AT THE NORTH ENTRANCE PAVILION OF THE METRO STATION

At the onset of Metrorail service, a transit center providing bus, taxi, and private vehicle drop-off along the Herndon Parkway will be in place. Access to the Metro Station via the North Entrance Pavilion will be provided by a sidewalk with lighting.

During redevelopment, the Town will work with applicants in a cooperative design process using a list of design criteria and objectives. The intent of this process is to ensure that developers can incorporate an enhanced transit center and a new Passenger Drop-Off/Pick-Up facility into their redevelopment site plans. Criteria for the facility include, but are not limited to:

- A drop-off area of a size, style, and design that serves as an alternative to long-term parking at the Herndon-Monroe Park and Ride facility.
- The presence of a pedestrian-oriented public open space upon exiting the North Entrance Pavilion instead of just the immediate presence of a plain sidewalk leading to roadway pavement and vehicular activity.
- A minimum size of the proposed open space should be determined. The open space should be adjacent to the North Entrance Pavilion landing.
- The open space should be highly visible from both Herndon Parkway and the North Entrance Pavilion, and should not be enclosed on all sides.

Essential components of the passenger drop-off/pickup facility, regardless of configuration or location, may include:

- Drop-off lane (for the activity of driving up, dropping off, driving away; no standing): while a length of 180 feet is a standard recommended by the consultant, the Planning Commission believes a lane longer than 180 feet would be preferable.
- Standing spaces (for drivers in vehicles to await passengers disembarking from the Metro Station): 10-14 spaces. These spaces should be accommodated with redevelopment near the Metro Station. The spaces do not need to be contiguous. For example, half of the spaces could be north of Herndon Parkway and half could be south of Herndon Parkway. As another example, the spaces could be shared among several properties close to the Metro Station. The principal point is that drivers picking up or dropping off passengers should not have to drive directly up to the North Entrance Pavilion, and do not need to be immediately adjacent to the station to wait.
- Two bus bays minimum.
- Off-site cell phone waiting area.

DEVELOPMENT / PRIVATE REALM GUIDELINES

As stated previously, the HTOC is conceptual and is meant to be used as a tool to understand the potential level of development intensity and to set broad goals that will be considered in greater detail when the Town advances new zoning for the Core. This section identifies goals that pertain to future redevelopment and considerations for site layout, block structure, parking, building massing, defining the public realm, and sustainability. The public realm generally includes elements such as squares, parks, the public right-of-way of streets, and other public spaces.

- **Defining the Public Realm (Building Form and Use)** – The HTOC identifies opportunities to create a unique public realm through wide sidewalks, a rich streetscape, and public gathering spaces such as the Herndon Metro Promenade. These features are important, as they will provide places for residents, employees, and visitors to walk and navigate to and throughout the Core. These areas could potentially be used for events and programmed activities. The public realm and other outdoor spaces will be defined by the buildings and structures that surround them. The placement of buildings and land uses (i.e., setbacks and ground floor uses) should be considered to determine how they contribute to creating these spaces. Potential ways to utilize building placement to shape the public realm and outdoor spaces include:
  - *Set-to Lines* - Building walls can be used to define the shape and form of the public realm. This could include variations in the proximity of building walls to the public right-of-way to help create transitions between the streetscape and the building.
  - *Ground Floor Uses* – Active interior ground floor uses should complement the adjacent public realm, especially along the length of the proposed Herndon Metro Promenade. In addition, building entrances should be placed in locations that relate to and support the public realm.
  - *Awnings and Colonnades* – The use of awning and/or colonnades are two ways of transitioning between the building envelope and the adjacent public realm. The design of colonnades should emphasize light and visibility of the abutting ground floor facades.
  - *Areas for outdoor activities* – Buildings should be placed to create additional space for outdoor activities such as seating for cafes and sidewalk display areas.
- **Including "Focal Points"**– The HTOC identifies opportunities to include urban plazas and streetscape improvements that create "focal points" at forecourts to buildings or at "gateway" locations in the Core. Potential examples of focal points include the following:
  - *Forecourts to building entrances* – Forecourts that include landscaped designed features and hardscape plazas that celebrate entry into buildings.
  - *Streetscape amenities* – Amenities such as artwork and sculptures, special landscape features and planting, water fountains, signage, and pavilions.
  - *Specialty lighting* – Lighting can be used to accent the architectural features of a building or elements within the streetscape and public realm.

The use and placement of focal points should be carefully considered so that there is consistency throughout the streetscape and public realm environment.

- **Block size** – The HTOC (Figure 6.2) identifies opportunities to define a "block structure" (i.e. size and location of blocks and streets) in the Study Area and includes suggestions for new streets, pedestrian connections, and trails. While the ultimate block structure could vary from what is depicted, the Plan identifies key elements that will contribute towards creating a consistent block structure. One of the goals for the planning study is to encourage and promote walkability. Block size and pedestrian connections will play an important part in achieving this goal. The following is a list of elements that contribute towards defining block structure:
  - *New Streets and Access Driveways* – The placement and use of new streets, access driveways, and parking will contribute to the block structure.
  - *Pedestrian Connections* – The use of pedestrian connections, trails, and the inclusion of the Metro Promenade will provide linkages to and between block and buildings.
  - *Building Massing* – The mass and scale of buildings should be articulated to mitigate the appearance of buildings so that each block does not appear too large to contribute to a sense of pedestrian scale.
- **Building Massing** – The HTOC identifies opportunities to articulate building massing in a way that contributes to creating a sense of scale at the street-level and for the overall development. By including upper-level setback requirements, the facades that front streets will create a "street wall" that helps to reduce the scale of the overall building height. This is particularly important given that buildings are likely to be up to fifteen-stories tall. The perspective sketch and cross-section illustrate the upper-level setbacks at the four- and eight-story levels (Figures 6.4 and 6.5). In addition to the upper-level setbacks, building massing could be further articulated along the horizontal length of building façades by including additional setbacks from the street wall.
- **Building Façades** – Quality of façade treatments
  - Facades should include high quality and durable materials.
  - Facades should include open glazing on the ground floor for activity, marketing, and security.
  - Facades should include the appropriate use of signal, awnings, canopies, belt courses, and water tables to scale buildings to the public realm.

- **Parking garages and entrances** – The HTOC identifies opportunities to locate parking garages and their entrances in ways that support the public realm. While parking is an important element of future redevelopment, it should be placed in locations that minimize conflicts with the public realm. The following is a list that should be considered in locating parking and access driveways:
  - *Internal locations* – Parking should be located in the middle of the development block to help mask the views of the parking structure.
  - *Façade treatments* –Parking structures that are not located internal to the block should include decorative façade treatments to mask views of the parking structure, with the goal that the façade treatments are harmonious with the associated adjacent buildings.
  - *Building floor area* – Lower levels of parking structures should include leasable building floor area at the perimeter of the parking structure where it abuts the public realm or streetscape.
  - *Locating Parking Entrances* – Where possible, parking entrances should not be located directly on major streets. Entrances to parking structures should be placed on secondary streets or off of access driveways.
- **Sustainability** – In support of 2030 Comprehensive Plan policies to "enable Herndon to be a leader in environmental stewardship in the region", the Town should consider revised zoning and designs standards for future redevelopment to include sustainable design, conservation of natural resources, such as water and energy, reduction of waste, and improvement of the human environment and health.
  - Such revised zoning and design standards can build on established redevelopment criteria for the Regional Corridor Mixed Use designation in the 2030 Comprehensive Plan, which calls for use of environmentally sound practices including: green roofs; natural (especially wooded) open space corridors/ areas as transition zones, visual amenities and buffers; use of natural site amenities (e.g., quality trees, streams, etc.) through sensitive building placement, street and parking lot design/construction.
  - Efforts to minimize the amount of impervious surface and provision of stormwater management facilities which can be retained as open space amenities. Use of bioretention and best management practices for stormwater retention wherever possible.

Additional sustainable design guidelines could potentially include the use of rain gardens and rooftop gardens within development projects for improving stormwater quality in place of conventional stormwater management techniques. Building energy performance criteria or energy reduction goals for new buildings could be included as part of the development guidelines. Sustainable design features within the public realm could potentially include items, such as energy efficient lighting (i.e., LED lighting) or other environmentally-friendly lighting technology, recycled materials, and utilization of Low Impact Design (LID) stormwater management techniques.

A number of guidance documents could be utilized in developing potential sustainable guidelines. Such guidance documents include:

Green Globes® building design and construction guidance and assessment program; and the U.S. Green Building Council's Leadership in Environmental and Energy Design (LEED®) high-performance building rating systems, such as LEED for Neighborhood Development.

GUIDING PRINCIPLES FOR OPEN SPACE AND PUBLIC AND SEMI-PUBLIC SPACE

The HTOC Plan will create a new and exciting entrance and economic engine for Herndon as a whole. It will also serve as a unique neighborhood for its residential and business inhabitants. The HTOC will be served by attractive and functional public and private exterior and interior spaces to ensure a balanced environment, provide adequate open space for the health and recreational needs of its residents, workforce and visitors, protect existing recreational resources in the town from over-use, and create attractive and inviting surroundings. These spaces will afford connectivity, relaxation, exercise, minor entertainment venues, civic pusuits and social engagement.

The design of an individual open space shall be governed by its intended purpose. Shared qualities should include: superior materials incorporating visual appeal and durability; an appropriate balance of landscape and hardscape; state-of-the-art landscape practices; a dependence on native trees augmented by native and non-native shrubs, annuals and perennials; and unique features providing aesthetic appeal and a memorable sense of place, including but not limited to water features, statuary, mosaics, plaques, lighting, streetscape furnishings and accessory structures. General green space for both respite and active play will be provided in conjunction with, and available to, residential uses throughout the TOD. Coordination among multiple developers may be necessary to create a consolidated open space area for recreational purposes.

The inventory of public and private spaces (exterior and interior) necessary to achieve the desired environment consists of the following:

- Commercial and Residential Open Space
- Interior Recreation Facilities
- Interior Community Facilities
- Primary Streetscape (Herndon Parkway)
- Secondary Streetscape
- Multimodal Trails
- Herndon Metro Promenade

HERNDON METRO PROMENADE

As stated above, the signature open space within the HTOC will be the Herndon Metro Promenade. Crucial to the success of the Plan, the Herndon Metro Promenade must make arrival in Herndon a unique experience among Metro stations. The Herndon Metro Promenade must be designed successfully in order to:

- Serve as the focal point of the TOD, but not supplant the role of the Herndon Downtown as the town's central entertainment venue.
- Connect the Metro Station portal visually and physically with the larger transit-oriented neighborhood and the Herndon Parkway bus and vehicle transit center.
- Create an appropriate sense of enclosure and comfortable pedestrian scale through the arrangement and design of abutting buildings.
- Provide a comfortable, safe, and practical walking environment that incorporates areas of respite, sun and shade, visible shopping and dining opportunities and a sense of eyes on the street.
- Serve the primary activities of transit user connectivity, walking, observing, café seating, shopping and relaxing.
- Provide a prominent feature visible from Herndon Parkway approach to relay the sense of arrival.
- Present a prominent feature visible at Herndon Station portal to relay the sense of arrival and provide an introduction to Herndon.
- Provide attractive and adequate lighting for evening activity.
- Provide areas for street entertainment.

In addition, the Herndon Metro Promenade shall be governed by the following design strategies:

Length

The length of the Herndon Metro Promenade will extend from the Herndon Parkway transit center to the North Entrance Pavilion of the Metro Station. The Promenade will be divided by a series of coordinated features to diminish the sense of distance and increase the appeal of the physical surroundings. The division of space should include such features as: seasonal planting beds and planters, trees, awnings, street furniture, fountain(s) and art such as: sculptures, plaques, mosaics and stone etchings. Additional open spaces on axis to the Herndon Metro Promenade may be incorporated. Such additional open spaces should differ from the Herndon Metro Promenade to create variety and an appropriate succession of spaces. Public open space abutting the Herndon Metro Promenade should provide supplementary pedestrian connections to the larger TOD.

Width

The width of the Herndon Metro Promenade should be a minimum 70 feet and a maximum of 90 feet exclusive of café seating areas. To achieve a comfortable sense of enclosure the upper stories of abutting buildings should step back and provide lower cornice lines.

Walls

The Herndon Metro Promenade will be framed by the walls of the abutting buildings. Features along the edges of the Herndon Metro Promenade should consist of shops, cafes, significant building entrances and other active building facades. Architectural elements such as appropriate canopies, banners, projecting signs, decorative storefronts and windows, and architectural art such as reliefs should be incorporated. Vertical and horizontal building step-backs and architectural features will be employed to provide an appropriate sense of scale, massing, and enclosure.

COMMERCIAL AND RESIDENTIAL OPEN SPACE

It is the intent that all new construction and redevelopment within the TOD achieve the highest quality in design, materials, convenience and livability. Open space should be distributed throughout the TOD for the enjoyment of various user groups. Whether providing residential condominiums or apartments, offices, retail and dining establishments, or a mix of several uses, it is obligatory that development within the HTOC provide adequate open space for use by the residents, employees and visitors.

The design and layout of structures in the TOD must relate to each other and the spaces they create in a harmonious manner. The creation of gracious and inviting plazas and landscape areas for numerous and varied purposes, each providing linkages to sidewalks, trails, and other open areas is necessary to the success of the TOD. In addition to passive use and trail linkages, development must provide active recreational opportunities for residents and employees.

GENERAL OPEN SPACE PRINCIPLES APPLYING TO ALL PROPERTY WITHIN THE TOD

- Open spaces should use decorative enhancements such as architectural elements, lighting, site furnishings, pavement, substantial landscaping, trellises, screen walls, planters and other features to create a unique sense of place.
- Trees should be limited to native species and selected on the basis of aesthetic attributes, wildlife benefits and drought tolerance.
- The majority of shrubs should be native and selected on the basis of aesthetic attributes, wildlife benefits, and drought tolerance.
- A mix of native and non-native annuals and perennials should be employed.
- In-ground irrigation systems in conjunction with rainwater harvesting systems should be provided for landscaped and turf open spaces.
- Open space should be laid out with solar orientation in mind and with the intent to provide a mix of sun and dappled shade to ensure comfort and optimum usability during various seasons.
- Open spaces may be located at-grade, on platforms/podiums, or on rooftops.
- Each building and site should be arranged to create attractive, functional, well-integrated open space that corresponds with on-site as well as the abutting development and right-of-way.
- Paths or sidewalks and site furniture, such as benches, chairs, or seating walls and trees or architectural devices to provide dappled shade should be provided along the periphery of open spaces, such as lawns, patios, play areas and pools.
- Bicycle racks should be provided near entrances and adjacent to open spaces in close proximity to trails and sidewalks.
- Development should provide construction of abutting sidewalks, trails, and other right-of-way improvements per town design specifications and policies.

PRINCIPLES FOR OPEN SPACE ASSOCIATED WITH MIXED-USE WITH RESIDENTIAL USES

- A mix of active and passive open spaces should be provided on site.
- Basic open spaces and activities to be provided on site include appropriately designed tot lots for climbing, sliding and imaginative play, dog walking areas with bag dispensers and receptacles, sitting areas, active rooftops, and swimming pools.
- Additional open spaces appropriate for residential uses include gardening plots and basketball courts or half courts, and smaller multi-purpose lawn areas for various informal games such as Frisbee, bocce, and catch and for general relaxation.
- Multifamily structures designed with ground floor retail space abutting public sidewalks or plazas should provide an additional ten feet of semi-public space along portions of the abutting facade to allow for café space.
- Features to promote entertainment opportunities by and for residents such as outdoor kitchens located near patio and pool areas and conversation groupings are desired.

PRINCIPLES FOR OPEN SPACE ASSOCIATED WITH MIXED-USE AND SINGLE-USE BUILDINGS

The following principles are applicable to buildings incorporating one or more of the following: office; hotel; retail; educational uses; and other non-residential uses.

- Passive open space providing areas for "brown bag" eating, walking, and respite should be provided.
- Site furniture, including small tables and chairs, benches, trash receptacles and recycling receptacles, the design of which should be coordinated and reflect the architectural style of the building and other surrounding features should be provided.

PRINCIPLES FOR INTERIOR RECREATION FACILITIES

The Town anticipates that future development and redevelopment within the Core will meet and exceed the general Dulles Corridor real estate market standard for interior amenities. To create a desirable environment and provide added convenience and value, interior recreational amenities will be provided within future structures. The incorporation of these recreational amenities, in close proximity to those living, working or visiting within the Core will not only serve those in the TOD, but will reduce excessive demand upon existing town facilities and decrease reliance on motor vehicles. Examples of appropriate residential interior recreational space include:

- Fully equipped fitness center
- Pub room
- Media club room
- Interior sports facilities
- Conference room with electronic audio-visual equipment

Examples of appropriate interior recreational space for development containing office uses include:

- Fully equipped fitness center with showers accessible to employees and which is operated under private, commercial or, if provided as a public use, Town management.
- Examples of appropriate interior recreational space for hotels include:
- State-of-the-art conference and banquet facilities
- Fully equipped fitness center with indoor pool and spa

INTERIOR COMMUNITY FACILITIES

The increase in multifamily units will place additional demands on existing Town of Herndon and Fairfax County facilities. To assist in defraying the cost of this increase in demand and for the convenience of TOD residents, development within the Core that contains multifamily units should dedicate interior floor area for community purposes. Such space should be located and designed to afford opportunities for Fairfax County Public Schools, County Senior Services, Town of Herndon Community Policing and Town of Herndon Parks and Recreation programs. Types of community space or facilities may include: community rooms; a branch library; exercise facility; community business/job center; game room; and meeting rooms.

HERNDON PARKWAY STREETSCAPE (HERNDON PARKWAY)

The Parkway along the TOD will serve as the primary pedestrian, bicycle, bus and private vehicle pathway. To many, the parkway will serve as the principle visual image of the TOD neighborhood and will be an important multimodal transportation link, a venue for commerce, and an active public space. It is anticipated that the Herndon Station transit center will be located along the Parkway and connected to the Metro Station pavilion by the Herndon Metro Promenade.

Directly or through linkages with other trails, sidewalks and plazas, all open spaces, including sidewalks and trails in and around the Core should link with the Herndon Parkway. To ensure functionality and provide adequate room for all users, create an attractive inviting open space and guarantee a successful commercial corridor, the Herndon Parkway abutting the Core shall be governed by the following design strategies:

- The Herndon Parkway will consist of a median of varying size providing landscaping and safe havens for pedestrians and bicycles.
- The Herndon Parkway will provide high visibility paver crosswalks and pedestrian countdown signals at all signalized intersections.
- The Herndon Parkway will provide two ten and a half to twelve foot wide lanes for both east-bound and west-bound motor vehicles with turn lane as appropriate.
- The Herndon Parkway streetscape shall be designed to provide safe access for those with disabilities.
- Along the south side of the Herndon Parkway the following amenities shall be provided:
  - A three-foot wide safety edge between the parking lane and an eleven-foot two-way cycle track.
  - A five-foot wide planting area, incorporating state-of-the-art landscape practices, for street trees and smaller plants for seasonal color.
  - An eleven-foot wide pedestrian sidewalk.
  - Additional space outside the right-of-way along portions of the abutting facades to allow for café space.
  - A parking lane protected by bump-outs.
- Adjacent to the Metro Station Promenade, the Herndon Station transit center will incorporate the following into the streetscape design along both sides of the Herndon Parkway:
  - A filled crosswalk square denoted by pavers and pedestrian countdown signals.
  - A twelve foot wide pick-up/drop-off lane segmented into auto, bus and taxi zones.
  - Appropriately placed bus shelters of an attractive, unique, functional and durable design.
  - An expanded sidewalk designed to readily accommodate the concentrated multimodal traffic, and provide safe access for those with disabilities and provide separation between functions.
- Along the south side, adjacent to the Herndon Metro Promenade, a gateway feature visible in both directions when approaching the transit center, which should include a structure, sculpture or fountain of appropriate design.

SECONDARY STREETSCAPE

Directly or through linkages with other trails, sidewalks and plazas, secondary streets should provide easy access for all forms of transportation. To ensure functionality and provide adequate room for all users, create an attractive inviting open space, and guarantee successful commercial and residential corridors, secondary streets within the Core shall be governed by the following design strategies:

- Secondary streets will provide high visibility paver crosswalks and pedestrian countdown signals at all signalized intersections.

- Lane width and number shall be determined by appropriate engineering measures.
- Where on-street parking is provided a parking lane protected by bump-outs will be standard.
- To ensure adequate and safe multimodal passage, eight-foot sidewalks apart from landscaping and the curbside safety zone will be provided.
- Landscaping along secondary streets shall rely upon tree grates and state-of-the-art landscape construction techniques to ensure optimum tree health. Tree pits should not be less than five feet wide.
- The streetscapes shall be designed to provide safe access for those with disabilities.

MULTIMODAL TRAILS

The Town is planning to extend two existing regional pedestrian/bike trails in order to connect to the North Entrance Pavilion of the Metro Station. These trails include the Folly Lick/Spring Branch Trail and the Sugarland Run Trail (described further below). Both of these multimodal trails will be part of the Fairfax County's regional trail network.

The two multimodal regional trails will connect pedestrians and bicyclists to areas within the Core. Multimodal trails differ from the TOD streetscapes in their relationship to the street. Multimodal trails may or may not be adjacent to roadways. In addition, multimodal trails may use alternative surface treatments such as color asphalt or textured asphalt paving. Multimodal trails within and leading to the HTOC shall be governed by the following design strategies:

- Multimodal trails shall link to the streetscape network within the TOD.
- The facilities shall be designed to accommodate bicyclists and pedestrians and those with disabilities.
- Directional signage shall be provided indicating directions and distances to the pedestrian entrance facility of the Metro Station.
- Multimodal trails shall be a minimum of eight feet in width.

Folly Lick Trail

This trail begins below Sugarland Road with a connection to the Sugarland Run Trail north of town in Fairfax County. The trail continues along Folly Lick stream to Herndon Parkway. The Town has plans to further extend this trail through the center of town in a north-south direction, using a short section of the Washington and Old Dominion (W&OD) Trail as well as a combination of existing and proposed asphalt trails and sidewalks, to eventually connect with the North Entrance Pavilion.

Sugarland Run Stream Valley Trail

This bike/pedestrian trail is part of the countywide trail system and runs from Sugarland Road to the town limits and continues through Runnymede Park to the W&OD Trail. The Town plans to extend the Sugarland Run Trail from the W&OD Trail to the Spring Street/Herndon Parkway intersection and to continue along or near the stream bed to eventually connect with the future North Entrance Pavilion of the Metro Station. This trail may require raised boardwalks in select areas to accommodate steep slopes, wetlands, streams or other environmental conditions.

LONG-TERM VISION

At this writing, development and redevelopment beyond that envisioned by the HTOC cannot be accommodated due to physical constraints on the street system in and around the southeastern portion of the town. Once Metrorail service opens and redevelopment of the HTOC proceeds, a need may be identified by future Town leaders to expand Herndon's transit-oriented neighborhood into adjacent areas of existing commercial development. This area is described here as the "Potential Transit Related Growth Area" (TRG) and it encompasses approximately 130 acres along Herndon Parkway between Van Buren Street and Spring Street, incorporating land north of the Herndon Parkway and parcels east of the HTOC. While not envisioned to be as intensely developed as the Core, these locations could experience some additional development intensity and mixing of uses into a larger, more walkable district. The portion of the TRG north of the Herndon Parkway lies adjacent to single-family residential neighborhoods existing in 2011. Those parcels in the TRG east of the HTOC are bounded by the Dulles Toll Road, Fairfax County Parkway and Herndon Parkway. The TRG is separate from the HTOC. Both the Core and TRG are designated "Regional Corridor Mixed Use" as defined at this time by the 2030 Proposed Land Use Map in the *2030 Comprehensive Plan*. Refer to Figure 6.9. It is anticipated that the area designated "Regional Corridor Mixed Use" will be redefined following the approval of the HTOC Plan to incorporate only the Core.

1. Proffer amendments and zoning map amendments under current zoning provisions that apply to TRG properties in 2011 are permitted.

POTENTIAL TRANSIT-RELATED GROWTH AREA

Properties in the TRG are developed in 2011 with commercial uses zoned O&LI or PD-B. The area has been stable since the mid-1980's when most of the existing buildings were constructed. The permitted density for most properties is 0.7 FAR and average existing FAR in the area is less. The Regional Corridor Mixed Use properties have served as a principal source of revenue for the town helping fund many town services and defraying the tax burden on town residents. Allowing growth within the TRG could bring many benefits to the town. However, financial studies conducted in 2011 for the HTOC showed no likelihood of redevelopment before 2035 under densities of 2.5 FAR or less. Furthermore, the need to protect stable residential neighborhoods abutting the TRG to the north in addition to roadway capacity limitations creates additional constraints. Redevelopment in the TRG cannot be enabled under new planning and zoning provisions until the town has addressed specific demands generated by the redevelopment, in cooperation with VDOT and Fairfax County. In the future, any development that is proposed in the TRG must mitigate adverse impacts to the abutting residential neighborhoods. These constraints as well as additional concerns are discussed below in more detail.

PUBLIC SECTOR REQUIREMENTS FOR THE POTENTIAL TRANSIT RELATED GROWTH AREA

Comprehensive Plan Amendment

Before enacting any new zoning provisions or associated zoning map amendments[1] for development or redevelopment in the TRG, this plan foresees a need for a studied comprehensive planning approach to the future of the area. These highly visible properties with excellent proximity to the Dulles Toll Road, the Fairfax County Parkway and Dulles International Airport warrant excellent urban design and state-of-the-art planning principles. The Town will want to consider regional scale transportation improvements, the proper mix of uses, the proper scale of future development, the impact on the character of the town, and stakeholder views. The conclusions of that study should be incorporated into the town's comprehensive plan to guide future development. This plan recommends that the comprehensive plan amendment be considered after the opening of the Metro station at Herndon. Some concepts encountered in the study of the HTOC apply to the TRG and help the HTOC and TRG together create an appealing location for economic development in Herndon.

Urban Design

Figure 6.10 shows how the TRG and Core can relate well to each other and create a sense of place along Herndon Parkway. The features shown will help give identity to the area by concentrating a rich mix of street life, restaurants, retail, entertainment, office and residences along it. On the south side, Herndon Parkway in the HTOC Plan features a cycle track within the streetscape. On the north side (left side of drawing), Herndon Parkway provides a streetscape adequate in width to accommodate bicyclists and pedestrians. The streetscape connects to the regional trails and creates a pleasant walking loop for visitors to the restaurants, entertainment, and retail establishments.

If redevelopment occurs, design should include focal points and opportunities for people to stop, shop, and dine. Like the HTOC, primary streets in the TRG should feature mixed-use buildings with ground floor commercial and upper floor office or apartments. Suitable building heights should be determined during the comprehensive planning study, and structured parking is envisioned, either free-standing or embedded in the occupied portion of the building.

Along the north side of the Herndon Parkway density may be arranged on larger development sites such that the density is concentrated along Herndon Parkway. The development should be in an urban form with building facades abutting the sidewalk, instead of spreading floor area evenly across the lot area. The future buildings, on the north side of Herndon Parkway, would complete the street wall enclosing the space at a scale that is similar to the lower tiers of the buildings in the Core to the south. The future plan should envision taller buildings along the north side of Herndon Parkway with building height stepping down as the distance narrows between new buildings and existing residential neighborhoods. There should be a distinct transitional area abutting existing residential areas with more significant landscaping and reduced building heights. Where new residential uses occur in this transitional area, their mass and appearance should be harmonious with nearby existing residential uses.

Physical Constraints

Land in the TRG is constrained by a Dominion Virginia transmission line that crosses the area east-west. Consideration of the relocation or burial of the transmission line as a public-private effort should be part of the future comprehensive plan amendment preparation. As stated previously the plan area north of Herndon Parkway borders existing neighborhoods of single-family homes representing a very real and important constraint. It is crucial that any redevelopment is harmonious with those neighborhoods.

Access

In addition to superior transit service, sidewalks and regional trails, the TRG may be well served by internal

Figure 6.9 | Long-Term Vision - Transit-Related Growth Area

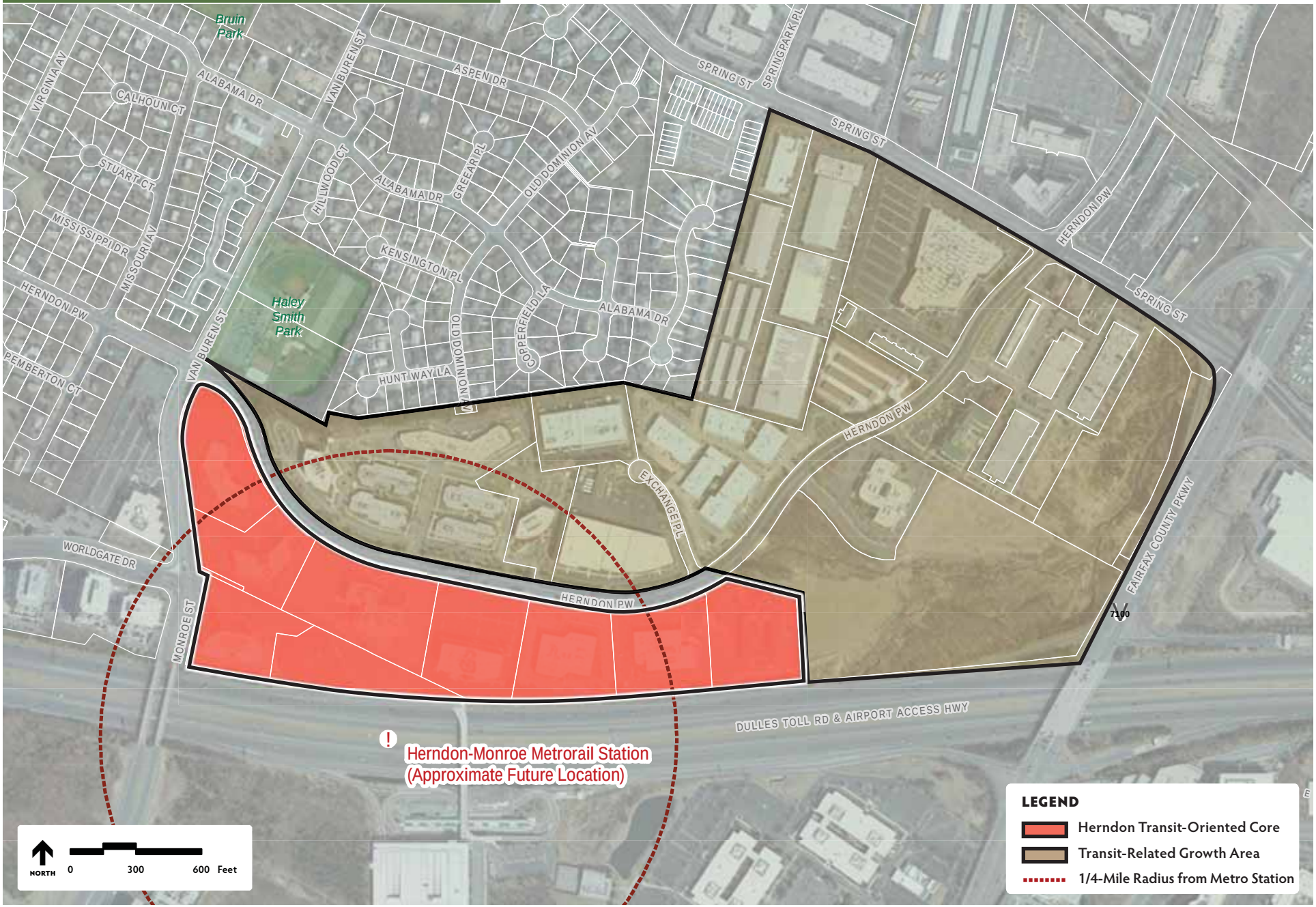

Figure 6.10 | Potential HTOC (right) and Transit Related Growth Area (left) Development Along Herndon Parkway

streets to organize vehicular traffic and contribute to a reasonable flow of vehicles on Herndon Parkway. Access points along the Herndon Parkway should be limited to Exchange Place, Fairbrook Drive, and a further extension of Worldgate Drive north of Herndon Parkway (Figure 6.9). Single-site driveway access to Herndon Parkway should be prohibited unless it serves multiple buildings over acres of development. Site access and internal circulation should be studied more fully during the comprehensive planning amendment preparation.

TRANSPORTATION SYSTEM

As part of any future comprehensive plan amendment for the TRG, the local transportation system should be re-examined thoroughly. Build out of the Core means that some intersections will be operating near their maximum capacity. Before additional growth is enabled by the Town, the Town must establish a strategy to increase transportation access to the Core and TRG so that capacity improvements occur as growth proceeds.

Herndon Parkway at Spring Street

This intersection serves two four-lane streets and has movements in that operate poorly (based on the existing traffic conditions analysis). Development beyond that envisioned in the HTOC could exceed the maximum capacity of the intersection. A text book traffic engineering analysis could call for a grade separated interchange or other similar onerous improvements. While such improvements may not be appropriate for Herndon, the fact that they may be warranted indicates a need for the town to explore more sophisticated transportation solutions. This intersection poses the single most significant physical constraint on development in the TRG.

Spring Street at Fairfax County Parkway

This interchange of a four-lane street with a six lane regional arterial suffers from an inefficient design that impacts both the Fairfax County Parkway itself and Spring Street. Because it is part of a configuration of two side-by-side interchanges on Fairfax County Parkway, at Spring Street and the Dulles Toll Road, solutions to improve the interchange pose challenges worthy of any major metropolitan area. The Town must press for resolution of operational issues at the interchange with cooperation from regional partners including Fairfax County, the Virginia Department of Transportation, the Northern Virginia Transportation Authority, and the MWCOG's Transportation Planning Board. Regardless of whether or not additional density is planned for the TRG, this transportation challenge must be solved and will involve time and intergovernmental coordination. The Town should: (i) determine the appropriate level of improvement for the desired character of Herndon; and (ii) establish a work program at its earliest convenience to engender regional cooperation for the desired enhancement of this interchange.

Alternative Access

Part of the transportation study should explore the benefits and any potential negative impacts of direct access to the Dulles Toll Road or the Fairfax County Parkway from the TRG. Since funding for such an improvement likely would not become available for decades, the Town should determine whether such access is desired and program funding accordingly.

Western Portal, Van Buren at Worldgate, and Van Buren at Herndon Parkway

Due to the close proximity of stable residential neighborhoods to the western portal of the TRG, transportation improvements beyond those planned for the development of the Core should be kept to a minimum.

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CAPITAL IMPROVEMENTS

7

INTRODUCTION

Capital improvements necessary to meet the densities recognized in the HTOC (described in Chapter 6, *Herndon Transit-Oriented Core Plan*) were identified as part of the financial feasibility and fiscal impact analysis. The proposed capital improvements include vehicle infrastructure, such as additional turn lanes or roads, pedestrian improvements such as sidewalks, trails, station access, and water and sewer (including additional sewer and water capacity, sewer trunk line upgrades and new waterline extensions).The intent is that these capital improvements will support and encourage development; thereby, meeting the Town's goals and objectives.

CAPITAL IMPROVEMENTS AND COSTS

The capital improvements and associated estimated costs presented in this section serve to provide a guide for the Town's reference until more precise information becomes available at the time of redevelopment. This section provides a detailed description of each improvement and the related assumptions. Refer to Figure 7.1 for an illustration of the proposed capital improvements. Table 7-1 provides the estimated cost for each improvement.

Table 7-1 | Capital Improvements and Order of Magnitude Estimated Costs

	CAPITAL IMPROVEMENT	ESTIMATED COST*
Transportation Improvements		
	PEDESTRIAN AND PUBLIC REALM IMPROVEMENTS	
	Herndon Parkway – pedestrian improvements (inside)	$ 2,700,000
6	Herndon Metro Promenade	$ 2,552,000
13	Sugarland Run Trail	$ 218,500
14	2008 Comprehensive Plan Pedestrian Path to Van Buren Street	$ 185,400
	TRANSPORTATION IMPROVEMENTS OUTSIDE THE REFINED STUDY AREA	
3	Worldgate Drive/Van Buren Street Intersection Modification	$ 384,500
7	Two-Lane Widening Northbound on Herndon Parkway at Spring Street	$ 813,900
10	One-Lane Widening Eastbound Spring Street from Herndon Parkway to FFX CP	$ 476,500
9	One Left Turn Bay (Southbound Ramp, Fairfax County Parkway)	$ 366,700
8	One Lane Westbound Spring with barricade	$ 190,500
12	One Lane Widening Eastbound Spring Street/West of Herndon Parkway	$ 364,100
11	One Lane Widening Southbound Herndon Parkway at Spring Street	$ 171,400
	TRANSPORTATION IMPROVEMENTS INSIDE THE REFINED STUDY AREA	
1	Worldgate Drive Extension	$ 3,020,000
2	Herndon Parkway – Lane Widening (Worldgate Extension intersection)	$ 503,500
4	Lane Widening (Bus Pull-Offs) on Herndon Parkway at Drop-Off	$ 1,616,200
5	New Signal at Exchange Place	$ 384,200

Refer to Figure 7.1
MGD = Million Gallons per Day
* Costs include in this table are order of magnitude and are meant for planning purposes only. It is anticipated that these preliminary costs will be updated as projects are advanced further and implemented.

Figure 7.1 | Preferred Plan—Conceptual Infrastructure Improvements

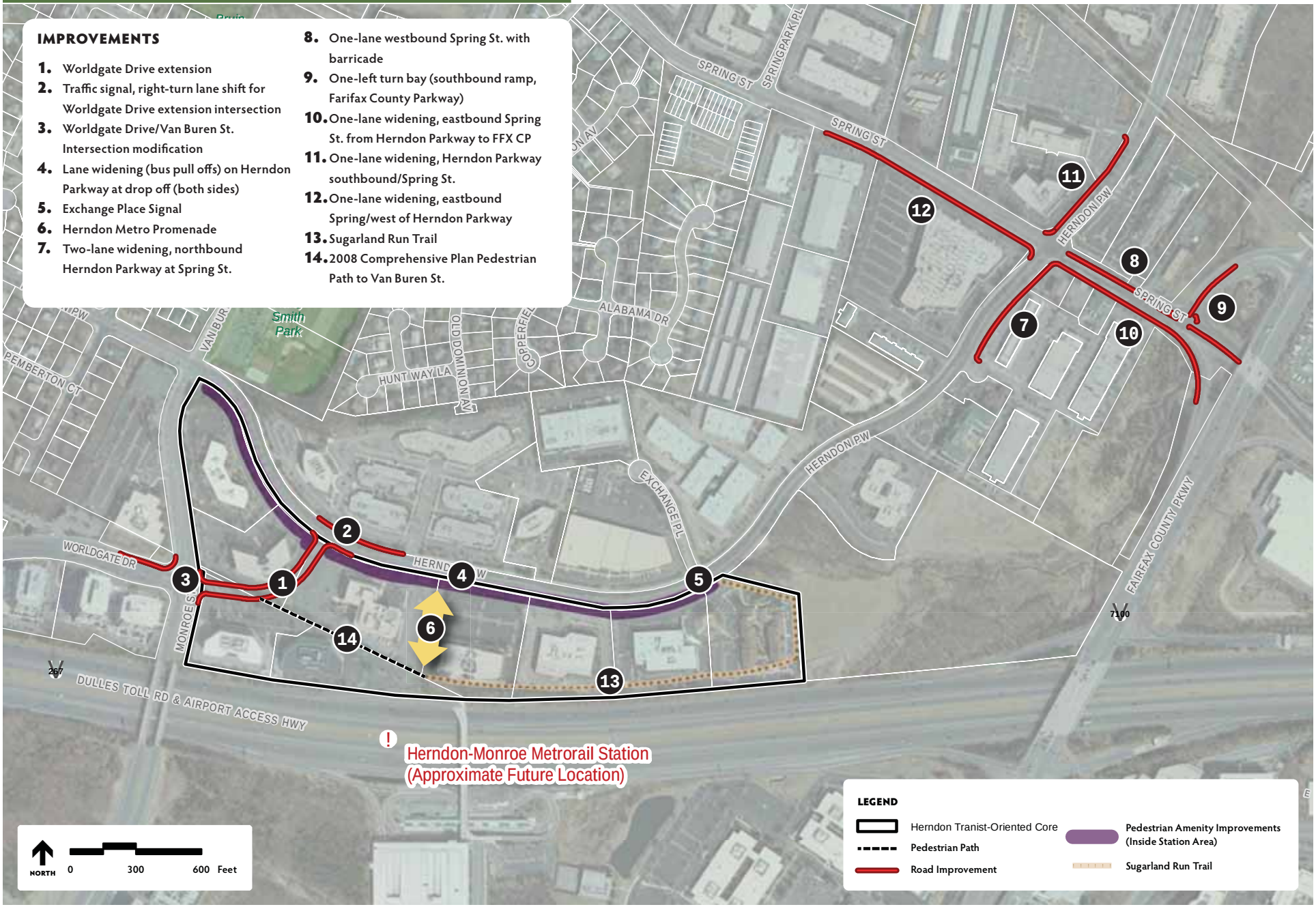

Table 7-1 | Capital Improvements and Order of Magnitude Estimated Costs (cont'd)

CAPITAL IMPROVEMENT	ESTIMATED COST*
Utilities	
WATER	
System engineering and preliminary design for capacity analysis and capacity purchases	$ 96,000
Water main from Van Buren St to Worldgate to Alabama Drive	$ 568,500
Purchase additional 1.3 MGD of water capacity	$ 5,908,500
SEWER	
System engineering and preliminary design for capacity analysis and capacity purchases	$ 150,000
Construct a trunk line and meter station for the Refined Study Area	$ 465,750
Purchase additional 0.8 MGD sewer capacity	$ 6,464,000
Refined Study Area trunk line	$ 186,300
Sugarland trunk line from Spring Downs Station to Sunset station	$ 338,700
Sugarland trunk line in the town from 24-inch to 27-inch (50% Town's share)	$ 604,500

Refer to Figure 7.1
MGD = Million Gallons per Day
* Costs include in this table are order of magnitude and are meant for planning purposes only. It is anticipated that these preliminary costs will be updated as projects are advanced further and implemented.

TRANSPORTATION IMPROVEMENTS

PEDESTRIAN AND PUBLIC REALM IMPROVEMENTS

The pedestrian and public realm improvements are seen as the most significant improvements to give an identity to the TOD and serve to create a vibrant and linked network of existing and proposed sidewalks and trails.

The following capital infrastructure improvements have been identified as priority for portions of Herndon Parkway and Worldgate Drive Extension within the Refined Study Area:

- A 15-foot concrete pedestrian/planting area on the south side of Herndon Parkway.
- A 15-foot asphalt cycle track or shared use path on the south side of Herndon Parkway.

A high level of landscape treatment should be expected within the Refined Study Area along Herndon Parkway and Worldgate Drive Extension. Along Herndon Parkway, the pedestrian zones should include ornamental street lights and street furniture (benches/trash containers/pots).

In addition to the 15-foot shared asphalt multi-use trail proposed along the major routes within the development, Sugarland Run Trail is a key element of the pedestrian and bicycle linkages and serves the eastern side of the station area. This estimate only includes that portion of Sugarland Run Trail, a 12-foot wide asphalt path shown on Figure 7.1, within the Study area and provides a connection to Herndon Parkway to avoid a dead-end. A significant portion of the planned trail is located within the Fairbrook Property. It is the Town's expectation that this portion of the trail, which includes elevated bridges and boardwalks to cross wetlands, will be built with future Fairbrook development. Approximately 2,200 linear feet has been included in this infrastructure element. Land acquisition is not included in the cost for this improvement.

Another trail connecting Worldgate Extension to the Metro Station would facilitate pedestrians on foot from the west. Approximately 950 feet of an eight-foot wide asphalt trail was proposed as part of the 2008 Comprehensive Plan. However, for this estimate, a ten-foot concrete walkway was included under the assumption that this would be a priority pedestrian path linking future development's key entrances. A portion of this right-of-way has been acquired but an additional 750 feet would need to be dedicated or acquired.

A public amenity space has also been identified within the Core—the Herndon Metro Promenade. A preliminary budget of $45 per square foot was established for purposes of the financial models. Final definition of this space will be dependent on the development plans of this area.

TRAFFIC AND ROADWAY IMPROVEMENTS

Herndon has long planned for intersection improvements at Van Buren Street and Herndon Parkway, and on Spring Street between Herndon Parkway and Fairfax County Parkway. The intersections operate at or near capacity in 2011. Regional changes, even without TOD, could cause the intersections to operate consistently at a failing level of service and certain improvements are currently programmed for inclusion in the Northern Virginia Transportation Authority's Transaction 2040 Plan. The HTOC Plan provides a means for the Town to coordinate the needed improvements in the context of a small area plan that identifies very specific design opportunities as well as a hierarchy of access.

The improvements proposed for outside the HTOC occur primarily at major entrances to the town's "Regional Corridor Mixed Use" land use designation. Those entrances include: Worldgate Drive; Van Buren Street/Herndon Parkway; and Spring/Herndon Parkway, which are described below.

VAN BUREN STREET/HERNDON PARKWAY

Improvements at the Van Buren Street and Herndon Parkway intersection are described here because they are needed to meet the transportation needs of the Metro Station Area, but are not included in the financial and fiscal model because they are already being addressed under the current Town Capital Improvement Plan. These improvements include:

- Construction of a 350-foot right turn lane northbound at Herndon Parkway;
- Pedestrian improvements, which may include six-foot concrete sidewalk; and
- Associated traffic signal modifications

The construction of a new traffic signal at the Herndon Parkway/Fairbrook Drive intersection is not included in this estimate, as it is proffered with the Fairbrook development.

WORLDGATE DRIVE/VAN BUREN STREET

- Signal modification to receive Worldgate Extension and improve pedestrian accommodations.
- Median conversion to create a second eastbound through lane and removal of the channelizing island and converting the free-flow right to maintain two westbound through lanes within the existing road footprint.

SPRING STREET/HERNDON PARKWAY/ FAIRFAX COUNTY PARKWAY

Two lane widening on northbound Herndon Parkway at Spring Street;

- One lane widening westbound on Spring Street from Fairfax County Parkway to Herndon Parkway. This segment will tie into the existing section where the road has already been widened. Improvements include a six-foot sidewalk and standard lighting;
- One additional lane for a southbound left turn bay on the Fairfax County Parkway Ramp;
- One lane widening eastbound on Spring Street from Herndon Parkway to Fairfax County Parkway;
- One lane widening eastbound on Spring Street west of Herndon Parkway for 650 feet;
- One lane widening southbound on Herndon Parkway for 300 feet at Spring Street; and
- Associated traffic signal modifications.

The following road improvements are proposed inside the HTOC:

WORLDGATE DRIVE EXTENSION

- Construction of a four-lane connection from Van Buren Street to Herndon Parkway with a new signal at Herndon Parkway and a signal modification at Van Buren Street. The road section will also include turn lanes at both intersections and a mid-block driveway, in addition to the four lanes;
- Streetscape to include 15-foot concrete sidewalk/planting area on both sides;
- No median
- High level of streetscape landscape treatment;
- A right-of-way width of 100–120 feet (ultimate right-of-way width will depend on final road design considerations);
- Land acquisition costs have not been included.

HERNDON PARKWAY

One lane widening for approximately 350-feet in the westbound direction of Herndon Parkway at the new intersection with Worldgate Drive Extension;

Removal of a portion of the median to facilitate the lane shifts required for turn lane improvements at the intersection;

Construction of bus pull offs, including one-lane widening of 500 feet in length on both sides (additional description of transit related facilities follows); and traffic signals at Worldgate Extension and Exchange Place.

TRANSIT CENTER

The integration of public transit into an existing built-out development comes with many challenges. The HTOC Plan establishes a "transit center" on Herndon Parkway closest to the Metro Station. The transit center will serve as a drop-off/pick-up point for Metrorail riders and for transfers from the Metro to bus or van service. The following items have been identified as key features (minimum necessary) of the HTOC Plan.

- Auxiliary lane for bus pull-offs with bus shelters will be provided on both sides of Herndon Parkway
- Pedestrian barrier in the median of Herndon Parkway to mitigate pedestrian mid-block crossings
- Herndon Metro Promenade from Herndon Parkway to the Metro Station.

The Town of Herndon has evaluated several options for feasible Passenger Drop-Off/Pick-Up solutions. Because the long-term solution may be significantly different, the Town selected the option that provided the most flexibility. For purposes of infrastructure estimating a scenario was selected that allowed for a combination bus stop and Passenger Drop-Off/Pick-Up area to be located along Herndon Parkway. Short-term standing spaces to pick up or discharge metro riders would be provided on Herndon Parkway.

LAND ACQUISITION

Right-of-way (ROW) for the road infrastructure will be necessary for many of the capital improvements outlined above. In some cases, ROW may be dedicated voluntarily to the Town of Herndon through the conditional zoning process with individual developments. However, that may not be the case and the town will need to acquire land. Land acquisition costs have not been included in the cost estimates.

UTILITIES

PUBLIC

The Town of Herndon DPW is responsible for planning and maintaining the water and sewer distribution and collection system within the Refined Study Area. For this report, DPW provided water and sewer projections for the HTOC Plan, capital infrastructure projects and costs. The following is based on a DPW analysis dated November 29, 2011.

Water and sewer costs were considered "break even" by the Town such that revenues are anticipated to cover costs. As a result, water and sewer costs were not included in the financial and fiscal modeling except for on-site development costs, which were attributed to the developer in the financial model.

WATER

The following were identified by Town of Herndon Department of Public Works CIP as Metrorail water infrastructure elements to support the development through 2035:

- System engineering and preliminary design for capacity analysis and capacity purchases
- 12-inch Van Buren Street water main Worldgate Drive to Alabama Drive
- Purchase additional 1.3 MGD of water capacity from Fairfax Water

SEWER

The following were identified by Town of Herndon Department of Public Works CIP as Metrorail sewer infrastructure elements to support the development through 2035:

- System engineering and preliminary design for capacity analysis and capacity purchases
- Purchase additional 0.8 MGD sewer capacity
- Construct a trunk line and meter station for the Refined Study Area
- Sugarland trunk line from Spring Downs station to Sunset station
- Upgrade Sugarland trunk line in the town from 24-inches to 27-inches (50 percent Town's share)

PRIVATE

No significant private utility relocation has been estimated as an individual capital infrastructure element. Any private utility relocation will be considered a part of individual infrastructure elements or as part of private development.

STORMWATER/DRAINAGE IMPROVEMENTS

No significant public stormwater or drainage infrastructure improvements are included in the anticipated capital infrastructure necessary for the redevelopment of the Refined Study Area.

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Vanasse Hangen Brustlin, Inc.