Executive Summary

The following report presents the findings of a Multimodal Transportation Study (MTS) for the proposed Landmark Mall Redevelopment Coordinated Development District (CDD) located in the City of Alexandria, Virginia.

The purpose of this report is to provide a transportation analysis associated with the proposed CDD to determine the multi-modal infrastructure needs for the entire site, identify all vehicular and external recommendations to mitigate transportation impacts from the CDD, and provide a context within which the Development Special Use Permit (DSUP) for each individual block/phase will identify more detailed recommendations. **This report concludes that the proposed development will not have a detrimental impact** on the surrounding transportation network, assuming the proposed infrastructure recommendations are implemented, as outlined in the Summary of Recommendations chapter, and specific development block details on building access and transportation demand management are developed during the DSUP process.

Proposed Project

The proposed development site is located in the City of Alexandria's West End and constitutes the Landmark neighborhood as designated in the Landmark/Van Dorn Corridor Plan. The site is bounded by the Henry G. Shirley Memorial Highway (I-395) to the north and west, Duke Street to the south, and N Van Dorn Street to the east.

The site was home to the Landmark Shopping Mall, which opened in 1965 and was a large retail center with over 100 stores at its peak. The proposed project will entail the redevelopment of the existing, largely vacant shopping center into a mixed-use community with up to 4,200,000 square feet of programmed density (excluding community facilities and above-grade parking structures) – of which, at least 20 percent will be non-residential uses. The project will be anchored by a new, state-of-the-art hospital campus including buildings A1, A2, B, and C of the CDD.

While this project does not currently have a final proposed development program, preliminary land uses include up to:

- 2,500 residential units
- 1,100,000 square feet of hospital campus
- 765,000 square feet of commercial space

A mixture of above- and below-grade parking will be dispersed throughout the site with a preliminary estimate of between 6,600 and 7,100 parking spaces. The existing above-grade garage is anticipated to provide nearly 2,700 parking spaces.

Compliance with Small Area Plan

In 2019, the City Council adopted an amended Landmark/Van Dorn Small Area Plan (SAP) incorporating a revised chapter on the Landmark neighborhood to provide recommendations encouraging a mixed-use neighborhood with an urban street grid and building forms, as well as open spaces and diverse housing opportunities.

The proposed development is consistent with the SAP by incorporating a mix of land uses, an urban street grid, and improvements to pedestrian, bicycle, and transit infrastructure and public open space. The variety of land uses in the project will improve the vibrancy of the neighborhood, maximize the number of trips taken by transit, bicycling, and walking, and distribute peak hour traffic into and out of the neighborhood over longer periods of the day.

By removing the fly-over ramp into the site from eastbound Duke Street, adding three new signalized intersections with crosswalks across Duke Street and Van Dorn street, and creating an interconnected street grid with multiple points of entry, the proposed development will strengthen multimodal connections between the site and adjacent neighborhoods. These three new intersections and new grid of walkable, urban streets were specifically outlined in the SAP as key improvements to increase the safety, visibility, and connectivity of the Landmark neighborhood. The project will also include a transit hub and protected bike lanes onsite to further enhance multimodal connectivity. These multimodal improvements will result in an improvement to the site's walk score, bike score, and transit score.

Travel Demand Assumptions

Mode split (also called mode share) is the percentage of travelers using a particular type (or mode) of transportation when traveling. Mode split projections for the proposed development are based on Census data using American Community Survey (ACS) data and Transportation Analysis Zones (TAZs), City of Alexandria staff input, and data contained in the 2005 WMATA Development-Related Ridership Survey Report. The following auto mode splits were assumed in the analysis:

- Residential : 50%
- Office: 65%
- Retail: 65%
- Grocer: 65%
- Hotel: 95%
- Hospital: 85%
- Medical Office: 85%
- Fire Station: 100%

The multi-modal improvements incorporated into the CDD, including the transit hub, dedicated bicycle facilities, and a Transportation Demand Management (TDM) program, will likely further reduce the automobile mode split of the CDD. The conservative assumptions above, however, were used in the analysis as the design scenario to ensure that adequate vehicular infrastructure was provided.

This data was then applied to the calculated number of trips that are generated by the proposed uses using the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition (with the exception of the proposed Fire Station, which used data collected at comparable locations). After incorporating trip adjustments for synergy between uses on site, vehicular trips from drivers already passing by the site, and removing the existing site trips, the resulting net new vehicular trips at full development build-out were calculated to be:

- AM Peak Hour: 1,625
- PM Peak Hour: 2,360
- Daily (Weekday): 29,405

Traffic Analysis

A traffic analysis of the CDD was performed after scoping the analysis methodology with the City's Department of Transportation and Environmental Services (T&ES). The traffic analysis built upon those performed for the 2019 SAP update, adding in new layers of detail regarding the revised program, internal streets, and hospital operations.

Unlike many other developments, this CDD provides the opportunity to re-think how the roads within and adjacent to the Landmark site will work, as all five intersections with either Duke or N Van Dorn Streets and the CDD will be new or partially reconstructed, and all internal streets will be new. Thus, the traffic analysis had a lot of flexibility in developing recommendations. The approach taken by the analysis was to perform traffic capacity analyses of future conditions based on the agreed scope and methodology, and then make recommendations on the roadway infrastructure to construct in conjunction with the CDD in a manner that would accommodate traffic flows, while not providing excess capacity and infrastructure that would encourage vehicle trips rather than transit and other modes. All of the recommendations that were developed for and contained within this report are based on this right-sizing philosophy, providing enough vehicular capacity while simultaneously pivoting the roadway network towards a significantly more multi-modal direction.

I-395 NB Ramp & Duke St/Walker St Intersection

Beyond simply determining the infrastructure capacity needs to accommodate the project's traffic volumes, a portion of the study area required special focus. This was the stretch of Duke Street between the off-ramp from I-395 northbound to eastbound Duke Street, and the intersection of Duke and Walker Streets, where the main hospital entrance is proposed across Walker Street (Road 3). There are several considerations unrelated to traffic volumes generated by the CDD to take into account:

- This location is one of the highest crash rate locations within the City. Thus, infrastructure recommendations in this location needed to not only focus on capacity, but also investigate ways to reduce conflicts based on a review of crash data.
- There is an existing condition where traffic on eastbound Duke Street trying to turn right onto Walker Street weaves across traffic exiting I-395 northbound trying to merge onto eastbound Duke Street. Any infrastructure change at this location will need to ensure this weaving movement does not create queues on the off-ramp and onto I-395.
- There are currently medians preventing traffic coming off the I-395 northbound ramp from turning left at Walker Street/Road 3, which will be the primary access to the hospital and, importantly, the hospital's Emergency Room and Ambulance drop-off. It is essential for the hospital's operations that Emergency Room and ambulance traffic arriving from northbound I-395 have direct access.

Because of these concerns, this report's traffic analysis includes the development of several alternatives and a comparison of those alternatives based upon an analysis of crash data and a microsimulation traffic model. Based on this analysis, an alternative was selected that provides the necessary vehicular

infrastructure to accommodate project volumes, allows for northbound I-395 traffic to access the hospital, and helps improve the weaving conditions between eastbound Duke Street traffic trying to turn right onto Walker Street and traffic exiting I-395 northbound trying to merge onto eastbound Duke Street.

This report recommends that the CDD incorporate this alternative, and the results contained within the report assume this improvement. This report also notes that this improvement will need more thorough analysis and review by VDOT and FHWA before it can be implemented. This review would take the form of an Interchange Modification Report (IMR), which would be completed post-CDD and during the Development Site Plan (DSP) and Final Site Plan (FSP) processes associated with the infrastructure phase of development.

Additional External Recommendations

The traffic analyses also resulted in recommendations for the site's intersections with Duke Street and N Van Dorn Street. This includes not just the intersection of Duke Street with Walker Street and Road 3, but also Duke Street with Roads 6 and 4, and N Van Dorn Street with Roads 5 and 7. These five intersections provide access to the site, re-configuring and adding to the existing two intersections into the site, while removing portions of the freeway style roads adjacent to the site including the flyover from eastbound Duke Street into the site. This includes:

- A new traffic signal where Road 6 intersection Duke Street, with a left turn lane from eastbound Duke Street into the site.
- A reconfiguration of the ramps between eastbound Duke Street and N Van Dorn Street, across where Road 4 will intersect Duke Street. This includes squaring up the ramps and turning the intersection into a four-way intersection with a traffic signal.
- A reconfiguration of the site's intersection with N Van Dorn Street, where the new Road 5 will access the site opposite the existing ramps between westbound Duke Street and N Van Dorn Street. This includes removing the southbound ramp from N Van Dorn Street to westbound Duke Street, and replacing it with a southbound left turn lane to a new connection to Duke Street.
- A new traffic signal where Road 7 will intersect with N Van Dorn Street.

In addition to these improvements at the site's access points, the traffic analysis also identifies changes to the intersection of N Van Dorn Street with the ramps to/from eastbound Duke Street to help facilitate the changes occurring at the intersection of Duke Street and Road 4, mainly an increase in the northbound left turn storage.

Internal Road Recommendations

The recommendations contained within this report for the internal roadways follow the right-sizing approach to accommodate traffic flows, while not providing excess capacity and infrastructure that would discourage use of the multi-modal improvements proposed. The result is a set of internal roadways that are primarily one lane in each direction that widen as they approach Duke Street and N Van Dorn Street.

Transit Hub

The CDD includes a transit hub, per the SAP and the Alexandria Transit Vision Plan. The transit hub will include six (6) bus stops to be used by WMATA and DASH buses in addition to routes along the planned West End and Duke Street transitways. The hub will serve as a transfer station between the transitways, and will offer connections to Old Town, the Pentagon, and the Van Dorn Street Metrorail station. An analysis of the site's transit needs confirmed that the proposed facilities will accommodate the 2030 Vision Plan Network as outlined in the Transit Vision Plan.

Bicycle Facilities

The CDD includes several bicycle facilities that will serve regional and local traffic. A shared-use path along the site's frontage along Duke Street and Van Dorn Street will link the City's planned connection to the Holmes Run Trail and the new facility to be constructed with the widening of the Duke Street bridge over I-395. Two-way protected bicycle lanes along Roads 3 and 5 provide bicycle access from this path into the heart of the project, and two-way protected lanes along Road 1 will provide an east-west connection within the site. Also, several reservoirs of bicycle parking will be located within the site, including Capital Bikeshare stations located in the internal park and at the transit hub. Details regarding the bikeshare stations will be provided as set forth in this report, and general bicycle parking will be included in the DSUP for each block.

Transportation Management Plan

A Transportation Management Plan (TMP) will be outlined in the DSUP for each individual block. The unique characteristics of this site offer a variety of possibilities for the TMPs. Factors such as coordinated transportation management between the development blocks and the on-site transit hub present an

exceptional opportunity to minimize the number of commuters driving alone to and from the site.

Remaining Details

This report recommends that the project's infrastructure layout is set by the CDD and the analysis contained within this report, and as such subsequent traffic analyses per block will not be necessary at the DSP/DSUP process, unless overall site trip generation increases by at least 10% compared to what is analyzed in this report.

The transportation review at the DSUP level will consist of various block specific details to be clarified, such as:

- Site access details, including vehicular parking access, loading docks, and general loading/unloading (with the exception of the hospital campus, whose site access details are shown in the CDD)
- Vehicular parking details
- Bicycle parking details
- TDM plans

The infrastructure DSP will contain details on other items, such as:

- Details of the transit hub, including maneuvering analyses for all final stop locations and roads/intersections to and from the transit hub
- Bicycle facility treatments, including types of buffers and intersection details

Conclusion

This report finds that this CDD meets the goals set by the Landmark/Van Dorn SAP, and fits within the City's Mobility Plan, Complete Streets Design Guidelines, and Vision Zero initiative. The project achieves this through providing high-quality internal and external multimodal connections as well as incorporating a roadway system that accommodates expected traffic flows while not providing excess capacity at the expense of non-auto accessibility. The CDD's proposed transit facilities and transit-oriented character also further the City's goal to encourage more people to travel more places using transit.

Thus, this report concludes that the proposed development **will not have a detrimental impact on the surrounding transportation network**, assuming the proposed infrastructure recommendations are implemented, as outlined in the Summary of Recommendations chapter, and specific development block details on building access and transportation demand management are developed during the DSUP process.