INTERSTATE 64 PENINSULA STUDY

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VDOT Virginia Department of Transportation

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

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A. Description of the Proposed Action

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA), is evaluating options to improve the 75 mile long Interstate 64 (I-64) corridor from the Interstate 95 (I-95) (Exit 190) interchange in the City of Richmond to the Interstate 664 (I-664) (Exit 264) interchange in the City of Hampton (**Figure ES.1**). This study is known as the Interstate 64 Peninsula Study (hereinafter referred to as the I-64 Study in this document).

The number of lanes on existing I-64 varies through the study area. In the vicinity of the City of Richmond, from Exit 190 to Exit 197, there are generally three travel lanes in each direction. Between Exit 197 and mile marker 254, there are generally two travel lanes in each direction. Beginning at mile marker 254 and continuing east to the City of Hampton area, I-64 widens to four lanes in each direction with three general purpose lanes and one 2+ person High Occupancy Vehicle (HOV 2+) lane during the AM and PM peak periods. There are some additional lanes between closely spaced interchanges at the eastern end of the corridor to provide for easier merging of traffic on and off of the I-64 mainline.

B. Purpose and Need

Increased traffic congestion and an aging infrastructure have led to greater concerns for travelers along the I-64 corridor. Therefore, improvements to I-64 are needed to address the following.

1. Capacity

The 2011 traffic volumes on I-64 are higher than the current facility can adequately accommodate, particularly during peak travel times. Traffic volumes are anticipated to increase in the future, exacerbating existing congestion issues. Traffic models show that the existing facility would be unable to accommodate the projected design year 2040 traffic volumes at an acceptable level of service (LOS). Improvements to I-64 would:

- Provide for increased capacity in order to reduce travel delays.
- Improve access to tourist attractions throughout the region.
- Improve connectivity to, from and between military installations.
- Provide for increased demand from the freight industry.
- Provide for the efficient transporting of freight in and out of the Port of Virginia.
- Support the current economic development needs along the corridor and in the region.

2. Roadway Deficiencies

There are a number of roadway and structure deficiencies throughout the corridor due to changes in the interstate design standards since I-64 was originally constructed as well as increasing traffic volumes creating wear and tear on the corridor infrastructure. Future increases in traffic volumes and the aging of the system would continue the deterioration of the corridor. Improvements to I-64 would:

- Minimize roadway geometric and structure deficiencies on the I-64 mainline and at the interchanges.

3. Safety

Existing traffic congestion, along with the aging roadway and design/structure deficiencies, have exacerbated safety concerns within the corridor. In many areas crash rates exceed statewide averages for similar roadway systems. Safety concerns are expected to increase. Improvements to I-64 would:

- Improve safety by reducing congestion and improving roadway design geometrics to meet current standards for interstate highways.

C. Alternatives

There are a number of possible solutions to address the need for improvements along the I-64 corridor. The goals of the I-64 Study are to develop the solutions that best meet the project purpose and need while avoiding and/or minimizing impacts to the human and natural environments. The Alternatives developed or investigated included a No-Build Alternative, a Transportation Systems Management (TSM)/Travel Demand Management (TDM) Alternative, an investigation of future passenger/freight rail and a range of highway Build Alternatives. Detailed descriptions of each of the Alternatives can be found in **Chapter II - Alternatives Considered** and in the ***Alternatives Development Technical Memorandum*.** The following summarizes the Alternatives considered and not carried forward for further study and the Alternatives retained for detailed study.

1. Alternatives Considered and Not Carried Forward for Further Study

TSM/TDM – TSM/TDM options would involve only minor work to the existing I-64 corridor. TSM strategies improve traffic flow, improve signalization, convert existing general purpose lanes to managed lanes, improve intersections and implement traveler information programs. TDM encourages new driving habits through staggered commuting hours, telecommuting, car and vanpooling, ridesharing and the creation of park and ride facilities. In investigating these options a number of possible TSM/TDM opportunities for the I-64 corridor were examined.

While some TSM/TDM strategies have the potential to result in slight reductions in peak hour traffic volumes or slight shifts in traffic away from peak hours and towards off-peak hours, they could not reasonably be expected to impact traffic volumes on I-64 to the extent needed to preclude the need for mainline and interchange improvements. For the I-64 mainline, the TSM/TDM strategies would not provide any substantial improvements to the capacity nor remove enough vehicle trips required to obtain an acceptable LOS needed to meet either the existing or design year 2040 capacity needs for traffic on I-64. In evaluating the 25 interchange areas, TSM/TDM options could provide some improvements to existing geometric deficiencies such as capacity at the ramps, weaves and intersections and thus address some of the safety issues that arise from those deficiencies. However, the TSM/TDM strategies would not include any major work needed for interchange configurations such as reconstructing ramps and structures, and therefore these elements that contribute to the safety issues would continue. Therefore, the TSM/TDM strategies alone would not meet the purpose and need of the **EIS** and were not carried forward for detailed study as an individual, stand alone alternative. However, TSM/TDM improvements can be pursued independently or as part of one of the Build Alternatives to provide for low-cost options for improving the transportation conditions within the I-64 study area.

Passenger/Freight Rail – As part of the Intermodal Study conducted for this **EIS**, both existing and planned passenger and freight railroad services were examined. Within the I-64 study area, there are two principal rail transportation facilities: (1) the existing CSX Transportation (CSXT)/Amtrak route from the City of Richmond to the City of Newport News, north of the James River on the Virginia Peninsula (Peninsula/CSXT) and (2) the Norfolk Southern Corporation (NS) rail route, south of the James River

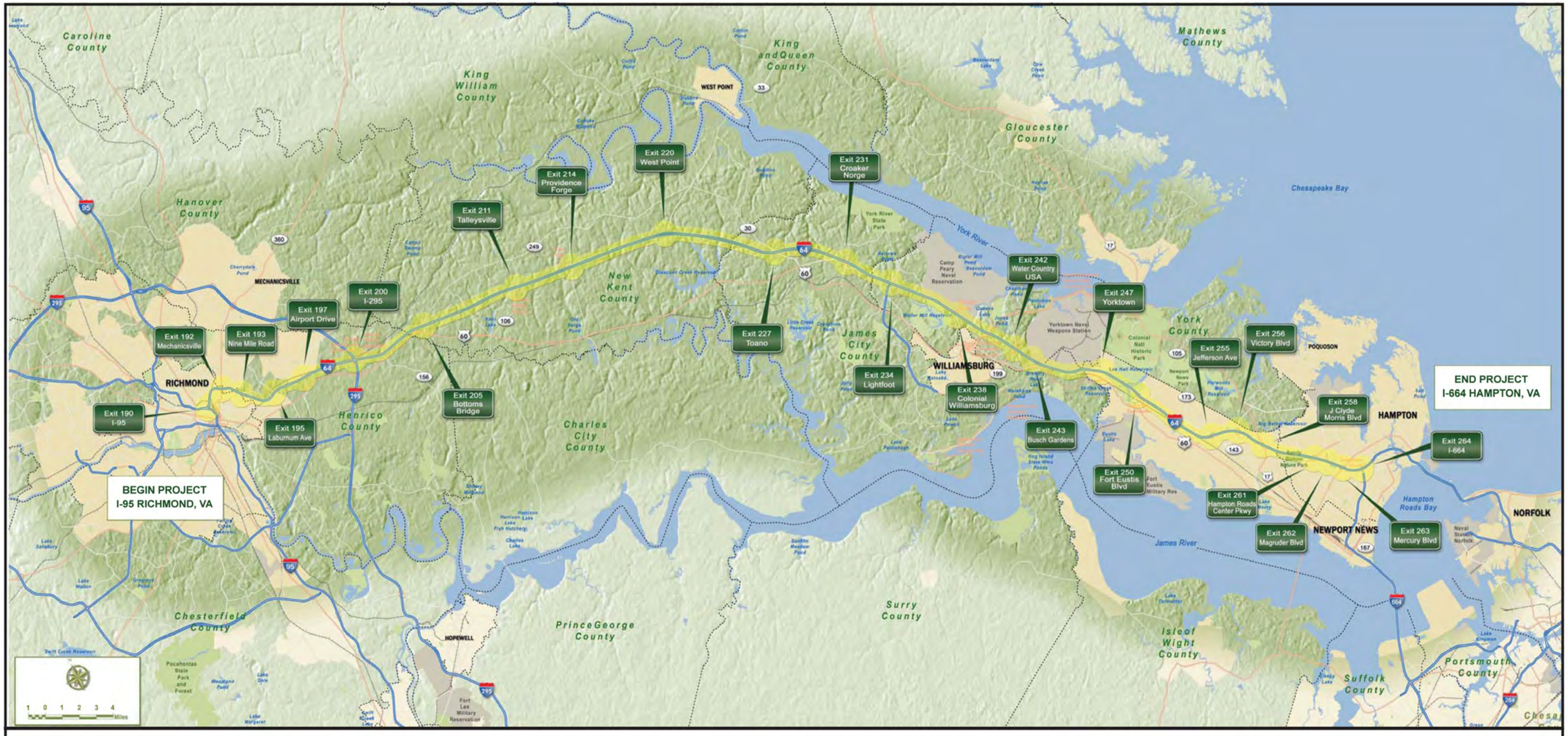

Figure ES.1
Project Location

I-64 PENINSULA STUDY ENVIRONMENTAL IMPACT STATEMENT

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between the City of Petersburg and the City of Norfolk (Southside/NS). The Peninsula/CSXT route is parallel to I-64 while the Southside/NS route is parallel to Route 460. Improvements are currently planned and underway for both corridors.

In investigating passenger rail, the Virginia Department of Rail and Public Transportation (VDRPT) prepared the *Richmond/Hampton Roads Passenger Rail Tier I Final Environmental Impact Statement (EIS)* which evaluated multiple options for passenger rail in the Richmond to Hampton Roads region, including the I-64 study area. As stated in the Tier I Final EIS, high-speed intercity passenger rail service attracts different types of ridership, and therefore it is unlikely that the additional rail trips generated by the Preferred Alternative would cause a measurable reduction in automobile traffic on major highways such as I-64 and I-95. In specifically examining the potential effects on traffic on I-64, the Tier I Final EIS states that a reduction of vehicles caused by diversion to rail would amount to only approximately 0.7% to 2.3% reduction in traffic on I-64 when using 2025 traffic volumes. This fraction is small enough that the resulting decrease in traffic would not be measurable, given the normal daily and seasonal fluctuations in traffic volume.

In investigating freight rail, a published report by the primary area railroads, *Freight Rail Investing in Virginia* (CSXT and NS, 2005) provides details on freight transportation within the Hampton Roads and Norfolk region. One of their main cargo shipments is export coal. CSXT and NS projections estimate that the total tonnage of export coal would increase and that CSXT's freight trains on the Peninsula/CSXT route would increase by 70% between 2007 and design year 2040. With this increase CSXT recognizes that it needs to improve the freight service along the Peninsula/CSXT Line and is evaluating projects to add passing siding and/or a second track throughout the corridor. Since most of the of CSXT Peninsula trains currently carry export coal, and export coal would not likely be carried by trucks in the future, the freight rail improvements on the Peninsula/CSXT Route would have little impact on the I-64 truck traffic.

Overall, the passenger and freight rail improvements that have been identified are not expected to remove enough general purpose vehicle trips from I-64 to obtain acceptable LOS needed to meet either the existing or design year 2040 capacity needs for traffic on I-64. New or improved rail lines and/or facilities within the I-64 corridor would not address the roadway deficiencies and safety needs identified for the **EIS**. Therefore, rail improvements would not meet the purpose and need of the **EIS** and were not carried forward for further study.

Highway Build Alternatives Considered and Not Carried Forward – Throughout the development of the Build Alternatives, an emphasis was placed on designing Alternatives which would meet the study purpose and need along with the established design criteria. Specific to meeting the study needs for capacity, the future (design year 2040) traffic volumes were projected and analyzed. As described in **Chapter I - Purpose and Need** and in the ***Traffic and Transportation Technical Memorandum,*** a LOS criteria of C or better was established for the I-64 mainline and for the merges/diverges/weaves. **Figures I.4** and **I.10** in the **Chapter I - Purpose and Need** show the 2011 Base Conditions LOS and projected design year 2040 No-Build LOS for the corridor which was used to determine the number of lanes needed to address the capacity needs. The Build Alternatives developed were then specifically designed to include the number of lanes needed to achieve or exceed these LOS goals. The Alternatives that did not meet the LOS needs were not carried forward for further study. The Build Alternatives that were determined to meet these criteria were retained for detailed study and are described below.

2. Alternatives Retained for Detailed Study

The Alternatives retained for detailed analysis in the **Draft EIS** include a No-Build Alternative and five separate highway Build Alternatives including:

- Alternative 1A – adding additional general purpose lanes to the outside of the existing general purpose lanes.
- Alternative 1B – adding additional general purpose lanes in the median.
- Alternative 2A – adding additional lanes to the outside and tolling all lanes.
- Alternative 2B – adding additional lanes to the median and tolling all lanes.
- Alternative 3 – adding managed lanes to the median.

These five Build Alternatives were specifically designed to meet the identified purpose and need and thus were retained for detailed study.

No-Build Alternative – The No-Build Alternative serves as a base line for the comparison of future conditions and impacts. The No-Build Alternative assumes that the projects currently programmed and funded in the VDOT Fiscal Year 2013-2018 Six-Year Improvement Program (SYIP) would be implemented. In addition to the programmed VDOT projects, the Tidewater Super-Regional Travel Model developed by VDOT and used for this study includes other projects within the corridor that are part of the Richmond Area Metropolitan Planning Organization (MPO) or Hampton Roads Transportation Planning Organization's (TPO) *Constrained Long Range Plans,* as well as the *Rural Long Range Transportation Plans* (which are not fiscally constrained) for the Richmond and Hampton Roads Planning District Commissions (PDC). Those projects form a part of the Base Conditions and the effects of these projects on I-64 traffic are accounted for in the design year 2040 No-Build analyses.

Alternatives 1A/1B General Purpose Lanes – These Alternatives involve adding additional general purpose travel lanes to the I-64 mainline to achieve a LOS C or better in the design year 2040. Although there are numerous possible combinations for adding these lanes, the analysis focused on adding the needed lanes within the existing right of way, to the greatest extent practicable, to either the outside of the existing lanes, which is Alternative 1A, or to the inside of the existing lanes within the median, which is Alternative 1B. For Alternative 1B, the lanes are also proposed in the median to the greatest extent practicable. However, not all sections of the corridor have sufficient median area to accommodate the needed additional lanes so in these areas the additional lanes are proposed to the outside of the existing general purpose lanes, with an effort to keep the proposed improvements within the existing right of way to the greatest extent practicable. Based on the conceptual engineering performed for Alternatives 1A/1B less than 10% or 13 miles of the 150 mile I-64 corridor (75 miles in each direction) may require additional right of way for the mainline widening improvements. The areas which may require additional right of way are located in the most urban areas of the corridor located at the western end in the City of Richmond and at the eastern end in the Cities of Newport News and Hampton.

For the 25 existing interchanges within the study area corridor, geometric deficiencies were examined along with design year 2040 traffic volumes and resulting LOS at each interchange location. Conceptual designs were investigated that would accommodate

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the future traffic, and assumptions were made and applied to each interchange to establish a study footprint that would allow for enough flexibility during the final design stage to accommodate other concepts not yet examined. Further engineering and traffic analyses would be performed at each interchange as the project progresses. During the *Interchange Modification Report* (IMR) process, which is required by FHWA before any changes can be made to interstate interchanges, each of these interchange configurations would serve as a starting point to be further studied and refined with a more in-depth examination of the needs at each location, in order to produce a constructible design.

The planning level estimated cost for Alternative 1A ranges from $4.7 - $7.3 billion. The planning level estimated cost for Alternative 1B ranges from $4.7 to $7.2 billion. Details of the cost estimates are included in **Table 5** of the ***Alternatives Development Technical Memorandum***. Each cost estimate is preliminary and would be refined if an Alternative is advanced.

Alternatives 2A/2B Full Toll Lanes – These alternatives evaluate the impacts of tolling the entire facility. However, as of the time of this study, there is no federal or state agreement in place that would allow for tolling I-64 from I-95 in the City of Richmond to I-664 in the City of Hampton. Therefore, these alternatives that involve tolling may or may not ultimately be possible. Notwithstanding, because tolling could be an option in the future, alternatives that involve tolling were considered in the range of possible alternatives evaluated. For the purposes of this study, it was assumed that if the facility is tolled, the tolling would be for all vehicles, in both directions, and for the entire length of the corridor from I-95 in the City of Richmond to I-664 in the City of Hampton. It was also assumed there would be toll collection stations, using overhead gantries and all-electronic tolling, for every interchange-to-interchange section of I-64. If Alternative 2A or 2B is selected, subsequent studies would refine the specifics of the tolling, such as whether or not it would encompass the entire length of the I-64 corridor along with the number and placement of the toll collection stations.

In order to determine the number of lanes needed for Alternatives 2A/2B, the traffic studies included a toll diversion analysis. As a result of this analysis, the tolling of I-64 is expected to have either a neutral effect or result in a decrease in traffic volumes on the I-64 mainline due to people choosing to avoid a tolled I-64 and using other parallel routes instead. The tolls are not expected to result in increased volumes at any location on the I-64 mainline.

This analysis indicated possible reductions to traffic on the I-64 corridor, however these reductions are not projected to change the number of lanes needed to achieve a LOS C or better in the design year 2040 from those indicated for the General Purpose Lanes Alternatives. Therefore, the proposed disturbance limits for Alternatives 2A or 2B would be the same as Alternatives 1A or 1B, respectively.

Although there are numerous possible combinations for adding these lanes, the analysis focused on adding all that is needed within the existing right of way, to the greatest extent practicable, to either the outside of the existing lanes, which is Alternative 2A, or to the inside of the existing lanes within the median, which is Alternative 2B. For Alternative 2B, the lanes are also proposed in the median to the greatest extent practicable. However, not all sections of the corridor have sufficient median area to accommodate the needed additional lanes so in these areas the additional lanes are proposed to the outside of the existing general purpose lanes. Based on the conceptual engineering performed for Alternatives 2A/2B less than 10% or 13 miles of the 150 mile I-64 corridor (75 miles in each direction) may require additional right of way for the mainline widening improvements. The areas which may require additional right of way are located in the most urban areas of the corridor located at the western end in the City of Richmond and at the eastern end in the Cities of Newport News and Hampton.

In addition to the mainline improvements, due to only modest changes in traffic volumes, as determined in the toll diversion analysis, Alternatives 2A/2B also include the same improvements to the 25 interchanges as described with Alternatives 1A/1B.

The planning level estimated costs for Alternatives 2A and 2B range from $4.8 to $7.3 billion each. Details of the cost estimates are included in **Table 5** of the ***Alternatives Development Technical Memorandum***. Each cost estimate is preliminary and would be refined if an Alternative is advanced.

Alternative 3 Managed Lanes – This Alternative involves the addition of separated, managed lanes located in the median. These managed lanes were examined for the entire length of the I-64 study area from I-95 in the City of Richmond to I-664 in the City of Hampton. As previously described, not all sections of the I-64 corridor have sufficient median area to accommodate the addition of any lanes. In these areas, the facility is proposed to be widened to the outside of the existing general purpose lanes in order to accommodate the managed lanes in the median between the eastbound and westbound general purpose travel lanes.

Based on the conceptual engineering performed for Alternative 3 approximately 2% or three miles of the 150 mile I-64 corridor (75 miles in each direction) may require additional right of way for the mainline widening improvements. The areas which may require additional right of way are located in the most urban areas of the corridor including both eastbound and westbound lanes between Exits 190 (I-95) and Exit 192 (Mechanicsville Turnpike).

Managed lanes can refer to many different strategies, including:

- High Occupancy Vehicle (HOV) Lanes.
- High Occupancy Toll (HOT) Lanes.
- Express Toll Lanes (ETL).
- Express Bus Lanes (EBL).

For any of the managed lanes that involve toll collection (HOT or ETL lanes), traditional toll plazas were not included. Rather, the toll collection would be conducted by overhead gantries with all-electronic tolling used to collect all tolls at highway speeds. This study does not identify what type of managed lanes would be constructed under this Alternative.

Based on the results of the capacity analysis, the lane configurations developed for Alternative 3 along the I-64 corridor are described in **Table ES.1**. If Alternative 3 is selected, subsequent studies would refine the specifics of the managed lanes throughout the I-64 corridor.

In addition to the mainline improvements, due to only modest changes in traffic volumes, Alternative 3 also includes the same improvements to the 25 interchanges as described in Alternatives 1A/1B and 2A/2B.

The planning level cost estimate for Alternative 3 ranges from $4.7 to $7.3 billion, however this does not include potential costs for tolling gantries and equipment which could vary depending on the type of managed lanes implemented. Details of this cost estimate are included in **Table 5** of the ***Alternatives Development Technical Memorandum***. This cost estimate is preliminary and would be refined if this Alternative is advanced.

D. Environmental Impacts

A comprehensive investigation of each Alternative's impacts to the natural, historic and human environments was completed. Impacts were identified based on the potential limits of disturbance footprint determined from the conceptual designs for each of

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Table ES.1: Alternative 3 Characteristics*

From	To	Number of Managed Lanes Located in the Median Area**	Number of Additional General Purpose Lanes Added to the Outside
I-95 (Exit 190)	Bottoms Bridge (Exit 205)	2 (Reversible)	0
Bottoms Bridge (Exit 205)	Yorktown (Exit 247)	2 (1 in each direction)	0
Yorktown (Exit 247)	I-664 (Exit 264)	4 (2 in each direction)	One additional westbound lane from I-664 (Exit 264) to J. Clyde Morris Boulevard (Exit 258)

* If Alternative 3 is identified as the Preferred Alternative, subsequent studies would define the specific type of managed lanes, lane needs and locations, access to and from the managed lanes, and end points and transition zones for the managed lanes along with the needed general purpose lanes.
** Not all sections of the I-64 corridor have sufficient median area to accommodate the addition of any lanes. In these areas, the facility is proposed to be widened to the outside in order to accommodate the managed lanes in between the eastbound and westbound general purpose travel lanes.

the Build Alternatives. The impacts identified for each of the Build Alternatives were developed based on the best available estimate of potential impacts resulting from the current stage of project development and the level of conceptual engineering investigations. **Table ES.2** provides a summary of the impacts. The details of these impact investigations are found in **Chapter III - Environmental Resources, Impacts and Mitigation** of this **Draft EIS** and in the following Technical Memoranda and documentation completed for this study:

- Air Quality Technical Memorandum.
- Alternatives Development Technical Memorandum.
- Historic Properties Documentation.
- Indirect and Cumulative Effects Technical Memorandum.
- Natural Resources Technical Memorandum.
- Noise Technical Memorandum.
- Purpose and Need Technical Memorandum.
- Right of Way Technical Memorandum.
- Socioeconomic and Land Use Technical Memorandum.
- Traffic and Transportation Technical Memorandum.

E. Other Major Actions and Proposals

In addition to the projects identified in the VDOT SYIP and outlined in the No-Build Alternative for the 75 mile long project corridor, there are a number of other major actions and proposals within and adjacent to this study area being pursued or recently completed by government agencies. At the time of this document other actions identified include the following:

- The VDRPT *Richmond/Hampton Roads Passenger Rail Study* was completed for enhanced passenger rail service between the City of Richmond and the Hampton Roads area. The Record of Decision (ROD) for the Tier I Final EIS is pending.
- The Hampton Roads *Vision Plan* provided high level recommendations for regional transit in Hampton Roads. The final report outlining numerous regional transit projects was completed in February 2011.
- The City of Newport News is currently engaged in designing the extension of Atkinson Boulevard which would include a new bridge over I-64.
- The City of Newport News is seeking services for master planning, business modeling, engineering and project management services related to a multi-modal transportation center and a supplementary downtown transit facility.
- VDOT and FHWA are conducting a study of the I-64 Hampton Roads Bridge-Tunnel corridor from I-664 in the City of Hampton to I-564 in the City of Norfolk.

F. Public and Agency Input

A comprehensive agency and public involvement program was completed for the study. This effort included 15 meetings and continuous telephone and e-mail coordination with interested citizens, organizations and agencies on a wide variety of topics. Throughout this coordination the following are the most notable project concerns that were expressed about the study.

Project Schedule/Timing for Construction – Throughout the public and agency interactions the topic of project schedule, including the timing for construction and project completion, was raised. Citizens and organizations were interested in how to quickly get the project moving and completed in order to address the project need.

Construction Travel Effects – In examining the large scale investment needed to complete a project of this magnitude the topic of investigating ways to construct the project was raised. Citizens asked about how the construction would occur and how it would affect travel time throughout the corridor.

Maintaining Trees in the Median – It has been expressed by a variety of citizens and organizations that it is important to preserve the aesthetics of the corridor by retaining the wooded median, particularly in the section of I-64 through the historic triangle area comprised of the Cities of Williamsburg, Jamestown and Yorktown.

Noise Impacts and Noise Walls – Throughout the public involvement process concerns were raised about the amount of increased noise additional lanes and increased traffic volumes on I-64 would generate. Concerns raised included the need to build new noise walls and how to maintain/rehabilitate the existing noise walls along I-64. Questions on the locations, types and colors of walls were expressed. The noise concerns were primarily concentrated in the urban areas near the City of Richmond on the western end and near the Cities of Newport News and Hampton on the eastern end of the study area.

Do Improvements Quickly and in Sections – Recognizing the magnitude of funding needed to construct the entire 75 mile project, it has been expressed that improvements be done in phases beginning with the most needed sections of I-64 and associated interchanges to improve safety and traffic conditions as soon as possible. These suggestions have included advancing improvements to the mainline section of I-64 between the Cities of Williamsburg and Newport News along with improving the Fort Eustis Boulevard (Exit 250) and Yorktown (Exit 247) interchanges since they have the highest accident rates.

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Table ES.2: Summary of Impacts

Category	Resource/Element Assessed	No-Build Alternative	Build Alternatives				
			General Purpose Lanes Alternatives		Full Toll Lanes Alternatives		Managed Lanes with General Purpose Lanes Alternative
			1A (Outside Widening)	1B (Median Widening)	2A (Outside Widening)	2B (Median Widening)	3
Farmlands	Prime Farmlands (acres)	0	65	65	65	65	65
	Farmlands of Statewide Importance (acres)	0	37	37	37	37	37
	Agricultural/Forestal Districts (acres)	0	2	1	2	1	2
Right of Way and Relocations	Rural (number of parcels)	0	106	81	106	81	106
	Residential/Suburban Low Density (number of parcels)	0	418	410	418	410	413
	Outlying Business/Suburban High Density (number of parcels)	0	213	201	213	201	208
	Central Business District (number of parcels)	0	52	51	52	51	52
Socioeconomic and Environmental Justice	Disproportionate Impacts to Minority and Low Income Populations	0	No	No	No	No	No
	Estimated Lost Tax Revenue (dollars)	0	Negligible	Negligible	Negligible	Negligible	Negligible
Public Parklands	Park Facilities (number in the limits of disturbance)	0	3	3	3	3	3
	Use of Park Facilities (acres)	0	38	38	38	38	37
Natural Resources	Wetlands Crossed – Tidal (acres within the limits of disturbance)	0	28	28	28	28	28
	Wetlands Crossed – Non-Tidal (acres within the limits of disturbance)	0	38	37	38	37	39
	Other Waters of the US Crossed – Tidal (linear feet within the limits of disturbance)	0	3,012	2,932	3,012	2,932	2,936
	Other Waters of the US Crossed – Non-Tidal (linear feet within the limits of disturbance)	0	109,225	110,612	109,225	110,612	109,580
	VDEQ 2010 Impaired Waters Crossed (number)	0	9	9	9	9	9
	100-Year Floodplains Crossed (acres within the limits of disturbance)	0	21	18	21	18	21
	Public Reservoirs Crossed (number)	0	4	4	4	4	4
	Threatened and Endangered Species Habitat/Populations (number of species with potential habitat within the limits of disturbance)	0	3	3	3	3	3
Historic Properties	Historic Sites/Districts (number within the limits of disturbance)	0	2	2	2	2	2
	Archaeological Sites (number within the limits of disturbance)	0	7	6	7	6	7
	Battlefields (number within the limits of disturbance)	0	5	5	5	5	5
Air Quality	Conforms to National Ambient Air Quality Standards	Yes	Yes	Yes	Yes	Yes	Yes
Noise	Common Noise Environments (number)	66	66	66	66	66	66
	Residences Impacted (number)	1,262	1,262	1,190	1,262	1,190	1,156
	Churches/Parks/Schools/Athletic Fields Impacted (number)	5	5	5	5	5	4
	Proposed Noise Barriers (number/linear feet)	0	39,376	39,376	39,376	39,376	37,321
Contaminated Sites	Sites Identified for Further Investigation (number)	0	13	13	13	13	13
Visual	Adversely Affected Visually Sensitive Areas	0	0	0	0	0	0
Capital Cost*	Cost in Billions (average expressed in year 2017 dollars)	0	$4.7 - $7.3	$4.7 - $7.2	$4.8 - $7.3	$4.8 - $7.3	$4.7 - $7.3

*Each cost estimate is preliminary and would be refined if an Alternative is advanced. Details of the cost estimates are included in **Table 5** of the ***Alternatives Development Technical Memorandum***.

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Timing of this Project with the Hampton Roads Bridge-Tunnel Study – In examining the regional traffic flow on I-64, concerns have been raised as to the timing and interaction between this I-64 Study and the Hampton Roads Bridge-Tunnel Study. Since both of these projects have a common end point at the I-64/I-664 interchange, concerns have been raised as to the timing and viability of both large scale projects being completed.

G. Unresolved Issues

The following are the unresolved issues as of the time of this **Draft EIS**.

Identification of the Preferred Alternative – A Preferred Alternative has not been identified in this **Draft EIS**. A Preferred Alternative would be identified in the **Final EIS** after the location public hearings are held and responses to comments provided on the **Draft EIS** have been prepared and reviewed. These responses to comments would be provided in the **Final EIS** which would also be made available to the public and agencies. Once the **Final EIS** has been made available, FHWA would review the information and issue a ROD which would identify the Preferred Alternative along with the known mitigation measures for impacts which may result from the Preferred Alternative.

MPO Actions – After the identification of the Preferred Alternative, the two MPOs along I-64, the Richmond Area MPO and the Hampton Roads TPO that encompass the I-64 study area could revise their respective long range transportation plans to specifically include the Preferred Alternative.

Funding – As of the time of this document there is no identified state or federal funding for any of the Build Alternatives examined in this **Draft EIS**. Funding is in place for projects within the I-64 corridor that are currently programmed and funded in the VDOT SYIP. A list of these projects can be found in **Chapter II - Alternatives Considered** of this **Draft EIS**.

Tolling – As previously stated, there is no federal or state agreement in place that would allow for tolling I-64 from I-95 in the City of Richmond to I-664 in the City of Hampton. Therefore, the Alternatives that involve tolling may or may not ultimately be possible. Notwithstanding, because tolling could be an option in the future, Alternatives that involve tolling were considered in the range of Alternatives evaluated. In order to determine the number of lanes needed for Alternatives 2A/2B, the traffic studies included a toll diversion analysis. A summary of the toll diversion analysis is included in the ***Traffic and Transportation Technical Memorandum***. If Alternative 2A or 2B is selected, subsequent studies would refine the specifics of the tolling, such as whether or not it would encompass the entire length of the I-64 corridor along with the number and placement of the toll collection stations (it is assumed that the electronic toll collection methods at highway speeds would be implemented).

Managed Lanes – One of the Build Alternatives evaluated is Alternative 3 Managed Lanes. As noted in the description of this Alternative, if Alternative 3 is selected, then the type of managed lanes (HOV, HOT, EBL or ETL) would be determined after completion of the **EIS** and after further investigations are completed. The number and locations for access points to these lanes would also be further investigated if this Alternative is selected.

Interchange Designs – For the 25 existing interchanges within the I-64 study area corridor, geometric deficiencies were examined along with design year 2040 traffic volumes and resulting LOS at each interchange location. Conceptual designs were investigated that would accommodate the future traffic, and assumptions were made and applied to each interchange to establish a study footprint that would allow for enough flexibility during the final design stage to accommodate other concepts not yet examined. Further engineering and traffic analyses would be performed at each interchange as the project progresses. During the IMR process, which is required by FHWA before any changes can be made to interstate interchanges, each of these interchange configurations would serve as a starting point to be further studied and refined with a more in-depth examination of the needs at each location, in order to produce a constructible design.

H. Other Actions/Approvals Required

The construction of any of the Build Alternatives would require coordination with and approval from state and federal environmental regulatory agencies. The following actions would be required for any Build Alternative.

- Waters of the United States, including wetlands, are regulated under Sections 401 and 404 of the Clean Water Act (CWA), the Virginia Water Protection Permit (VWPP) Program Regulation 9 VAC 25-210 and the Virginia Wetlands Act (Chapter 13, Title 28.2 of the Code of Virginia). There are both tidal and non-tidal wetland and stream systems located within the study area. Impacts to these systems resulting from the discharge of fill material into or otherwise encroachment in, on or over these systems may require a Section 404 United States Army Corps of Engineers (Corps) permit, a Virginia Department of Environmental Quality (VDEQ) VWPP, and a Virginia Marine Resources Commission (VMRC) Subaqueous Bottomlands Permit.
- Projects that are located within the Coastal Zone Management Area (CZMA) in Virginia which are, at least in part, federally-funded or require federal approval must undergo a federal consistency certification process. The goal of this process is to ensure that projects are designed to avoid and/or minimize impacts to specific coastal resources as identified by several enforceable policies related to fisheries, subaqueous lands, tidal and non-tidal wetlands, dunes, non-point and point source pollution control, shoreline sanitation, air pollution, and land management. In Virginia, the VDEQ is responsible for coordinating the Commonwealth's review of federal consistency determination and certification with the appropriate agencies and responding to the appropriate federal agency or applicant. While the Joint Permit Application process required for the Sections 401 and 404 of the CWA and VMRC permits (described above) would address the resources and requirements associated with the CZMA Program, the completion of the CZMA checklist may also be required.
- Navigable Waters of the United States are regulated by both the Corps and the United States Coast Guard (USCG) under Section 10 of the Rivers and Harbors Act of 1899. There are two tidal stream systems, and associated wetlands, which are considered navigable waters within the study area. Authorization for work in these waters would be required from the Corps. In addition, if impacts occur to the navigable waters, a USCG bridge permit may be required for the individual bridge crossing.
- A Stormwater Pollution Prevention Plan would need to be prepared and the Virginia Stormwater Management Program Permit would need to be acquired from the Virginia Department of Conservation and Recreation. In addition, the construction work must be completed in accordance with applicable local requirements and practices.

EXECUTIVE SUMMARY

- There are nine surface waters intersecting the study area corridor that have been listed as impaired waters (Categories 4 and/or 5) on the VDEQ 2010 303(d) list. Relevant regulations and requirements including the strict adherence to appropriate erosion and sediment control measures, the appropriate use of fertilizers, limiting clearing practices, and the implementation of stormwater management plans designed specifically to address the particular condition as appropriate would need to be followed as part of construction.
- Due to the presence of federal and state listed threatened and endangered species and/or habitat documented within the vicinity of the study area, construction time-of-year restrictions may be required. These restrictions would be determined through the permitting process. Also, habitat assessments and species surveys may be required to determine the presence of a threatened or endangered species or habitat. These species surveys, if needed, would be completed by an agency certified or approved specialist, and may have restrictions on time-of-year when the surveys can be conducted. Additional design or construction considerations, such as the use of bubble curtains, maintaining construction buffer widths, etc., may also be requested or required by the agencies.
- For any adverse effect to Agricultural/Forestal Districts, close coordination with the appropriate localities, agencies, and affected property owners would be required to ensure that land use conversions are consistent with local land use policies and plans. Any land use conversions that are inconsistent with land use policies would require appropriate mitigation measures. Impacts to Agricultural/Forestal Districts would be coordinated with each of the localities prior to project commencement.
- A Programmatic Agreement between the FHWA, the VDOT and the Virginia Department of Historic Resources would document future study efforts for historic properties.