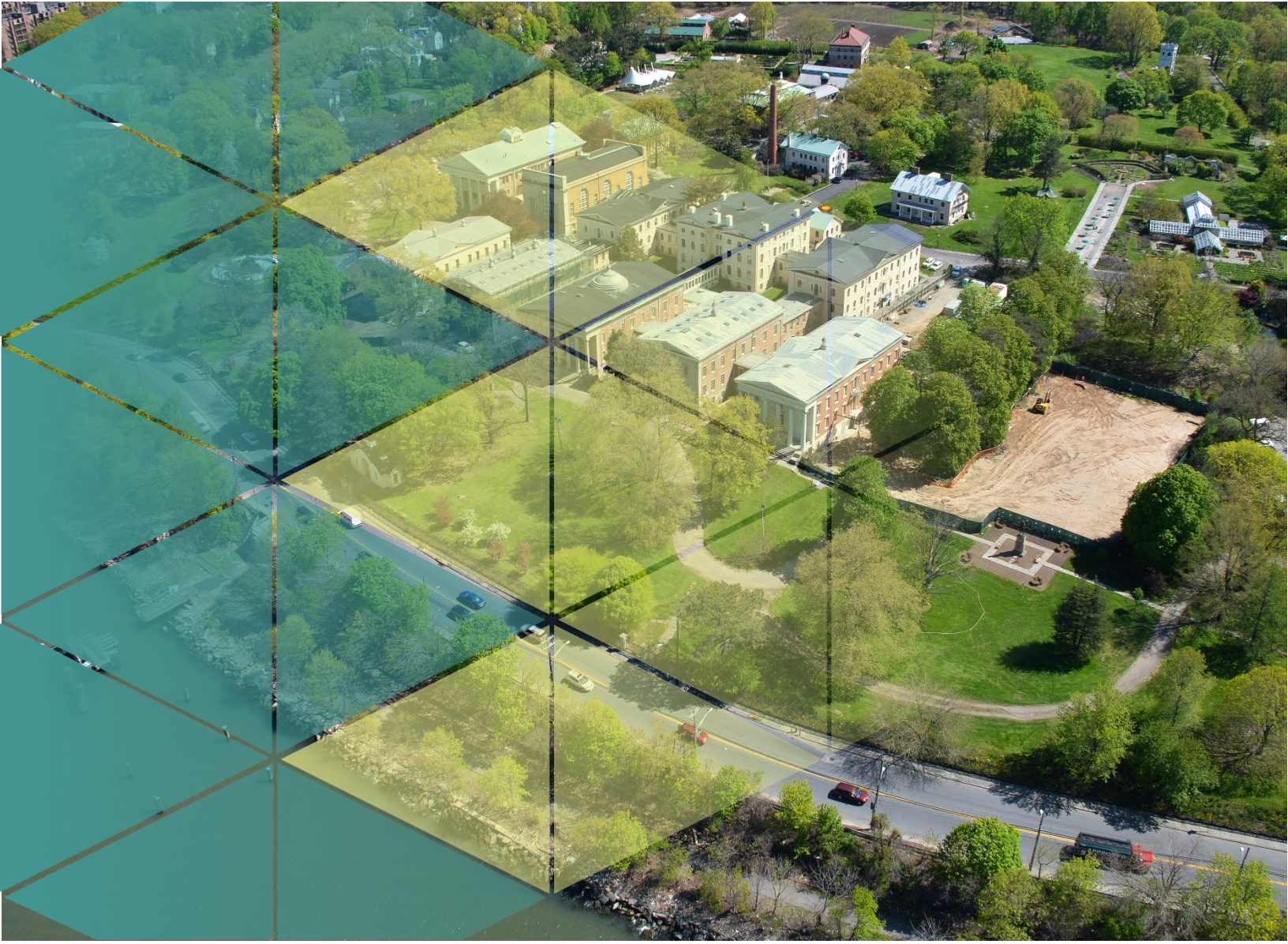

Final Environmental Impact Statement

for the

Staten Island North Shore Bus Rapid Transit (BRT) Project

January 2024

Prepared for:

MTA

Prepared by:

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Foreword[1]

This document is the Final Environmental Impact Statement (FEIS) for the Staten Island North Shore Bus Rapid Transit (BRT) Project. The Metropolitan Transportation Authority (MTA) accepted the Draft Environmental Impact Statement (DEIS) as complete and issued a Notice of Availability of Final Scope and Notice of Acceptance of the Draft EIS in the New York State Department of Environmental Conservation (NYSDEC) Environmental News Bulletin (ENB) on October 25, 2023.

The DEIS was available online on the MTA's Staten Island North Shore BRT project website (https://new.mta.info/project/staten-island-north-shore-bus-rapid-transit) and physical copies of the Final Scope and DEIS were available at three locations including: MTA Headquarters Lobby, 2 Broadway, New York, NY 10004; the St. George Library Center, 5 Central Avenue, Staten Island, NY 10301; and the Mariner's Harbor Library, 206 South Avenue, Staten Island, NY 10303. The public comment period began on October 25, 2023 and concluded on December 22, 2023.

This FEIS reflects all substantive comments made on the DEIS during the public comment period. The comments are summarized and responded to in **Chapter 28, Response to Comments on the DEIS**, and written comments on the DEIS are included as a new appendix to the FEIS (**Appendix Q**).

Changes to the text and graphics from the DEIS were made in the FEIS, as necessary, in response to these comments. Unless otherwise noted, all revisions and updates to the text since the publication of the DEIS are marked by strikethroughs and double underlines. No strikethroughs or doubles underlines are used for the **Foreword** and **Chapter 28**, which are new to the FEIS.

[1] This Foreword is new to the FEIS.

1 Introduction

The Metropolitan Transportation Authority (MTA) has prepared this ~~Draft~~ Final Environmental Impact Statement (~~D~~FEIS) for the Staten Island North Shore Bus Rapid Transit (BRT) Project (the Proposed Project) in accordance with New York's State Environmental Quality Review Act (SEQRA). Because the Proposed Project would be within New York City, the *City Environmental Quality Review (CEQR) Technical Manual* was used as a guide with respect to environmental analysis methodologies and impact criteria for evaluating the Proposed Project in this ~~D~~FEIS, unless stated otherwise.

Project Overview

This SEQRA FEIS will assess the proposed implementation of new and enhanced public transit service along the North and West Shores of Staten Island (see Figure 1-1) between South Avenue (West Shore Plaza, located near the intersection of South Avenue and Chelsea Road) and St. George (St. George Terminal, located near the intersection of Richmond Terrace and Bay Street) in Richmond County, New York. The 8-mile proposed alignment would consist of approximately 4.8 miles of right-of-way (ROW) from the former North Shore Railroad and a total of 3.2 miles of City roadways, such as Richmond Terrace (0.5 miles) and South Avenue (2.7 miles). As shown in Figure 1-1 and Figure 1-2, the proposed alignment includes at-grade, elevated viaduct, and below-grade open-cut sections, with street-running portions along South Avenue (mixed traffic) and Richmond Terrace (exclusive two-lane median busway).

Figure 1-1 Staten Island North Shore BRT Proposed Alignment

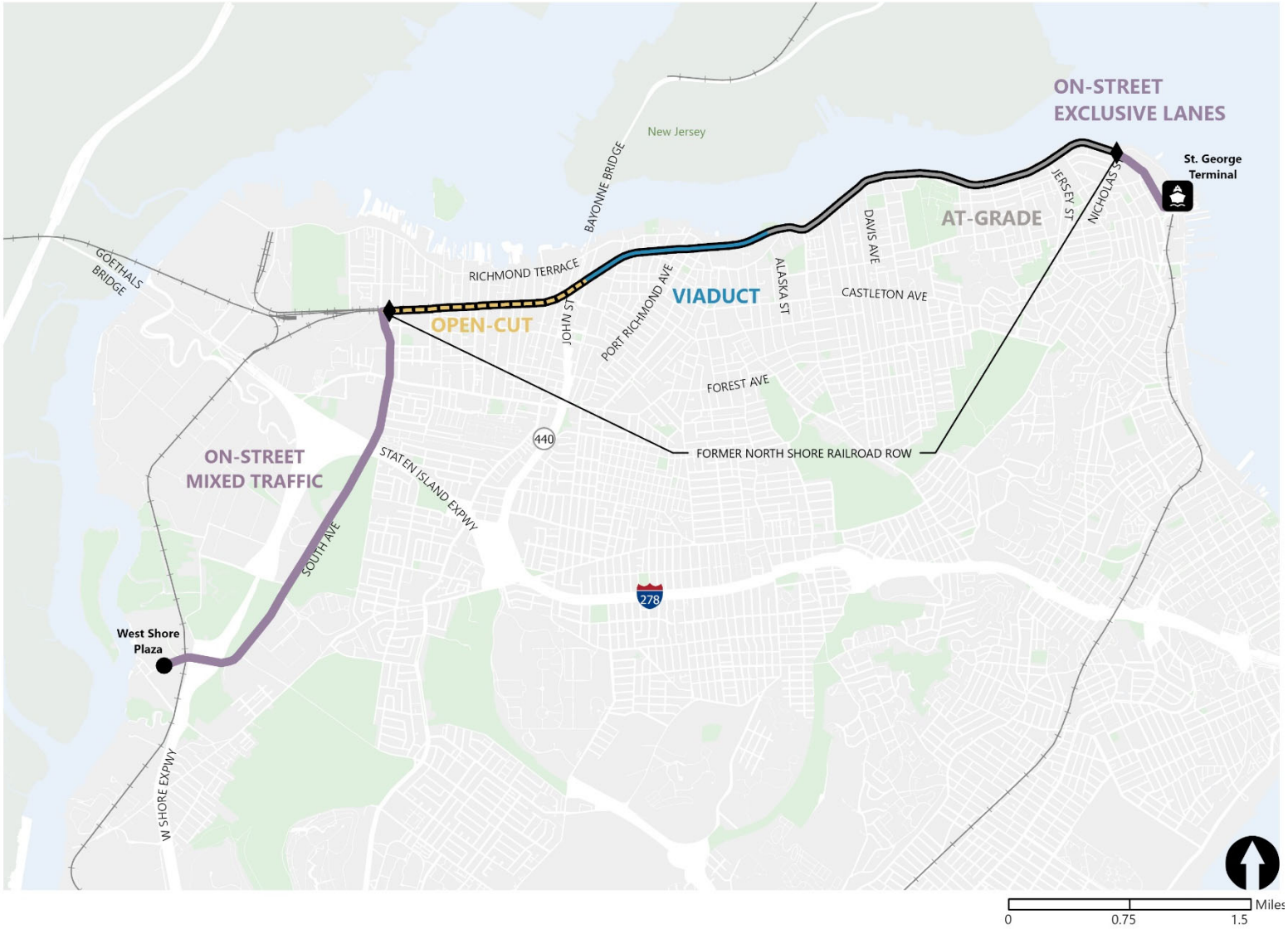

Figure 1-2 Existing Conditions Photographs of the Proposed Alignment

On-Street (Exclusive Lanes): View of Richmond Terrace looking west

At-Grade: View of ROW and destabilized shoreline near Snug Harbor

At-Grade: View of Bank Street; Richmond Terrace at left

Viaduct: View of Richmond Terrace looking south from viaduct

Figure 1-3 Existing Conditions Photographs of Proposed Alignment (continued)

Viaduct: View of remnant station on viaduct section of ROW

Open-Cut: View of western portion of open-cut section (freight use)

Open-Cut: View of overhead bridge and abutments in open-cut section

On-Street (Mixed-Traffic): View of South Avenue

Project Context

The MTA Staten Island North Shore Alternatives Analysis (SINSAA), completed in 2012, as well as several concurrent and subsequent planning studies, have identified key, pervasive transportation issues that continue to exist in the North Shore and West Shore areas of Staten Island. These issues are described below in the *Purpose and Need* subsection of this chapter. The SINSAA evaluated several alternatives to address the identified needs; these alternatives are described in **Chapter 2, Proposed Project and Alternatives**. The alternatives were revisited in the June 2019 Supplement to the 2012 SINSAA (the Supplement), which identified bus rapid transit (BRT) as the preferred alternative.

The Proposed Project would address the existing transportation needs in the North Shore of Staten Island and meet the demand for expanded transportation capacity through improved and priority transit service. Use of the former North Shore Railroad ROW would provide more consistent and reliable travel times and would improve transit access, capacity, and connectivity between North Shore and West Shore activity, residential centers, and the St. George Terminal. St. George Terminal provides on-island transfers between the Staten Island Railway (SIR) and connections to MTA bus routes, as well as off-island transfers to Lower Manhattan via the New York City Department of Transportation's (NYCDOT) Staten Island Ferry, and to Battery Park City and Midtown West via the NYC Ferry service immediately adjacent to the St. George Terminal.

The proposed alignment would extend through and serve an area comprised of several neighborhoods along the North and West Shores—including Arlington, Mariners Harbor, Elm Park, Port Richmond, West Brighton, New Brighton, and St. George (see **Figure 1-4**). The study area includes Community Board 1 and parts of Community Board 2. Neighborhoods in the study area are characterized by varied land use patterns, civic and commercial clusters in St. George and Port Richmond, and historic Snug Harbor's well-established cultural uses. Other prevalent land uses include park land such as Heritage Park, housing and residential uses, and a waterfront industrial sector featuring an array of maritime support services as well as the city's Port Richmond Wastewater Resource Recovery Facility ~~Treatment Plant~~ (WRRF~~WTP~~). The Port Authority of New York and New Jersey's (PANYNJ) Howland Hook Marine Terminal is a major freight terminal and container port at the western end of the proposed alignment, and both the Teleport and Matrix Global Logistics Park are significant business parks on the West Shore. In St. George, economic growth is occurring along or near the Proposed Project alignment, including the Empire Outlets retail center, as well as mixed-, other developments that complement existing municipal, residential, and educational land uses.

The North Shore roadway network includes the two-lane Richmond Terrace; the area's primary east-west roadway—most of which runs along the shoreline. Other notable streets include Forest Avenue, Castleton Avenue, and the Staten Island Expressway (I-278), which connects Staten Island with New Jersey via the

Figure 1-4 Area Map

Goethals Bridge. North-south access routes between the North Shore and points south include South Avenue, Harbor Road, NY Route 440 (which connects Staten Island with New Jersey via the Bayonne Bridge), Port Richmond Avenue, and Jersey Street.

MTA operates an extensive network of local and limited bus routes that serve the entire borough (http://web.mta.info/nyct/maps/bussi.pdf). The four primary local/limited bus routes that link the North Shore with the St. George Terminal are the S40/90, S44/94, S46/96, and S48/98. The terminal is currently served by 22 NYCT bus routes, the MTA Staten Island Railway (SIR), which is the borough's only passenger rail line, serving communities between St. George and Tottenville, and the Staten Island Ferry, which provides a connection to Lower Manhattan.[1]

The former North Shore Railroad right-of-way provided rapid transit passenger and freight service, ending in 1953 and 1989, respectively. In 1993, the City of New York acquired the North Shore right-of-way via a federal grant preserving the corridor for transportation use. Currently, the right-of-way, managed by the New York City Economic Development Corporation (NYCEDC), is largely abandoned, except for a portion of the western section of the right-of-way that is used for freight rail operations supporting the PANYNJ Howland Hook Marine Terminal.

Purpose and Need

Background

Several planning studies, including the *2012 Staten Island North Shore Alternatives Analysis (SINSAA)*, *North Shore 2030*[2], *Working West Shore 2030*[3], and studies for the Port Richmond and West Brighton Brownfield Opportunity Areas (BOAs), have identified pressing transportation-related issues within the North Shore and West Shore of Staten Island. The North Shore has an irregular and disconnected street grid that physically constrains the roadway network, with only one east-west route—Richmond Terrace—running the length of Staten Island north of the Staten Island Expressway (I-278). This limited network is inadequate to accommodate the shared movement of automobiles, trucks, bicycles, pedestrians, and transit vehicles.

Demand for transit among North Shore residents is high and growing. According to the New York City Community District Profiles, the North Shore's population is nearly twice as dense as Staten Island's overall population, more racially and economically diverse, and considerably more transit-reliant.[4] However, the North Shore's constrained infrastructure makes it difficult to efficiently serve the area's

[1] MTA Staten Island Bus Service Map. https://new.mta.info/map/5376. Accessed on May 11, 2023

[2] https://www.nyc.gov/assets/planning/download/pdf/plans-studies/north-shore/north_shore2030.pdf. Accessed on May 11, 2023

[3] https://www.nyc.gov/assets/planning/download/pdf/plans-studies/west-shore/west_shore2030work_plan.pdf. Accessed on May 11, 2023

[4] https://communityprofiles.planning.nyc.gov/staten-island/1. Accessed on May 11, 2023

transit needs. Service on the area's four primary bus routes (S40/S90, S44/S94, S46/S96, and S48/S98) is characterized by overcrowding of buses during peak commute periods; inconvenient transfers between travel modes; and a lack of reliability, with nearly two-thirds of bus trips running five or more minutes late. The potential to add future transit capacity to meet growing demand is severely constrained by the physical limitations of the existing roadway network.

These limitations on expanded transit capacity inhibit local economic growth and the quality of life for residents along the North and West Shores. Providing a direct, reliable transit connection along South Avenue and across the North Shore between the West Shore and St. George would help address service and capacity issues, support economic growth, and meet projected ridership demand. Such a connection would provide faster and more consistent travel times and improve overall transit access and connectivity between the commercial hub at West Shore Plaza, various existing and planned West Shore and North Shore activity centers such as the Teleport Business Park, Matrix Global Logistics Park, Snug Harbor Cultural Center, civic and commercial concentrations in St. George, and the St. George Terminal.

Purpose of the Project

The purpose of the Proposed Project is to:

- Provide frequent, efficient, and reliable transit to serve growing demand on the North and West Shores of Staten Island.
- Facilitate improved connections between Staten Island neighborhoods and existing North and West Shore activity centers, industries, and employment centers.
- Offer a reliable and cost-effective transportation solution that supports adopted City and community-endorsed public policy initiatives pertaining to economic growth and development, such as the *North Shore 2030*.
- Maximize transportation use of the currently unused North Shore Railroad right-of-way while minimizing property acquisition and disruption to the community and businesses.

Need for the Project

The North and West Shores have a high demand for public transit that is expected to grow in the future. This demand is not effectively served by existing transit routes, which creates a need for transit improvements, as described below.

Public transportation demand is higher on the North Shore than the rest of Staten Island.

Staten Island's North Shore (Community District 1) is home to about 38 percent of the borough's 493,194 residents. Approximately 32 percent of North Shore residents aged 16 or older use public transportation to commute to work—

notably more than other Staten Islanders (26 percent).[5] On the North Shore, approximately 48 percent of residents drove along compared with 55 percent of Staten Islanders overall. See Table 1-1 below for a breakout of modes comparing the North Shore with Staten Island overall.

Table 1-1 Commuting Modes Comparison

Commuting Mode	Staten Island CD 1 (North Shore)	Staten Island
Drove Alone	48%	55%
Public Transit	32%	26%
Bus	68%	73%
Subway	16%	12%
Ferry	16%	13%
Walked	4%	3%
Worked from Home	6%	7%

ACS 5-year, 2017-2021, B08006 SEX OF WORKERS BY MEANS OF TRANSPORTATION TO WORK

Approximately 68 percent of the transit commuters on the North Shore use the bus as their mode of transport to work. Ferries and subways are each used by 16 percent of North Shore transit commuters (32 percent total).[6] The four primary east-west bus routes serving the area carried a combined average of nearly 23,000 riders on an average weekday in 2019.[7] Many peak-hour buses are crowded (operating over capacity); and in some cases buses bypass stops because they are too full to serve waiting passengers. Approximately 64 percent of morning peak-hour (eastbound) trips on the S40 route operate over capacity; significant crowding is also experienced in the evening peak (54 percent of trips).

[5] US Census Bureau. *American Community Survey.* 2017-2021 American Community Survey 5-year Estimates. Accessed from data.census.gov. Accessed on March 23, 2023.

[6] US Census Bureau. *Table B08006 Sex of Workers by Means of Transportation NYC-Staten Island Community District 1--Port Richmond, Stapleton & Mariner's Harbor PUMA, NY ACS 2017 1-year* data.census.gov. Accessed on March 23, 2023

[7] MTA New York City Transit. *Average Weekday Bus Ridership* http://web.mta.info/nyct/facts/ridership/ridership_bus.htm. Accessed on May 5, 2023

The demographic characteristics of the North Shore—including a higher poverty rate and lower car ownership than Staten Island overall—are consistent with high use of transit.

The study area for the Proposed Project is approximately 74.5 percent non-white and 32.1 percent low income, which is higher than in Staten Island CD1 and in Staten Island as a whole. Nearly all of the block groups that comprise the study area meet two of the criteria for a Potential Environmental Justice Area (PEJA) due to a high minority-identifying population and at least 22.8 percent with a household income below the federal poverty level.[8] Staten Island CD1, which encompasses the majority of the Proposed Project, has a population that is approximately 62.1 percent non-white and 19.7 percent below the poverty level—compared to 40.4 percent and 11.3 percent, respectively, for Staten Island overall. Both the study area and CD1 meet one of New York State's definitions of a PEJA based on a minority-identifying population exceeding 52 percent.[9]

Studies conducted by the Pew Research Center have shown that in urban areas, people who are lower-income, black or Hispanic, or immigrants are much more likely than non-Hispanic white adults to use public transportation on a regular basis.[10] In addition, while only 15.4 percent of Staten Island households do not own at least one vehicle, almost 24 percent of households in Community District 1 are non-vehicle owners.[11] This rate is markedly higher than in either Community District 2 (13.5 percent) or Community District 3 (7.8 percent), indicating that North Shore residents are transit-reliant to a greater degree than residents in other areas of the borough.[12] These factors, combined with the high percentage of North Shore commuters currently using public transportation, mean there will continue to be a strong demand for, and reliance on, public transportation in this area.

[8] https://www.dec.ny.gov/public/911.html. Accessed on May 11, 2023.

[9] Mayor's Office for Economic Opportunity. *NYC Opportunity 2019 Poverty Report* https://www.nyc.gov/assets/opportunity/pdf/21_poverty_measure_report.pdf. The NYCgov poverty threshold for a family of two adults and two children is $32,402. This city-specific poverty threshold, derived from the federal poverty threshold, represents the minimal standard of spending on basic necessities (e.g. food, shelter, clothing, utilities) and is adjusted for the higher cost of housing in New York City. Accessed on May 11, 2023

[10] Monica Anderson. Pew Research Center. April 7, 2016. *Who Relies on Public Transit in the U.S.* Access from https://www.pewresearch.org/fact-tank/2016/04/07/who-relies-on-public-transit-in-the-u-s/. Accessed on December 4, 2019.

[11] North Shore demographic data was derived from U.S. Census Public Use Microdata Area (PUMA) data; PUMA 3903 – Port Richmond, Stapleton & Mariner's Harbor covers an area that is geographically coterminous with Staten Island Community District 1.

[12] US Census Bureau. *American Community Survey*. 2013-2017 American Community Survey 5-year Estimate. Accessed from data.census.gov. 2017-2021 American Community Survey. Accessed on March 23, 2023.

Commutes on Staten Island and the North Shore are longer and more circuitous than those in New York City as a whole.

Many Staten Islanders—especially those who commute off-island—have long commutes involving multiple transit modes. Currently, the mean travel time to work for residents of Staten Island is 44.5 minutes, which is the longest of any borough and longer than the citywide mean of 41.4 minutes. On the North Shore, 45 percent of residents spend 45 minutes or longer commuting each way to work, and over 34 percent have commutes of an hour or longer. Citywide, 43.2 percent of trips to work are over 45 minutes and 26.9 percent are an hour or longer.[13]

The length and complexity of transportation routes on Staten Island contribute to long commute times for residents. Four of the ten longest bus routes in New York City operate in Staten Island. Two operate within North Shore communities and are far longer than the citywide bus route average of 6.8 miles.[14] More specifically, the S59 bus route (16 miles) provides service between Port Richmond Terminal and Eltingville or Tottenville, and the S54 (11.5 miles) provides service between West New Brighton and Eltingville. Compounding the length of these routes is their circuitous nature; local Staten Island bus routes average 13 turning movements per route, which is the highest average number of turns for buses in any borough.

Because ferry and rail service are accessed via the St. George Terminal, most North Shore residents must travel east-west by bus to reach these services. Approximately two-thirds of transfers on the four primary local bus routes (S40, S44, S46, S48) occur at the St. George Terminal. North Shore residents who travel to off-island employment destinations via the Staten Island Ferry and NYC Ferry are affected by the long travel times and on-time performance issues of existing bus routes, which increase the difficulty of consistently making timed ferry connections. Overall, between 25 and 30 percent of all S40 trips (eastbound and westbound) are late throughout the day over the last 12-month period reported by the MTA ending in February 2023.[15]

Transit demand will increase in the future as growth continues in North Shore communities and as the population ages.

The population of Staten Island and the North Shore are expected to continue growing, creating additional demand for public transit. Based on the latest available City estimates, Staten Island's population is projected to increase by 2.9

[13] US Census Bureau. *Table S0801 Commuting Characteristics by Sex ACS 2017-2021 5-year*. Accessed from data.census.gov. Accessed March 23, 2023.

[14] Office of the New York City Comptroller. Bureau of Policy and Research. *The Other Transit Challenge: How to Improve the NYC Bus System*. November 2017. Accessed from https://comptroller.nyc.gov/reports/the-other-transit-crisis-how-to-improve-the-nyc-bus-system/#_ednref18. Accessed on December 4, 2019

[15] https://metrics.mta.info/. Accessed on March 23, 2023

percent (from 487,155 to 501,109) between 2020 and 2040.[16] The North Shore's population has been increasing faster than that of Staten Island overall. Between 2011 and 2021, Community District 1 grew by approximately 6.8 percent, compared to 4.9 percent for the borough as a whole.[17] According to the NYMTC Best Practices Model, the study area is expected to grow by 7 percent between 2020 and 2035.[18] This growing population is expected to increase the demand for transit among North Shore residents, who, as described previously, are generally more reliant on public transit.

While the population of Staten Island is growing, it is also becoming steadily older. Based on the City's latest population projections, the number of Staten Islanders aged 65 years or over is expected to grow from 77,644 in 2020 to 97,883 by 2040, an increase of approximately 26 percent.[19] This increase is the second largest of any borough (after The Bronx), and greater than the 20 percent increase projected for New York City as a whole. While many factors influence older adults' use of public transit, research shows that transit can provide older adults who choose not to or are unable to drive with a means of independent travel and improved mobility.[20] Transit is also vital to connecting older adults to health care and other community resources, which is particularly important in the aftermath of the COVID-19 pandemic. Staten Island had the highest per capita COVID-19 case rate in New York City for all ages and for residents 65 and up between the start of the pandemic in March 2020 and May 15, 2023.[21]

Adopted plans for the North Shore and all of Staten Island have established economic development goals that require efficient, reliable transportation.

The North Shore has a diverse range of commerce that includes maritime industries, light industrial activities, service businesses, educational and historic centers, and neighborhood commercial centers. The area has experienced substantial economic growth in recent years as the borough continues to recover from the after effects of the COVID-19 pandemic, which resulted in the loss of nearly one million jobs in New York City overall in Spring 2020. The unemployment rate in Staten Island and the North Shore had been consistently

[16] New York City Department of City Planning. *New York City Population Projections by Age/Sex & Borough 2010-2040* https://www1.nyc.gov/assets/planning/download/pdf/data-maps/nyc-population/projections_report_2010_2040.pdf. Accessed on March 23, 2023

[17] US Census Bureau. Accessed from data.census.gov. Accessed on March 23, 2023

[18] TAZ level forecasts prepared for NYMTC Best Practice Model and consistent with NYMTC 2055 Socioeconomic and Demographic Forecasts. Accessed 8/22/2023. https://www.nymtc.org/en-us/Data-and-Modeling/Socioeconomic-and-Demographic-SED-Forecasts/2055-Forecasts

[19] New York City Department of City Planning. *New York City Population Projections by Age/Sex & Borough 2010-2040* https://www1.nyc.gov/assets/planning/download/pdf/data-maps/nyc-population/projections_report_2010_2040.pdf. Accessed on December 4, 2019

[20] University Transportation Research Center Region 2. *Access to Public Transit and Its Influence on Ridership for Older Adults in Two U.S. Cities*. http://www.utrc2.org/sites/default/files/pubs/access-transit-ridership-older-adults-journal_0.pdf. Accessed on December 4, 2019

[21] https://www.nyc.gov/site/doh/covid/covid-19-data-totals.page. Accessed May 15, 2023

on the decline in the years leading up to the pandemic. Between 2011 and 2019, both the Staten Island and the North Shore unemployment rates were halved, from 8.3 to 4.0 percent and from 10.4 to 5.1 percent, respectively. Since reaching a high of nearly 20 percent unemployment in May 2020 in the borough as a whole, Staten Island has been steadily regaining jobs. As of December 2022, Staten Island had an unemployment rate of 4.8 percent, which is nearly back to pre-pandemic levels.

Between March 2021 and 2022, employment grew six percent in Staten Island and wages grew nearly 4.5 percent[22] and between December 2021 and 2022, unemployment decreased by 17 percent. Additionally, several large redevelopment programs are underway in the St. George area, and recently completed warehouse facilities for Amazon and Ikea at Phase 1 of the Matrix Global Logistics Park on the West Shore are expected to employ more than 4,000 workers. Staten Islanders are nearly evenly split between those staying in the borough for work (53 percent) and those that work in other counties (approximately 47 percent).[23] This underscores the need for frequent and reliable transit service to move residents and workers between neighborhoods and employment centers both on and off the island.

Recent planning efforts seek to continue these economic development trends. The *North Shore 2030* study identified economic growth objectives including job creation and retention, the future reuse of the former North Shore Railroad right-of-way, and the provision of improved transit and roadway connections. Building on the recommendations identified in *North Shore 2030*[24], several communities, including Port Richmond (2014)[25], West Brighton, and New Brighton (2016)[26], have worked with the Department of City Planning to envision the future of growth and transportation on the North Shore. All these studies outline a need for enhanced connections, greater mobility, and improved public transportation options to support the anticipated level of economic development.

The existing transportation network is physically constrained and limits mobility for general-purpose and transit vehicles.

The North Shore's roadway network, based on former Native American trails, is influenced by the area's hilly topography and contains few direct east-west through streets. These conditions have resulted in an irregular street grid characterized by circuitous routes, sharp curves, and misaligned intersections. Roadway capacity and maneuverability for buses are constrained by narrow curb-

[22] https://www.bls.gov/regions/new-york-new-jersey/news-release/countyemploymentandwages_newyorkcity.htm. Accessed March 23, 2023

[23] https://stacker.com/new-york/counties-worst-commutes-new-york. Accessed March 23, 2023

[24] https://www.nycedc.com/resource/north-shore-2030. Accessed on December 4, 2019

[25] https://www1.nyc.gov/site/planning/plans/port-richmond-boa/port-richmond-boa.page. Accessed on December 4, 2019

[26] https://www1.nyc.gov/site/planning/plans/west-brighton-boa/west-brighton-boa.page. Accessed on December 4, 2019

to-curb widths, winding roadway alignments, and on-street parking, which have a severe impact on the reliability of bus routes serving the North Shore. Sharp curves, steep hills, narrow lanes, and a lack of turn lanes reduce travel speeds. Buses picking up or dropping off passengers often block traffic when they are stopped, due to the absence of bus pullout areas or travel lanes for traffic to bypass. The two-lane corridors pose additional challenges near bus stops, as drivers cross into oncoming traffic lanes to pass buses stopped at a bus stop. All these factors combine to impede the efficiency of existing surface transit operations along the North Shore.

Goals and Objectives

The goals and supporting objectives of the Proposed Project are shown in Table 1-2. The Proposed Project was developed to improve transit accessibility and mobility, reduce travel time, improve reliability, and cost-effectively support Staten Island's growth objectives within a reasonable timeframe. They were also designed to provide benefits to the community character and avoid or minimize impacts on the environment.

Table 1-2 Goals and Objectives

Goal	Objectives
Improve Mobility	› Provide increased and improved travel options along Staten Island's North Shore. › Provide a well-integrated and efficient transit system. › Improve transit access for the transit-dependent and transit-reliant. › Reduce travel time for linked, Manhattan-bound trips. › Reduce crowding on transit services. › Improve transit reliability. › Provide improved transit access to growing activity centers. › Reduce increasing roadway congestion by attracting auto users to transit.
Preserve and Enhance the Environment, Natural Resources and Open Space	› Improve air quality by providing transit alternatives that moderate the increase of vehicle emissions. › Minimize potential adverse impacts on residential areas, businesses, and the built environment from the operation of a transit mode on the North Shore. › Minimize potential adverse impacts on the natural environment from the operation and construction of a transit mode on the North Shore. › Maintain safe and efficient access to land uses along the North Shore.

Goal	Objectives
Maximize Limited Financial Resources for the Greatest Public Benefit	› Make use of existing capacity in transportation corridors, assets, and infrastructure. › Advance the most cost-effective transportation options. › Increase revenue potential, thereby minimizing the level of subsidy required. › Develop transit options that use known and proven technologies suitable for use on the North Shore. › Provide a transportation solution that can be implemented in a timely manner.

Regulatory Framework

SEQRA Compliance

This project is being reviewed pursuant to the requirements of the State Environmental Quality Review Act (SEQRA), codified in Article 8 of the Environmental Conservation Law (ECL), and its implementing regulations, promulgated at Part 617 of Title 6 of the New York Codes, Rules, and Regulations (NYCRR), which collectively contain the requirements for the State Environmental Quality Review (SEQR) process. The Proposed Project is also being reviewed in conformance with the New York State Historic Preservation Act of 1980 (SHPA), specifically the implementing regulations of Section 14.09 of the Parks, Recreation and Historic Preservation Law (PRHPL).

Future NEPA Compliance

MTA may apply for federal funding from the Federal Transit Administration (FTA) to build the proposed project. If MTA intends to seek federal funding to support the capital construction of the Proposed Project, it will require a separate analysis under the requirements of the National Environmental Policy Act of 1969 (NEPA). The FTA would be the lead agency for NEPA compliance. MTA and the FTA have agreed that NEPA will occur after and separately from the SEQRA process.

Regulatory Approvals

In addition to the SEQRA actions described above, several discretionary approvals and permits may be required to implement the Proposed Project. Although the project is a state action, the City of New York may utilize the SEQRA EIS to make CEQR findings should it be determined that City actions are required to facilitate implementation of the project. In addition to the potential City approvals, several federal and state permits are likely to be required for the project. These permits and approvals are identified below.

MTA has coordinated with City agencies both directly, and prior to scoping. Coordination has also taken place with the state and federal agencies responsible for other approvals listed below. MTA will continue to work with these agencies during the project development process to ensure that their input and

information needs are appropriately reflected in the environmental documentation.

Potential City Approvals

- Transfer of property: Currently, the ROW is under New York City ownership.
- Landfills: Uniform Land Use Review Procedure (ULURP) application to facilitate constructing fill at the Snug Harbor waterfront portion of the proposed alignment.
- Zoning Map Amendment: ULURP application to facilitate a change in the City Zoning Map may be required at several locations, including Roxbury Street, portions of Richmond Terrace, and areas where parkland alienation would be required.
- Cross Access Connections: Non-ULURP application from the New York City Department of City Planning for cross access for the potential station surface parking facilities located at Arlington Station and Livingston Station.
- Acquisitions and Dispositions: ULURP application(s) to acquire private properties and dispose of City-owned properties to facilitate the proposed alignment.

Other Potential Approvals

- US Army Corps of Engineers: Clean Water Act Section 404/Section 10 permit(s).
- New York State legislation authorizing the alienation of mapped parkland.
- New York State Historic Preservation Office and New York City Landmarks Preservation Commission: Compliance with State Historic Preservation Act of 1980 (SHPA), Section 14.09 of the Parks, Recreation and Historic Preservation Law (PRHPL).
- New York State Department of Environmental Conservation: State Pollutant Discharge Elimination System (SPDES) Permit; tidal and freshwater wetlands permit.

Identification of Lead Agency & Determination of Significance

Under SEQRA, the lead agency is typically the state or local agency principally responsible for undertaking, funding, and/or approving an action. The lead agency is required to perform the environmental review in connection with the action, determine whether an Environmental Impact Statement is required, and prepare and file the EIS if one is required.

MTA issued its lead agency letter for the Proposed Project on June 26, 2019. The letter served as a notification to public agencies that MTA had initiated the environmental review process in accordance with SEQRA; that MTA was the lead agency and had made a determination of significance pursuant to SEQRA; that MTA intended to prepare a Draft EIS for the Proposed Project; and that MTA

would also be complying with NEPA requirements. MTA determined that the Proposed Action constituted a Type I action (6 NYCRR Part 617.4) with respect to SEQRA. This letter, together with Part I of the full SEQRA Environmental Assessment Form (EAF), pursuant to 6 NYCRR Part 617.6 (b-3), was distributed to 18 federal, state, and New York City agencies.

Based upon its initial evaluation of the Proposed Project, MTA issued a *Positive Declaration and Notice of Intent to Prepare a Draft Environmental Impact Statement* on September 18, 2019. The Positive Declaration discussed the rationale for the preparation of a DEIS and described how the public and other stakeholders could become involved in the EIS preparation.

Scoping Process

The purpose of scoping under SEQRA is to identify concerns, issues, and ideas relevant to the project so they can be appropriately studied during Draft EIS. Scoping also provides an opportunity for the public, agencies, and other stakeholders to review and recommend for consideration alternatives to be addressed in the Draft EIS. The scoping process is intended to:

- Ensure public participation in the EIS development process;
- Allow open discussion of issues of public concern; and
- Permit inclusion of relevant public issues in the final written scope.

The SEQRA scoping process (e.g., the manner and means of technical analysis, public outreach, and agency coordination) was conducted in a manner that is consistent with NEPA. The key steps, or milestones, in the process are as follows:

- A Notice of Public Scoping Meeting was published in the NYSDEC Environmental Notice Bulletin (ENB) and on the project website on September 18, 2019.
- The Draft Scoping Document was published on the project website on September 18, 2019.
- The Public Scoping Meeting was held 30 days following the publication of the Scoping Notice in the NYSDEC ENB, on October 17, 2019, from 6:00 pm to 8:30 pm at the Snug Harbor Cultural Center & Botanical Gardens, Lower Great Hall. There were 43 attendees, and a total of 12 individuals spoke at the meeting. The record was held open for a period of 30 calendar days following the close of the Public Scoping Meeting (until November 18, 2019) in order to receive any additional comments. In total, 60 comments (excluding agency comments) were received from 27 commenters during the 60-day public scoping comment period. An additional 35 comments were received from the City via MOEC and from other agencies, such as the United States Environmental Protection Agency (USEPA) and the Port Authority of New York & New Jersey (PANYNJ).

Early Scoping

In the event that a potential future NEPA environmental review is advanced, the scoping process undertaken by MTA was also compliant with FTA's early scoping guidelines for NEPA. The NEPA process is typically initiated by a Notice of Intent to Prepare an Environmental Impact Statement (referred to as an NOI) and a formal public and agency scoping process like SEQRA scoping. However, FTA may initiate early scoping prior to an NOI if there is appropriate public notice and sufficient project information available so that the public and relevant agencies can participate effectively. Early scoping can involve incorporating environmental review process considerations (e.g., purpose and need, alternatives, and significant environmental issues) during the project planning stage as well as conducting preliminary data analysis and requesting input from the public and agencies on issues before NEPA begins. FTA determined that early NEPA scoping concurrent with the SEQRA scoping process was appropriate for the Proposed Project and published an early scoping notice in the Federal Register on September 30, 2019.

Draft Environmental Impact Statement

The~~is~~ DEIS ~~i~~was intended to provide systematic consideration of the potential environmental effects of the Proposed Project; evaluate reasonable alternatives; and identify reasonable and practicable mitigation measures to reduce or eliminate the significant adverse environmental impacts of the Proposed Project. The *2021 CEQR Technical Manual* was used to provide guidance in developing environmental analysis methodologies and in establishing impact criteria.

~~Once~~ The MTA, as lead agency, determined~~s~~ that the DEIS ~~i~~was complete for the purposes of public review, and a Notice of Completion (NOC) was~~ill be~~ issued on October 25, 2023. Consistent with 6 NYCRR 617.12, the NOC was~~ill be~~ published in the NYSDEC's Environmental Notice Bulletin (ENB) ~~and in local newspaper(s)~~, and the DEIS was~~ill be~~ circulated for public review, including a copy ~~to be~~ that was posted on the MTA website. Printed copies of the Draft EIS were available at the MTA Headquarters Lobby, 2 Broadway, New York, NY 10004, the St. George Library Center, 5 Central Avenue, Staten Island, NY 10301; the Mariner's Harbor Library, 206 South Avenue, Staten Island, NY 10303. Publication of the DEIS and issuance of the NOC commenced~~s~~ the public review and comment period which closed on December 22, 2023.

Public Review and Comment Period

In accordance with the SEQRA, the public comment period for the Draft EIS was required to be a minimum of 30 days. The North Shore BRT Draft EIS comment period began on October 25, 2023 and concluded on December 22, 2023, which was nearly double the amount of time required under the statute. ~~A public comment period (a minimum of 30 days per SEQRA) will be held following publication of the Draft EIS. The dates of the comment period will be published in the ENB as part of the NOC.~~ The public comment period ~~will~~ provided a forum for

the public and other stakeholders to provide formal comments on the Draft EIS. These comments ~~will be~~ have been addressed as part of the Final EIS.

Comments received during the public comment period ~~will be~~ have been incorporated into a comment summary. All comments ~~will be~~ have been collected and retained in a database, and MTA ~~will~~ has summarized comments and developed responses to comments as part of the Final EIS (see Chapter 28).

Final Environmental Impact Statement

At the close of the public comment period for the DEIS, a Final EIS (FEIS) ~~will be~~ was prepared that ~~will~~ included responses to comments made on the DEIS, along with any revisions to the technical analyses necessary to respond to those comments. MTA ~~will~~ published a NOC for the FEIS in the ENB on January 24, 2024. Like the DEIS, the FEIS ~~will~~ was also ~~be~~ published on the project website, ~~distributed to agencies, and available at repositories within the study area~~. SEQRA requires that the FEIS be completed within 45 days after the Public Hearing unless MTA, as lead agency, determines that more time is warranted.

Statement of Findings

Upon issuance of the FEIS, MTA ~~will also issue~~ issued a Statement of Findings to the MTA Board of Directors for their consideration. In accordance with 6 NYCRR 617.11(d), the Statement of Findings issued in connection with a proposed action must (a) consider the relevant environmental impacts disclosed in the FEIS; (b) weigh and balance the relevant environmental impacts with applicable social, economic and other essential considerations; (c) provide the rationale for the agency's decision; (d) certify that the SEQR requirements (as specified in 6 NYCRR 617) have been met; and (e) certify that, consistent with social, economic, and other essential factors—and considering the available reasonable alternatives—the proposed action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating as conditions to the decision those mitigation measures identified as practicable.

In addition, the City of New York may utilize the SEQRA FEIS to make CEQR findings should it be determined that City actions are required to facilitate the Proposed Project.

Coordination with Environmental & Regulatory Agencies

During the preparation of the DEIS, MTA has coordinated with the relevant environmental and regulatory agencies with jurisdiction over issues of concern regarding the Proposed Project. At the inception of the planning process, MTA assembled an Interagency Advisory Committee (IAAC) comprised of "interested"

or "involved" Federal, State and local agencies, as defined in 6 CRR-NY 617.2,[27] to solicit their input. Agency coordination and project-related outreach are fully detailed in the Agency Coordination & Public Outreach Plan (ACPOP) that was prepared to support this SEQRA EIS (https://new.mta.info/document/10491). Project-related agency correspondence is included in **Appendix A** of the ~~D~~FEIS.

MTA has and continues to coordinate with elected officials, community members, CB1, businesses and local, state and federal agencies throughout the planning process. Presentations were made to the CB1 Waterfront Committee in 2019 and on November 28, 2023. Additional meetings were conducted with elected officials (February 2022 and October 2023); the NYCEDC in April 2022; a joint meeting with the Staten Island EDC and Chamber of Commerce in October 2023; as well as a joint meeting with NYCEDC and the Department of City Planning on November 30, 2023. Meetings with these and other stakeholders would continue as the project moves forward beyond the Final EIS.

Analysis Methodology & Framework

Methodology

Analytical methodologies for evaluating baseline environmental conditions and project-related impacts are consistent with the guidelines set forth in the *2021 CEQR Technical Manual*, where applicable. These are the most appropriate methodologies and guidelines for environmental impact assessment in New York City. In disclosing impacts, the FEIS considers the Proposed Project's potential adverse effects on its environmental setting. The *2021 CEQR Technical Manual* will also guide the development of mitigation measures.

Analysis Years

The ~~D~~FEIS describes existing conditions and provides an assessment of conditions in the future with and without the Proposed Project in 2035 (the Build Year), which is when the proposed BRT service would be fully operational. The No-Action Condition serves as the 2035 baseline, or the projected environmental setting in which the Proposed Project would not be constructed. It is used as a basis for evaluating the potential impacts of the Proposed Project. Each of these aspects of the analysis is described below.

Existing Conditions

For each technical area assessed in the ~~D~~FEIS, the existing conditions are described first. The description focuses on those aspects of the environment that have the greatest potential to be affected by the Proposed Project. The assessment of existing conditions establishes a current baseline that informs the

[27] An *involved agency* means an agency that has jurisdiction by law to fund, approve, or directly undertake an action. An *interested agency* means an agency that lacks the jurisdiction to fund, approve, or directly undertake an action but wishes to participate in the review process because of its specific expertise or concern about the proposed action.

analysis of future conditions for the No-Action Condition and the Proposed Project.

No-Action Condition

The No-Action Condition establishes a future baseline that is used to evaluate the incremental changes expected as a result of the Proposed Project and alternatives. Using existing conditions as the starting point, the No-Action Condition adds in changes that are known or expected to be in place by the analysis year, including development currently under construction and that which can be reasonably anticipated. The methodology section included in each ~~D~~DFEIS chapter specifies how the No-Action Condition was developed, since it may vary among technical analyses.

For the ~~D~~DFEIS, known projects or planned developments and initiatives that share a common study area with the Proposed Project and are scheduled to be completed by the Build Year were reviewed. Relevant agencies were contacted to obtain information on future plans—including the New York City Department of City Planning, New York City Department of Parks and Recreation, and the New York City Department of Transportation. Smaller projects, within the various technical study areas, that would not substantially change conditions have been factored into the No-Action Condition by applying background growth factors.

With-Action Condition

The With-Action Condition is developed by starting with the No-Action Condition, and then adding to it the effects that are anticipated to result from the Proposed Project. The With-Action Condition is then evaluated against the No-Action Condition, thus enabling the assessment of the Proposed Project's incremental impacts on the environment. Chapter 2, Proposed Project and Alternatives provides a detailed description of the Proposed Project.

Delineation of Study Areas

In general, the study area is an area that lies within a specified distance from the Proposed Project and could be directly or indirectly affected for a particular impact category as a result of the project. The primary study area for the Proposed Project includes the proposed alignment, proposed station areas, and ancillary facilities, as well as a 400-foot-wide buffer around each side of the approximately 8-mile proposed alignment. As an organizing principle for assessment purposes, the proposed alignment was divided into seven sections, each of which comprises generally similar land use concentrations and/or is distinct from an engineering standpoint. These sections are shown in Figure 1-5 and include:

- **St. George:** Richmond Terrace from St. George Terminal west to Jersey Street
- **New Brighton Waterfront:** Kill Van Kull shoreline in the New Brighton neighborhood from Jersey Street west to Davis Avenue

- **West Brighton Waterfront:** Generally, parallels the Kill Van Kull shoreline from Davis Avenue to the foot of Alaska Street
- **Viaduct:** Existing viaduct section of the right-of-way from Alaska Street west to John Street
- **Open-Cut:** Follows open-cut section of the former right-of-way from John Street west to Harbor Road
- **Arlington Station:** Follows the former right-of-way along an at-grade section from Harbor Road to South Avenue, where the BRT would access South Avenue from a driveway located just north of Brabant Street
- **South Avenue:** South of Cable Way/Netherland Street to West Shore Plaza

In some technical areas, the study area will vary from the primary study area described above, according to the impact category under consideration and the scope of potential impacts. Certain analyses require information from an expanded area; for example, the parking study area is the area from which individuals can reasonably walk to a bus stop (represented by a one-quarter mile radius around the proposed alignment). Other analyses—such as those related to hazardous materials and architectural resources—have a narrower study area, as potential impacts for those resource categories are focused on the physical limits of disturbance associated with the Proposed Project. Each chapter of the ~~D~~FEIS describes the study area used for that technical analysis.

Figure 1-5. Section Overview Map

Identification of Significant Adverse Impacts & Mitigation Measures

This ~~D~~FEIS discloses reasonable and practicable mitigation measures to reduce or eliminate significant adverse environmental impacts that would be caused by the Proposed Project. Mitigation measures are discussed within each technical chapter as well as in Chapter 23, Mitigation. Where significant adverse environmental impacts are identified, mitigation measures have been developed with the objective of minimizing impacts to the greatest extent practicable.

Organization of this Document

This FEIS is organized in the following manner:

- Chapter 1 describes the background, purpose, and need for the Proposed Project, as well as SEQRA/CEQR compliance. This chapter also provides the regulatory and analytical framework for the EIS.
- Chapter 2 presents the Proposed Project, describes project alternatives including the No-Action Condition, and provides a summary of the alternatives evaluation process.
- Chapters 3 through 22 describe existing conditions, potential environmental impacts, and mitigation measures—each organized by environmental resource category, as noted in the Scoping Document.
- Chapter 23 identifies anticipated impacts requiring mitigation and likely mitigation measures.
- Chapter 24 describes and assesses the No-Action Alternative, as required by SEQRA.
- Chapters 25 through 27 are summary chapters focusing on various aspects of the EIS, as set forth in SEQRA regulations and the CEQR Technical Manual. These include:
    - Unavoidable Adverse Impacts, addressing those impacts (if any) that could not be avoided or practicably mitigated;
    - Growth-Inducing Aspects of the Proposed Project, which focuses on the potential for project-related inducement of new development within the surrounding area;
    - Irreversible & Irretrievable Commitments of Resources, which describes resources that would be irretrievably committed if the Proposed Project is built.
- Chapter 28 summarizes and responds to substantive comments on the Draft EIS that were received during the public comment period.
- Appendices provide supporting information such as technical data, conceptual engineering-level drawing sets of the proposed alignment, and the ~~D~~EIS public review process and materials.

2 Proposed Project and Alternatives

This chapter provides a detailed description of the Proposed Project, describes the process used to evaluate alternatives to the Proposed Project, and identifies the alternatives that were considered but not advanced into detailed environmental review. This FEIS evaluates the Proposed Project (With-Action Condition), and a No-Action Condition, which serves as a future baseline condition to provide a basis for comparison with the With-Action Condition.

Evaluation of Alternatives

The identification and evaluation of a range of reasonable alternatives to the Proposed Project is a required component of an FEIS under SEQRA and NEPA. This planning process allows decision-makers to consider whether alternatives exist that would avoid or minimize significant adverse environmental impacts while satisfying the goals of the Proposed Project. The alternatives development and screening process for the Proposed Project, summarized below, was based on both the Purpose and Need and the Goals and Objectives, as described in Chapter 1, Introduction.

2012 Staten Island North Shore Alternatives Analysis (SINSAA)

In August 2012, MTA published the SINSAA, which assessed the implementation of new or enhanced transit service along the North and West Shores of Staten Island between West Shore Plaza and St. George Terminal.[1] The SINSAA identified and evaluated eight alternatives representing a mix of modes, routes, alignments and termini, with a desired re-use of the former North Shore Railroad right-of-way for transit service. These "long list alternatives" included:

- Transportation Systems Management (TSM)
- Heavy Rail along the Staten Island Railway (SIR) – St. George to Arlington
- Electric Light Rail (LRT) – St. George to Arlington
- Diesel Light Rail (DLRT) – St. George to Arlington

[1] http://web.mta.info/mta/planning/nsaa/pdfs/FinalReport.pdf

- Electric Light Rail (LRT) – St. George to West Shore Plaza
- Diesel Light Rail (DLRT) – St. George to West Shore Plaza
- Bus Rapid Transit (BRT) – St. George to West Shore Plaza
- Ferry/Water Taxi – Kill Van Kull from St. George Terminal to Mariners Harbor

The three alternatives terminating in Arlington were screened out as they were less successful in improving mobility and transit access than those alternatives that provided a one-seat ride to West Shore Plaza. Of the two rail options providing service to West Shore Plaza (LRT and DLRT), the diesel light rail alternative was not advanced due to higher operating and maintenance costs and greater potential for air quality impacts as compared to LRT. The Ferry/Water Taxi alternative was fatally flawed due to the limited improvement in mobility and low levels of public benefit that it would provide. Accordingly, three of the eight alternatives were advanced and further developed as part of a "short list," including:

- **Transportation Systems Management (TSM)**

  This baseline option, which was required by the FTA at the time of the analysis, emphasized low-cost bus transit improvements such as signalization and intersection improvements, minor road widening, short segments of on-street dedicated bus lanes, shortened bus headways, and bus route restructuring.

- **Electric Light Rail (LRT) - St. George to West Shore Plaza**

  This alternative included LRT service on two new tracks that would extend west along the former North Shore Railroad right-of-way from the existing St. George Terminal to Arlington, and then along South Avenue to a new terminus at West Shore Plaza. The alternative would also require a new, dedicated LRT maintenance facility.

- **Bus Rapid Transit (BRT) - St. George to West Shore Plaza**

  This alternative included BRT service on a new dedicated busway that would extend west along the former North Shore Railroad ROW from the existing St. George Terminal to Arlington, and then in mixed traffic along South Avenue to a new terminus at West Shore Plaza. Some local bus services would become feeder routes by accessing the busway via ramps at Bard Avenue and Alaska Street.

The details and results of the short list evaluation are contained in the SINSAA (http://web.mta.info/mta/planning/nsaa/pdfs/FinalReport.pdf). Ultimately, after extensive analysis as well as stakeholder and public outreach, the SINSAA identified the BRT Alternative as the Preferred Alternative based on its potential to reduce travel time, improve transit access, and attract the most riders with lower capital and operating costs than the LRT Alternative. The TSM Alternative was not advanced because it was determined to be the least effective in terms of improving mobility and meeting the project goals and objectives.

St. George Terminal Access Evaluation

As documented in the SINSAA, the proposed St. George BRT terminal station was originally planned to be situated just west and north of the St. George Terminal on a former surface parking lot, providing convenient pedestrian access between the two facilities. However, since the publication of the SINSAA in 2012, the portion of St. George near St. George Terminal has undergone significant changes. The construction of the Empire Outlets and the former New York Wheel parking garage, as well as resiliency-related infrastructure measures, have complicated access between Nicholas Street and St. George Terminal, precluding the proposed St. George BRT terminal as originally planned during SINSAA. These changes created the need to revisit transit access to a terminal station at St. George, as well as that station's configuration.

Based on these considerations, in November 2018, MTA completed the St. George Terminal Access Evaluation, which reconsidered transit access to the St. George Terminal in the area east of Jersey Street as well as access, configuration, and operation of a BRT terminal station. Access and terminal layout alternatives were developed and evaluated so that the best-performing option could be included as part of an updated transit alternative in a supplement to the SINSAA (described in the following subsection).

After discussions with NYCDOT (owner of St. George Terminal), review of existing construction plans, field observations along the Staten Island Railway (SIR) and the former North Shore Railroad ROW, and an assessment of on-the-ground conditions, a set of conceptual alternative access options was developed for the BRT between Jersey Street and St. George Terminal. These options considered access via Richmond Terrace, the former North Shore Railroad ROW, and Bank Street. Each access option advanced the original principles of the recommended BRT Alternative from the 2012 SINSAA, which included a one-seat ride from West Shore Plaza, the provision of sufficient passenger and bus lay-over areas to support the planned headways, the use of dedicated ROW to the maximum extent possible, and the siting of the BRT terminal at or near the St. George Ferry Terminal. Physical feasibility, institutional feasibility, and effectiveness in meeting the SINSAA goals and objectives were also considered in this evaluation.

Concepts for seven options were developed and reviewed as part of a first-level screening effort. These varied from "low" concepts, which would operate entirely beneath existing structures such as the former New York Wheel Garage, existing Empire Outlets and active Ferry Terminal properties (Options 1 and 2), to hybrid "high/low" concepts using a combination of surface roadways (e.g., Richmond Terrace and Bank Street) along with SIR right-of-way beneath the existing structures (Options 3 and 4). Option 5 was a "low/high" option that would use the former North Shore Railroad ROW before transitioning to Richmond Terrace at the former New York Wheel Garage. Options 6 and 7 were "high" options that would include eastbound and westbound exclusive BRT lanes (Option 6) or a single reversible lane (Option 7) along Richmond Terrace to access the St. George

Terminal via a new exclusive ramp. Full descriptions and features of each option and a comparative matrix are provided in Appendix B, St. George Access Evaluation.

In consultation with the New York City Department of Transportation, it was determined that alignments that travelled beneath St. George Terminal and its associated retail corridor were not feasible, primarily due to Maritime Transportation Security Act (MARSEC) restrictions and, to a lesser extent, the inability to relocate critical NYCDOT equipment and/or facilities. Similarly, options that impacted the existing Staten Island September 11 Memorial and access to the Staten Island University Hospital (SIUH) Community Park were flawed and thus were not advanced. After significant coordination among agency and elected officials and consideration of MTA operational requirements, Option 5, which would use a combination of former North Shore Railroad ROW and Richmond Terrace, was selected for inclusion in a Supplement to the 2012 SINSAA as the updated BRT alternative.

Supplement to the 2012 SINSAA

In light of the changes described above, MTA prepared a Supplement to the 2012 SINSAA ("the Supplement"), which was published in June 2019.[2] The Supplement focused on the two alternatives that were shortlisted in the 2012 SINSAA (BRT and LRT). The TSM alternative was not included because it was screened out in the SINSAA and it is no longer required by the FTA. Because the common alignment for the updated BRT and LRT alternatives west of Nicholas Street had not changed since the completion of the SINSAA, the focus of the updated analyses was in St. George.[3] The Supplement reevaluated the accessibility of the BRT and LRT alternatives to St. George Terminal and re-evaluated those alternatives against the Proposed Project's goals and objectives. The evaluation confirmed the feasibility of both alternatives and their ability to serve a terminal station at St. George with a new, dedicated ROW transit facility. A full description of the updated BRT and LRT alternatives is provided in Appendix C. A brief summary of each updated alternative follows.

» 2019 Updated Bus Rapid Transit (BRT) Alternative

This alternative would operate on a dedicated busway using the former North Shore Railroad ROW to Nicholas Street, where a new exclusive bus ramp would be constructed to access Richmond Terrace. On Richmond

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[2] MTA. Staten Island North Shore Alternatives Analysis Supplement Considering St. George Transit Access Options. Available at https://new.mta.info/sites/default/files/2019-06/FINAL%20Staten%20Island%20North%20Shore%20Alternatives%20Analysis%20Supplement.pdf. Accessed June 4, 2023.

[3] For the Supplement, MTA-NYCT prepared updated estimated order of magnitude operations and maintenance and construction costs for the updated LRT and BRT alternatives along with the identification of potential environmental, community, as well as institutional issues and impacts.

Terrace, the BRT would run in a dedicated center running two-lane busway to the existing bus deck at St. George Terminal. The BRT Alternative would result in varying street geometry changes in this section, including reduced sidewalk widths, the loss of parking and the preclusion of a potential bicycle lane.

» **2019 Updated Electric Light Rail Transit (LRT) Alternative**

The updated LRT Alternative would use former North Shore Railroad and SIR rights-of-way to access St. George Terminal. Pedestrian access to the ferry terminal itself would be through the SIR terminal level. Modifications and/or relocations to several structural columns for Empire Outlets and the NYCDOT bus deck/ramp would be required to facilitate access to the terminal. Additionally, this alternative would require the removal of SIR Tracks 10, 11, and 12. While Tracks 11 and 12 are not used for revenue service the elimination of this track infrastructure may impact SIR non-revenue operations. Additionally, existing SIR revenue service would be impacted by the elimination of SIR Track 10 and the relocation of a wye track, as well as a loss of SIR equipment storage and materials capacity.[4] This alternative would require a new LRT-only maintenance facility.

Despite a slightly greater travel time and some impacts to Richmond Terrace, the BRT Alternative still provided greater potential to attract transit riders at a lower cost than the LRT Alternative. The updated LRT Alternative was not advanced into detailed analysis due to its high capital cost, incompatibility with SIR operations, and the extensive structural modifications to existing facilities required to facilitate the operation of the LRT. Consistent with the 2012 SINSAA, the BRT Alternative remained the higher rated alternative.

The BRT Alternative was presented as the recommended alternative at a public meeting held at the Snug Harbor Cultural Center on May 8, 2019. The alternatives analysis concluded in June 2019 with the publication of the Supplement, officially known as the *Staten Island North Shore Alternatives Analysis Supplement Considering St. George Transit Access Options* (June 3, 2019). After considering feedback received at this meeting and from the public and local elected officials, along with the analyses presented in the SINSAA and the Supplement, MTA reconfirmed the BRT Alternative as the preferred alternative for new transit service on the North Shore. As such, the BRT Alternative was deemed viable to be carried forward in this FEIS for detailed analysis and is referenced as the Proposed Project.

No-Action Alternative

SEQRA and CEQR both require the evaluation of a no-action alternative (known in CEQR as the No-Action Condition). This alternative serves as a baseline against

[4] A wye track is a triangular track arrangement typically located at the end of a rail line that provides the ability for a railroad to turn a train around

which the environmental effects of a proposed project can be compared. The No-Action Alternative is evaluated for a future year in which the project would be fully operational, referred to as the "build year." For the Proposed Project, the build year is 2035, when the new transit system is planned to be complete and operating. The No-Action Alternative would incorporate development and projects that can reasonably be expected to be in place at that time. These include known planned and future proposed developments identified in **Chapter 3, Land Use, Zoning and Public Policy,** as well as traffic improvements anticipated to be in place by 2035 (see **Chapter 15, Transportation**).

Under the No-Action Alternative, the Proposed Project would not be implemented, and the existing former North Shore Railroad right-of-way would remain abandoned and unimproved. Bus service on local streets would continue to operate at existing levels on a constrained roadway network, adding to existing congestion, delay, and lack of reliable transit options as the North and West Shores continue to grow. Without the Proposed Project in place, the ability to add enhanced public transit capacity to meet growing demand would be severely hindered. Moreover, there are no other plans to realize the opportunities afforded by the presence of a separate and dedicated transit ROW. As such, the No-Action Condition would fail to meet the purpose and need of the Proposed Project.

Proposed Project

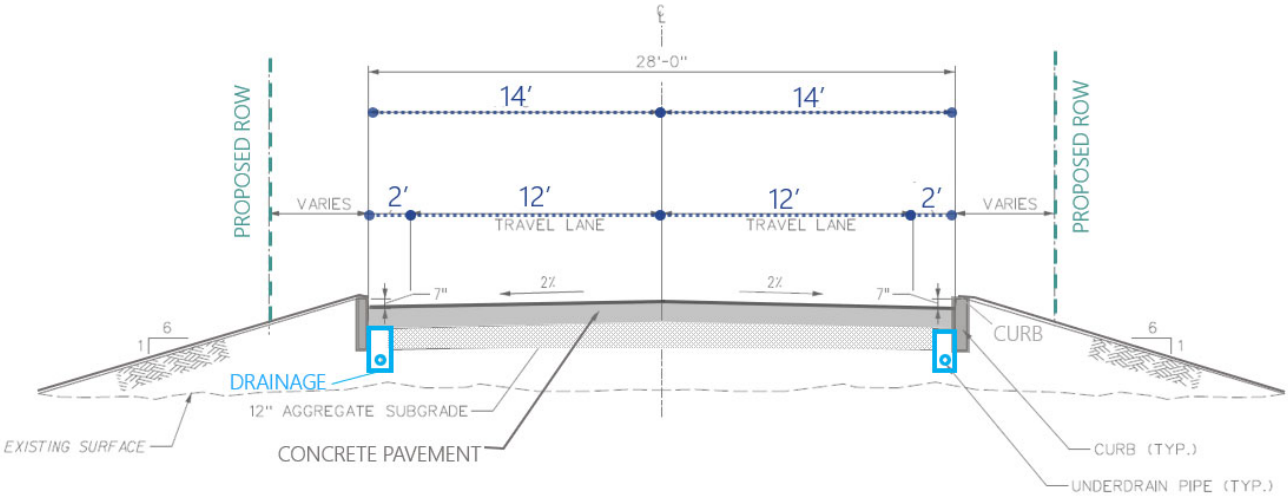
Project Overview

The Proposed Project would implement new BRT service between West Shore Plaza and St. George Terminal. The approximately 8-mile alignment would comprise approximately 4.8 miles of right-of-way from the former North Shore Railroad, and a total of 3.2 miles of City streets such as Richmond Terrace (0.5 miles) and South Avenue (2.7 miles). An overview of the proposed alignment is provided below, followed by a general description of stations as well as the Proposed Project's operating plan and ridership forecast. A more detailed description of the alignment and associated project elements is provided for each section, beginning in St. George and moving west towards West Shore Plaza.

As noted in **Chapter 1, Introduction**, the proposed alignment includes at-grade, elevated viaduct, and below-grade open-cut sections, with street-running portions along South Avenue and an exclusive two-lane median busway on Richmond Terrace. On the portion of the proposed alignment that uses the former North Shore Railroad right-of-way, BRT service would operate within a two-lane, dedicated busway with the potential for passing lanes at certain stations. A typical busway cross section is shown in **Figure 2-1**. Access to the proposed busway would be provided at four locations: in Arlington, at Bard Avenue, at an extended Alaska Street, and at Nicholas Street. Life safety service providers would also be able to utilize these access points to gain access to the

busway in an emergency situation.[5] For additional project design details, refer to the design drawings and Basis of Design Report contained in Appendices D and E.

Figure 2-1 Typical BRT At-Grade Cross Section



The North Shore Railroad right-of-way and the affected streets are under City ownership. However, in several locations the acquisition of additional right-of-way would be required to accommodate the proposed busway and/or stations. Refer to Chapters 3, Land Use, Zoning and Public Policy, and 4, Socioeconomic Conditions, for specific details on acquisitions and relocations to facilitate the Proposed Project.

Given the varied nature of the right-of-way infrastructure, a combination of drainage components would be provided to manage stormwater runoff from the proposed busway and ancillary facilities such as stations and park and ride surface lots. On South Avenue and Richmond Terrace where the BRT would operate on existing City streets, existing street drainage to New York City Department of Environmental Protection (NYCDEP) storm sewers would be maintained. In inland areas where there are no existing connections to NYCDEP storm sewers, stormwater linear infiltration systems and/or detention facilities systems would be provided as appropriate. As described in Appendix E, Basis of Design Report, the drainage system in inland areas would use linear infiltration low-head chambers along with Type I catch basins, pre-cast manholes and ductile piping. Along the viaduct, stormwater runoff would continue to discharge to existing stormwater connections within the viaduct structure to a linear

[5] Minimum vertical clearance between the top of pavement and overhead structures is 14'-6". Based on coordination with NYCT emergency vehicle access was assumed for NYPD and ambulances only with DSNY garbage trucks for snow plowing operations. Per NYCDOT, NYCDDC standards, the conceptual design utilized AASHTO SU-4 as the design vehicle to accommodate turning clearances for both emergency and snow plowing needs.

infiltration system spaced beneath the existing viaduct structure. Near the waterfront in the vicinity of Alaska Street, the runoff from the viaduct would be directed to hydrodynamic separators prior to discharge into the Kill Van Kull. In areas where the proposed alignment is near the shoreline, runoff would be directed to a hydrodynamic separator for treatment before being discharged into the Kill Van Kull. A total of 12 new outfalls are proposed beginning at the Port Richmond viaduct and extending to the Nicholas Street ramp at Richmond Terrace (refer to **Chapter 10, Natural Resources** for discharge permitting requirements). The drainage design would comply with applicable local, state and federal requirements for water quality, treatment and flow reduction/detainment (see Basis of Design Report contained in **Appendix E** and **Chapter 12, Water and Sewer Infrastructure**.

Station Summary

The proposed BRT service would re-purpose and utilize the existing taxi stand on the bus deck of the St. George Terminal as its eastern terminus and the existing West Shore Plaza shopping center as the western terminus. In between these termini, seven new BRT stations, with amenities such as platforms and shelters, and three existing, on-street South Avenue stops would be served (**Figure 2-2** and **Table 2-1**). Commuter parking lots would be provided at the proposed Livingston and Arlington stations and at West Shore Plaza. A passenger pick-up/drop-off and taxi staging area would also be provided at Arlington Station.

Figure 2-2 Proposed Station Types and Locations

Table 2-1 Proposed Stations by Section

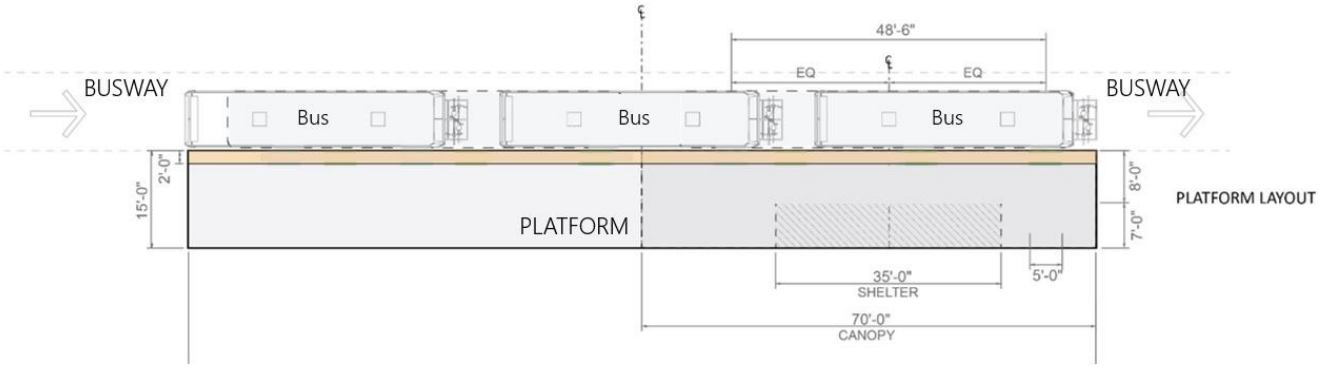
Proposed Alignment Section	Station Name	Location	Station Characteristics
St. George	St. George Terminal	Existing taxi stand on bus deck at St. George Terminal	Terminus (Eastern)
New Brighton Waterfront	New Brighton Station	Richmond Terrace between Clinton Avenue and Tysen Street	Side platforms; sloped walkway; pedestrian overpass; elevators (one per platform) and stairs
	Livingston Station	Richmond Terrace between Davis and Bard Avenues	At-grade; side platforms; passing lanes; approximately 72-space park and ride facility; dedicated spaces (45) for Con Ed parking; space reserved for Con Ed equipment set down area; elevators (one per platform); stairs; pedestrian overpass
West Brighton Waterfront	West Brighton Station	North Burgher Avenue and Richmond Terrace	At-grade; side platforms; elevators (one per platform); stairs; sloped walkway; pedestrian overpass
Viaduct	Port Richmond Station	Port Richmond Avenue between Park and Maple Avenues	Elevated viaduct; offset side platforms; station access from Port Richmond Avenue; elevators (one per platform); stairs
Open-Cut Section	Elm Park/Morningstar Road Station	Morningstar Road	Below-grade open-cut; side platforms; station access from Easton Place, Newark Avenue and Morningstar Road; elevators (one per platform); stairs; sloped walkway
	Mariner's Harbor Station	Between Van Name and Van Pelt Avenues	Below grade open-cut; staggered side platforms; station access from Van Name and Van Pelt Avenues; eastbound station entrance/drop-off area on Heusden Street; elevators (one per platform); stairs
Arlington Station	Arlington Station	West of South Avenue at Brabant Street	At-grade; side platforms; pick-up/drop-off area off South Avenue; 71-space park-and-ride facility; provides layover space and facility; elevators (one per platform); stairs; pedestrian overpass

Table 2-1 Proposed Stations by Section

Proposed Alignment Section	Station Name	Location	Station Characteristics
South Avenue	Forest Avenue	South Avenue and Forest Avenue	On-street stops
	Goethals Road	South Avenue and Goethals Road North	
	Teleport	South Avenue and Teleport Drive	
	West Shore Plaza	Existing West Shore Plaza parking lot	Terminus (Western); 100-space park-and-ride facility

Stations would feature two side platforms (one in the eastbound and one in the westbound direction) that would be approximately 140 feet in length to accommodate three 40-foot standard length buses and buffer zones, as shown in Figure 2-3. This platform length would enable up to three buses to be loaded from six points of entry along the platform. Platform height would be approximately 16 inches above the ground to allow for level boarding. Platforms would be approximately 15 feet wide, except at the proposed Port Richmond Station, where the width of the existing viaduct structure would limit the platform width to 12 feet. At each station, an approximately 70-foot-long canopy would be provided in order to cover the boarding areas of two standard buses; an approximately 35-foot shelter with seating would be centered along the canopy. Stations would be fully compliant with the Americans with Disabilities Act (ADA). See Appendices D and E for more details.

Figure 2-3 Bus Door Alignment, Platform, and Shelter Sizing



The seven proposed new BRT stations would be accessed via a combination of stairs, ADA-compliant ramps, and elevators, as noted above in Table 2-1. Stations stops along South Avenue, where the BRT bus would operate with traffic in non-separated lanes, would be similar to existing curbside transit stops on Staten Island (i.e., pole-mounted signage, no platforms or shelters).

Pedestrian overpasses would be provided at the Arlington, Livingston, West Brighton, and New Brighton stations. At these stations, vertical circulation would be provided by elevators and stairs providing access to the street level and platforms. These vertical circulation elements would connect to the elevated pedestrian overpasses which would allow passengers to safely cross over the proposed busway travel lanes to and from the respective eastbound and westbound station platforms. The passenger overpasses are provided for these stations to avoid passenger and BRT/bus traffic conflicts. The proposed overpasses at Livingston, West Brighton, and New Brighton Station would cross over the proposed busway. At Arlington Station, the pedestrian overpass would connect the station entrance at the proposed pick-up/drop-off area to both respective BRT platforms. The pedestrian overpass would cross over the busway travel lanes within the station footprint. All pedestrian overpasses would provide a minimum of 16 feet vertical clearance from the top of pavement.

Additional elements that would likely be incorporated at stations include lighting, benches, trash receptacles, Closed Circuit TV cameras (CCTV), signage and wayfinding systems. For fare collection, the BRT would accept One Metro New York (OMNY) and off-board coin-receipt payments would also be available. Stations would be branded with a common theme to distinguish the BRT corridor from other NY-metro bus service.

Description of Alignment by Section

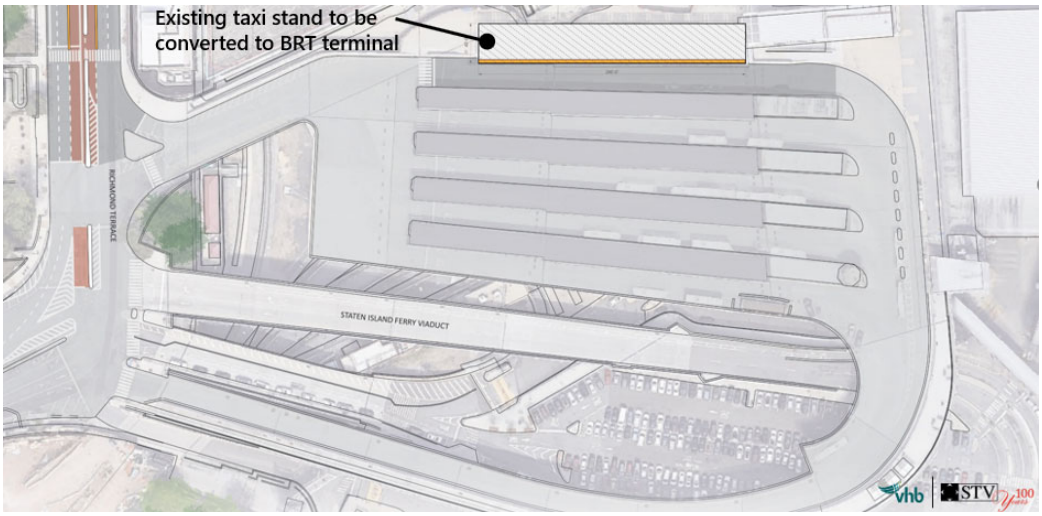
As noted in **Chapter 1, Introduction** and shown in **Figure 2-4**, the proposed alignment was divided into seven sections, each of which is distinct from an engineering standpoint or comprises generally similar land use concentrations. A description of the proposed alignment and associated project elements is provided below for each section, beginning in St. George and moving west towards West Shore Plaza.

Figure 2-4 Section Overview Map

St. George

As described above, the proposed terminal station in St. George would repurpose the existing taxi stand on the bus deck at St. George Terminal for BRT use (see Figure 2-5). It is anticipated that the taxi stand would be relocated to the lower level of St. George Terminal. Traveling westbound, the BRT would enter the busway via the channelized right-turn ramp onto Richmond Terrace.

Figure 2-5 St. George Terminal Station



The proposed alignment extends down Richmond Terrace for approximately 0.5 mile between the St. George Terminal entrance at Bay Street and the intersection of Nicholas Street and Richmond Terrace. A center-running exclusive bus lane would be provided in each direction through this area. Right-of-way for the busway would be obtained by reallocating space from adjacent parking lanes, the existing concrete median, and some existing sidewalk space within the Richmond Terrace right-of-way. Lane configurations for intersection approaches along this stretch of Richmond Terrace would be modified to accommodate the busway. The existing and proposed roadway configurations are described in detail in Chapter 15, Transportation, and shown in Appendix I. Approximately 250 on-street parking spaces would be eliminated along Richmond Terrace between Bay Street and Nicholas Street (with the exception of the 90-degree parking associated with the 120th Precinct on the south side of Richmond Terrace between Wall Street and Hamilton Avenue). A Transit Signal Priority (TSP) system would be implemented at signalized intersections along this part of Richmond Terrace to minimize delay for buses accessing the St. George Terminal. A rendering of the proposed busway on Richmond Terrace is provided in Figure 2-6.

As described in Chapter 3, Land Use, Zoning, and Public Policy, St. George is predominantly characterized by civic land uses that form the governmental core of Staten Island. The proposed alignment would pass Borough Hall and other civic uses, including the NYPD 120th Police Precinct and the Staten Island Family Court facility located on Richmond Terrace between Wall Street and Hamilton Avenue. The current

design concept would require the use of Richmond Terrace from curb to curb. Currently, 120th Precinct emergency response vehicles park in front of the station house and courthouse at a 90-degree angle from the curb occupying a parking lane and a portion of the existing sidewalk.

120th Precinct combat parking on Richmond Terrace

To maintain unobstructed access to Richmond Terrace for NYPD emergency vehicles, the project would be designed to maintain this perpendicular "combat parking" arrangement between Hamilton Avenue and Wall Street while also accommodating the proposed busway on Richmond Terrace (see Figure 2-6). The existing sidewalk on the south side of Richmond Terrace would be reduced in width from 15 to 5 feet in order to preserve the perpendicular parking on this blockfront. This width is the effective clear width of the sidewalk at present, as police vehicles utilize the sidewalk to partially accommodate the combat parking. The precinct's existing landscaped berm/retaining wall and front steps off of Richmond Terrace would be modified and re-oriented to create sufficient space for combat parking. The existing landscaped berm in front of the precinct house would be removed to accommodate a new stair alignment. Similar modifications to the front stairway off of Richmond Terrace would be needed at the adjacent Staten Island Family Court building.

Figure 2-6 120th Police Precinct & Staten Island Family Courthouse Combat Parking on Richmond Terrace

MTA has been coordinating closely with NYPD and an allowance for a minimum of 37 combat parking spots was requested by precinct officials. Aside from the modifications

described above, the precinct and courthouse buildings would not be modified as a result of the Proposed Project. MTA would coordinate closely with NYPD and New York State Unified Court System officials to ensure that the modifications would be staged in such a way as to not disrupt NYPD or courthouse operations.

North Shore Esplanade at Nicholas Street; former New York Wheel Garage access at right

At Nicholas Street, the proposed busway would descend from Richmond Terrace to the former North Shore Railroad right-of-way via a new ramp that would share an intersection with the existing access ramp to the former New York Wheel Garage ramp (see Figure 2-7). As the busway moves off Richmond Terrace, it would cross an approximately 0.12-acre paved area of North Shore Esplanade. The new crossing would be signalized for safety. Refer to Chapter 6, Open Space for additional detail on effects to the esplanade.

Figure 2-7 Proposed Nicholas Street Ramp

The proposed Nicholas Street ramp would be approximately 2,100 feet long and constructed on a combination of retained fill and pile-supported structure to accommodate the difference in grade between Bank Street and Richmond Terrace. The proposed ramp would have a maximum elevation of 25 feet at its highest point. After reaching the bottom of the ramp, the busway would continue westward to Jersey Street in city-owned right-of-way parallel and south of Bank Street. Bank Street would be shifted slightly northward to accommodate the proposed busway. A short retaining

wall would also be constructed east of Westervelt Avenue between the proposed busway and Bank Street to accommodate a differential in grade. A new TSP-enabled signal would be provided at Jersey Street and Bank Street, which would be coordinated with the existing signal at Richmond Terrace and Jersey Street.

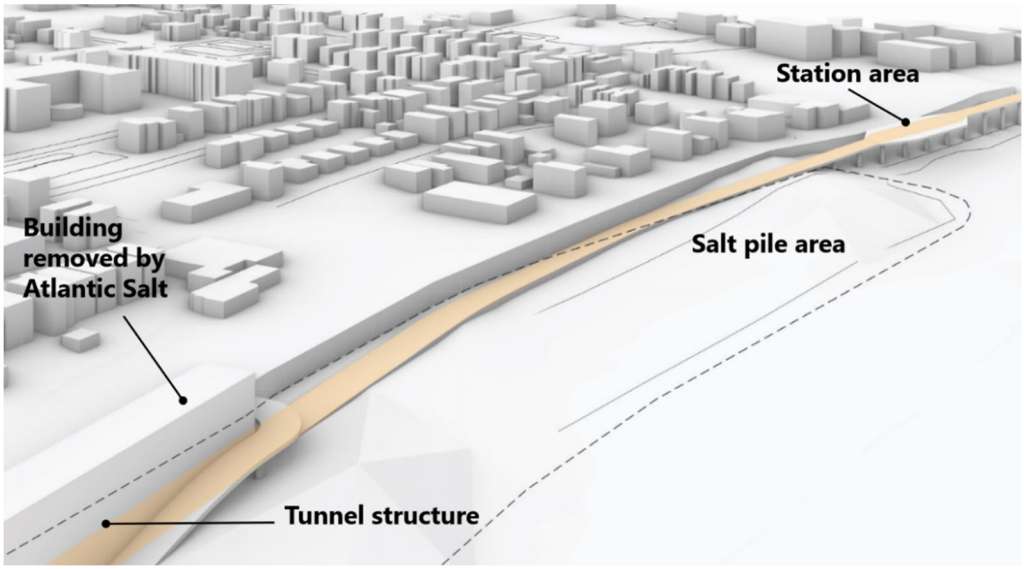
New Brighton Waterfront

Moving west from Jersey Street, the city-owned ROW passes through Atlantic Salt, a marine salt terminal, which extends from Jersey Street to Clinton Avenue. This facility includes a tall brick smokestack ringed with cell phone panels, a tunnel structure, and large piles of salt, some of which are covered with tarps. MTA determined in consultation with Atlantic Salt that a shift in the ROW alignment closer to Richmond Terrace would enable the company to ~~maximize~~ maintain waterfront access ~~and capacity for salt storage, both of~~ which ~~are~~ is essential to its business function. This shift would be accomplished via property discussions (e.g., possible land exchanges) involving the City (owner of the right-of-way), Atlantic Salt (owner of the property adjacent to the right-of-way, and MTA. The exchange is currently expected to comprise an area of approximately 127,000 square feet; the exact dimensions are currently under discussion, and will be refined through the final project design process. Refer to **Chapter 3, Land Use, Zoning, and Public Policy** for additional detail on land exchanges. MTA will continue to coordinate with Atlantic Salt beyond the FEIS during project development phases such as NEPA and Preliminary/Final Design should the project advance.

The existing at-grade tunnel structure on the Atlantic Salt property is located north of and parallel to Richmond Terrace. The tunnel structure, which is currently ~~not~~ used as a garage for the indoor servicing of loaders and supply storage area, lies at dock level and is below the grade of Richmond Terrace. The proposed BRT alignment would travel through the tunnel structure, which is approximately 850 feet in length, with a minimum vertical clearance of approximately 15 feet.[6] After clearing the tunnel, which is approximately 10 feet above sea level, the proposed alignment would ascend slightly toward the proposed New Brighton Station, as shown in **Figure 2-8** below.

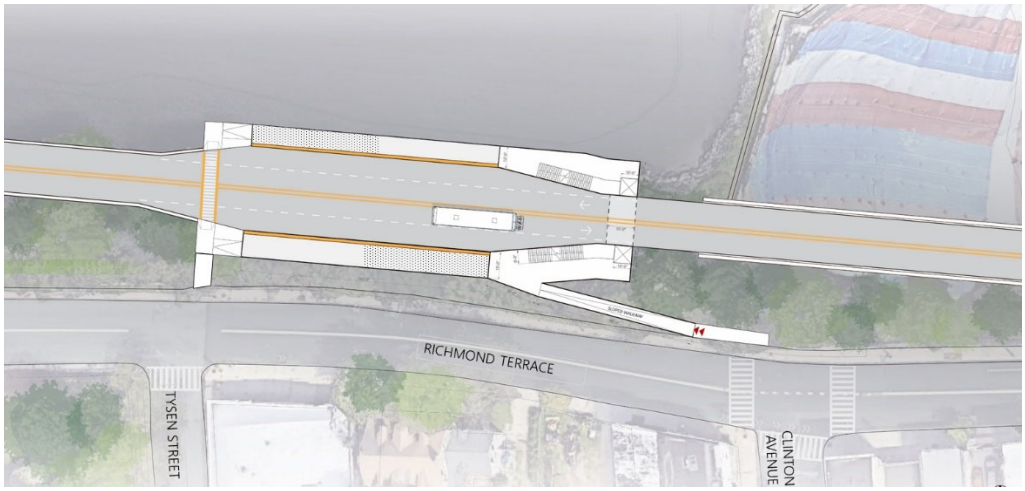
[6] Atlantic Salt has indicated than an existing structural conditions survey was performed for the tunnel structure; however, the receipt of that data is still pending. The tunnel structure is assumed to remain until additional structural conditions data by Atlantic Salt is provided and further evaluation is possible. It is anticipated that the tunnel structure would be included as part of a possible land exchange and would need to be maintained by the City as the expected owner of the right-of-way.

Figure 2-8 Proposed Alignment through Atlantic Salt



The proposed New Brighton Station would be located just west of the Atlantic Salt property, fronting Richmond Terrace between Tysen Street and Clinton Avenue. A new pedestrian crossing with a pedestrian signal would be provided to allow safe pedestrian access to and from the proposed station. The station would be generally parallel to Richmond Terrace as a result of the geometry required for the elevated busway alignment (Figure 2-9). The station would feature parallel platforms, elevators, stairs, and a pedestrian overpass. A gated crosswalk would be included for emergency egress.

Figure 2-9 New Brighton Station

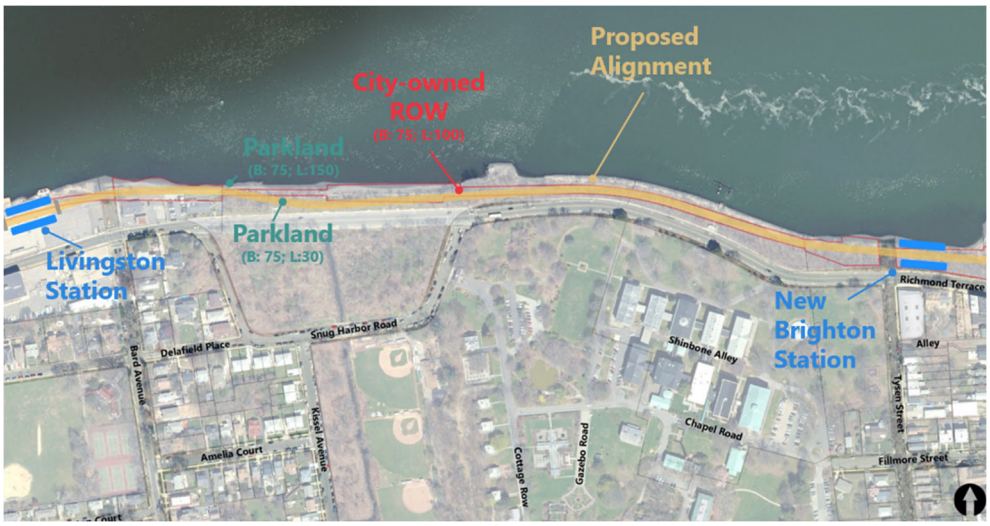


The design flood elevation (DFE) that was established for the proposed alignment accounted for location-specific base flood elevations (BFE) including sea-level rise and freeboard. The DFE for the busway design is also consistent with New York City Transit's Flood Resiliency Design Guidelines (DG 312). In the area through Snug Harbor

spanning from Bard to Clinton Avenues through Snug Harbor the BFE was determined to be 14 feet due to adjacent 100-year flood zones. An additional 2 feet was added BFE to account for sea-level rise, wave action and other hydrological effects. As such, the DFE for the Proposed Project was established at 16 feet.[7]

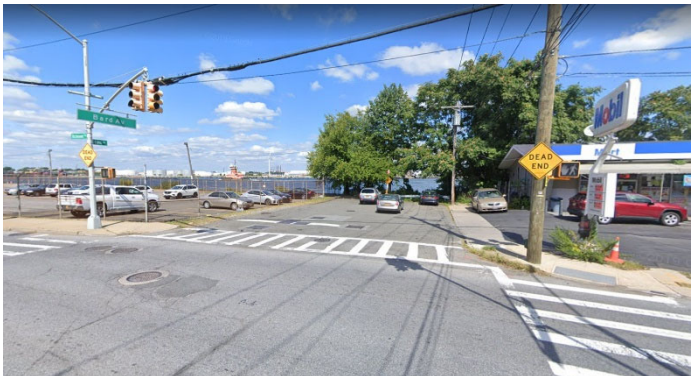
Through Snug Harbor, the Proposed Project would involve the construction of an elevated busway primarily within the existing ROW just north of Richmond Terrace as shown in Figure 2-11. This option would deviate from the existing ROW at the eastern end of Snug Harbor Road. The busway in this area would extend approximately 2,770 feet from the proposed New Brighton Station to just east of Bard Avenue and would reach its highest elevation (approximately 36 feet above seal level) at mid-span just east of Snug Harbor Road and west of the Snug Harbor gatehouse and overlook. Ramps at both ends of the busway would be constructed on fill contained by a retaining wall before transitioning to a bridge structure. The busway deck would be reinforced concrete supported on concrete girders, resting on a reinforced substructure founded on piles.

Figure 2-11 Proposed Alignment Through Snug Harbor



While the busway would primarily utilize city-owned right-of-way, the alignment through this area would require the conversion of approximately 0.36 acre of existing parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to right-of-way. The elevated busway would be constructed on piers, and pedestrians would still be able to access the waterfront at Snug Harbor by crossing under the busway. MTA would continue to coordinate closely with NYC Parks to minimize the use of parkland and to implement design measures that would make the busway more compatible with the adjacent park use. If the final design for the Proposed Project requires the conversion of parkland, the adoption of parkland alienation legislation would be required (see Chapter 6, Open Space).

[7] VHB/STV. Draft Basis of Design Report CM-0143 Environmental and Engineering Services for the Staten Island North Shore Bus Rapid Transit System. June 16, 2023. p.128



Intersection of Bard Avenue and Richmond Terrace; proposed site of Livingston Station to the left; gas station at right

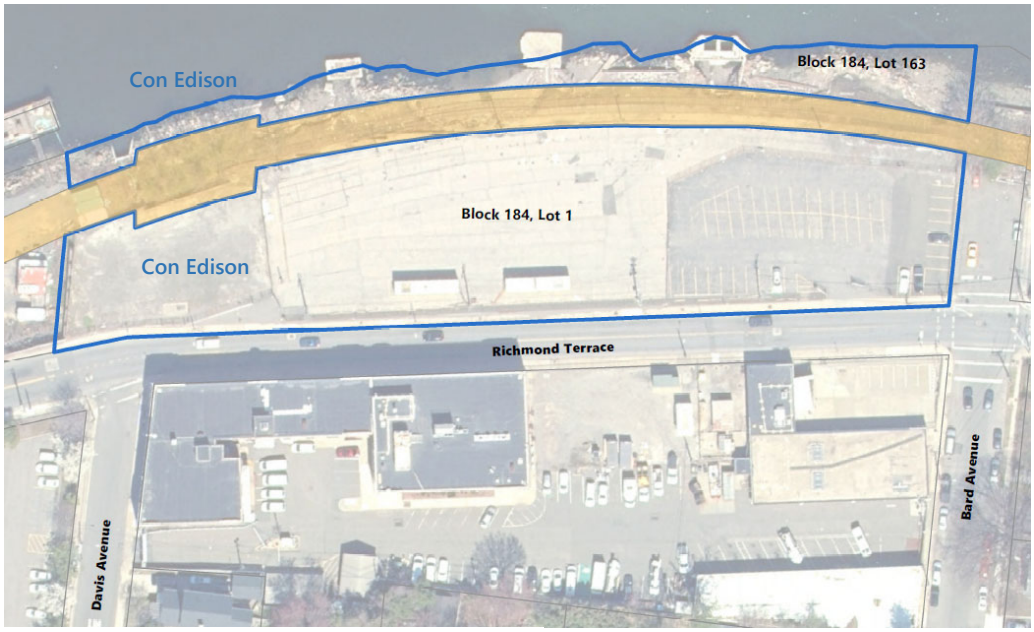
West of Snug Harbor, before entering Livingston Station, the proposed alignment would pass behind a restaurant and a gas station on the east corner of Richmond Terrace and Bard Avenue. Retaining walls would be constructed on the gas station property; however, these walls would not affect the gas station access or function. Similarly, access to and the function of the restaurant would be preserved.

At Bard Avenue, a busway entrance would be provided to allow local feeder bus routes to enter it. This entrance would be controlled by a gate that can be opened by a signal from bus drivers. The entrance would be stop controlled for buses turning onto the busway and no signals would be required at this location.

A one-block section from Bard Avenue to Davis Avenue that currently contains a Con Edison surface parking lot would be developed for the proposed Livingston Station. As shown in **Figure 2-13**, the city-owned ROW transects the parking lot, which includes two parcels to the north and south of the right-of-way under Con Edison ownership. This lot is used for customer parking for Con Edison's Davis Avenue facility, storage for mobile emergency generators, and as an emergency staging area to park equipment prior to field deployment. Based on coordination with Con Edison, MTA has configured the proposed Livingston Station in such a way as to accommodate the continuation of these uses with the project in place.

As shown in **Figure 2-14**, the proposed station layout would preserve about 45 Con Edison customer parking spaces and provide sufficient space for the mobile emergency generators.

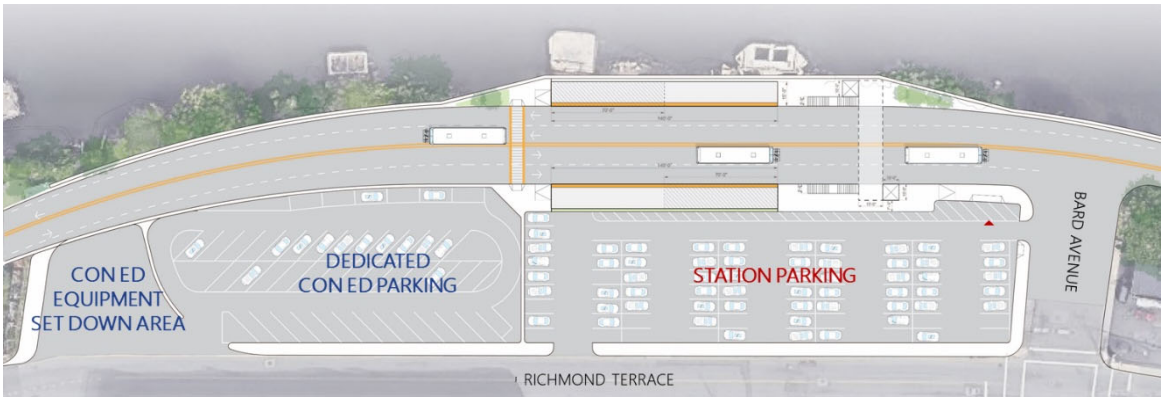
Figure 2-13 Existing Property Ownership at Livingston Station



Source(s): MapPLUTO; ESRI Data

The proposed station would include two parallel platforms that would each be 15 feet wide and 140 feet long. The proposed busway through the station area would feature a four-lane configuration to allow for one passing lane in each direction. The station would also include an approximately 72-space park-and-ride facility with a drop-off area along the eastbound platform.

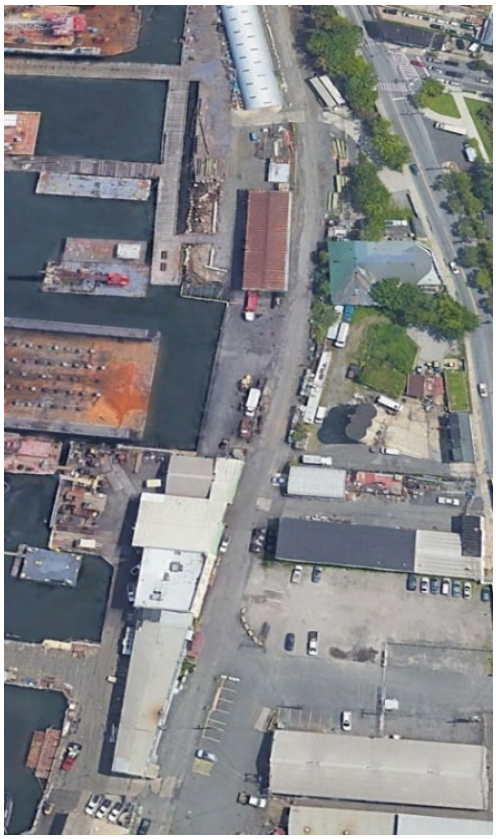
Figure 2-14 Livingston Station



Pedestrian connectivity would be provided to and from Richmond Terrace via a sidewalk. Elevators and stairs would be placed on the east end of both platforms to provide vertical circulation. These elements would be connected to a pedestrian overpass that would allow safe access across the busway to and from the westbound platform. In order to maintain two means of egress, ramps to a gated crosswalk would be placed on the western end of each platform for emergency use.

West Brighton Waterfront

West of Livingston Station, the proposed alignment would travel through Caddell Dry Dock (Caddell), an active maritime business situated along the Kill Van Kull. The former North Shore Railroad ROW bisects the lots that comprise the Caddell property lengthwise. Currently, the former right-of-way is being used by Caddell as an access road. There are storage and business-related facilities on the upland side of the property and waterfront functions that are segmented by the right-of-way. As with Atlantic Salt, a shift in alignment via property discussions (e.g., possible property exchanges) with the City would enable Caddell to maximize waterfront access for their business functions while enabling the proposed busway to be shifted inland closer to Richmond Terrace, bringing the alignment closer to potential customers.



Aerial view of right-of-way through Caddell Dry Dock

MTA has developed a proposed alignment through the facility in consultation with Caddell (see **Figure 2-15**). The exact location and dimensions of the property to be exchanged are under discussion and will be refined through the final design process. The exchange is expected to comprise about 106,700 square feet, with no net loss of land area for Caddell. Approximately 25,000 square feet of building floor space would be eliminated, including administrative office space, a locker room, and two additional buildings (see **Chapter 3, Land Use, Zoning and Public Policy**, and **4, Socioeconomic Conditions**). MTA will continue to coordinate with Caddell beyond the FEIS during project development phases such as NEPA and Preliminary/Final Design should project advance.

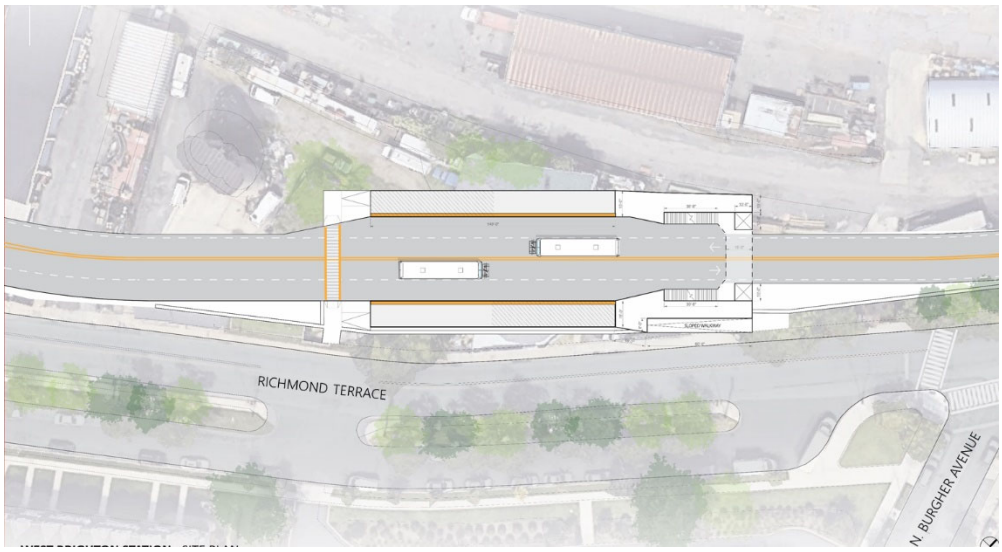
Active crossings that provide access to Caddell Dry Dock from Richmond Terrace would be maintained and improved in two locations. Near Elizabeth Avenue, there would be a new signal and crosswalk providing access across the proposed busway between the northern and southern portions of the Caddell property. At the entrance to Caddell Drydock at Broadway, a new signal and crosswalk would provide access across the busway (see **Figure 2-16**). **Chapter 15, Transportation**, provides additional detail regarding signal controls.

Figure 2-15 Proposed Alignment through Caddell Dry Dock

Figure 2-16 Crossings at Caddell Dry Dock

The West Brighton Station would be along Richmond Terrace just west of North Burgher Avenue, which has an existing traffic signal and pedestrian crossing. The proposed station would displace two businesses (Quinlan Oil and Twin Power Supermarket and Restaurant Equipment), as noted in Chapter 4, Socioeconomic Conditions. The proposed station design would implement efficient pedestrian and passenger circulation to and from the platforms. A sloped walkway to connect pedestrians to and from Richmond Terrace would be provided. At the east end of each platform, elevators and stairs would connect to a pedestrian overpass. A gated crosswalk would be provided at the west end of the platforms for secondary egress and emergency access.

Figure 2-17 West Brighton Station



Exiting the west end of the Caddell Dry Dock property, the proposed alignment would pass immediately south of Heritage Park. MTA would work with NYC Parks to maintain vehicle and pedestrian access between Richmond Terrace and the waterfront parcel on the north side of the right-of-way. While the project would not require the use of designated parkland, the proposed busway would cross a park access road and would displace one of the two parking lots serving the park. This portion of the access road and the parking lot are located partially within the existing former North Shore Railroad right-of-way and are not fully contained within the mapped parkland. MTA would maintain pedestrian and auto access between the park and the parking lot through traffic and crosswalk signals (see Chapter 15, Transportation). MTA would coordinate with NYC Parks to explore the possibility of replacing the eight displaced surface parking spaces (currently located in the existing North Shore Railroad right-of-way) in another location. NYC Parks has emphasized the importance of maintaining safe access to the park; further discussions as to how to integrate the right-of-way with the park setting would occur in the future as design plans advance (see Chapter 6, Open Space).

At Alaska Street, a new curb cut on Richmond Terrace would be installed to allow local feeder bus routes and emergency service providers to enter the busway. The access from Richmond Terrace extending to the proposed busway would occur on MTA-owned property and would be controlled with a stop sign on the proposed ramp approaches at its intersection with Richmond Terrace and the proposed busway.

The busway's elevation throughout this section is generally 6 to 12 feet above sea level; thus, it may be subject to flooding from tidal action. In extreme weather or flood events it is anticipated that MTA would decide to temporarily suspend service. Refer to Chapter 17, Greenhouse Gas Emissions and Climate Change and Appendix E for additional detail on resiliency. The New York State Department of Environmental

Conservation (NYSDEC) has indicated that the maintenance of the bulkhead along the North Shore is the responsibility of the respective property owners.

Viaduct

West of Alaska Street, the proposed alignment would ascend to the existing elevated viaduct structure. Completed in 1936, the structure is made of reinforced concrete and is approximately 40 feet wide. There are nine bridges along the length of the viaduct consisting of the Bodine Creek bridge and eight overhead roadway bridges (roadways pass below the viaduct) along the length of the viaduct at Richmond Terrace, Park Avenue, Port Richmond Avenue, Maple Avenue, Faber Avenue, Sharpe Avenue, Treadwell Avenue, and Nicholas Avenue. The existing structure would be rehabilitated to the greatest extent practicable. However, some modifications to the viaduct would be required to accommodate the Proposed Project such as the installation of a new concrete deck to support the busway pavement and the installation of appropriate roadway safety barriers. Since the viaduct was initially constructed to support conventional "heavy-rail" traffic, it is anticipated that the existing structure would support the proposed BRT alignment with modifications and/or rehabilitation. Historically, heavy-rail structures are designed to withstand heavier loads than would be required for a typical BRT system. A detailed physical inspection of the viaduct should be conducted during the project's preliminary engineering phase.

From its starting point west of Alaska Street, the viaduct crosses above the Port Richmond Resource Recovery Facility and Bodine Creek, then shifts slightly inland as it crosses over Richmond Terrace and through the Port Richmond neighborhood. The proposed Port Richmond Station would be located between Maple and Park Avenues, spanning Port Richmond Avenue. The station configuration would be influenced by the existing viaduct structure, with platforms about 200 feet long and 12 feet wide with one BRT lane in each direction. The eastbound and westbound platforms would be staggered to maximize the platform size in the available right-of-way. Stairs, elevators, and a plaza entry would be located on adjacent lots to the northeast and southwest of the viaduct to connect pedestrians to and from the street level (see Figure 2-18). One elevator and stair tower would be situated to provide access to each platform. A gated stair leading back to street level would also be provided on each platform for emergency egress.

Figure 2-18 Port Richmond Station

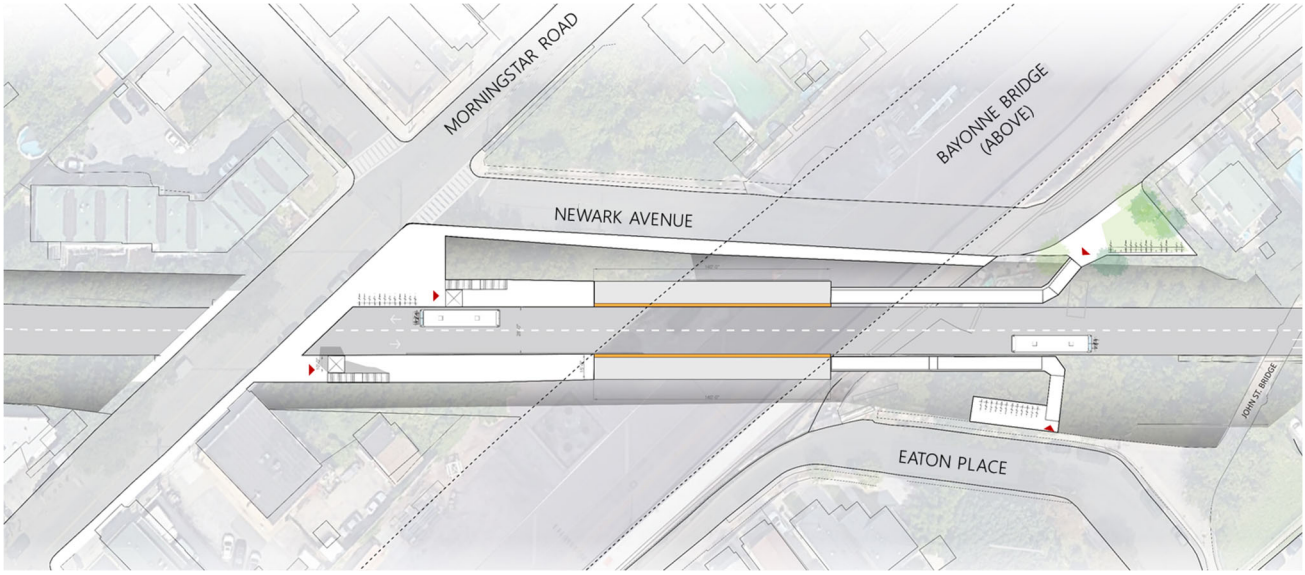
West of Port Richmond Avenue, the viaduct passes through commercial/industrial and residential areas before ending just west of Treadwell Avenue. Here it transitions to an at-grade section, which curves southwest to cross Nicholas Avenue on an overpass and passes north of the Port Richmond High School sports fields before reaching the beginning of the open-cut section.

Open-Cut Section

In the vicinity of John Street, just east of the Bayonne Bridge, the proposed alignment would transition into the open-cut section of the former North Shore Railroad right-of-way. Elm Park/Morningstar Station, the first of two proposed stations in the open-cut section, would be between Morningstar Road and Eaton Place (see Figure 2-19). Part of the proposed station and busway would be between the existing Bayonne Bridge footings. The Bayonne Bridge deck itself is considerably higher than the proposed station and busway.

Because this station would be located approximately 22 feet below the existing street level at Morningstar Road, access to the platforms would be provided via stairs, elevators and sloped walkways to connect pedestrians to and from the street level. Two sets of elevators and stairs (one for the eastbound platform and one for the westbound platform) would be accessed from Morningstar Road. A ramp located on the opposite end of each platform from the elevator and stairs would provide an additional pedestrian connection to the street level. The pedestrian ramp from the westbound platform would connect to a small plaza area off Newark Avenue, and the ramp from the eastbound platform would connect to Eaton Place. Designated bicycle storage areas would be placed at appropriate locations such as along Newark Avenue, Eaton Place, and Morningstar Road.

Figure 2-19 Elm Park/Morningstar Station



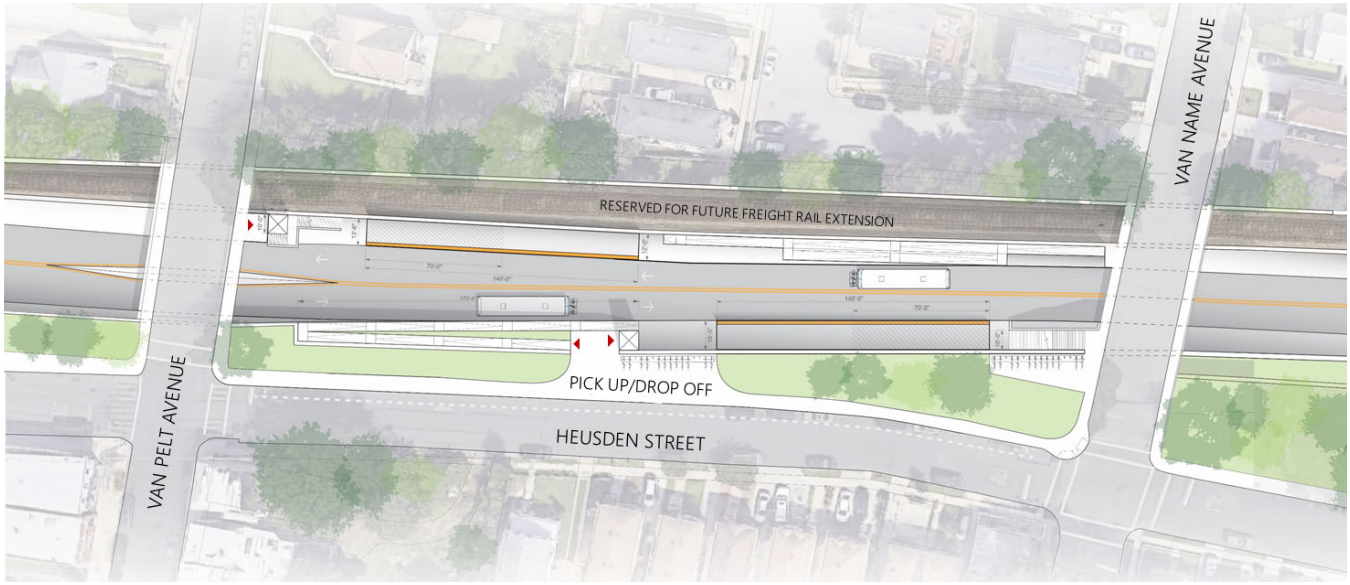
Moving west, the proposed alignment would continue in the open cut, passing beneath a series of bridges at Morningstar Road, Granite Avenue, Lake Avenue, and Simonson Avenue. After passing beneath the Simonson Avenue bridge, the alignment would reach Van Name Avenue, where the eastern edge of the proposed Mariners Harbor Station would be located. This station would be approximately 22 feet below the existing street level at Van Pelt and Van Name Avenues. As shown in **Figure 2-20**, the proposed eastbound and westbound platforms would be staggered to maximize the platform size in the available right-of-way. This configuration would allow for one BRT lane in each direction.

Passenger and pedestrian circulation would be provided from the existing Van Pelt bridge to the westbound platform via an elevator and stairs. To the east, access to both platforms would be provided by two sets of stairs from the Van Name Avenue bridge. A primary access point for the eastbound platform would be from Heusden Street, where a pick-up/drop-off area and new sidewalk would be provided. Access to the eastbound platform from Heusden Street would be provided by an elevator and stairs.

Physical considerations that influenced both the busway lane configuration and the platform placement at the Mariners Harbor Station include the existing Van Name and Van Pelt bridge structures, as well as the Port Authority of New York and New Jersey's (PANYNJ) desire to preserve the ability to extend the existing freight rail track east beyond Union Avenue to Van Name Avenue in the future. This potential freight rail extension, which would occur independent of the Proposed Project, would allow the PANYNJ to achieve efficiency and economies of scale by enabling longer trains to be assembled. Freight rail conditions and operations at Arlington Rail Yard are detailed in **Chapter 15, Transportation;** future plans for Arlington Yard, as described in the PANYNJ's Port Master Plan 2050, are discussed in **Chapter 3, Land Use, Zoning, and**

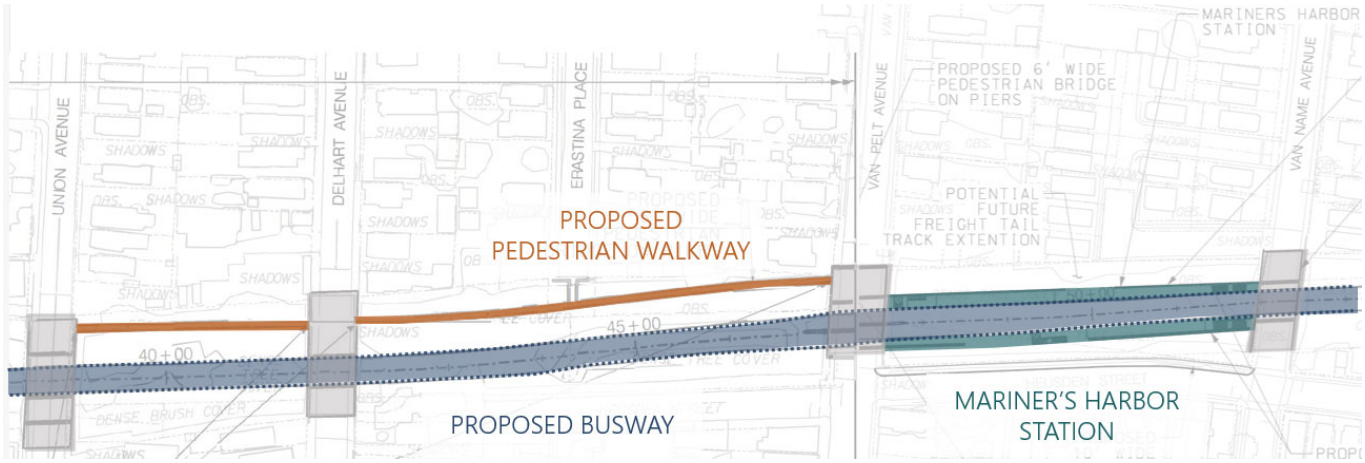
Public Policy. The proposed BRT alignment would not preclude existing or proposed future freight rail operations at Arlington Yard.

Figure 2-20 Mariner's Harbor Station



To provide improved pedestrian connectivity between residential neighborhoods north of the BRT alignment in the vicinity of Erastina Place and Mariner's Harbor Station, a six-foot wide, approximately 760-foot long pedestrian walkway on city-owned property is proposed on the north side of the open cut between Union and DeHart Avenues and Van Pelt Avenue (see Figure 2-21). Two prefabricated steel truss bridges supported by concrete piers would be used to connect with the existing roadway bridges over Union, Dehart, and Van Pelt Avenues.

Figure 2-21 Proposed Erastina Place Walkway



Arlington Station

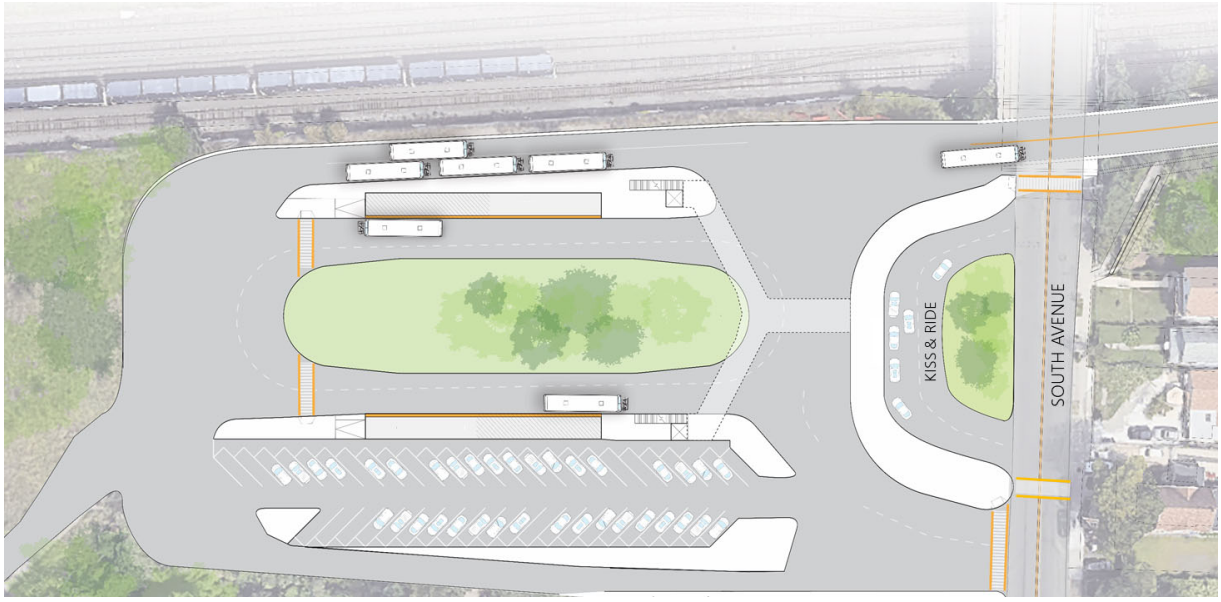
The proposed alignment would continue west under the Harbor Road bridge before shifting slightly south. Near Roxbury Street, the alignment would leave the open cut and rise to grade. To accommodate the proposed busway and to align the busway with the existing South Avenue bridge, Roxbury Street between Lockman and Grandview Avenues would be shifted to the south. As part of this reconfiguration, the width of Roxbury Street would be reduced from approximately 55 feet to 40 feet. The configuration of the roadway would remain similar to the existing condition, maintaining one travel lane in each direction, one parking lane on the east side of the street, and a 10-foot sidewalk on the south side of the street. Two new retaining walls would be constructed on either side of the busway due to the grade differential of approximately 7 feet between Roxbury Street and the existing freight rail tracks. These walls would be topped with 8-foot high fencing to separate the BRT alignment from Roxbury Street and the tracks.

South Avenue Bridge, existing pedestrian walkway and proposed Arlington Station site at left

The proposed alignment would pass beneath the South Avenue bridge, which would be modified to accommodate the busway, and the existing pedestrian walkway adjacent to the South Avenue bridge would be relocated. After crossing under the bridge, the alignment would enter the proposed Arlington Station. A pedestrian overpass would connect the street level to the inbound and outbound BRT platforms, as shown in **Figure 2-22**. Elevators and stairs at the end of the platforms would be provided for connections to the overpass. On the opposite end of the platform would be a gated emergency egress route.

The Arlington Station would function as a layover area for BRT crews. A small crew facility would be at this proposed station. An approximately 71-space surface parking area would be south of the eastbound platform. A pick-up/drop-off and taxi area would be provided off South Avenue. New curb cuts would be required on South Avenue to access both the station, the busway, and the proposed pick-up/drop-off area. As noted in **Chapter 3, Land Use, Zoning, and Public Policy**, the proposed station would be situated on portions of three lots that currently contain undeveloped land, a surface lot associated with a trucking facility, and a Con Ed substation facility. The substation would not be displaced by the project.

Figure 2-22 Arlington Station



South Avenue

Coming out of Arlington Station, the proposed BRT route would access South Avenue from a driveway located just north of Brabant Street. The proposed BRT would operate in mixed traffic within general travel (non-separated) lanes along South Avenue in the same manner as a regular bus. Accordingly, there would be no modifications required along this 2.7-mile section of South Avenue. Three on-street BRT stops would be located on South Avenue at Forest Avenue, Goethals Road North, and Teleport Drive. These stops would be similar to the existing curbside bus stops on South Avenue. As such, platforms and other station infrastructure are not proposed for the three South Avenue stops.

West Shore Plaza would function as the western terminus of the Proposed Project. Currently, West Shore Plaza is used by MTA as a station and for layover space and to turn buses. While the West Shore Plaza terminus may be improved and/or reconfigured as part of the Proposed Project, facilities and operations at this location would be functionally similar to those that exist now. Parking for 100 vehicles would be provided at the existing West Shore Plaza surface parking lot.

Proposed BRT Service Plan

An operating plan describes how a particular transit service is to be provided. Information contained in an operating plan typically includes the type of route operated, the frequency, travel time, and stations served. The operating plan for the Proposed Project is described below.

BRT service under the Proposed Project would be provided on two routes, the S1 and S2. Each would utilize a fully electric-powered fleet. It is anticipated that existing NYCT

bus depots on Staten Island with available capacity such as Castleton Depot would be utilized for the storage, inspection, and maintenance of the BRT fleet.

The S1 would operate in the busway between St. George Terminal and the proposed Arlington Station before entering into mixed traffic on South Avenue to West Shore Plaza. This route would create connectivity between West Shore Plaza, communities along the route, and the St. George Terminal. The average running time is estimated at 25 minutes. Proposed stops are as follows:

- Eastern Terminus: St. George Terminal
- Seven busway stations: New Brighton, Livingston Station, West Brighton, Port Richmond, Elm Park/Morningstar Road, Mariner's Harbor, Arlington Station
- Three on-streets stops along South Avenue: Forest Avenue, Goethals Road, Teleport
- Western Terminus: West Shore Plaza

The S2 would travel on the proposed busway between St. George and Arlington, with an average running time of 18 minutes. Proposed stops are as follows:

- Eastern Terminus: St. George Terminal
- Seven busway stations: New Brighton, Livingston, West Brighton, Port Richmond, Elm Park/Morningstar Road, Mariner's Harbor, Arlington Station (western terminus for S2)

Additionally, three existing local routes would be extended to enter the busway including the S53, S54, and S57 which would use the existing non-electric bus fleet.[8] Although this may be true at the 2035 Build Year, the MTA will replace and transform its entire bus fleet with zero-emissions vehicles by 2040.[9] The S40 would maintain local service along Richmond Terrace. Two bus routes, the S90, offering service between the Matrix Global Logistics Park and the St. George Terminal and the S96 operating between West Shore Plaza and St. George Terminal are proposed to be eliminated under the Proposed Project. The S90 bus route is a limited-stop version of the S40 (which would maintain local service under the Proposed Project). Accordingly, no geographic coverage of transit service would be lost with the elimination of the S90. The S96 bus route is a limited-stop version of the S46. While the S46 would be truncated to the Teleport, the proposed S1 BRT route would originate at West Shore Plaza with a stop at the Teleport. As such, the S1 would effectively provide the geographic coverage that would be lost.

- The S53 would enter the busway via Alaska Street and would serve the four BRT stations west of the entry point, including Port Richmond, Elm Park/Morningstar

[8] NYCT is transitioning to a fleet composed of zero-emission electric buses. In the future, autonomous buses may be investigated and the Proposed Project offers an appropriate alignment for testing that type of technology.

[9] Transitioning to a zero-emissions bus fleet. https://new.mta.info/project/zero-emission-bus-fleet Updated Jul 25, 2022. accessed August 22, 2023.

Road, Mariners Harbor, and Arlington. The route would operate between Arlington and Bay Ridge.

- The S54 would enter the busway via Bard Avenue and would serve the New Brighton and St. George BRT stations. The route would operate between St. George and Eltingville.
- The S57 would enter the busway via Alaska Street and would serve the New Brighton and St. George BRT stations. The route would operate between St. George and New Dorp.

The proposed BRT service is expected to operate with average headways (i.e., time between buses) of 9 to 10 minutes, with the S2 operating every 5 minutes during the morning peak hour of 6:30 to 7:30. These headways are intended to coordinate with ferry service at St. George Terminal. The existing local bus routes are expected to operate with headways of 8 to 15 minutes. The weekday AM peak service pattern with headways is shown below in Table 2-2 and illustrated in Figure 2-23. Coding of the new BRT routes compared to existing routes is shown in Table 2-3.

Table 2-2 Proposed Weekday AM Service

Route	Description	Existing Headway (minutes	Proposed Headway (minutes)
BRT Routes			
S1	St. George to West Shore Plaza		10
S2	St. George to Arlington		9*
Feeder & Local Routes			
S40	Maintains local service	7	10
S53	Enters Busway at Alaska Street; terminates at Arlington	5	8
S54	Enters busway at Bard Avenue to St. George	10	11
S57	Enters busway at Alaska Street to St. George	12	15

* S2 operates every 5 minutes in peak hour (6:30-7:30)

Figure 2-23 Proposed Service Pattern

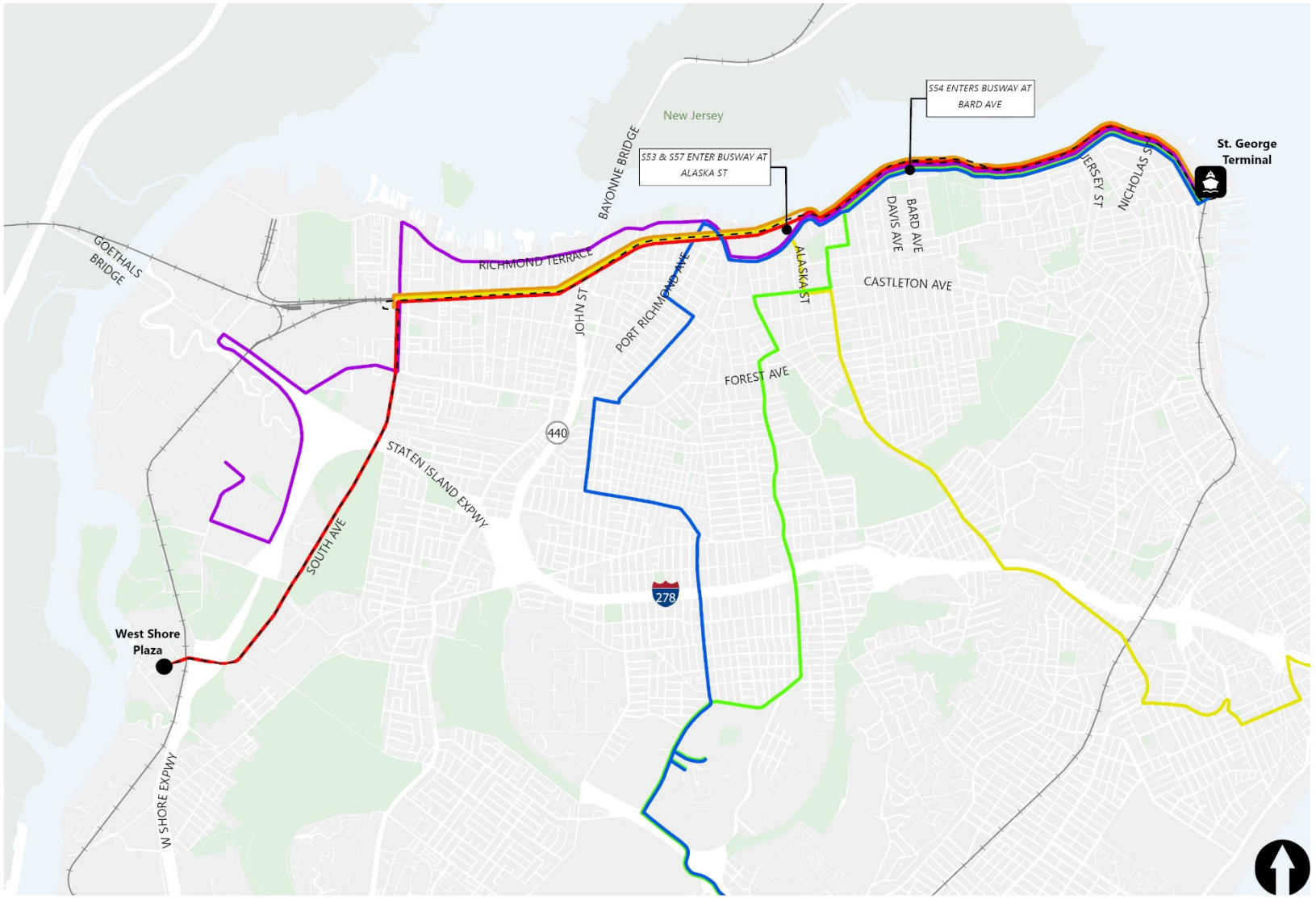


Table 2-3 BRT Coding for New BRT Routes (S1 and S2) Compared to Existing Routes (S40 and S46)

Route	S1	S2	S40	S46
Type	BRT	BRT	Local Bus	Local Bus
Operates in No-Build	No	No	Yes	Yes
Operates in Build	Yes	Yes	Yes	Yes
Peak Headway	10	5	10	10
Mid-Day Headway	10	15	20	12[1]
Route Type	0	0	3	3
Station	Time from Origin (hh:mm:ss)	Time from Origin (hh:mm:ss)	Time from Origin (min.)	Time from Origin (min.)
BRT - West Shore Plaza	0:00:00			0:00
BRT-Teleport	0:03:00			
BRT – Goethals	0:07:00			
BRT - Forest Av	0:08:00			
BRT Arlington	0:09:00	0:00:00	0:00	
BRT-Mariners	0:12:00	0:02:00		
BRT-Elm Park (Morningstar)	0:13:00	0:04:00		
BRT-Port Richmond	0:16:00	0:06:00	0:14	0:30
BRT-West Brighton (Broadway)	0:18:00	0:08:00		
BRT-Livingston	0:20:00	0:10:00		
BRT-New Brighton	0:22:00	0:12:00		
BRT – St. George	0:27:00	0:17:00	0:34	0:54

Ridership Forecasts

Ridership forecasts to predict how many people would use the proposed BRT service were prepared using the MTA's Regional Transit Forecasting Model (RTFM). The RTFM, which is built on Caliper's Transcad platform, is a variant of the 4-step ridership forecasting methodology of trip generation, distribution, mode choice, and assignment. It is used to forecast changes in ridership of the various modes, resulting from changes in population, employment, and other socioeconomic factors, as well as changes in the transportation network. Ridership projections were developed using this model. Data on transit service and demand are provided to the model to represent all transit travel occurring within New York City on New York City Transit (NYCT), MTA Bus, and New York City Department of Transportation (NYCDOT) Ferries. Demand and service characteristics for the Long Island Rail Road (LIRR) and Metro-North Railroad (MNR) are also represented in the model. Demographic forecasts

incorporated into the model were based on adopted Traffic Analysis Zone (TAZ) projections available from the New York Metropolitan Transportation Council (NYMTC) Best Practice Model and consistent with NYMTC 2050 Employment Forecasts.

Based on the RTFM model results, boardings on the new BRT routes in 2035 (the Proposed Project's analysis year for SEQRA/CEQR) are anticipated to be 28,148 per day. Route level boardings for the Build Condition totals 20,041.

Cost Analysis

Capital Costs

A conceptual capital cost estimate was prepared according to the guidance in FTA's Standard Cost Categories for Capital Projects. Unit costs included in the model have been developed based on typical costs provided by NYCDOT, NYCDDC, MTA Bridges and Tunnels and other sources. MTA Construction & Development (C&D) experience with the design and cost estimating of capital cost elements on similar transportation corridors was also a contributor. The cost estimates include allocated contingencies to account for design risk associated with the design uncertainty of individual elements as well as an overall project contingency to account for the conceptual level of overall design. Year 2023 conceptual capital costs for the Proposed Project is estimated at approximately $1.24 billion.[10] A summary of the conceptual capital cost estimate is contained in Appendix G.

Operating and Maintenance Costs

An operating and maintenance cost (O&M) model was developed to estimate cost for buses operating both on and off the busway. The cost model is based on unit price factors provided by the NYCT Department of Buses and the NYCT Office of Management and Budget (OMB). The O&M model for the Proposed Project is consistent with FTA guidelines and builds off of the model developed to estimate the project's O&M costs in the SINSAA published in 2012 and the Supplement to the SINSAA published in 2018. Refer to Appendix H for the detailed O&M cost methodology report. Table 2-5 summarizes the O&M costs of the proposed BRT including O&M costs for the S1 and S2 BRT routes plus the incremental cost of the feeder routes and a 20% contingency to account for any future schedule changes less the O&M costs for routes that were eliminated. The overall O&M cost estimate in 2035 dollars was approximately $29.314 million.

[10] Does not include costs for private property acquisition or environmental mitigation

Table 2-5 North Shore BRT O&M Cost Summary

Cost Item	Annual Unit of Service		Unit Cost (2020$)		Line Item Cost
Vehicle Operations (vehicle hour costs)	837,289	Bus Hours	$2.40	/Bus Hour	$2,007,000
Vehicle Operations (pay hour costs)	150,712	Pay Hours	$47.91	/Pay Hour	$7,220,813
Vehicle Maintenance (peak bus costs)	5,490	Peak Buses	$147.57	/Peak Bus	$810,179
Vehicle Maintenance (mileage costs)	1,507,120	Bus Miles	$1.86	/Bus Mile	$2,800,312
Maintenance of Way	5	Busway Miles	$40,922	/Busway Mile	$212,794
Busway Station Maintenance	7	Stations	$246,702	/Station	$1,726,915
On-Street Station Maintenance	6	Stations	$17,291	/Station	$103,747
Elevator Maintenance	8	Elevators	$63,175	/Elevator	$505,398
Revised BRT Feeder Routes					$7,843,498
Contingency		Percent	20%		$4,646,131
Subtotal S1/S2					$27,876,788
Elimination/Truncation					($6,079,940)
TOTAL O&M COST (2020$)					$21,796,847
TOTAL O&M COST (2035$)					**$29,314,337**

3 Land Use, Zoning, and Public Policy

This chapter considers the potential for the Proposed Project to result in significant adverse impacts to land use, zoning, and public policy. Under the guidelines of the *2021 CEQR Technical Manual*, this analysis evaluates the uses in the area that may be affected by the Proposed Project and determines whether the project would be compatible with those uses or may otherwise affect them. The analysis also considers the Proposed Project's compatibility with zoning regulations and other public policies applicable to the area.

Regulatory Background

The Proposed Project is being undertaken by the Metropolitan Transportation Authority (MTA), a state agency that is not subject to New York City (City) zoning controls. However, because the City may base future land use decisions on this Final Environmental Impact Statement (FEIS), this chapter describes the study area's zoning districts. Potential City land use actions that may be required include the following:

- Transfer of property: Currently, the former North Shore Railroad right-of-way (ROW) is under New York City ownership.
- Landfills: Uniform Land Use Review Procedure (ULURP) application to facilitate constructing fill at the Snug Harbor waterfront portion of the proposed alignment.
- Zoning Map Amendment: ULURP application to facilitate a change in the City Zoning Map may be required at several locations, including Roxbury Street, portions of Richmond Terrace, and areas where parkland alienation would be required.
- Cross Access Connections: Non-ULURP application from the New York City Department of City Planning for cross access for the potential station surface parking facilities located at Arlington Station and Livingston Station.
- Acquisitions and Dispositions: ULURP application(s) to acquire private properties and dispose of City-owned properties to facilitate the proposed alignment.

Public policy documents that are directly applicable to the Proposed Project include the Staten Island Community Board 1 Needs Statement, New York City's *North Shore 2030* and *Working West Shore 2030,* Brownfield Opportunity Area (BOA) plans for several North and West Shore areas, New York City's *Waterfront Revitalization Program*, the Port Authority of New York and New Jersey's *Port Master Plan 2050,* and other planning documents.

Existing Conditions

To facilitate the land use, zoning, and public policy analysis for the Proposed Project, the proposed alignment has been divided into seven sections. Each section and its associated study area comprise generally similar land uses and/or reflect a section of the alignment that is distinct from an engineering standpoint. For example, the Viaduct and Open Cut sections are characterized by engineering design features that address the local topography, while the New Brighton Waterfront and West Brighton Waterfront sections would have similar at-grade busway configurations but are characterized by distinctive land use patterns. Along these sections, a study area approximately 400 feet from the alignment was evaluated. The study area boundaries were chosen to include those communities and uses that could potentially be affected by the Proposed Project. **Figures 3-1 through 3-7** depict existing land uses within the study area for each of the seven sections.

Land Use

The neighborhoods along the proposed alignment vary in their land use patterns, which encompass civic and commercial clusters in St. George and Port Richmond, well-established cultural uses in historic Snug Harbor, a variety of residential housing developments, and a waterfront industrial sector featuring an array of maritime support services and the City's Port Richmond Wastewater Resource Recovery Facility (WRRF). The PANYNJ's Howland Hook Maritime Terminal is a major freight terminal and container port at the western end of the proposed alignment, and both the Teleport and Matrix Global Logistics Park are significant business parks on the West Shore. In St. George, economic growth is occurring, including mixed-use, and other developments that complement existing municipal, residential, and educational land uses.

Transit passenger service and freight rail service provided by the former North Shore Railroad ended in 1953 and 1989, respectively. In 1993, the City of New York acquired the North Shore Railroad ROW via a federal grant preserving the corridor for transportation use. Currently, the ROW, managed by the New York City Economic Development Corporation (NYCEDC), is largely abandoned, with a portion of the western section in use for rail freight supporting the PANYNJ Howland Hook Marine Terminal.

The following subsections describe land uses in the study area by section, as depicted in **Figures 3-1 through 3-7.**

Figure 3-1 Land Use Study Area: St. George

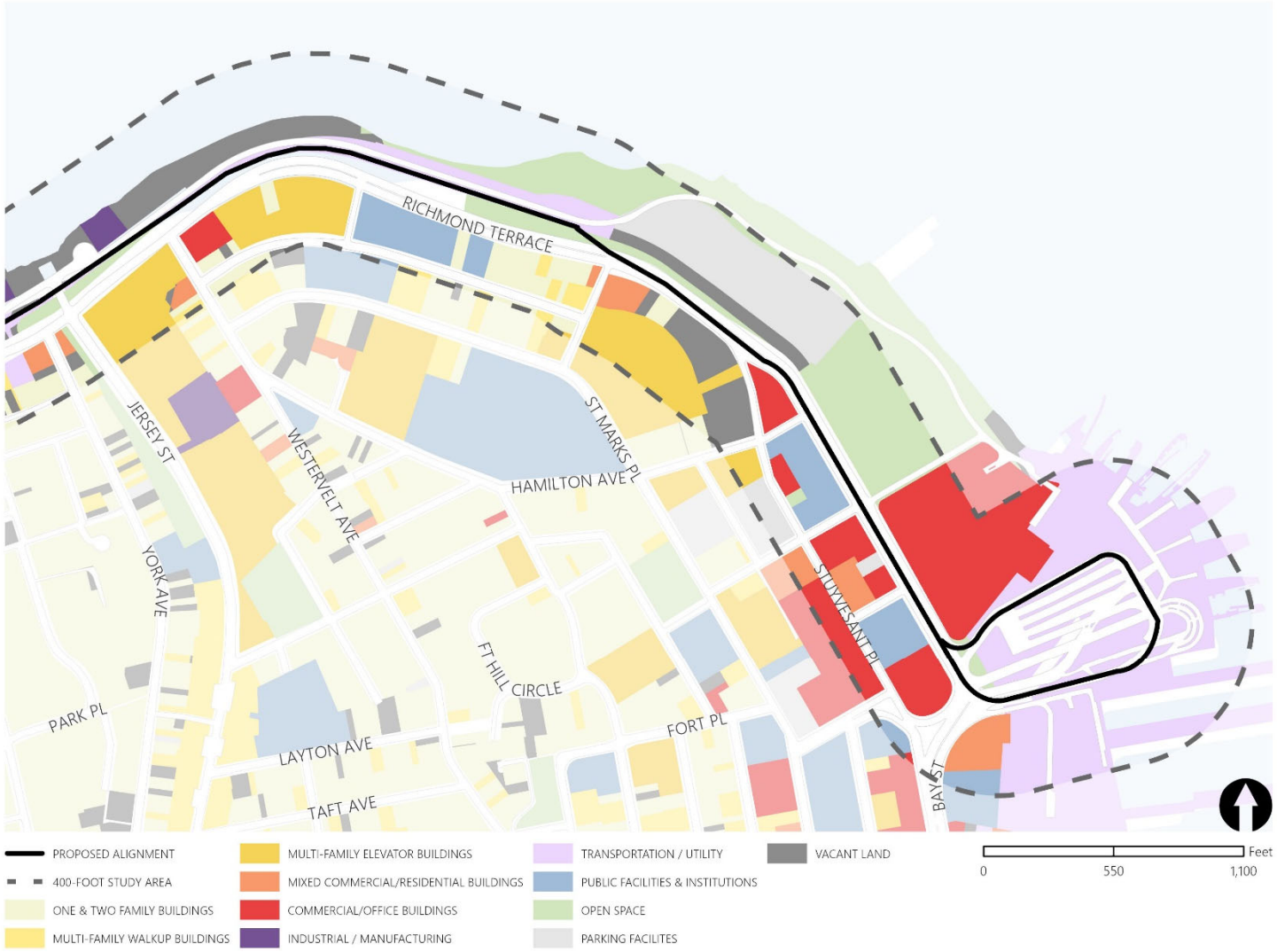


Figure 3-2 Land Use Study Area: New Brighton Waterfront

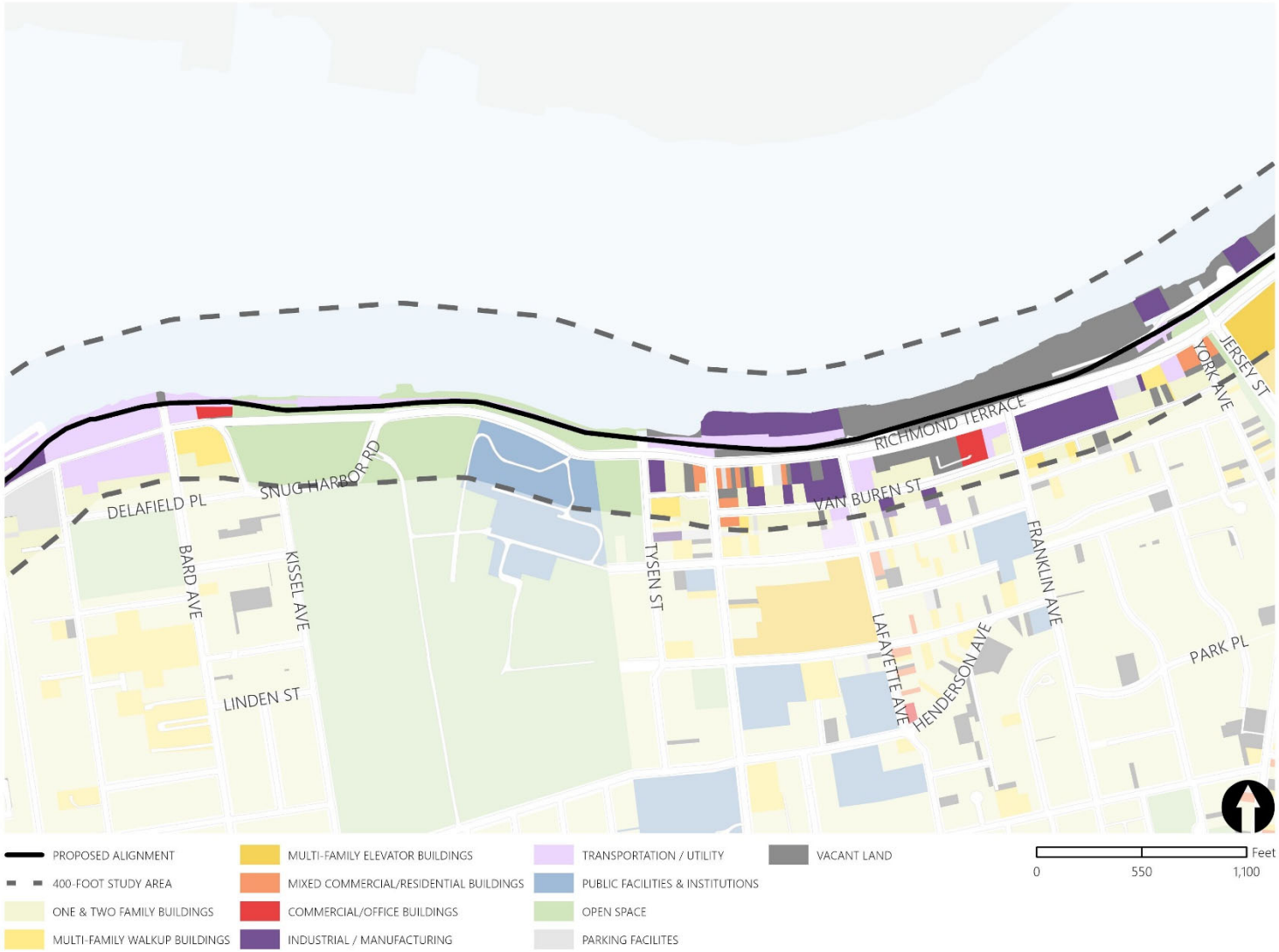


Figure 3-3 Land Use Study Area: West Brighton Waterfront

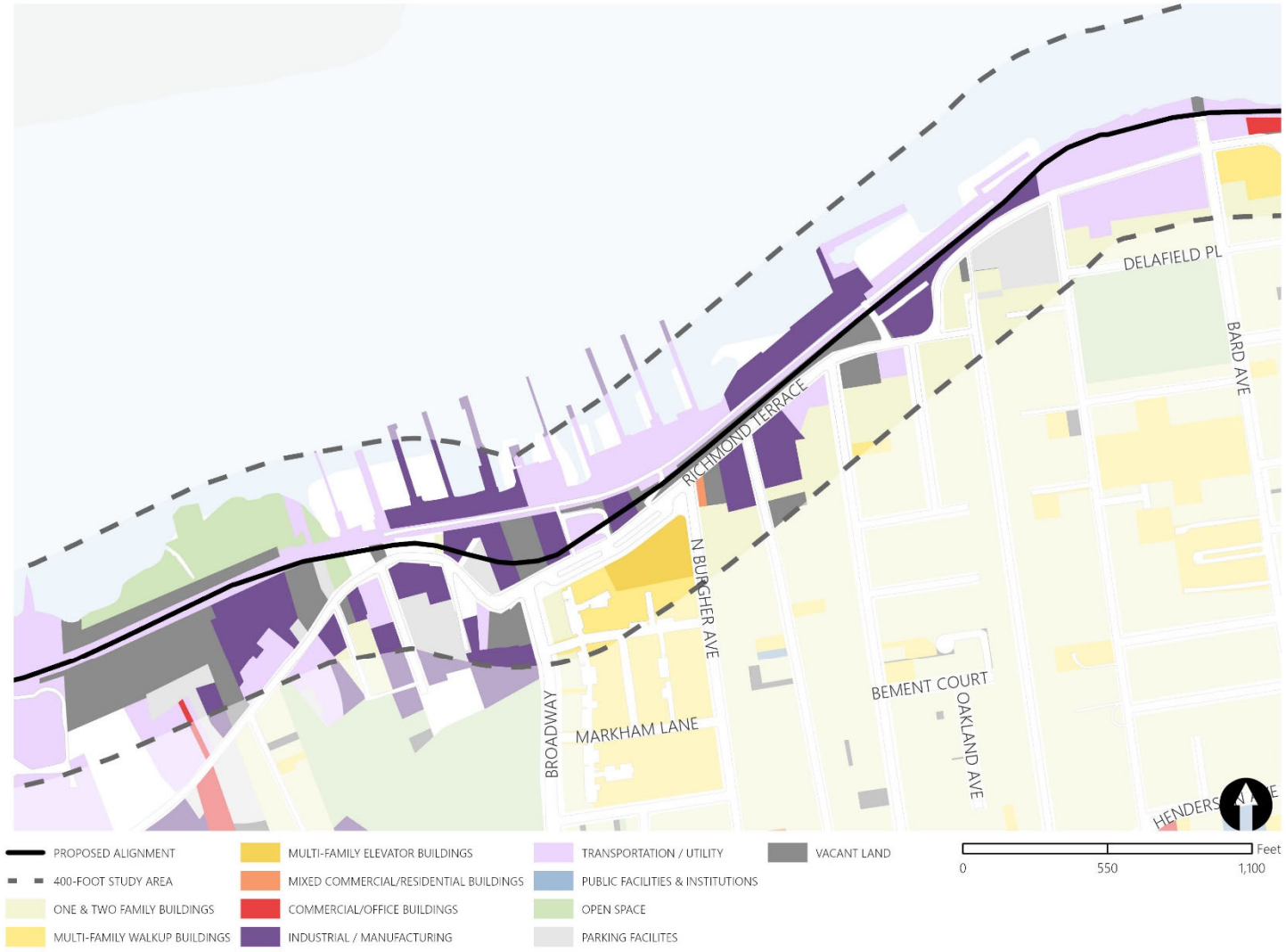


Figure 3-4 Land Use Study Area: Viaduct

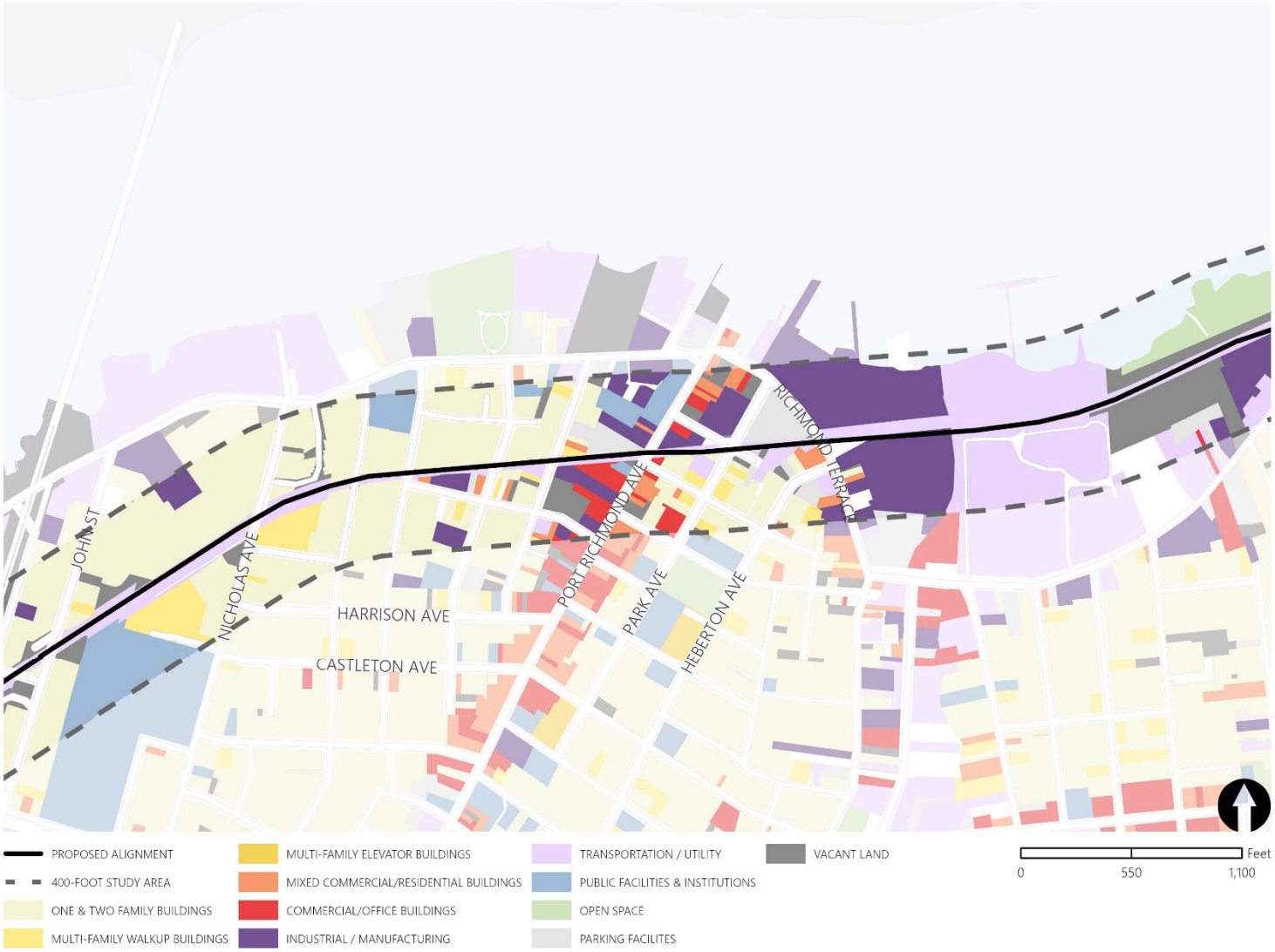


Figure 3-5 Land Use Study Area: Open-Cut Section

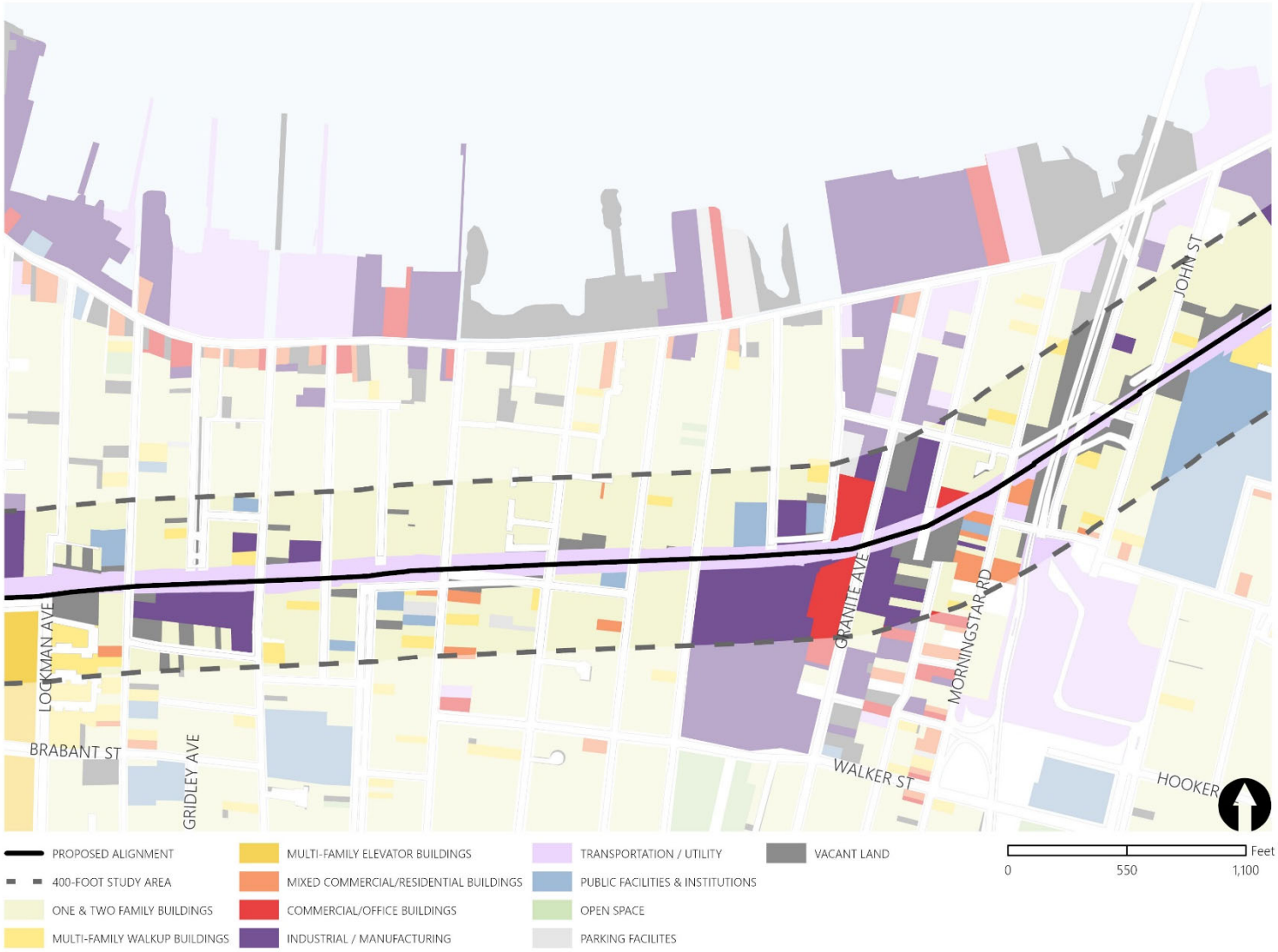


Figure 3-6 Land Use Study Area: Arlington Station

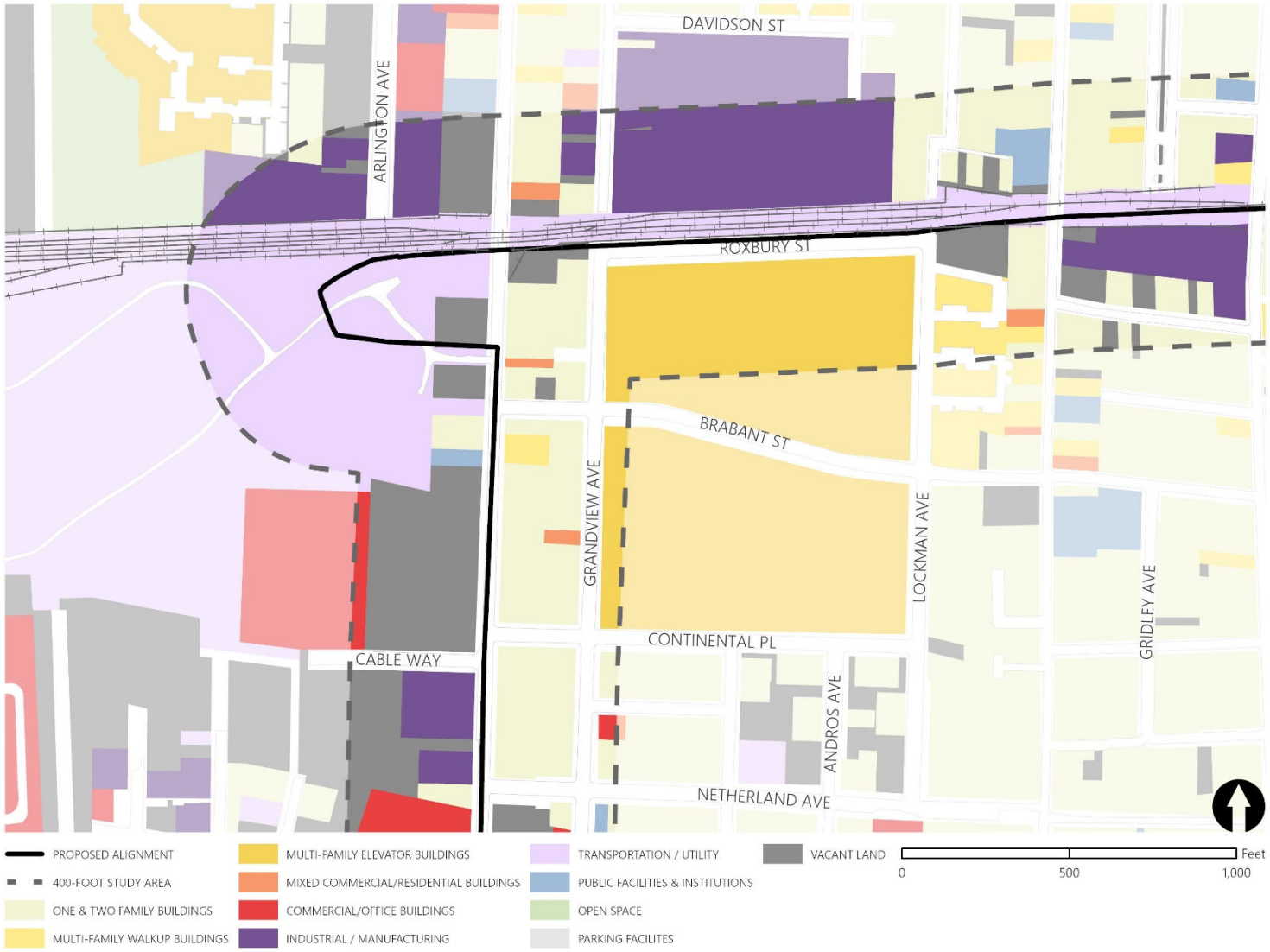
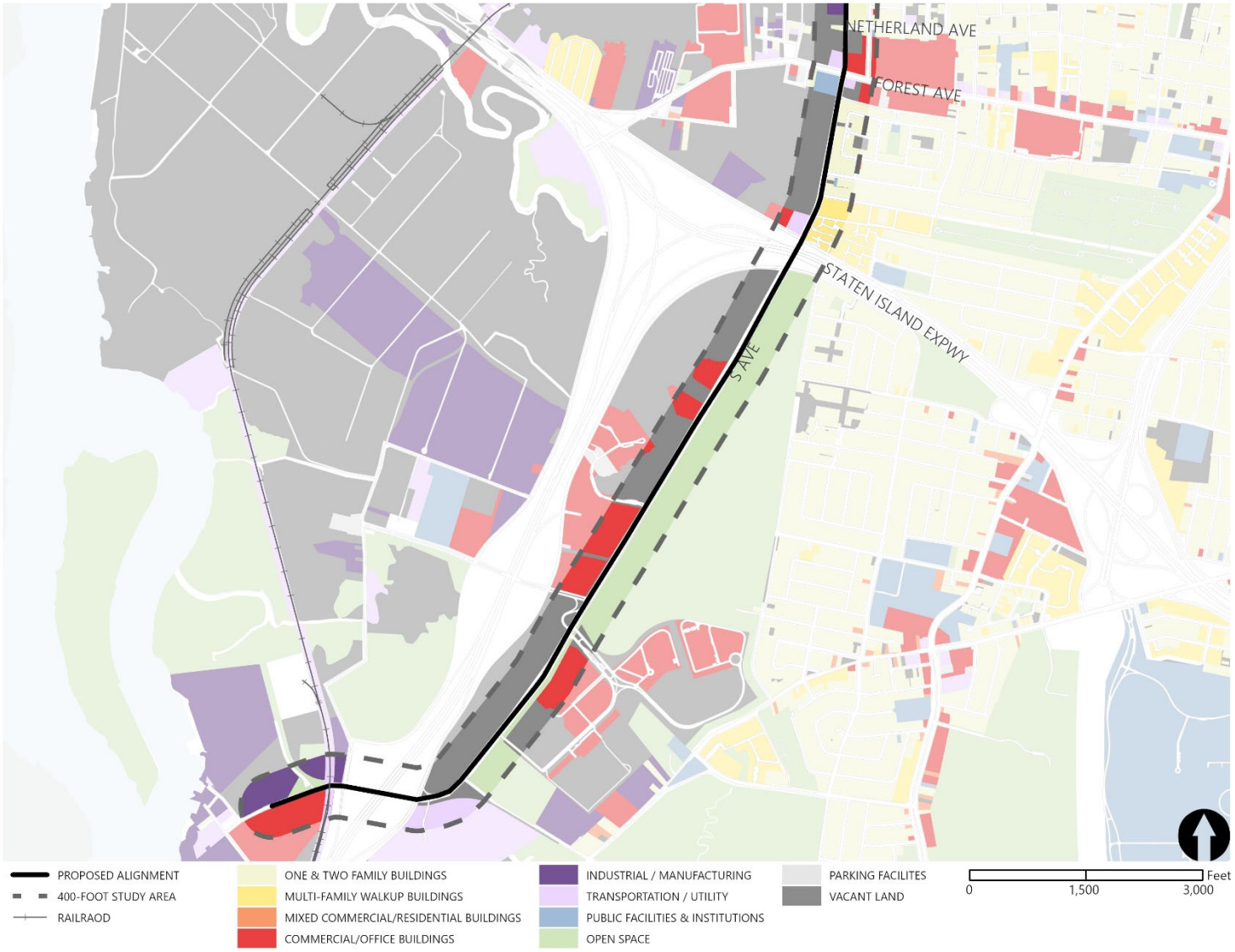


Figure 3-7 Land Use Study Area: South Avenue



Section 1: St. George

This 0.9-mile section comprises the area along Richmond Terrace from the St. George Terminal west to Jersey Street. This area is the civic center of Staten Island, containing the Borough Hall; several courthouses; NYPD's 120th Precinct House; and various schools, religious institutions, and community and social service facilities. **Chapter 5, Community Facilities and Services,** provides more detail on community facilities in the study area. The North Shore Esplanade and the Staten Island 9/11 Memorial are also located in this section (see **Chapter 6, Open Space,** for more information on open space uses).

Borough Hall

The predominant land uses in this section are residential and commercial. Empire Outlets, a commercial retail destination, as well as smaller commercial and retail uses, are concentrated near the St. George Terminal. The Staten Island University Hospital (SIUH) Community Park and the former New York Wheel garage are also notable land uses on the north side of Richmond Terrace. Residential land uses in this section include higher-density multifamily developments located in the St. George Terminal area and along Richmond Terrace, with single-family housing predominating along the streets farther inland. The New York City Housing Authority (NYCHA) Richmond Terrace public housing development is also located in this section.

Section 2: New Brighton Waterfront

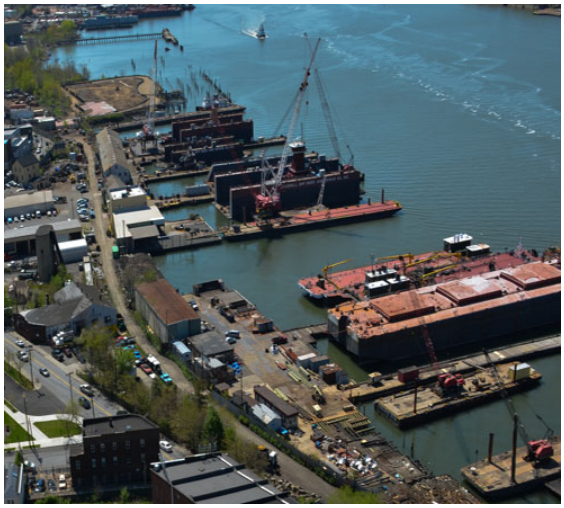
Richmond Terrace, commercial uses at left; Atlantic Salt at right

This 1.2-mile section, which runs primarily along the Kill Van Kull shoreline in the New Brighton neighborhood, extends from Jersey Street west to Davis Avenue. It encompasses the northern portions of the New Brighton neighborhood and the Snug Harbor Cultural Center and Botanical Garden. Land uses along Richmond

Terrace in this section are predominantly commercial and light industrial, with some low-rise multifamily residential buildings above commercial storefronts. Single-family housing predominates along the side streets south of Richmond Terrace. Most of the waterfront in the eastern portion of the section is occupied by Atlantic Salt, a terminal facility which provides road salt to the City of New York and other municipalities for winter de-icing. The western portion of the section is mainly occupied by the Snug Harbor campus, which includes active recreational uses such as ballfields, cultural facilities, open space, and trails; between Richmond Terrace and the Kill Van Kull in this area, a strip of designated, but informal and lightly used, parkland exists. West of Snug Harbor are local commercial convenience uses including a gas station and restaurant. The western extent of this section also features a surface lot which functions as a parking and equipment staging area for a Consolidated Edison (Con Ed) customer service center, located on the south side of Richmond Terrace.

Section 3: West Brighton Waterfront

Section 3, which is approximately 0.7 miles long, generally parallels the shoreline from Davis Avenue to the foot of Alaska Street, where the former North Shore Railroad ROW transitions from at-grade to a viaduct structure south of Heritage Park. Land uses in this area include single-family and lower-density multifamily residential south of Richmond Terrace in the West Brighton neighborhood, marine industrial uses (including Caddell Dry Dock and TP Marine Electric) along the waterfront, and industrial and commercial uses between the waterfront and Richmond Terrace. Heritage Park, an approximately 10-acre park along the Kill Van Kull shoreline near the western end of the section, offers passive recreational uses. This section also contains several vacant properties and parking lots along Richmond Terrace.



Richmond Terrace, ROW and maritime industrial uses

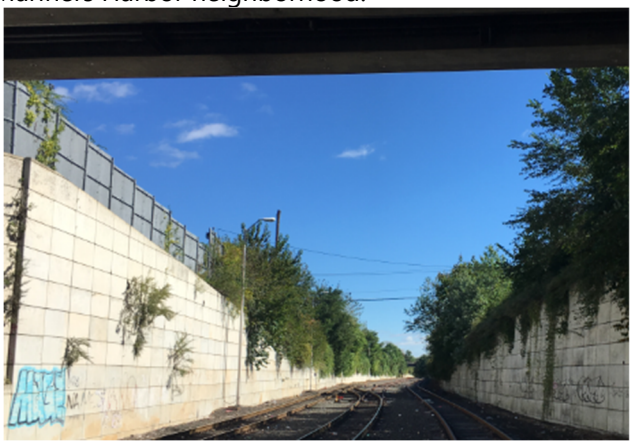
Section 4: Viaduct

This 1.2-mile section follows the existing, abandoned viaduct section of the ROW from Alaska Street west to John Street. The eastern portion traverses vacant land west of Heritage Park as well as industrial uses—including the Port Richmond Wastewater Resource Recovery Facility and a single-family residential area south of the alignment. It then crosses Port Richmond Avenue in the Port Richmond business district and passes through a diverse mixture of residential, commercial, and light industrial uses. West of Sharpe Avenue, the land uses surrounding the viaduct become mainly single-family residential, with areas of new development occurring west of Nicholas Avenue. Port Richmond High School and associated sports fields are located at the westernmost end of this section.

Viaduct and Port Richmond Wastewater Resource Recovery Facility

Section 5: Open-Cut Section

Section 5 includes an approximately 0.8-mile long portion of the ROW that lies within an open cut approximately 30 feet below grade. This section generally extends from John Street west to Union Avenue. The open cut is largely abandoned and in disrepair; however, a portion of the open cut ROW west of Harbor Road is used for freight rail assembly to support operations at Arlington Rail Yard (part of the Howland Hook Maritime Terminal). The area between the Bayonne Bridge and Lake Avenue contains a variety of commercial and industrial uses, while the area between Lake Avenue and Harbor Road consists of mainly single-family residential land uses in the Mariners Harbor neighborhood.



Remnant station at Mariner's Harbor (at left); Freight rail tracks beneath South Avenue Bridge (at right)

Section 6: Arlington Station

View of Roxbury Street and NYCHA Mariner's Harbor Complex

This approximately 0.5-mile section extends from Harbor Road to South Avenue, then south to Cable Way/Netherland Avenue. Within this section, land uses on the east side of South Avenue are primarily residential, including the NYCHA Mariner's Harbor public housing development, which fronts Roxbury Street. The Big Park is a 3-acre recreational resource which contains sports courts and playgrounds, located south of the housing development. A Con Ed substation facility, comprised of three buildings, surface lots associated with a trucking facility, and undeveloped land, is situated to the west of the South Avenue bridge and south of the existing freight rail ROW. The area north of the ROW and east of South Avenue contains industrial and commercial uses, while the area west of South Avenue has large undeveloped swaths, interspersed with large-scale retail and commercial uses.

Section 7: South Avenue

South Avenue & Teleport Drive

The South Avenue section begins south of Cable Way/Netherland Avenue and follows the existing South Avenue ROW to West Shore Plaza. Between the northern end of the section and the Staten Island Expressway, the west side of the alignment is bordered primarily by undeveloped land, with single-family residential uses to the east. South of the expressway, both sides of South Avenue are characterized by undeveloped land (including some wetland areas) and a large-scale office park, hotel, and retail development. A large public open space associated with Staten Island Industrial Park is located north of Teleport Drive. This section is approximately 2.7 miles long.

Zoning

Zoning throughout the study area consists of a mix of manufacturing, residential, and commercial districts. Manufacturing districts comprise most of the waterfront area along the alignment, reflecting the historical use of the North Shore waterfront for shipping and other industrial activities. Manufacturing districts also cover the western portion of the proposed alignment along South Avenue in areas that are relatively sparsely developed with suburban-style offices, shopping centers, and warehouses. The landward portion of the study area primarily

comprises residential zoning, consistent with the mostly low- and medium-density residential neighborhoods along the North Shore. Some residential areas along Richmond Terrace and other arterial streets include commercial overlays to serve local retail needs. **Figures 3-8 through 3-14** show zoning districts for each section of the study area.

Portions of the study area are within the Lower Density Growth Management Area (LDGMA), which covers most of Staten Island east of South Avenue. The LDGMA uses "special zoning controls to match future development to the capacity of supporting services and infrastructure in parts of the city experiencing rapid growth." These special zoning controls include, but are not limited to, higher residential parking requirements, modified residential lot size and dimensional requirements, prohibitions on street level residences in commercial overlays and commercial districts, and modified requirements for medical offices and day care centers to preserve community character.

Figure 3-8 Zoning Districts in Study Area: St. George

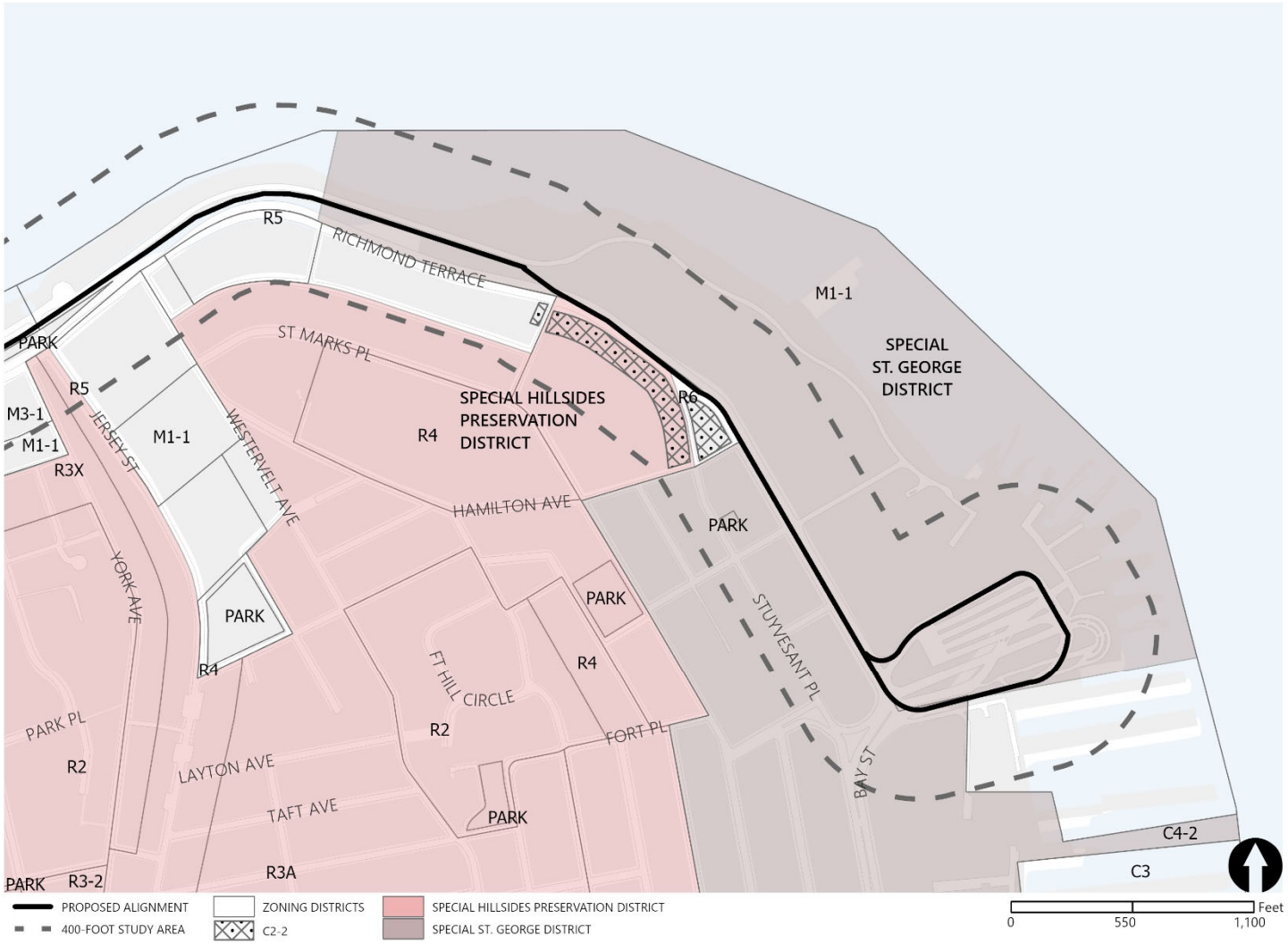


Figure 3-9 Zoning Districts in Study Area: New Brighton Waterfront

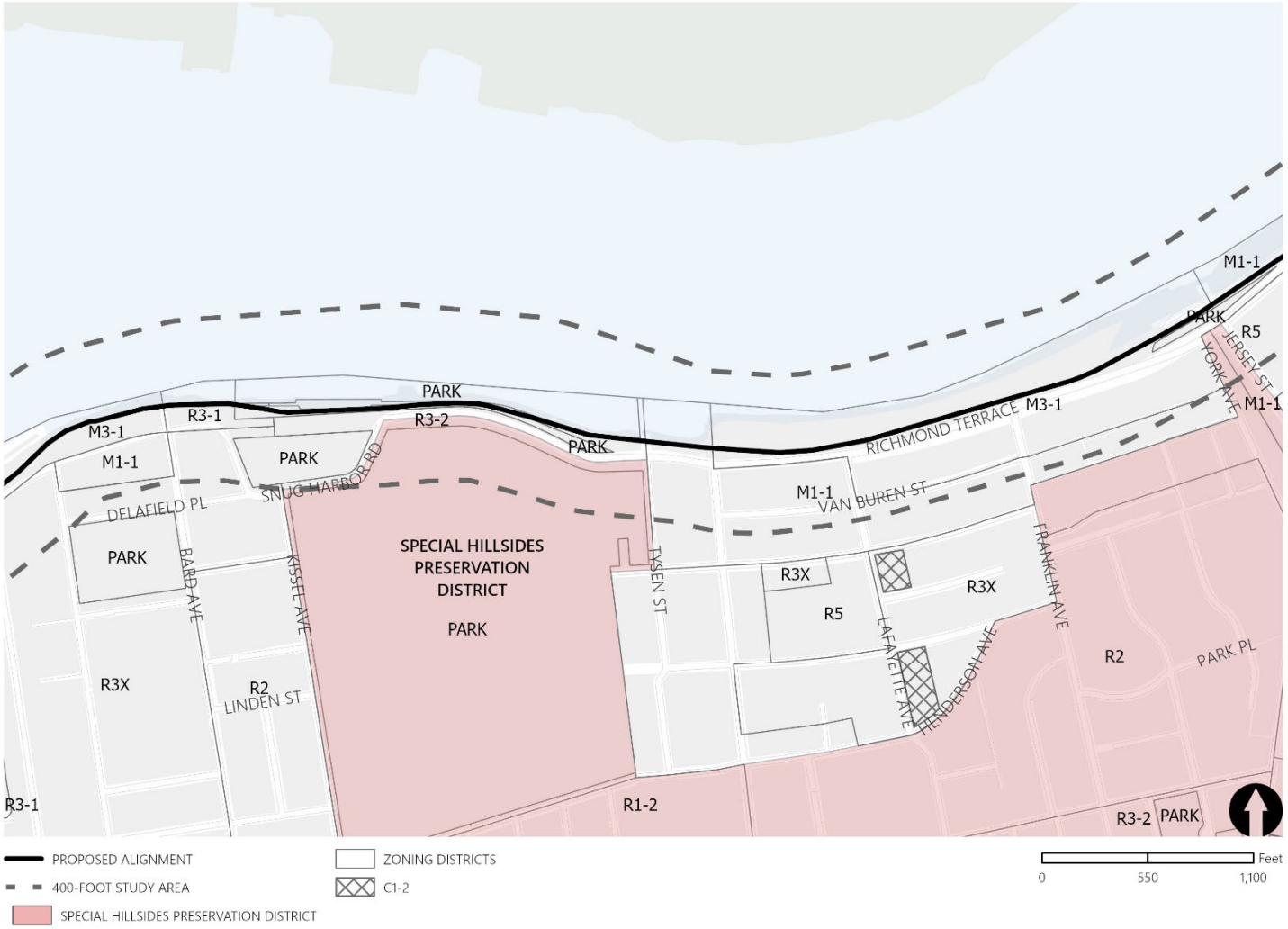


Figure 3-10 Zoning Districts in Study Area: West Brighton Waterfront

Figure 3-11 Zoning Districts in Study Area: Viaduct

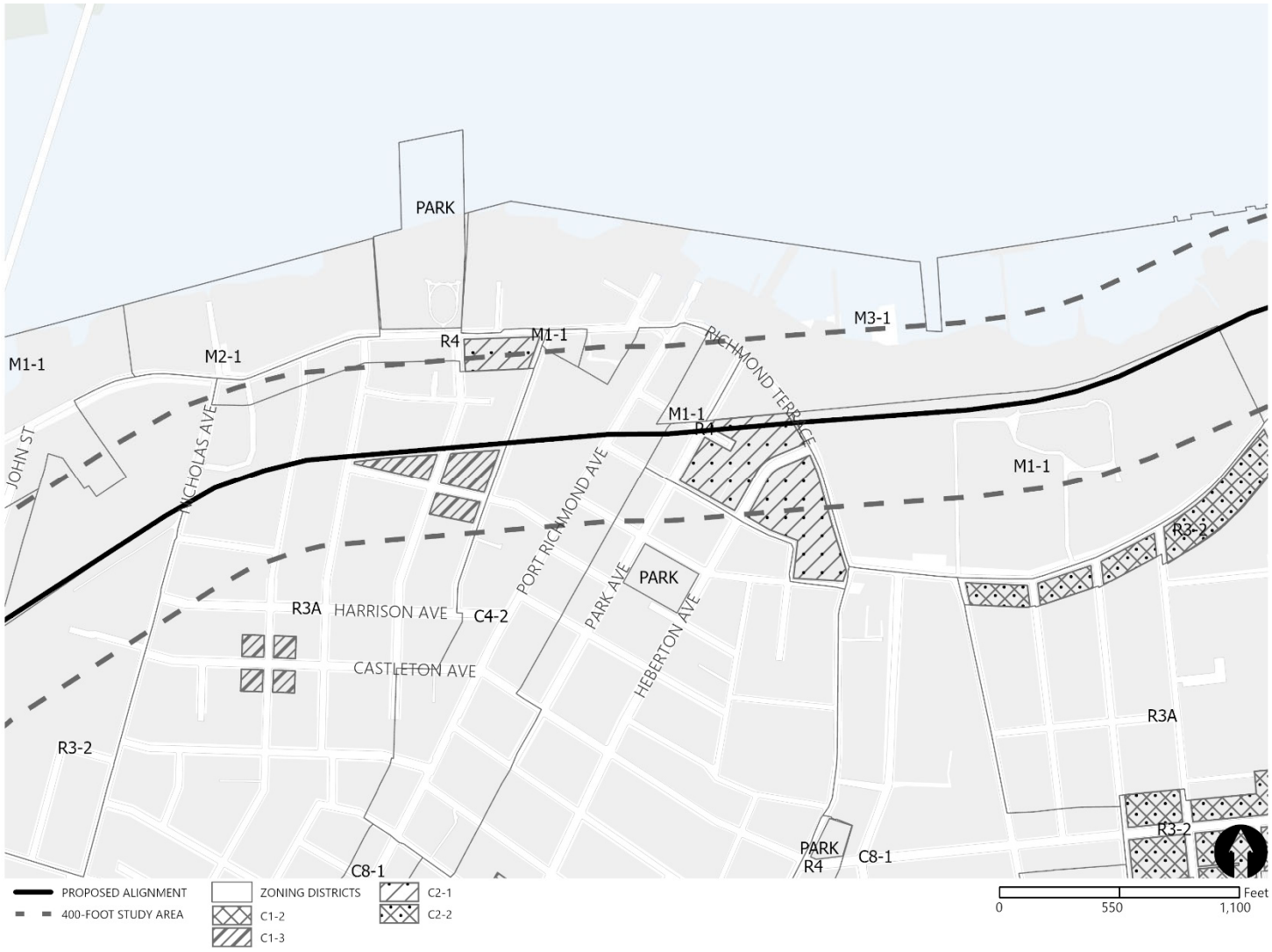


Figure 3-12 Zoning Districts in Study Area: Open-Cut Section

Figure 3-13 Zoning Districts in Study Area: Arlington Station

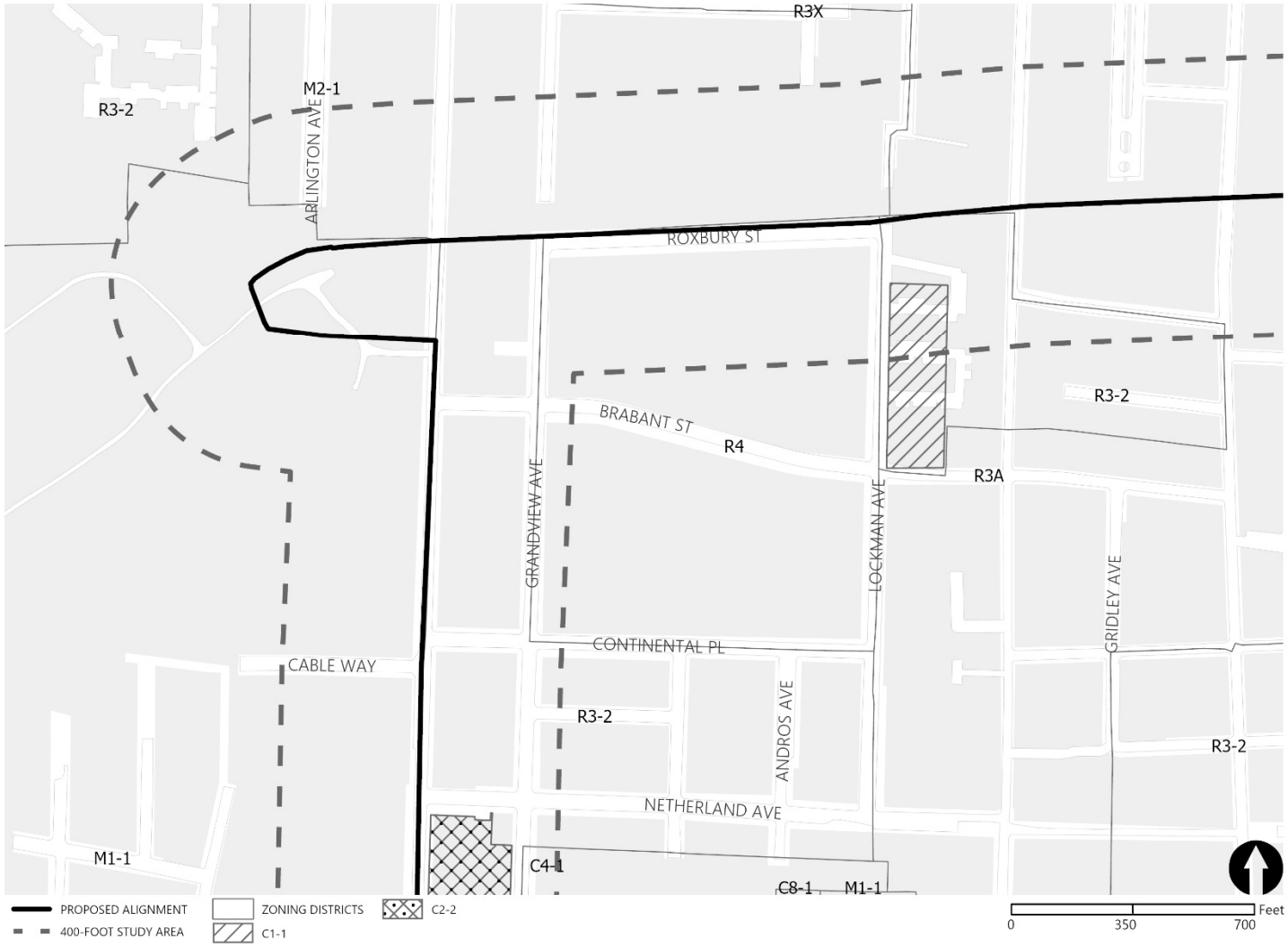
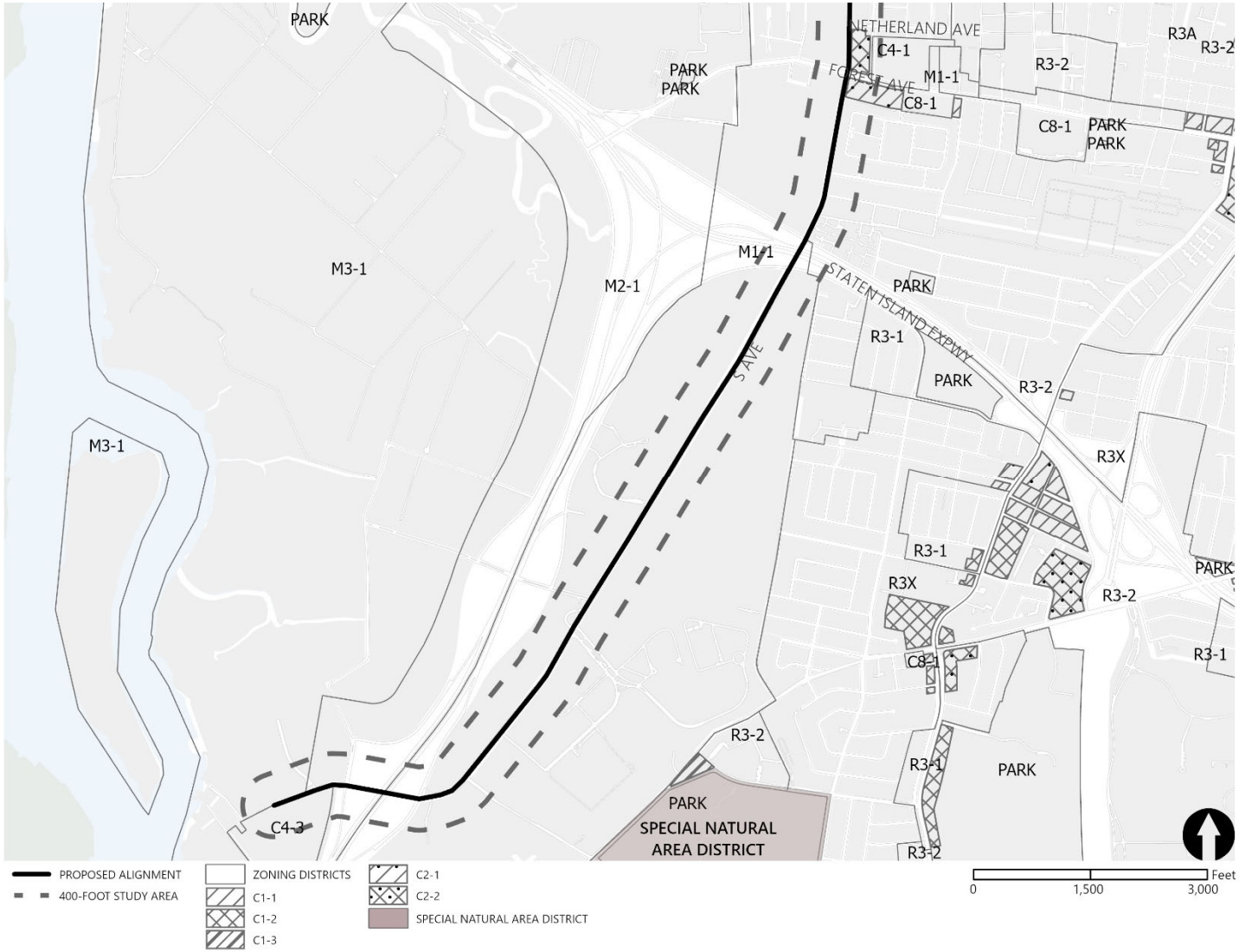


Figure 3-14 Zoning Districts in Study Area: South Avenue



Section 1: St. George

The entire shoreline area of Section 1 north and east of Richmond Terrace is mapped as an M1 zoning district, a light manufacturing/industrial designation. West of Richmond Terrace from Hamilton Avenue to Bay Street, a C4 commercial district is mapped; these districts occur in regional centers where larger stores, theaters, and office uses serve a wider region and generate more traffic than neighborhood shopping areas. Commercial overlays for neighborhood businesses are mapped west/south of Richmond Terrace between Hamilton Avenue and Nicholas Street. The remainder of the neighborhood consists of residential zoning districts, ranging from single-family R2 zones to medium-density multifamily R6 zones.

Special districts are mapped in certain areas of the City to achieve specific planning and urban design objectives in defined areas with unique characteristics. Each district stipulates zoning requirements and/or incentives tailored to the area's distinctive qualities. The St. George section of the alignment contains two such districts: the Special St. George District and the Special Hillsides Preservation District. The Special St. George District, which covers most of the eastern portion of the section, was created to support a pedestrian-friendly business and residence district in a unique hillside waterfront community that is one of Staten Island's oldest commercial neighborhoods. The Special Hillsides Preservation District guides development in the steep slope areas of Staten Island's Serpentine Ridge; its purpose is to reduce hillside erosion, landslides, and excessive stormwater runoff by preserving the area's hilly terrain, trees, and vegetation.

Section 2: New Brighton Waterfront

Section 2 encompasses M1 (light industrial) and M3 (heavy industrial) manufacturing districts on the north side of Richmond Terrace; the M3 designation is mapped for the Atlantic Salt property. The area south of Richmond Terrace between Jersey Street and Tysen Street is primarily mapped M1, with R2 (single-family) and R3 (one- and two-family) designations along the side streets. The Snug Harbor Cultural Center and Botanical Garden is zoned as parkland, while the area to the west is mapped as residential (R2 and R3) and industrial (M1 and M3), with the latter located along the shoreline between Bard and Davis Avenues. A portion of this section, including all the Snug Harbor property, is also mapped in the Special Hillsides Preservation District.

Section 3: West Brighton Waterfront

North of Richmond Terrace, Section 3 is mapped entirely as an M3 heavy industrial district. The south side of Richmond Terrace is mapped in R3 residential zoning, except for an M1 light industrial district along the south side of Richmond Terrace between Broadway and the western edge of the Staten Island Cemetery. There are commercial overlays between Elizabeth Avenue and North Burgher Avenue on the south side of Richmond Terrace.

Section 4: Viaduct

In Section 4, manufacturing districts are located along both sides of the viaduct from Alaska Street to Richmond Terrace, with M3 zoning to the north along the waterfront and M1 zoning to the south. West of Richmond Terrace, a C4 regional commercial district is mapped along Port Richmond Avenue, with small areas of M1, M3, and R4 (lower-density multifamily) zoning between the C4 district and Richmond Terrace. The remainder of this section is mapped in the R3 zoning district. Commercial overlays are mapped south of the proposed alignment between Richmond Terrace and the edge of the Port Richmond C4 zoning district, and between Maple Avenue and Sharpe Avenue.

Section 5: Open-Cut Section

In Section 5, R3 residential districts are located on both sides of the open cut between John Street and Pulaski Avenue; an M3 district is mapped on both sides between Pulaski Avenue and Lakeview Avenue. The remainder of the section, west of Lakeview Avenue, is mapped as R3. Commercial overlays are mapped in several residential areas south of the ROW.

Section 6: Arlington Station

Section 6 has residential districts on both sides of the ROW from Harbor Road to Lockman Avenue. Between Lockman Avenue and South Avenue, the area north of the ROW is in the M2 zoning district (described as a middle ground between light and heavy industrial), and most of the area south of the ROW, where the NYCHA Mariner's Harbor development is located, is zoned R4. M1 light industrial zoning extends throughout the area west of South Avenue; the east side of South Avenue is bordered by R3 residential zoning.

Section 7: South Avenue

Between Netherland Avenue and Goethals Road, the west side of the BRT alignment along South Avenue Section 7 is mapped in the M1 manufacturing district and the east side in the R3 residential district. A commercial overlay extends from Netherland Avenue to Wemple Street. South of Goethals Road, both sides of South Avenue are mapped as M1 to West Shore Plaza, where a C4 commercial district is located near the terminus of South Avenue at Meredith Avenue.

Public Policy

The following describes plans and policies that pertain to the Proposed Project. They include several local planning documents as well as Citywide plans. An overview of each policy document is presented, followed by the goals and/or recommendations specifically related to the Proposed Project.

Community District 1 Needs Statement and Community Board Budget Requests

The North Shore lies within Staten Island's Community District 1. The Community District periodically prepares a statement of needs and budget requests that helps to guide the City's planning and investment in the district. The most recent statement available, for fiscal year 2023, identifies the need for improved mass transit as well as traffic congestion, safety and enforcement as pressing issues within Community District 1. To address this concern, the statement identifies the need for BRT lanes and service within the district to improve traffic flow and transit access and reliability.[1]

North Shore 2030

North Shore 2030: Improving and Reconnecting the North Shore's Unique and Historic Assets[2] was prepared in partnership by NYCEDC and the New York City Department of City Planning (NYCDCP) in December 2011, "to identify opportunities for improved transportation connections, job creation, environmental protection, public access, and other public goals."[3] The study area for *North Shore 2030* encompasses the North Shore of Staten Island, from St. George Ferry Terminal in the east to Mariners Marsh in the west, and includes Sections 1 through 6 of the proposed BRT alignment. The plan is guided by four strategies for revitalizing and reconnecting the study area:

- Promote quality jobs and workplaces that strengthen maritime and active industrial businesses, waterfront business opportunities, and connect local residents with more diverse employment opportunities;
- Reconnect people with the working waterfront through increased public access, new views of the working waterfront and a continuous multipurpose pathway along Richmond Terrace;
- Support and create neighborhood centers through more local retail, services, and housing options in the North Shore's historic neighborhood centers.

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[1] Staten Island Community District 1. Statements of Community District Needs and Community Board Budget Requests Fiscal Year 2023, Available at https://docs.google.com/viewer?url=https://github.com/NYCPlanning/labs-cd-needs-statements/raw/master//SI%20DNS%20FY%202023/FY2023_Statement_SI01.pdf. Accessed February 5. 2023.

[2] NYCEDC and NYCDCP. December 2011. *North Shore 2030: Improving and Reconnecting the North Shore's Unique and Historic Assets*. Available at https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/north-shore/north_shore2030.pdf. Accessed on November 21, 2019.

[3] NYCDCP. Undated. *Staten Island North Shore – Land Use & Transportation Study – Background*. Available at https://www1.nyc.gov/site/planning/plans/north-shore/north-shore-2.page. Accessed on November 21, 2019.

- Improve connections and mobility for residents and businesses through targeted and coordinated intersection and transportation improvements to support an enhanced transit network.

In order to achieve the vision set forth in *North Shore 2030*, the plan applies these strategies to six Opportunity Areas: St. George, New Brighton, West Brighton, Port Richmond, Mariners Harbor-Arlington, and Jersey Street. The result is a set of specific short- and long-term land use and infrastructure recommendations in for each Opportunity Area.

The plan identifies transportation, particularly commuting, as a key challenge for North Shore residents. It describes the former North Shore Railroad ROW as a key asset in the study area and recommends consideration of its future reuse as a transit corridor, in coordination with MTA's Staten Island North Shore Alternatives Analysis (the SINSAA study, discussed in **Chapter 1, Introduction**). Strategies for specific Opportunity Areas that are relevant to the Proposed Project include:

- Improve transportation connections to St. George Terminal through ferry and other transit connections;
- Coordinate with MTA to maintain and potentially improve waterfront access at Snug Harbor in connection with future development of the North Shore ROW;
- Relocate portions of the North Shore ROW in New Brighton and West Brighton to facilitate maritime expansion and support future transit options.

Working West Shore 2030

Working West Shore 2030: Creating Jobs, Improving Infrastructure, and Expanding Growth[4], was a collaboration between NYCEDC and NYCDCP. Completed in 2011, the plan's purpose was to develop a planning framework centered on job creation, infrastructure upgrades, and managed growth of Staten Island's West Shore over a 20-year planning horizon. The four primary objectives of *Working West Shore 2030* are as follows:

- Create quality local jobs for Staten Islanders and reduce the need for off-island commutes;
- Provide better connections between West Shore neighborhoods and employment centers to the rest of the borough and the region through updated road and transit networks;
- Preserve and link open spaces, expand public waterfront access, and strengthen connections between parks and neighborhoods;

[4] NYCEDC and DCP. June 2011. *Working West Shore 2030: Creating Jobs, Improving Infrastructure, and Expanding Growth*. Available at https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/west-shore/wsfinalreport.pdf. Accessed on November 21, 2019.

» Improve community services and choices for the West Shore and for surrounding neighborhoods and expand housing and transit options to attract and retain young adults and meet the needs of a growing senior population.

Recommendations related to connecting the West Shore include the creation of a sustainable transit network. The plan specifically identifies the need to improve bus service from existing Staten Island neighborhoods to West Shore job centers and destinations. It addressed the need to coordinate with MTA on the SINSAA study and to evaluate transit connections to the Teleport. The plan's recommendations include a bus transit hub located south of the North Shore ROW and west of South Avenue.

North and West Shore Brownfield Opportunity Areas

The New York State Department of State administers the Brownfield Opportunity Area (BOA) Program. The BOA Program provides state planning funds to community-based organizations and municipalities to develop community plans for areas with multiple vacant properties or brownfields. Three areas within the Proposed Project's study area have been designated as BOAs and received BOA funding: West Brighton, Port Richmond-Mariners Harbor, and West Shore.

West Brighton

The West Brighton BOA[5] encompasses three subareas along the North Shore waterfront: Jersey Street, New Brighton, and West Brighton. Released in 2016, the BOA report identifies sites within the BOA with potential environmental issues, including 10 strategic sites, eight of which are within the study area for the Proposed Project. These strategic sites are either brownfields or underutilized or vacant sites "whose strategic redevelopment presents a unique opportunity to achieve the community's vision and revitalization of the area" (p. 7).

The result of the West Brighton BOA study is a "Recommendations Action Agenda" with five key components: support and create neighborhood centers; create quality jobs and workplaces; improve access to waterfront, parks, and open space; improve connections and mobility; and address environmental challenges. The recommendations for improving connections and mobility are primarily focused on coordinating with MTA to implement BRT in the North Shore ROW, including exploring appropriate station locations and advancing environmental studies and engineering for the corridor. Specific recommendations with respect to BRT planning and the former North Shore Railroad ROW include:

» Coordinate BRT planning with transportation and streetscape improvements

» Explore land swap proposals to allow straightening of hazardous curves on Richmond Terrace at Bement Avenue and Broadway intersections

[5] Department of City Planning. March 2016. *West Brighton Brownfield Opportunity Area*. Available at https://docs.dos.ny.gov/opd/boa/RichmondTerraceBOA.pdf. Accessed on November 22, 2019.

- Explore potential designs for the construction of street improvements on city-owned portion of Richmond Terrace between Jersey Street and Lafayette Avenue to improve traffic flow and safety
- Explore potential alignment for the proposed North Shore Greenway
- Explore a zoning proposal in New Brighton and West Brighton along Richmond Terrace and Port Richmond along Port Richmond Avenue

Port Richmond-Mariners Harbor

The Port Richmond-Mariners Harbor BOA[6] completed Step 2 of the BOA program in January 2019. The study area for this BOA largely follows zoning district boundaries to include concentrations of manufacturing properties in Port Richmond and Mariners Harbor, as well as the Port Richmond Avenue commercial corridor. This study area encompasses two subareas: one focusing on the Port Richmond Avenue commercial corridor and one focusing on the manufacturing zones along the waterfront, as well as Mariners Marsh Park and Arlington Marsh.

The plan's recommendations include five key components: support and create a vital live-work neighborhood; create quality jobs and workplaces; create new civic, cultural, and recreational spaces; improve connections and mobility; and address environmental challenges. The recommendations related to connections and mobility include a discussion of the potential for "reinventing the former North Shore Railroad," consistent with the SINSAA study, to address urgent needs for improved transit service across the BOA area and to other on- and off-island destinations. The plan describes the ROW as having "remarkable potential to catalyze revitalization across the BOA area" (p. 78).

West Shore

The West Shore BOA[7] released its Nomination Report in February 2018. This BOA is mostly outside of the study area for the Proposed Project; however, the southern portion of the BOA includes West Shore Plaza (the southern terminus of the proposed alignment). As expressed in the Nomination Report, "[t]he overall vision of the West Shore BOA is to create a vibrant, economically sustainable, environmentally recognized industrial green zone that becomes a showcase for the implementation of sustainable best practices in land use, transportation, and stormwater management" (p. 12). The plan's transportation recommendations

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[6] Northfield Community Local Development Corporation. January 2019. *Port Richmond—Mariners Harbor Brownfield Opportunity Area – Step 2 Nomination Report*. Available at https://a002-epic.nyc.gov/community/areas/14. Accessed on November 22, 2019.

[7] Staten Island Economic Development Corporation. *West Shore Brownfield Opportunity Area Final Revitalization Plan*. February 2018. Available at https://docs.dos.ny.gov/opd/boa/WestShoreBOA.pdf. Accessed on November 25, 2019.

include enhanced transit service and new stops at employment centers in the BOA to support continued economic development in the area.

MTA 2025-2044 Twenty-Year Needs Assessment

The MTA's planning process involves the preparation of a Twenty-Year Needs Assessment, which is a comprehensive strategy for investments needed to improve the MTA's existing system, and to enhance and expand the transit network. This assessment includes a comparative evaluation of costs, benefits, and other metrics to determine which projects best meet the MTA's strategic goals. Projects with the greatest benefit will be prioritized and may be included in subsequent Capital Programs. The Twenty-Year Needs Assessment is ongoing and anticipated to be completed by the fall of 2023.

New York City Waterfront Revitalization Program (WRP)

A large portion of the proposed BRT alignment lies within New York State's coastal zone, a designation intended to promote "the preservation, enhancement and utilization of the natural and man-made resources of the State's unique coastal area."[8] Approval of the Proposed Project is therefore subject to the state coastal policies in New York Codes, Rules, and Regulations (NYCRR) Chapter 19, Part 600.5, as well as the *New York City Waterfront Revitalization Program*[9] (a state-approved Local Waterfront Revitalization Program). WRP consistency determinations for state actions subject to State Environmental Quality Review Act (SEQRA) review, including the Proposed Project, are made by the lead state agency (in this case MTA). If federal funding or permitting is involved, the New York State Department of State is responsible for concurring with or objecting to an applicant's consistency determination. As indicated in the *Regulatory Background*, additional City actions will be required to implement the Proposed Project, some of which include applications subject to ULURP which is subject to approval by the City Planning Commission (CPC). During the ULURP process, CPC, acting as the City Coastal Commission, would be required to make a WRP consistency finding. Should the Proposed Project advance through the final design process, WRP consistency findings will be made by CPC. **Figure 3-15** shows the boundaries of the coastal zone in the study area.

The NYC WRP consists of ten policies, each containing sub-policies. The policies and sub-policies most relevant to the Proposed Project are described below. The specific applicability of these policies to the Proposed Project is discussed in the "With-Action Condition" section.

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[8] 19 CRR-NY 600.1, Available at https://govt.westlaw.com/nycrr/Document/I89cbf805c22411ddb9e5b2e06f1b2e15?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default). Accessed on December 3, 2019.

[9] New York City Department of City Planning. *New York City Waterfront Revitalization Program*. Available at https://www.nyc.gov/assets/planning/download/pdf/planning-level/waterfront/wrp/wrp-2016/nyc-wrp-full.pdf. Accessed March 25, 2023.

Figure 3-15 Coastal Zone Boundary

Policy Two: Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

Policy 2.1 is to promote water-dependent and industrial uses in Significant Maritime and Industrial Areas (SMIA). Most of the Kill Van Kull shoreline is designated as an SMIA.[10] Policy 2.1 G, is to "Target public investment to improve transportation access for maritime and industrial operations."

Policy Four: Protect and restore the quality and function of ecological systems within the New York City coastal area.

A small portion of the study area, where the Arlington station is proposed to be located, is within the Northwestern Staten Island Harbor Herons Area, a designated Special Natural Waterfront Area. Policy 4.1 identifies the need to protect and restore the ecological quality and component habitats and resources within Special Natural Waterfront Areas by avoiding and minimizing impacts, using stormwater best management practices, and preparing natural resource assessments under *CEQR Technical Manual* guidelines for projects that would disturb an acre or more within these areas. Policy 4.5 identifies the need to protect and restore tidal and freshwater wetlands by avoiding, minimizing, and mitigating impacts to the greatest extent practicable.

Policy Five: Protect and improve water quality in the New York City coastal area.

Policy 5.2 calls for the use of sustainable stormwater management strategies, such as green infrastructure, permeable surfaces, on-site detention, and the preservation and enhancement of vegetation, wetlands, and ecosystems, to minimize nonpoint discharge of pollutants into coastal waters and to control stormwater runoff from roadways and other developed areas. Policy 5.3 emphasizes the protection of water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands including compliance with federal and state regulations for dredging and filling in these areas.

Policy Six: Minimize loss of life, structures, infrastructure, and natural resources caused by flooding and erosion, and increase resilience to future conditions created by climate change.

Policy 6.2 states that project sponsors should, "Integrate consideration of the latest New York City projections of climate change and sea level rise (as published by the New York City Panel on Climate Change, or any successor thereof) into the planning and design of projects in the city's Coastal Zone."[11]

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[10] New York City Department of City Planning. *New York City Waterfront Revitalization Program*. Available at https://www1.nyc.gov/assets/planning/download/pdf/planning-level/waterfront/wrp/wrp-2016/nyc-wrp-smia.pdf. Accessed on November 20, 2019.

[11] New York City Waterfront Revitalization Program Climate Change Adaptation Guidance, Available at https://www1.nyc.gov/assets/planning/download/pdf/planning-level/waterfront/wrp/revisions-2017/policy-62-guidance-document-nov2018.pdf, page 2. Accessed on December 3, 2019.

This policy requires all projects, except for maintenance and in-kind replacement of existing facilities, to identify potential vulnerabilities to and consequences of sea level rise and coastal flooding over their lifespan and to identify and incorporate design techniques to address these risks.

Policy Ten: Protect, preserve, and enhance resources significant to the historical, archaeological, architectural, and cultural legacy of the New York City coastal area.

The intent of this policy is to protect, preserve, and revitalize those historic, archaeological, and cultural resources that have a coastal relationship or significance. Architectural resources generally include historically, culturally, or architecturally significant buildings, structures, objects, sites, and districts and also may include infrastructure such as bridges, canals, piers, and wharves. Archaeological resources are physical remains, usually subsurface, of the prehistoric, Native American, and historic periods. Policy 10.1 is to retain and preserve historic resources and enhance resources significant to the coastal culture of New York City, while Policy 10.2 is to protect and preserve archaeological resources and artifacts. Both policies stress compliance with national, state, and local laws and regulations regarding designated historical resources, specifically New York City Administrative Code §25-303, as well as those pertaining to the discovery, investigation, and recovery of archaeological resources.

Port Authority of New York and New Jersey Port Master Plan 2050

The Port Authority of New York and New Jersey (PANYNJ) *Port Master Plan 2050* is a long-range plan to identify opportunities over the next 30 years that will allow the Port Authority to maximize and diversify land use, unlock freight network capacity, and identify innovative revenue opportunities across its marine facilities.[12] The PANYNJ's Howland Hook Marine Terminal, located approximately a mile west of the proposed Arlington BRT station, is one of the facilities covered in the plan, and freight rail service associated with the terminal operates within the study area. To accommodate anticipated growth of containerized shipping at the marine terminal, the Master Plan identifies the need to expand Arlington Yard, a freight rail yard located along the still-operating portion of the North Shore Railroad ROW between South Avenue and Western Avenue. The yard leads into the Travis Branch of the railway, the Howland Hook Container Terminal, and the Arthur Kill Lift Bridge to Elizabeth, New Jersey. Expansion of the Arlington Yard would be undertaken in coordination with NYCEDC and Conrail.

[12] Port Authority of New York and New Jersey. *Port Master Plan 2050,* Available at https://www.panynj.gov/port/en/our-port/port-development/port-master-plan.html. Accessed on November 26, 2019.

No-Action Condition

Land Use and Zoning

In the No-Action condition, the North Shore ROW would remain in its undeveloped condition. The No-Action condition would not require the acquisition of any property and would not result in any changes in land use or zoning along the ROW.

Under the No-Action condition, independent of the Proposed Project, several new developments are anticipated to be completed in the vicinity of the study area by the Build Year of 2035 (see **Table 3-1**). Of the thirteen No-Action developments, five are mixed-use in nature, three are residential developments, and the remainder consist of commercial retail, office, or warehouse developments. By 2035, it is anticipated that approximately 3,489 residential units, approximately 2 million square feet of commercial (retail and office) space, approximately 53,000 square feet of community facility space, and approximately 2.7 million square feet of warehouse space will have been constructed in and near the study area.

These No-Action projects, independent of the Proposed Project, consist of the redevelopment of underutilized properties, infill strategies resulting in the development of vacant land with new structures, or the adaptive reuse of structures with modifications to the interior space or use of existing buildings. Under the No-Action condition, ongoing economic development within the study area is expected to continue based on market conditions.

Public Policy

At this time, there are no known new public policies, other than those identified above, that would directly affect the ROW or study area in the No-Action condition. As described above under Existing Conditions, the public policies specific to the study area all identify the need for enhanced transit service to support local goals for community connection and economic development. Many of these plans specifically identify the implementation of BRT, consistent with the SINSAA recommendations, as a key element of their planning efforts. Under the No-Action condition in 2035, although bus service on local streets might be increased or modified as part of a bus network redesign to meet growing demand, there are no plans for bus lanes or other physical improvements to existing routes. Without improvements to transit infrastructure, buses would continue to operate with high levels of congestion and delay, and the North and West Shores would continue to lack reliable transit options to support their planned growth in accordance with established City policies. The opportunities afforded by the presence of a separate transit ROW would not be realized. Therefore, the No-Action condition would not be compatible with applicable public policies.

Table 3-1 No-Action Projects Within and in Vicinity of Study Area

Project Name	Location	Development Summary
Bay Street Corridor	20-block area in Downtown Staten Island	Residential: 2,557 units Commercial: 275,348 sf Community Facility: 46,799 sf Parking Facility: 1,290 spaces
St. George Waterfront Redevelopment [includes NY Wheel (W) & Empire Outlets (O)]*	Richmond Terrace between Bay Street and Nicholas Street	Commercial: 95,100 sf (W)+490,000 sf (O) Parking Facility: 962 spaces (W)+1,250 spaces (O)
Lighthouse Point	Richmond Terrace and Bay Street	Residential: 109 units Commercial: 259,800 sf Parking Facility: 345 spaces
2111 Richmond Terrace Storage Facility	Richmond Terrace and Maple Avenue	Warehouse: 305,076 sf
110 Port Richmond Avenue Housing Development	Port Richmond Avenue between Ann and Bennet Streets	Residential: 77 units
221 Port Richmond Avenue Housing Development	Port Richmond Avenue between Castleton and Anderson Avenues	Residential: 48 units
Forest Avenue & South Avenue Cross Access Retail	Forest Avenue and South Avenue	Commercial: 300,000 sf (approx.)
South Avenue Retail Development	Forest Avenue and South Avenue	Retail + Restaurant: 226,000 sf Parking Facility: 838 spaces
Matrix Development	656 Gulf Avenue	Warehouse: 2,400,000 sf
1441 South Avenue Office Development	South Avenue between Teleport Drive and Travis Avenue	Office: 325,000 sf Parking Facility: 672 spaces
River North	Richmond Terrace, Stuyvesant Place, and Hamilton Avenue	568 housing units Residential: 669,785 sf Commercial: 30,489 sf
160 Richmond Terrace	Richmond Terrace, Stuyvesant Place, and Hamilton Avenue	77 housing units
40 Bay Street	Bay Street between Hyatt Street and Victory Boulevard	53 housing units Residential: 39,665.65 sf Commercial or community facility: 6,546 sq ft

* In February 2023, the NYCEDC terminated their lease with the developer of the NY Wheel property and the development is not moving forward as planned. Since a new development plan has not been identified to date, the development as previously proposed is being included as a No-Action project for the purposes of a conservative analysis.

With-Action Condition

Property Acquisition

The Proposed Project would require the conversion of public and private property from existing uses to transportation right-of-way to facilitate construction of the Proposed Project. The Proposed Project would result in a project total of approximately 4.8 acres that would be converted to right-of-way. Table 3-2 below shows property acquisition for the project by land use type.

As described in Chapter 4, Socioeconomic Conditions, acquisition of the properties identified in Table 3-2 is expected to displace up to four existing businesses, including Thomas Iron Works and Richmond Chandelier Lighting & Electrical Supply, both at 69 Port Richmond Avenue; T.F. Quinlan & Sons at 1473 Richmond Terrace; and Twin Power Supermarket and Restaurant Equipment at 1449 Richmond Terrace. In addition, permits have been filed for a two-story building at 270 South Avenue, which is proposed to be acquired for the construction of Arlington Station. Chapter 4, Socioeconomics, contains more detail on potential business displacements.

The two publicly owned parcels identified in the table are within the portion of the Snug Harbor Cultural Center and Botanical Garden that lies north of Richmond Terrace along the shoreline. The potential area of acquisition from these parcels totals approximately 0.36 acre. Conversion of parkland to right-of-way would trigger New York State's parkland alienation process, which is described in Chapter 6, Open Space. MTA is working with the NYC Department of Parks and Recreation to identify ways to avoid or minimize the use of parkland.

Table 3-2 Property Acquisition by Land Use

Block and Lot	Property Address	Mapped Land Use	Partial or Full Acquisition	Approximate Area Converted to ROW (sq. ft.)
Block 75, Lot 30	Richmond Terrace	Public Facilities (Parkland)*	Partial	15,236
Block 75, Lot 150	Richmond Terrace	Public Facilities (Parkland)*	Full	322
Block 184, Lot 1	1149 Richmond Terrace	Transportation/Utility (Con Edison)	Full	75,724
Block 184, Lot 163	Richmond Terrace	Transportation/Utility (Con Edison)	Full	39,869[a]
Block 184, Lot 248	1449 Richmond Terrace	Manufacturing (Twin Power Supermarket and Restaurant Equipment)	Full	11,829
Block 184, Lot 254	Richmond Terrace	Vacant (Quinlan Oil)	Full	3,444
Block 184, Lot 256	1473 Richmond Terrace	Transportation/ Utility (Quinlan Oil)	Full	19,561
Block 185, Lot 52	1615 Richmond Terrace	Parking Facilities	Partial	1,062
Block 1004, Lot 7	69 Port Richmond Avenue	Industrial/ Manufacturing (Thomas Iron Works, Richmond Chandelier Lighting & Electrical Supply)	Full	8,389
Block 1268, Lot 209	270 South Avenue	Vacant (building permits filed 7/19)	Full	23,400
Block 1268, Lot 69	Northfield Avenue	Transportation/Utility (NYS Public Service)	Partial	58,800
Block 1268, Lot 217	South Avenue	Transportation/Utility (Con Edison)	Partial	13,042
Block 1243, Lot 30	Lockman Avenue	Vacant (CSX)	Partial	605
			Total (sq. ft.)	**231,414**

[a] A portion of this area is submerged land

* Denotes public property

Land Exchanges

The ROW bisects two active water-dependent industrial uses situated along the Kill Van Kull: Caddell Dry Dock and Atlantic Salt. Although these businesses previously operated when the North Shore Railroad was in active service through their property, they have continued to evolve in the absence of the rail line, and

re-establishment of transit service along the ROW would likely be problematic for the viability of their current operations. As such, the Proposed Project would shift the BRT alignment to the south within both properties to maintain an efficient transit corridor while enabling these property owners to ~~maximize~~ maintain waterfront access for their business functions. This shift would involve property discussions (e.g., possible land exchanges) involving the City (owner of the right-of-way), Atlantic Salt and Caddell (owners of the property adjacent to the right-of-way), and the MTA. The intent of the property discussions is to exchange of a portion of the existing ROW for an equivalent portion of the Caddell and Atlantic Salt properties. Access to both businesses would be modified, however, the proposed alignment was conceptually designed to minimize impacts to these businesses to the extent possible to enable these businesses to continue their maritime operations. ~~but the operational functions of the businesses would not be impacted by the Proposed Project.~~

The exact location and dimensions of the property to be exchanged are currently under discussion with the owners and would be refined through the final project design process. The exchanges are currently expected to comprise an area of approximately 106,700 square feet for Caddell Dry Dock and up to 127,000 square feet for Atlantic Salt. Under both potential land exchanges, there would be no net loss of land area. Approximately 25,000 square feet of building floor space would be eliminated at Caddell Dry Dock, including administrative office space, a locker room, and two additional buildings.

Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with Atlantic Salt to refine the proposed BRT design to reflect a design that will accommodate Atlantic Salt's storage and salt operations needs to the extent practicable while meeting MTA's operational needs.

Land Use and Zoning

Other than the conversion of several properties to transportation right-of-way, as described above, the Proposed Project would not change existing land uses in the study area. Along much of its length, the Proposed Project would be in existing roadways with substantial traffic, or in a dedicated transportation ROW that is adjacent to industrial properties that are less sensitive to the potential impacts of traffic than residential neighborhoods. The open-cut portion of the ROW is buffered from adjacent residential uses by the depth of the cut. This change in land use is not expected to have adverse impacts on existing land uses.

However, in some areas—particularly the New Brighton and Viaduct sections—the proposed alignment is adjacent to residential neighborhoods and parklands that could experience potential noise and visual impacts from increased bus traffic. To enhance the Proposed Project's compatibility with adjacent residential and park uses, MTA would evaluate urban design and landscaping measures to buffer these uses from the corridor and maintain the character of the surrounding neighborhood. These approaches would be developed in detail with community

participation as part of final project design. The design would also minimize potential noise impacts in accordance with applicable requirements. Chapter 9, Urban Design and Visual Resources, and Chapter 18, Noise, include more information on design measures to avoid and minimize potential impacts.

New park-and-ride facilities at the proposed Livingston and Arlington stations and in other station areas may result in increased levels of vehicular traffic and pedestrians, and sidewalks may be modified along Richmond Terrace and at stations to enable access and egress. In addition, some areas along Richmond Terrace in St. George and Roxbury Street in Arlington may lose some public street parking. As part of the Proposed Project, a new walkway would be provided between Union Avenue and Van Pelt Avenue to provide pedestrian connectivity between the Erastina Place neighborhood and the proposed Mariner's Harbor Station. Chapter 2, Proposed Project and Alternatives, and Chapter 15, Transportation, provide more information on transportation impacts.

While the Proposed Project would support community goals of facilitating transportation connections, it would not create new development within the study area; rather, it would enhance the area's ability to develop consistently with adopted plans and policies.

The Proposed Project would not change zoning throughout most of the study area. If City-owned parkland is acquired and converted to right-of-way for the Proposed Project, a zoning map amendment would be necessary to facilitate parkland alienation. A new zoning designation would be required for the alienated parkland and the new parkland created in exchange. A zoning map amendment would also be required for private properties acquired and converted to right-of-way.

Public Policy

In general, the Proposed Project would be compatible with applicable public policies. A brief discussion of consistency is provided below.

Community District 1 Needs Statement and Community Board Budget Requests

As described under Existing Conditions, the most recent Staten Island Community District 1 Needs Statement identifies the need for improved mass transit, notes traffic congestion as a key concern and identifies the need for BRT lanes and service within the district to improve traffic flow and transit access and reliability. The Proposed Project would address this need.

North Shore 2030

The Proposed Project would support the *North Shore 2030* strategy to improve connections and mobility for residents and businesses through targeted and coordinated intersection and transportation improvements to support an enhanced transit network. Specifically, the project would further the goal of considering the former North Shore Railroad ROW's future reuse as a transit corridor in coordination with MTA. It would also support relevant strategies for

specific Opportunity Areas by improving transportation connections to St. George Terminal, maintaining waterfront access at Snug Harbor, and providing for land exchanges with Caddell and Atlantic Salt to facilitate operation of these important maritime businesses while expanding future transit options.

Working West Shore 2030

Like *North Shore 2030,* the Proposed Project would support the West Shore 2030 strategy of providing better connections between West Shore neighborhoods and employment centers to the rest of the borough and the region through updated road and transit networks. The new BRT corridor would serve as an important component of the sustainable transit network envisioned by the plan by improving bus service from existing Staten Island neighborhoods to West Shore job centers and destinations. The Proposed Project would also provide a bus transit hub located south of the former North Shore Railroad ROW and west of South Avenue, as recommended in *Working West Shore 2030*.

North and West Shore Brownfield Opportunity Areas

The three BOAs within the study area—West Brighton, Port Richmond-Mariners Harbor, and West Shore—have similar goals related to improving transportation connections and mobility. The West Brighton and Port Richmond BOA studies call specifically for implementation of BRT in the North Shore corridor as recommended by the SINSAA. The Proposed Project would also advance the West Shore BOA plan's transportation recommendations for enhanced transit service and new stops at employment centers in the BOA to support continued economic development in the area.

While the West Brighton BOA notes potential to utilize the 100-foot mapped width of Richmond Terrace, it is important to note that altering Richmond Terrace to utilize the mapped width of 100 feet would be an independent city-sponsored action that is beyond the scope of the Proposed Project and not within MTA jurisdiction to implement.

MTA 2025-2044 Twenty-Year Needs Assessment

The Proposed Project is anticipated to be evaluated along with other MTA expansion and enhancement projects for inclusion in the MTA Twenty-Year Needs Assessment.

New York City Waterfront Revitalization Program (WRP)

As described above under Existing Conditions, a large portion of the proposed BRT alignment is within the coastal zone and therefore subject to the requirements of the WRP. Much of Sections 1, 2, and 3 is also within the 1 percent chance, or 100-year, floodplain, with a base flood elevation (BFE) of 12 to 13 feet.[13] To support transit system reliability during flooding events, the

[13] Based on NYC Flood Hazard Mapper, Available at http://dcp.maps.arcgis.com/apps/webappviewer/index.html?id=1c37d271fba14163bbb5

Proposed Project would be constructed at a minimum elevation of 2 feet above the BFE. This would require an elevated, pier-supported roadway section for a portion of the busway adjacent to Snug Harbor. The structures would be designed to withstand anticipated levels of wind and wave action. Additional information on coastal and floodplain design considerations and resiliency is provided in Chapter 2, Proposed Project and Alternatives, of this EIS. The Proposed Project's consistency with specific WRP policies described under Existing Conditions is summarized below.

- **Policy Two:** The Proposed Project would support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation—specifically along the Kill Van Kull, a Significant Maritime and Industrial Area (SMIA). The Proposed Project would advance Policy 2.1's directive to target public investment to improve transportation access for maritime and industrial operations. With respect to the continued operation of Caddell Dry Dock and Atlantic Salt, the discussion under Land Exchanges, above, notes that the ROW would be shifted to minimize impacts on the operations of these two businesses. This would involve the exchange of a portion of the existing ROW for an equivalent portion of the Caddell and Atlantic Salt properties. While ~~A~~access to both businesses would be modified, the proposed alignment was conceptually designed to minimize impacts to these businesses to the extent possible to enable these businesses to continue their maritime operations ~~but the operational functions of the businesses would not be impacted by the Proposed Project~~.
- **Policy Four:** Design and construction of the Proposed Project would include measures to protect and restore the quality and function of ecological systems, including wetlands, intertidal areas, and Special Natural Waterfront Areas. MTA has prioritized avoidance of these areas during project design. Chapter 10, Natural Resources, describes measures that have been taken to avoid, minimize, and/or mitigate impacts on coastal resources.
- **Policy Five:** The Proposed Project would improve water quality by collecting and treating stormwater from the new busway, including stormwater that currently discharges untreated into the Kill Van Kull. In addition, measures such as sustainable stormwater management strategies and the preservation and enhancement of vegetation, wetlands, and ecosystems will be employed to the extent feasible to minimize nonpoint discharge of pollutants into coastal waters. The project would also comply with federal and state regulations for dredging and filling in navigable waters and in or near wetland areas, as detailed in Chapter 10, Natural Resources.
- **Policy Six:** As described above, the Proposed Project would incorporate design measures to ensure that the BRT corridor could continue to operate in 100-year flood conditions and would withstand anticipated levels of wind

20517153d6d5. Flood elevation is based on 2015 Preliminary Flood Insurance Rate Map (FIRM) with a vertical datum of NAVD88. Accessed May 20, 2023.

and wave action. During some future sea level rise scenarios, as anticipated in the City's guidance for Policy 6.2, the busway may become inundated in lower-elevation areas during flood events. However, the busway is not considered a critical facility, and in the event of significant flooding, MTA would suspend service until safe conditions were restored.

- **Policy Ten:** The Proposed Project would comply with all national, state, and local regulations intended to protect, preserve, and enhance resources significant to the historical, archaeological, architectural, and cultural legacy of the New York City coastal area. Chapter 8, Historic and Cultural Resources, provides additional information.

Port Authority of New York and New Jersey (PANJNY) Port Master Plan 2050

The Proposed Project would allow for continued operations on the former North Shore Railroad ROW in the Arlington Yard area. Operation of BRT service east of South Avenue would not preclude existing train movements; future expansion of Arlington Yard operations to accommodate increased activity at the Howland Hook Marine Terminal; or a future expansion of freight rail operations to Van Name Avenue. The Proposed Project would therefore support the PANYNJ's *Port Master Plan 2050*. MTA would coordinate with the PANYNJ as the project progresses to ensure the compatibility of BRT and rail operations in the ROW.

Conclusion

The Proposed Project would require the conversion of public and private property from existing uses to transportation right-of-way to facilitate construction of the Proposed Project. This change in land use is not expected to have adverse impacts on existing land uses. In addition, zoning in the study area would not change as a result of the Proposed Project, except for a zoning map amendment that could be necessary to facilitate parkland alienation. The Proposed Project would be compatible with and/or actively support all applicable public policies. As a result, the Proposed Project is not expected to have significant adverse impacts on land use, zoning, or public policy in the study area.

4 Socioeconomic Conditions

This chapter describes the socioeconomic changes that may result from the Proposed Project and assesses whether the Proposed Project would result in significant adverse impacts to the surrounding area's socioeconomic character, including population, housing, and economic activity.

Regulatory Background

According to the *2021 CEQR Technical Manual*, an analysis of socioeconomic conditions may be necessary when a project would directly or indirectly change an area's socioeconomic character (population, housing, and economic activity). An assessment of socioeconomic conditions is warranted when a project would result in:

- Direct displacement of residential population on a development site;
- Direct displacement of existing businesses or institutions on a development site;
- Indirect displacement of residential population in a study area;
- Indirect displacement of businesses or institutions in a study area;
- Indirect displacement of businesses due to retail market saturation; and
- Adverse effects on specific industries.

Methodology

Introduction

According to *CEQR Technical Manual* guidance, the socioeconomic character of an area is defined by its population, housing, and economic activities. The assessment of socioeconomic conditions usually distinguishes between the socioeconomic conditions of an area's residents and businesses. However, proposed actions may affect either or both segments in the same ways; they may directly displace residents or businesses, or they may alter one or more of the underlying forces that shape socioeconomic conditions in an area and thus may cause indirect displacement of residents or businesses.

Direct displacement is defined as the involuntary displacement of residents, businesses, or institutions from the actual site of (or sites directly affected by) a proposed project. Indirect or secondary displacement is defined as the involuntary displacement of residents, businesses, or employees in an area adjacent or close to a development site that results from changes in socioeconomic conditions created by a proposed project. Examples include rising rents in an area that result from a new concentration of higher-income housing introduced by a project, which ultimately may make existing housing unaffordable to lower income residents.

The objective of the analysis is to disclose whether any potential changes created by the Proposed Project would have a significant adverse impact compared with what would happen in the future without the Proposed Project (i.e., the No-Action condition).

Analysis Framework

Following *CEQR Technical Manual* guidelines, the analysis begins with an initial screen that considers threshold circumstances identified in the *CEQR Technical Manual* that can lead to socioeconomic changes warranting further assessment. If the initial screen determines that further assessment is warranted, a preliminary assessment is then undertaken. The purpose of the preliminary assessment is to learn enough about the effects of the proposed project to either rule out the possibility of significant adverse impacts or determine that a more detailed analysis is required to resolve the issue. A detailed analysis, when required, is framed in the context of existing conditions and evaluations of the future No-Action and With-Action conditions by the project Build Year.

Study Area Definition

A study area is the location where the Proposed Project is expected to have the greatest impact to directly or indirectly affect population, housing, and economic activities. It typically resembles the land use study area, containing both the project site and adjacent areas. A study area reflects the scale of the project relative to the surrounding area's population and employment, ranging from an approximately 400-foot, one-quarter-mile, or one-half-mile radius, depending upon the project size and area characteristics. For this project, a half-mile radius was chosen based on the length of the corridor and the diverse nature of the areas through which it passes.

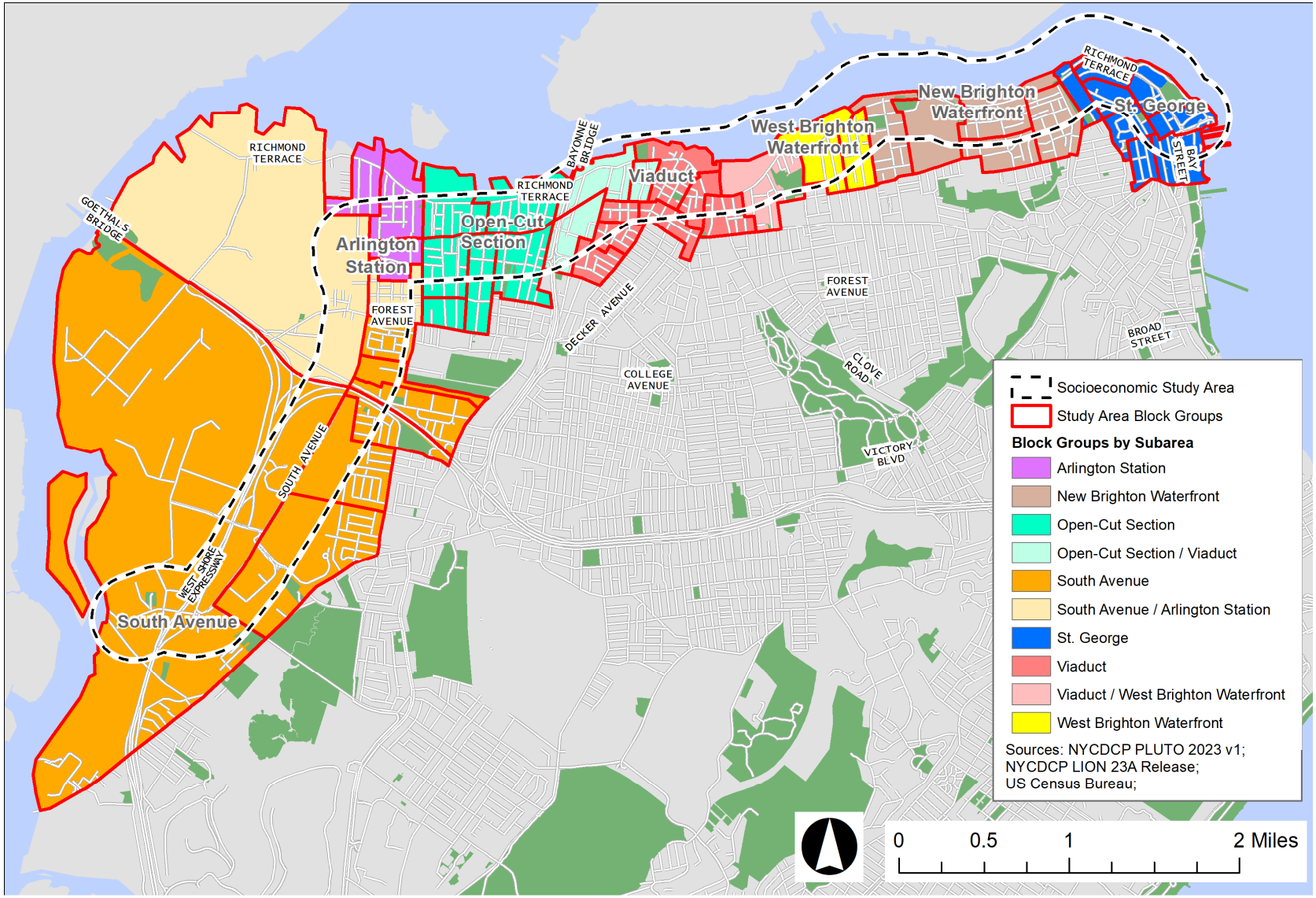
The study area is generally located along the North Shore of Staten Island between South Avenue (West Shore Plaza) and St. George (St. George Terminal) in Richmond County, New York. The approximately 8-mile proposed alignment would be comprised of approximately 4.8 miles of former North Shore Railroad right-of-way (ROW) and a total of 3.2 miles of City roadways, such as Richmond Terrace (0.5 miles) and South Avenue (2.7 miles). Due to the large size of the study area, diverse land use characteristics, and real estate trends across the area, several sections were used for the analysis to better disclose whether the Proposed Project may have disparate effects on distinct populations that would otherwise be masked or overlooked within the larger study area. The U.S. Census

Block Groups that encompass the socioeconomic study area are shown in Figure 4-1 and have been organized into the following sections[1] (listed from east to west):

- **St. George** (area along Richmond Terrace from the St. George Terminal west to Jersey Street): Tract 3 Block Groups 1 and 2; Tract 7 Block Groups 1, 2, 3, and 4; Tract 9 Block Group 1; and Tract 11 Block Group 1;
- **New Brighton Waterfront** (area along the Kill Van Kull shoreline in the New Brighton neighborhood extending from Jersey Street west to Davis Avenue): Tract 81 Block Groups 1, 2, and 3; and Tract 97 Block Groups 1 and 3;
- **West Brighton Waterfront** (area parallel to the shoreline from Davis Avenue to the foot of Alaska Street): Tract 97 Block Groups 1 and 2; and Tract 133.02 Block Group 2;
- **Viaduct** (area along the existing viaduct section of the ROW from Alaska Street west to John Street): Tract 133.02 Block Groups 1 and 2; Tract 207 Block Groups 1, 2, and 3; and Tract 213 Block Groups 2, 4, and 5;
- **Open-Cut** (area along a section of the former right of way running from John Street west to Union Street): Tract 231 Block Groups 1, 2, and 3; Tract 223 Block Groups 1 and 2; Tract 239 Block Group 1; Tract 213 Block Group 5; and Tract 207 Block Group 1;
- **Arlington Station** (area along the former ROW along an at-grade section from Harbor Road to South Avenue): Tract 319.01 Block Groups 1 and 2; Tract 319.02 Block Groups 2 and 3; and Tract 323 Block Group 1; and
- **South Avenue** (area south of Cable Way/Netherland Street connecting to South Avenue and then to West Shore Plaza): Tract 291.02 Block Group 1; Tract 291.03 Block Group 1; Tract 291.04 Block Groups 1 and 2; Tract 303.01 Block Group 1; Tract 303.02 Block Groups 1 and 2; Tract 319.01 Block Group 2; and Tract 323 Block Group 1.

[1] There is some overlap among sections where block groups are located in more than one section, including Tract 20700 Block Groups 1 and 3 as well as and Tract 21300 Block Group 5, both located in the Open-Cut and Viaduct sections; Tract 31901 Block Group 2 and Tract 32300 Block Group 1, both located in the South Avenue and Arlington Station sections; and Tract 13302 Block Group 2, located in both the Viaduct and West Brighton Waterfront sections. As a result, the sum of data reported by section may exceed the total of data reported for the study area as a whole.

Figure 4-1 Socioeconomic Study Area and Sections



Data Sources

Population, housing, and income data were collected from the U.S. Census Bureau's 2010 Decennial Census and both the 2006-2010 and 2017-2021 Five-Year American Community Surveys (ACS), compiled through the American FactFinder. The ACS data reflects five-year averages of income distribution, mean income, and rent for the previous 12 months in 2021 inflation-adjusted dollars. All income and rent data were adjusted to 2023 Q1 dollars to account for inflation based on the New York-Northern New Jersey-Long Island, NY-NJ-CT-PA Consumer Price Index for All Urban Consumers so that income and rent trends were observed to change based on normalized figures.

Land use and parcel data was collected from the City's Primary Land Use Tax Lot Output (MapPLUTO™) Release 23v1 data files. Business data was collected from DataAxle, a business database, on April 28, 2023.

Existing Conditions

Residential Development

The study area has a large concentration of residential land uses, comprising over 22,600 dwelling units under existing conditions—particularly in the South Avenue, St. George, and Open-Cut sections. Residential development activity has been moderately active in recent years, with borough-wide development activity concentrated in the North Shore in the neighborhoods of St. George and Stapleton. Major recent projects in the North Shore area include The Pointe, a 57-unit luxury condominium building, and The Accolade, a 101-unit condominium building—both completed in the St. George neighborhood in 2013; Eastpointe at Bridgeview, an 84-unit townhome development completed in the Clifton neighborhood in 2015; and Urby Staten Island, a 571-unit mixed-use development completed in 2016 in the Stapleton neighborhood.

The current population of the socioeconomic study area is 58,571, according to the 2017-2021 ACS. Among the 22,662 housing units in the study area, approximately 11.6 percent were estimated to be vacant in 2021, compared to a 7.4 percent vacancy rate in Staten Island and 9.5 percent in New York City as a whole. Approximately 46.2 percent of occupied units in the study area are rental units, which is considerably higher than Staten Island (31.3 percent) but less than New York City as a whole (66.8 percent) (see **Table 4-1**).

Table 4-1 Population and Housing Data

Geography	Population	Housing Units	Percent Vacant	Percent Rental Units
Study Area	58,571	22,662	11.6%	46.2%
St. George	9,093	4,809	14.4%	76.1%
New Brighton Waterfront	6,144	2,617	12.0%	46.4%
West Brighton Waterfront	4,160	1,463	4.9%	42.1%
Viaduct	10,045	3,731	21.8%	54.8%
Open-Cut Section	12,450	4,228	13.9%	36.9%
Arlington Station	8,196	2,821	10.6%	47.2%
South Avenue	15,565	5,596	6.8%	23.0%
Staten Island	493,194	183,011	7.4%	31.3%
New York City	8,736,047	3,590,995	9.5%	66.8%

Source: US Census Bureau. *American Community Survey*. 2017-2021 American Community Survey 5-year Estimates. Accessed from https://data.census.gov/. Accessed on April 2, 2023.

Note: Percent Vacant, as defined by the U.S. Census, includes vacant housing units for rent or sale, units that are occupied by persons who have a usual residence elsewhere, and vacant units held off the market. The sum of section data does not equal the value for study area data due to overlap among section block group boundaries.

Among the seven sections within the study area, vacancy rates range from 4.9 percent in the West Brighton Waterfront section to 21.8 percent in the Viaduct section. The St. George section has the highest percentage of rental housing units (76.1 percent). In all other sections, the share of rental units ranges from 23.0 percent in the South Avenue section to 54.8 percent in the Viaduct section.

After adjusting for inflation, household rents (Table 4-2) have increased in the study area since 2010. In 2021, the average gross rent[2] in the study area was estimated at $1,506 per month.[3] Between 2010 and 2021, New York City experienced a gain in average gross rent of 20.4 percent, while Staten Island saw an increase of 3.7 percent and the study area's average gross rent increased by 6.5 percent.

The study area has a relatively high number of publicly subsidized, rent-protected housing compared to the other areas of the City, contributing to its relatively low average gross rents compared to Staten Island and New York City as a whole. In addition, as discussed below, median household income has increased at a greater rate than average gross rents in the study area.

[2] Due to the small sample size, estimates of average gross rent are considered more reliable; median rents in the study area and Staten Island showed a decrease in rent between 2010 and 2021.

[3] Real time listings accessed from StreetEasy.com on May 5, 2023, identify eleven (11) units available for rent in the study area with rents ranging from $1,200 to $3,750, with an average asking rent of $2,185.

Table 4-2 Average Gross Rent

Geography	2010	2021	Percent Change[1]
Study Area	$1,415	$1,506	+6.5%
Staten Island	$1,541	$1,598	+3.7%
New York City	$1,621	$1,951	+20.4%

Source: US Census Bureau. *American Community Survey*. 2006-2010 and 2017-2021 American Community Survey 5-year Estimates. Accessed from https://data.census.gov/. Accessed on April 2, 2023.

[1] Gross rent levels presented in inflation-adjusted 2023 dollars. Gross rent levels are statistically significant per the ACS.

The median annual household income for the study area (see Table 4-3) is estimated at $82,109 in 2021—ranging from $60,744 in the Viaduct section to $104,173 in the South Avenue section. Median household income is $103,825 on Staten Island and $82,040 in New York City as a whole. Between 2010 and 2021, the median household income for the study area increased by 8.9 percent after adjusting for inflation. Median household income on Staten Island expanded by 5.9 percent during this period, while in New York City as a whole it increased by 18.3 percent.

Table 4-3 Median Household Income

Geography	2010	2021	Percent Change[1]
Study Area	$75,431	$82,109	+8.9%
St. George	$62,859	$67,064	+6.7%
New Brighton Waterfront	$77,826	$84,159	+8.1%
West Brighton Waterfront	$94,375	$90,230	-4.4%
Viaduct	$69,687	$60,744	-12.8%
Open-Cut Section	$73,777	$81,343	+10.3%
Arlington Station	$51,647	$78,047	+51.1%
South Avenue	$97,268	$104,173	+7.1%
Staten Island	$98,025	$103,825	+5.9%
New York City	$69,343	$82,040	+18.3%

Source: US Census Bureau. *American Community Survey*. 2006-2010 and 2017-2021 American Community Survey 5-year Estimates. Accessed from https://data.census.gov/. Accessed on April 2, 2023.

[1] Negative values in red. Income levels presented in inflation-adjusted 2023 dollars. Income levels are statistically significant per the ACS; however, data for the individual sections are collected from a small sample size and are therefore, less statistically reliable. Median values were estimated using ACS tables indicating the number of households in each block group whose household incomes fall into a given range. The share of each income bracket by section was calculated and a cumulative distribution established. Using the cumulative distribution, the median household income was calculated by interpolating the value between the end points of the earnings brackets where the 50th percentile lay.

The average annual household income in the study area (see Table 4-4) is estimated at $109,998 in 2021, compared with $127,491 in Staten Island and $125,021 in New York City. Average annual household income varies across the

sections from $67,556 in the Viaduct section to $111,855 in the South Avenue section. Between 2010 and 2021, the average household income of residents in the study area increased by 15.4 percent after adjusting for inflation. In Staten Island, average annual household income increased by 6.8 percent during this period, while it increased by 16.4 percent in New York City as a whole.

Compared to average household income, the study area's median household income is less inflated by the relatively small number of high-income households across the study area, such as in the South Avenue and West Brighton Waterfront sections. The data broadly show that the socioeconomic study area is an area with a household income level moderately less than Staten Island and New York City as a whole.

Table 4-4 Average Household Income

Geography	2010	2021	Percent Change[1]
Study Area	$95,292	$109,998	+15.4%
St. George	$86,450	$102,543	+18.6%
New Brighton Waterfront	$95,703	$110,869	+15.8%
West Brighton Waterfront	$106,567	$116,120	+9.0%
Viaduct	$83,561	$78,444	-6.1%
Open-Cut Section	$84,972	$99,168	+16.7%
Arlington Station	$76,214	$119,195	+56.4%
South Avenue	$119,335	$129,863	+8.8%
Staten Island	$119,428	$127,491	+6.8%
New York City	$107,420	$125,021	+16.4%

Source: US Census Bureau. *American Community Survey*. 2006-2010 and 2017-2021 American Community Survey 5-year Estimates. Accessed from https://data.census.gov/. Accessed on April 2, 2023.

[1] Negative values in red. Income levels presented in inflation-adjusted 2023 dollars. Income levels are statistically significant per the ACS, however, data for the individual sections are collected from a small sample size and are therefore, less statistically reliable.

The range of household income across the study area and its sections is shown in Table 4-5. Within the study area, 36.8 percent of households earn less than $50,000 annually, compared with 29.0 percent in Staten Island and 38.1 percent in the City as a whole. The wide range of household income is due in part to the study area's mix of rent-regulated and market-rate housing stock. A large share of low- and moderate-income households live in housing regulated by rent control, rent stabilization, and other government controls that regulate the cost of rent. Among the 22,662 housing units in the study area, 5,524 units (24.4 percent) were identified by the Furman Center[4] as being located in a property where one or more units receive some form of government subsidy from city, state, or federal government sources.

[4] NYU Furman Center. *State of New York City's Housing and Neighborhoods—2018 Report.* Accessed at https://furmancenter.org/research/sonychan

These subsidized properties include three NYCHA developments in the study area: Cassidy-Lafayette in the New Brighton Waterfront section (380 units), Mariner's Harbor in the Arlington Station section (607 units), and Richmond Terrace in the St. George section (502 units). Collectively, these developments account for 1,489 dwelling units, or 6.6 percent of total housing units in the study area.

Beyond publicly subsidized housing, there are many potentially rent-stabilized housing units in the study area located in rental buildings with six or more units built prior to 1974.

According to MapPLUTO, in 2023 there were 5,245 such units, with more than half (50.2 percent) located in the St. George section. In total, there are 10,769 potentially rent-stabilized units and units in publicly subsidized buildings (which may be rent-regulated) according to MapPLUTO and Furman Center data. Although there are numerous options for units to be converted out of rent protection, data on these unprotected units is not easily accessible.

Table 4-5 Distribution of Household Income

Geography	<$25,000	$25,000-$49,999	$50,000-$99,999	$100,000-$149,999	$150,000+
Study Area	19.3%	17.5%	26.1%	18.3%	18.8%
St. George	22.9%	21.1%	25.3%	16.3%	14.5%
N. Brighton Waterfront	20.1%	19.3%	26.0%	17.0%	17.6%
W. Brighton Waterfront	17.7%	15.6%	19.6%	20.7%	26.4%
Viaduct	28.4%	20.2%	24.1%	17.4%	9.9%
Open-Cut Section	15.7%	14.0%	35.8%	17.9%	16.6%
Arlington Station	29.0%	12.0%	18.3%	17.4%	23.3%
South Avenue	9.3%	18.3%	27.5%	20.9%	24.0%
Staten Island	14.5%	14.5%	25.6%	19.0%	26.5%
New York City	21.2%	16.9%	25.0%	15.0%	21.9%

Source: US Census Bureau. *American Community Survey*. 2017-2021 American Community Survey 5-year Estimates. Accessed from https://data.census.gov/. Accessed on April 2, 2023.

Business Conditions

The study area has historically been a center for blue-collar employment for the borough. During the mid-20th century, the region's waterfront was a center for manufacturing, shipping, and warehousing. With the decline of the manufacturing sector in the late 20th century, the region's economy diversified—with significant growth in service sector industries including health care, retail, and educational services. Containerized shipping in the North Shore was revitalized during the 1990s following several decades of decline as regional shipping activity moved to the Port Newark-Elizabeth Marine Terminal.

The study area contains several unique employment clusters. These range from transportation, cultural, and recreational activities at the St. George waterfront and central business district to dry dock and shipyard facilities at Port Richmond,

the 187-acre New York Container Terminal, and other working waterfront areas at Howland Hook, to the cluster of cultural facilities at the Snug Harbor national historic landmark district, to the West Shore Plaza and Teleport office park in Bloomfield.

Over the past 15 years, the study area has experienced an economic resurgence; from 2002 to 2020, the study area added over 9,000 private-sector jobs (+72.8 percent), increasing from 13,400 to 23,157 jobs. This growth is expected to continue in the future due to recent and ongoing major economic development projects in the area such as the Empire Outlets, Lighthouse Point, Navy Pier, a $10 million fund for the St. George Economic Revitalization Initiative, and the Bay Street Corridor Affordable Housing Plan. In addition, recently completed warehouse facilities for Amazon and Ikea at Phase 1 of the Matrix Global Logistics Park on the West Shore are expected to employ more than 4,000 workers when at full capacity. These projects and plans contributed to development activity across the North Shore. The nature of new development projects in the study area and the broader North Shore area demonstrates a shift away from the previously industrial base.

As of 2020, there were an estimated 23,157 private-sector employees in the socioeconomic study area (see **Table 4-6**), accounting for 26.1 percent of private employment in Staten Island and 0.65 percent of private employment in New York City as a whole. The largest concentration of jobs in the study area is in the Transportation and Warehousing sector (43.4 percent), a considerably larger share of private employment than in Staten Island and New York City as a whole (12.9 percent and 3.3 percent, respectively). Employment in this sector is concentrated in the Arlington Station, South Avenue, and Viaduct sections at locations including the New York Container Terminal and the Coca-Cola Bottling Company facility in the Arlington Station section; Ambit Pros and Island Charter in the South Avenue section; and Priority Ambulance One, MV Transportation, and Four Wheel Driveline Systems in the Viaduct section. The Matrix Global Logistics Park in Bloomfield in the South Avenue section recently opened its Amazon and Ikea warehouses and is expected employ more than 4,000 workers when operating at full capacity.

Health Care and Social Assistance represents the study area's second largest sector, accounting for 12.7 percent of private employment. This is a lesser share than in the borough (30.1 percent) or the City (22.6 percent). Most of the study area's health care employment is concentrated in the St. George, Viaduct, and Open-Cut sections. Although major hospital campuses are not located within the study area, several clinics and medical office buildings operate there. These include the Staten Island University Hospital – Bay Street Health Center and a Planned Parenthood clinic in the St. George section; the Community Health Center of Richmond Port Richmond Health Center in the Viaduct section; and the Beacon Christian Community Health Center in the Open-Cut section.

The third largest sector in terms of private employment in the study area is the Construction sector. The study area has a larger share (10.9 percent) of private sector workers employed in the Construction sector than in the borough (10.0

percent) and the City as a whole (3.8 percent). Major employers include ADCO Electrical and JP Hogan Coring Sawing in the South Avenue section as well as Gaeta Interior Demolition in the Viaduct section.

Table 4-6 2020 Private Employment in the Socioeconomic Study Area, Staten Island and New York City

	Socioeconomic Study Area		Staten Island		New York City	
Industry Sector	**Employees**	**%**	**Employees**	**%**	**Employees**	**%**
Agriculture, Forestry, Fishing, and Hunting	0	0.0%	1	0.0%	513	0.0%
Mining, Quarrying, Oil, and Gas Extraction	0	0.0%	0	0.0%	88	0.0%
Utilities	700	3.0%	1,205	1.4%	16,491	0.5%
Construction	2,519	10.9%	8,871	10.0%	134,137	3.8%
Manufacturing	503	2.2%	1,104	1.2%	52,603	1.5%
Wholesale Trade	524	2.3%	1,380	1.6%	128,088	3.6%
Retail Trade	1,361	5.9%	12,873	14.5%	292,417	8.2%
Transportation and Warehousing	10,055	43.4%	11,464	12.9%	119,449	3.3%
Information	583	2.5%	1094	1.2%	241,408	6.8%
Finance and Insurance	192	0.8%	2,285	2.6%	341,331	9.6%
Real Estate Rental, and Leasing	251	1.1%	1,019	1.1%	130,112	3.6%
Professional, Scientific and Technical Services	705	3.0%	3,295	3.7%	418,792	11.7%
Management of Companies and Enterprises	182	0.8%	511	0.6%	72,924	2.0%
Administration, Support, Waste Management, and Remediation	1305	5.6%	4,429	5.0%	222,049	6.2%
Educational Services	475	2.1%	3,538	4.0%	206,208	5.8%
Health Care and Social Assistance	2,940	12.7%	26,689	30.1%	805,961	22.6%
Arts, Entertainment, and Recreation	80	0.3%	704	0.8%	70,478	2.0%
Accommodation and Food Services	409	1.8%	5,156	5.8%	178,424	5.0%
Other Services (excluding Public Administration)	373	1.6%	3,150	3.5%	138,921	3.9%
Total	**23,157**	**100.0%**	**88,768**	**100.0%**	**3,570,394**	**100.0%**

Source: US Census Bureau. 2023 *LODES 7 / OnTheMap*. Longitudinal Employer-Household Dynamics Program. Accessed from https://onthemap.ces.census.gov. Accessed on April 28, 2023.

No-Action Condition

In the No-Action Condition, the study area will continue to be developed with residential and commercial uses. Currently, 932 housing units are under construction or pending within the study area according to the New York City Department of City Planning's (DCP) Staten Island Borough Office (see Table 4-7) along with 4,437,211 square feet of commercial area including 706,535 square feet of retail area, 325,000 square feet of office area, 2,892,176 square feet of storage/warehouse area, 513,500 square feet of undefined commercial use area and 4,333 parking spaces. According to the 2019 Bay Street Corridor Rezoning Final Environmental Impact Statement (FEIS), new higher density mixed-use development remains in high demand in the St. George and Stapleton areas, but this trend has not placed upward pressure on rents for businesses in surrounding areas.

Table 4-7 Development Activity Under Construction or Pending in the Socioeconomic Study Area and Sections

Geography	Residential Dwelling Units	Total Commercial Area[1]	Retail Area	Office Area	Ware-house Area	Parking Spaces
Study Area	**932**	**4,437,211**	**706,535**	**325,000**	**2,892,176**	**4,333**
St. George	807	881,135	480,535		95,100	2,823
New Brighton Waterfront						
West Brighton Waterfront						
Viaduct	125	305,076			305,076	
Open-Cut						
Arlington Station		526,000	226,000		92,000	838
South Avenue		2,725,000		325,000	2,400,000	672

Source: New York City Department of City Planning. Received December 2022

[1] The sum of retail, office, and warehouse area does not add up to total commercial area because some commercial area in development reported by DCP had an undefined land use type.

There are 932 new residential units proposed or under construction within the study area, of which 60.3 percent will be market-rate units. Major projects include River North (568 units), Lighthouse Point (109 units), 110 Port Richmond Avenue and 160 Richmond Terrace (both 77 units), 40 Bay Street (53 units), and 221 Port Richmond Avenue (48 units).

Just outside of the St. George section, a recently approved residential rezoning of Stapleton's Bay Street Corridor is expected to convert the area between Tompkinsville Park and Tappan Park from manufacturing to residential, resulting in approximately 2,560 new residential units, 275,350 square feet of new commercial space, 7,000 new residents, and 1,300 new workers.[5] While roughly

[5] Bay Street Corridor Rezoning and Related Actions Final EIS

half these housing units would house low- and moderate-income residents, the remaining units would be market-rate units.

Also, in Stapleton outside the study area, the second phase of the Urby Staten Island development is expected to begin construction soon, which will add 320 residential units upon completion. It can be expected that effects of intensified residential development activity in Stapleton will likely spill over into neighboring communities within the study area, such as St. George.

The study area and nearby areas have added sizeable retail projects in recent years, including a 240,000-square-foot expansion of the Staten Island Mall just east of the South Avenue section and 65,000 square feet of retail space added at Urby Staten Island. Additionally, several major retail projects are planned in the study area under the No-Action Condition, including 260,000 square feet of space at the South Avenue Retail Development at 534 South Ave in the Arlington Station section and several projects in the St. George section. These include 85,000 square feet at Lighthouse Point (1 Bay Street), 30,489 square feet at River North, 6,546 square feet at the mixed-use 40 Bay Street project. Additionally, the St. George Waterfront Redevelopment, which includes the NY Wheel & Empire Outlets, includes 358,500 square feet of retail space in planned development. As noted in **Chapter 3, Land Use, Zoning and Public Policy**, in February 2023, the NYCEDC terminated their lease with the developer of the NY Wheel property and the development is not moving forward as planned. Since a new development plan has not been identified to date, the development as previously proposed is being included as a No-Action project for the purposes of a conservative analysis.

Among office uses, 325,000 square feet is planned in the study area under the No-Action Condition at the 1441 South Avenue Office Development in the South Avenue section. The No-Action Condition includes 2,892,176 square feet of warehouse square feet planned in the study area including the 2.4 million Matrix Development at 656 Gulf Avenue in the South Avenue section and the 305,076 square foot storage facility at 2111 Richmond Terrace in the Viaduct section. Another 92,000 square feet warehouse at 534 South Avenue is in the pipeline in the Arlington Station section as well as 95,100 square feet of space at the St. George Waterfront Redevelopment.

Local planning documents for the study area call for additional residential growth but emphasizes the need for enhanced economic development. The *North Shore 2030* plan, published in 2011, identifies an "action agenda" for the North Shore that includes the following elements:

- Creation of quality jobs and workplaces, including the establishment of a Staten Island Industrial Business Zone to retain and recruit industrial users;
- Expansion of the Significant Maritime and Industrial Areas in the Waterfront Revitalization Program to include areas on the North Shore for expansion of the maritime industry;

, CEQR No. 16DCP156R, March 2019.

- Identification of opportunities to attract and retain targeted industries that can serve regional and national markets;
- Establishing an In-Water Permitting Task Force to facilitate maritime development;
- Working with industrial businesses to improve performance standards to modernize business operations;
- Improving connections and mobility by coordinating with MTA on the completion of the North Shore Alternatives Analysis.

Similarly, the *Working West Shore 2030* plan, also completed in 2011, identified goals related to business growth, which included creating quality local jobs for Staten Islanders, reducing the need for off-island commutes, and improving connections from West Shore job centers and neighborhoods to the rest of the borough and region through upgraded road and transit networks.

In January 2023, Mayor Adams announced a new comprehensive plan for the North Shore was under development with a focus on housing, the waterfront and job opportunities.[6]

With-Action Condition

Under the With-Action Condition, a bus rapid transit (BRT) system would be developed using a combination of the former North Shore Railroad ROW and existing street rights-of-way, expected to be completed and operational by 2035. It would not add new residential units or business space and would not displace any existing residential units. However, it would displace existing businesses. The sections below describe the project's impacts for each impact category in the *CEQR Technical Manual* screening analysis.

Direct Residential Displacement

Would the project directly displace residential population to the extent that the socioeconomic character of the neighborhood would be substantially altered? Displacement of fewer than 500 residents would not typically be expected to alter the socioeconomic character of a neighborhood.

The Proposed Project would not directly displace any residents from the study area; therefore, no analysis of direct residential displacement is warranted.

Direct Business Displacement

Would the project directly displace more than 100 employees, or would the project directly displace a business whose products or services are uniquely dependent on its location, are the subject of policies or plans aimed at its preservation or serve a

[6] Paul Liotta, Jan. 26, 2023. "NYC to develop new revitalization plan for Staten Island's North Shore." Staten Island Advance. Accessed on May 3, 2023. Accessed at: https://www.silive.com/news/2023/01/exclusive-nyc-to-develop-new-revitalization-plan-for-staten-islands-north-shore.html.

population uniquely dependent on its services in its present location? If so, assessments of direct business displacement and indirect business displacement are appropriate.

The *CEQR Technical Manual* defines direct business displacement as the involuntary displacement of businesses from the site of or a site directly affected by a proposed project. Displacement of a business or group of businesses is not, in itself, considered a significant adverse environmental impact. While all businesses provide value to the city's economy, the *CEQR Technical Manual* specifies consideration of the following in determining the potential for significant adverse impacts: (1) whether the businesses to be displaced provide products or services essential to the local economy that would no longer be available to local residents or businesses; and (2) whether adopted public plans call for preservation of such businesses in the area.

The Proposed Project may displace up to five full businesses employing an estimated 46 workers.[7] These displacements would occur to support the development of new BRT stations.

The existing businesses expected to be fully displaced include Thomas Iron Works (four workers) and Richmond Chandelier Lighting and Supply (15 workers), both located at 69 Port Richmond Avenue; T.F. Quinlan & Sons (12 workers) at 1473 Richmond Terrace; and Twin Power Supermarket and Restaurant Equipment (10 workers) at 1449 Richmond Terrace. These businesses include individual firms in the Transportation and Warehousing, Manufacturing, and Construction industry sectors. Additionally, at 270 South Avenue, J. Scaramella LTD Trucking recently completed a two-story building with a 1,280-square-foot office building and contractors' yard that complements the firm's current facility at 300 South Avenue. The Proposed Project would fully displace the site at 270 South Avenue, resulting in displacement of up to approximately five workers. However, it is expected that J. Scaramella LTD Trucking would continue to operate from its existing facility at 300 South Avenue.

As noted in **Table 3-2** in **Chapter 3, Land Use, Zoning and Public Policy**, acquisition of properties include property owned by Con Edison. The Con Edison parcels that would be acquired for the proposed Livingston Station are currently used as customer surface parking, storage for mobile emergency generators, and as an emergency staging area to park equipment prior to field deployment. Based on coordination with Con Edison, MTA has configured the proposed Livingston Station in such a way as to accommodate the continuation of these uses with the Proposed Project in place. A portion of a Con Edison parcel would also be acquired for the proposed Arlington Station. Although that Con Edison property contains a substation facility, the substation would not be displaced as a result of the partial acquisition of the property. Therefore, the proposed acquisitions would not affect the business operation of Con Edison

[7] Employment for displaced firms was sourced from DataAxle as of April 28, 2023, which includes location-specific employment for individual firms.

Table 4-8 shows the number of potentially displaced businesses and employees by sector. A discussion of these displacements with respect to the sector overall is provided below.

Table 4-8 Potentially Directly Displaced Private Businesses and Employees

NAICS	Number of Businesses	% of Displaced Businesses	Number of Employees	% of Displaced Employees
Construction	1	20.0%	12	26.1%
Manufacturing	1	20.0%	4	8.7%
Wholesale Trade	1	20.0%	10	21.7%
Transportation and Warehousing[1]	1	20.0%	5	10.9%
Retail Trade	1	20.0%	15	32.6%
Total	**5**	**100.0%**	**46**	**100.0%**

Source: DataAxle. 2022. Accessed from https://bao.arcgis.com/. Accessed on April 28, 2023.

Construction Sector

There is potentially one Construction sector business with 12 workers at risk of displacement due to the Proposed Project: T.F. Quinlan & Sons located at 1473 Richmond Terrace (Block 184, Lots 254 and 256) in the West Brighton Waterfront section of the study area.

This industry sector employs approximately 2,519 workers. The potentially displaced business of 12 workers represents 0.5 percent of Construction sector employment in the study area.

Manufacturing Sector

Thomas Iron Works, employing four workers, represents the only potentially displaced Manufacturing sector business within the study area. Located at 69 Port Richmond Avenue (Block 1004, Lot 7) in the Viaduct section, Thomas Iron Works is an Ornamental & Architectural Metal Work Manufacturer. This industry sector employs approximately 503 workers. The potentially displaced business represents 0.8 percent of Manufacturing sector employment in the study area.

Wholesale Trade Sector

Twin Power Supermarket and Restaurant Equipment, employing ten workers, represents the only potentially displaced Wholesale Trade sector business within the study area. It is located at 1449 Richmond Terrace (Block 184, Lot 248). Within this industry sector, there are approximately 524 workers. The potentially displaced business represents 1.9 percent of Wholesale sector employment in the study area.

Retail Trade Sector

Employing 15 workers, Richmond Chandelier Lighting & Electrical Supply is the only Retail Trade sector business that may be potentially displaced within the study area. It is also located at 69 Port Richmond Avenue, adjacent to Thomas Iron Works. This industry sector employs approximately 1,361 workers in total. The potentially displaced business represents 1.1 percent of Retail Trade sector employment in the study area.

Transportation and Warehousing Sector

An estimated five workers within the Transportation and Warehousing industry sector would potentially be displaced at J. Scaramella LTD Trucking at 270 South Avenue (Block 1268, Lot 209). This industry sector employs 10,055 workers in total. The potentially displaced business represents 0.05 percent of Transportation and Warehousing sector employment in the study area.

Summary of Sectors

In summary, the businesses that would be displaced by the Proposed Project do not represent most study area businesses or employment for any given industry sector. While the businesses may contribute to neighborhood character and provide value to the City's economy, due to the availability of alternative sources of goods, services, and employment provided within the study area, their displacement would not adversely affect socioeconomic conditions in the area as defined by the *CEQR Technical Manual*. Additionally, there are currently no categories of businesses that may be directly displaced that are the subject of regulations or plans to preserve, enhance, or otherwise protect them. Thus, an assessment of potential direct business displacement due to direct business displacement is not warranted.

Two other businesses with unique waterfront operations that provide value to the local and regional economy would engage in property discussions (e.g., possible land exchanges) with the City and the MTA that would ensure that their business operations could continue without significant hardship. Those affected businesses include Caddell Dry Dock and Repair Company (approximately 175 direct employees and up to 500 contract workers) and Atlantic Salt (approximately 175 workers). The City-owned ROW bisects both businesses; however, because of their importance to the local/regional economy, the proposed alignment would be shifted closer to Richmond Terrace in these areas in order to maximize waterfront access and maintain the viability of these maritime businesses. MTA will continue to coordinate with Caddell Dry Dock and Repair Company and Atlantic Salt as the project moves forward beyond the FEIS.

The property discussions would involve a possible exchange of the City-owned ROW that bisects the two businesses for property owned by Caddell and Atlantic Salt that is located closer to Richmond Terrace. Under both land exchanges, there would be no net loss of land area. As a result of the land exchanges, Caddell is expected to lose approximately 25,000 square feet of building floor space—including administrative office space, a locker room, and two additional buildings.

~~However, this loss is not expected to have a major adverse effect on business operations.~~

Affected Properties and Property Tax Revenues

The Proposed Project would require acquisition of up to five privately-owned properties within the study area. No residential property acquisitions are required.

The ultimate determination of changes in property tax revenues based on the acquisition of real property would be made by the local tax assessors.

Acquisition of these properties is not expected to result in any significant adverse impacts to the community character of the study areas. These businesses would receive just compensation and relocation assistance, with priority given to relocation within the project study area that the businesses currently operate in. The Proposed Project would consider options for tax shortfall support for dislocated businesses.

While subject to final appraisal and acquisition determination, Table 4-9 shows a preliminary estimate of the potential loss of property tax revenue that could result from the Proposed Project. In total, the Proposed Project would result in an estimated tax loss of approximately $83,176 annually. This amount is considered de minimis and is not considered a significant adverse impact.

Table 4-9 Estimated Property Tax Reduction—Anticipated Full Property Acquisitions

Parcel	Property Type	Lot Size	Assessed Land/Total Value	Reduction in Annual Property Taxes
T.F. Quinlan & Sons located at 1473 Richmond Terrace (Block 184, Lots 254)	Transportation / Utility	3,444 sq ft	$25,650	($2,730.70)
T.F. Quinlan & Sons located at 1473 Richmond Terrace (Block 184, Lot 256)	Transportation / Utility	19,561 sq ft	$128,700	($13,701.40)
Thomas Iron Works 69 Port Richmond Avenue (Block 1004, Lot 7)	Industrial / Manufacturing	8,389 sq ft	$157,230	($16,738.71)
Richmond Chandelier Lighting & Electrical Supply (Block 1004, Lot 7)[1]	Industrial / Manufacturing	8,389 sq ft	N/A	N/A
J. Scaramella LTD Trucking at 270 South Avenue (Block 1268, Lot 209)[2]	Commercial	23,400 sq ft	$193,500	($20,600.01)
Twin Power Supermarket and Restaurant Equipment (Block 184, Lot 248)	Industrial / Manufacturing	11,829 sq ft	$276,210	($29,405.32)
Total				**($83,176.13)**

Source: New York City Department of Finance, 2023-2024 Tentative Assessed Value, Accessed May 3, 2023.

[1] Richmond Chandelier Lighting on same lot as Thomas Iron Works; one set of property taxes

[2] Property Taxes are for Sonny's Pier

Compensation and Relocation Assistance

To construct the Proposed Project, the State would seek to acquire the required properties through voluntary agreements with the affected property owners. All affected property owners and tenants would be compensated fairly for their property.

If the Proposed Project is approved, acquisition of property for the Proposed Project can begin after the Final Environmental Impact Statement is complete and the State has issued SEQRA Findings. The acquisition process would consist of the following seven steps: identification of required real estate once design information is available; appraisal of required property interests; preparation of detailed property acquisition maps and metes-and-bounds descriptions of the property interests to be acquired; procurement of title reports to identify owners, lessees, mortgagees lien holders, and any parties with compensable interests in the property to be acquired; acquisition, either through negotiation or eminent domain; settlement or litigation of any claims for additional compensation or property damage; and relocation of occupants if necessary. With respect to property acquisition, if properties cannot be acquired voluntarily, the State would adhere to the requirements of the Eminent Domain Procedure Law.

Public hearings on proposed property acquisitions can be expected to occur at least six months to a year before the State would seek to acquire needed properties by condemnation. Affected parties would be given notice by mail approximately 30 days before the hearing. Determinations and findings of the State would be published after the hearing. In the case of condemnation proceedings, condemnees would be provided with legal notice prior to the court date. A minimum of 90-days' notice would be given to both residents and business owners before they would be required to vacate. However, where practicable the State would work with property owners to develop fair and reasonable timeframes for commercial tenants to be relocated to replacement sites. Businesses, whether new or old, would be compensated for the appraised depreciated value of their business fixtures and relocation costs.

As part of the procedure for preparing the acquisition stage relocation plan, all site occupants would be personally interviewed by the MTA or the City (depending upon property ownership) to determine their specific relocation needs and would be given written information about benefits to which they may be entitled. Owners, tenants, and parties with compensable interests in the properties to be acquired would be compensated in accordance with the Eminent Domain Procedure Law.

Relocation assistance could include helping to seek out and acquire replacement space and/or provision of relocation assistance—including lump sum payments, payment of moving expenses, payment of brokers' fees, and payment for improvements to the replacement space (if the new landlord is not providing for improvements).

Indirect Residential and Business Displacement

For indirect displacements, the *CEQR Technical Manual* screening analysis evaluates three categories of potential impact: increased rents, retail market saturation, and adverse effects on specific industries. Each is discussed below.

Indirect Residential and Business Displacement due to Increased Rents

Would the project result in substantial new development that is markedly different from existing uses, development, and activities within the neighborhood? Residential development of 200 units or less or commercial development of 200,000 square feet or less would typically not result in significant socioeconomic impacts. For projects exceeding these thresholds, assessments of indirect residential displacement and indirect business displacement are appropriate.

The Proposed Project does not include new residential or business development, and would not change existing uses, development, or activities within study area neighborhoods; therefore, an assessment of potential indirect residential and business displacement is not warranted.

Indirect Business Displacement due to Retail Market Saturation

Would the project result in a total of 200,000 square feet or more of retail on a single development site or 200,000 square feet or more of region-serving retail across multiple sites?

The Proposed Project would not add any new retail space; thus, an assessment of potential indirect business displacement due to retail market saturation is not warranted.

Adverse Effects on Specific Industries

Is the project expected to affect conditions within a specific industry?

The Proposed Project would not be expected to affect conditions within a specific industry, affect a substantial number of workers or residents who depend on the goods or services provided by affected businesses, or result in the loss or substantial diminishment of a particularly important product or service within the City; therefore, an assessment of adverse effects on specific industries is not warranted.

Based on the screening assessment presented above, the Proposed Project does not warrant additional analysis for the potential for direct or indirect residential or business displacement.

Conclusion

As described above, the Proposed Project would result in direct business displacement impacts, with a total of five existing businesses and approximately 46 employees expected to be displaced. These displacements do not represent a majority of study area businesses or employment for any given industry sector and their displacement would not adversely affect socioeconomic conditions in

the area as defined by the *CEQR Technical Manual*. MTA would provide relocation assistance and compensation, as appropriate, to affected property and/or business owners in accordance with the Federal Uniform Relocation Act (49 CFR 24.205) and the New York State regulations that govern acquisition and displacements (Article 5, Section 74-B). Relocation assistance could include helping to seek out and acquire replacement space and/or provision of relocation assistance—including lump sum payments, payment of moving expenses, payment of brokers' fees, and payment for improvements to the replacement space (if the new landlord is not providing for improvements). Given the business types and number of employees affected, it is expected that appropriate space could be identified to accommodate relocation of the affected businesses in or near the study area. As a result, the Proposed Project would not result in significant adverse impacts as defined by the *CEQR Technical Manual*.

5 Community Facilities and Services

This chapter describes the Proposed Project's potential to impact the community facilities within the study area. The *2021 CEQR Technical Manual* defines community facilities as public or publicly funded schools, libraries, childcare centers, health care facilities, and fire and police protection. A project can affect these facilities and services when it physically displaces or alters a community facility or causes a change in population that may affect the services delivered by a community facility, such as by creating a demand that could not be met by the existing facility.

Regulatory Background and Study Area

The *2021 CEQR Technical Manual* states that a community facilities analysis is needed if there would be potential direct or indirect effects on a facility; however, there are no specific City, State, or Federal statutory regulations or standards which govern the analysis of community facilities. Per the *2021 CEQR Technical Manual*, the inventory of community facilities considered the following public or publicly funded facilities:

- Childcare centers: New York City Department of Education (DOE) and New York City Administration for Children's Services (ACS) day cares and Pre-K
- Health care facilities: hospitals and public health clinics
- Public schools: schools operated and funded by the New York City Department of Education
- Fire protection: fire stations and communications offices
- Police protection: police stations and precinct houses
- Public libraries: New York Public Library branches
- Other community facilities: homeless shelters, jails, community centers, colleges and universities, or religious or cultural facilities

The Proposed Project is not expected to introduce new utilization demands on community facilities, because it would not increase the number of residents or workers in the study area. Therefore, this community facilities analysis assessed whether the Proposed Project would displace, affect access to, or otherwise

directly affect any existing community facilities. The primary study area for the Proposed Project includes the project alignment and a 400-foot-wide radius around each side of the alignment.

Existing Conditions

An inventory of public or publicly funded community facilities within the study area, including childcare centers, health care facilities, public schools, fire and police stations, public libraries, and community centers, was created to help assess the Proposed Project's potential impacts on these facilities. Table 5-1 lists the existing community facilities within the study area by project section; these facilities are depicted on Figures 5-1 through 5-5. No community facilities were identified in the study area of the New Brighton or West Brighton Waterfront sections.

Table 5-1 Existing Community Facilities

Proposed Alignment Section	Name	Map ID	Category	Address	Block, Lot No.
St. George	St. George Library Center	1	Public Library	5 Central Avenue, Staten Island, NY 10301	5, 74
	120th Precinct	2	Police Station	78 Richmond Terrace, Staten Island, NY 10301	9, 28
	Richmond Hill Pre-K Center at 120 Stuyvesant Place	3	Public School	120 Stuyvesant Place, Staten Island, NY 10301	8, 60
	P.S. 59 The Harbor View School	4	Public School	300 Richmond Terrace, Staten Island, NY 10301	14, 32
	Curtis High School & Athletic Field	5	Public School	105 Hamilton Avenue, Staten Island, NY 10301	22, 1
	JCC Cornerstone Richmond Terrace Community Center	6	Community Center	71 Jersey Street, Staten Island, NY 10301	51, 30
	Staten Island Workforce1 Career Center	7	Workforce Development Center	120 Stuyvesant Place 3rd Floor, Staten Island, NY 10301	8, 60
Viaduct	Port Richmond High School	8	Public School	85 St. Josephs Avenue, Staten Island, NY 10302	1121,1
	Port Richmond Library	9	Public Library	75 Bennett Street, Staten Island, NY 10302	1007, 26

Table 5-1 Existing Community Facilities

Proposed Alignment Section	Name	Map ID	Category	Address	Block, Lot No.
	P.S. 20 The Christy J. Cugini Port Richmond School	10	Public School	161 Park Avenue, Staten Island, NY 10302	1020, 1
	Staten Island Workforce1 Industrial & Transportation Career Center	11	Workforce Development Center	1972 Richmond Terrace Staten Island, NY 10302	1006, 62
Open-Cut Section	Engine 158	12	Firehouse	65 Harbor Road, Staten Island, NY 10303	1227, 25
	P.S. 44 Thomas C. Brown School	13	Public School	80 Maple Pkwy Staten Island, NY 10303	1218, 1
	Richmond Pre-K Center	14	Public School	104 Housman Avenue Staten Island, NY 10303	1158, 103
Arlington Station	Mariners Harbor Library	15	Public Library	206 South Avenue, Staten Island, NY 10303	1266, 64
	New York City Housing Authority's Mariner's Harbor, Port Richmond Day Nursery	16	Childcare Center	166 Lockman Avenue, Staten Island, NY 10303	1245, 1
	Mariners Harbor Houses	17	Community Center	157 Brabant Street, Staten Island, NY 10303	1245, 1
South Avenue	Barney Day Care Center Inc.	18	Childcare Center	472 Netherland Avenue Staten Island, NY 10303	1250, 175
	NYC Business Solutions Industrial and Transportation - Staten Island	19	Workforce Development Center	900 South Avenue, Suite 402, Staten Island, NY 10314	1725, 85
	Richmond University Medical Center - The Center for Integrative Behavioral Medicine	20	Health Care Facility	1130 South Ave Staten Island, NY 10314	1725, 500
	Bayley Seton – St. George Clinic	21	Health Care Facility	1130 South Ave Staten Island, NY 10314	1725, 500

Source: NYC Digital Tax Map, available athttp://gis.nyc.gov/taxmap/map.htm NYC Capital Planning Explorer. Accessed May 20, 2023.
Note: Block and lot numbers were obtained using NYC Department of Finance, Office of the City Register property index, available at https://a836-acris.nyc.gov/CP/LookUp/Index. Accessed March 20, 2023.

Figure 5-1 Community Facilities Study Area: St. George

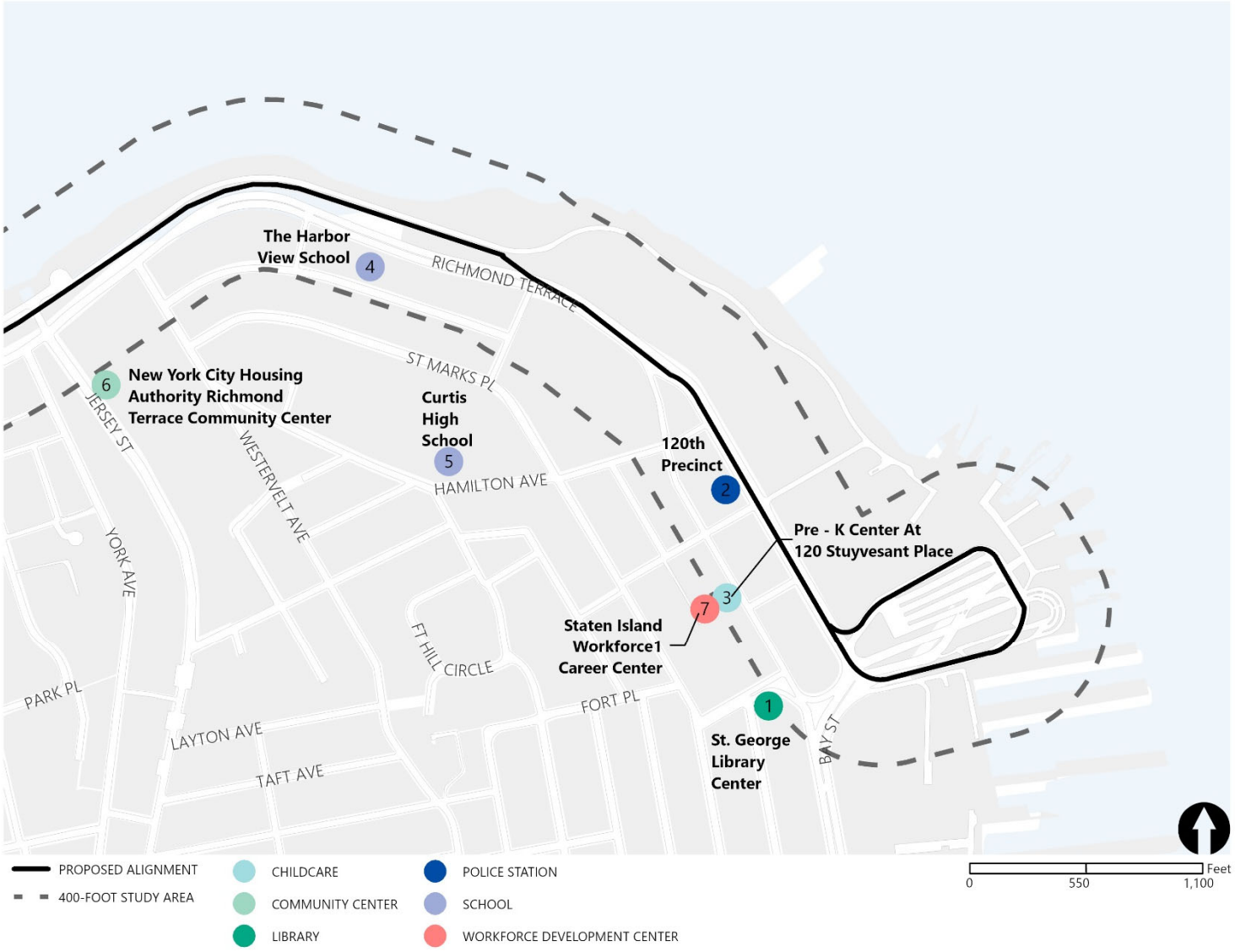


Figure 5-2 Community Facilities Study Area: Viaduct

Figure 5-3 Community Facilities Study Area: Open-Cut Section

Figure 5-4 Community Facilities Study Area: Arlington Station

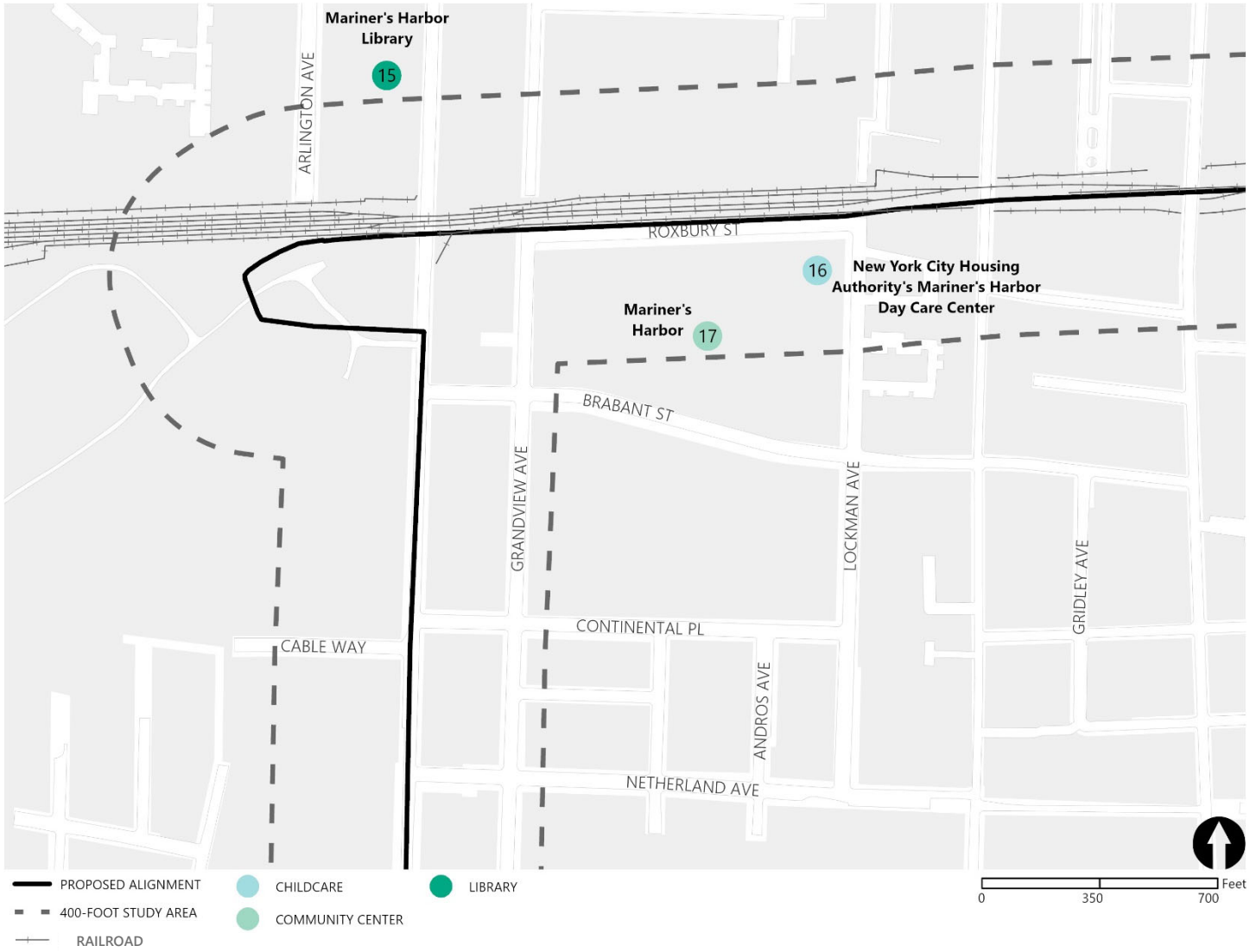
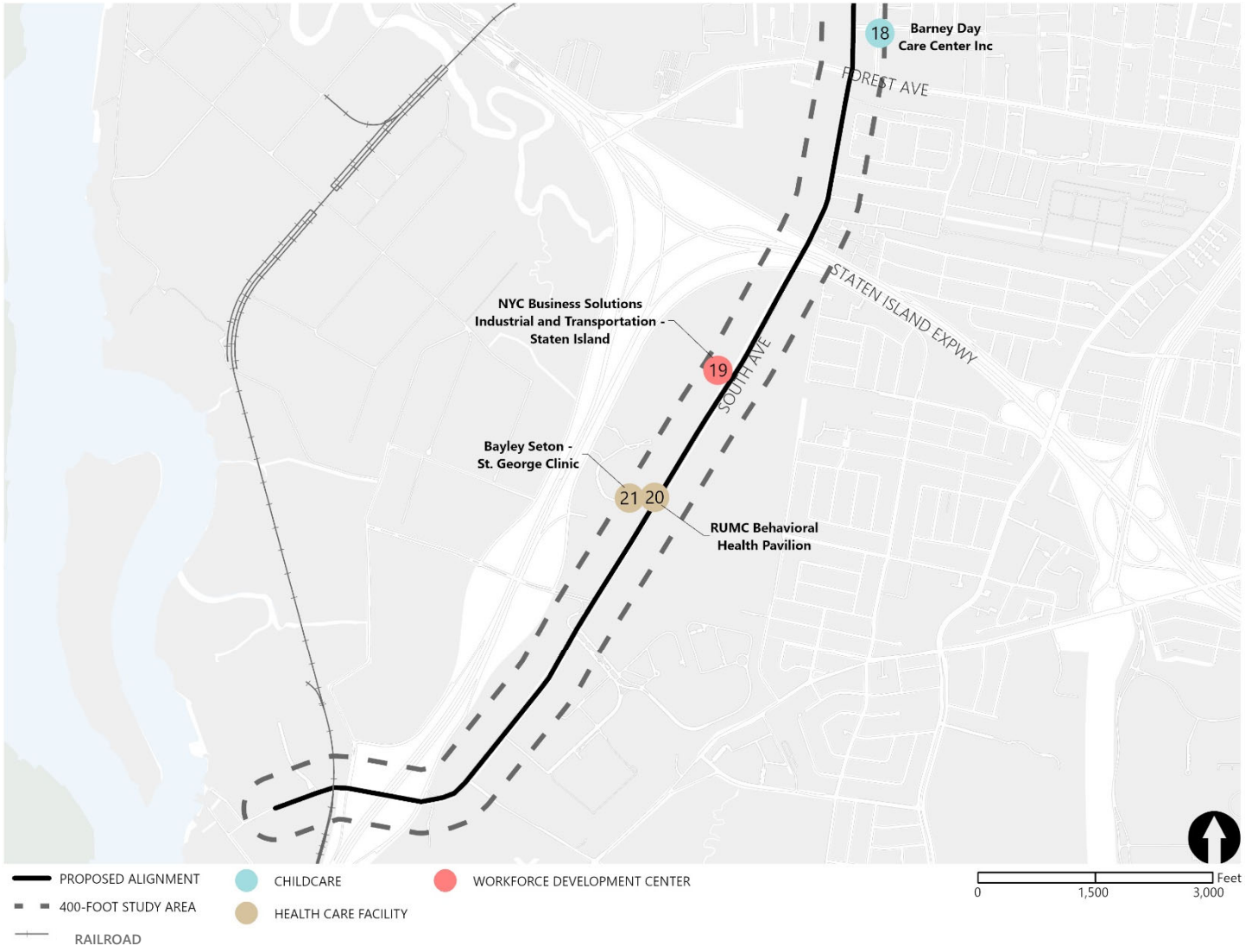


Figure 5-5 Community Facilities Study Area: South Avenue



Childcare Centers

- Port Richmond Day Nursery at 166 Lockman Avenue (Map ID 16) is located withing the New York City Housing Authority's Mariners Harbor Houses, a 22-building public housing development. The day care center offers childcare for pre-school children, ages 2 years through 5 years, 9 months.[1]
- Barney Day Care Center Inc. (Map ID 18) offers childcare for children ages 2 years through 6 years. The day care is located at 472 Netherland Avenue and is only open during the summer months.[2]

Health Care Facilities

- Richmond University Medical Center (RUMC) Behavioral Health Pavilion/ Center for Integrative Behavioral Medicine at 1130 South Avenue (Map ID 20) is one of nine locations associated with the Richmond University Medical Center. The center offers behavioral health services in addition to substance abuse treatment and other programs. The behavioral health outreach services this location offers are for children, adolescents, and adults. The services include evaluations and referrals, psychiatric disorder programs, a gamblers treatment program; a developmental disability program, a child and adolescent inpatient unit, an adult inpatient unit, comprehensive psychiatric emergency program, and a mobile crisis outreach service.[3] The Bayley Seton – St. George Clinic (Map ID 21) is co-located with the RUMC Behavioral Health Pavilion at 1130 South Avenue. The St. George Clinic provides substance abuse and alcohol treatment programs. Both facilities are open on weekdays.

Public Schools[4]

- The Richmond Pre-K Center at 104 Housman Avenue (Map ID 14) offers free, full-day, 3K, and Pre-K programs.[5] The Richmond Pre-K Center has 90 student seats.[6]

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1 https://maps.nyc.gov/childcare-finder/. Accessed March 20, 2023

2 https://maps.nyc.gov/childcare-finder/ Accessed March 20, 2023

3 https://www.rumcsi.org/rumc-locations/the-center-for-integrative-behavioral-medicine-4. Accessed March 20, 2023

4 Enrollment data sourced from NYC Public Schools Info Hub, Information and Data Overview, Demographic Snapshot for 2021-2022 academic year Available at https://infohub.nyced.org/reports/school-quality/information-and-data-overview. Accessed April 10, 2023.

5 http://therichmondprekcenter.edublogs.org/. Accessed May 20, 2023

6 https://www.schools.nyc.gov/schools/Z134. Accessed May 20, 2023

- Richmond Hill Pre-K Center at 120 Stuyvesant Place (Map ID 3) has an indoor play space, late pickup is also available. According to DOE data, the current enrollment is 329 Pre-K students.[7]
- P.S. 59, The Harbor View School at 300 Richmond Terrace (Map ID 4) serves Pre-K, K, and grades 1 through 5, in addition to offering special education classes. The DOE notes that this school is partially accessible and has an enrollment of 286 students.
- Curtis High School and Athletic Field (Map ID 5) is located at 105 Hamilton Avenue. Approximately 2,253 students are enrolled in this school for grades 9, 10, 11, and 12.[8] Curtis High School is noted as being partially accessible and offers special education classes.[9]
- Port Richmond High School at 85 St. Josephs Avenue (Map ID 8) has 1,634 enrolled students. The high school is partially accessible and serves grades 9, 10, 11, and 12, in addition to offering special education classes.[10]
- P.S. 20, the Christy J. Cugini Port Richmond School at 161 Park Avenue (Map ID 10) has 378 students enrolled and serves grades K-5. The school is noted as being partially accessible and offers special education classes.[11]
- P.S. 44, the Thomas C. Brown School at 80 Maple Parkway (Map ID 13) serves Pre-K, K, and grades 1 through 5, in addition to offering special education classes. The school has indoor and outdoor play spaces, 599 enrolled students, and is partially accessible.[12,13]

Public Libraries

- The St. George Library Center branch of The New York Public Library (Map ID 1) is the largest library on Staten Island.[14] Located at 5 Central Avenue, the fully accessible St. George Library Center offers a variety of amenities for patrons, including computers, photocopiers, wireless internet access, and self-service check out. The library also offers free English classes; a Staten Island History collection; and other events and programs for children, teens, and adults.
- The Port Richmond Library (Map ID 9), a branch of The New York Public Library, opened in 1905 and is located at 75 Bennett Street.[15] The Port Richmond Library is partially accessible and offers a variety of amenities for

[7] https://www.schools.nyc.gov/schools/R066. Accessed May 20, 2023
[8] https://curtishs.org/. Accessed May 20, 2023
[9] https://www.myschools.nyc/en/schools/high-school/12861. Accessed May 20, 2023
[10] https://www.myschools.nyc/en/schools/high-school/12860. Accessed May 20, 2023
[11] https://www.schools.nyc.gov/schools/R020. Accessed May 20, 2023
[12] https://www.schools.nyc.gov/schools/R044. Accessed May 20, 2023
[13] https://r044.echalksites.com/home_page. Accessed May 20, 2023
[14] https://www.nypl.org/locations/st-george-library-center. Accessed May 20, 2023
[15] https://www.nypl.org/locations/port-richmond. Accessed May 20, 2023.

patrons, including computers for public use, photocopiers, wireless internet access, public restrooms, and self-service check out. The library also offers programs such as free English classes, family story time, reading hours, technology assistance, movie nights, and other free events.

- The Mariners Harbor Library (Map ID 15), a branch of The New York Public Library, serves approximately 30,000 people. Located at 206 South Avenue, the library is fully accessible and offers amenities such as computers, self-service check out, wireless internet access, photocopiers, and a 24-hour book drop box. Free events and programs include computer labs, meditation sessions, family literacy workshops, college and career workshops, as well as family movie showings.

Community Centers

- The Jewish Community Center (JCC) Cornerstone Richmond Terrace Community Center (Map ID 6), located at 71 Jersey Street, is a community center operated by JCC of Staten Island and funded by the New York City Department of Youth and Community Development. The community center offers free activities and after school and summer programs for ages 5 years through 21 years. The community center also offers programs for adults, including parenting workshops, ESL courses, and new home buyer workshops.
- The New York City Housing Authority's Mariners Harbor Houses (Map ID 17), a 22-building public housing development, has a community center located at 157 Brabant Street.[16]

Workforce Development Centers

- Staten Island Workforce1 Industrial & Transportation Career Center (Map ID 11), located at 1972 Richmond Terrace, offers comprehensive career services and connections for individuals looking for employment in industrial or manufacturing fields.
- The Staten Island Workforce1 Career Center at 120 Stuyvesant Place (Map ID 7) offers services to connect military veterans and their spouses to training, jobs, and supportive services.
- The NYC Business Solutions Industrial and Transportation – Staten Island Center at 900 South Avenue (Map ID 19) offers free services such as workshops and courses to help entrepreneurs, small business owners, and large corporations start, operate, and grow.

Fire Stations

- Engine Company 158 of the Fire Department of the City of New York (FDNY; Map ID 12) has been in operation at 65 Harbor Road since 1931. The Engine

[16] https://www1.nyc.gov/assets/nycha/downloads/pdf/Mariners%20Harbor.pdf. Accessed May 20, 2023

158 service area covers 3.49 square miles and provides fire protection and other critical public safety services to residents and visitors.[17]

Police Stations

» The 120th Precinct of the New York City Police Department (NYPD; Map ID 2) serves an area of 14.5 square miles, which encompasses more than 180,000 residents. The station house is located at 78 Richmond Terrace; over 400 NYPD employees are assigned to the 120th Precinct. The precinct has a total of 57 emergency response vehicles. The limited capacity of the parking lot south of the station house and the current design of its entrance create bottlenecks during the movement of response vehicles. As a result, up to 20 emergency vehicles at a time currently park in angle parking slots on Richmond Terrace, in front of the station house, to provide added readiness for emergency response. The NYPD refers to this parking style as combat parking (90-degree/perpendicular parking from the curb).

No-Action Condition

In the No-Action condition in 2035, the Proposed Project would not be implemented, and the former North Shore Railroad right-of-way (ROW) would remain abandoned and unimproved. The No-Action condition assumes that existing Metropolitan Transportation Authority (MTA) bus service would continue to operate on Richmond Terrace and throughout the North Shore on a constrained roadway network.

Under the No-Action condition, there would be no changes, alterations, or displacements to community facilities and services within the study area. However, transportation demands within the study area would continue to grow as the local population of residents and workers increases over time. MTA would increase transit service levels to the extent feasible in response to increasing demand.

With-Action Condition

The Proposed Project would improve transit access through development of a bus rapid transit (BRT) system using a combination of the former North Shore Railroad ROW and existing street rights-of-way. Improved transit service would enhance the ability of North Shore residents, workers, and visitors to access community facilities and services. As stated above, the Proposed Project is not expected to introduce new utilization demands on community facilities, because it would not increase the number of residents or workers in the study area. The Proposed Project would not add any new residential units or business space to the study area, and as described in **Chapter 4, Socioeconomic Conditions**, it would not indirectly result in an increase in residential units or business space. By providing more frequent and reliable transit service, the Proposed Project would

[17] NYC Open Data. https://data.cityofnewyork.us/Public-Safety/Fire-Companies/iiv7-jaj9. Accessed May 20, 2023

support growth that is already contemplated under existing zoning and public policies, as discussed in Chapter 3, Land Use. Based on an analysis of identified partial and full property acquisitions, the Proposed Project would not displace any of the identified community facilities within the study area.

The Proposed Project would be designed to avoid impacts to access at the NYPD 120th Police Precinct at 78 Richmond Terrace. As described above, to maintain efficient response times, the 120th Precinct currently parks emergency response vehicles in front of the station house adjacent to Richmond Terrace, occupying a parking lane and a portion of the existing sidewalk. As noted above, the 120th Precinct has 57 vehicles that utilize combat parking in front of the precinct building with up to 20 vehicles deployed at any given time.

MTA has been coordinating closely with NYPD and an allowance for a minimum of 37 combat parking spots was requested by precinct officials. To provide this space along with the proposed BRT alignment, the Proposed Project would require the use of Richmond Terrace from curb to curb.

To maintain unobstructed access to Richmond Terrace for NYPD emergency vehicles and ensure there would be no impacts to NYPD emergency response time or deployment activities, the Proposed Project would be designed to maintain a perpendicular combat parking arrangement between Hamilton Avenue and Wall Street while also accommodating the proposed BRT alignment on Richmond Terrace. The existing sidewalk on the south side of Richmond Terrace would be reduced in width from 15 feet to 5 feet in order to preserve the combat parking on this blockfront. Five feet is the effective clear width of the sidewalk today, as police vehicles are using up to two thirds of the sidewalk to partially accommodate the combat parking.

The precinct's existing retaining wall and front steps off Richmond Terrace would be modified and re-oriented to create enough space for combat parking. The existing landscaped berm in front of the precinct house would be removed to accommodate a new stair alignment. Existing retaining walls near the police precinct parking lots near Wall Street and on the west side of the building would also be replaced and/or modified. Aside from the modifications described above, the 120th Police Precinct building itself would not be modified as a result of the Proposed Project. ADA accessibility would not be impacted. MTA would coordinate closely with NYPD to ensure that the modifications meet all operational requirements.

In addition, because the precinct house is a City Landmark and listed on the National Register of Historic Places, these modifications would be coordinated with the New York City Landmarks Preservation Commission and the New York State Office of Parks, Recreation, and Historic Preservation. See Chapter 8, Historic and Cultural Resources, for additional information.

Conclusion

As described above, the Proposed Project would not displace any community facilities, have adverse impacts on access to community facilities and services, or result in new utilization demands. As a result, the Proposed Project would not result in significant adverse impacts on community facilities and services.

6 Open Space

This chapter describes the open spaces present within the study area for the Proposed Project, and the potential impacts of the Proposed Project on the identified open spaces. The *2021 CEQR Technical Manual* defines open space as "*…publicly or privately owned land that is publicly accessible and available for leisure, play, or sport, or is set aside for the protection and/or enhancement of the natural environment*." Open space may be publicly accessible, or privately owned but sometimes open to the public. Common types of open space include community parks, public pools, beaches, ballfields, plazas, esplanades, nature preserves, church yards, greenways, and others.

Uses of open space generally fall into two categories: active or passive. Examples of active open space would be areas used for sports or active play, such as playgrounds, greenways, sport fields, or golf courses. Passive open space may include, for example, plazas with benches, picnicking areas, walking paths, gardens, or publicly accessible nature areas. Open spaces could also be used for both active and passive recreation, such as beaches or esplanades.

Regulatory Background and Study Area

CEQR Technical Manual Guidance

The analysis of open space considers officially designated existing or planned public open space. According to the *2021 CEQR Technical Manual*, open space study areas are generally defined by a reasonable walking distance that open space users (residents or workers) would typically travel to reach local open space and recreational areas. Effects on open space can be either direct or indirect.

Direct Effects Analysis

Consistent with the *CEQR Technical Manual*, a direct effects analysis should be performed if a proposed project would directly affect open space conditions by causing a loss of public open space, changing the use of an open space so that it no longer serves the same user population, limiting public access to an open space, or increasing noise or air pollutant emissions, odors, or shadows that would temporarily or permanently affect the usefulness of a public open space.

Indirect Effects Analysis

The *CEQR Technical Manual* states that indirect effects may occur when the population generated by a project would overtax the capacity of open spaces so that their service to the future population of the affected area would be substantially or noticeably diminished. The Proposed Project would not include facilities that would introduce any new open space user populations (e.g., new residential populations or substantial new employment) to the area. While the accessibility of open space along the proposed bus rapid transit (BRT) corridor would be improved, the primary ridership is expected to be existing North and West Shore residents and workers. Therefore, no indirect effects on open space are anticipated.

Walk-to-a-Park Initiative

New York City, as part of the OneNYC 2050 Building a Strong and Fair City plan, has put forth a goal for 85 percent of New York City residents living within a walking distance of a park by 2030. To help the City reach this goal, NYC Parks has a Walk-to-a-Park initiative that focuses on increasing access to parks and open space in areas of the City where residents live further than a walk to a park. According to Walk-to-a-Park service area geographic data provided by the City, the proposed BRT alignment area overlaps portions of walk gap areas (see **Figure 6-1**). However, as mentioned above, the Proposed Project would not include facilities that would introduce any new open space user populations (e.g., new residential populations or substantial new employment) to the area. Therefore, a detailed assessment of the Proposed Project's impacts on open space access is not warranted.

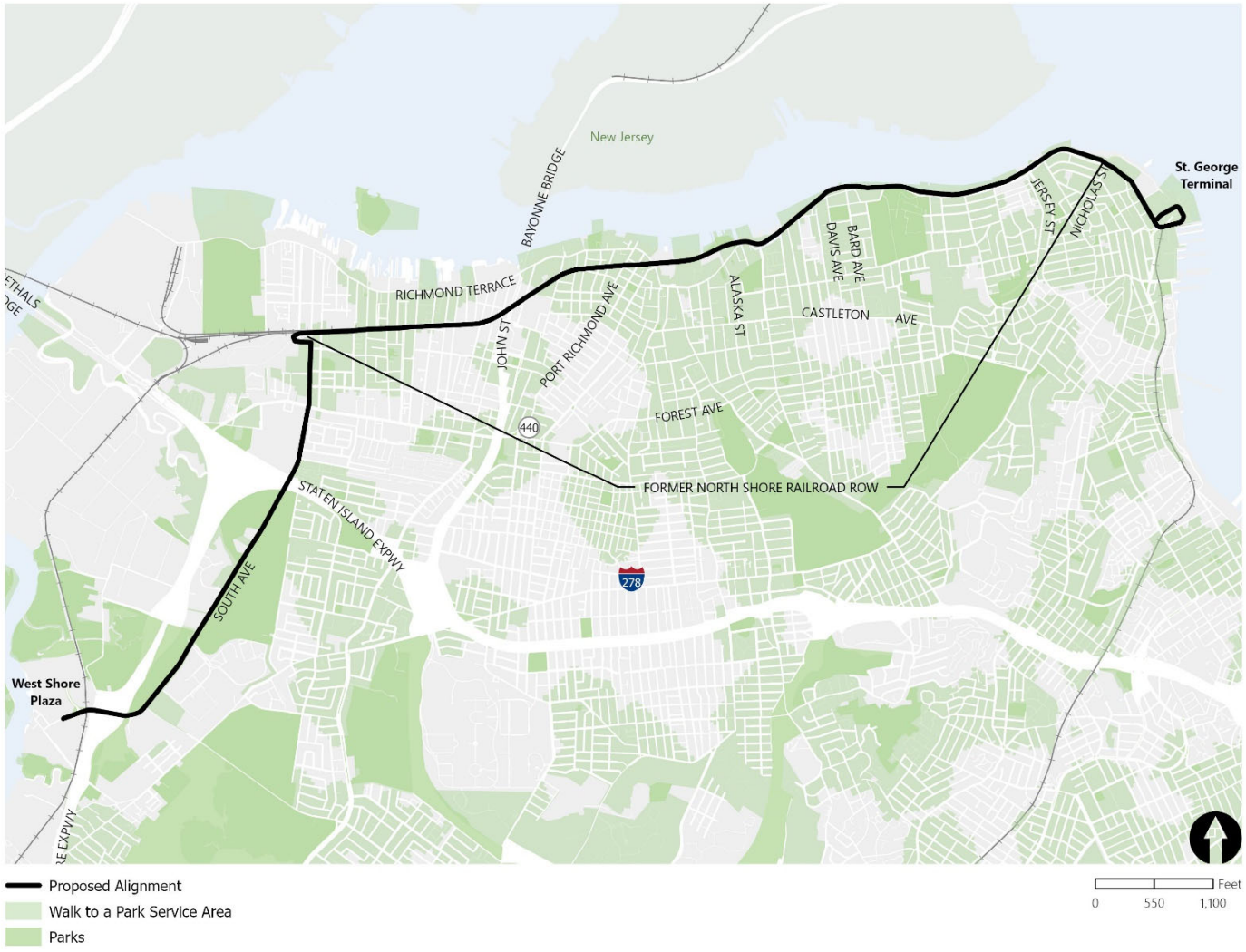
Open Space Study Area

For purposes of this assessment, the study area is defined as 400 feet on either side of the proposed BRT alignment, which is the area with the potential to experience direct effects from the Proposed Project's construction and operation.

Parkland Alienation

Parkland alienation occurs when a municipality wishes to convey, sell, or lease dedicated municipal parkland or discontinue its use as a park. To convey parkland away, or to use parkland for another purpose, a municipality must receive prior authorization from the State in the form of legislation enacted by the New York State Legislature and approved by the Governor. The bill by which the Legislature grants its authorization is commonly referred to as a parkland alienation bill.

Figure 6-1 Walk to a Park Service Area



The parkland alienation process applies to any dedicated municipal parkland in the state, no matter its size or whether it is owned by a city, county, town, or village. Alienation is defined as a substantial intrusion on municipal parkland use for non-park purposes, even if the landowner does not convey title or intends to eventually restore the parkland. The use of parkland by a municipality for a non-park purpose, including the development of transportation facilities is considered an alienation, even if the use has public benefit or purpose.[1] In certain cases, temporary use of property may also be considered an alienation.

In general, land removed from park use through the alienation process must be substituted with parkland of similar function and value. The alienation legislation identifies both the land being removed from park use and the substitute land. If it is not possible to identify the substitute land at the time the alienation legislation is introduced, the legislation must clearly state that adequate substitute land must be identified, and that the legislation will not become effective until this occurs.

Existing Conditions

The Proposed Project is adjacent or in proximity to a number of designated park and open space areas. The inventory of existing conditions identified open space resources within the study area by category or type, active or passive recreational use, the property owner, street address, and size in acres. The following sources were used to complete the open space existing conditions analysis:

- *CEQR Technical Manual,* 2021 Edition
- New York City Department of Parks and Recreation website
- NYC Open Data

Table 6-1 lists the existing open spaces within a 400-foot radius of the proposed alignment by section. Of the seven sections of the alignment, two (Viaduct and Open-Cut) had no identified open space resources. The text below includes descriptions of each of the open spaces within the study area.

Table 6-1 Existing Open Spaces

Proposed Alignment Section	Name	Map ID	Category	Use Type[1]	Owner	Acres[2]
St. George	North Shore Esplanade	1	Esplanade/ Plaza/ Sitting Area	Passive	NYC Parks	2.2
	St. George Park	2	Plaza/ Sitting Area	Passive	NYC Parks	0.1
	Baker Square	3	Sitting Area	Passive	NYC Parks	0.08
	Barrett Triangle	4	Plaza/Sitting Area	Passive	NYC Parks	0.16

[1] *Handbook on the Alienation and Conversion of Municipal Parkland in New York,* New York State Office of Parks, Recreation, and Historic Preservation, September 2017.

Table 6-1 Existing Open Spaces

Proposed Alignment Section	Name	Map ID	Category	Use Type[1]	Owner	Acres[2]
New Brighton Waterfront	Snug Harbor Cultural Center and Botanical Garden	5	Historic House Park/ Cultural Center/ Public Gardens	Active; Passive	NYC Department of Cultural Affairs	83.3
	Walker Park	6	Recreation Field/Courts	Active; Passive	NYC Parks	5.3
West Brighton Waterfront	Heritage Park	7	Park	Passive	NYC Parks	9.9
Arlington Station	The Big Park (aka Grandview Playground)	8	Park	Active; Passive	NYC Parks	3.0
South Avenue	Staten Island Industrial Park (aka Staten Island Corporate Park)	9	Nature Area	Passive	NYC Parks	210.9[3]
	Saw Mill Creek Marsh	10	Nature Area	Passive	NYC Parks	178.5
	Meredith Woods	11	Nature Area	Passive	NYC Parks	32.2

Notes:

[1] Open space can be used for active purposes (such as sports, exercise, or other active play) or passive purposes (such as sitting, sunbathing, bird watching, or strolling).

[2] Acreage of the park as a whole according to NYC Digital Tax Map, available at http://gis.nyc.gov/taxmap/map.htm and NYC Parks park details, available at https://www.nycgovparks.org/parks.

[3] Of this total, 35 acres occupied by the office park development are not considered as public open space for analysis purposes.

Eleven public open space and recreational resources are either partially or fully located within the study area—including sitting areas, public gardens, recreational fields, parks, and nature areas. These resources cover a total of over 526 acres, of which approximately 434 acres (eight resources) are designated for passive recreational uses. The remaining 92 acres (three resources) are open spaces with both active and passive uses. Figure 6-2 through Figure 6-6 shows the location of each open space area in relation to the proposed alignment; portions of some identified open space parcels may lie outside the study area.

Figure 6-2 Open Space Resources in Study Area: St. George

Figure 6-3 Open Space Resources in Study Area: New Brighton Waterfront

Figure 6-4 Open Space Resources in Study Area: West Brighton Waterfront

Figure 6-5 Open Space Resources in Study Area: Arlington Station

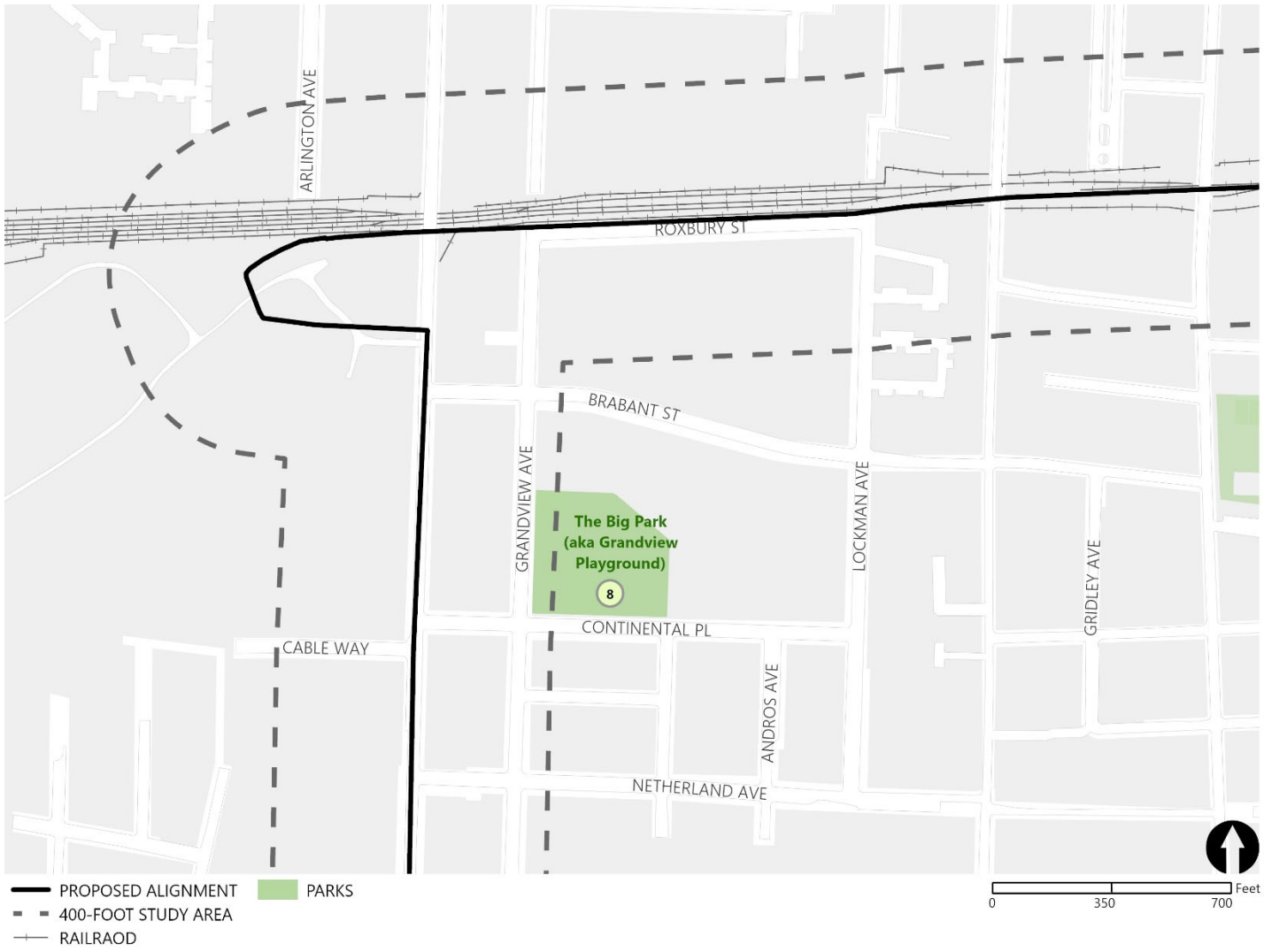
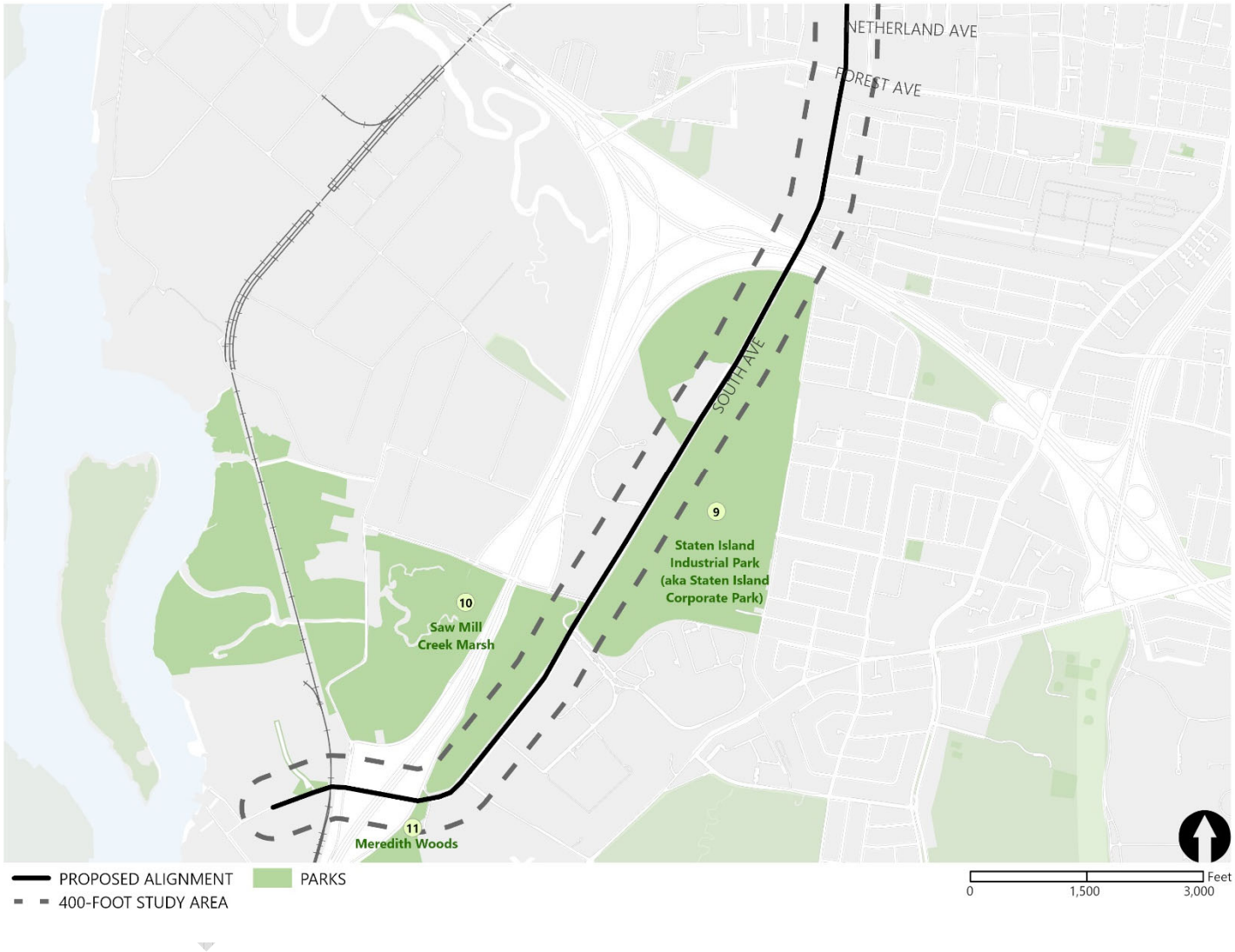


Figure 6-6 Open Space Resources in Study Are: South Avenue



Section 1: St. George

The two open spaces within the study area of this alignment section are the North Shore Esplanade and St. George Park. Both resources are used for passive recreation and are owned by the NYC Department of Parks and Recreation (NYC Parks).

North Shore Esplanade

The North Shore Esplanade is a long stretch of land, split up by roadways, that encompasses a total of 2.2 acres along the northeastern waterfront of Staten Island, north of Richmond Terrace. About 1.5 acres of the North Shore Esplanade extends roughly from Stuyvesant Place on the east to St. Peter's Place on the west. This portion of the esplanade is paved and offers benches for sitting, while providing the public with scenic waterfront views. Trees line the esplanade, and a row of lamp posts runs parallel to the fencing that acts as the boundary between the esplanade and Richmond Terrace to the south. While this area is owned by NYC Parks, it is mapped on the City Zoning Map as vacant land rather than parkland. The remainder of the North Shore Esplanade includes two small, undeveloped parcels, which are located on either side of Jersey Street in the area between Richmond Terrace and Bank Street. These two small sections of the esplanade, which are mapped as parkland, are overgrown with vegetation. A third Parks-owned undeveloped parcel in this area, located north of a cul-de-sac on Bank Street near the foot of Jersey Street, is shown on the NYC Parks website as being part of the esplanade, but is mapped as vacant land.

North Shore Esplanade at Nicholas Street; Wheel Garage access at right

St. George Park

St. George Park offers benches for sitting and a playground. Additionally, there are shade trees and brick pavers. The 0.1-acre park is located along Stuyvesant Place between Wall Street and Hamilton Avenue.

Baker Square

This 0.08-acre square is located at the corner of Hyatt Street and Stuyvesant Place, behind Borough Hall. Baker Square is also identified as a Greenstreet, which is a joint project between NYC Parks and NYCDOT to convert unused road areas into green spaces. Baker Square is landscaped with trees, shrubs, and other plantings. The square honors Edward Grant Baker, the 8th Staten Island borough president and a municipal court judge.

Barrett Triangle

This 0.16-acre triangle is located southeast of Baker Square between Stuyvesant Place, Nick Laporte Place, and Bay Street. This passive public space provides seating and a water fountain; it also serves as the location of the Clarence T. Barrett memorial, which commemorates Major Barrett's distinguished military service during the Civil War. Barrett, a member of a prominent Staten Island family, enjoyed careers in landscape architecture and sanitation engineering prior to serving as Police Commissioner and Superintendent of the Poor.

Section 2: New Brighton Waterfront

The two open spaces within the study area of this alignment section are the Snug Harbor Cultural Center and Botanical Garden and Walker Park. Both resources are used for both active and passive recreation. Both the NYC Department of Cultural Affairs and NYC Parks share jurisdiction over Snug Harbor Cultural Center and Botanical Garden; Walker Park is under the jurisdiction of NYC Parks.

Snug Harbor Cultural Center and Botanical Garden

Snug Harbor Cultural Center and Botanical Garden, also known as Sailors' Snug Harbor, is located at 1000 Richmond Terrace. The property was built in the 1800s and originally functioned as a home for retired sailors. Currently, the 83.3-acre campus includes 28 buildings, 14 botanical gardens, a 2-acre urban farm, wetlands, and parkland. Several buildings and structures within the Snug Harbor Cultural Center and Botanical Garden are listed on the National Register of Historic Places, as discussed in **Chapter 8, Historic and Cultural Resources**. The campus offers seasonal festivals, educational opportunities, galleries, museums, and botanical gardens, and includes the Newhouse Center for Contemporary Art, New York Chinese Scholar's Garden, Noble Maritime Collection, Staten Island Conservatory of Music, Music Hall, and Richmond County Savings Foundation Tuscan Garden, among others. According to the Snug Harbor Cultural Center and Botanical Garden website, it is one of the largest ongoing adaptive reuse projects in the country and is one of New York City's unique architectural complexes and historic landscapes.[2] The campus open daily from dawn to dusk; can be accessed by public transit, using the S40 bus has

Overlook north of Richmond Terrace; which is blocked from pedestrian access due to its state of disrepair.

[2] Snug Harbor Cultural Center & Botanical Garden. History. Available at https://snug-harbor.org/about-us/history/. Accessed June 3, 2023.

both on-street and off-street parking, and all areas of Snug Harbor's campus are fully accessible.

Richmond Terrace divides a narrow waterfront portion of Snug Harbor Cultural Center and Botanical Garden from the main campus area. An overlook north of Richmond Terrace, located at the former site of the Snug Harbor dock, offers relatively unobstructed views of the water and shoreline. A portion of the main campus lawn south of Richmond Terrace also has views of the water, although they are partially obscured by large trees and by large vehicles passing by on Richmond Terrace. From the overlook, steps lead down to the remnants of the dock and an unsigned, partially paved pathway that traverses along the shoreline, running parallel to Richmond Terrace for approximately 800 feet. The pathway, which abuts and is bisected by the former North Shore Railroad ROW for a portion of its length, is not heavily used and is partially overgrown. It connects the dock area to a point near the intersection of Richmond Terrace and Snug Harbor Road. The existing steps alongside the overlook are currently in a state of disrepair and barricaded off to prevent pedestrian access to this area. In addition, the dock area is presently barricaded and inaccessible due to its poor structural state. The closest access to the waterfront portion of Snug Harbor is at the intersection of Richmond Terrace and Snug Harbor Road, approximately 0.15 miles west of the overlook.

Aside from the pathway and some remnant retaining walls, the remainder of the waterfront parcel is undeveloped and vegetated, partially blocking roadway travelers' views of the waterfront during leaf-on season.

Randolph Walker Park

Randolph Walker Park, commonly known as Walker Park, is located off Delafield Place between Bard Avenue and Davis Avenue. The 5.3-acre park offers facilities including baseball and softball fields, basketball courts, cricket fields, tennis courts, soccer fields, football fields, and a playground with toddler swings. Additional features of Walker Park include walkways, benches, drinking fountains, and landscaping.

Section 3: West Brighton Waterfront

Heritage Park

Heritage Park

Heritage Park, a passive recreational park, is owned by NYC Parks and encompasses 9.9 acres. The park offers open lawn space with trees, landscaping, walking paths, benches, and a 12-space parking lot. A second southern parking lot with eight spaces, located in the North Shore ROW, is also used by park visitors. From Heritage Park, visitors experience scenic views of Snug Harbor, the Bayonne Bridge, and other waterfront views. The land was donated to NYC Parks by The Trust for Public Land and the Port Authority of New York and New Jersey. According to NYC Parks's webpage on Heritage Park, the park was named to commemorate the historic and cultural character of the surrounding community.

Section 4: Viaduct

No open space resources were identified within the study area of this section of the alignment.

Section 5: Open-Cut Section

No open space resources were identified within the study area of this section of the alignment.

Section 6: Arlington Station

The Big Park

The Big Park offers active and passive recreational opportunities, including basketball courts, handball courts, playgrounds, fitness equipment, a large multi-use field, splash pad, cooling spray towers, benches, picnic tables, walking paths, and shade trees. The 3-acre park, which is located off Grandview Avenue at Continental Place, is under the jurisdiction of NYC Parks.

Section 7: South Avenue

The three open spaces within the study area of this alignment section are the Staten Island Industrial Park, Saw Mill Creek Marsh, and Meredith Woods. All three of these resources are nature areas, designated for passive recreational uses, and are under the jurisdiction of NYC Parks.

Staten Island Industrial Park

Staten Island Industrial Park, also referred to as Staten Island Corporate Park, encompasses a total of 210.9 acres, of which approximately 130 acres are undeveloped forested wetland. Approximately 35 acres of Staten Island Industrial Park consists of developed office space and therefore is not considered an open space resource for purposes of this analysis. According to NYC Parks, the preserved area contains many plants that are rare in New York State, including swamp or sweetbay magnolia (*Magnolia virginiana*), persimmon (*Diospyros virginiana*), possum-haw (*Ilex decidua*), and primrose-leaved violet (*Viola primulafolia*), among others.[3] The park is roughly bounded by Fahy Avenue to the north, Graham Avenue to the east, Teleport Drive to the south, and South Avenue to the west.

Saw Mill Creek Marsh

Saw Mill Creek Marsh offers visitors a variety of passive recreational activities, including hiking, bird watching, nature and wildlife observation, and photography. The nature area encompasses a total of 178.5 acres.[4] The marsh is roughly bounded by Chelsea Road to the west and south, South Avenue to the east, and Edward Curry Avenue to the north.

Meredith Woods

Meredith Woods is a protected 32.2-acre nature area that is mostly salt marsh. Although it primarily functions as habitat, it is used informally for walking and nature viewing.

No-Action Condition

In the 2035 No-Action condition, community access to open space resources within the study area would be maintained. The North Shore ROW would remain in its undeveloped condition, and there would be no use of open space resources due to the Proposed Project. No new open spaces are expected to be developed in the study area in the No-Action condition, and no substantial changes are planned to the existing open spaces.

With-Action Condition

The potential changes to parklands that may result from the Proposed Project warrant an assessment of direct effects on area open spaces. The analysis assessed, as appropriate, any potential displacement of open space and recreational resources and potential increases in noise, air pollutants, or shadows from the Proposed Project. The potential need for parkland alienation was also evaluated (see separate discussion below).

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[3] https://www.nycgovparks.org/parks/staten-island-industrial-park/highlights

[4] https://www.dec.ny.gov/outdoor/55407.html

The Proposed Project would improve transit access through development of a BRT system using a combination of the former North Shore Railroad ROW and existing street rights-of-way. However, the Proposed Project would impact the following open space resources: North Shore Esplanade, Snug Harbor Cultural Center and Botanical Garden, and Heritage Park. Impacts on these three open space resources are described in the sections below. The other open spaces identified in the study area (St. George Park, Walker Park, The Big Park, Staten Island Industrial Park, Saw Mill Creek Marsh, and Meredith Woods) would not experience any impacts as a result of the Proposed Project.

North Shore Esplanade

The new busway would cross the North Shore Esplanade at Nicholas Street, sharing an intersection with the existing access ramp to the New York Wheel Garage. From this intersection, the busway would cross the esplanade on a southeast-to-northwest diagonal before transitioning to a structure that would carry it down the grade to the former North Shore Railroad ROW south of Bank Street. Pedestrian access along the esplanade would be maintained, and crossing would be signalized and designed to maintain the safety of pedestrians and bicyclists.

A small area of the esplanade (approximately 0.12 acre) would be occupied by the at-grade busway crossing. The area is currently paved and does not contain any visitor amenities (see **Figure 6-7**). The new crossing is not expected to adversely affect the visitor experience, since the former NY Wheel parking garage access ramp already crosses it at this location. This area is owned by NYC Parks, but is not mapped as parkland; hence, its use for the crossing is not subject to parkland alienation regulations. The three undeveloped parcels associated with the esplanade near Jersey Street would not be affected by the Proposed Project (see **Figure 6-8**).

Figure 6-7 North Shore Esplanade & Nicholas Street Ramp

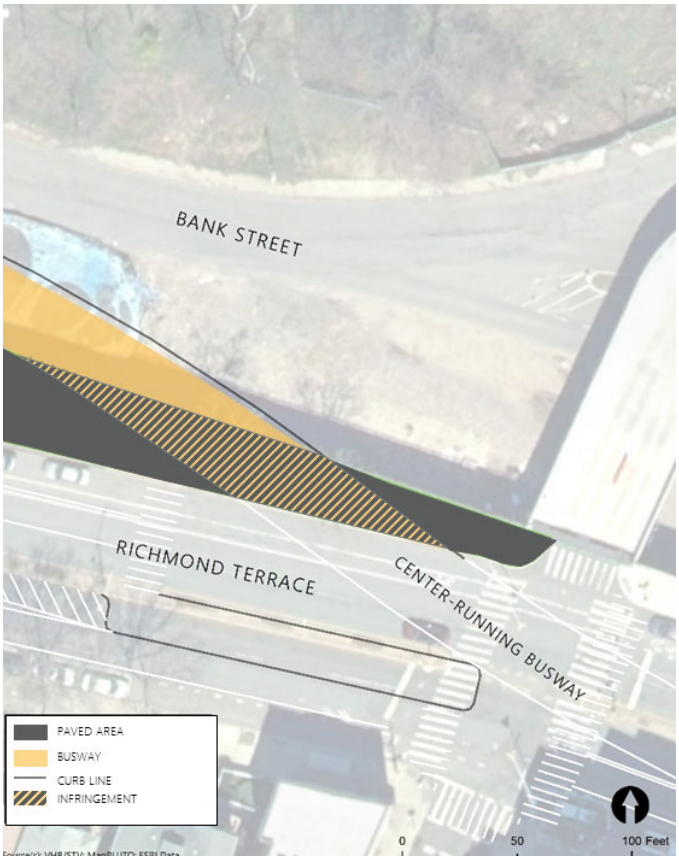

Figure 6-8 Jersey Street & Richmond Terrace

Snug Harbor Cultural Center and Botanical Garden

The Proposed Project in the Snug Harbor area would require the use of approximately 0.36 acre of parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to construct the new BRT corridor (see Figure 6-9). The parkland area, which is located north of Richmond Terrace, would be used because portions of the former North Shore Railroad right-of-way are now submerged in the Kill Van Kull as a result of storm damage and ongoing coastal erosion. The elevated busway would be raised on columns through the park to maintain an elevation of 2 feet above the level of the 100-year flood. The proposed design would not impede access to the waterfront and shoreline pathway. As previously noted, the existing steps alongside the Kill Van Kull overlook are barricaded off which prohibits pedestrian access. However, once the stairs are brought to a state of good repair access would be restored and the busway would not impede this access.

Figure 6-9 Parkland North of Richmond Terrace

The Proposed Project would involve the direct displacement of park property, and would potentially affect noise levels, shadows, and views in portions of the Snug Harbor parkland. Under the Proposed Project, noise levels may increase in the area of the park north of Richmond Terrace due to the proximity of the proposed busway (see Chapter 18, Noise, for more information).

As described in Chapter 7, Shadows, with the Proposed Project in place, shadows would be cast on the parkland north of Richmond Terrace that lines the Kill Van Kull shoreline. This park area, which is not signed as public open space and is lightly used, includes undeveloped and vegetated areas with no seating or active recreational amenities. The vegetation, shrubs, and trees in this area generally function as a buffer between the shoreline and Richmond Terrace. Shadows would be relatively limited in scope and would not impact the viability of vegetation in the area nor would project-generated shadows reach the Snug Harbor Cultural Center main campus.

In addition, the proposed busway would introduce changes to the streetscape viewed by pedestrians on Richmond Terrace and from adjacent areas of the park, as discussed in Chapter 9, Urban Design and Visual Resources. However, because the affected area is relatively undeveloped and little-used compared to the portion of the Snug Harbor facility south of Richmond Terrace, these impacts are not expected to be significant.

The Metropolitan Transportation Authority (MTA) would work with NYC Parks and Snug Harbor Cultural Center representatives to identify ways to minimize the use of parkland to maintain access to the waterfront, and to implement design

measures that would make the busway more compatible with the adjacent park use. Additionally, the elevated busway would not preclude any of the other waterfront access projects that may be planned and/or funded by Snug Harbor, the City, or federal government. As currently designed, the Proposed Project would require alienation of 0.36 acre of dedicated parkland from the portion of the Snug Harbor Cultural Center and Botanical Garden on the north side of Richmond Terrace.

If the final design for the Proposed Project requires the conversion of parkland to ROW for the new busway, the City would initiate parkland alienation legislation, which would identify substitute parkland of similar function and value. If it is not possible to identify the substitute land at the time the alienation legislation is introduced, the need to identify substitute land would be clearly stated in the legislation. Should parkland alienation be required, it would constitute a significant adverse impact to the Snug Harbor Cultural Center and Botanical Garden.

Heritage Park

As currently designed, the Proposed Project would not require the use of designated parkland in Heritage Park (see **Figure 6-10**). However, the busway would cross the park access road and would displace one of the two parking lots serving the park. This southern parking lot is located partially within the existing North Shore ROW. The lot is striped for eight spaces and is bordered by an unpaved area to the south, adjacent to Richmond Terrace. The park's main parking lot, located farther to the north, has a capacity of 12 parking spaces, one of which is designated for vehicles with a Parking Permit for People with Disabilities (PPPD).

Figure 6-10 Heritage Park

MTA would coordinate with NYC Parks to explore the possibility of replacing the lost parking in another location, such as the unpaved area south of the ROW. NYC Parks has emphasized the importance of maintaining safe access to the park; further discussions as to how to integrate the ROW with the park setting will occur in the future as design plans advance. MTA would maintain pedestrian and auto access to the developed portion of the park via a new TSP-enabled signal and a signalized crosswalk across the busway. Because parking would continue to be provided in the larger lot, which is located on designated parkland, the loss of the eight parking spaces in the North Shore ROW is not expected to be a significant adverse impact to the park.

Conclusion

As described in the previous sections, MTA is working with NYC Parks to avoid and minimize impacts to the three study area parks that would be affected by the Proposed Project. Should parkland alienation be required, it would constitute a significant adverse impact to the Snug Harbor Cultural Center and Botanical Garden. Otherwise, MTA anticipates that significant adverse impacts would be avoided through landscape design and buffering, maintenance of access and parking, and pedestrian and vehicular safety measures.

7 Shadows

A shadow is defined in the *2021 CEQR Technical Manual* as the condition that results when a building or other built structure blocks the sunlight that would otherwise directly reach a certain area, space, or feature. The purpose of this chapter is to assess whether new project-related structures may cast shadows on sunlight-sensitive, publicly accessible resources or other resources of concern, such as natural resources, and to assess the significance of their impact.

Regulatory Background

According to the *CEQR Technical Manual*, a shadows assessment is required for proposed actions that would result in new structures (or additions to new structures) greater than 50 feet in height or located adjacent to, or across the street from, a sunlight-sensitive resource. Sunlight-sensitive resources include publicly accessible open space, historic architectural resources with sun-sensitive features (e.g., stained glass windows, architectural styles that are dependent on contrast between light and dark design elements, etc.), and important natural resources. According to *CEQR Technical Manual* guidance, shadows occurring within 90 minutes of sunrise or sunset are not considered significant. Similarly, shadows occurring on non-sunlight-sensitive resources (city sidewalks and streets, other buildings, and private open space resources) are not considered significant.

Methodology

Preliminary Screening Assessment

In accordance with the *CEQR Technical Manual*, a preliminary screening assessment is conducted to ascertain whether shadows resulting from a project could reach any sunlight-sensitive resource at any time of year. This preliminary screening assessment consists of three tiers of analyses:

» **Tier 1 Screening**: The first tier determines a radius around the proposed structure representing the longest shadow that could be cast by the project. If there are sunlight-sensitive resources within the radius, the analysis proceeds to the second tier;

- **Tier 2 Screening**: The second-tier analysis reduces that area that could be affected by project-generated shadows by accounting for a specific range of angles that can never receive shade in New York City due to the path of the sun in the northern hemisphere. According to the *CEQR Technical Manual*, no shadow can be cast in a triangular area south of any given project site. In New York City, the area where shadows cannot be cast is within 108 degrees from True North;
- **Tier 3 Screening**: If the second tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a third tier of screening analysis further refines the area that could be reached by new shadows by looking at specific representative days of the year and determining the maximum extent of shadow over the course of each representative day. Shadows are projected using 3D modeling software, and elements that would affect the length of shadows, such as topography, are taken into account. If the Tier 3 screening indicates that, in the absence of intervening buildings, shadows from the project would reach a sunlight-sensitive resource on any of the representative analysis days, a detailed shadow analysis is typically undertaken.

A detailed assessment may be undertaken after a preliminary screening assessment if the preliminary screening cannot rule out the potential for an adverse impact on sunlight sensitive resources due to shadows. A detailed analysis considers existing buildings/structures or future buildings/structures that would be expected to cast shadows in the future without the Proposed Project.

To accommodate new BRT service, the Proposed Project would rehabilitate the former North Shore Railroad right-of-way, which is an existing transportation corridor. Project elements such as station canopies, station platforms for level boarding, proposed busway access points, and roadway lighting would not exceed 50 feet in height, which is typically the threshold for a shadow assessment.

In addition to the project elements, the physical characteristics of the alignment were also considered. The open-cut section of the ROW was screened from analysis, as this existing infrastructure is approximately 20 to 25 feet below grade and therefore would not cast shadows. The existing elevated viaduct section is approximately 20 feet in height; modifications to accommodate the new BRT service are not expected to result in a substantially higher structure and therefore would not be expected to result in any significant new areas of shadow. Similarly, South Avenue and Richmond Terrace were screened from analysis, as the BRT would operate at-grade within these existing roadways.

In the vicinity of Snug Harbor, the former North Shore Railroad ROW, which was formerly located on dry land, is currently submerged in the waters of the Kill Van Kull. As a result, in this area the Proposed Project would require an elevated busway landward of the Kill Van Kull shoreline north of Richmond Terrace.

Accordingly, this feature, located in the New Brighton Waterfront section of the study area, was assessed for potential project-related shadow effects.

A Tier 3 analysis was undertaken to demonstrate the potential shadows of the proposed alignment within the New Brighton Waterfront section. A detailed analysis would not provide additional information, since there is no elevated structure proposed in the No-Action condition, and there are no intervening structures that would affect potential shadows. Therefore, a Tier 1 through 3 analysis was undertaken for the Proposed Project.

Preliminary Assessment

Tier 1 and Tier 2 Screening

A base map was created identifying all known historic, natural, and open space resources within the vicinity of the Proposed Project's New Brighton Waterfront section. Sunlight-sensitive features of each resource were identified. Any resources that did not have sunlight-sensitive elements were not considered further in the analysis.

Table 7-1 and **Figure 7-1** show the results of the Tier 1 and Tier 2 screening assessments. Due to the irregular shape and varying height of the proposed structure, a maximum shadow radius and an area that could not receive shadow from the Proposed Project were not defined. However, at its tallest elevation of approximately 36 feet, the alignment would be expected to project a maximum shadow of 155 feet. There are two sunlight sensitive resources, one open space and one natural resource, within the vicinity of the proposed alignment within the New Brighton Waterfront section.

Table 7-1 Affected Area- Potential Sunlight Sensitive Resources

Map ID	Resource Name	Description	Sunlight Sensitive Elements
O1	Snug Harbor Cultural Center	A collection of architecturally significant 19th century buildings on landscaped grounds that total 83 acres.	Vegetation
N1	Kill Van Kull	Three-mile channel between Staten Island and Bayonne New Jersey that is approximately 1,000 feet wide.	Open-water and benthic habitat

Notes:

As described above, the *CEQR Technical Manual* establishes a Tier I screening assessment to determine whether a Proposed Project would cast a shadow on resource(s) that could potentially result in adverse impacts to the resource or the area in which the shadow is cast. This screening procedure establishes the longest shadow that a structure could cast, which is 4.3 times the structure's height; this condition would occur at the start and end of December 21, the winter solstice.

The shadow study area encompasses portions of the Kill Van Kull (N1) (considered to be a natural resource) to the north and south; a strip of parkland to the south, which is situated between the shoreline and Richmond Terrace; and Richmond Terrace itself. The shadow study area ends within the Richmond Terrace ROW and falls short of the entrance to the main campus of the Snug Harbor Cultural Center and Botanical Garden.

As noted in **Chapter 6, Open Space**, designated parkland associated with the Snug Harbor Cultural Center and Botanical Garden (O1) is located north of Richmond Terrace in the area where the elevated busway would be built. According to the *CEQR Technical Manual*, open space facilities that are paved, do not contain sitting areas, or contain vegetation or plantings that are shade-tolerant are not considered to be sunlight-sensitive resources.[1] This park area, which is not signed as public open space and is lightly used, includes an overlook and a partially paved pathway that traverses the shoreline running parallel to Richmond Terrace as well as undeveloped and vegetated areas with no seating or active recreational amenities. The vegetation, shrubs, and trees in this area generally function as a buffer between the shoreline and Richmond Terrace. Therefore, the sunlight sensitive features of this area are limited to the vegetation within the area, and a Tier 3 screening assessment is warranted.

The natural waterfront characteristics of the Kill Van Kull, a 3-mile tidal river that connects Newark Bay with the Upper New York Bay, represent a feature within the vicinity of the proposed alignment (see **Chapter 11, Natural Resources**). It is categorized as an estuarine/marine waterway with open water and benthic habitat. These habitats are considered sunlight sensitive and therefore a Tier 3 screening assessment is warranted.

[1] *2021 CEQR Technical Manual*. p. 8-26.

Figure 7-1 Tier 1 and Tier 2 Screening Results

Tier 3 Screening Results

Figure 7-2 through **Figure 7-5** show a representative sample of shadows that could be cast by the Proposed Project on the December 21, March 21/September 21, May 6/August 6 and June 21 analysis days. The figures show the full extent of shadow throughout each analysis day, with areas in darker shades receiving longer shadow durations throughout the day.

The Proposed Project would run through the Sung Harbor Cultural Center (O1) just south of the existing ROW and just north of Richmond Terrace. **Figure 7-2** through **Figure 7-5** show the extent of the shadow cast on each analysis day.

The Kill Van Kull (N1) would receive some shading on each analysis day, with the longest shadow durations occurring on the December 21st analysis day. On the remaining three analysis days the shadows on the channel would be very limited in scope and duration. On all four analysis days, the potential shadows cast from the Proposed Project would be confined to the intertidal edge of the Kill Van Kull.

As discussed in Chapter 10, Natural Resources, a limited amount of intertidal habitat would be present in this area but could periodically contain small common forage fish. Since these shadows represent a relatively small area of the Kill Van Kill intertidal edge, and would move throughout each analysis day, it is

expected that any species in the area could migrate through the area and would not be adversely impacted.

The Proposed Project would also cast shadow within the Snug Harbor Cultural Center parkland (O1). These shadows would be confined to the parkland north of Richmond Terrace that lines the Kill Van Kull shoreline, and would never reach the Snug Harbor Cultural Center main campus. As discussed in the Tier 1/2 screening section, the sunlight-sensitive aspects of this area are limited to the vegetation present within the buffer. Shadow would be cast on small portions of this area on each analysis day, and much of the time be located directly under and around the elevated structure. As discussed in Chapter 10, Natural Resources, this area has vegetation categorized as secondary successional forest, and is considered disturbance tolerant. Therefore, it is not expected that the viability of the vegetation in this area would be adversely impacted due to project-generated shadows.

Figure 7-2 Tier 3 – December 21st Analysis Day

Figure 7-3 Tier 3 – March/September 21st Analysis Day

Figure 7-4 Tier 3 – May/August 6th Analysis Day

Figure 7-5 Tier 3 – June 21st Analysis Day

Conclusion

As detailed above, it is not expected that the shadows cast on the sunlight sensitive resources within the New Brighton Waterfront section of the alignment would result in a significant adverse impact. Shadows on the identified sunlight sensitive resources from the Proposed Project would be relatively limited in scope and would not impact the viability of vegetation or marine habitats in the area. Therefore, no significant adverse shadow impacts are anticipated.

8 Historic and Cultural Resources

This chapter assesses the potential for the Proposed Project to result in significant adverse impacts on historic and cultural resources, including both archaeological and architectural resources. Historical and cultural resources are defined as districts, buildings, structures, sites, and objects of historical, aesthetic, cultural, and archaeological significance. According to the *2021 CEQR Technical Manual*, these include properties that have been designated, or are under consideration for being designated, as New York City Landmarks (NYCL) or Scenic Landmarks, or are eligible for such designation; properties within NYCL Historic Districts; properties listed in, or determined eligible for listing in, the State and/or National Register of Historic Places (S/NRHP); and National Historic Landmarks (NHL).

Regulatory Background

State, Local, and Federal Regulations

MTA is preparing this ~~D~~FEIS for the Proposed Project in accordance with New York's State Environmental Quality Review Act (SEQRA) and New York City's City Environmental Quality Review (CEQR). The Proposed Project is being reviewed in conformance with the New York State Historic Preservation Act of 1980 (SHPA), specifically the implementing regulations of Section 14.09 of the Parks, Recreation and Historic Preservation Law (PRHPL). Review under SHPA is required when a project may or will cause any change, beneficial or otherwise, in the quality of any property listed in or eligible for listing in the State and/or National Registers of Historic Places (S/NR).[1]

[1] Districts, buildings, structures and objects are eligible for the S/NR if they possess integrity of location, design, setting, materials, workmanship, feeling and association and are associated with events that have made a significant contribution to the broad patterns of our history; or are associated with significant persons of our past; or embody distinctive characteristics of a type, period, method of construction or that represent the work of a master, possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or that have yielded or may be likely to yield information important in prehistory or history (National Register of Historic Places, 36 Code of Federal Regulation ("CFR") Parts 60 and 63 (1994)). Properties that are less than 50 years old are generally not eligible for listing unless they have achieved exceptional significance. Determinations of eligibility are made by the OPRHP.

SHPO Consultation and Establishment of the Area of Potential Effects

In August 2019, consultation began with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP or SHPO) under SEQRA. On October 4, 2019, SHPO representatives conducted a field visit to view the Proposed Project. Based on the results of the field visit and supporting documentation about the Proposed Project, on October 30, 2019, SHPO issued a response indicating that a Phase IA Archaeology Survey and an Architectural Resources Survey were necessary (see **Appendix A, Agency Correspondence**).[2]

After subsequent discussions by the project team with SHPO and submission of additional project materials, SHPO issued a supplemental response, indicating that the study area or Area of Potential Effects (APE) for Architectural Resources would be 90 feet from the Proposed Project in all areas to account for potential construction-related impacts, except surrounding Sailors' Snug Harbor, where the study area or APE would be expanded to 400 feet to account for potential visual and contextual project impacts on this S/NRHP listed Historic District, NYCL, and NHL.

Additionally, SHPO concurred with the project team that the portion of the Proposed Project along South Avenue to West Shore Plaza, where there would be no construction impacts, could be eliminated from the historic and cultural resources APE (see **Appendix A, Agency Correspondence**).[3]

The Archaeological APE is defined as the area that could be affected by ground disturbance associated with project development, including construction staging areas. Ground disturbance as part of the Proposed Project would vary across the alignment, depending on location and need. Types of ground disturbance would include construction of the proposed raised busway and its foundations along the Kill Van Kull shoreline; construction of retaining walls at various points along the entire alignment; removal of soil in conjunction with the retaining walls, especially south of the active railroad tracks and behind the present retaining wall in Section 6; construction of drainage features spaced along the alignment consisting of either drainage infiltration or drainage detention chambers; and construction of seven new bus stations along the alignment. If not already paved, construction staging areas would be stripped of existing topsoil and covered with gravel or pavement. Overall depths of proposed ground disturbance could range from a few inches to 15 feet below grade.

As part of a separate effort, in June 2019, an architectural survey of waterfront neighborhoods was conducted throughout Staten Island under a larger OPRHP initiative to create consistent and up-to-date historic resources survey information for areas in New York City and Long Island that are vulnerable to

[2] Olivia Brazee, SHPO to Linda Tonn, MTA Capital Program, October 20. 2019.

[3] Olivia Brazee, SHPO to Linda Tonn, MTA Capital Program, December 11, 2019.

storm damage.[4] That architectural study, which was in response to Superstorm Sandy, resulted in the submission of both Reconnaissance-level and Intensive-Level historic resource forms across much of the northern shore of Staten Island. Large portions of the North Shore BRT study area were included in the 2019 architectural survey. As a result of subsequent consultation by the project team, SHPO concurred that those locations included as part of the 2019 architectural survey would not need to be reevaluated or updated as part of the current study.[5]

On June 4, 2020, a viewshed analysis, including renderings, for the proposed design along the shoreline at Sailors' Snug Harbor was submitted to SHPO for review. On July 3, 2020, the SHPO responded:

> We have reviewed the viewshed analysis for Sailors' Snug Harbor and the memorandum of project design options that were provided to our office on June 4, 2020. Based upon our review, the proposed undertaking would have an Adverse Effect upon the setting of Sailors' Snug Harbor, a National Historic Landmark.[6]

On June 29, 2020, a viewshed analysis, including renderings, for the widening of Richmond Terrace at the 120th Police Precinct building and the Staten Island Family Courthouse was submitted for SHPO review. On July 22, 2020, the SHPO responded (see **Appendix A, Agency Correspondence**):

> We have reviewed the description and renderings illustrating the proposed changes to the stairs and cheek/retaining walls at both the 120th Police Precinct and the Richmond County Courthouse, provided to our office on June 29th, 2020. We understand that the existing steps have been replaced at both buildings. Based upon this, and upon our assessment of the visual impacts to the historic buildings as illustrated in the renderings, we have no concerns with this component of the proposed project.[7]

Identical submissions of the two sets of viewsheds and renderings to the New York City Landmarks Preservation Commission (LPC) did not result in any additional comments (see **Appendix A, Agency Correspondence**).[8]

In August 2020, two cultural resources survey reports were completed for the Proposed Project. Archaeological resources were addressed in a *Phase IA*

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[4] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

[5] Linda Mackey, SHPO to Julie Abell Horn, HPI. December 20, 2019.

[6] Olivia Brazee, SHPO to Linda Tonn, MTA. July 3, 2020.

[7] Olivia Brazee, SHPO to Linda Tonn, MTA. July 22, 2020.

[8] Gina Santucci, LPC. July 27, 2020.

Archaeological Documentary Study, and architectural resources were addressed in an *Architectural Resources Survey*. Both reports were undertaken by Historical Perspectives, Inc. (HPI) and submitted to MTA. The reports are included in Appendix J.

Both reports were submitted to SHPO for review in 2023. The archaeological survey was accepted by SHPO on January 31, 2023, and the architectural survey was accepted by SHPO on March 3, 2023.[9] The acceptance letters are included in Appendix A, Agency Correspondence. Results of these two cultural resources surveys and the SHPO determinations that were updated after completion of the surveys are summarized in the following sections of this chapter.

Existing Conditions

As described in Chapter 1, Introduction, to facilitate the analysis for the North Shore BRT study area, the proposed alignment has been divided into seven sections. Each section and associated study area contain generally similar land uses, and/or reflect a section of the alignment that is distinct from an engineering standpoint. The Historic and Cultural Resources APE includes Sections 1, 2, 3, 4, 5, and the portion of Section 6 from just east of Harbor Road to the intersection of South Avenue and the railroad tracks. Because the BRT would operate in mixed traffic along South Avenue to the West Shore Plaza, there would be no new ground disturbance in the portions of Sections 6 and 7 along South Avenue, and these locations have been eliminated from the APE.

Figures 8-1 through 8-5 depict the six sections within the APE, the 90-foot APE, the 400-foot APE at Sailors' Snug Harbor, and historic structures discussed in this chapter. The following sub-sections summarize existing conditions and cultural resources results by section, first addressing archaeological resources and next architectural resources. Each sub-section presents previously recorded archaeological and architectural sites and resources, previous archaeological and architectural surveys within each section, and the results of the present archaeological and architectural studies.

Previously recorded cultural resources sites and surveys are on file at SHPO and LPC. Archaeological sites include those recorded by the SHPO, the New York State Museum (NYSM), and in the LPC's *Archaeological Evaluation and Sensitivity Assessment of Staten Island, New York* prepared for the LPC by Eugene Boesch in 1994.

The Staten Island Architectural Survey, headed by Barnett Shepherd of the Staten Island Institute of Arts and Sciences (SIIAS), surveyed many of the architectural resources within the APE in the late 1970s. The work resulted in photos, research, and documentation forms, copies of which, known as "blue forms," were deposited with SHPO and are available via their electronic Cultural Resources

[9] Timothy Lloyd, SHPO to Naomi Delphin, MTA. January 31, 2023. Linda Mackey, SHPO to Naomi Delphin, MTA. March 3, 2023.

Information System (CRIS). S/NRHP eligible and listed resources have additional documentation on file at SHPO. LPC maintains Designation Reports for NYCLs.

The final sub-section evaluates the potential S/NRHP eligibility of the Staten Island Railway (SIR)[10] resource as a whole, including the at-grade components in Sections 1, 2 and 3, the Viaduct in Section 4, and the Open Cut in Sections 5 and 6.

Archaeological Resources

Section 1: St. George

Existing Conditions

Section 1 begins at the entrance to the St. George Terminal on Richmond Terrace. The proposed alignment then runs northwest along the existing paved roadway of Richmond Terrace as far as Nicholas Street. At Nicholas Street, the proposed alignment descends to the paved North Shore Esplanade, where it then runs along the former Staten Island Railway (SIR) right-of-way (ROW) and through the North Shore Waterfront Esplanade Park to Jersey Street. The Archaeological APE within the North Shore Waterfront Esplanade Park consists of a level, paved roadway bordered by parkland. There are several soil and debris piles covered with large tarps between the North Shore Esplanade roadway and Richmond Terrace. This area was once under water and was landfilled in the nineteenth century.

Previously Recorded Archaeological Sites

The NYSM recorded one precontact period archaeological site, NYSM Site 4629, overlapping Section 1. This large, amorphously mapped site includes much of the St. George neighborhood. Its generalized location and scant documentation suggests that the likelihood is low that this site is extant within Section 1.

Previous Archaeological Surveys

Archaeologists have conducted several archaeological studies within and abutting Section 1. Two studies were immediately abutting Section 1: the St. George Railyards project[11] and the subsequent Minor League Baseball Stadium project,[12] now known as Staten Island University Hospital (SIUH) Community Park, which included much of the same area. The initial 1989 project recommended limited Phase IB archaeological testing. During the 1999 study, archaeologists monitored soil borings near Richmond Terrace between Nicholas Street and Wall Street to determine whether possible precontact, or Native American, resources could be located along the former natural shoreline. The soil borings revealed an

[10] Elsewhere in this EIS, the North Shore Branch of the Staten Island Railway is referred to as the "former North Shore Railroad." In this chapter, it is referred to as SIR for consistency with previous historic resource evaluations.

[11] Greenhouse Consultants, Inc. 1989. *Phase IA Historical/Archaeological Sensitivity Evaluation of the St. George Railyard Project, Staten Island, New York*.

[12] Greenhouse Consultants, Inc. 1999. *Phase IA Memorandum, Proposed Minor League Baseball Stadium, St. George, Staten Island, Richmond County, New York*.

entirely disturbed soil profile, with no evidence of the former beach remaining. The archaeologists recommended no further work.

Maritime projects abutting Section 1 included several studies along the Kill Van Kull and its shoreline, which identified archaeological resources at various locations along the waterfront and beneath the Kill Van Kull.[13] All of the resources identified as part of these outboard studies have been evaluated and where necessary, mitigated.

Archaeological projects abutting Section 1 inland of Richmond Terrace included the National Lighthouse Redevelopment Project on Block 1 south of the Staten Island Ferry Terminal,[14] which is now being redeveloped; and the Staten Island Condominiums project on Block 13 on Stuyvesant Place,[15] which has since been constructed.

Section 2: New Brighton Waterfront

Existing Conditions

Section 2 continues west along the Kill Van Kull shoreline in the New Brighton neighborhood from Jersey Street to Davis Avenue. It follows the former North Shore Railroad ROW, generally on landfilled areas. The proposed alignment passes through the Atlantic Salt industrial facility from Jersey Street to Clinton Avenue. This facility includes several large warehouse buildings; a tall, brick smokestack ringed with cell panels; and large piles of salt, some of which are covered with large tarps. A portion of the Archaeological APE at the Atlantic Salt facility runs through an existing tunnel structure.

From Clinton Avenue to the western end of Snug Harbor Road, the proposed alignment passes through New York City-owned parkland associated with the S/NRHP-listed, NYCL, and NHL Sailors' Snug Harbor Historic District. One set of the former North Shore Railroad tracks (there were originally two sets) is partially visible within the woodland in this section. Across from the gate at Sailors' Snug Harbor on Richmond Terrace, there is a stone lookout and flagpole platform with

[13] Panamerican Consultants, Inc. 1999. *Cultural Resources Survey, New York Harbor Collection and Removal of Drift Project, Arthur Kill, New York Reach; Arthur Kill, New Jersey Reach; and Kill Van Kull, New York Reach.*; 2002. *Remote Sensing Survey in Connection with the New York and New Jersey Harbor Navigation Study, Upper and Lower Bay. Port of New York and New Jersey, Kings, Queens, New York and Richmond Counties, New York, Essex, Hudson, Monmouth and Union Counties, New Jersey.*

[14] Cragsmoor Consultants. 2004. *Stage IA Archaeological Survey, National Lighthouse Museum, Staten Island, Borough and County of Richmond, New York City*; 2007. *Phase IA Archaeological Survey, National Lighthouse Redevelopment Project, Block 1, Portion of Lot 60, Staten Island Borough and County of Richmond, New York City*; 2008. *Phase 1B Archaeological Survey, National Lighthouse Redevelopment Project, Block 1, Portion of Lot 60, Staten Island, Borough and County of Richmond, New York City*.

[15] Bergoffen, Celia. 2007. *Staten Island Condominiums, Block 13, Lots 82, 92, 100, 103, 104, Borough of Staten Island, New York, Phase IA Archaeological Assessment*; 2008. *Staten Island Condominiums, Block 13, Lots 82, 92, 100, 103, 104, Borough of Staten Island, New York, Phase IB Archaeological Field Testing.*

flanking stairways that lead down to the waterfront and a modern dock, constructed in the 1990s. An embossed tablet facing the shoreline reads "SAILORS SNUG HARBOR."

The shoreline here has a stone bulkhead, as well as wooden pilings in the water west of the modern dock. This area also contains a series of dressed ashlar stone retaining walls between Richmond Terrace and the shoreline. One section of the wall juts out and has embossed lettering that says "S. S. HARBOR." Two paved pathways lead down from Richmond Terrace along the retaining walls to the waterfront, and then along the waterfront. Historically, the stone retaining walls were part of a nineteenth-century feature called the "dual drive," which was a former carriage path running roughly parallel to Richmond Terrace along the shoreline.[16] Across from the two ends of the horseshoe-shaped Snug Harbor Road, a perennial stream discharges into the Kill Van Kull. Here, the former landfilled area supporting the railroad tracks has eroded away.

The portion of Section 2 from the west end of Snug Harbor Road to Bard Avenue passes behind a restaurant and a gas station. The one-block section from Bard Avenue to Davis Avenue contains the paved surface parking lot for a Con Edison facility.

Previously Recorded Archaeological Sites

The NYSM has mapped one precontact period archaeological site overlapping Section 2. NYSM Site 4591, or Upper Pelton's Cove, was described in 1909 by Alanson Skinner, who wrote:

> A village site and burial ground at Upper or Pelton's Cove occur between Livingston and West New Brighton. When the Shore Road [now called Richmond Terrace] was cut through this place many years ago, numbers of skeletons, etc. were found. This site is now obliterated. During the last ten or twenty years, there has been absolutely nothing to show aboriginal occupation.[17]

Although the NYSM mapped this site as once overlapping Section 2, it is assumed due to widespread development that the site has been destroyed.

Previous Archaeological Surveys

Archaeologists have studied most of Section 2 twice in the past. In 1990 LPC completed a Predictive Model of the Sailors' Snug Harbor shoreline, which includes the portion of Section 2 from Tysen Street to the western end of Snug

[16] New York City Landmarks Preservation Commission. An Archaeological Predictive Model of the Shoreline Property of the Snug Harbor Cultural Center, Staten Island, New York. July 1990. Available at http://s-media.nyc.gov/agencies/lpc/arch_reports/780.pdf; Accessed on July 30, 2023.

[17] Skinner, Alanson. 1909. The Lenape Indians of Staten Island. Reprinted from the *Anthropological Papers of the American Museum of Natural History*, Volume III, p. 4. New York.

Harbor Road.[18] The results of the study indicated LPC did not consider the strip of land between Richmond Terrace and the Kill Van Kull archaeologically sensitive. In 2002, this same shoreline (beginning at Clinton Avenue and continuing to the end of the section at Davis Avenue) was studied for the Cross Harbor Freight Movement Project,[19] which intended to reuse the North Shore Railroad ROW along the waterfront by creating a tunnel along the former alignment. That report concluded that limited remains from the Sailors' Snug Harbor former boathouse and dock could be present within the area. The study also concluded that the shoreline areas could contain precontact period archaeological deposits in areas that are now submerged, but which would have been above sea level in precontact periods.

As with Section 1, several maritime projects along the Kill Van Kull also abut Section 2.[20] All of the resources that archaeologists identified as part of these studies have been evaluated and, where necessary, mitigated. Of note is the fact that the maritime archaeological studies along the shoreline did not identify any waterfront resources associated with the Sailors' Snug Harbor former boathouse or the dock as part of those remote sensing surveys.

Section 3: West Brighton Waterfront

Existing Conditions

Section 3 continues southwest along the former North Shore Railroad ROW alignment between Richmond Terrace and the Kill Van Kull shoreline, generally on landfilled areas. From Davis Avenue to N. Burgher Avenue it follows the former ROW, but west of N. Burgher Avenue the proposed alignment shifts closer to Richmond Terrace and south of the ROW, before rejoining the ROW east of Alaska Street. The alignment passes through working industrial waterfront businesses including the large Caddell Dry Dock facility and the TP Marine Electric facility. Near Alaska Street, the section passes south of the City-owned Heritage Park.

Previously Recorded Archaeological Sites

The NYSM has mapped one precontact period archaeological site, NYSM Site 734, overlapping Section 3. This site, although given a different NYSM number

[18] Baugher, Sherene and Edward J. Lenik. 1990. *An Archaeological Predictive Model of the Shoreline Property of Snug Harbor Cultural Center, Staten Island, New York.*

[19] Hartgen Archaeological Associates. 2002. *Phase IA Literature Review and Archeological Sensitivity Assessment, Cross Harbor Freight Movement Project: Port Ivory Yard, Arlington Yard, Eleven Railroad Crossings and Proposed Tunnel, Staten Island, Richmond County, New York*.

[20] Panamerican Consultants, Inc. 1999. *Cultural Resources Survey, New York Harbor Collection and Removal of Drift Project, Arthur Kill, New York Reach; Arthur Kill, New Jersey Reach; and Kill Van Kull, New York Reach.*; 2002. *Remote Sensing Survey in Connection with the New York and New Jersey Harbor Navigation Study, Upper and Lower Bay. Port of New York and New Jersey, Kings, Queens, New York and Richmond Counties, New York, Essex, Hudson, Monmouth and Union Counties, New Jersey.*

than Upper Pelton's Cove from Section 2, appears to be another locus of the same site described by Skinner, above.[21] Due to subsequent widespread development, it, too, has likely been destroyed.

Previous Archaeological Surveys

The majority of Section 3, from Davis Avenue to Broadway, was also included as part of the 2002 archaeological survey for the Cross Harbor Freight Movement Project, where a tunnel was proposed.[22] That study concluded that the area could be archeologically sensitive for deposits and structures associated with the early twentieth-century shipbuilding industry in the area, as well as limited archaeological deposits associated with a former power station and former railroad station. Further, the study concluded that the shoreline areas could contain precontact deposits in locations that are now submerged but would have been above sea level in precontact periods.

As with Sections 1 and 2, several maritime projects along the Kill Van Kull also abut Section 3.[23] All of the resources that archaeologists identified as part of previous studies have been evaluated and where necessary, mitigated.

Section 4: Viaduct

Existing Conditions

Section 4 begins at Alaska Street, where the Proposed Project plans a new entrance through an existing surface parking lot, extending from Richmond Terrace north to the proposed alignment. Just west of this new entrance, the section transitions from at-grade to the extant, elevated existing former North Shore Railroad viaduct. The viaduct continues southwest along the ROW past the Port Richmond Wastewater Resource Recovery Facility and an industrial and commercial area, crossing Bodine Creek west of the plant. West of Richmond Terrace, the viaduct and ROW cross through neighborhoods containing a mixture of residential, commercial, and light industrial buildings, becoming mostly residential further to the west. The S/NRHP-eligible Port Richmond Historic District is located along Port Richmond Avenue, abutting the viaduct to the north. The viaduct ends just west of Treadwell Avenue, and transitions to an at-grade

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[21] Skinner, Alanson. 1909. "The Lenape Indians of Staten Island." Reprinted from the *Anthropological Papers of the American Museum of Natural History*, Volume III, p. 4. New York.

[22] Hartgen Archaeological Associates. 2002. *Phase IA Literature Review and Archeological Sensitivity Assessment, Cross Harbor Freight Movement Project: Port Ivory Yard, Arlington Yard, Eleven Railroad Crossings and Proposed Tunnel, Staten Island, Richmond County, New York*.

[23] Panamerican Consultants, Inc. 1999. *Cultural Resources Survey, New York Harbor Collection and Removal of Drift Project, Arthur Kill, New York Reach; Arthur Kill, New Jersey Reach; and Kill Van Kull, New York Reach.*; 2002. *Remote Sensing Survey in Connection with the New York and New Jersey Harbor Navigation Study, Upper and Lower Bay. Port of New York and New Jersey, Kings, Queens, New York and Richmond Counties, New York, Essex, Hudson, Monmouth and Union Counties, New Jersey.*

section, which then crosses Nicholas Avenue on an overpass. West of Nicholas Avenue is a housing development to the north of the ROW, and the Richmond High School facility to the south of the ROW. Here the ROW shifts from at-grade to an existing open cut. The cut, with grades to approximately 20 feet below the surrounding landscape, continues to the end of the section at John Street.

Previously Recorded Archaeological Sites

Archaeologists have mapped two precontact period archaeological sites overlapping Section 4. NYSM Site 7813 was recorded by Arthur C. Parker in 1922 and is noted merely as "traces of occupation" over a large area.[24] Another site, documented by Boesch in his 1994 study, was known as "Erastina" and was initially recorded by the SIIAS as Site STD-E, but never formally listed with the OPRHP or the NYSM. Its general location, bounded roughly by Hooker Street on the south, Richmond Terrace on the north, and extending several blocks to the east and west of the APE, was mapped by Boesch in his 1994 sensitivity report for Staten Island.[25] Boesch noted it as a precontact site, but did not record it as having firm boundaries or provide any other data.

Previous Archaeological Surveys

Archaeologists have completed two studies within or abutting Section 4. Historical Perspectives, Inc. completed a Phase IA Archaeological Assessment for the proposed Port Richmond High Rate Treatment Facility project in 2006, located on the north side of Richmond Terrace between Bodine and Alaska Streets, on Block 185, Lots 187 and 201. This project was not constructed and the parcels remain vacant. The parcels are proposed as a construction staging location for the Proposed Project. The 2006 archaeological study concluded that the parcels were not archaeologically sensitive for either precontact or historic period resources and the parcels were disturbed from later construction and demolition episodes.[26]

The Nicholas Avenue project was located on the west side of Nicholas Avenue immediately north of the North Shore Railroad ROW on Block 1116.[27] Despite being designated as sensitive for both precontact and historic period resources in the Stage 1A study, archaeologists found no significant archaeological resources during subsequent field testing. Today this parcel is covered with recently constructed townhouses along Riverside Lane.

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[24] Parker, Arthur C. 1922. "The Archaeological History of New York." *New York State Museum Bulletin*. The University of the State of New York, New York State Museum, Albany, New York.

[25] Boesch, Eugene J. 1994. *Archaeological Evaluation and Sensitivity Assessment of Staten Island, New York.* Prepared for the New York City Landmarks Preservation Commission.

[26] Historical Perspectives, Inc. 2006. *Phase IA Archaeological Assessment*

Port Richmond High Rate Treatment Facility, North side of Richmond Terrace between Bodine and Alaska Streets, Block 185, Lots 187 and 201, Staten Island, New York, NYSOPRHP 02PR01121.

[27] Greenhouse Consultants, Inc. 1999. *Stage 1A Archaeological/Historical Sensitivity Evaluation of the Nicholas Avenue and Richmond Terrace Project, Richmond, New York;* 2000. *Archaeological Testing Report, Nicholas Avenue and Richmond Terrace Project, Richmond, New York*.

Section 5: Open-Cut Section

Existing Conditions

Section 5 continues the open cut section of the ROW southwest under the Bayonne Bridge and through mixed-use neighborhoods containing residential and commercial/light industrial structures. Remains of railroad stations are situated within the cut near Morningstar Road (the Elm Park station), Lake Avenue, and Van Pelt Avenue (the Mariners Harbor station). The section ends at Union Street, where the ROW transitions from the open cut to an at-grade section.

Previously Recorded Archaeological Sites

The NYSM has mapped several amorphously-shaped precontact period archaeological sites as overlapping Section 5. It is likely that these discretely mapped sites are actually the same "traces of occupation" noted by Skinner, who indicated:

> At Mariners' Harbor, beginning about half a mile south of the station and running north to Bowman's Point, in every field are traces of prolonged occupation, fire-cracked stones, flint chips, potsherds, and the like.[28]

Given the widespread development in this area since the turn of the twentieth century, which has almost entirely obliterated the fields Skinner refers to, it is expected that most of the remains from these precontact period archaeological resources have been destroyed.

Previous Archaeological Surveys

All of Section 5 was also included as part of the 2002 archaeological survey for the Cross Harbor Freight Movement Project.[29] In this section, the project sponsors proposed the open cut to be deepened to provide higher clearances for trains. That study concluded that because the open cut had been created by excavating the original landform, there was no longer any archaeological sensitivity along this area.

The Bayonne Bridge Navigational Clearance Program project also crossed Section 5. That study included both sides of the Route 440 approach to the bridge.[30] The

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[28] Skinner, Alanson. 1909. "The Lenape Indians of Staten Island." Reprinted from the *Anthropological Papers of the American Museum of Natural History*, Volume III, p. 5. New York.

[29] Hartgen Archaeological Associates. 2002. *Phase IA Literature Review and Archeological Sensitivity Assessment, Cross Harbor Freight Movement Project: Port Ivory Yard, Arlington Yard, Eleven Railroad Crossings and Proposed Tunnel, Staten Island, Richmond County, New York*.

[30] Historical Perspectives, Inc. 2012. *Phase IA Archaeological Assessment, Bayonne Bridge Navigational Clearance Program, The Port Authority of New York and New Jersey, Staten Island, Richmond County, New York*.

authors concluded that due to prior disturbance there was no archaeological sensitivity in this area.

Section 6: Arlington Station

Existing Conditions

Section 6 follows the former ROW along an at-grade section from Harbor Road west to South Avenue, where the BRT route would turn on to South Avenue just north of Brabant Street. Although termed "at-grade," the alignment in this section is approximately 5 to 10 feet lower in elevation than the surrounding areas, although not as deep as the open cut section. Land uses along the ROW and on the east side of South Avenue are primarily residential, including the New York City Housing Authority (NYCHA) Mariner's Harbor complex, with some industrial uses north of the ROW and east of South Avenue. Portions of this section have been reactivated as an active freight railway. Due to the height of the cross-street overpasses, there are high retaining walls along either side of the railroad tracks at the cross streets, which are lower between the overpasses. The Proposed Project would be located within the present southern embankment of the section from Harbor Road to South Avenue and would require removal of this earthen balk behind the retaining walls.

The Archaeological APE terminates at South Avenue, where the former Arlington Station was located and where the Proposed Project proposes a new station and parking lot on the southwest side of the intersection. The proposed station area is a gravel-covered lot used for storage and stockpiling of materials.

Previously Recorded Archaeological Sites

Two precontact period "traces of occupation" sites, described under Section 5, also overlap Section 6. One additional precontact period archaeological site, the Arlington Station site (recorded as NYSM Site 730 and SHPO Site 08501.000138), was once located immediately adjacent to the Section 6 APE, on the west side of South Avenue just north of the SIR tracks. Archaeologist Skinner wrote:

> On South Avenue, just opposite the Arlington station of the Staten Island Rapid Transit Railroad, is what remains of a once much larger sandy knoll, most of which has been dug away. In May 1902, half-a-dozen shell pits were opened, all of which averaged from four to six feet deep, with about an equal breadth. They were all bowl-shaped and contained animal bones, oyster shells, etc. Several bone and antler implements, a quantity of typical Algonkin pottery, fragments of quite a number of clay pipes, stone arrow points, scrapers, hammerstones, and a flat, thin, double-sided mortar or metate were found. A portion of a pestle, a grooved axe, and a grooved adze were picked up nearby. Several small shell-heaps averaging ten by six feet, and from four to six inches deep, containing the usual camp refuse, were also opened. In the nearby fields, portions of a couple of bannerstones, grooved axes, a couple of celts, and a number of

> celt (?) blades were picked up. Celts are very rare on the north shore of Staten Island; the writer in ten years of collecting has never obtained a single specimen and has not seen more than two or three. A stone gouge, the only one reported from Staten Island, was found nearby.[31]

Today the area once containing the Arlington Station site has warehouses and a building supply storage lot on an artificially leveled landform. The former archaeological site on the sandy knoll has been destroyed.

Previous Archaeological Surveys

Much of Section 6 was also included as part of the 2002 Hartgen archaeological survey for the Cross Harbor Freight Movement Project.[32] The section from Harbor Road to South Avenue was part of the area proposed to be deepened to provide higher clearances for trains, and as described above under Section 5, the report concluded that there was no longer any archaeological sensitivity along this corridor. The area west of South Avenue along the existing SIR railroad tracks was part of the Arlington Yard section of that project. The study concluded that the area had likely been graded to create the tracks, but there still could be buried precontact period archaeological resources beneath the tracks.

Architectural Resources

Section 1: St. George

Existing Conditions

Architectural conditions within the 90-foot study area for Section 1 contain a mix of municipal, transportation, commercial, and residential resources (see **Figure 8-1**). On the east side of Richmond Terrace, resources include the St. George Ferry Terminal complex, a modern outlet shopping mall, the modern Staten Island University Hospital (SIUH) Community Park, and an associated multiple-story parking deck. The North Shore Esplanade Park generally does not contain any buildings. On the west side of Richmond Terrace are S/NRHP-listed and eligible and NYCL municipal buildings including the Staten Island Borough Hall, the Richmond County Courthouse, the Staten Island Family Courthouse, and the 120th Police Precinct. Commercial, mixed-use commercial, and residential buildings are interspersed between the municipal buildings. Several residential properties are located on both sides of Nicholas Street. Just outside the 90-foot study area, between Nicholas Street and Westervelt Avenue, are a parochial

[31] Skinner, Alanson. 1909. "The Lenape Indians of Staten Island." Reprinted from the *Anthropological Papers of the American Museum of Natural History*, Volume III, p. 5. New York.

[32] Hartgen Archaeological Associates. 2002. *Phase IA Literature Review and Archeological Sensitivity Assessment, Cross Harbor Freight Movement Project: Port Ivory Yard, Arlington Yard, Eleven Railroad Crossings and Proposed Tunnel, Staten Island, Richmond County, New York*.

school/church complex, a Greek Revival residence repurposed as a restaurant facility, and some vestigial, small-scale single and multi-family residences.

Architectural Resources

There are 53 individual lots within the 90-foot APE for Section 1. Of those, 31 lots contain improvements that were evaluated as part of the Proposed Project.

SHPO and LPC previously documented seven historic resources within the 90-foot study area for Section 1. They are listed in **Table 8-1**, below, and on accompanying **Figure 8-1**. SHPO and LPC status of the resources are indicated in the table, including updated SHPO determinations based on data and recommendations from the Proposed Project's architectural survey. Those resources that were previously recorded but have been demolished and are no longer S/NRHP listed or eligible are not included in the table.

Figure 8-1 Historic Resources in Section 1

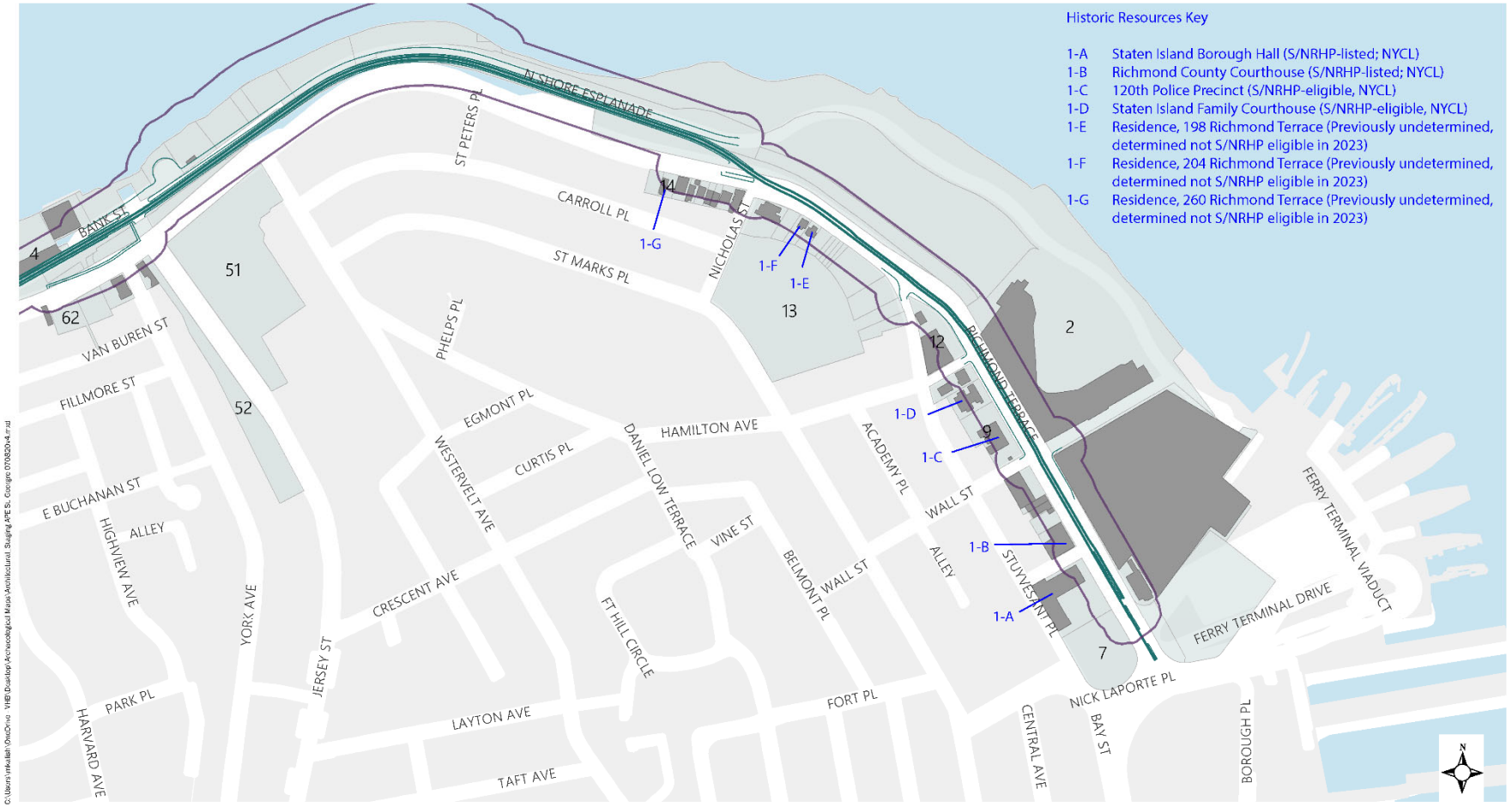

Figure 8-1: Historic Resources in Section 1 (HPI 2023 and VHB 2023).

Table 8-1 Architectural Resources within the 90-foot Section 1 APE

Map number	Site name and number(s)	Location	Date	Status
1-A	Staten Island Borough Hall 90NR01036 08501.000998 LP-1206	Block 1, Lot 7; 10 Richmond Terrace	1903	S/NRHP listed, NYCL
1-B	Richmond County Courthouse 90NR01036 08501.000999 LP-1207	Block 1, Lot 12; 18 Richmond Terrace	1913	S/NRHP listed, NYCL
1-C	120th Police Precinct 08501.001000 LP-2058	Block 9, Lot 28; 78 Richmond Terrace	1920-1923	S/NRHP eligible, NYCL
1-D	Staten Island Family Courthouse 08501.001001 LP-2057	Block 9, Lot 22; 100 Richmond Terrace	1930-1931	S/NRHP eligible, NYCL
1-E	Residence 08501.001003	Block 13, Lot 73; 198 Richmond Terrace	Pre-1874	Previously undetermined, determined not S/NRHP eligible in 2023
1-F	Residence 08501.001004	Block 13, Lot 71; 204 Richmond Terrace	Pre-1874	Previously undetermined, determined not S/NRHP eligible in 2023
1-G	Residence 08501.001007	260 Richmond Terrace	Between 1907-1917	Previously undetermined, determined not S/NRHP eligible in 2023

Source: HPI 2020 and Mackey 2023.

Section 1 was not included in the 2019 architectural survey.[33] As such, the entire Section 1 Architectural APE was evaluated as part of the Proposed Project. No

[33] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

additional S/NRHP eligible resources were identified in Section 1 as part of the current survey.

At one time there were five adjacent residences along the south side of Richmond Terrace between Stuyvesant Place and Nicholas Street; in 2000 SHPO indicated four of the five houses might constitute a potential historic district. Since that time three of the five houses have been demolished. The remaining two Second Empire era houses, at 204 and 198 Richmond Terrace, appear to have been heavily modified since their original construction and were recommended not S/NRHP eligible, either individually or as a reduced size district. Another residence, at 260 Richmond Terrace, also previously recorded as undetermined by SHPO, also appears to have been heavily modified and was recommended not S/NRHP eligible. SHPO concurred with these recommendations and determined in 2023 that these three residences are not S/NRHP eligible.

Section 2: New Brighton Waterfront

Existing Conditions

Section 2 extends from Jersey Street to Davis Avenue along Richmond Terrace, roughly paralleling the shoreline (see **Figure 8-2**). The eastern portion of Section 2 contains primarily industrial and commercial resources, including, on the north, the Atlantic Salt Company, which occupies most of the northern side of Richmond Terrace. The Atlantic Salt Company is a large and once-rambling industrial complex that originated as a plaster manufacturing site in the nineteenth century. Many of the buildings in the historic complex have been demolished, some as recently as July 2019. Several buildings remain, as does a tall brick smokestack, but the once sprawling complex has lost most of its original and historic character.

The southern side of Richmond Terrace within the 90-foot study area from Jersey Street to Tysen Street has vestiges of nineteenth-century commercial and residential stock, little of which survives with a high degree of architectural integrity. The area has and continues to transition to modern industrial and commercial uses. The exception is the Neville House, at 806 Richmond Terrace near Tysen Street, which is a pre-Revolutionary dwelling that is listed on the S/NRHP and is an NYCL. One circa 1870 residence, at 536 Richmond Terrace near York Avenue, sits on a high bluff but is obscured from the street by dense vegetation. Noted by SHPO as undetermined at the time of the architectural survey for the Proposed Project, its condition could not be accurately assessed from the street level due to visual impediments. In 2023, SHPO determined that the residence at 536 Richmond Terrace was eligible for the S/NRHP. Also in 2023, SHPO determined that the previously undetermined Richmond Apartments at 514 Richmond Terrace are eligible for the S/NRHP.

There are several late nineteenth and early twentieth-century buildings along this stretch of Section 2 that have commercial space on the ground floor and residences above and were also noted as undetermined by SHPO. Although vestiges of detail at the upper stories survive, the first-floor commercial spaces

have all been insensitively remodeled, and in some cases all the historic detail has been obliterated. These buildings were recommended not eligible for the S/NRHP, and the SHPO concurred with these recommendations in 2023.

The remainder of Section 2 is dominated by Sailors' Snug Harbor, an S/NRHP listed Historic District and which is also an NYCL (Individual and Interior) and an NHL. There are several contributing resources to this large historic district.

Architectural Resources

There are 71 individual lots within the 90-foot and 400-foot APE for Section 2. Of those, 42 lots contain improvements that were evaluated as part of the Proposed Project.

SHPO and LPC have previously documented eight historic resources within the 90-foot and 400-foot study area for Section 2. One additional historic resource was identified by SHPO in 2023. They are listed in **Table 8-2**, below, and on accompanying **Figure 8-2**. SHPO and LPC status of the resources are indicated in the table, including updated SHPO determinations based on data and recommendations from the Proposed Project's architectural survey. Those resources that were previously recorded but have been demolished and are no longer S/NRHP listed or eligible are not included in the table.

Figure 8-2 Historic Resources in Section 2

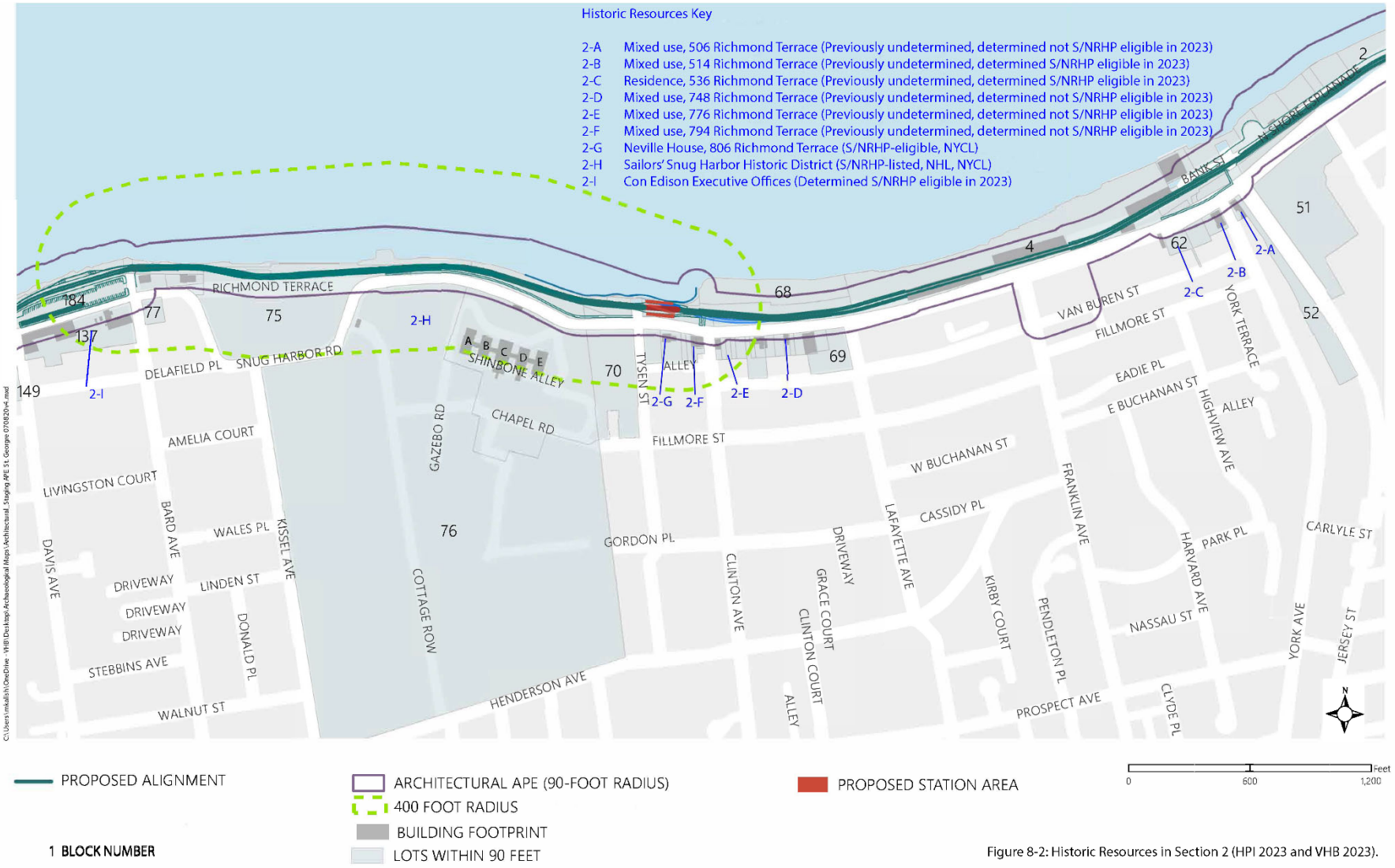

Figure 8-2: Historic Resources in Section 2 (HPI 2023 and VHB 2023).

Table 8-2 Architectural Resources within the 90-foot Section 2 APE

Map number	Site name and number(s)	Location	Date	Status
2-A	08501.000766	Block 52, Lot 76; 506 Richmond Terrace	Ca. 1870s	Previously undetermined, determined not S/NRHP eligible in 2023
2-B	The Richmond Apartments 08501.000767	Block 62, Lot 106; 514 Richmond Terrace	Ca. 1890s	Previously undetermined, determined S/NRHP eligible in 2023
2-C	08501.000768	Block 62, Lot 11; 536 Richmond Terrace	Ca. 1870	Previously undetermined, determined S/NRHP eligible in 2023
2-D	08501.000769	Block 69, Lot 117; 748 Richmond Terrace	Ca. 1910s	Previously undetermined, determined not S/NRHP eligible in 2023[34]
2-E	08501.000770	Block 69, Lot 105; 776 Richmond Terrace	Ca. 1910s	Previously undetermined, determined not S/NRHP eligible in 2023
2-F	08501.000771	Block 70, Lot 31; 794 Richmond Terrace	Ca. 1880s	Previously undetermined, determined not S/NRHP eligible in 2023
2-G	Neville House 90NR01028 08501.000772 LP-0334	Block 70, Lot 24; 806 Richmond Terrace	Ca. 1770	S/NRHP eligible, NYCL
2-H	Sailors' Snug Harbor 90NR01018 Multiple USNs for contributing resources within district	Blocks 70, 75 and 76, multiple lots	Includes Buildings A-E, chapel, gatehouses, iron fence, and ferry landing. Initial building on site in 1831.	S/NRHP listed, NHL, LPC individual and interior landmark; stone lookout platform, stone retaining walls and pathways along waterfront determined contributing resources in 2023

Table 8-2 Architectural Resources within the 90-foot Section 2 APE

Map number	Site name and number(s)	Location	Date	Status
2-I	Con Edison Executive Offices 08501.004180	Block 137, Lot 1; 1165 Richmond Terrace	1925 (addition in 1990s)	Determined eligible for S/NRHP in 2023

Source: HPI 2020.

The eastern portion of Section 2, from Jersey Street to Tysen Street, was not included in the 2019 architectural survey and was evaluated as part of the Proposed Project. No additional S/NRHP eligible resources were identified in the eastern portion of Section 2 as part of the Proposed Project. Three resources had been previously recorded as undetermined by SHPO. Of these, the apartment building at 514 Richmond Terrace and the residence at 536 Richmond Terrace were determined S/NRHP eligible by SHPO in 2023, while the building at 506 Richmond Terrace was determined by SHPO in 2023 to be S/NRHP not eligible.

At 514 Richmond Terrace, SHPO's 2023 determination of S/NRHP eligibility indicated:

> The five-story building at the corner of Richmond Terrace and York Avenue is significant under Criterion C in the area of architecture as an excellent example of Renaissance Revival commercial architecture in Staten Island. Faced in Roman brick, the mixed-use building has storefronts at the ground story and apartments above. Character-defining features include the horizontal divisions of the facade, rusticated base, arched windows, brick pilasters, brick belt courses, brick corbelling and dentils, and projecting cornice.

At 536 Richmond Terrace, SHPO's 2023 determination of S/NRHP eligibility indicated:

> The ca. 1870 residence at 536 Richmond Terrace is significant under Criterion C in the area of architecture as an excellent example of the Second Empire style in Staten Island. Sited on a high bluff, the 2 1/2-story brick dwelling features a mansard roof, brick chimney, pedimented dormers, wide bracketed cornice with dentil molding, one-story bay windows, and wrap-around wood porched resting on brick piers. The property also has a stone retaining wall along the Richmond Terrace property line.

[34] SHPO confirmation of status is pending.

The portion of Section 2 from Tysen Street to Davis Avenue and including Sailors' Snug Harbor was included in the 2019 architectural study. Here, the Architectural APE expands to 400 feet to consider the visual and contextual impacts of the Proposed Project on this significant historic resource. The S/NRHP listed Historic District contains several contributing resources within the 400-foot APE. These resource listings were updated in CRIS as part of the 2019 survey.[35] Additionally, the architectural survey completed as part of the Proposed Project recommended that the stone lookout platform pathways and retaining walls on the north side of Richmond Terrace constitute other contributing resources to this historic district. SHPO concurred with these recommendations in 2023 to add the two contributing resources to the overall Sailors' Snug Harbor Historic District.

In addition, SHPO identified the Con Edison Executive Office building at 1165 Richmond Terrace as S/NRHP eligible in 2023. SHPO's 2023 determination of eligibility indicated:

> The Con Edison Executive Office Building at 1165 Richmond Terrace appears eligible under Criteria A and C in the areas of industry and architecture for its association with the growth and expansion of Consolidate Edison in the early decades of the twentieth century, a time when the company continued to acquire other power companies. The company was formed in 1884 as the Consolidated Gas Company of New York and grew to become the utility company that provides gas and electricity to most of New York City.
>
> The two-story building is located at the corner of Richmond Terrace and Davis Avenue and was built in 1925. The exterior is brick laid in Flemish bond. The facade has nine bays divided by brick pier buttresses. Windows within each bay consist of two steel sliders with multi-light steel windows above. The center entrance has a terra cotta stone surround. Above the entrance is a rectangular stone panel with the building date, "1925." Atop of the rectangular panel is a circular stone panel with a light bulb. There is a two-story non-historic, but compatible addition that was built in the 1990s.

Section 3: West Brighton Waterfront

Existing Conditions

Section 3 predominantly contains industrial, commercial, and multi-family residential resources (see **Figure 8-3**). The Caddell Dry Dock and Repair Company, a large shipyard that occupies most of the north side of Section 3, dominates the northern side of Richmond Terrace. Caddell's two yards are not

[35] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

contiguous and extend between Richmond Terrace and the shoreline from Davis Avenue to west of Elm Street (East Yard) and then again from east of Broadway west to Barrett Lane (West Yard). Land in between the Caddell yards has commercial uses fronting Richmond Terrace and industrial marine uses shoreward. The southern side of Richmond Terrace in Section 3 contains a combination of residential and commercial properties of varied age, type, and condition.

One resource within the 90-foot study area near Pelton Avenue, the Kreuzer-Pelton House, is S/NRHP listed and an NYCL. SHPO noted several additional resources on both sides of Richmond Terrace within Section 3 as undetermined. One of these undetermined resources, at 1550 Richmond Terrace near Barrett Lane, recently housed the Restoration Workshop facility. It is a three-story brick commercial and industrial building that was constructed by 1885 and survives with a high degree of integrity. It may be potentially eligible for the S/NRHP.

Two buildings within the Caddell Dry Dock complex were surveyed in the past and are noted as undetermined by SHPO. The 2019 survey included this large facility, indicating: "The large industrial sites, particularly those in Mariner's Harbor, Port Ivory/Howland Hook, Old Place, and Bloomfield, lack architectural integrity, do not have a distinct style, and are not representative of an innovative construction method."[36] Thus, the previously undetermined Caddell Dry Dock buildings as well as the overall complex are not S/NRHP eligible.

Finally, one resource previously noted as undetermined at 1390 Richmond Terrace at Elm Street presently is covered completely with protective netting for renovation work. As the building details are not visible beneath the netting, it could not be reevaluated for this study.

Architectural Resources

There are 86 individual lots within the 90-foot APE for Section 3. Of those, 35 lots contain improvements that were evaluated as part of the Proposed Project.

SHPO and LPC previously have documented six historic resources within the 90-foot study area for Section 3. They are listed in **Table 8-3**, below, and on accompanying **Figure 8-3**. SHPO and LPC status of the resources are indicated in the table, including updated SHPO determinations based on data and recommendations from the Proposed Project's architectural survey. Those resources that were previously recorded but have been demolished and are no longer S/NRHP listed or eligible are not included in the table.

[36] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York,* p. 2-20. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

Figure 8-3 Historic Resources in Section 3 and the Eastern Part of Section 4

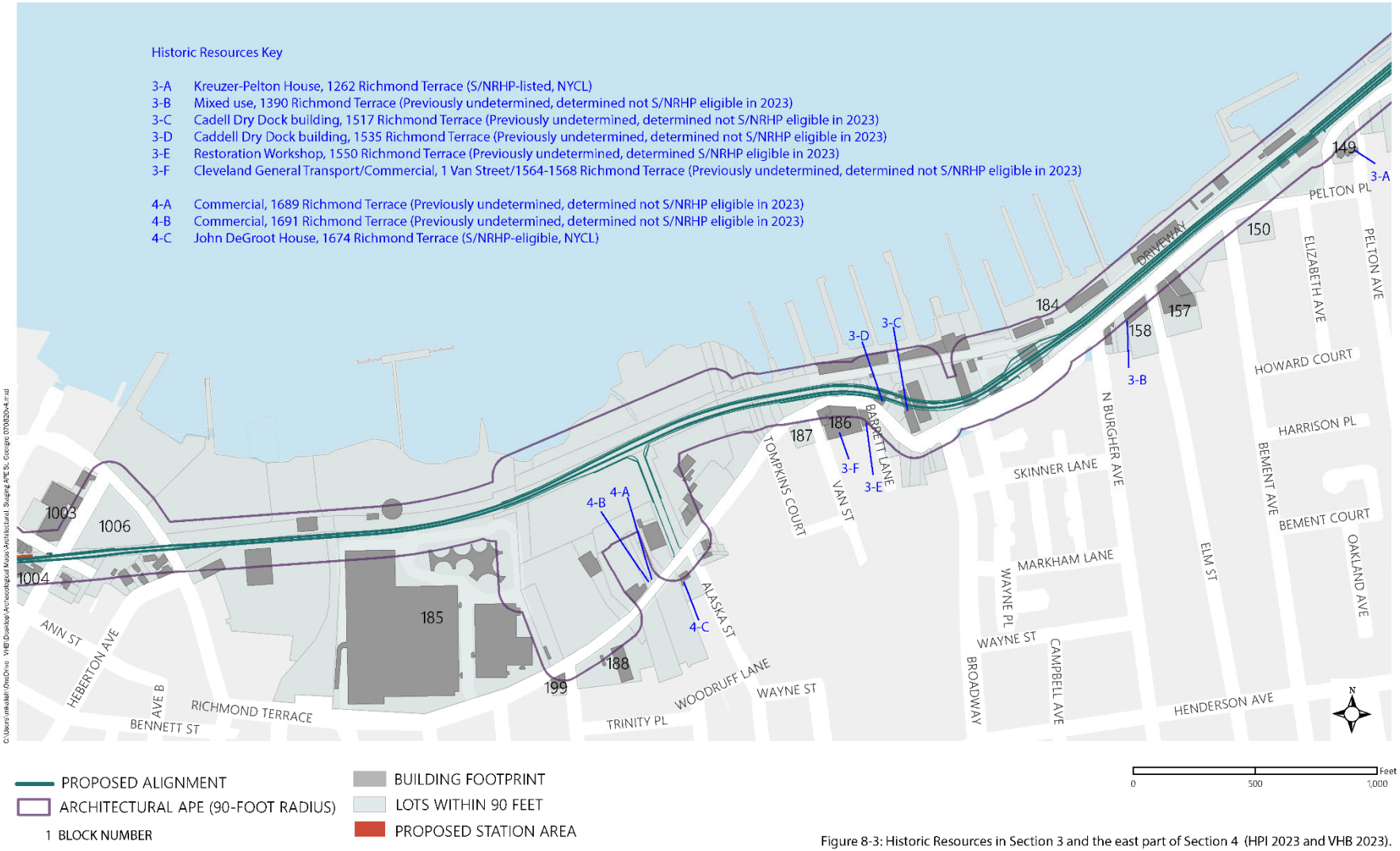

Figure 8-3: Historic Resources in Section 3 and the east part of Section 4 (HPI 2023 and VHB 2023).

Table 8-3 Architectural Resources within the 90-foot Section 3 APE

Map number	Site name and number(s)	Location	Date	Status
3-A	Kreuzer-Pelton House 90NR01014 08501.001436 LP-0341	Block 149, Lot 1; 1262 Richmond Terrace	Built 1722, 1770 and 1836	S/NRHP listed, NYCL
3-B	08501.001439	Block 158, Lot 6; 1390 Richmond Terrace	Ca. 1910s	Previously undetermined, determined not S/NRHP eligible in 2023
3-C	Caddell Dry Dock 08501.001443	Block 185, Lot 10; 1517 Richmond Terrace	Former building now replaced with newer building	Previously undetermined, determined not S/NRHP eligible in 2023
3-D	Caddell Dry Dock 08501.001445	Block 185, Lot 21; 1535 Richmond Terrace	Ca. 1880s	Previously undetermined, determined not S/NRHP eligible in 2023
3-E	Restoration Workshop 08501.001449	Block 186, Lot 10; 1550 Richmond Terrace	By 1885	Previously undetermined, determined S/NRHP eligible in 2023
3-F	Cleveland General Transport/ Commercial 08501.001449	Block 186, Lot 1; 1 Van Street, AKA 1564-1568 Richmond Terrace	Ca. 1880s	Previously undetermined, determined not S/NRHP eligible in 2023

Source: HPI 2020.

Most of Section 3, including all the areas on the north side of Richmond Terrace, was included in the 2019 architectural study.[37] Several lots are outside that study area, and they have been evaluated as part the Proposed Project. As noted above, one new resource was recommended potentially S/NRHP eligible as part of the Proposed Project, the former Restoration Workshop building at 1550 Richmond Terrace, which was built by 1885 and is an example of the type of commercial building constructed as part of the nineteenth-century Factoryville community. SHPO concurred with this recommendation and determined the resource S/NRHP

[37] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

eligible in 2023. SHPO also concurred in 2023 with recommendations that the remaining resources previously noted as undetermined were not eligible for the S/NRHP.

Section 4: Viaduct

Existing Conditions

Section 4 is bounded by Alaska Street on the east and John Street on the west and encompasses the raised viaduct section of the project (see **Figure 8-3** and **Figure 8-4**). The viaduct begins west of Heritage Park, behind the Port Richmond Wastewater Resource Recovery Facility, and extends west over and just beyond Nicholas Avenue to the beginning of the open cut. Most of Section 4 was studied in the 2019 architectural survey.[38]

The resources within the 90-foot study area along the viaduct in Section 4 consist of low-rise municipal, industrial, and commercial buildings from the eastern boundary to Maple Avenue, at which point the area transitions to building stock comprised primarily of multi- and single-family housing to Nicholas Avenue, where the viaduct terminates. A recently constructed townhouse complex is located north of the viaduct and west of Nicholas Avenue.

The 90-foot study area for Section 4 contains one architectural resource determined eligible for the S/NRHP and a NYCL: the John DeGroot House at 1674 Richmond Terrace near Alaska Avenue. Three architectural resources, 64, 68 and 70 Port Richmond Avenue, were reevaluated as part of the 2019 study, and have been determined eligible as contributing resources to the S/NRHP-eligible Port Richmond Commercial Historic District.[39]

No other architectural resources within the 90-foot study area were found to be eligible or potentially eligible for the S/NRHP in 2019 or as part of the present survey. Three resources previously recorded as undetermined, at 1689 Richmond Terrace, 1691 Richmond Terrace, and 61 Port Richmond Avenue, were recommended as not eligible for the S/NRHP. SHPO concurred with these recommendations in 2023 and determined that these three resources were not eligible for the S/NRHP. Resources that are old enough to be considered for S/NRHP eligibility have been heavily modified and altered and do not retain adequate historic fabric to be considered individually eligible for S/NRHP consideration. Further, the neighborhoods within the 90-foot study area, except for the Port Richmond Historic District, do not meet criteria for eligibility as historic districts.

[38] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

[39] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

Architectural Resources

There are 235 individual lots within the 90-foot APE for Section 4. Of those, 185 lots contain improvements that were evaluated as part of the Proposed Project.

SHPO and LPC previously have documented eight historic resources within the 90-foot study area for Section 4. They are listed in **Table 8-4**, below, and on accompanying **Figure 8-3** and **Figure 8-4**. SHPO and LPC status of the resources are indicated in the table, including updated SHPO determinations based on data and recommendations from the Proposed Project's architectural survey. Those resources that were previously recorded but have been demolished and are no longer S/NRHP listed or eligible are not included in the table.

Figure 8-4 Historic Resources in the Western Part of Section 4 and the Eastern Part of Section 5

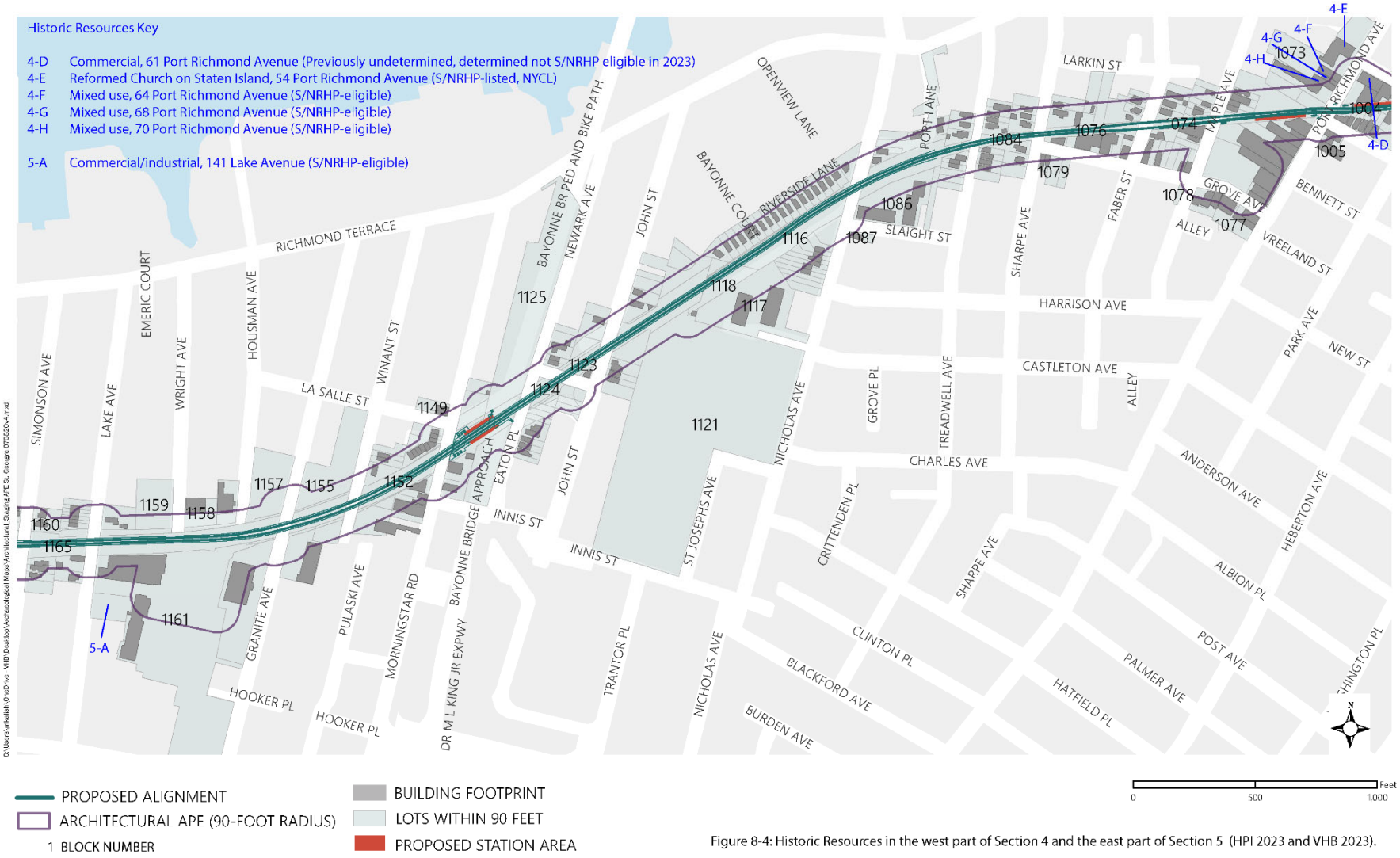

Figure 8-4: Historic Resources in the west part of Section 4 and the east part of Section 5 (HPI 2023 and VHB 2023).

Table 8-4 Architectural Resources within the 90-foot Section 4 APE

Map number	Site name and number(s)	Location	Date	Status
4-A	08501.001456	Block 185, Lot 177; 1689 Richmond Terrace	Ca. 1900	Previously, undetermined, determined not S/NRHP eligible in 2023
4-B	08501.001457	Block 185, Lot 178; 1691 Richmond Terrace	Ca. 1900	Previously undetermined, determined not S/NRHP eligible in 2023
4-C	John DeGroot House 08501.001454 LP-2179	Block 188, Lot 40; 1674 Richmond Terrace	Ca. 1870	S/NRHP eligible, NYCL
4-D	08501.002162	Block 1004, Lot 12; 61 Port Richmond Avenue	By 1885	Previously undetermined, determined not S/NRHP eligible in 2023
4-E	Reformed Church on Staten Island and Cemetery 08501.002160 04NR05269 LP-02384	Block 1073, Lot 75; 54 Port Richmond Avenue	1844	S/NRHP listed, NYCL, within the S/NRHP-eligible Port Richmond Historic District
4-F	08501.003935	Block 1073, Lot 90; 64 Port Richmond Avenue	1931	S/NRHP eligible as a contributing resource to the Port Richmond Historic District
4-G	08501.003934	Block 1073, Lot 92; 68 Port Richmond Avenue	1931	S/NRHP eligible as a contributing resource to the Port Richmond Historic District
4-H	08501.003933	Block 1073, Lot 93; 70 Port Richmond Avenue	Ca. 1910	S/NRHP eligible as a contributing resource to the Port Richmond Historic District

Source: HPI 2020.

Most of Section 4 was included in the 2019 architectural study.[40] Several lots are outside that study area, and they have been evaluated as part of the Proposed Project.

As noted above, the 90-foot study area for Section 4 contains two architectural resources determined eligible for the S/NRHP and a NYCL: the John DeGroot House at 1674 Richmond Terrace near Alaska Avenue, and the Reformed Church on Staten Island and its associated cemetery, at 54 Port Richmond Avenue. Three architectural resources, 64, 68 and 70 Port Richmond Avenue, were reevaluated as part of the 2019 study, and have been determined eligible as contributing resources to the S/NRHP-eligible Port Richmond Commercial Historic District.[41]

No other architectural resources within the 90-foot study area were found to be eligible or potentially eligible for the S/NRHP in 2019 or as part of the present survey. As noted above, one resource previously recorded as undetermined, at 61 Port Richmond Avenue, was recommended as not eligible for the S/NRHP due to significant alterations. Two additional commercial resources, previously recorded as undetermined, at 1689 and 1691 Richmond Terrace, have experienced very significant changes in the years since they were recorded in the late 1970s, including obliteration of the first floor entrance on one building and the sealing of the entire front elevation behind a brick façade in the second building. They, too, were recommended as not eligible for the S/NRHP. SHPO concurred with these three recommendations and determined the resources not eligible for the S/NRHP in 2023.

All remaining resources that are old enough to be considered for S/NRHP eligibility have been heavily modified and altered and do not retain adequate historic fabric to be considered individually eligible for S/NRHP consideration. Further, the neighborhoods within the 90-foot study area, except for the Port Richmond Historic District, do not meet criteria for eligibility as historic districts.

Section 5: Open-Cut Section

Existing Conditions

Section 5 contains the open cut from John Street on the east to Harbor Road on the west (see **Figure 8-4** and **Figure 8-5**). Overpasses at the through streets span the open cut; several streets terminate at either the north or south of the span. The buildings in the 90-foot Section 5 APE consist predominantly of single and multi-family residential housing stock, but also include some commercial, manufacturing, and offices uses, and a small amount of retail.

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[40] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

[41] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

Architectural Resources

There are 220 individual lots within the 90-foot APE for Section 5. Of those, 131 of those lots contain improvements that were evaluated as part of the current project.

SHPO and LPC previously have documented one historic resource within the 90-foot study area for Section 5. The resource is listed in Table 8-5, below, and on accompanying Figure 8-4. SHPO and LPC status of the resource is indicated in the table. Those resources that were previously recorded but have been demolished and are no longer S/NRHP listed or eligible are not included in the table.

Table 8-5 Architectural Resources within the 90-foot Section 5 APE

Map number	Site name and number(s)	Location	Date	Status
5-A	Industrial/office building 08501.002793	Block 1161, Lot 20; 141 Lake Avenue	Ca. 1930-1940	S/NRHP eligible as 137 Lake Avenue

Source: HPI 2020.

Section 5 was not covered the 2019 architectural study, and as such it was fully evaluated as part of the Proposed Project. Within this section, previously unevaluated resources that are old enough to be considered for S/NRHP eligibility have been heavily modified and altered and do not retain adequate historic fabric to be considered potentially individually eligible. No collections of properties were found to meet the criteria for eligibility as S/NRHP or LPC Historic Districts.

Last, there are nine bridges that cross the open cut, located at (from east to west) John Street, Morningstar Road, Granite Avenue, Lake Avenue, Simonson Avenue, Van Name Avenue, Van Pelt Avenue, De Hart Avenue, and Union Avenue. All of these bridges, which were originally constructed in the mid-1930s in conjunction with the open cut, have either been extensively reconstructed or fully replaced since the 1980s, according to the Basis of Design report for this project.[42] None of the bridges appear to contain characteristics that qualify them for S/NRHP eligibility, either individually or as part of a district. SHPO did not assign these bridges USN numbers as part of this project.

Section 6: Arlington Station

Existing Conditions

Section 6, the westernmost portion of the APE, is bounded by Harbor Road on the east and vacant land west of South Avenue on the west (see Figure 8-5 and Table 8-6). The depressed ROW bisects the neighborhood, with no streets crossing the alignment via an overpass between Harbor Road and South Avenue.

[42] VHB and STV, 2020. *Basis of Design Report, Contract Number B-62040/B-80143, CM-0143 Environmental and Engineering Services for the Staten Island North Shore Bus Rapid Transit System in the Borough of Staten Island, New York.* Prepared for MTA New York City Transit.

Figure 8-5 Historic Resources in the Western Part of Section 5 and Section 6

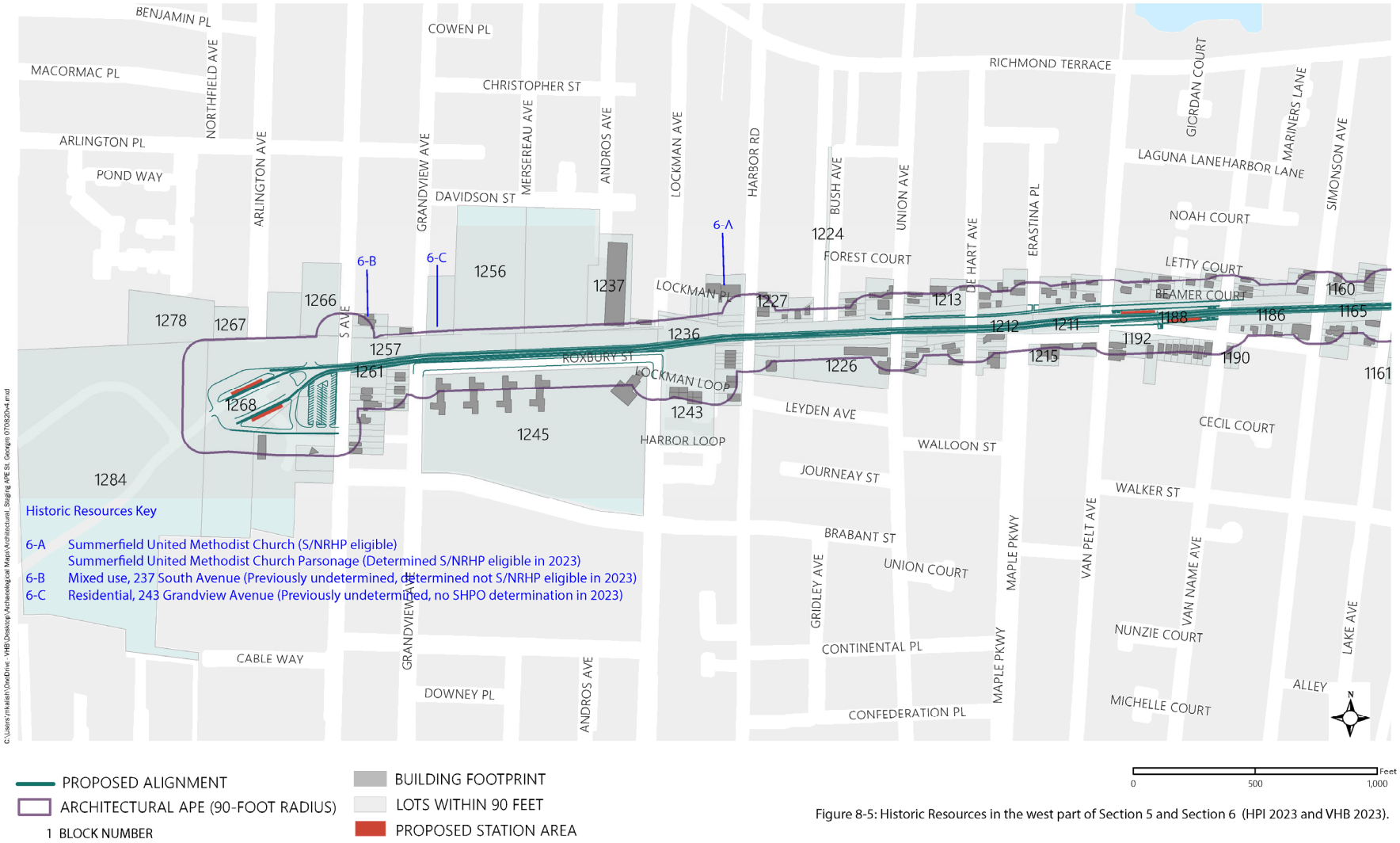

Figure 8-5: Historic Resources in the west part of Section 5 and Section 6 (HPI 2023 and VHB 2023).

The neighborhood surrounding the Section 6 APE contains a mixture of late-nineteenth and early-twentieth century residential, commercial, and industrial buildings.

Architectural resources

There are 59 individual lots within the 90-foot APE for Section 6. Of those, 35 of those lots contain improvements that were evaluated as part of the current project.

SHPO and LPC previously have documented three historic resources within the 90-foot study area for Section 6. They are listed in Table 8-6, below, and on accompanying Figure 8-5. SHPO and LPC status of the resources are indicated in the table, including updated SHPO determinations based on data and recommendations from the Proposed Project's architectural survey. Those resources that were previously recorded but have been demolished and are no longer S/NRHP listed or eligible are not included in the table.

Table 8-6 Architectural Resources within the 90-foot Section 6 APE

Map number	Site name and number(s)	Location	Date	Status
6-A	Summerfield United Methodist Church and Parsonage 08501.000556 08501.000555	Block 1236, Lot 164; 100 Harbor Road	1869	S/NRHP eligible, associated parsonage on the lot determined S/NRHP eligible in 2023
6-B	08501.000648	Block 1257, Lot 9; 237 South Avenue	Ca. 1920s	Previously undetermined, determined not S/NRHP eligible in 2023
6-C	08501.000548	Block 1256, Lot 39; 243 Grandview Avenue	Ca. 1920s	Previously undetermined, recommended not S/NRHP eligible, no determination by SHPO in 2023

Source: HPI 2020.

Section 6 was not covered in the 2019 architectural survey, and as such was fully evaluated as part of the Proposed Project.[43] One resource, the Summerfield Methodist Church at 100 Harbor Road, was previously determined S/NRHP eligible. The associated parsonage on the same lot, dating to ca. 1909, survives

[43] AKRF, Inc. 2019. *Architectural Resources Survey Summary, Historic Resources Survey of Selected Waterfront Communities: Staten Island, New York*. Prepared for the New York State Office of Parks, Recreation & Historic Preservation.

with a high degree of original character and was recommended as S/NRHP eligible as part of this Project. SHPO concurred with this recommendation in 2023.

Two additional resources, at 243 Grandview Avenue and 237-239 South Avenue, were noted by SHPO as undetermined. Both resources have been architecturally compromised in the intervening years, and neither retains enough integrity to be considered individually eligible for the S/NRHP. SHPO determined that the resource at 237-239 South Avenue was not S/NRHP eligible in 2023. SHPO did not issue a formal determination of the resource at 243 Grandview Avenue in 2023 and it remains undetermined.

No other resources were found to be eligible or potentially eligible individually for the S/NRHP. Resources that are old enough to be considered for S/NRHP eligibility have been heavily modified and altered and do not retain adequate historic fabric. No collections of properties were found to meet criteria for eligibility as S/NRHP Historic Districts.

Last, there are two bridges that cross the open cut, located at (from east to west) Harbor Road and South Avenue. Both of these bridges, which were originally constructed in the mid-1930s in conjunction with the open cut, have either been extensively reconstructed or fully replaced since the 1980s, according to the Basis of Design report for this project.[44] Neither of the bridges appear to contain characteristics that qualify them for S/NRHP eligibility, either individually or as part of a district. SHPO did not assign these bridges USN numbers as part of this project.

Staten Island Railway

The Proposed Project would utilize the existing, unused former Staten Island Railway's North Shore Branch ROW. This ROW includes at-grade railroad tracks or former track locations in Sections 1, 2, and 3, an elevated viaduct containing railroad tracks in Section 4, an open cut containing railroad tracks in Section 5, and a return to at-grade railroad tracks in Section 6.

The Staten Island Rapid Transit Railroad Company (SIRT) incorporated in 1880. In conjunction with the Baltimore and Ohio Railroad (B&O), the company constructed the North Shore Branch in 1886 as an entirely at-grade, double-tracked railroad from St. George Station on the east to Elm Park Station on the west. The line subsequently opened further west to Arlington Station in 1889 and to Port Ivory, beyond the project limits, in 1906.[45]

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[44] VHB and STV, 2020. *Basis of Design Report, Contract Number B-62040/B-80143, CM-0143 Environmental and Engineering Services for the Staten Island North Shore Bus Rapid Transit System in the Borough of Staten Island, New York.* Prepared for MTA New York City Transit.

[45] Leigh, Irvin and Paul Matus. 2002. *Staten Island Rapid Transit, The Essential History*. The Third Rail Online. http://thethirdrail.net/0201/sirt1.html. Accessed February 21, 2020.

Original passenger stations, consisting of stand-alone buildings adjacent to the tracks, were located at St. George, New Brighton, Sailors' Snug Harbor, Livingston, West New Brighton, Port Richmond, Tower Hill, Elm Park, Mariner's Harbor, and Arlington. Passenger platforms generally were located on both sides of the railroad tracks at each station.

A 500-foot-long railroad swing bridge over the Arthur Kill was constructed in 1888, connecting the North Shore Branch with New Jersey. This bridge was replaced in 1959 with a vertical lift truss bridge, which has been determined individually eligible for the S/NRHP by both the New Jersey Historic Preservation Office (HPO) and the New York SHPO.[46]

In 1925, with hopes of connecting to the BMT subway line in Brooklyn via a tunnel at St. George under the Narrows, the SIRT completed electrification of its railroad lines. This entailed track rehabilitation, a new signal system, new railroad cars, and higher platforms at the stations to accommodate elevated railroad car doors. [47]

The following year, in 1926, New York State passed the "State Grade Crossings Act," which called for the elimination of at-grade crossings in populated areas.[48] In response to this act, construction began in 1934 on the viaduct in Section 4 and the open cut in Section 5. The viaduct carried the railroad over cross streets, while the open cut routed the railroad under them, where new street overpasses were built. New stations and platforms were constructed along the top of the viaduct and within the open cut. Historic maps and photographs show that the new viaduct and open cut were located immediately adjacent to the existing at-grade tracks, so that construction of the new components could proceed without disruption to the active trains. When the viaduct formally opened in February 1937, newspaper accounts claimed that at one mile in length, it was the longest grade crossing elimination unit in the United States.[49] Once the viaduct and open cut were completed, the old tracks were removed or covered over, and those areas became part of the existing roadbeds.

With time, the original railroad stations from the pre-grade separation era were demolished. Passenger service on the North Shore line continued until 1953, and freight service continued until 1989. In 2007, freight service resumed on an approximately one-mile stretch from the Arthur Kill lift bridge to the Union Avenue overpass, servicing the Howland Hook Marine Terminal.

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[46] Howe, Kathy, SHPO. 2008. *Resource Evaluation, Staten Island Railway Lift Truss Bridge over the Arthur Kill between Staten Island and New Jersey*.

[47] Leigh, Irvin and Paul Matus. 2002. *Staten Island Rapid Transit, The Essential History*. The Third Rail Online. http://thethirdrail.net/0201/sirt1.html. Accessed February 21, 2020.

[48] Roess, Roger P. and Gene Sansone. 2012. *The Wheels That Drove New York: A History of the New York City Transit System,* p. 238. Springer, Heidelberg, Germany.

[49] "Staten Island Opens Mile-Long Viaduct; Thirty-Four Grade Crossings Are Eliminated." *New York Times*. February 26, 1937.

The present condition of the former ROW varies across the APE. In Section 1, the former railroad is no longer extant after construction of the North Shore Esplanade Park. There are no visible tracks within the park and no remnants of the former New Brighton Station at Westervelt Avenue. Section 2 runs through the Atlantic Salt facility and past Sailors' Snug Harbor. Within the Atlantic Salt facility, the tracks are either covered over or embedded in pavement. The Sailors' Snug Harbor station, previously located near Tysen Street, has been removed and no visible traces remain. Along the shoreline at Sailors' Snug Harbor, only one set of tracks is still partially visible within the wooded area north of Richmond Terrace; the second set is no longer visible or removed. Between the two ends of the horseshoe-shaped Snug Harbor Road, the shoreline and former ROW has significantly washed away, leaving one set of tracks suspended above the scoured waterfront. The Livingston Station, once located at Bard Avenue, has been demolished.

In Section 3, the railroad tracks run through the industrial working waterfront, where they are either covered over or embedded in the pavement. The West New Brighton Station, once located between N. Burgher Avenue and Broadway, has been demolished, and no remains are visible.

Section 4 contains the extant viaduct, completed in 1936, which would be reused for the Proposed Project. The pre-grade separation stations along this section were removed after the viaduct was completed. There were elevated stations on the top of the viaduct at Port Richmond Avenue and between Treadwell and Sharpe Avenues (the Tower Hill Station). These elevated stations are in poor condition due to over 30 years of abandonment and exposure to the elements. The top of the viaduct is covered with dense vegetation and debris, although the railroad tracks are still visible in many places.

Section 5 contains the open cut, also completed in 1936 and which would be reused for the Proposed Project. The pre-grade separation stations along this section were removed after the open cut was completed. New stations and passenger platforms were constructed in conjunction with the open cut at Elm Park (Morningstar Road), Lake Avenue, Mariner's Harbor (Van Pelt Avenue), and Harbor Road. At Elm Park, a brick station house was constructed on the east side of Morningstar Road at the overpass level but was removed in the 1980s. The stations within the open cut are in significant disrepair after 30 years of abandonment and exposure to the elements. Trees and other vegetation have grown throughout the open cut area, obscuring the railroad tracks and the embankments. In some locations there are large pools of standing water.

Section 6 contains a short stretch of trackage that was reactivated in 2007. It is slightly lower in elevation than surrounding properties. South Avenue has been elevated via an overpass. The former Arlington Station on the west side of South Avenue was razed in the 1950s after passenger service ceased.

The North Shore Branch of the SIR has changed greatly since the late nineteenth century. The route was constructed in the 1880s, but other than the alignment itself, little remains of the original railroad features. The original tracks were

reconfigured in 1926 when the railroad converted from steam to electricity. New station platforms were constructed at that time to accommodate higher railroad car doors. During the 1930s, when grade separation occurred, creation of the viaduct and open cut required the demolition of the original stations and the construction of new ones. Over time, all the stations east of the viaduct were demolished as well. Today, none of the original 1880s components of the North Shore Branch are extant.

Since freight service ended in 1987, the condition of the overall railroad has deteriorated greatly. Those partially extant stations along the viaduct and open cut are in significant decay, and vegetation and standing water has taken over much of the alignment. Along the Kill Van Kull shoreline, much of the land and fill beneath the alignment has washed away, leaving twisted iron railroad tracks suspended above the eroded beach. Those portions of the alignment that pass through active industrial concerns, such as the Caddell Dry Dock facility and the Atlantic Salt facility, have been subsumed into the surrounding pavement or covered over. Of the components that comprise the North Shore Branch, only the concrete and steel superstructure of the viaduct remains in serviceable condition, and it is intended to be reused for the Proposed Project.

The North Shore Branch of the SIR, from St. George to the Arthur Kill, does not appear to collectively meet criteria for S/NRHP eligibility. There is a lack of surviving historic resources from either the railroad or stations dating to original construction or later 1930s grade safety modifications. The components of the SIR do not survive with adequate integrity to convey the historic significance of the railroad. Further, the setting has been compromised. The only surviving physical resource, the 1936 viaduct, is utilitarian in design and neither possessed nor survives with characteristics that embody the work of a master or with a high degree of integrity. While certainly providing significant safety benefits, the viaduct and the open cut served to sever the connection between the flanking neighborhoods and resources on its north and south sides.

No-Action Condition

Under the No-Action Condition, the Proposed Project would not be constructed. Consequently, no impacts to historic and cultural resources in the APE would occur. It is assumed that historic and cultural resources within and adjacent to the right-of-way would remain the same as for the existing conditions.

With-Action Condition

Archaeological Resources

Under the With-Action Condition, the Proposed Project would be constructed. The following sub-sections describe the archaeological sensitivity for each section of the alignment given the current design of the Proposed Project.

Section 1: St. George

The archaeological sensitivity for Section 1 is mixed. There has been significant disturbance throughout the area from multiple construction and demolition episodes over time, which likely has destroyed many potential archaeological resources within the Archaeological APE. However, the complete subsurface conditions cannot be known without further study.

Given that the Proposed Project includes construction of retaining walls and drainage features to various depths below the at-grade portion of the bus route in this section between Nicholas Street and Jersey Street, it is possible that both precontact period and historic period archaeological resources could exist within discrete locations. Soil or geotechnical borings to be taken in these locations for design purposes should be reviewed by a qualified archaeologist to determine whether there is any potential for archaeological resources to be impacted as a result of the Proposed Project.

Within Block 9, where the Richmond Terrace roadway would be widened by 12 feet, necessitating the acquisition of a narrow swath of land in front of the Staten Island Family Courthouse, Phase IB archaeological testing may be warranted if disturbance to the original landform cannot be confirmed to the depth of the planned impacts.

Section 2: New Brighton Waterfront

The archaeological sensitivity for Section 2 is mixed. Archaeologists have studied the span along the Sailors' Snug Harbor waterfront twice in the past. In 1990, archaeologists concluded that the area was too disturbed to contain any historic period archaeological resources, and that potential buried precontact period resources beneath the Kill Van Kull were possible but not probable. They recommended review of any future soil borings to assess the precontact period archaeological potential along the waterfront, should future development be proposed. In 2002, archaeologists reiterated the potential for precontact archaeological resources beneath the Kill Van Kull, and also indicated the possibility for historic period remains from the Sailors' Snug Harbor boathouse and dock.

Section 2 conditions have deteriorated since 2002. The coastline along this stretch has eroded considerably, scouring the area and lowering the landform by several feet in places. While it is still possible that precontact period archaeological resources could be present under the Kill Van Kull, any potential historic period archaeological resources here appear to have been further disturbed or destroyed.

As described in Chapter 2, Proposed Project and Alternatives, the proposed alignment would include a new elevated road landward of the Kill Van Kull shoreline (on the existing land between Richmond Terrace and the Kill Van Kull. Soil or geotechnical borings to be taken in this location for design purposes should be reviewed by a qualified archaeologist to determine whether there is

any potential for precontact period archaeological resources to be impacted as a result of the Proposed Project.

Section 3: West Brighton Waterfront

The archaeological sensitivity for Section 3 is mixed. There has been significant disturbance throughout the area from multiple construction and demolition episodes over time, which likely has destroyed many potential archaeological resources within the Archaeological APE. However, the complete subsurface conditions cannot be known without further study. Given that the Proposed Project includes construction of retaining walls and drainage features to various depths below the at-grade portion of the bus route along the length of this section, it is possible that both precontact period and historic period archaeological resources could exist within discrete locations. Soil or geotechnical borings to be taken in these locations for design purposes should be reviewed by a qualified archaeologist to determine whether there is any potential for archaeological resources to be impacted as a result of the Proposed Project.

Section 4: Viaduct

The archaeological sensitivity for Section 4 is low. Construction of the original railroad alignment and the existing viaduct have caused significant disturbance to the original landform within this section. The Proposed Project plans indicate that there would be new subsurface drainage features installed beneath the viaduct at approximately 333-foot intervals to depths of approximately 3.52 feet below grade, spaced between the existing viaduct concrete supports. The exact locations of the new drainage features have not been confirmed. As design progresses for the Proposed Project, if soil or geotechnical borings are taken prior to installation of these drainage features, the soil borings should be reviewed by a qualified archaeologist to determine whether there is any potential for archaeological resources to be impacted as a result of the Proposed Project.

Section 5: Open-Cut Section

The archaeological sensitivity for Section 5 is low. The Proposed Project plans indicate that there would be no new excavation below areas that have already been disturbed by past construction and demolition episodes.

Section 6: Arlington Station

The archaeological sensitivity for Section 6 is high. The portion of Section 6 south of the active railroad tracks and behind the present retaining wall may contain landforms that were not substantially graded when the railroad tracks were lowered in the 1930s. Given the proximity to former wetlands and a perennial stream in the area now covered by the NYCHA Mariners Harbor complex, which are markers for precontact period archaeological sensitivity, this area south of the railroad tracks may warrant future archaeological testing. Additionally, the proposed Arlington Station parcel on the west side of South Avenue may be sensitive for precontact period archaeological resources beneath the gravel parking area that covers the lot, given its proximity to wetlands and the former

Arlington Station archaeological site. If impacts from the Proposed Project extend beneath this gravel surface, archaeological testing may be necessary here as well.

Summary

The results of the Phase IA Archaeological Documentary Study (see Appendix J) indicated that archaeological sensitivity is mixed for Sections 1, 2, and 3, low for Sections 4 and 5. Review of future geotechnical soil borings by archaeologists would be necessary to determine whether any potential precontact or historic period archaeological resources could be extant in those sections identified as having mixed or high archaeological sensitivity. If geotechnical soil borings are taken prior to installation of drainage features beneath the viaduct in Section 4, those should also be reviewed by archaeologists to confirm or deny specific disturbance in those discrete locations.

The results of the Phase IA Archaeological Documentary Study indicated that archaeological sensitivity for Section 6 is high. Potential precontact period archaeological resources could be located in areas of Section 6 that have not been disturbed from past development or earthmoving. If these locations cannot be avoided, then archaeological field testing is recommended in these areas.

Architectural Resources

The following describes the impacts of the Proposed Project on the historic resources within the 90-foot Architectural APE in Sections 1-6, as well as the 400-foot Architectural APE in Section 2 around Sailors' Snug Harbor.

Sections 1-6: 90-foot Architectural APE

The results of the Architectural Survey indicated that all sections contain architectural resources either listed on, eligible for, or potentially eligible for the S/NRHP within the 90-foot Architectural APE. Some of these resources are also NHL and NYCLs. Depending on the degree of vibration from the Proposed Project, there could be construction-related physical impacts to these architectural resources. If these impacts cannot be avoided, then they will need to be mitigated through the implementation of a Construction Protection Plan.

Section 2: 400-foot Architectural APE

The Proposed Project in Section 2 includes the construction of a raised busway that would be above the elevation of Richmond Terrace in the vicinity of Snug Harbor. The Proposed Project would be visible from a number of contributing resources within the overall Sailors' Snug Harbor S/NRHP Historic District, including Buildings A-E, the chapel, the two gatehouses, the iron fence, and the ferry landing. The SHPO has indicated that the proposed undertaking would have an Adverse Effect upon the setting of Sailors' Snug Harbor, an NHL and therefore result in a significant adverse impact under SEQRA.[50]

[50] Olivia Brazee, SHPO to Linda Tonn, MTA. July 3, 2020.

The Proposed Project would alter the setting of the waterfront portion of Sailors' Snug Harbor and the viewscape from the portion of Sailors' Snug Harbor on the south side of Richmond Terrace. Sailors' Snug Harbor historically maintained a prominent place along the Kill Van Kull shoreline, and views to and from the resource along this waterway were important to the setting for the former sailors housed at this institution and therefore, the Proposed Project would result in a significant adverse impact. If these impacts cannot be avoided, then mitigation will need to be developed to address these visual and contextual impacts.

Construction of the Proposed Project would also be visible and could have an Adverse Effect on several contributing S/NRHP listed resources between Richmond Terrace and the Kill Van Kull shoreline, including the stone lookout platform directly across from the pedestrian gatehouse and the dressed ashlar stone retaining walls that flank the dual pathways leading down to the former dock location across from the eastern end of Snug Harbor Road.

Depending on the degree of construction vibrations, the Proposed Project could also have physical impacts on the stone lookout structure and the stone retaining walls along the waterfront that are part of the Sailors' Snug Harbor shoreline. If these impacts cannot be avoided, then they would need to be mitigated through the implementation of a Construction Protection Plan. If these resources cannot be protected because they are within the construction footprint of the Proposed Project, additional mitigation would need to be developed, in consultation with SHPO, LPC, and other consulting parties.

Conclusion

The Proposed Project could result in an impact to potential archaeological resources in Sections 1, 2 3, and 6. Review of geotechnical soil borings and/or subsurface testing would be necessary to determine whether such resources could exist and whether the Proposed Project could have an Adverse Effect on such resources.

The Proposed Project could have an Adverse Effect on architectural resources in all six Sections. Depending on the degree of construction impacts, particularly vibrations, a Construction Protection Plan may be necessary to avoid these Adverse Effects.

Last, as presently designed, the Proposed Project would have one or more Adverse Effects to architectural resources in the Sailors' Snug Harbor S/NRHP listed Historic District, given the visual and contextual changes that would be created by the Proposed Project. This would constitute a significant adverse impact under SEQRA. If these impacts cannot be avoided, mitigation options should be undertaken in consultation with SHPO, LPC, and other consulting parties.

9 Urban Design

The urban design assessment focuses on the components of a proposed project that may have the potential to alter the arrangement, appearance, and functionality of the built environment. Specifically, per the guidance of the *CEQR Technical Manual,* the urban design assessment examines whether and how a project may change the experience of a pedestrian in the project area.

Regulatory Background

As defined in the *2021 CEQR Technical Manual*, urban design is the totality of components that may affect a pedestrian's experience of public space. The manual identifies the following elements that play an important role in the pedestrian's experience: streets, buildings, visual resources, open space, natural resources, and wind. Based on the *CEQR Technical Manual*, an assessment of urban design and visual resources is appropriate when a project may have effects on one or more of the elements that contribute to urban design, if these elements contribute to the pedestrian experience.

The proposed project is described in **Chapter 2, Proposed Project and Alternatives.** The Proposed Project would include new physical structures that include ramps, an elevated busway, retaining walls, and stations. These elements would result in physical changes that could be observed by a pedestrian from the street level and could change or restrict views of visual resources; therefore, an urban design and visual resources analysis is warranted.

Methodology and Study Area

In accordance with the *CEQR Technical Manual* guidelines, the urban design and visual resources assessment considers a study area where the Proposed Project would be most likely to influence the built environment and where that influence would be experienced by pedestrians. The Proposed Project would consist of the implementation of BRT service along an approximately 8-mile alignment between St. George Terminal and West Shore Plaza. Given the general obstruction of public views to the north by existing waterfront uses and density of development to the south of the proposed alignment, this urban design assessment considers

a study area within 400 feet of the proposed alignment to capture the potential effects on urban design and visual resources.

The Proposed Project would introduce a mix of new features:

- **Stations and Retaining Walls:** Along the alignment, seven new stations would be introduced along the busway, including three new stations at grade level, one station along an existing elevated viaduct, and three stations below grade in an open-cut configuration. Pedestrian overpasses would be provided at four of the seven busway stations.
- **Ramps:** At Nicholas Street, a new ramp would be constructed to connect the proposed busway from Richmond Terrace to the former North Shore Railroad ROW.
- **Elevated Busway:** The proposed alignment would introduce an elevated busway just north of Richmond Terrace from the proposed New Brighton Station to just east of Bard Avenue.
- **Right-of-Way:** Depending on the segment, the BRT service would operate:
  - Within a two-lane, dedicated busway with potential passing lanes
  - Within city roadways in exclusive lanes
  - Within city roadways in mixed-traffic

As noted above, the *CEQR Technical Manual* identifies the following elements that play an important role in the pedestrian's experience: streets, buildings, visual resources, open space, natural resources, and wind.[1] These elements are generally defined as follows:

- **Street Pattern and Streetscape:** The arrangement and orientation of streets define location and flow of activity in an area, set street views, and create blocks on which buildings and open spaces are arranged.
- **Buildings:** Building components define the appearance of the built environment.
- **Open Space:** Open space includes public and private areas such as parks and other landscaped areas, cemeteries, parking lots, and privately-owned public spaces.
- **Natural Features:** Natural features include vegetation and geologic, topographic, and aquatic features that are natural to the area. Examples include rock outcroppings, steep slopes or varied ground elevation, beaches, or wetlands.

[1] The *CEQR Technical Manual* identifies wind as a concern when channelized wind pressure from between tall buildings and/or downwashed wind pressure from parallel tall buildings causes winds that affect pedestrian comfort and safety. Because the Proposed Project would not introduce new buildings, wind is not considered in this analysis.

- **View Corridors and Visual Resources:** Visual resources are the connection from the public realm to significant natural or built features, including view of the waterfront, public parks, landmark structures or districts, or otherwise distinct buildings, or natural resources.

To facilitate the analysis for the North Shore BRT, the proposed alignment and study area has been divided into seven sections. Each section and associated study area reflects a section of the alignment that is distinct from an engineering standpoint.

This urban design assessment focuses on Sections 1: St. George, 2: New Brighton Waterfront, 3: West Brighton Waterfront, 4: Viaduct, 5: Open-Cut Section, and 6: Arlington Station. The proposed BRT would operate in mixed-traffic along South Avenue to the West Shore Plaza, serving three existing, on-street stops with no proposed physical improvements or construction impacts occurring along South Avenue. Accordingly, no impacts related to urban design are anticipated in Section 7: South Avenue and no further analysis is required for that section.

As detailed above, portions of the approximately 8-mile proposed BRT alignment would run within the existing North Shore Railroad ROW and others would run within existing City roadways such as Richmond Terrace and South Avenue. As such, a significant portion of the proposed alignment makes use of existing roadways or infrastructure, including the existing open-cut and viaduct portions of the ROW, and would not be expected to significantly alter physical conditions. Therefore, each section of the alignment is assessed by focusing on those project elements that have the potential to alter the built environment or urban design. The analysis begins with a description and photographs of existing conditions along each section, with a particular focus on those areas where project elements (such as stations) would be located. The existing conditions analysis also provides a general description of the area landscape, topography, and any sensitive view corridors or visual resources that could be affected by the Proposed Project. Next, future conditions under the No-Action condition are described, followed by an assessment of how the Proposed Project (e.g., With-Action Condition) would affect those conditions. The analysis includes ground-level photographs along the alignment as well as three-dimensional representations of the future With-Action Condition streetscape and then determines the extent to which physical changes resulting from the proposed development would alter the pedestrian experience.

Assessment

Existing Conditions

Section 1: St. George

As shown in Figure 9-1, Section 1: St. George extends from the St. George Terminal bus deck west to Jersey Street. This segment is characterized as the transportation and civic center of Staten Island, consisting of transportation uses

as well as commercial/retail, open space, and institutional uses. Residential uses are located further west.

Area Urban Design and Visual Resources

Richmond Terrace, which runs parallel to the waterfront and carries two lanes of traffic in each direction, forms the backbone of Section 1 (see **Photo 9-1a**). An existing concrete median runs through the center of Richmond Terrace for almost the entire length of Section 1; it is planted with trees from Nicholas Street to St. Peters Place. Bike lanes run in both directions along the north side of the roadway closest to the St. George Terminal and move to both the north and south sides west of Schuyler Street. These lanes shift from separated lanes to shared lanes depending on the location. Sidewalks of varying widths also run the length of Section 1 on both the north and south sides of Richmond Terrace.

The St. George Terminal is a defining feature of this portion of the study area north of Richmond Terrace. The terminal comprises a combination of transportation infrastructure that includes a series of ramps for buses, taxis, and passenger vehicles, as well as parking areas at a lower grade than Richmond Terrace (see **Photo 9-1a**). The complicated roadway network at the entrance to the St. George Terminal from Richmond Terrace centers the focus of the infrastructure on the vehicular rather than the pedestrian experience at this intersection.

Moving west along the north side of Richmond Terrace is the Empire Outlets shopping mall and the Staten Island University Hospital (SIUH) Community Park. Empire Outlets is a two-story modern outlet shopping mall that is integrated within the waterfront area behind Bank Street and the St. George Terminal (see **Photo 9-2a**). Just north of Empire Outlets is the ballpark, with a brick or fenced façade lining the street-front of the ballpark property (see **Photo 9-5**).

Figure 9-1 Section 1 Study Area Photo Locations

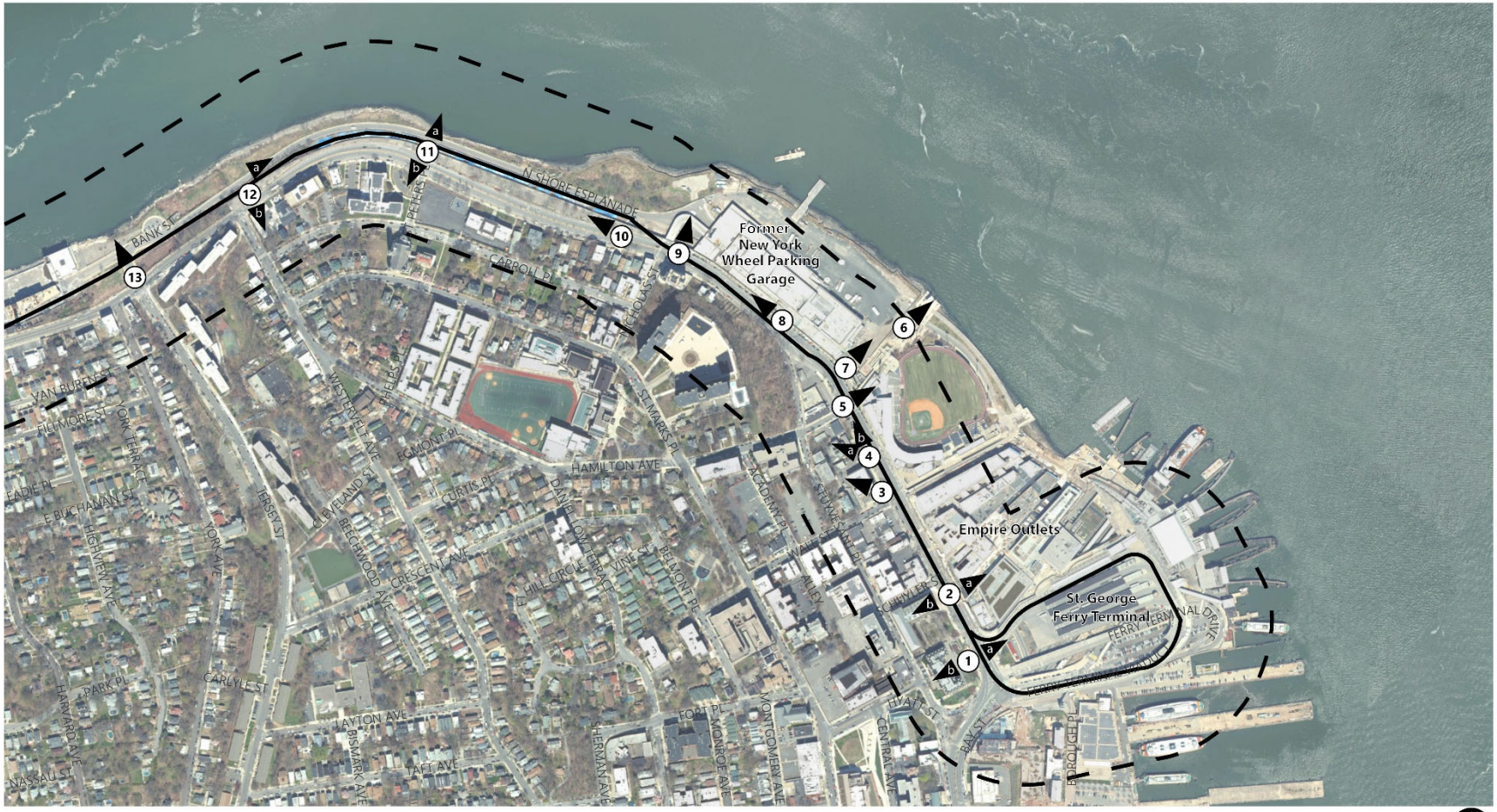


Photo 9-1a

View of Richmond Terrace facing northeast toward the St. George Ferry Terminal (right) and Empire Outlets (left)

Photo 9-1b

View southwest of Staten Island Borough Hall from Richmond Terrace

Photo 9-2a

View northeast of the Empire Outlets from Richmond Terrace

Photo 9-2b

View southwest of the Richmond County Courthouse

Photo 9-3

View northwest along Richmond Terrace, with the 120th Precinct Police Headquarters on the left and police vehicles parked in front

Photo 9-4a

View northwest of the Staten Island Family Courthouse

Photo 9-4b

View north along Richmond Terrace, with the stairs leading up to the Staten Island Family Courthouse on the left

Photo 9-5

View of back entrance to the SIUH Community Park, facing northeast

On the south side of Richmond Terrace is the civic center, with State and National-Register of Historic Places (S/NRHP)-listed and eligible and New York City Landmark (NYCL) municipal buildings, including Staten Island Borough Hall (**Photo 9-1b**), the Richmond County Courthouse (**Photo 9-2b**), the 120th Police Precinct (**Photo 9-3**), and the Staten Island Family Courthouse (**Photo 9-4a**). These early 20th century municipal buildings are set back from the street-front with large entry stairwells. Police vehicles are regularly parked perpendicular to the street occupying a parking lane of Richmond Terrace and a portion of the sidewalk in front of the precinct building and courthouse. One- to three-story commercial and mixed-use commercial and residential buildings are interspersed between the municipal buildings. Within Section 1, pedestrian activity is concentrated in the areas between the civic center, Empire Outlets and the ballpark, and the transportation center at St. George Terminal.

Waterfront open space is present within Section 1 starting just west of Empire Outlets behind the ballpark and the former New York Wheel site Garage (just west of the ballpark). This area, which is improved with a pedestrian path, seating and art, as well as a September 11 First Responders Memorial, can be accessed both from Empire Outlets and from Richmond Terrace via a pedestrian walkway and staircase between the ballpark and garage (see **Photo 9-6**).

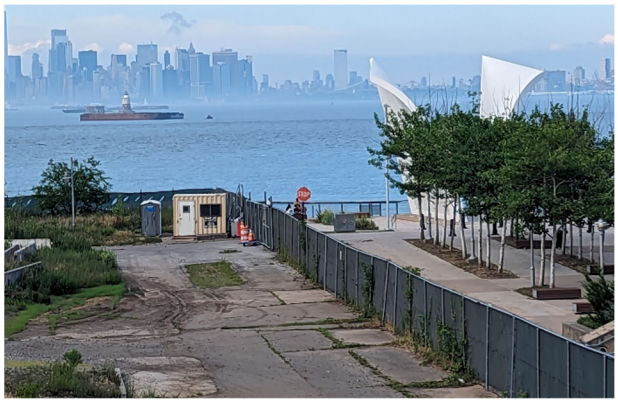
Further west along Richmond Terrace, the urban design character and pedestrian experience of this section changes block by block and is generally dependent on the prominent land uses. Just west of the civic center and ballpark, the garage at the former New York Wheel site occupies the entire block along the waterfront. The garage is a large white structure with vertical paneling, and temporary construction fencing blocks some views to the site (see **Photo 9-7** and **Photo 9-8**). There is a large vehicular entry ramp at the north end of the structure (see **Photo 9-9**) at the intersection with Nicholas Street). The south side of Richmond Terrace across from the garage contains a concrete retaining wall and is densely vegetated. These conditions fully obstruct views of existing development from Richmond Terrace to the south.

The North Shore Esplanade picks up again along the north side of Richmond Terrace, from Nicholas Street to Westervelt Avenue, providing a wide pedestrian walkway, benches, lighting, and, as Richmond Terrace curves in this location, sweeping views of the waterfront and the Manhattan skyline (see Photo 9-10). Along the Esplanade in this location, the significant change in topography from Richmond Terrace hides views from street level down to Bank Street and the waterfront (see Photo 9-11). West of Westervelt Avenue, chain link fencing and dense vegetation cut off views to the water, while Richmond Terrace begins to descend to meet the elevation of the waterfront at its intersection with Jersey Street (see Photo 9-13). The south side of Richmond Terrace along this stretch is characterized by a mix of residential housing types, including single-family homes set back from the street-front by front yards and fencing or stone retaining walls and tall multi-family apartment buildings of varying styles (See Photo 9-11b, Photo 9-12a, and Photo 12b).

Photo 9-6

View northeast of the September 11 First Responders Memorial along the waterfront

Photo 9-7



View northeast of construction fencing at the former New York Wheel Garage site

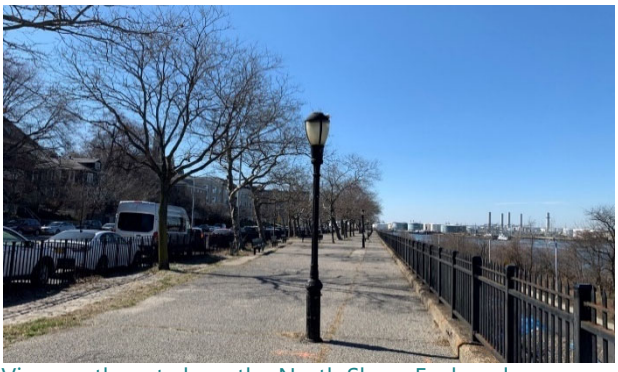
Photo 9-8

View northwest along Richmond Terrace adjacent to the former New York Wheel site

Photo 9-9

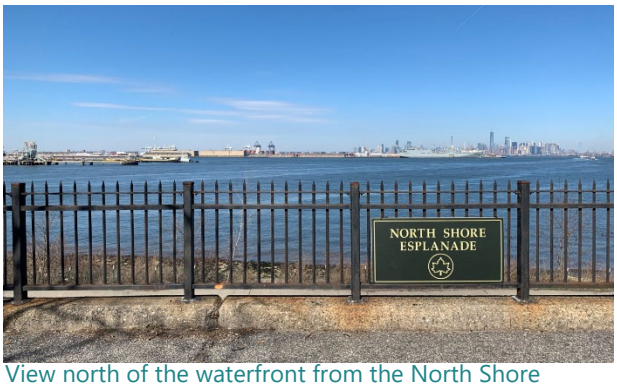
View north of existing ramp from Richmond Terrace to the garage at the former New York Wheel site

Photo 9-10



View northwest along the North Shore Esplanade adjacent to Richmond Terrace

Photo 9-11a



View north of the waterfront from the North Shore Esplanade toward the proposed alignment below

Photo 9-11b

View of multi-family apartment buildings southwest from Richmond Terrace at St. Peters Place

Photo 9-12a

View east along the North Shore Esplanade, along the north side of Richmond Terrace, improved with streetlights and seating

Photo 9-12b

View south between Jersey Street and Westervelt Avenue, along Richmond Terrace

Photo 9-13

View north of the waterfront toward the proposed alignment from Bank Street and Jersey Street

Section 2: New Brighton Waterfront

As shown in Figure 9-2, the New Brighton Waterfront section extends approximately 1.2-miles west from Section 1 along the Kill Van Kull shoreline from Jersey Street to Davis Avenue. This section is generally characterized by industrial and commercial uses including Atlantic Salt in the eastern portion of the segment and by the Snug Harbor Cultural Center & Botanical Garden and waterfront parkland in the western portion of the segment.

Area Urban Design and Visual Resources

The Section 2 study area closely follows the Kill Van Kull shoreline and Richmond Terrace. Moving west along Richmond Terrace from Jersey Street, urban design characteristics along the north side of the roadway are largely shaped by the presence of Atlantic Salt, a marine salt terminal. This facility includes a tall brick smokestack, which is a visible feature through much of the eastern portion of this section, and large piles of salt (see Photo 9-14, Photo 9-15, and Photo 9-16). However, chain-link fencing, plywood panels, and trees line most of the property boundary along Richmond Terrace, obstructing views of the property and views through to the waterfront from pedestrians on the roadway. As part of the Proposed Project, a new station (New Brighton Station) would be located just west of the Atlantic Salt property, fronting Richmond Terrace between Tysen Street and Clinton Avenue. Views to the north and the waterfront in this area are obstructed by existing vegetation and tree cover (see Photo 9-17).

The south side of Richmond Terrace in this portion of Section 2 contains a mix of land uses and associated building types, including up to five-story mixed-use buildings, single-story autobody shops and gas stations, parking facilities, vacant lots, and commercial buildings of various building styles (see Photo 9-18). Though sidewalks and shared bike lanes are provided along both sides of Richmond Avenue in this area, the lot vacancies and fencing along the entirety of the north side of Richmond Terrace detract from the pedestrian and cyclist experience.

Figure 9-2 Section 2 Study Area Photo Locations

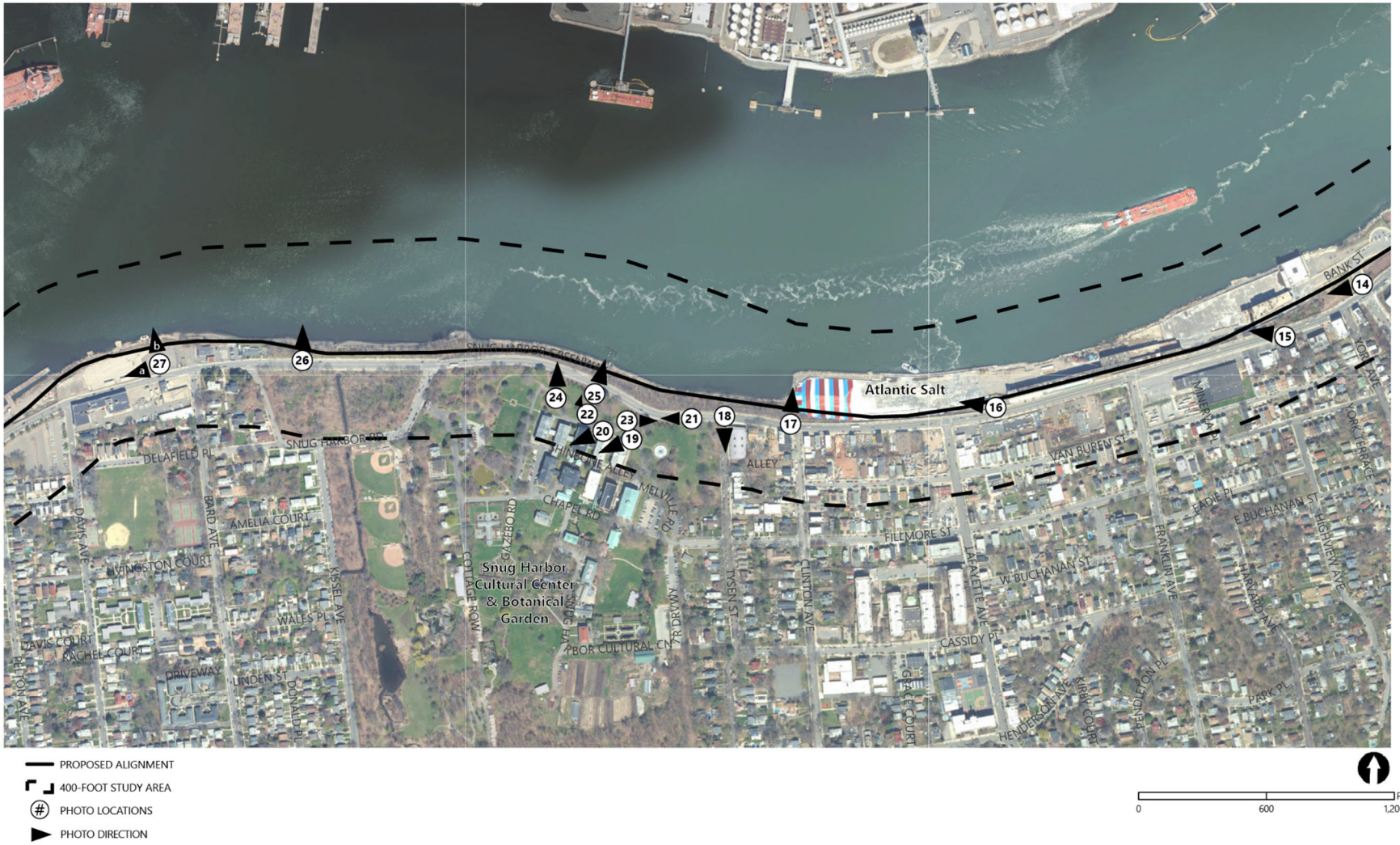


Photo 9-14

View of vacant building and Atlantic Salt facing west toward the proposed alignment from the intersection of Jersey Street and Bank Street

Photo 9-15

View west toward the proposed alignment from Richmond Terrace, at the site of the Atlantic Salt Terminal; views obstructed by existing vegetation

Photo 9-16

View along Richmond Terrace and chain-link fencing at the site of the Atlantic Salt Terminal

Photo 9-17

View north from the intersection of Richmond Terrace and Clinton Avenue toward the proposed alignment

Photo 9-18

View south from Richmond Terrace along Tysen Street

Photo 9-19

View of Snug Harbor historical building

The western portion of Section 2 is mainly occupied by the Snug Harbor Cultural Center & Botanical Garden, a significant visual resource within the study area. Snug Harbor is an S/NRHP-listed Historic District, NYCL, and National Historic Landmark that consists of cultural facilities, a row of late nineteenth and early twentieth century historic buildings, open space, and trails (see **Photo 9-19** through **Photo 9-24**). The Snug Harbor campus is separated from Richmond Terrace by a short wrought-iron fence, permitting full views of the campus from the roadway (see **Photo 9-21**). There is informal New York City-owned parkland with dense tree cover on north side of Richmond Terrace between the roadway and the Kill Van Kull, generally blocking direct views to the water, particularly during the warmer months with leaf-on conditions (see **Photo 9-24**). There is a wider pedestrian overlook located across Richmond Terrace from the northern gated entrance to Snug Harbor (see **Photo 9-25**) that does provide year-round views to the water as well as a staircase down to a dock and walking path below. Currently, the existing staircase alongside the overlook is in a state of disrepair and barricaded off to prevent pedestrian access to this area. Similarly, the dock area is barricaded and inaccessible due to its poor structural state. The partially paved path, which is inaccessible from Richmond Terrace in this area, extends to the west to meet back up with Richmond Terrace, and is overgrown with vegetation. Further west of the platform, some benches and a memorial line the sidewalk along the north side of Richmond Terrace (see **Photo 9-26**).

West of Snug Harbor along Richmond Terrace, the area is developed with a mix of building types and land uses, including single-family homes set back from the sidewalk, a gas station, and some one-and two-story brick utility buildings. The western extent of this section also features a large surface lot which functions as a parking and equipment staging area for Consolidated Edison (Con Ed) on the north side of Richmond Terrace just west of Bard Avenue. This is the proposed location of the Livingston Station that would be constructed as part of the Proposed Project. The water in this portion of Section 2 is at grade with Richmond Terrace, and the topography is relative flat compared with Section 1. Views to the water are provided intermittently, though in several locations, including adjacent to the large Con Ed surface lot, are impeded by chain-link fencing or building obstructions (see **Photo 9-27a** and **Photo 9-27b**).

Photo 9-20

View of Snug Harbor historical building

Photo 9-21

View west along Richmond Terrace with Snug Harbor campus to the left

Photo 9-22

View north of the waterfront from inside the gates of the Snug Harbor Cultural Center

Photo 9-23

View of the lawn area within the Snug Harbor Cultural Center

Photo 9-24

View north of the waterfront from inside the gates of the Snug Harbor Cultural Center, toward the proposed alignment

Photo 9-25

View north toward the proposed alignment from the entrance gate at the Snug Harbor Cultural Center

Photo 9-26

The site of the World War II Memorial along the waterfront facing north

Photo 9-27a

View of brick Con Ed facility facing west along Richmond Terrace

Photo 9-27b

View of the Con Ed parking lot north toward the proposed alignment from Richmond Terrace

Section 3: West Brighton Waterfront

As shown in **Figure 9-3**, the West Brighton Waterfront section continues west from the proposed Livingston Station through Caddell Dry Dock, an active maritime business situated along the Kill Van Kull, to Alaska Street. Section 3 generally parallels the shoreline and the primary roadway within this section, Richmond Terrace.

Area Urban Design and Visual Resources

As detailed in **Chapter 3, Land Use, Zoning and Public Policy**, predominant land uses in Section 3 include marine industrial uses along the waterfront and a mix of residential, industrial, and parking facilities inland of Richmond Terrace. Residential uses along the south side of Richmond Terrace range from two- to three-story single-family homes to a five-story multi-family elevator building set

back from the roadway located at the intersection with North Burgher Avenue (see **Photo 9-30b**). In addition to size and density, these residential buildings vary in age, condition, and architectural style, and consequently there is no cohesive character to the residential buildings in Section 3. One notable residential structure and visual resource in Section 3 is the Kreuzer-Pelton House, located at 1262 Richmond Terrace. This LPC-designated Dutch Colonial home is set back from the street-front and situated up on a hill, visible to pedestrians (see **Photo 9-28**). The presence of various vacant lots and parking facilities along both the north and south sides of Richmond Terrace detract from the pedestrian experience along the roadway (see **Photo 9-33**).

This section also includes a working waterfront. The Caddell Dry Dock and Repair Company is a large maritime shipyard that occupies much of the waterfront in this area. Caddell's two yards extend between Richmond Terrace and the shoreline from Davis Avenue to west of Elm Street (East Yard) and then again from east of Broadway west to Barrett Lane (West Yard). Caddell and the other industrial businesses that occupy the waterfront in Section 3 have erected approximately 8-foot tall fencing along much of the length of the property lines along Richmond Terrace, meaning views of these industrial buildings and views through to the waterfront from Richmond Terrace are scarce (see **Photo 9-29**). In locations where there is no fencing, cranes and other industrial operations and buildings are visible, and obstruct views to water (see **Photo 9-30a**).

Pedestrian infrastructure in Section 3 is inconsistent and where present, varies in condition. Certain sections of Richmond Terrace have sidewalks only along the south side of the roadway. From Elm Street to Alaska Street, approximately five-foot wide sidewalks line both sides of the roadway, though sidewalks are often cracked or in need of repair. From Pelton Avenue to Pelton Place, there are either no sidewalks or sidewalks have been completely overgrown with vegetation.

Heritage Park is the most notable visual resource within Section 3 and provides the one exception to the patterns described above, providing pedestrian access and views to the waterfront. This approximately ten-acre park along the Kill Van Kull shoreline is located at the west end of the segment, offering passive recreational uses consisting of walking path, benches, and parking (see **Photo 9-31a**, **Photo 9-31b**, and **Photo 9-31d**). Looking west, the park also provides views of the Bayonne Bridge, while views to the east from the park include cranes and other industrial waterfront operating equipment and buildings in the background (see **Photo 9-31c**). Heritage Park itself is blocked from view from Richmond Terrace by fencing. **Photo 9-32** depicts the view from Heritage Park south toward Richmond Terrace.

Figure 9-3 Section 3 Study Area Photo Locations

Photo 9-28

View of the Kreuzer-Pelton House facing southeast from Richmond Terrace

Photo 9-29

View west of the Caddell Dry Dock property from Richmond Terrace; proposed alignment obstructed by existing fencing

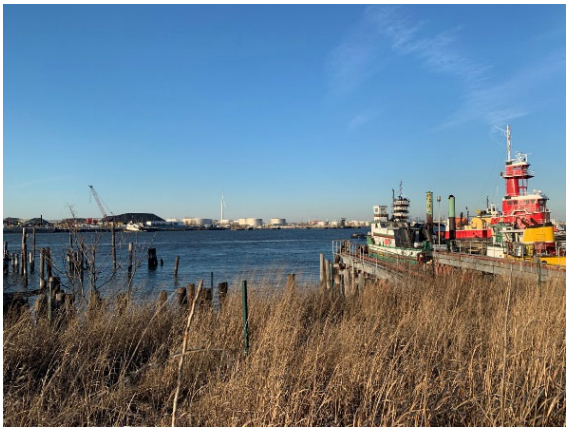
Photo 9-30a

View northeast from Richmond Terrace of the industrial buildings and operations at Caddell Dry Dock

Photo 9-30b

View southeast of multi-family residential building on the south side of Richmond Terrace

Photo 9-31a



View north from Heritage Park

Photo 9-31b

View of Heritage Park facing southeast

Photo 9-31c

View of Heritage Park facing east, improved with a paved walking path and benches

Photo 9-31d

View west of the Bayonne Bridge from Heritage Park

Photo 9-32

View of the entrance driveway and proposed alignment facing south from Heritage Park

Photo 9-33

View north of parking area along Richmond Terrace at Alaska Street

Section 4: Viaduct

As shown in **Figure 9-4**, Section 4: Viaduct extends west from Alaska Street to John Street. Section 4 includes the area where the Proposed Project would transition from the at-grade segment to the existing elevated former North Shore Railroad viaduct. The Section 4 study area follows the proposed alignment along the viaduct, which generally passes through vacant land west of Heritage Park as well as industrial uses, including the Port Richmond Wastewater Resource Recovery Facility, and continues through a mixed-use corridor and residential neighborhood further west.

Area Urban Design and Visual Resources

The existing viaduct structure is a prominent visual feature within Section 4. It rises approximately 22-feet above the existing street level, supported with concrete columns and topped with metal guardrails (see **Photo 9-35** and **Photo**

9-36). As the viaduct has been abandoned for over 30 years, the aesthetic conditions of the structure are poor, and the fencing is overgrown with vegetation in many places. The viaduct ends just west of Treadwell Avenue, and transitions to an at-grade section, which then crosses Nicholas Avenue on an overpass. The ROW eventually shifts from at-grade to an existing open cut, continuing to the section end at John Street.

Given the viaduct's path through the Port Richmond Wastewater Resource Recovery Facility and other large industrial properties along the eastern portion of this section, views of the structure are limited to those public streets that cross its path, including Richmond Terrace, Park Avenue, Port Richmond Avenue, Maple Avenue, Faber Street, Sharpe Avenue, Treadwell Avenue, and Nicholas Avenue. The urban design character of these streets varies depending on the predominant land uses present on these streets. The visual character of Park Avenue and Richmond Terrace are influenced mostly by vacant land and industrial properties that are fenced off from the street, with some single-family and two- to three-story brick mixed-use buildings just south of the viaduct (see **Photo 9-34**).

As more of a mixed-use and commercial corridor, Port Richmond Avenue is improved with one- and two-story retail and mixed-use buildings, which promote increased pedestrian activity. The S/NRHP-eligible Port Richmond Historic District is located just north of the viaduct along Port Richmond Avenue. This district encompasses a small commercial corridor between the viaduct structure and Richmond Terrace. The buildings are primarily two-to three story in height, predominantly industrial in style, incorporating Romanesque Revival characteristics, such as the wide-rounded arches above the windows (see **Photo 9-37**). The NYCL Reform Church building located immediately north of the viaduct is a Greek Revival church building with a small adjacent cemetery.

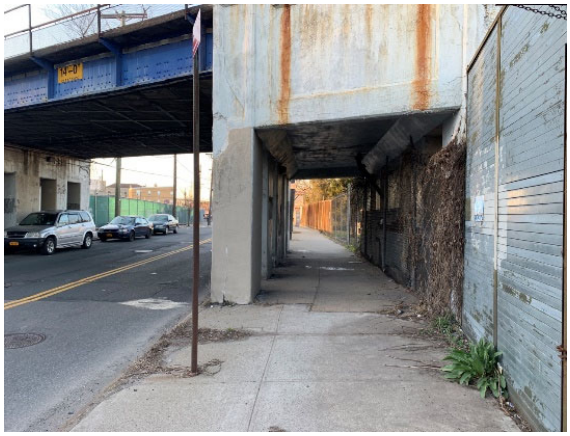
The north-south running streets within the study area become increasingly residential further west within Section 4, with detached single-family homes of varying architectural styles along the streets from Maple Avenue to Nicholas Avenue (see **Photo 9-38**). As a walkable primarily residential neighborhood, pedestrian accommodations are consistent along the public streets that cross the path of the existing viaduct, with sidewalks along both sides of the roadways.

Figure 9-4 Section 4 Study Area Photo Locations

Photo 9-34

View north of the viaduct along Richmond Terrace

Photo 9-35



View north of the viaduct from the street level of Richmond Terrace

Photo 9-36

View northeast of the viaduct along Park Avenue

Photo 9-37

View south from Richmond Terrace of the Port Richmond Historic District

Photo 9-38

View south of the viaduct from the street level of Sharpe Avenue

Section 5: Open-Cut Section

As shown in Figure 9-5, Section 5 begins in the vicinity of John Street, just east of the Bayonne Bridge, where the proposed alignment would transition into the open-cut section of the former North Shore Railroad ROW before ending at Union Street. The open-cut section is approximately 20 to 30 feet below grade. As detailed in Chapter 3, Land Use, Zoning and Public Policy, the alignment in this section extends southwest under the Bayonne Bridge and through primarily mixed-use neighborhoods supporting low-density residential and commercial/light industrial structures.

Area Urban Design and Visual Resources

The eastern-most portion of Section 5 runs beneath the Bayonne Bridge, where the bridge and its supporting structures are the defining visual feature of the study area. The Bayonne Bridge is a steel arch bridge which spans the Kill Van Kull from Bayonne, New Jersey to the North Shore of Staten Island. The entrance ramp to the bridge which passes over the study area is supported by tall concrete piers, between which the open-cut portion of the former North Shore Railroad ROW runs (see Photo 9-39 through Photo 9-41). From the years during which this ROW has not been used, it has become overgrown with vegetation as well as a dumping ground for garbage and debris (see Photo 9-42 and Photo 9-43). Pedestrian access to the bridge is available from Trantor Place, south of Innis Street, leading to a 12-foot path that runs along the east side of the bridge.

West of the Bayonne Bridge, the existing ROW crosses several north-south running, primarily residential streets. As the open-cut area of the ROW sits below street level, the ROW is not visible from much of the study area within Section 5. The alignment passes beneath a series of bridges along these streets, including Morningstar Road, Granite Avenue, Lake Avenue, Simonson Avenue, Van Name Avenue, Van Pelt Avenue, Dehart Avenue, and Union Avenue. From these bridges, most of what can be seen of the ROW is the overgrowth of trees and vegetation, as well as debris. West of Union Avenue, some views of the existing freight railroad tracks along the ROW are prevalent (see Photo 9-44). Certain streets within the study area are dead ends cut off by the crossing of the open-cut ROW. Like the views from the bridges, views from these streets, such as at Erastina Place, are primarily of overgrown trees and vegetation behind chain-link fencing (see Photo 9-45).

Because this area predominantly contains low-density residential and commercial light/industrial uses, pedestrian activity within the Section 5 study area is light. Throughout this segment, paved sidewalks are approximately three feet in width along the street frontages. There are no existing publicly-accessible open spaces or natural features within the Section 5 study area. This area has been improved with streetlights and pedestrian crossings. As described, except for the roadway bridges with sidewalks over the existing ROW, views of the open-cut section of the ROW are limited within the study area.

Figure 9-5 Section 5 Study Area Photo Locations

Photo 9-39

View northeast of the Bayonne Bridge from Richmond Terrace

Photo 9-40

View north of the Bayonne Bridge approach from the intersection of Morningstar Road and Newark Avenue

Photo 9-41

View of the neighborhood near the Bayonne Bridge approach north along Newark Avenue

Photo 9-42

View north of the proposed alignment situated in the open-cut along Eaton Place

Photo 9-43

View southeast of vegetative growth and garbage within the open-cut portion of the proposed alignment

Photo 9-44

View north of open-cut portion of the proposed alignment from Simonson Avenue and roadway bridge

Photo 9-45

View south of open-cut portion of the proposed alignment from the dead-end at Erastina Place

Section 6: Arlington Station

As shown in **Figure 9-6**, Section 6 extends from Harbor Road west to South Avenue, then south along South Avenue to Cable Way/Netherland Avenue. The proposed alignment in this section follows the former ROW under the Harbor Road bridge before shifting slightly south. Near Roxbury Street, the alignment would leave the open-cut and rise to grade passing beneath the existing South Avenue bridge.

Area Urban Design and Visual Resources

Within Section 6, the existing ROW continues west within an open-cut, running north of and parallel to Roxbury Street. Immediately south of Roxbury Street is the New York City Housing Authority (NYCHA) Mariner's Harbor complex, composed of a series of three-story brick buildings on a large lot with internal walking paths and lawn areas. Roxbury Street is a two-lane roadway with a parking lane on either side, and a wide sidewalk on the south side of the roadway adjacent to Mariner's Harbor (see **Photo 9-46**). There is an existing pedestrian ramp leading from Roxbury Street up to the South Avenue bridge which is planted on both sides with trees and does not provide significant views to the ROW (see **Photo 9-48**). The predominant uses on the north side of the ROW are single-family residential uses and industrial uses with large industrial buildings and gated storage lots. Views of the ROW from the dead-end streets to the north (including Lockman Avenue and Grandview Avenue) are blocked by existing fencing and an overgrowth of vegetation.

Figure 9-6 Section 6 Study Area Photo Locations

The western portion of the Section 6 study area is centered on South Avenue, a two-lane roadway with parking lanes and sidewalks lining both sides. Uses along the west side of South Avenue are separated from the sidewalk by tall chain-link fencing overgrown with vegetation, significantly limiting views to those properties, including the site of the proposed Arlington Station described above (see **Photo 9-47**). Further south along South Avenue is primarily improved with single-family homes set back from the street-front with landscaped front yards (see **Photo 9-49**).

Photo 9-46

View west along Roxbury Street with the NYCHA complex on the left and existing right-of-way on the far right

Photo 9-47

View west from South Avenue from just south of the bridge over the existing right-of-way

Photo 9-48

View north along South Avenue across the South Avenue bridge over the existing right-of-way; access to pedestrian ramp to Roxbury Street on right

Photo 9-49

View south along South Avenue at the intersection of South Avenue and Brabant Street

No-Action Condition

Under the No-Action Condition, the Proposed Project would not be implemented, and the existing former North Shore Railroad ROW would remain abandoned and unimproved. Independent of the Proposed Project, several developments are anticipated to be completed by the Build Year of 2035. No-Action developments that may have an effect on the visual character of the study area are detailed below.

Bay Street Corridor

Directly south of Section 1: St. George, the Special Bay Street Corridor District has been established to enhance economic diversity and create a walkable, urban streetscape. The stated goal of the project is to encourage well-designed buildings that complement the built character of the surrounding neighborhoods, including St. George. At full buildout, the redevelopment plan would facilitate approximately 2,557 residential units, 275,348 sf of commercial space, 46,799 sf of community facility space and 1,290 parking spaces. This would increase density within the district and would promote a better pedestrian environment along Bay Street, directly south of the North Shore BRT study area. Public realm investments will include completion of a waterfront esplanade, 12 acres of waterfront open space, repairs to Tappen Park, two new public schools, and pedestrian and intersection improvements. These improvements will occur to the south of the Proposed Project, and therefore will not significantly affect visual conditions within the study area.

Lighthouse Point

Adjacent to the St. George Terminal to the south of Section 1, Lighthouse Point will introduce more than 100 residential units, 85,000 sf of retail, a 160-room hotel and communal-style workspaces. This project will also include a series of outdoor recreational areas throughout the site, open to the public. Given the location of these spaces south of the Proposed Project, they are not anticipated to significantly affect visual conditions within the study area. The most visually prominent feature of this new development will be a tall, modern glass residential tower that will be visible from the St. George Terminal and various other locations within the Section 1 study area.

River North

River North is a proposed multi-building development bounded by Richmond Terrace to the north, Hamilton Avenue to the south, Stuyvesant Place to the east and Nicholas Street to the west. This proposed development would introduce more than 600 residential units in three buildings ranging between 11 and 16 stories. This project will also include retail uses and private open space that would also be accessible to the public. The project would introduce three visually prominent modern residential towers, varying between 130 feet and 198 feet in height. As such, the project would affect views of the waterfront and alter the urban design character of Richmond Terrace and the St. George area.

160 Richmond Terrace

This project consisting of 77 residential units is situated at the confluence of Stuyvesant Place and Richmond Terrace. The project is adjacent to the proposed River North development, described above. This project would introduce a new 7-story modern residential building that would be visible along portions of Richmond Terrace.

110 Port Richmond Avenue Housing Development

Located on the west side of Port Richmond Avenue within Section 4, this project will include an eight-story building with 77 residential units. This development will minimally alter the urban design character of the surrounding area, as there are few existing buildings of similar height nearby. This development will not impact views of the waterfront, as the site is located further inland. There are no other existing-publicly accessible open spaces, natural features or visual corridors near this development.

With-Action Condition

The Proposed Project would consist of the implementation of BRT service along the 8-mile proposed alignment between St. George Terminal and West Shore Plaza. The sections of the proposed alignment vary in their physical setting, and include at-grade, elevated viaduct, and below grade open-cut sections, with street-running portions along South Avenue (mixed-traffic) and Richmond Terrace (exclusive two-lane center-running busway). A full description of the proposed alignment and various new features required for operation of the BRT is provided in Chapter 2, Proposed Project and Alternatives. The following is an analysis of the Proposed Project's potential effects on urban design conditions and visual resources within the study area, by section of the alignment. This assessment analyzes the potential impacts of both the alignment of the proposed BRT service and the construction of the seven proposed stations within the busway.

Section 1: St. George

Alignment

As detailed in Chapter 2, Proposed Project and Alternatives, the eastern portion of the proposed alignment within Section 1 extends on Richmond Terrace between the St. George Terminal entrance and Nicholas Street. Consequently, changes to the urban design character and visual resources in this segment would be limited to a reconfiguration of the roadway to include a center-running exclusive bus lane in each direction. See Figure 2-6 in Chapter 2, Proposed Project and Alternatives, for an illustrative rendering of the proposed busway on Richmond Terrace. To accommodate this change, the existing Richmond Terrace median would be removed, and width would be reallocated from existing parking lanes, the northbound bike lane, and some sidewalks. The proposed roadway reconfiguration is not anticipated to significantly modify the urban design character of the study area.

One location that would require some modification of the block face fronting the NYPD's 120th Precinct building and the Staten Island Family Courthouse. To maintain unobstructed access to Richmond Terrace for NYPD emergency vehicles, the Proposed Project would be designed to maintain perpendicular parking for NYPD vehicles between Hamilton Avenue and Wall Street while also accommodating the proposed busway on Richmond Terrace. This would require modifications to a landscaped berm, retaining walls and two stairways in front of the 120th Precinct and a modification to the front steps and courtyard of the courthouse off Richmond Terrace. The existing sidewalk on the south side of Richmond Terrace would be reduced in width in order to formalize the perpendicular parking on this blockfront. The reduction in sidewalk width to 5 feet is the effective clear width of the sidewalk under existing conditions, as police vehicles are using the sidewalk to partially accommodate the combat parking. While the proposed modifications would change the configuration of the front steps to these buildings, sufficient pedestrian accommodations would be maintained. See Figure 9-7 for an illustrative view of the proposed alignment in this location. As detailed in Chapter 8, Historic and Cultural Resources, the State Historic Preservation Office and New York City Landmarks Preservation Commission reviewed the plans for these modifications and expressed no concerns related to historic resources.

Figure 9-7 120th Police Precinct and Staten Island Family Courthouse Modifications, No-Action and With-Action Conditions

No-Action Condition 120th Police Precinct view from Richmond Terrace

With-Action Condition 120th Police Precinct view from Richmond Terrace

No-Action Condition 120th Police Precinct view from Wall Street

With-Action Condition 120th Police Precinct view from Wall Street

No-Action Condition SI Family Courthouse view from Richmond Terrace

With-Action Condition SI Family Courthouse view from Richmond Terrace

Further west, the proposed alignment would require construction of a ramp at the intersection of Nicholas Street and Richmond Terrace, which would descend to the North Shore Railroad ROW alignment adjacent to Bank Street. The proposed ramp would be approximately 2,100 feet long and would share the intersection with the existing access ramp to the former New York Wheel Garage ramp. The proposed changes would include some limited visual changes to the intersection, including the addition of another vehicular approach to the intersection and crossing a small portion of the North Shore Esplanade to accommodate the new approach. However, given that existing views to the water from this intersection already include the ramp infrastructure associated with the former New York Wheel Garage, the new ramp would not significantly alter the character of the study area in this location. See Figure 9-8 for an illustrative view of the proposed ramp in this location.

Figure 9-8 Nicholas Street Ramp, No-Action and With-Action Conditions

No-Action Condition Richmond Terrace and Nicholas Street

With-Action Condition Richmond Terrace and Nicholas Street

Station

The proposed terminal station in Section 1: St. George would repurpose the existing taxi stand on the bus deck at St. George Terminal for the eastern terminus of the North Shore BRT. As the proposed station would make use of existing infrastructure, no significant changes to urban design or visual resources are anticipated.

Section 2: New Brighton Waterfront

Alignment

The proposed alignment within the eastern portion of Section 2 follows the former ROW through the Atlantic Salt industrial facility from Jersey Street to

Clinton Avenue. As detailed in Chapter 3 Land Use, Zoning, and Public Policy, through a potential land exchange with Atlantic Salt, the proposed busway would be shifted closer to Richmond Terrace, and would run through an existing tunnel structure on the Atlantic Salt property that is below the grade of Richmond Terrace, before ascending slightly to meet the proposed New Brighton Station (detailed below). As described above in existing conditions, there are no significant waterfront views from Richmond Terrace in this area, but rather views are primarily of existing buildings, salt piles, and chain-link fencing associated with the Atlantic Salt property. Therefore, the placement of the proposed BRT busway along the north side Richmond Terrace under the With-Action Condition would not detract from the urban design character of this portion of Section 2, and in certain locations, would be below the grade of Richmond Terrace and hidden from view.

East of Bard Avenue, the proposed busway would primarily utilize city-owned right-of-way and would also pass-through existing New York City-owned parkland on the north side of Richmond Terrace adjacent to Snug Harbor as detailed in Chapter 6, Open Space. The proposed busway in this location would involve the construction of an approximately 2,770-foot elevated busway on piers and would require clearance of the parkland vegetation during construction. As previously noted, pedestrian access to the waterfront is currently prohibited as the existing steps alongside the overlook are barricaded off. Repairs to the overlook and stairs would not be included under the With-Action Condition. These repairs would be made independently by the property owner. However, once the stairs are brought to a state of good repair, access to the waterfront would be restored and the proposed busway would not impede this access.

Figures 9-9 through 9-11 provide illustrative views of the proposed busway from various viewpoints within Snug Harbor under the No-Action and With-Action Conditions. As shown, the proposed elevated busway would be visible from a number of viewpoints at the Snug Harbor campus as well as from a number of contributing resources within the overall Sailors' Snug Harbor S/NRHP Historic District, as detailed in Chapter 8, Historic and Cultural Resources. In the case of the views from Richmond Terrace, the proposed structure would block views to the New Jersey skyline across the Kill Van Kull, and from most vantage points, would either block or obstruct existing views of the water.

Figure 9-9 Snug Harbor View from Historic Buildings, No-Action and With-Action Conditions

No-Action Condition

With-Action Condition

Figure 9-10 Snug Harbor View from Front Lawn, No-Action and With-Action Conditions

No-Action Condition

With-Action Condition

Figure 9-11 Snug Harbor View from Richmond Terrace, No-Action and With-Action Conditions

No-Action Condition

With-Action Condition

Per *CEQR Technical Manual* guidelines, an urban design impact may be significant if it alters a built environment in a manner that would negatively affect pedestrians' experience of the area, if it obstructs important visual resources, and/or if it obstructs a view that is unique. In the case of the views from Snug Harbor, the Proposed Project may alter the context of the campus, for which views to the Kill Van Kull were important to the setting for former sailors housed at the institution (as detailed in Chapter 8, Historic and Cultural Resources). In light of these conditions, and the fact that the Proposed Project in this location, would obstruct a unique view and would diminish the quality of the pedestrian experience, the Proposed Project would have a significant adverse impact on the urban design characteristics and visual resources of the study area in Section 2, adjacent to Snug Harbor (see Chapter 22, Mitigation).

Moving further west, the proposed alignment would pass behind an existing restaurant and a gas station. Retaining walls would be constructed on the gas station property but would not significantly alter the existing visual conditions of the property.

Stations

Two stations are proposed within Section 2—New Brighton Station, on Richmond Terrace between Clinton Avenue and Tysen Street and Livingston Station, along Richmond Terrace between Davis and Bard Avenues. The New Brighton Station would feature eastbound and westbound side-loading platforms that would be approximately 140 feet in length, with an approximately 70-foot long canopy provided in order to cover boarding areas of two standard buses. Similarly, an approximately 35-foot shelter with seating would be centered along the canopy. The station would feature elevators, stairs and a pedestrian overpass. A sloped walkway would provide pedestrian access to the station from Richmond Terrace. The New Brighton Station would be oriented parallel to Richmond Terrace (The changes to the visual character of the intersection would include replacing existing trees along the waterfront with ramps and the station infrastructure described above. **Photo 9-17** in the Existing Conditions section above shows the existing view at the proposed site of the New Brighton Station. Existing views to the water in this location are obstructed by tree cover, and existing residential and commercial buildings are located on the south side of Richmond Terrace in this location. The proposed location is also immediately adjacent to the Atlantic Salt property. A new transportation facility would not be out of character with this adjacent industrial property, nor would it be incompatible with the nearby residential and commercial uses. Therefore, installation of the New Brighton Station is not anticipated to negatively impact the urban design character of the study area in this location.

The proposed Livingston Station would be constructed at grade along Richmond Terrace, at the site of an existing Con Ed parking and equipment staging area. The Livingston Station would also feature a 72-space park-and-ride facility along Richmond Terrace, with the station set back from the roadway. Elevators and stairs would be placed on the east end of both platforms to provide vertical circulation. These elements would be connected via a pedestrian overpass that would allow safe access across the busway to and from the westbound platform. Pedestrian connectivity would be provided via a sidewalk following the extension of Bard Avenue, and some Con Ed parking and a laydown area for their equipment would be maintained at the western edge of the property. As construction of the station would replace an existing parking facility, it is not expected to significantly alter the urban design character of the area.

Section 3: West Brighton Waterfront

Alignment

Within the eastern portion of Section 3, the proposed alignment would travel through Caddell Dry Dock. The existing ROW would be shifted from its existing

location through the Caddell property further inland along Richmond Terrace (see Figure 9-12 and Figure 9-13). The potential property exchange, detailed in Chapter 3 Land Use, Zoning, and Public Policy, would require elimination of some buildings on the Caddell property, but would not change the existing maritime industrial character of the property. A proposed retaining wall and fence would separate the existing sidewalk from the busway, which, as described above, would be like the existing conditions along the property line, and therefore would not alter the visual character of the study area.

Figure 9-12 Caddell Dry Dock, Broadway and Richmond Terrace

No-Action Condition

With-Action Condition

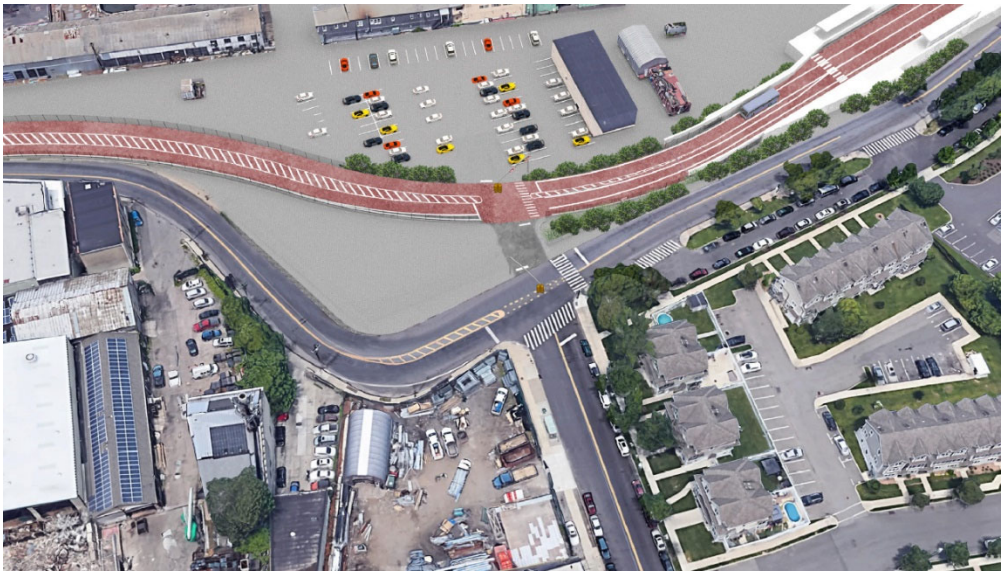


Figure 9-13 Caddell Dry Dock Entrance, Broadway & Richmond Terrace

No-Action Condition

With-Action Condition

Further west of the Caddell property, the proposed alignment would pass immediately to the south of Heritage Park, crossing the park access road from Richmond Terrace and displacing one of the two existing parking lots that serve the park (see Figure 9-14 and Figure 9-15). Pedestrian access to the park would be maintained through proposed traffic and crosswalk signals. As the proposed busway would be provided at-grade in place of a parking area, it is not

anticipated to significantly alter the visual character of the park, nor would it block significant views from the park.

Figure 9-14 Heritage Park – View from Richmond Terrace

No-Action Condition

With-Action Condition

Figure 9-15 Heritage Park & Alaska Street

No-Action Condition

With- Action Condition

At Alaska Street, a new curb cut would be installed on Richmond Terrace to allow local feeder bus routes and emergency service providers to enter the busway. As shown in Photo 9-33 above, this feeder roadway would replace an existing parking area, and therefore would not significantly alter the visual character of the intersection.

Station

The proposed West Brighton Station would be constructed at-grade and would be located along the north side of Richmond Terrace just west of North Burgher Avenue. The proposed station would displace two businesses in that location. Pedestrian overpasses would be provided to avoid passenger and BRT conflicts,

and a sloped walkway would connect pedestrians to and from Richmond Terrace. As the proposed station would replace two existing buildings in this location, it is not expected to have a significant effect on the urban design character of the area.

Section 4: Viaduct

Alignment

West of Alaska Street, the proposed alignment would ascend to the existing elevated viaduct structure detailed in the existing conditions section above. To accommodate the busway, some modifications to the existing viaduct would be required, including installation of a new concrete deck to support the busway pavement and installation of roadway safety railings. However, as the existing structure would be rehabilitated to accommodate the proposed BRT service, existing visual conditions would remain largely as they are described above.

Station

Within Section 4, the proposed Port Richmond Station would be elevated on the viaduct structure and would be located between Maple and Park Avenues, spanning Port Richmond Avenue. At this location, new station infrastructure would be visible from the surrounding street network, including side platforms and one elevator and stair tower per side of the station. A plaza entry would be located on adjacent lots to the northeast and southwest of the viaduct to connect pedestrians to and from the street level. Visual impacts would be limited to the area immediately surrounding the platform. Because the proposed station would make use of the existing viaduct structure, construction of the platform in this location is not expected to significantly alter the urban design character of the area.

Section 5: Open-Cut Section

Alignment

As described above, just east of the Bayonne Bridge, near John Street, the viaduct transitions to the ROW's open-cut section, situated roughly 20 to 30 feet below grade with varying widths. This portion of the busway would pass beneath the roadway bridges with sidewalks described in the existing conditions above.

Construction of the busway within the open-cut section of the alignment would require removal of some of the existing trees and vegetation that has grown in its path. However, as described above, in addition to an overgrowth of vegetation, the ROW has also been used as a dumping ground for garbage in various locations. Though some vegetation would be removed to accommodate construction, installation of the BRT would improve the visual condition of the ROW by cleaning up the exiting railroad bed and installing new upgraded infrastructure. In addition, as described above, public views to the ROW are limited to the roadway bridges with sidewalks and dead-end streets that border the proposed alignment, and therefore significant changes to visual conditions are not anticipated.

Furthermore, the Proposed Project would include the installation of a six-foot wide, approximately 760-foot long pedestrian walkway on the north side of the open cut between Union and DeHart Avenues and Van Pelt Avenue. This would improve pedestrian connectivity between the residential neighborhoods north of the BRT alignment in the vicinity of Erastina Place and Mariner's Harbor Station (described below).

Stations

Two stations are proposed within Section 5—the Elm Park/Morningstar Station and the Mariner's Harbor Station. The Elm Park/Morningstar Station would be located along Morningstar Road, within the open-cut approximately 22 feet below the elevation of the street level at Morningstar Road. Stairs, elevators and sloped walkways would connect pedestrians to and from the street levels at Eaton Place, Newark Avenue and Morningstar Road. Because the station would be situated within the open-cut, views of the station would be limited to those areas immediately adjacent to the proposed station, and therefore would not significantly alter existing visual conditions of the area.

Mariner's Harbor Station would be located within the open-cut between Van Name and Van Pelt Avenues, approximately 22 feet below the existing street levels. Passenger and pedestrian circulation would be provided from the existing Van Pelt and Van Name Avenue bridges, as well as from Heusden Street, which runs parallel to the ROW, where a pickup/drop-off area and new sidewalk would be provided. As with the Elm Park/Morningstar Station, because the station would be situated within the open-cut, views of the station would be limited to those areas immediately adjacent to the proposed station, and therefore would not significantly alter existing visual conditions of the area. Visual conditions along Heusden Street adjacent to the proposed station would be minimally altered, but pedestrian conditions in the area would be enhanced by the provision of a new sidewalk.

Section 6: Arlington Station

Alignment

The proposed alignment in Section 6 would leave the open-cut portion of the ROW and rise to grade in the vicinity of Roxbury Street. Within the eastern portion of Section 6, some alterations to Roxbury Street would be required to accommodate the proposed busway. Specifically, Roxbury Street would be shifted to the south, and the width would be reduced from 55 feet to 40 feet. The existing configuration of the roadway would remain like its existing condition. In addition, two new retaining walls would be constructed on either side of the busway in this location which would be topped with an 8-foot high fence to separate the busway from Roxbury Street and the existing freight rail tracks (see **Figure 9-16**). Therefore, the proposed visual conditions would not be dissimilar from the existing conditions in this location.

Figure 9-16 Roxbury Street

No-Action Condition

With-Action Condition

Further west, the proposed alignment would pass beneath the South Avenue bridge and would enter the proposed Arlington Station, described below. The existing pedestrian walkway connecting Roxbury Street to South Avenue would be relocated to maintain pedestrian access.

Station

The Arlington Station is proposed within Section 6 and would be located west of South Avenue at Brabant Street. This station would be constructed at-grade and would include a pick-up/drop-off area off South Avenue, with a 71-space parking lot. The proposed Arlington Station would also function as a layover area for BRT

crews, and therefore would incorporate a small crew facility behind the westbound platform.

As described above, the proposed station would be situated on portions of three lots that currently contain undeveloped land, a surface lot associated with a trucking facility, and a portion of Con Ed property that houses a substation facility. Therefore, though visual conditions in this area would be altered as a result of the Proposed Project, no significant views would be obstructed, and the proposed station would fit the existing character of the study area, which currently includes other transportation/utility uses.

Conclusion

The Proposed Project wherever possible makes use of the existing North Shore Railroad ROW, and therefore is adapted to the various physical conditions and settings in different sections of the proposed alignment, including at-grade sections, the elevated viaduct, and the below grade open-cut sections. As a result, installation of the proposed busway and various infrastructure improvements necessary to facilitate the BRT service fit within the existing physical context of the ROW. With the use of the existing viaduct structure and open-cut portions of the ROW, changes to physical settings are limited to areas immediately surrounding the proposed alignment and station areas, and in many cases, would not be visible to pedestrians. Within the street-running portions along Richmond Terrace, changes to the physical environment would be mostly limited to reconfiguration of the roadways, and therefore is not anticipated to significantly alter urban design characteristics. Therefore, no significant adverse impacts to urban design and visual resources are anticipated in Sections 1, 3, 4, 5, and 6.

In Section 2, the Proposed Project would result in a significant adverse impact to urban design and visual resources within the Snug Harbor campus, as the historic context of the campus would be altered. Potential mitigation measures are detailed in Chapter 23, Mitigation.

10 Natural Resources

The *CEQR Technical Manual* defines a natural resource as (1) the City's biodiversity (plants, wildlife, and other organisms); (2) any aquatic or terrestrial areas capable of providing suitable habitat to sustain the life processes of plants, wildlife, and other organisms; and (3) any areas capable of functioning in support of the ecological systems that maintain the City's environmental stability. Under CEQR, a natural resources assessment considers species in the context of the surrounding environment, habitat, or ecosystem and examines a project's potential to impact those resources.

Resources such as ground water, soils, and geologic features; numerous types of natural and human-created aquatic and terrestrial habitats (including wetlands, dunes, beaches, grasslands, woodlands, landscaped areas, gardens, parks, and built structures); and any areas used by wildlife may be considered, as appropriate, in a natural resources analysis. Although any aspect of the City's biodiversity may be considered in a CEQR evaluation, those species classified as sensitive, vulnerable, rare, of special concern, threatened, endangered, or otherwise worthy of protection are to be given individual consideration within the context of New York City's environment.

This chapter provides an overview of the regulations that pertain to natural resources in the Proposed Project study area, the existing conditions for the resource categories identified in the *CEQR Technical Manual*, and the anticipated impacts of the Proposed Project under With-Action and No-Action conditions. More detailed information is contained in **Appendix K, Natural Resources Documentation.**

Regulatory Background

Natural resources in the study area are regulated at the federal, state, and local levels. The regulations applicable to the Proposed Project are noted below.

Federal Regulations

Section 404 of the Federal Clean Water Act (33 USC 1344)

Section 404 of the Federal Clean Water Act (CWA) is jointly administered by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE). It prohibits the discharge of dredged or fill material into the waters of the United States (including wetlands) without a permit from the USACE.

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403)

Section 10 of the Rivers and Harbors Act requires a permit for construction of structures on or affecting navigable waters of the United States. For the permit to be issued, the project must not obstruct or alter navigable waters, result in a significant adverse effect on the aquatic environment, or result in violations of water quality criteria.

Section 401 of the Clean Water Act (33 USC 1341)

Section 401 of the CWA requires a Water Quality Certificate to be issued for all discharge activities within the waters of the United States including wetlands. In New York State, this certificate is issued by the New York State Department of Environmental Conservation (NYSDEC). This certification requires evidence that the project would not cause a violation of water quality standards.

Section 402 of the Clean Water Act National Pollutant Discharge Elimination System (NPDES) Program (33 USC 1342)

Section 402 requires a permit for any discharge into surface waters of pollutants associated with industrial activities or municipal separate storm sewer systems. The State of New York is authorized to administer the NPDES program under the State Pollutant Discharge Elimination System (SPDES), described below.

Coastal Zone Management Act of 1972 (16 USC 1451 to 1465)

The Coastal Zone Management Act encourages coastal states to manage development within designated coastal areas to reduce conflicts between development and protection of resources. Federal permits issued in New York State must be accompanied by a Coastal Zone Consistency Determination that evaluates consistency with New York State's federally approved coastal zone management program.

Executive Order 11988 Floodplain Management

Executive Order 11988 requires that agencies provide leadership and take action to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains.

Endangered Species Act of 1973 (16 USC 1531 et seq.)

The Endangered Species Act (ESA) is intended to conserve threatened and endangered plants and animals, and wildlife habitat. It is administered by the National Marine Fisheries Service (NMFS), which oversees marine species, and the U.S. Fish and Wildlife Service (USFWS), which is responsible for freshwater fish and all other species. The ESA prohibits any federal action that causes a "taking"[1] of any listed species of endangered fish or wildlife.

Migratory Bird Treaty Act of 1918 (16 USC 703-712)

The Migratory Bird Treaty Act (MBTA) makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird or their parts, nests, eggs, or young, except under a valid Federal permit. Birds protected under the MBTA are listed in 50 CFR 10.13. The USFWS is the lead agency in enforcing the MBTA rules.

New York State Regulations

Floodplain Management Criteria for State Projects – Article 36, New York State ECL (6 NYCRR Part 502)

This regulation requires state agencies to ensure that state-financed projects are designed to minimize flood hazards and losses. For nonresidential structures, the lowest floor must be elevated or flood-proofed to not less than one foot above the base flood level, and the cumulative effect of the proposed project and existing developments may not cause material flood damage to the existing developments.

Waterfront Revitalization of Coastal Areas and Inland Waterways Act – N.Y. Executive Law Article 42 (6 NYCRR Part 600 et. seq.)

Under this Act, the New York State Department of State is responsible for administering the Coastal Management Program. The Act also authorizes the state to encourage local governments to adopt Waterfront Revitalization Programs that incorporate the state's policies. New York City has a Waterfront Revitalization Program that is administered by the Department of City Planning.

Protection of Waters – Article 15, Title 5, New York State Environmental Conservation Law (ECL) (6 NYCRR Part 608)

This permit program, administered by the NYSDEC, regulates disturbance of stream beds or banks; construction or repair of dams and other impoundment structures; construction or expansion of docking and mooring facilities; excavation or placement of fill in navigable waters and their adjacent and contiguous wetlands; and Water Quality Certification for placing fill or other

[1] A taking is defined under Section 3(18) as "to harass, harm, pursue, hunt, shoot, wound, trap, kill, capture, or collect, or to attempt to engage in any such conduct."

activities that result in a discharge to waters of the United States in accordance with Section 401 of the Clean Water Act.

Tidal Wetlands Act – Article 25, New York State ECL (6 NYCRR Part 661)

NYSDEC administers the tidal wetlands regulatory program and the mapping of the state's tidal wetlands. A permit is required for most activities that would alter wetlands or the adjacent areas (up to 300 feet inland from wetland boundary or up to 150 feet inland within New York City).

Freshwater Wetlands Act – Article 24, New York State ECL (6 NYCRR Parts 662-665)

This Act requires a permit for regulated activities in freshwater wetlands that are 12.4 acres or greater in size and contain wetland vegetation characteristic of freshwater wetlands. Around each mapped wetland is a protected 100-foot buffer. In accordance with the Act, the NYSDEC ranks wetlands in one of four classes that range from Class I through IV.

State Pollutant Discharge Elimination System (SPDES) Program, Water Pollution Control Act – Article 17, New York State ECL (6 NYCRR Parts 750-757)

The SPDES Program is designed to regulate the discharge of pollutants into New York waters. SPDES permits are required for discharges of wastewater into surface or ground waters of the State; construction or operation of a disposal system (sewage treatment plant); discharge of stormwater; and construction activities that disturb one acre or more.

State Endangered Species Act – Section 11-0535, New York State ECL (6 NYCRR Part 182)

Under the State Environmental Quality Review Act (SEQRA) and other permitting authorities, the NYSDEC assesses the potential impacts projects may pose to endangered and threatened wildlife species. When it is determined that impacts to listed species cannot be avoided, a permit authorizing the take of a threatened or endangered species may be required, in accordance with 6 NYCRR Part 182. The NYSDEC Natural Heritage Program maintains a database of documented occurrences of protected species in New York.

New York City Regulations

New York City Administrative Code, Title 18 (Parks), Chapter 1, Section 18-129

Under the New York City Administrative Code, it is unlawful to remove or damage park or street trees (or other vegetation on public property) under the jurisdiction of the commissioner. Removal or work on such vegetation requires a Tree Work Permit with express consent from the New York City Parks Forestry Division.

Study Area and Methodology

To determine the existing conditions in the study area, various federal, state, and local GIS sources, data, and records were reviewed. Specific sources include:

- US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping;
- New York State Department of Environmental Conservation (NYSDEC) freshwater and tidal wetlands mapping;
- US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) mapping;
- Federal Emergency Management Agency (FEMA) Preliminary Digital Flood Insurance Rate Map (DFIRM) flood mapping;
- USFWS Information for Planning and Consultation (IPaC) database;
- NYSDEC New York Natural Explorer; and
- NYSDEC Natural Heritage Program (NHP) database.

Biological field investigations for the entire Proposed Project study area were performed on April 11, 12, and 15 and May 24, 2019. The purpose of these investigations was to delineate freshwater wetlands as well as examine existing conditions and identify natural resources occurring within and in proximity to the study area. The findings of the investigation, in conjunction with the source data reviews, are described in the Existing Conditions section below.

Quantitative impacts for the various resource types were evaluated by overlaying project design drawings on GIS mapping of the resources and measuring the area of impact. Impacts were also assessed qualitatively as appropriate. The 1987 *Corps of Engineers Wetland Delineation Manual* was used to determine the presence and extent of tidal wetlands, freshwater wetlands, and adjacent areas in the North Shore BRT study area. The following secondary resources were reviewed prior to the delineation:

- USFWS NWI mapping;
- NYSDEC Freshwater Wetland mapping;
- NYSDEC Tidal Wetland mapping, State Soil Geographic Database (STATSGO) soils mapping; and
- Aerial mapping.

The potential presence/absence of federally listed endangered, threatened, and candidate species, and critical habitat, as well as State-listed endangered threatened, and special concern species, was based on review of the following:

- USFWS Information for Planning and Consultation (IPaC) Trust Resource Report;
- New York State Natural Heritage Program (NHP) records;
- NYSDEC New York Nature Explorer and Environmental Resource Mapper; and
- New York State Breeding Bird Atlas.

Impact significance was evaluated based on guidance provided in Chapter 11 of the *CEQR Technical Manual,* which states: "In general, if a resource has been found to serve one or more natural or recreational functions, and a project would directly or indirectly diminish its size or its capacity to function, the impact is considered to be significant." The analysis also considered the description of specific significant impacts provided in Section 400 of Chapter 11 to determine their potential relevance to the Proposed Project.

Existing Conditions

Water Resources

Figure 10-1 through Figure 10-7 show the location of water resources in relation to the proposed alignment and 400-foot study area.

Surface Waters

NYSDEC and NWI mapping identify four permanent surface water features within and adjacent to the North Shore BRT study area:

- Approximately 2,800 feet of the study area, from approximately Bard Avenue to Clinton Avenue, lies within or along the shoreline of the tidal Kill Van Kull, which is mapped by USFWS NWI as an estuarine/marine waterway. Within the study area, the shoreline is mostly bulkhead or stone revetment at an elevation of approximately 10 feet above mean sea level (AMSL). Some portions of the study area shoreline, particularly in the area of Snug Harbor, are exposed and lack functioning bulkheads or revetments, although remnants of past structures may be observed. The substrate in these locations is mostly gravel and transitions immediately into upland vegetation as the waterfront rapidly slopes upward to approximately 10-20 feet AMSL.
- An approximately 45-foot-wide (bank to bank) unnamed tidal tributary of the Kill Van Kull (known locally as Boone Creek) crosses beneath the former North Shore Railroad ROW immediately west of the Port Richmond Wastewater Resource Recovery Facility. The banks of this stream within the study area are bulkheaded and/or lined with anthropogenic stone revetment. This stream is mapped by USFWS NWI as a tidal perennial waterway.

Figure 10-1 Water Resources: St. George

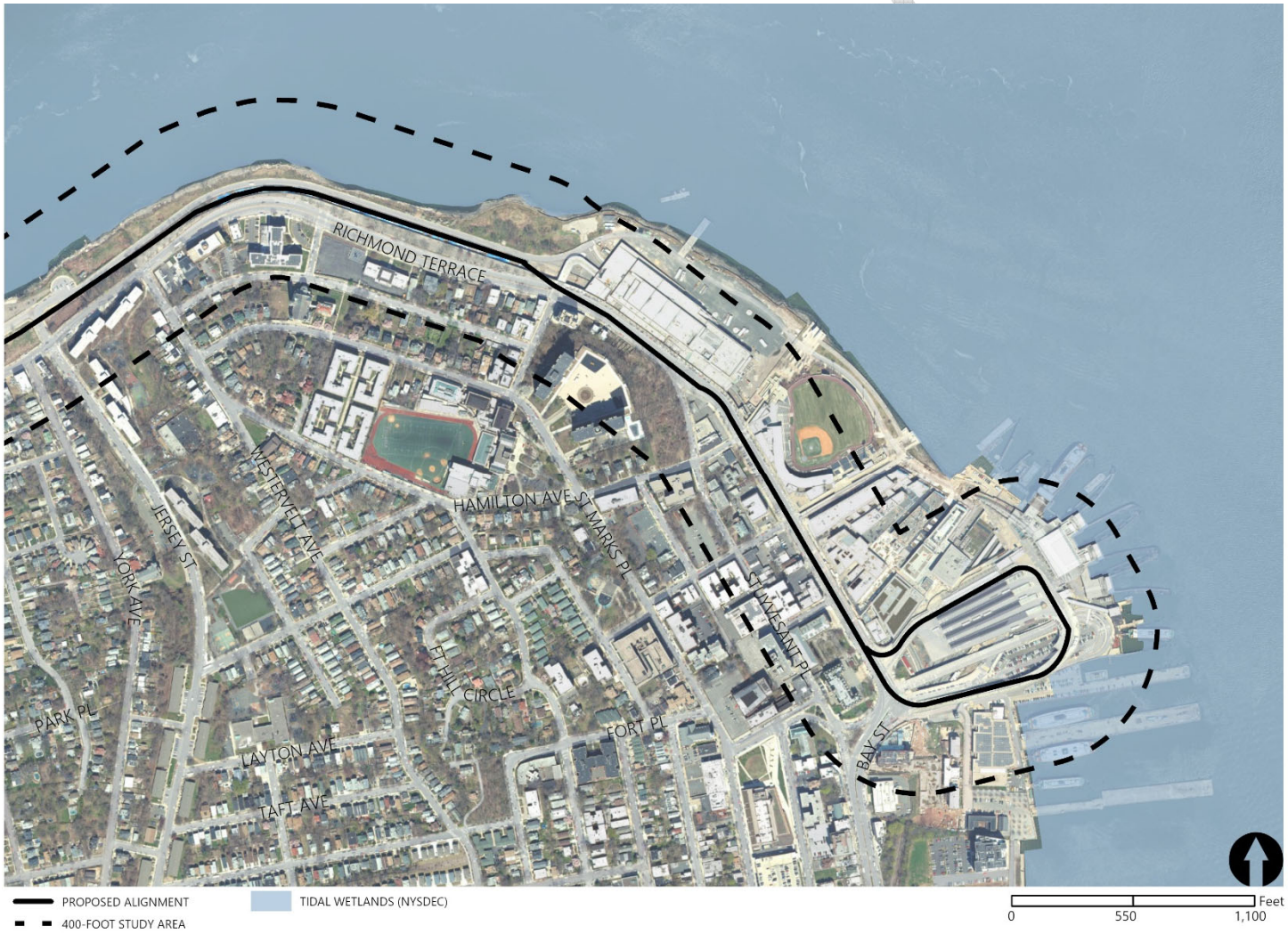


Figure 10-2 Water Resources: New Brighton Waterfront (Snug Harbor Area)

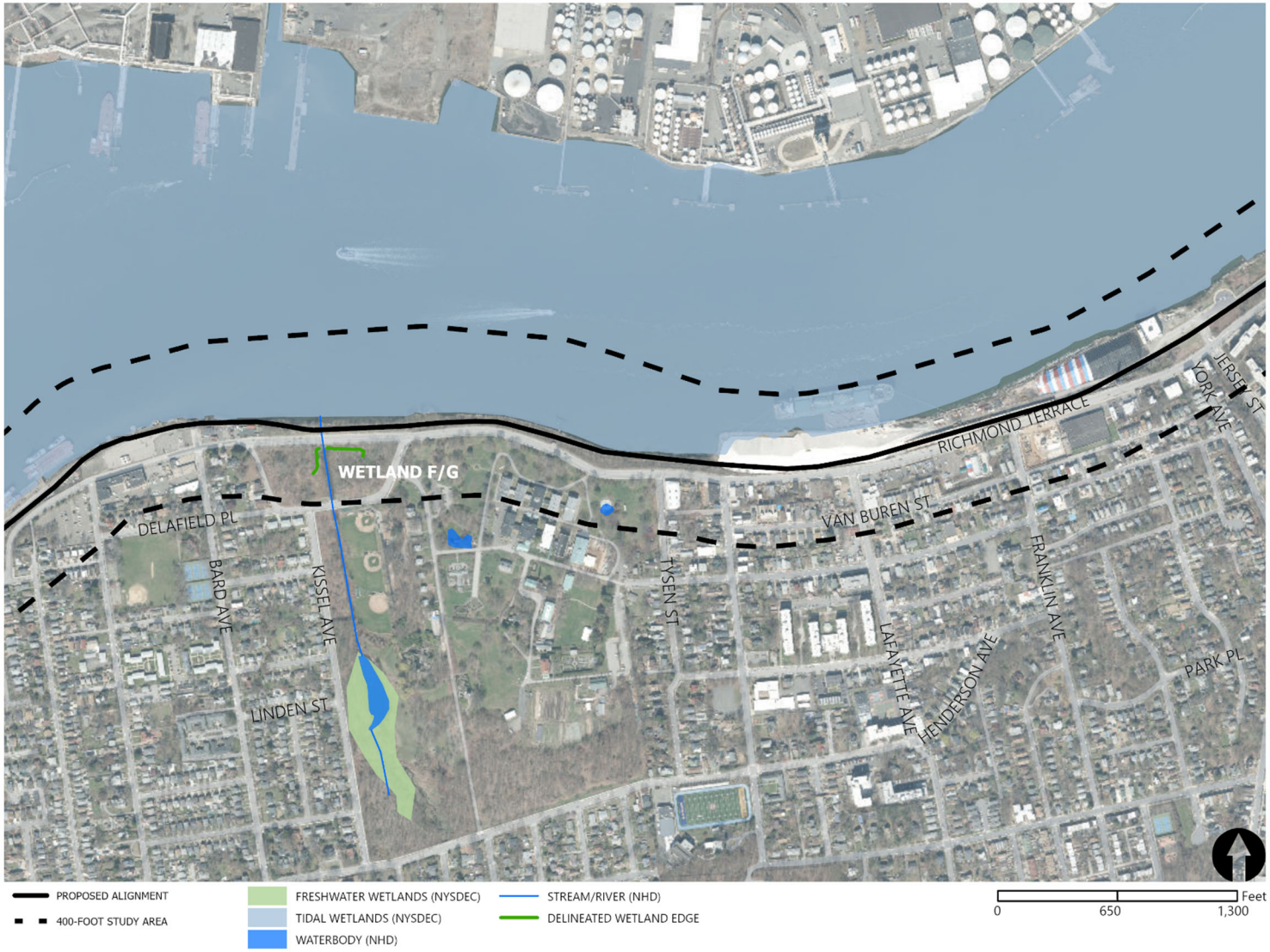


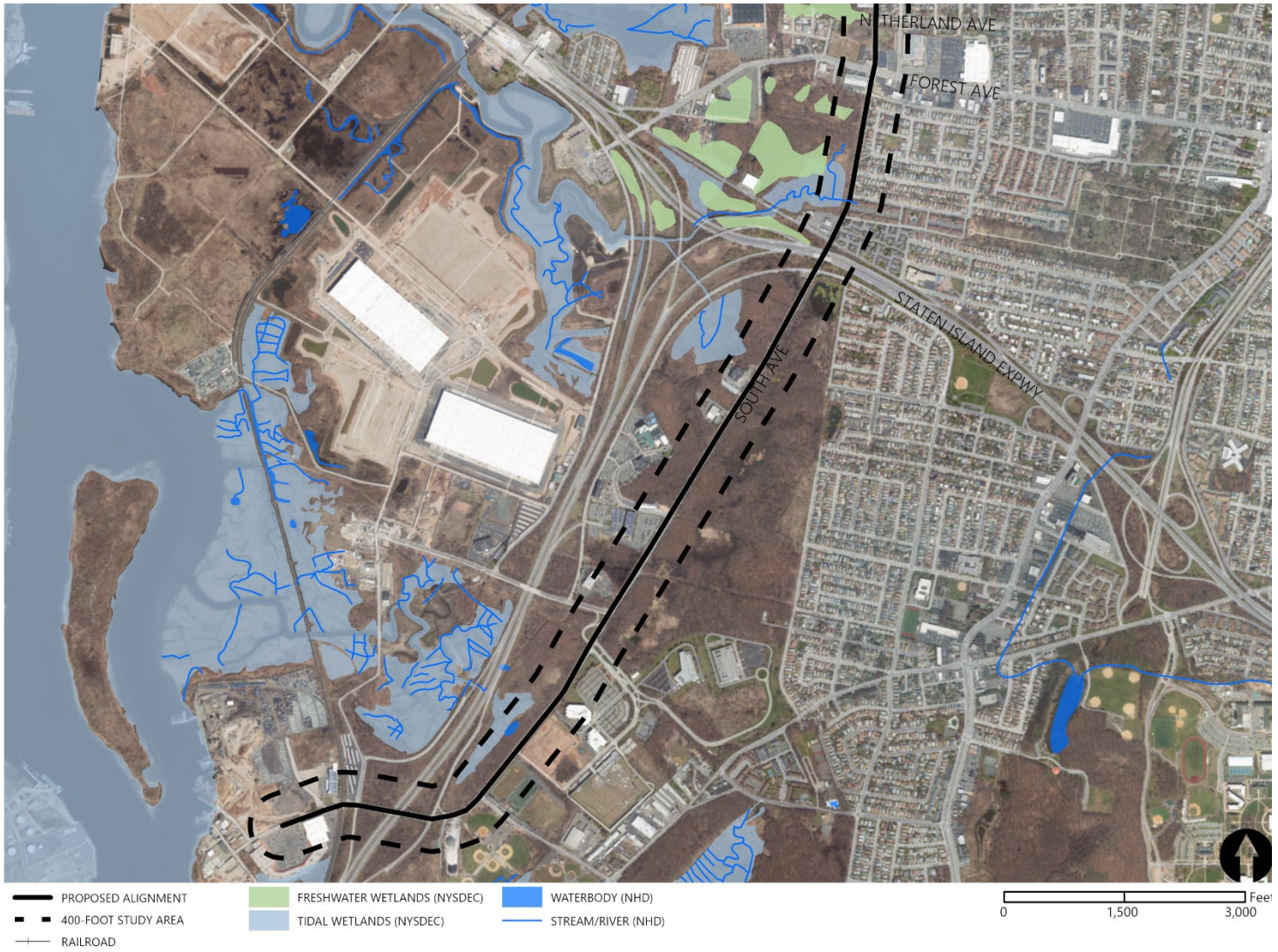
Figure 10-3 Water Resources: West Brighton Waterfront

Figure 10-4 Water Resources: Viaduct

Figure 10-5 Water Resources: Open-Cut Section

Figure 10-6 Water Resources: Arlington Station

Figure 10-7 Water Resources: South Avenue



- An unnamed, approximately 12-foot wide tidal tributary of the Kill Van Kull is piped under Richmond Terrace and exits from a culvert on the Snug Harbor property south of Richmond Terrace. The tributary consists of mud sediment and anthropogenic debris and stone; water depths generally range from several inches to three feet depending on tidal conditions. This stream is mapped by USFWS NWI as a tidal perennial waterway.
- A third unnamed tributary is mapped by NYSDEC as crossing the study area from Corporal Thompson Park (located west of Broadway and south of Richmond Terrace). However, this stream was not located during the field delineation and, based on aerial mapping, it appears to have been completely filled or culverted within the study area at some point in the past.

Water Quality

None of the surface waters in the study area are designated by NYSDEC as a Protected Water under state water quality regulations.[2] The Kill Van Kull is classified as SD, which allows for fishing and is considered suitable for fish survival. Boone Creek and the tributary adjacent to Snug Harbor are classified as SD/B; Class B waters allow for activities such as swimming, boating, and fishing and are considered suitable for fish propagation and survival.

The study area lies within the Arthur Kill-Upper Bay watershed. The Proposed Project is within two sub-watersheds: Morses Creek-Arthur Kill and Upper Bay-The Narrows. According to a water quality report published by NYSDEC for all segments of the Arthur Kill-Upper Bay watershed (last revised December 2016), water quality in the Kill Van Kull is listed as 'Impaired' due to floatable debris, PCBs, oil, grease, and low dissolved oxygen, among other pollutants. The report lists urban/storm runoff, combined sewer overflows (CSOs),[3] and toxic/contaminated sediment as known sources of pollution. The NYS Department of Health (NYSDOH) has issued an advisory recommending that several types of fish and shellfish in the Newark Bay complex, including the Kill Van Kull, not be eaten or be consumed only in limited quantities due to the potential for contamination from PCBs, dioxin and cadmium.[4]

Based on mapping provided by the NYSDEC, 22 CSO discharge points are located along the North Shore. Of these, 13 are within or immediately adjacent to the study area, between the Port Richmond Wastewater Resource Recovery Facility

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[2] 6 NYCRR Parts 700-706.

[3] Much of New York City is served by a combined sewer system in which stormwater and wastewater are carried through a single pipe. When stormwater volumes in the system are high, a mix of stormwater and wastewater known as combined sewer overflow (CSO) is discharged into nearby waterways. This discharge results in localized and periodic high levels of coliform bacteria, floatables, and reduced dissolved oxygen levels.

[4] New York State Department of Health. New York City Region Fish Advisories. Available at https://www.health.ny.gov/environmental/outdoors/fish/health_advisories/regional/new_york_city.htm#lower. Accessed May 20, 2023.

and the St. George Ferry Terminal. The number of CSO discharges permitted per outfall is regulated under a 2014 agreement between NYSDEC and the New York City Department of Environmental Protection (NYCDEP). The 2019-2021 NYCDEP Harbor Survey Report found that water quality in the study area generally meets applicable criteria except during CSO events, in which low oxygen levels and high pathogen levels were observed.[5]

In addition to mapped CSO locations, other potential sources of water pollution include runoff from urban and industrial areas containing high densities of impervious surface. Common pollution sources may include petroleum products, road salts, and contamination from historical industrial areas and landfills. In addition, a leaking sewer was observed within the open-cut section of the former North Shore Railroad ROW near Lake Avenue.

Floodplains

According to the Preliminary Draft Flood Insurance Rate Map (DFIRM) for Richmond County released by the Federal Emergency Management Administration (FEMA) in January 2015, portions of the North Shore BRT study area are within the 100-year floodplain of the Kill Van Kull, particularly the areas east of the Port Richmond Wastewater Resource Recovery Facility where the study area runs along the edge of the Kill Van Kull. Coastal High Hazard areas (Zone V), defined as areas of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave action from storms or seismic sources (FEMA 2019), are identified in the northeastern portion of the study area, from approximately Franklin Avenue to south of the St. George Ferry Terminal (approx. 5,800 linear feet).

Groundwater Resources

The North Shore BRT study area is underlain by three major aquifers, including the Raritan formation, the Lloyd aquifer, and the Magothy aquifer. However, groundwater usage is generally limited to non-potable business and industrial applications, as much of the public water supply for Staten Island is provided by the surface reservoir system in upstate New York. No EPA-designated sole source aquifers or New York State-designated wellhead protection areas occur within the study area.

Based on the extensive historic and current automotive and industrial uses in the study area, the potential for groundwater contamination is high. **Chapter 11, Hazardous Materials**, contains more information on known and potential groundwater contamination within the study area.

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[5] New York City Department of Environmental Protection.. 2019-2021 Harbor Survey Report. September 16, 2022 Available at https://storymaps.arcgis.com/stories/79dd5df97d794d27b6fb9d76e1937bf1. Accessed May 9, 2023.

Wetland Resources

Freshwater Wetlands

Mapping by the USFWS and NYSDEC identifies freshwater wetlands within the study area within and adjacent to the proposed Arlington station site (Wetlands A through C) and in the vicinity of Heritage Park along a mapped, unnamed tidal tributary to the Kill Van Kull (Wetland D/E). The 2019 field investigation verified the presence of four freshwater wetlands and a vegetated tidal estuarine/freshwater wetland that generally concurred with the USFWS and NYSDEC mapping. These wetlands are described briefly below. Maps showing their locations, along with more information on wetland characteristics and classification, are provided in the Wetland Delineation Report contained in Appendix K.

Wetland A/B

Wetland A is an approximately 1.37-acre non-tidal freshwater forested wetland located in an undeveloped lot immediately north of Cable Way, west of South Avenue. Its location corresponds with a NYSDEC-mapped wetland and an NWI-mapped wetland. A culvert in the southwestern corner of the wetland conveys drainage to offsite wetlands across the street to the south. The wetland contained up to 18 inches of standing water at the time of the delineation.

Wetland B is an approximately 0.12-acre forested wetland depression. It is located immediately adjacent to Wetland A, but is separated by a narrow upland berm. Its location is not directly mapped by the NYSDEC or NWI as wetland; however, it is in very close proximity to a NYSDEC mapped wetland. It appears to be contained entirely onsite; no intakes or outfalls were observed. Soils were saturated and minor amounts of ponded water (less than one inch) were observed in this wetland.

The canopies within both wetlands are dominated by pin oak (*Quercus palustris*), red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), and black gum (*Nyssa sylvatica*). Northern spicebush (*Lindera benzoin*), coastal sweet pepperbush (*Clethra alnifolia*), soft rush (*Juncus effusus*), and a variety of sedges (*Carex* spp.) dominate the understory within Wetland A. Wetland B's understory is sparse; however, it contains some woolgrass (*Scirpus cyperinus*), sedges, and roundleaf catbrier (*Smilax rotundifolia*).

The vegetation composition and structure within Wetlands A and B, as well as their location as depressions within an overall upland forest community, are generally consistent with the red maple-sweetgum swamp ecological community as defined by *Ecological Communities of New York State* (Edinger et al. 2014). This community typically contains a forest canopy co-dominated by red maple and sweetgum, with other tree species such as black gum and pin oak. Coastal sweet pepperbush and northern spicebush are also described as common occurrences within the shrub layer. Wetland B also contains roundleaf catbrier, which is a typical vine species within this ecological community.

On April 11 and 12, 2019, Wetland A was observed as supporting a rookery of eight to ten yellow-crowned night heron (Nyctanassa violacea) nests.

Wetland C

Wetland C, an approximately 0.55-acre forested/scrub-shrub/emergent wetland, is in a forested lot west of South Avenue and south of the North Shore ROW. Its location corresponds to a NYSDEC-mapped wetland and is immediately adjacent to a NWI-mapped wetland complex. Portions of the wetland contained several inches of standing water at the time of the delineation. A portion of the wetland occurs as an emergent ditch, which appears to convey drainage to an expansive wetland complex west of the study area. The forested portions of Wetland C are dominated by red maple and some pin oak; wetter, shrub-dominant portions of the wetland contain black willow (*Salix nigra*), silky dogwood (*Cornus amomum*), and buttonbush (*Cephalanthus occidentalis*). Understory species include northern spicebush, common reed (*Phragmites australis*), Japanese honeysuckle (*Lonicera japonica*), skunk cabbage (*Symplocarpus foetidus*), woolgrass, and fowl mannagrass (*Glyceria striata*).

Although this wetland shows signs of past disturbance (e.g., ditching), it is relatively consistent with the red maple-swamp white oak swamp ecological community as defined by Edinger et al. 2014. This community type contains canopies co-dominated by red maple and swamp white oak, although pin oak is known to be an associate canopy species and may also replace swamp white oak as a codominant. This community is defined as containing shrubs such as buttonbush and northern spicebush; both species were observed within Wetland C.

Wetland D/E

Wetland D/E is an approximately 0.06-acre degraded emergent wetland located in a disturbed, litter-strewn lot near Heritage Park and the Port Richmond Wastewater Resource Recovery Facility (WPCP). Although there is an outlet pipe near the WPCP, it appears that Wetland D/E is isolated and separated from this pipe by uplands. Vegetation within the wetland includes some sedges such as tussock sedge (*Carex stricta*), as well as seaside goldenrod (*Solidago sempervirens*), greater water dock (*Rumex britannica*), and reed canary grass (*Phalaris arundinacea*). Small numbers of silver maple (*Acer saccharinum*) and multiflora rose (*Rosa multiflora*) were also observed. Most of the surrounding uplands consist of accumulated historic trash fill.

Tidal Wetlands

Within the study area, there is one delineated vegetated tidal wetland meeting the 1987 *USACE Manual* criteria and additional non-vegetated littoral areas (intertidal areas and subtidal areas to six feet below mean low water) considered wetlands under NYSDEC regulations (NYCRR Parts 660-661).

Wetland F/G

Wetland F/G is a 0.70-acre tidal scrub-shrub/emergent wetland fringe and forested wetland along the banks of a tidal tributary of the Kill Van Kull. Its location corresponds to an NWI-mapped forested wetland. This feature appears to contain small relict components of intertidal marsh vegetation, including saltmarsh cordgrass (*Spartina alterniflora*), hightide bush (*Iva frutescens*), and groundsel bush (*Baccharis halimifolia*), but is mostly dominated by common reed, indicating reduced tidal influence due to human disturbance. This component of the wetland is consistent with the estuarine common reed marsh ecological community defined by Edinger et al. 2014, which describes an estuarine cultural habitat dominated by common reed with remnant native plants. The outer edges of this marsh wetland transition into a forested wetland with a canopy of common hackberry (*Celtis occidentalis*), pin oak, and ash; this component of the wetland is generally consistent with the floodplain forest ecological community defined by Edinger et al., 2014. This habitat type, which occurs on mineral soils on low terraces of river floodplains, is highly variable, and may contain tree species such as silver maple, ashes, pin oaks, cottonwood, elms, hickories, hackberry and sugar maple.

Wetland F/G drains via culvert beneath Richmond Terrace to the Kill Van Kull, located immediately to the north.

Additional Tidal (Non-marsh) Wetlands

Additional tidal (non-marsh) wetlands, as defined and regulated by NYSDEC, exist within the study area along approximately 2,500 linear feet of the Kill Van Kull shoreline and tidal tributaries. These non-marsh wetlands include the littoral zone (all land under tidal waters to a depth of six feet at mean low water) and coastal shoals, bars, and flats (unvegetated wetland zones covered by water at high tide and exposed or nearly exposed at low tide). These features, located within the Snug Harbor area, include narrow shorelines made up of silt, gravel, coarse sand, riprap, cobble, and other anthropogenic material, including the remnants of industrial infrastructure. These areas are consistent with the estuarine riprap/artificial shore community as defined by Edinger et al., 2014. This cultural habitat is described as a constructed estuarine shore made up of broken rocks, wooden bulkheads, or concrete, with low vegetative cover and species diversity.

Upland Resources

The Proposed Project study area is a highly urbanized environment, although patches of vacant or maintained vegetated land exist. Many upland vegetation communities within study area can be categorized as terrestrial cultural communities, as defined by Edinger et al. 2014. Much of the vacant land within the study area shows signs of historic disturbance. Wildlife habitat is limited and

biodiversity is low, with vegetation communities dominated by opportunistic and/or exotic plant species indicative of disturbed conditions.[6]

Land cover in the area surrounding the proposed bus terminal at Arlington is primarily wetland and upland forest; a small, semi-maintained urban vacant lot containing various grasses and forbs is located adjacent to the landfill on the northernmost end of the terminal site. The uplands adjacent to Wetlands A, B, and C contain remnant dry oak-dominant Coastal Plain forest consisting of a canopy of red oak (*Quercus rubra*), black gum (*Nyssa sylvatica*), and sassafras (*Sassafras albidum*). The understory is sparse but contains some black cherry saplings and a few trout lilies (*Erythronium americanum*). This native community was not observed elsewhere in the study area.

Forest communities typical of urban vacant lots and successional southern hardwood ecological communities (Edinger et al. 2014) occur within the North Shore BRT study area. These communities grow on or within the old railway infrastructure or on debris piles from historic dumping. Heritage Park, a passive recreational City-owned open space located along the Kill Van Kull, contains areas of mowed lawn and semi-maintained early successional areas.

Coastal upland habitats are limited to shorelines along the Kill Van Kull, specifically at the northern limits of Heritage Park and within Snug Harbor, where narrow sand beaches littered with rip-rap and other anthropogenic debris occur. Sporadic landscaping and foundation plantings, as well as shade trees, are in the developed areas.

Semi-maintained early successional areas, such as the former A&A landfill area in Arlington and in portions of Heritage Park, consist of a mix of grasses, including little bluestem (*Schizachyrium scoparium*) and panic grass (*Panicum virgatum*). Other species that periodically occur in these communities include juvenile Eastern cottonwood (*Populus deltoides*) and dogbane (*Apocynum cannabinum*).

Areas that are less maintained, including woodlots and field edges and disturbed areas within the North Shore BRT study area, often contain a dense mix of exotic and native saplings, shrubs, vines, and herbaceous species. Common saplings and trees in these mid- and late-successional vegetation communities include Norway maple (*Acer platanoides*), Eastern cottonwood, white mulberry (*Morus alba*), empress tree (*Paulownia tomentosa*), tree-of-heaven (*Ailanthus altissima*), boxelder (*Acer negundo*), black locust (*Robinia pseudoacacia*), and black cherry. Shrub and woody vine species include multiflora rose (*Rosa multiflora*), autumn olive (*Elaeagnus umbellata*), poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), oldfield cinquefoil (*Potentilla simplex*), wineberry (*Rubus phoenicolasius*), blackberries (*Rubus* spp.), fox grape (*Vitis labrusca*), and Virginia creeper (*Parthenocissus quinquefolia*). Common herbaceous species include Japanese knotweed (*Reynoutria japonica*), mugwort (*Artemisia vulgaris*),

[6] Opportunistic plant species are those adapted to colonizing disturbed areas; "exotic" refers to non-native species.

common reed (*Phragmites australis*), white snakeroot (*Ageratina altissima*), goldenrods (*Solidago* spp.), barnyard grass (*Echinochloa crus-galli*), bittercress (*Cardamine* sp.), and mullein (*Verbascum thapsus*).

Heavily maintained uplands, such as the mowed areas in Heritage Park and within lawn infields and edges, contain various cool-season grasses (*Poa* spp., *Festuca* spp.) and crabgrass (*Digitaria* spp.) interspersed with forbs such as plantain (*Plantago* spp.), white clover (*Trifolium repens*), and red clover (*Trifolium pratense*).

Built Resources

Although not specifically regulated under state and city environmental laws, certain built resources can provide habitat to plant and wildlife species, including those that are State or Federally listed. These can include rooftops, chimneys, the interiors of abandoned buildings, and bridges, all of which have been known to support nesting birds, bats, and other species. Peregrine falcon (*Falco peregrinus*), for example, is known to nest in urban environments, utilizing buildings, towers, and bridges.

The study area is heavily developed and contains built resources with the potential to support State and/or Federally listed species. The New York Natural Heritage Program identifies two bird species of concern (peregrine falcon and barn owl) that are documented as utilizing the Bayonne Bridge (under which the former North Shore Railroad ROW crosses) for breeding (see **Appendix A, Agency Correspondence**). These species are further addressed in the following section.

Significant, Sensitive, or Designated Resources

Federally and State Listed Species

A total of seven State or Federally listed rare, threatened, or endangered terrestrial wildlife species were identified as potentially occurring within the project area based on state and federal agency sources (**Table 10-1**).

Table 10-1 Rare, Threatened, and Endangered Species Identified as Potentially Occurring within the North Shore BRT Study Area

Common Name	Scientific Name	Status	Habitat	Source
Northern long-eared bat	*Myotis septentrionalis*	Federally listed endangered* State listed endangered*	Mature trees; forest communities; man-made structures (bridges, culverts)	USFWS IPaC
Piping plover	*Charadrius melodus*	Federally listed threatened/ State listed endangered	Sandy beaches (nesting); Shores and mudflats (foraging)	USFWS IpaC
Peregrine falcon	*Falco peregrinus*	State listed endangered	Cliffs, built structures (nesting); coastal shores, fields, urban areas (foraging)	NHP
Barn owl	*Tyto alba*	Unlisted, but imperiled in NY	Built structures, forest edges (nesting); open fields, marshes (foraging)	NHP
Bald eagle	*Haliaeetus leucocephalus*	State listed threatened	Forest edges or built structures near water (nesting); open water, fields (foraging)	NHP
Yellow-crowned night heron	*Nyctanassa violacea*	State-protected bird	Tidal marshes, swamps, open water edges (nesting and foraging)	Field sighting
Eastern mud turtle	*Kinosternon subrubrum*	State listed endangered	Freshwater or estuarine wetlands with sandy uplands	NYSDEC Correspondence
Monarch	*Danaus plexippus*	Candidate species for Federal listing	Open habitats containing wildflowers, including milkweed (larval host plant)	USFWS IPaC

* On November 29, 2022 the USFWS published a rule reclassifying northern long-eared bat from 'threatened' to 'endangered' under the federal Endangered Species Act. This rule is effective March 31, 2023. The change to 'endangered' in NY will take place at the same time as the Federal listing.

According to the USFWS IpaC Report for the study area (dated February 22, 2023) the following Federally listed species were listed as possibly being affected by the Proposed Project:

» Northern long-eared bat (*Myotis septentrionalis*) – Federally-listed threatened

- Piping plover (*Charadrius melodus*) – Federally-listed threatened
- Monarch (*Danaus plexippus*) – Candidate species for Federal listing

Northern long-eared bats utilize a variety of forest habitats for roosting, foraging, and rearing young, but are typically associated with mature interior forest habitats (Carroll et al. 2002; NYNHP 2023) and tend to avoid woodlands with significant edge habitat (Yates & Muzika 2006; NYNHP 2023). The species may also occur in dense forest communities in uplands, along streams, or adjacent to vernal pools (Brooks & Ford 2005; NYNHP 2023). In general, any tree, living or dead, with a cavity or loose bark may be utilized by the species; though roosts of female bats tend to be tall, large diameter trees (Sasse & Pekins 1996; NYNHP 2023). The species is known to occasionally roost in manmade structures such as buildings or bridges. Northern long-eared bats hibernate through the late fall through the early spring, usually within caves or abandoned mines. Trees potentially suitable for roosting northern long-eared bats are largely limited to the forest habitats within and adjacent to Wetlands A, B, and C, with some additional scattered trees occurring along the former railroad ROW. The Bayonne Bridge, which crosses over the former railroad ROW, may also provide potentially suitable summer roosting habitat for the species.

Piping plovers typically nest on sandy beaches with scattered patches of vegetation, usually between the primary dune and the high tide line. The species forages for benthic organisms along shorelines, as well as in brackish meadows, coastal salt ponds, low salt marshes, and tidal flats. Although nesting populations occur on Long Island (NHP 2020a), none are known to occur on Staten Island.

The monarch is a migratory butterfly species that can be found throughout New York during the summer and fall. It is primarily associated with open habitats, including fallow fields and roadsides, gardens, and meadows. The monarch caterpillar is entirely dependent upon milkweed (*Asclepias* spp.) as a host plant, whereas adults will take nectar from a variety of wildflower species. Although open weedy secondary successional and shoreline communities occur within portions of the project study area, no milkweed was observed. In addition, no significant wildflower populations were found that would support significant numbers of adult monarchs.

Three species of concern were identified by the NHP as occurring within the North Shore BRT study area. State-endangered peregrine falcons are known to nest on and near the Bayonne Bridge. Barn owls are also known to utilize man-made structures and are documented as occurring at the Bayonne Bridge. In addition, the State-threatened bald eagle is known to breed within two-thirds of a mile from the study area limits. No known bald eagle nests occur within the North Shore BRT study area.

Migratory Birds of Conservation Concern

The USFWS IPaC report identifies 29 migratory birds of conservation concern with the potential to occur within the study area. A list of these birds and additional

information on their status are provided in Appendix K. These species, though not Federally listed as threatened or endangered, are protected by the Migratory Bird Treaty Act (50 CFR 10.13) and the Bald and Golden Eagle Protection Act (50 CFR 22). Any activity which results in the taking of migratory birds or eagles is prohibited unless authorized by the USFWS.

Habitat Assessment

A preliminary threatened and endangered species habitat assessment was performed during the field investigations in April and May 2019. As described above, most of the North Shore BRT study area is developed and shows extensive disturbance and limited biodiversity. Wildlife documented or presumed to occur within the study area consists principally of bird species adapted to an urbanized environment.

Riparian/Shoreline Habitats and Tidal Marsh

Within the study area, the highest diversity of wildlife likely occurs along the Kill Van Kull, particularly in the Snug Harbor area. In areas where an intact bulkhead exists, there is no exposed shoreline; in areas where the bulkhead is in a state of disrepair, there is a degree of shoreline exposure containing debris and rubble. A narrow shoreline comprised of gravel, cobble, and coarse sand occurs within the northern portion of Snug Harbor. Expansive mudflats were not observed within the study area. Under these conditions, there is no suitable nesting habitat for piping plover, a federally listed threatened shorebird species identified in the USFWS IPaC report.

Although the study area broadly meets the definition for piping plover foraging habitat, the limited amount and degraded nature of the foraging habitat limits the probability of occurrence with any regularity. However, the cobbly, sand and mud shoreline in the Snug Harbor area may provide suitable habitat for some foraging shorebirds or waterbirds, particularly generalist species such as spotted sandpiper (*Actitis macularius*) or great blue heron (*Ardea herodias*). Terns, as well as other larids, may utilize the Kill Van Kull for foraging and may also utilize the hard and soft edges of the shoreline to rest, though due to the high degree of disturbances along these edges, the probability of occurrence is limited. Other wading bird species and waterfowl would also be expected to use the Kill Van Kull and the adjacent marsh wetland (Wetland F/G) for resting and foraging.

Wetland/Upland Forest

Wetlands A, B and C and surrounding upland forest provide conditions potentially suitable for roosting and foraging northern long-eared bats. In addition, these communities provide suitable cover and foraging habitat and limited nesting opportunities for common songbird and other bird species. Onsite forests also have the potential to be rest areas for migratory birds such as warblers, flycatchers, and vireos. During the field investigations, yellow-crowned night herons were observed utilizing Wetland A south of the study area limits (adjacent to Cable Way) as a rookery. Several stick nests were located in the

canopy and subcanopy, and the birds were roosting in the trees as well as in standing water areas of the wetland. This is a notable observation, given the general rarity of yellow-crowned night heron nesting sites in New York State.

Because of the surrounding development and historic habitat degradation, the site would have limited potential for a high diversity of reptiles and amphibians. One garter snake (*Thamnophis sirtalus*) was observed onsite. Forested wetlands and uplands occurring south of the proposed Arlington station site may be connected to the offsite emergent wetland habitats meeting the definition of mud turtle habitat. However, due to closed nature of the wetland canopy and the highly urbanized surrounding environment, including active roadways, construction yards, and commercial development, populations of mud turtle within the study area wetland and adjacent uplands are unlikely.

Disturbed Successional Communities

Highly disturbed communities in varying stages of succession, ranging from weedy fields to secondary successional forest, are frequently found in small patches or strips within the study area. These areas are often colonized by a mix of disturbance-tolerant grasses and forbs, and shrubs or small trees. Vertebrate wildlife in these locations would be expected to be limited to disturbance-tolerant species, including raccoon (*Procyon lotor*), grey squirrel (*Sciurus carolinensis*) striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), Norway rat (*Rattus norvegicus*), or common bird species. Trees potentially suitable for northern long-eared bat are scattered within these communities; however, due to the degree of anthropogenic disturbance within and surrounding these communities, populations of this species within the study area disturbed successional communities are unlikely.

Marine Wildlife and Fisheries Resources

Existing Habitat Conditions

The North Shore BRT study area is within the Constable Hook Reach section of the Kill Van Kull, an approximately 3-mile-long tidal estuarine river that connects Newark Bay with the Upper New York Bay. Although heavily degraded, the study area and surrounding waters support populations of marine wildlife and fisheries resources, as described below.

Within the study area, the Kill Van Kull consists of intertidal/subtidal shallows with depths varying from less than one foot to 25 feet within 50 yards of the Snug Harbor shoreline. The shoreline and littoral zone of the Kill Van Kull are characterized by historic urbanization, high densities of adjacent impervious surfaces, and various sources of nonpoint pollution, including from commercial and industrial facilities and vehicles. Substrate observed within the shoreline area consists predominantly of gravel, cobble, and coarse sand, interspersed with anthropogenic debris such as slag, concrete, and old bulkhead materials. Portions of the shoreline in the study area consist of boulder sized stone revetment. The study area shoreline does not contain vegetated wetlands and rapidly transitions

from the littoral zone to upland vegetation. There is no evidence of submerged aquatic vegetation (SAV) of any type within the study area.

Small shell fragments of several sea clams (*Mercenaria mercenaria*) were observed on the shoreline, indicating the potential for a limited amount of shellfish habitat in the general vicinity. The historic keystone shellfish species, the American oyster, is functionally extinct from the Kill Van Kull. Marine worms, snails, sponges, and sea jellies (Cnidarians) may be present in the water column, substrate, and submerged structures of the study area; however, the diversity and/or density of species is likely to be limited by the presence of toxins and other environmental stressors associated with surrounding industrialization.

No highly sensitive invertebrate species are present in the Kill Van Kull. Pollution-tolerant species such as various polychaete, tubificid, and nematode worms may be more widespread (USFWS 1997). Such invertebrates may be a food supply for certain fish species and other shoreline wildlife.

Federally Listed and State-listed Marine Wildlife Species

Six Federal and State listed marine wildlife species are identified as potentially occurring in the study area. These species, their listing status, their life stages, and the time of year in which they would be expected to occur within the study area are presented in Table 10-2 below. No critical habitat for these or any other Federally listed marine species was identified in or near the study area.

Table 10-2 National Marine Fisheries Service (NMFS) Listed Species in the North Shore BRT Study Area

Common Name	Scientific Name	Status	Habitat	Life Stages	Time of Presence
Atlantic sturgeon	*Acipenser oxyrinchus*	Federally listed endangered	Open Water (Raritan Bay, Atlantic Ocean, Hudson and Raritan Rivers)	Adults/ Subadults	Year-round
Shortnose sturgeon	*Acipenser brevirostrum*	Federally listed endangered/ State listed endangered	Open Water (Raritan Bay, Atlantic Ocean, Hudson and Raritan Rivers)	Adults	Apr 1 – Nov 30
Kemp's ridley	*Lepidochelys kempii*	Federally listed endangered/ State listed endangered	Open Water (Raritan Bay, Atlantic Ocean)	Adults/ Juveniles	May 1 – Nov 30
Loggerhead turtle	*Caretta*	Federally listed threatened/ State listed threatened	Open water (Raritan Bay, Atlantic Ocean)	Adults/ Juveniles	May 1 – Nov 30
Leatherback turtle	*Dermochelys coriacea*	Federally listed endangered/ State listed endangered	Open water (Raritan Bay, Atlantic Ocean)	Adults/ Juveniles	May 1 – Nov 30
Green turtle	*Chelonia mydas*	Federally listed threatened/ State listed threatened	Open water (Raritan Bay, Atlantic Ocean)	Adults/ Juveniles	May 1 – Nov 30

Source: National Oceanic and Atmospheric Association (NOAA) Fisheries Greater Atlantic Region ESA-Listed Species Section 7 Mapper (list generated 5/9/2023)

Atlantic sturgeon ranges along the East Coast from Canada to Florida. Young Atlantic sturgeons occupy river and estuarine habitats before migrating to open oceans as sub-adults. Spawning migrations typically take place in the Mid-Atlantic region between April and May (Carson et al. 2002). Because of their life history, sub-adult or adult Atlantic sturgeon life stages could be found migrating between the Hudson River and Long Island Sound and may occur within the in-water portions of the North Shore BRT study area.

Shortnose sturgeon occurs in rivers and estuaries along the East Coast. Although shortnose sturgeon spends much of its time in its natal river, it is known to travel

into other rivers and into shallow coastal waters. Based on occasionally documented movements of adult shortnose sturgeon from the Hudson River to Connecticut River (NMFS 1998), it is assumed that transient individuals could enter the in-water portions of the North Shore BRT study area.

Four federally listed sea turtle species are identified as potentially occurring in study area waters during their yearly migrations between May 1 and November 30. No sea turtles are known to nest in waters north of North Carolina; however, adult and juvenile turtles may utilize the Kill Van Kull for foraging.

Essential Fish Habitat

The waters of the Kill Van Kull in the Snug Harbor area are identified by NMFS as essential fish habitat (EFH) for 14 species of fish and associated life stages, listed in **Appendix K**. Many of the fish identified through the EFH process are bottom- or near bottom-dwelling, including winter flounder (*Pseudopleuronectes americanus*), yellowtail flounder (*Pleuronectes ferruginea*), windowpane (*Scophthalmus aquosus*) and summer flounder (*Paralichthys dentatus*). These species may feed on invertebrates and small fish in the study area. The winter flounder, because it will utilize shallow (several feet deep) waters, may be present in the study area in all life stages. Status assessments have indicated population declines in the New York area and across much of its northeastern range. Other fish found in deeper waters include red hake (*Urophycis chuss*) and some life stages of silver hake (*Merluccius bilinearis*), relatives of cod often found at depths greater than 40 meters.

Elasmobranchs (sharks, rays, and skates) in the study area include the clearnose skate (*Raja eglanteria*), little skate (*Leucoraja erinacea*), and the smoothound shark complex (*Mustelus mustelus/canis*). The smoothound is a small (3-5 foot) shark that feeds on invertebrates and fish and is often found at depths less than 18 meters. Habitat for all life stages of this species may occur within the study area, as well as habitat for juvenile and adult skates. These species, which forage close to the sea floor for invertebrates and (occasionally) small fish, are relatively common within the New York Bight and often found at depths less than 100 meters.

Bluefish and striped bass are the most common mid-sized predatory fish that forage in mid-water or at the surface in the study area vicinity. Larvae of the butterfish, a small, short-lived mid-water schooling fish, may occur in the study area during warmer months. In addition to these identified species, many other species may periodically occur in the study area, including killifish (*Fundulus* spp.) and Atlantic silverside (*Menidia menidia*). There is also potential for migratory clupeid species (American shad or herrings) to be present during certain times of the year; the EFH mapper specifically identifies the study area as potential habitat for larval, juvenile, and adult Atlantic herring (*Clupea harengus*).

No-Action Condition

Under the No-Action Condition, the natural resources in the study area would remain like their existing conditions. However, ongoing natural and human-caused conditions such as flooding, storm surges, and development would result in gradual changes over time. The projects currently anticipated to occur within the study area by the build year would be developed on land that is already disturbed and surrounded by urban land uses.

With-Action Condition

The Proposed Project would result in impacts on several natural resources in the study area through development of the busway and stations. These impacts are summarized in Table 10-3 and described in the following subsections.

Table 10-3 Summary of Proposed Project Impacts by Resource

Resource	Impact under With-Action Condition
Water Resources	
Surface Waters	The proposed alignment within the Snug Harbor area would place approximately 50 square feet of new piers below the ordinary high-water mark (OHWM) of the Kill Van Kull.
Water Quality	The Proposed Project would require grading and excavation of the ground surface. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and a SPDES General Permit for Stormwater Discharges for Construction Activity would be obtained. Temporarily exposed soils or runoff and development of temporary concrete batch plants at the Arlington Station Property and Alaska Street intersection may result in runoff to adjacent waterbodies and temporary turbidity increases. Soil Erosion and Sediment Control (SESC) measures would be implemented to mitigate these impacts. New impervious surfaces associated with the proposed busway would increase existing stormwater runoff and associated pollutants. The project proposes the development of 12 new outfalls. Treatment of runoff from roadway surfaces would minimize this impact.
Wetlands	As a result of project design changes, there would be no impacts to freshwater wetlands or adjacent areas regulated by NYSDEC. The proposed alignment within the Snug Harbor area would fill 0.001 acre of littoral wetland and 3.1 acres of NYSDEC tidal wetland Adjacent Areas. Minor and temporary impacts to tidal wetlands and adjacent areas would result from staging and other activities during construction.
Groundwater	No impact anticipated.
Floodplains	The proposed alignment in the Snug Harbor area would include 1.28 acres of infrastructure within the FEMA mapped floodplain.

Table 10-3 Summary of Proposed Project Impacts by Resource

Resource	Impact under With-Action Condition
Upland Resources	The Proposed Project would permanently remove approximately 12 acres of upland vegetation to facilitate construction of the proposed alignment within the Snug Harbor area.
Built Resources	No impact anticipated.
Significant, Sensitive, or Designated Resources	No impact anticipated, as little or no suitable habitat for sensitive species exists in the study area. Project design was revised to avoid impact to yellow-crowned night heron habitat. Although limited by existing disturbance, the potential presence of suitable roosting trees of northern long-eared bat within onsite forests would result in the need for close coordination with USFWS to avoid direct or indirect impacts to this species (see discussion section).
Marine Wildlife and Fisheries Resources	Permanent loss of approximately 0.001 acre of open-water habitat within the Snug Harbor area. Minor and temporary disturbances to nearshore habitats may occur as a result of in-water work resulting from staging and sheeting installation. These may include substrate disturbance and noise during construction.

Water Resources

Surface Water

The proposed busway would span the Boone Creek tributary and adjacent uplands, as well as the second identified tidal tributary on the Snug Harbor property. No alterations to the stream channels are proposed and it is expected that no riparian vegetation would be removed.

Within the Snug Harbor area (from approximately Bard Avenue east to Clinton Avenue), portions of the North Shore BRT study area have been submerged and undercut by coastal erosion. As described in Chapter 2, Proposed Project and Alternatives, a new busway is proposed landward of the Kill Van Kull shoreline. The proposed alignment would require several new piers below the mean high-water line, resulting in the placement of approximately 50 square feet of tidal in-water fill.

Water Quality

Construction of the Proposed Project would require soil disturbances, such as removal of vegetation, grading, and excavation of the ground surface. Temporarily exposed soils or runoff during construction activities (such as grading and filling) and the development of temporary concrete batch plants at the Arlington Station property and Alaska Street intersection have the potential to result in runoff into adjacent waterbodies and result in temporary turbidity increases.

The proposed alignment for the Snug Harbor area is anticipated to require temporary disturbance to approximately 3,750 linear feet of shoreline along the Kill Van Kull. The proposed alignment may result in changes in drainage patterns and the introduction of runoff into the Kill Van Kull from new or expanded impervious surfaces (roadways), particularly where the proposed roadway runs adjacent to the shoreline and there is a conversion from maintained or naturalized vegetation to impervious surface. Increased impervious surface, particularly in areas where there was previously vegetation, may result in changes in runoff volume or increased introduction of pollutants associated with transportation infrastructure. These introductions may have the potential to change localized water quality conditions, particularly after rainfall events.

Temporary increases in turbidity may also result from any aquatic substrate disruption due to machinery placement, vibratory sheet driving, and caisson installation. This may be complicated by the presence of contaminants within substrates (such as dioxin or petroleum products) which are relatively common within the Kill Van Kull. Petroleum spills and other incidental discharges during fueling or other construction activities may also occur.

As summarized in **Chapter 2, Proposed Project and Alternatives** and detailed in **Appendix E, Basis of Design Report**, a combination of drainage components would be provided to manage stormwater runoff from the proposed busway and ancillary facilities such as station areas. On South Avenue and Richmond Terrace where the BRT would operate on existing City streets, existing street drainage to NYCDEP storm sewers would be maintained. In inland areas where there are no existing connections to NYCDEP storm sewers, stormwater linear infiltration systems and/or detention facilities systems would be provided as appropriate. As described in **Appendix E, Basis of Design Report**, the drainage system in inland areas would use linear infiltration low-head chambers spaced 333 feet apart along with Type I catch basins, pre-cast manholes and ductile piping. Along the viaduct, runoff would continue to discharge to existing stormwater connections within the viaduct structure to a linear infiltration system spaced beneath the existing viaduct structure at approximately 333-foot intervals to depths of approximately 3.52 feet below grade. Near the waterfront in the vicinity of Alaska Street, the runoff from the viaduct would be directed to hydrodynamic separators prior to discharge into the Kill Van Kull.

In areas where the proposed alignment is near the shoreline, runoff would be directed to a hydrodynamic separator for treatment before being discharged into the Kill Van Kull. A total of 12 new outfalls are proposed beginning at the Port Richmond viaduct and extending to the Nicholas Street ramp at Richmond Terrace. The drainage design would comply with applicable local, state and federal requirements for water quality, treatment, and flow reduction/detainment. This includes the acquisition of a New York State Pollutant Discharge Elimination System (SPDES) permit for the direct discharge into the Kill Van Kull. Stormwater design would need to account for pollutants of concern (POC), which is assumed to be floatables. Hydrodynamic separators are intended to be utilized to remove

floatables such as trash, debris, sediment, and hydrocarbons prior to stormwater discharge.

Floodplains

Most of the Proposed Project would occur within the existing former North Shore ROW and existing city street ROW. Impacts to the floodplain include permanent increases in impervious surfaces and increased runoff volumes along and in proximity to the Kill Van Kull, particularly within the Heritage Park and Snug Harbor areas as described above. However, the impacts are expected to be negligible relative to the existing impervious surface within the study area. Because the floodplains associated with the Proposed Project are tidal, the relatively minor changes in flood storage volume resulting from the placement of structures in the floodplain are not expected to affect the flood storage capacity of the region and/or lead to increased flooding or flood damage.

Groundwater Resources

Subsurface drilling and excavating into bedrock would be required for project activities near Snug Harbor, which may increase potential exposure to groundwater. As described in **Chapter 11, Hazardous Materials**, groundwater contamination is known to occur in some areas of the North Shore BRT study area due to the current and historic transportation and industrial uses. Temporary impacts associated with construction activities, such as the spilling of petroleum or other materials, may result in the introduction of additional contaminants into groundwater sources. These impacts would be mitigated through a plan for containing spilled materials and designating fueling or storage areas that are secured and away from locations sensitive to groundwater transfer and contamination, such as waterbodies or wetlands. See **Chapter 11** for additional information.

Wetland Resources

Following the identification and delineation of freshwater wetlands A, B, and C near the proposed Arlington Station area, the project design was modified to avoid these wetlands and their NYSDEC-regulated adjacent areas. Therefore, these wetlands and adjacent areas (buffers) would not be directly impacted by the project. There is a potential for relatively minor, localized changes in stormwater runoff volume (primarily into Wetland C) from the introduction of impervious surfaces associated with the Arlington station. Freshwater wetland D/E is not anticipated to be impacted by the project.

Tidal scrub-shrub/emergent and forested wetland fringe (Wetland F/G), located between Richmond Terrace and Snug Harbor Road, is outside the impact area of the project, which would be north of Richmond Terrace. Changes in water flow could occur within the tidal portion of this wetland if there were substantial changes to the culvert structure along the Snug Harbor shoreline; however, such changes are not anticipated.

As described under Existing Conditions, additional NYSDEC-defined tidal wetlands exist within the study area along portions of the Kill Van Kull shoreline. It is anticipated that the proposed alignment in the Snug Harbor portion of the study area would result in impacts associated with equipment operations within or adjacent to the littoral zone wetlands. Other disturbances to littoral zone wetlands may occur as a result of stabilization and development of the staging areas adjacent to the Kill Van Kull shoreline; these areas include Livingston Station (approximately 640 linear feet), New Brighton Station (approx. 300 linear feet), and Bank Street (approximately 1,460 linear feet). As shown in Table 10-3, the proposed alignment would result in the permanent loss of approximately 0.001 acre of littoral zone wetlands due to pier placement.

In addition, the proposed alignment would result in the permanent removal of 3.1 acres of vegetation in regulated adjacent areas (buffers) for construction of the busway. Under the Proposed Project, adjacent area impacts would also include an approximate 0.46-acre conversion of vegetation to impervious surface (busway) along the western portion of Heritage Park.

Appropriate SESC measures would be implemented to minimize disturbances to wetlands within the study area, such as silt fence and containment of loose soils or raw concrete. Construction impacts to littoral zone wetlands would be addressed as part of NYSDEC Article 15 (Protection of Waters), NYSDEC Article 25 (Tidal Wetlands), and USACE Nationwide permitting to be obtained for the project.

Upland Resources

Permanent upland vegetation clearing would be required within the proposed alignment, as well as temporary clearing to facilitate access and staging. These impacts would occur primarily along portions of the North Shore ROW that have become overgrown with trees. The Proposed Project would require the permanent removal of approximately 12 acres of upland vegetation in the Snug Harbor area as part of the proposed alignment. The Proposed Project in this area includes a total of 85,999 square feet of new road surface adjacent to the shoreline and would be expected to affect an approximately 119,636-square-foot area of successional forest along the Snug Harbor shoreline; however, a portion of this area is covered with existing impervious surfaces.

In addition to the Snug Harbor area discussed above, the conversion of vegetated areas to impervious surface would occur along an approximately 600-foot section in the Heritage Park area between 150 and 200 feet from the Kill Van Kull, resulting in approximately 55,667 square feet (1.28 acres) of impacts to vegetation. This area consists of a mix of semi-maintained early successional field and secondary successional forest.

Some vegetation removal is also proposed for the Arlington Station area and for the open-cut portion of the ROW. Within the Arlington Station area, removal of upland vegetation would include approximately 28,861 square feet (0.66 acre) of secondary successional forest and 37,392 square feet (0.86 acre) of disturbed

early successional fields. All these uplands would be outside of wetland adjacent areas as defined by NYSDEC (see **Wetlands** section). In addition, approximately 278,946 square feet (6.40 acres) of degraded secondary successional forest would be removed in the open-cut portion of the rail ROW (primarily along the slopes).

A significant component of the upland vegetation within the Proposed Project alignment is exotic or otherwise disturbance-tolerant. Impacts would occur primarily within disturbed secondary successional forest. Unique or protected upland coastal habitats such as coastal bluffs, dunes, or coastal shrublands do not exist within the study area. Temporarily cleared upland areas would be returned to equal or better ecological function or value by planting appropriate native species following project completion.

Built Resources

Impacts to built structures would be limited to stabilization measures and improvements to existing infrastructure, including the Boone Creek overpass, which may provide habitat for common species such as barn swallow (*Hirundo rustica*). The introduction of new built structures, such as the proposed busway in the Snug Harbor area, may potentially result in behavioral changes to wildlife populations, such as gulls, terns, barn swallows, or rock doves that may use the structure for shelter, nesting or as a perch, depending on species.

Significant, Sensitive, or Designated Resources

Most of the North Shore BRT study area is developed, with extensive disturbance and compromised aquatic and terrestrial biodiversity. Wildlife documented or presumed to occur within the study area are principally avian species adapted to an urbanized environment containing fragmented, degraded natural habitat, pockets of exotic successional vegetation communities with limited infrastructure, and artificial food resources. The Proposed Project has been redesigned to avoid impacts to the palustrine forested/scrub-shrub/emergent wetland communities located in the Arlington Station area. As a result, ecological impacts from the project are expected to be minor overall.

As described under Existing Conditions above, piping plover is a listed species identified as being potentially present in the study area. However, the shoreline of the Kill Van Kull contains only limited areas of exposed beach made up of coarse sand, gravel, cobble, and anthropogenic debris, which does not constitute suitable nesting habitat for this species. Rookeries or shorebird nest colonies are not expected to occur within the Study Area. Foraging habitat for piping plover is severely limited in the area by the amount of existing degradation and revetments, and the overall lack of sandy beaches or extensive mudflats. However, the cobbly shoreline in the Snug Harbor area, as well as the adjacent mudflats, may provide habitat for foraging shorebirds. Terns and other larids, may utilize the Kill Van Kull for foraging and may also utilize the hard and soft edges of the shoreline to rest. Although temporary shoreline disturbances associated with the proposed busway may result in avoidance between behaviors by terns and other fish-foraging birds, no permanent impacts to these species are

anticipated. Based on the availability of similar shoreline habitat along the North Shore and the level of existing regional disturbance, temporary displacements would not be expected to result in significant impacts to shorebird populations.

The northern long-eared bat is identified as a Federally-listed endangered mammal species potentially occurring within the study area. The most suitable summer roosting/foraging habitat for this species occurs in forested areas within and adjacent to Wetlands A, B, and C in the vicinity of Arlington Station. Scattered trees potentially suitable for roosting bats do occur within the secondary successional habitat and successional forest along the railroad ROW, and shoreline of Snug Harbor but are less likely to be utilized due to extensive surrounding disturbance and the lack of a large forest canopy preferred by this species. In addition to trees, northern long-eared bats will also occasionally utilize structures such as bridges for roosting.

Coordination with USFWS will determine protective measures needed to avoid adverse impacts to this species and a timing restriction between April 1 and September 30 may be required for tree removal. To determine potential presence of roosting bats during the active season, surveys including a detailed tree survey or acoustic identification surveys, may be required to determine potential presence in forested areas proposed for clearing.

The yellow-crowned night heron was further identified as a Federally designated Bird of Conservation Concern potentially occurring within the study area. These species, though not Federally listed as threatened or endangered, are protected by the Migratory Bird Treaty Act (50 CFR 10.13). As described under Existing Conditions, 8 to 10 yellow-crowned night herons were observed utilizing Wetland A, and several stick nests were observed in the canopy and subcanopy. However, after Wetlands A, B, and C were identified and delineated, the project design was changed to avoid impacts to these wetlands. A significant visual (tree) barrier exists between the colony and the proposed active construction area. Furthermore, the colony is surrounded by consistent ambient noise and disturbances from traffic, commercial businesses, and industries. As a result, impacts to yellow-crowned night heron and other species utilizing these wetlands are not anticipated.

No bald eagle or osprey nests have been observed or are known to exist within the study area. Peregrine falcons and barn owls are known to nest on and adjacent to the Bayonne Bridge, under which the former North Shore ROW crosses. No work on the Bayonne Bridge is proposed as part of this project, though construction activities would occur in close proximity to the structure. Although peregrine falcons or barn owls potentially nesting on the bridge may be disrupted by noise or visual disturbances associated with project activities, the amount of existing disturbance and noise at this location reduces the probability that the proposed activities would significantly impact either species. Construction monitoring during the active breeding season or limited work (typically within 300 feet) of a nest location during breeding would be implemented, if required by the NYSDEC.

Although eagles and other birds of prey would be expected to utilize the Kill Van Kull corridor for foraging, including the study area, the Proposed Project would not result in any adverse impacts to the species. Potentially suitable habitat for these species (including artificial structures and trees) occurs along the Snug Harbor shoreline. Although not anticipated to occur, populations of both species are regionally increasing and nesting in urbanized environments has become more common. Coordination with the NYSDEC and/or USFWS would be required if osprey or eagle nests are established in the vicinity of the construction area prior to or during construction.

Tree nesting of common, disturbance-tolerant migratory bird species would be expected to nest in trees existing within the construction area, including at Arlington Station, along portions of the alignment, at several staging areas, and along the Snug Harbor shoreline, where tree clearing would be required. Indirect impacts to these species would be expected to occur as a result of forest nesting habitat losses. To avoid direct impacts to nesting birds, eggs, and/or their young; any suitable nest trees (typically 6 inches of diameter or more) that require removal within the project area would be removed outside of the migratory bird nesting season (generally April 1 to August 31), in accordance with the Migratory Bird Treaty Act.

The USFWS IPaC report identified monarch, a candidate species for federal listing as potentially present within the study area. Although open habitats, such as vegetated tidal shorelines and weedy secondary successional communities, occur within the study area, none appear to contain significant milkweed or other nectar-producing wildflowers needed to support the species. Therefore, no impacts to monarch are anticipated to result from the project.

As requested by the NYSDEC, the potential for impacts to the State-endangered eastern mud turtle was also included in the analysis for the project. Potentially suitable habitat for this species occurs in the protected lands west of the proposed Arlington Station. Wetlands occurring adjacent to this portion of the study area (north of Cable Way) generally meet the wetland habitat needs of eastern mud turtles; however, viable populations of mud turtle would not be expected in this location due to the extensive surrounding development.

Protective measures would be designed and implemented in coordination with regulatory agencies as part of the City, State, and Federal review and permitting processes.

Marine Wildlife and Fisheries Resources

A portion of the proposed work area in the vicinity of Snug Harbor would involve a minor permanent loss of benthic marine habitat at or below MHW. The proposed alignment within the Snug Harbor area would require the use of hammers or pile drivers to install temporary steel sheeting and new piers. This activity is expected to result in minor and temporary increases in turbidity and acute noise increases.

As project planning advances, coordination with the National Marine Fisheries Service (NMFS) will occur. NMFS coordination will be required to evaluate potential adverse effects and assure avoidance or minimization of impacts to both essential fish habitats (EFH) and threatened/endangered marine species (sturgeon species and marine turtles) protected under the ESA. NMFS coordination would evaluate the three primary factors (noise changes, substrate impacts, and vessel traffic) that could result in adverse effects to marine resources.

Temporary impacts from in-water construction noise, particularly from low frequency sounds from hammers or pile drivers used to install temporary sheeting, pilings, etc., have the potential to temporarily displace or injure fish, including the Federally listed 'endangered' Atlantic and shortnose sturgeon, or other marine wildlife species sensitive to pressure changes. Physical changes can include instantaneous or delayed mortality, physical injury, physiological changes, temporary or permanent loss of hearing, increased stress leading to reduced fitness, and the loss of ability to detect biologically relevant sounds (i.e., sounds from predators or prey, communication, acoustic cues for orientation).

Behavioral responses include any change in behavior from small and short-duration movements to changes in feeding or mating; alteration of migratory paths; and the disruption of finding of places for larval settlement. Anthropogenic sounds may interfere with detection of the overall acoustic scene (or soundscape) as well as affecting sound communication by fishes. Sounds in excess of 207 dB SELcum can cause mortality and potential fatal injury in fish. The threshold at which temporarily lose hearing is 186 dB SELcum.

The sounds produced by pile driving are impulsive, short and most of their energy lies below 500 Hz, though some energy may extend up to 1 kHz. The sound levels (both sound pressure and particle motion) vary substantially, depending on numerous factors such as pile diameter, hammer size, substrate characteristics, etc. The sounds produced by pile drivers are often very intense with SELss often well-exceeding 180 to 200 dB re 1 µPa2 s−1 and with very sharp rise times (Popper & Hawkins 2019; National Marine Fisheries Service 2018).

The intertidal and subtidal areas within the study area have been degraded by historic industrial pollution and disturbance and contain high levels of existing turbidity associated with fine sediments in the water column. Despite these conditions, these areas have the potential to provide habitat for common fish, such as mummichog (*Fundulus heteroclitus*) and disturbance-tolerant invertebrates. It may also be expected that this portion of the study area has the potential to contain species identified through EFH mapping in various life stages.

The installation of the temporary sheeting and new piers would potentially agitate sediment into the water column, resulting in increased turbidity and possibly the release of pollutants, both of which could adversely impact fish, shellfish, and other marine life. As part of NMFS consultation, grain size analysis

of impacted substrates would be required and included in analysis. This will help estimate the duration and density of suspended particles resulting from construction and any subsequent potential impacts to aquatic biota. It is anticipated that such impacts would be temporary in nature and only occur periodically during the duration of construction.

The installation may also result in direct mortality by crushing or entrapping shellfish and other low-mobility benthic organisms. In-water and near-water construction activities may also drive juvenile fish, small forage fish, or other small prey items from shallow nearshore habitats into deeper waters, where they are vulnerable to predation. The loss of benthic habitat, temporary or permanent changes to water quality, and substrate impacts will be fully analyzed through NMFS consultation.

As described above under Water Quality, stormwater discharges from new impervious surfaces created by the Proposed Project (busway, station platforms, etc.) would conform with the water quality requirements and standards of NYSDEC and the latest edition of the New York State Stormwater Management Design Manual. Discharges resulting from the Proposed Project would be localized and would not be expected to significantly impact fisheries or marine wildlife, as they are minor in comparison to the extent of urbanization within the study area.

Permanent changes or increases in vessel traffic are not anticipated as part of this project. The minor and temporary increases or changes in vessel traffic may result in some avoidance behaviors or displacement of marine life. These activities would not be expected to significantly impact EFH or result in adverse effects to threatened or endangered marine species.

Impacts associated with the new pier installation would be mitigated to the greatest extent practicable by installing containment structures around the proposed pier location, such as turbidity curtains. This structure would be installed prior to construction and would remain in place for the duration of construction. Although some benthic organism mortality may still occur, it is expected to be negligible relative to the available habitat surrounding the construction zone. Based on the type of work and existing marine conditions, recolonization of temporarily disturbed areas by any benthic or other marine organisms would occur quickly.

It is expected that protective measures described here would result in the avoidance of significant adverse impacts to fisheries, fish habitats, and endangered species during construction. This determination will be confirmed through NMFS coordination should project planning and design advance.

Conclusion

Based on the above findings, the Proposed Project is not expected to result in any impairments to water resources; would require only minor amounts of

permanent fill in wetland-adjacent areas; would not affect significant, sensitive, or designated resources or diminish the habitat of protected species; and would not cause a noticeable decrease in resource functions such as habitat value, recreational use, or commercial productivity. As a result, the impacts of the Proposed Project are not considered to be significantly adverse.

11 Hazardous Materials

As described in the *2021 CEQR Technical Manual*, a hazardous material is any substance that poses a threat to human health or the environment. Substances that can be of concern include, but are not limited to, heavy metals, volatile and semi-volatile organic compounds (SVOCs), methane, polychlorinated biphenyls (PCBs), and hazardous wastes (defined as substances that are chemically reactive, ignitable, corrosive, or toxic).

According to the *CEQR Technical Manual*, the potential for significant impacts from hazardous materials can occur when:

- hazardous materials exist on a site;
- an action would increase pathways to their exposure; or
- an action would introduce new activities or processes using hazardous materials.

This chapter presents a summary of information developed in a series of corridor-level Phase I Environmental Site Assessments (ESAs) prepared for the Proposed Project. Additional information on known and suspected contamination along the Proposed Project's alignment can be found in those documents, which are included as **Appendix L** to this FEIS.

Phase I ESAs document Recognized Environmental Conditions (RECs) that are identified during the assessment. According to the American Society for Testing and Materials (ASTM) Standard E 1527-13, a REC is "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property." These can include areas of documented, suspected, or potential contamination of soil, groundwater, or other media as a result of leaks, spills, placement of contaminated fill, or other means. Within the broader category of RECs are two other categories:

- Historical RECs (HRECs) are past releases of hazardous substances or petroleum products that have been addressed to the satisfaction of the applicable regulatory authority, meet that authority's criteria for unrestricted use of the property, and can be used as if they had never been contaminated.

» Controlled RECs (CRECs) are past releases of hazardous substances or petroleum products that have been addressed to the satisfaction of the applicable regulatory authority, but still require restrictions on use of the property due to the continued presence of contamination. Examples could include the maintenance of a paved cap over the contaminated area or periodic monitoring of groundwater beneath the property.

Regulatory Background and Methodology

Key Regulations and Guidance

Regulations regarding hazardous materials address their identification, registration, classification, discharge, handling and storage, generation, treatment, transportation, and disposal. They also provide a means to identify and fund the cleanup of hazardous sites and hazardous releases. Regulations are promulgated by the City, State, and Federal governments. A brief summary of key applicable regulations is presented below.

Federal Regulations

Resource Conservation and Recovery Act (RCRA): RCRA, adopted in 1976 and amended in 1984, creates the basic framework for the Federal regulation of hazardous wastes. It provides controls for the generation, transportation, treatment, storage, and disposal of hazardous waste through a comprehensive "cradle to grave" system of hazardous waste management techniques and requirements. The U.S. Environmental Protection Agency (USEPA) administers RCRA and delegates administration of major components to New York State.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA): Congress enacted CERCLA (also known as Superfund) and its amendments (40 CFR Part 300) to fund the cleanup of hazardous substance waste sites. CERCLA, which was amended by SARA, has created a national policy and procedures for containing and remediating released hazardous waste substances and for identifying and remediating sites contaminated with hazardous substances.

Toxic Substances Control Act (TSCA): TSCA empowers USEPA to regulate specific toxic substances. Federal regulation of polychlorinated biphenyls (PCBs) and asbestos-containing materials falls under TSCA.

New York State Regulations

Environmental Conservation Laws: NYSDEC has developed the regulatory framework for hazardous waste management in New York in response to the State's Environmental Conservation Law. The criteria for determining a hazardous waste closely parallel those of RCRA and are set forth in 6 NYCRR Part 371. New York State's Superfund program, the Inactive Hazardous Waste Sites Law (6 NYCRR Part 375), was passed in 1979. The law provides for the identification, listing, and remediation of inactive hazardous waste sites.

Petroleum and Hazardous Substances Storage Laws: The storage of petroleum and hazardous substances in New York State is regulated through a series of laws enacted to ensure proper storage and to address petroleum and hazardous substance spills and leaks. The state's petroleum and hazardous substance storage laws are more comprehensive than the Federal laws and include the Oil Spill Prevention, Control and Compensation Act of 1977; the Petroleum Bulk Storage Act of 1986; and the Hazardous Substance Bulk Storage Act of 1986.

New York City Regulations

Hazardous Substances Emergency Response Law (Spill Law): Under this law (Local Law 42 of 1987), the City has declared its policy to respond to emergencies caused by releases or threatened releases of hazardous substances into the environment that may have an adverse effect on the public health, safety, and welfare and to prevent injury to human, plant, and animal life and property. The City's Department of Environmental Protection (NYCDEP) administers this law, which allows the department to order clean-up of hazardous substance spills.

Community Right-to-Know Law: This law (Local Law 26 of 1988) authorizes NYCDEP to gather chemical information from facilities that use, store, or manufacture hazardous substances and to use this information for emergency planning and response purposes. In addition, the law gives New York City residents the right to know the identities, quantities, characteristics, and locations of hazardous substances used, stored, and manufactured in their communities.

Asbestos Legislation: NYCDEP, under Title 15 Chapter 1, regulates building surveys, professional certifications, and asbestos abatement procedures. Local Laws 70 of 1985 and 21 of 1987, administered by the New York City Department of Sanitation (DSNY), govern the transport, storage, and disposal of asbestos waste in the City. The City's regulations are more stringent than those of the state and federal governments.

Methodology

The potential for hazardous materials was evaluated based on a series of corridor-level Environmental Site Assessments (ESAs) prepared to inform this environmental review. These assessments were prepared in general accordance with the scope and limitations of the ASTM International E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment (ESA) Process. The goal of a Phase I ESA process is to identify RECs, which means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property.

Per the ASTM Standard, a Phase I ESA reviews a variety of information sources—including current and historic Sanborn Fire Insurance Maps and aerial photographs, state and federal environmental regulatory databases identifying listed sites, and local environmental records. The analysis also included

reconnaissance of the project site and surrounding neighborhoods. No sampling or testing of soil or groundwater was conducted. As part of the assessment, a preliminary overview of planned construction activities for the Proposed Project was reviewed to evaluate the extent and nature of contamination of sites that could potentially impact the Proposed Project. Sites with potential contamination were evaluated as follows:

- Properties where contamination may exist but has little or no potential to affect the construction or operation of the Proposed Project; and,
- Properties where contamination may exist and has the potential to affect the construction or operation of the Proposed Project.

Only the second category—properties where contamination has the potential to affect the Proposed Project—are discussed in this chapter. Information on all potentially contaminated properties can be found in Appendix L.

The analysis identified RECs, controlled RECs, and/or historical RECs, as defined by the ASTM E 1527-13 standard. Additionally, a limited evaluation for the presence of contaminated building materials (e.g., asbestos-containing materials, lead-based paint, and polychlorinated biphenyl [PCB]-containing building materials) was included in each corridor assessment.

Existing Conditions

As noted above, the proposed alignment was evaluated for hazardous materials in three segments from east to west. Section 1 extends from St. George Terminal to Jersey Street; Section 2 extends from Jersey Street to Alaska Street; and Section 3 extends from Alaska Street to South Avenue. The RECs, CRECs, and HRECs that may be affected by construction and/or operation of the Proposed Project are summarized by segment below. RECs that are located within the Proposed Project's limits of disturbance, and therefore could directly affect or be affected by the Proposed Project, are discussed first, followed by RECs that are outside the limits of disturbance but could still affect the Proposed Project (for example, by migration of contaminants through soil or groundwater). Other environmental concerns—including the potential presence of contaminated building materials (e.g., asbestos-containing material lead-based paint, and PCB-containing building materials)—are also summarized.

The potentially contaminated sites discussed for each section are shown in Figures 11-1 through 11-3. Because the figures show only the sites with the potential to affect the Proposed Project, which are a subset of the number of sites identified within the study area, site numbering is not continuous. Additional information is provided in Appendix L.

Section 1 (St. George to Jersey Street)

Land Use and Geologic Characteristics

This section of the Proposed Project is approximately one mile long, with the limits of disturbance varying between 75 and 150 feet in width and encompassing both Richmond Terrace and the Jersey Street/Bank Street and Richmond Terrace intersection. The eastern portion, between St. George Terminal and Nicholas Street, approximately, consists of Richmond Terrace—a two-way, four-lane roadway with a median and sidewalks. The western portion, between Nicholas Street and just west of Jersey Street, consists of the former North Shore Railroad ROW, the Bank Street bike path/service road, and the North Shore Esplanade.

Properties neighboring Richmond Terrace include the St. George Terminal, a commercial shopping mall (Empire Outlets), the Staten island University Hospital (SIUH) Community Park, a multilevel parking garage, a construction site, several Staten Island municipal buildings, and commercial and residential properties. Properties neighboring the former North Shore Railroad ROW include vegetated land along the shoreline, Richmond Terrace and the North Shore Esplanade Park (above the ROW), two properties with former one-story structures containing abandoned cars and lumber and an asphalt-paved semicircle utilized for parking, the Atlantic Salt property, and commercial and residential properties. A contractor's storage yard is present near the intersection of Richmond Terrace and Nicholas Street, and piles of stockpiled soil are located within the former North Shore Railroad ROW (adjacent to the Richmond Terrace retaining wall) between Nicholas Street and St. Peter's Place.

The eastern portion of Section 1 is located approximately 400 to 1,000 feet southwest of the upper portion of the New York Bay (Upper Bay), while the western portion is located approximately 30 to 150 feet south of the Upper Bay. The alignment is approximately 30 to 40 feet above mean sea level in this area; local topography slopes downward to the north/northwest in the western portion and to the northeast in the eastern portion. Generally, groundwater contour lines mimic the surface topography, with shallow groundwater flowing north/northwest in the western portion of Section 1 and northeast in the eastern portion; however, a subsurface investigation would be required to determine actual groundwater flow direction. The depth to groundwater is reported as approximately 8 to 10 feet below ground surface (bgs) in the general vicinity (Mott MacDonald, 2017).

Based on the review of available literature (Soren, 1988), the subsurface geology of Section 1 likely includes the following formations: Upper Pleistocene deposits, Raritan Formation, and bedrock. The surficial soils are comprised of till soils (glacial deposits), which consist of a mixture of boulders, gravel, sand, silt, and clay. Based on review of available documentation, these soils were observed in soil borings advanced to terminal depths of approximately 16 to 57 feet below ground surface (bgs) in the vicinity of the Section 1 alignment. In addition, uncontrolled fill was observed in soil borings, including sand, gravel, brick, concrete, wood, and glass fragments from ground surface to thicknesses that

ranged from 13 to 33 feet bgs (Mott MacDonald, 2017). The bedrock contains several units, including the Staten Island Serpentine of Merrill and Manhattan Schist. Serpentine bedrock was observed in soil borings at depths ranging from 40 to 52 feet bgs (Mott MacDonald, 2017). Serpentine contains high concentrations of magnesium, which facilitates the formation of naturally occurring asbestos (magnesium-iron silicate).

Recognized Environmental Conditions (RECs) and Environmental Concerns

RECs Within the Limits of Disturbance

Properties within the limits of disturbance of Section 1, where contamination may exist that has the potential to affect the construction or operation of the Proposed Project, are identified below. Each noted property is designated by a number that corresponds to a site shown in **Figure 11-1.** Sites designated with an H (e.g. H001) are those identified through a review of historical records; sites designated with an R (e.g. R001) were identified through a review of regulatory agency records; and sites designated with an S (e.g. S001) were identified during site reconnaissance.

- The former rail ROW (H011) was historically developed with railroad-related structures that have since been demolished. Rail corridors are associated with a high potential for contaminants deposited during former rail operations (including petroleum products, creosote from wood ties, and arsenic from herbicides) and adjacent industrial activities. Historic fill of unknown origin and suspected buried structures have the potential to impact the environmental integrity of the study area.
- Several current and historic commercial and manufacturing facilities were identified in the western portion of Section 1 (H018, H024, H026, and H027) around Jersey Street. The industries involved include dyeing and cleaning; animal rendering; textile and clock manufacturers; and lumber, coal, stone, and feed storage yards. As a result of these activities, petroleum-related, metal/polycyclic-aromatic-hydrocarbon (PAH)-related, and/or chlorinated-solvent-related contaminants may be present in soil or groundwater.
- During site reconnaissance, a drum storage area consisting of three 55-gallon drums (S001) was observed in a contractor's storage yard on the central portion of Section 1. The drum storage area was inaccessible due to construction restraints; the ability to inspect these drums was limited. Any unreported releases from the drum storage area would have the potential to impact the environmental integrity of this portion of the study area.
- A line of soil stockpiles, covered by tarps and partially vegetated for maintenance, extends along the ROW between Bank Street and the Richmond Terrace retaining wall just north of the North Shore Esplanade Park (S002). The stockpiles contain approximately 13,000 cubic feet of soil—which

Figure 11-1 Recognized Environmental Conditions (Section 1: St. George to Jersey Street)

was excavated primarily during construction of the parking garage at the former New York Wheel site and is contaminated with residual arsenic, lead, PAHs, and petroleum as well as soil vapor, including methane. The former New York Wheel site and the Staten island University Hospital (SIUH) Community Park site were previously remediated under a Voluntary Cleanup Agreement (VCA) with the NYSDEC (Site Number V-00228) and are subject to an August 2005 Restrictive Declaration. A Site Management Plan (SMP) has been prepared by NYCEDC for the site, and NYSDEC approval and revision to the SMP is required related to future soil disturbance or disturbance of materials beneath the existing soil cap. To that end, a Soil Reuse and Sampling Plan Approval Request was prepared under the provisions of the SMP. The soil has been characterized and will be either reused on the former New York Wheel site below the site cap, as approved by NYSDEC, or properly disposed of off-site by the property owner. In 2015 and 2016, the contaminated stockpiles were placed in the City-owned former North Shore Railroad ROW between the Richmond Terrace retaining wall and Bank Street, where they remain today. The ROW is outside of the area under VCA jurisdiction.

Environmental Concerns Within the Limits of Disturbance

During the site reconnaissance, potential areas were noted which could contain asbestos- and PCB-containing materials and lead-based paint. These substances may be present in areas of older infrastructure, where caulking materials and paints may not conform to current standards. The potential presence of these materials is considered an environmental concern.

RECs Outside the Limits of Disturbance

Properties outside the limits of disturbance, but where contamination may exist that could have the potential to affect the construction or operation of the Proposed Project, were identified as follows:

- Several current and historic commercial and manufacturing facilities were identified on properties adjacent to and surrounding the proposed alignment (H001 through H010, H012 through H017, H019 through H023, H025, and H028 through H030). These facilities, which are focused primarily in the westernmost and easternmost portions of Section 1, include a former railyard; auto wash and repair services; machine and carpentry shops; lumber and paint storage; gasoline filling stations; tire service; dry cleaning/laundry; sign printing; paints and oils sales; carpentry; upholstering; sheet metal works; an electrical substation with transformers; automobile repair and wash shops; gasoline filling stations; lumber, coal, stone, and feed storage yards; and paint, chemical, and other types of manufacturers. These types of businesses have the potential to release petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminants into soil and/or groundwater that could migrate into the alignment.

- Properties located in close proximity to the limits of disturbance are listed in the regulatory database report that identifies documented instances of past or existing contamination. Contamination associated with sites listed in the report includes spills and a Voluntary Cleanup Program (R001); spills, petroleum bulk storage, and hazardous waste generation (R002, R003, R004and, R005); and spills including one open spill and petroleum bulk storage (R006). The potential presence of petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminated soil and/or groundwater at these sites may have impacted the proposed alignment.
- During the reconnaissance, a metal-framed structure housing metal debris (i.e., abandoned car parts) and a concrete structure housing lumber and miscellaneous construction debris were identified in a landscaped area adjacent to the proposed alignment, suggestive of potential dumping (S003).

Section 2 (Jersey Street to Alaska Street)

Land Use and Geologic Characteristics

Section 2 of the Proposed Project extends approximately two miles along the north shore of Staten Island; the limits of disturbance are approximately 30 feet in width (somewhat wider in station areas). The alignment is generally located within the former North Shore Railroad ROW, except as follows:

- In the area where the ROW traverses the Atlantic Salt property (located north of Richmond Terrace, between approximately Jersey Street and Clinton Avenue), a portion of the ROW is currently occupied by Atlantic Salt; as a result, some existing Atlantic Salt property may be exchanged for the City-owned ROW currently in use by Atlantic Salt. This area includes a paved roadway and parking areas, several structures, construction equipment and construction-related debris, a paved ramp used for Atlantic Salt access to and from Richmond Terrace, and a portion of the salt stockpile area.
- Between Clinton Avenue and Bard Avenue, portions of the ROW are currently partially or fully submerged due to storm damage, ongoing coastal erosion, and lack of bulkhead maintenance. As described in **Chapter 2, Proposed Project and Alternatives**, an on-land busway would run north of Richmond Terrace, in the vicinity of Snug Harbor, using a combination of City-owned ROW and mapped parkland.
- The ROW passes through a portion of the existing Caddell Dry Dock and Repair Company facility, with some Caddell uses occupying the ROW. Like Atlantic Salt, some Caddell property may be exchanged for some of the existing former railroad ROW. Uses in this portion of the Caddell facility include a paved service road and parking lots; storage yards, trailers, and warehouses; and several low-rise structures used as maritime repair shops, employee locker rooms, and offices.

Properties neighboring the eastern portion of Section 2 alignment include the Atlantic Salt property; Richmond Terrace; vegetated land; commercial facilities

located along Richmond Terrace (including auto repair facilities, service shops, and a gasoline station); warehouses; residential buildings; vacant lots; and unpaved and asphalt-paved parking areas. In the central portion, neighboring properties include Richmond Terrace; the Snug Harbor Cultural Center and Botanical Garden north and south of Richmond Terrace; vegetated land; and commercial facilities—including a gasoline station and residential buildings located along Richmond Terrace and the Kill Van Kull shoreline. Properties neighboring the western portion of Section 2 include Caddell Dry Dock and Repair Company, a Con Edison facility, Heritage Park, and various areas of vegetated land, paved parking areas, residences, and commercial facilities (including auto repair facilities and service shops) located along and near Richmond Terrace.

Based on site reconnaissance and a review of United States Geological Survey (USGS) topographic maps, existing ground elevation along the proposed alignment in Section 2 ranges from 0 to 20 feet above mean sea level (amsl), and local topography slopes downward to the north. Generally, groundwater contour lines mimic the surface topography, and groundwater flow direction is perpendicular to these contour lines flowing from higher to lower elevation. Based on local topography, the direction of shallow groundwater flow is north in the eastern and central portions of Section 2 and north/northwest in the western portion, toward the Kill Van Kull; however, a subsurface investigation would be required to determine actual groundwater flow direction. Information provided in the regulatory database report indicates the depth to groundwater ranges from 0 to 10 feet bgs in this area. Based on a review of available literature (Soren, 1988), subsurface geology in this area is similar to that of Section 1.

Recognized Environmental Conditions (RECs) and Environmental Concerns

RECs Within the Limits of Disturbance

Properties within the limits of disturbance of Section 2, where contamination may exist that has the potential to affect the construction or operation of the Proposed Project, are identified below. Each noted property is designated by a number that corresponds to a site shown in **Figure 11-2.** At the time of the site reconnaissance, several uses were noted as RECs; however, some of these uses no longer exist or the RECs have been addressed.

- Two areas within the proposed alignment of Section 2 (H114 and H124) were formerly inundated by the Kill Van Kull and subject to historic landfilling. Historic fill of unknown origin and suspected buried structures have the potential to impact the environmental integrity of the proposed alignment.
- The former rail ROW (H113) was historically developed with railroad-related structures that have since been demolished. Rail corridors are associated with

Figure 11-2 Recognized Environmental Conditions (Section 2: Jersey Street to Alaska Street)

a high potential for contaminants deposited during former rail operations (including petroleum products, creosote from wood ties, and arsenic from herbicides) and adjacent industrial activities. Historic fill of unknown origin and suspected buried structures also have the potential to impact the environmental integrity of the study area.

- Several current and historic commercial and manufacturing facilities were identified within the proposed alignment (H101, H117, H118, H126, and H127). These facilities include an oil warehouse, a salt distribution facility, a maritime repair dock and yard, clock manufacturers, a clothing manufacturer, an electric company with associated coal pocket and coal hoist, machine shops, and automobile-related businesses—including gasoline filling stations, automobile repair and painting shops, and used car sales. As a result of these activities, petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminants may be present in soil and groundwater. The Atlantic Salt facility was formerly a US Gypsum plant and was at one time on the National Priorities List (NPL) or Superfund site; however, cleanup of the site was completed in 1993, and it is no longer on the NPL.
- Two properties potentially within the proposed alignment are listed in the regulatory database report. Property R105 is listed for spills, hazardous waste generation, and violations associated with the mismanagement of hazardous waste; and property R104 is listed for hazardous waste generation, petroleum bulk storage, and spills. These conditions suggest the potential presence of petroleum-related, metal/PAH-related, and/or chlorinated solvent-related contaminants in soil and/or groundwater along the proposed alignment.
- At the time of the site reconnaissance, a one-story concrete structure that was undergoing active demolition was identified on the Atlantic Salt property (S102). Since that time, the demolition of the structure has been completed. The REC identified at the time of the site reconnaissance was associated with construction equipment and miscellaneous construction-related debris, which no longer exist. Environmental Concerns within the Limits of Disturbance.

During the site reconnaissance, suspected asbestos-containing material was observed in the form of caulking (i.e., window glazing), mortar (i.e., brick, masonry block), and roofing materials. Asbestos-containing material may also be present in structures, including former railroad structures (i.e., tracks and abutments) and possibly other interior building components (e.g., pipe insulation, plaster, gypsum board, ceiling tiles, floor tiles, and mastics). Suspected lead-based paint was observed on roadways/service roads, sidewalks, asphalt-paved parking areas, and the exterior of structures. Suspected PCBs were observed in the form of caulking material (i.e., window glazing). In addition, asbestos- and PCB-containing materials and lead-based paint may be present in historic fill. The potential presence of these materials is considered an environmental concern.

A portion of the proposed alignment in Section 2 was part of the Kill Van Kull prior to approximately 1925 and was subsequently filled and developed (H115 and H128). Organic-rich deposits from historic landfilling have the potential to generate methane, which is considered an environmental concern.

RECs Outside the Limits of Disturbance

Properties outside the limits of disturbance, but where contamination may exist that could have the potential to affect the construction or operation of the Proposed Project, were identified as follows:

- Several current and historic commercial and manufacturing facilities (H102 through H112, H115, H116, H119 through H123, H125, H128 through H132) were identified on properties adjacent to and surrounding the proposed alignment, with some uses dating back to at least 1885. These facilities include a fuel oil tank storage yard, maritime repair yards and associated dry docks, lumber storage sheds, a coal, fuel oil, and building materials storage yard, a paper and sign manufacturing facility, plaster manufacturing, textile manufacturing, various factory buildings, electric and carpentry shops, a salt distribution facility, iron works, automobile repair facilities/paint shops, filling stations, a gypsum and wood storage facility, machine repair shop, paint shops, saw and planing mills, and a former railyard. The potential presence of petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminants in soil and/or groundwater may have impacted the proposed alignment.
- Properties located in close proximity to the proposed alignment are listed in the regulatory database report for spills, hazardous waste generation, petroleum bulk storage, and previous enrollment in the State Superfund Program (R101); spills and petroleum bulk storage (R102); spills, hazardous waste generation, and petroleum bulk storage (R103 and R104); spills, hazardous waste generation and violations associated with the mismanagement of hazardous waste (R105); and spills and hazardous waste generation (R106). The potential presence of contaminated soil and/or groundwater associated with these sites may have impacted the proposed alignment.
- At the time of the site reconnaissance, a property located south of and adjacent to the proposed alignment (S104) was identified as a potential junk yard/contractor storage yard. This identification was based on the presence of metal debris (i.e., abandoned car parts), lumber, and miscellaneous construction-related debris. Material mismanagement at this site may have the potential to impact the environmental integrity of the proposed alignment. Additionally, during the reconnaissance, two auto-repair facilities/service shops were identified on properties located upgradient and adjacent to the proposed alignment (S101, S103). Petroleum-related and/or chlorinated-solvent-related impacts associated with the current use of these

properties may have affected the environmental integrity of the proposed alignment.

Section 3 (Alaska Street to South Avenue)

Land Use and Geologic Characteristics

Section 3 of the proposed alignment extends approximately 2.5 miles along the north shore of Staten Island. The limits of disturbance are mainly within the existing viaduct and open-cut portions of the ROW and are approximately 30 feet in width, except at the westernmost portion of the alignment, where an approximately 3-acre plot of land extending west of South Avenue would be used to construct the Arlington station.

The existing section of ROW from Alaska Street to near John Street consists of at-grade abandoned railroad tracks and vegetated land that transitions to the elevated concrete and steel viaduct structure approximately 500 feet west of Alaska Street. The viaduct, which extends for approximately 1.2 miles, contains abandoned railroad tracks, vegetation, and remnants of former railway stations (i.e., distressed metal-framed structures, concrete platforms, and metal railings). The eastern portion traverses the Port Richmond Wastewater Treatment Plant (WWTP), while the remainder extends above a variety of uses that include vegetated land, commercial and industrial facilities, asphalt-paved parking areas, residential neighborhoods, a tributary of the Kill Van Kull (Bodine Creek), and several roadways.

The open-cut section of the former ROW begins east of the Bayonne Bridge, near John Street. This section, which is approximately 0.9 mile long and roughly 20- to 30-feet below grade, is bounded by concrete retaining walls to the north and south. Land uses within the limits of disturbance consist of abandoned railroad tracks, remnants of former railway stations (i.e., distressed metal-framed structures, concrete platforms, and metal railings), electric utility poles, vegetation, and areas containing trash and debris (i.e., abandoned car parts, former railroad ties and remnants of former railway stations, abandoned lumber). Near Roxbury Street, the proposed alignment would leave the open-cut and rise to grade, extending along Roxbury Street and the adjacent concrete sidewalks towards the South Avenue bridge, reaching South Avenue at approximately Brabant Street. The 3-acre parcel at the westernmost end of the proposed alignment, which consists of unpaved parking areas and vegetation, is occupied by a transportation facility and used as a storage yard for dump trucks and other construction-related vehicles.

Properties neighboring the eastern portion of Section 3 include vegetated land, asphalt-paved parking areas, residential neighborhoods, commercial, industrial, and transportation facilities (i.e., Port Richmond WWTP, MV Transportation, Richmond Auto Glass); the Port Richmond High School baseball field, and several roadways. Properties neighboring the western portion of the segment include vegetated land, commercial facilities (i.e., discount tires, a contracting and storage

yard, a propane supplier, plumbing and heating, a welding shop, grocery delivery service, a Con Edison substation, a fence depot, and parking areas), one- and two-family residential neighborhoods, the New York City Housing Authority Mariner's Harbor complex, several roadways, the A&A Landfill site, and an operating freight rail service west of South Avenue.

Based on a review of USGS topographic maps, the existing ground elevation of Section 3 ranges from 5 to 45 feet above mean sea level, and local topography slopes downward to the north/northwest. In general, groundwater contour lines mimic the surface topography, and groundwater flow direction is perpendicular to these contour lines flowing from higher to lower elevation. Based on local topography, the direction of shallow groundwater flow is north/northwest towards the Kill Van Kull—however, a subsurface investigation would be required to determine actual groundwater flow direction. Information provided in the regulatory database report indicates that the depth to groundwater ranges from 5 to 15 feet below ground surface in the general vicinity of the proposed alignment. Based on a review of available literature (Soren, 1988), the subsurface geology of Section 3 appears to include similar formations to Segments 1 and 2.

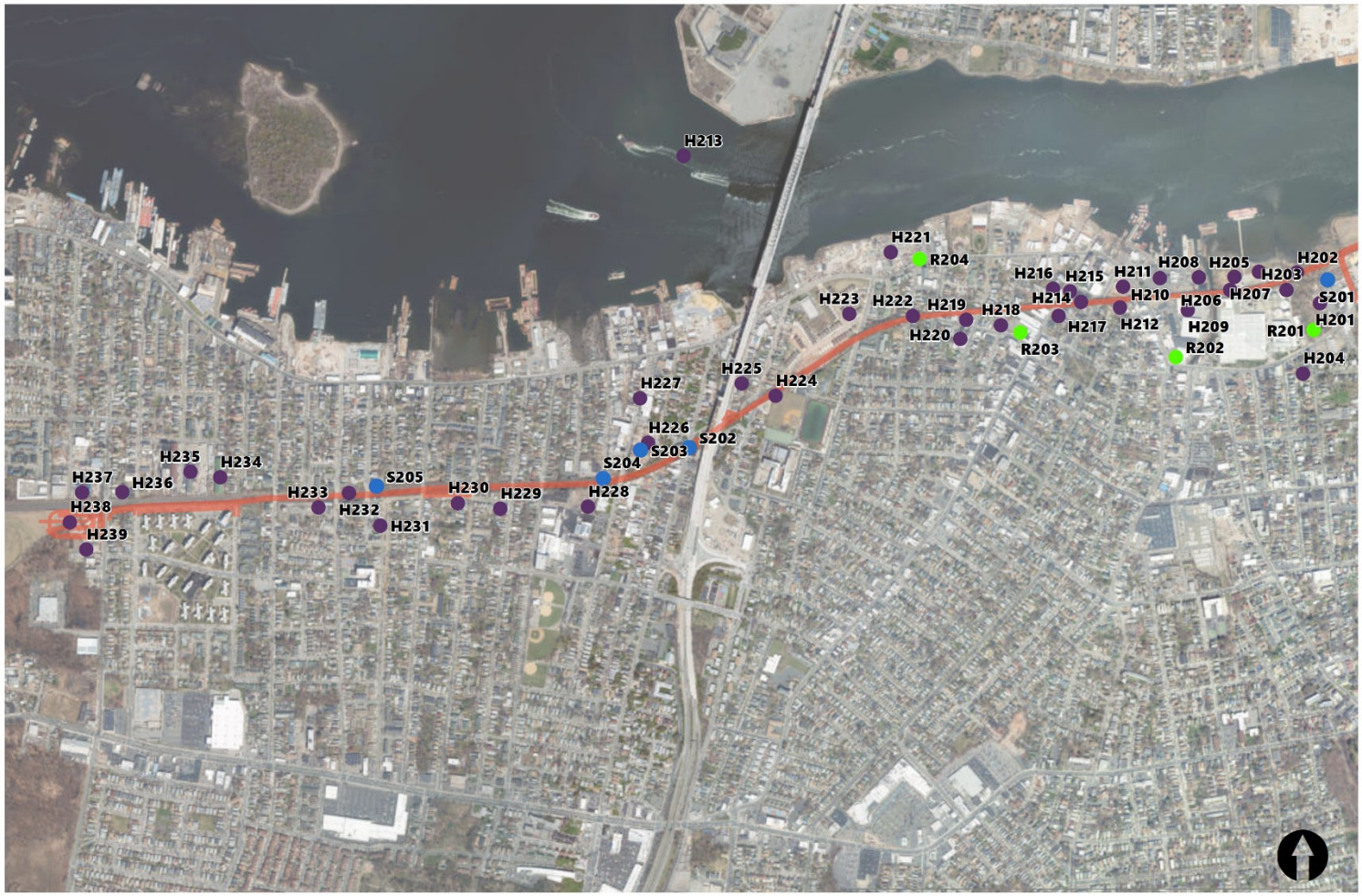
Recognized Environmental Conditions (RECs) and Environmental Concerns

RECs Within the Limits of Disturbance

Properties within the limits of disturbance of Section 3, where contamination may exist that has the potential to affect the construction or operation of the Proposed Project, are identified below. Each noted property is designated by a number that corresponds to a site shown in **Figure 11-3.**

- A small portion of the proposed alignment between Heritage Park and the Port Richmond WWTP (H202) was formerly part of the Kill Van Kull and subject to historic landfilling. Historic fill of unknown origin and suspected buried structures have the potential to impact the environmental integrity of the proposed alignment.
- Most of the proposed alignment in this segment was historically developed with a former railroad (H213) and a former railway storage yard (H238). The potential presence of petroleum-related contaminants in soil and/or groundwater from former railroad operations and railway storage may have impacted the alignment.

Figure 11-3 Recognized Environmental Conditions (Section 3: Alaska Street to South Avenue)



- Several current and historic commercial and manufacturing facilities were identified in Section 3 (H206, H214, H219, H222, H224, H232). These facilities include a machine shop, a planing mill, an awning factory, coal and lumber yards, an electric company, automobile-related businesses with gasoline tanks—including gasoline filling stations and automobile repair, and a chemical works facility and oil warehouse. Based on these land uses, petroleum-related, metal/PAH-related, and/or chlorinated solvent-related contaminants in soil and/or groundwater may exist along the proposed alignment.
- During the site reconnaissance, areas were observed to contain miscellaneous trash and debris, abandoned car parts, former railroad ties and remnants of former railway stations, and abandoned lumber (S202, S204, S205). Potential releases and material mismanagement may have impacted the environmental integrity of the proposed alignment.

Environmental Concerns Within the Limits of Disturbance

During the site reconnaissance, suspected asbestos- and PCB-containing materials were observed in the form of caulking (i.e., between concrete joints in sidewalks and the existing viaduct structure) and in mortar (i.e. masonry block). Suspected lead-based paint was observed on roadways, sidewalks, asphalt-paved parking areas, and the exterior of structures. The potential presence of these materials is considered an environmental concern.

As noted above, a portion of the proposed alignment between Heritage Park and the Port Richmond WWTP (H202) was part of the Kill Van Kull prior to approximately 1925 and was subsequently developed. Organic-rich deposits from historic landfilling have the potential to generate methane, which is considered an environmental concern.

RECs Outside the Limits of Disturbance

Properties outside the limits of disturbance, but where contamination may exist that could have the potential to affect the construction or operation of the Proposed Project, were identified as follows:

- Several current and historic commercial and manufacturing facilities (H201, H203 through H205, H207 through H212, H215 through H218, H220, H221, H223, H225 through H231, H233 through H237, and H239) were identified on properties adjacent to and surrounding the proposed alignment, with some uses dating back to at least 1885. These include coal facilities, a fuel oil and coal storage facility, a Consolidated Edison transformer station, automobile repair facilities, automobile sales facilities, an automobile paint facility, automobile wrecking yards, steam laundry and dry cleaning facilities, gasoline filling stations, a clothing manufacturer, a varnish works facility, lumber yards, an asphalt plant, ship repair yards, an electrical repair facility, iron and lead works facilities, and miscellaneous manufacturing facilities. As a

result, petroleum-related, metal/PAH-related, and/or chlorinated solvent-related contaminants may exist in soil and/or groundwater along the proposed alignment.

- Properties located in close proximity to the proposed alignment are listed in the regulatory database report for spills and petroleum bulk storage (R201); spills, petroleum bulk storage, and hazardous waste generation (R202); spills, including one that remains open (R203); and spills (including one that remains open), petroleum bulk storage, and hazardous waste generation (R204). The potential exists for contaminants from these areas to have migrated into the limits of disturbance. As indicated in the corridor-level ESA for this section of the alignment, the A&A Landfill Site is located approximately 0.3 miles to the west of the proposed alignment and outside the Proposed Project's limit of disturbance.
- During the site reconnaissance, a property located adjacent to and upgradient of the proposed alignment (S201) appeared to have been used as a junk yard. This assessment was made based on the presence of metal debris (i.e., abandoned car parts), lumber, and miscellaneous debris and trash. The property's use as a junk yard and potential for material mismanagement may impact the environmental integrity of the proposed alignment. Additionally, during the site reconnaissance, several properties located adjacent to the alignment (S203) were occupied by automobile-related facilities—including repair, wrecking, and painting shops. Petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminants in soil and/or groundwater may have migrated from these properties into the limits of disturbance.

No-Action Condition

In the future without the Proposed Project, it is assumed that changes in the use of the study area, including changes that require construction or soil excavation, would likely continue and there would still be a potential for disturbance of contaminated materials that could increase exposure. However, unlike the conditions in the future with the Proposed Project, regulatory oversight of any required remediation and/or the implementation of proper environmental health and safety protocols would not necessarily be conducted. Any sites currently undergoing remediation under a regulatory program would continue their efforts in those programs.

As noted under Existing Conditions, the soil currently stockpiled just south of Bank Street in Section 1 has been characterized and will be either reused on the former New York Wheel site below the site cap, as approved by NYSDEC, or properly disposed of off-site. The City and/or future tenant of the former New York Wheel site is responsible for the reuse and/or removal of this soil. It is assumed that disposition of the stockpiles by the City or future tenant of the

former New York Wheel site will occur under the No-Action Condition and that no contamination from the stockpiled material will remain in the ROW.

With-Action Condition

Construction of the Proposed Project would require subsurface disturbance along the alignment for construction of the busway, stations, parking areas, and drainage facilities. Excavation would range from approximately 5 to 15 feet below ground surface throughout the proposed alignment. Based on the review of preliminary construction plans for the Proposed Project and the identified RECs and environmental concerns at or in close proximity to the proposed construction area, as described above under Existing Conditions, the potential exists to encounter contaminated soils during construction activities. In addition, based on the planned construction activities and anticipated depth to groundwater, dewatering may be required as part of construction, resulting in the potential for discharge of contaminated groundwater. The types of contaminants that may be encountered include the following:

- **Volatile organic compounds (VOCs)**: These include aromatic compounds, such as benzene, toluene, ethylbenzene, xylene (BTEX), and methyl tertiary butyl ether (MTBE), which are found in petroleum products (especially gasoline). They're also found in chlorinated compounds like tetrachloroethene (also known as perchloroethylene or "perc") and trichloroethene; these compounds are common ingredients in solvents, degreasers, and cleansers that are often used in vehicle repair.
- **Semi-volatile organic compounds (SVOCs)**: The most common SVOCs in urban areas are PAHs, which are constituents of partially combusted coal- or petroleum-derived products, such as coal ash and fuel oil. PAHs are commonly found in fill material. In addition, petroleum-related SVOCs associated with engine fluids (including fuels) and petroleum storage tanks could be present.
- **PCBs**: PCBs were commonly used in dielectric fluid in stationary or railroad transformers, some underground high-voltage electric pipelines, and hydraulically operated machinery. PCBs are of special concern at maintenance locations where leakage into soil may have occurred.
- **Pesticides, herbicides, and rodenticides**: These are commonly used to control rodents and/or insects and vegetation in vegetated lots, vacant structures, and railroad yards and rights-of-way.
- **Metals**: Metals (including lead, arsenic, cadmium, chromium, and mercury) are often used in smelters, foundries, and metal works, and are found as components in paint, ink, petroleum products, and coal ash. Metals are also associated with pressure-treated wood (e.g., railroad ties), building components (e.g., mercury thermostats), and lead acid automotive batteries.

- **Methane:** Methane is formed from the decomposition of organic materials—both natural organic deposits (e.g., peat) and/or municipal wastes. Methane represents a concern since it can migrate through the subsurface, causing an explosion hazard.

In addition, asbestos- and PCB-containing building materials and lead-based paints may be encountered, as described in the Environmental Concerns subsections under Existing Conditions. As noted above for the No-Action Condition, stockpiles of contaminated soil associated with the garage construction at the former New York Wheel site are expected to be removed by the City and/or the future tenant of the former New York Wheel site prior to, and independently of, the Proposed Project. MTA would not be responsible for any contamination associated with these stockpiles.

Best Management Practices

During detailed project design, Phase II ESAs would be performed for properties identified in the Phase I ESA as having the potential to contain contaminants that would be disturbed during construction. The Phase II ESAs would include subsurface testing of soil, soil gas, and/or groundwater to identify sources of environmental impacts. Based on the results of the Phase II ESAs, the following measures could be used to address areas of identified contamination within the limits of disturbance:

- A Remedial Action Plan (RAP) would be prepared for implementation during project construction. This plan would address both the remediation of known or potential unknown environmental conditions that may be encountered during subsurface disturbance associated with project construction. The purpose of the RAP is to present measures for managing contaminated on-site soil and groundwater and USTs and removing any potentially unknown underground petroleum storage tanks in accordance with applicable federal, state, and local regulations. Contaminated soil management protocols would include guidelines for temporary on-site stockpiling and off-site transportation and disposal. The plans would incorporate safety and other measures to minimize the potential for impacts to the community and construction workers. The RAP also would specify the need for engineering controls as warranted based on the testing, such as the incorporation of vapor mitigation systems into the project design.
- To minimize the potential for impacts to the community and construction workers, all demolition, excavation, and construction work involving soil disturbance would be performed under a site-specific environmental Construction Health and Safety Plan (CHASP). The CHASP would also be based on the results of the Phase II study and would specify appropriate testing and/or monitoring, and detail appropriate measures to be implemented (including notification of regulatory agencies, dust suppression techniques, appropriate air monitoring action levels and responses, etc.) if

underground storage tanks, soil and groundwater contamination, or other unforeseen environmental conditions are encountered.

- If dewatering is required for construction, testing would be performed to ensure compliance with applicable discharge regulatory requirements. If necessary, pre-treatment would be conducted prior to discharge.

  Removal and disposal of electrical equipment would be performed in accordance with applicable federal, state, and local regulations—with special considerations if there is labeling or test data indicating it is mercury- and/or PCB-containing.

- Prior to any activities required as part of the Proposed Project that could disturb potential asbestos-containing materials, a comprehensive asbestos survey would be conducted of areas to be disturbed by the Proposed Project. Such survey would include the sampling of all suspect materials to confirm the presence or absence of asbestos. All identified asbestos-containing materials would be removed and disposed of prior to construction, in accordance with all federal, state, and local regulations. Asbestos abatement procedures and containment requirements would be based on the type and quantities of materials to be removed.

- Any demolition activities with the potential to disturb lead-based paint would be performed in accordance with applicable Occupational Safety and Health Administration regulations, including OSHA 29 CFR 1926.6 – Lead Exposure in Construction. Methods for lead abatement would comply with all applicable abatement procedures and containment requirements.

- All material requiring disposal (e.g., miscellaneous debris, tires, contaminated soil, and any excess fill) would be characterized and disposed of off-site in accordance with applicable federal, state, and local requirements.

Conclusion

With the implementation of these protocols, no significant adverse impacts related to contaminated materials would result from demolition and/or construction activities related to the Proposed Project. Following construction, there would be no further potential for significant adverse hazardous materials impacts.

12 Water and Sewer Infrastructure

Water and sewer infrastructure includes the water supply system and wastewater and stormwater conveyance and treatment. This water and sewer infrastructure analysis describes the existing water and sewer infrastructure within the study area that may be affected by the Proposed Project and determines the extent to which the Proposed Project would impact these resources.

Regulatory Background

According to the *CEQR Technical Manual*, a preliminary water supply infrastructure analysis is needed if the project:

- Would result in an exceptionally large demand for water (e.g., those that are projected to use more than one million gallons per day (gpd) such as power plants, very large cooling systems, or large developments); or
- Is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system such as the Rockaway Peninsula and Coney Island).

The Proposed Project is not located in an area that experiences low water pressure. The Proposed Project would implement new Bus Rapid Transit (BRT) service between West Shore Plaza and St. George Terminal, which would result in a minimal increase in water demand. It is anticipated that existing NYCT bus depots on Staten Island with available capacity would be utilized for the storage, inspection, and maintenance of the BRT fleet. Therefore, the Proposed Project would not result in a demand for water of more than one million gpd, and the Proposed Project does not warrant an analysis of water supply. The analysis below includes an assessment of the Proposed Project's potential to affect water infrastructure.

Additionally, a preliminary wastewater and stormwater conveyance and treatment analysis is needed if the project:

- Is located in a combined sewer area and would exceed the following incremental development of residential units or commercial, public facility, and institution and/or community facility space above the predicted No-Action scenario:

- 1,000 residential units or 250,000 square feet (sf) of commercial, public facility, and institution and/or community facility space or more in Manhattan; or,
- 400 residential units or 150,000 sf of commercial, public facility, and institution and/or community facility space or more in the Bronx, Brooklyn Staten Island, or Queens.

» Is located in a separately sewered area and would exceed certain incremental development thresholds for residential units or commercial, public facility, and institution and/or community facility space per site, depending upon the existing zoning district.

» Is located in an area that is partially sewered or currently unsewered.

» Involves development of a site five acres or larger.

The Proposed Project would not result in new residential, commercial, public facility, or institution and/or community facility space and therefore would not result in any increase demand on wastewater treatment. Therefore, the analysis below is an assessment of the Proposed Project's potential to affect the sewer conveyance system itself.

Since the Proposed Project would result in an increase in impervious surfaces, the following includes an assessment of potential impacts on the stormwater infrastructure system.

Existing Conditions

Water

The area surrounding the Proposed Project is served by New York City Department of Environmental Protection (NYCDEP) water distribution mains located within City streets. Therefore, water infrastructure is not located directly within the ROW in the areas where the ROW is not located on City streets, including north of Richmond Terrace, the viaduct and the open-cut.

Sanitary and Stormwater

Throughout the study area, stormwater runoff and sanitary wastewater are conveyed to an underground system that consists of a combination of separate and combined sewers. The separate sanitary sewers and combined sewers lead to two Wastewater Resource Recovery Facilities (WRRFs). The Port Richmond WRRF is located at 1800 Richmond Terrace. The Oakwood Beach WRRF is located on the eastern shore of Staten Island at 683 Mill Road, outside the study area.

As their names suggest, separate sewers exclusively handle stormwater or sanitary wastewater while combined sewers handle both stormwater and sanitary wastewater.

From St. George to Mariners Harbor, the Proposed Project is located in the Port Richmond sewershed.[1] Then, along South Avenue, the Proposed Project crosses into the Oakbeach sewershed when South Avenue runs south of the Staten Island Expressway.

There are several combined sewer overflow (CSO) outfalls along the North Shore of Staten Island, which, during certain rain events, may discharge untreated sewage directly to the Kill Van Kull and Upper New York Bay.

Similar to the water infrastructure, sewer infrastructure is not located directly within the ROW in the areas where the ROW is not located on City streets. However, north of Richmond Terrace, sewer infrastructure does cross the ROW in various locations that discharge to the CSO outfalls.

In terms of stormwater, initial research (see **Appendix E, Basis of Design Report**) indicates that runoff infiltrates into the ground along the cut sections of the ROW. Based on site investigations, there are existing downspouts along the viaduct located at several undergrade bridge crossings. These are likely existing stormwater discharge points. North of Richmond Terrace, Caddell Dry Dock and Atlantic Salt, maritime industries, have indicated private drainage exists within their respective property which discharge stormwater directly to the Kill van Kull.

No-Action Condition

Water

In the No-Action Condition, there would be no changes to existing water supply infrastructure.

Sanitary and Stormwater

In the No-Action Condition, there would be no changes to existing sanitary and stormwater sewer infrastructure.

With-Action Condition

A *Basis of Design Report* (see **Appendix E**), has been prepared to guide future construction activities associated with the Proposed Project. The *Basis of Design Report* identifies where along the proposed alignment modifications to existing utilities, including water supply, sanitary and stormwater sewers would be required. The following summarizes the relevant details of the *Basis of Design Report*.

[1] The Port Richmond sewershed includes the land area that contributes drainage to the Port Richmond WRRF. According to the Newtown Creek Alliance, "A sewershed describes an area of land and how water flows through the built environment; over the streets, sidewalks, buildings and how it drains into pipes that carry it to treatment plants or to surrounding waterbodies." Newtown Creek Alliance. Available at http://www.newtowncreekalliance.org/wp-content/uploads/2018/08/4-Watershed-Sewershed-worksheets.pdf. Accessed April 27, 2023.

Water

Construction of the proposed alignment is expected to involve minimal disturbance to existing water supply infrastructure. Four areas have been identified throughout the proposed alignment where it would be necessary to replace and/or relocate existing water mains and hydrants, as listed below.

- **Arlington Station Section:** Reconfiguration of Roxbury Street between Lockman and Grandview Avenues would require replacement of the existing 12-inch diameter water main, in accordance with NYCDEP water main replacement age criteria. These criteria require the replacement of any distribution water main installed prior to and including 1970.
- **St. George Section:** Along Bank Street, from the dead end located in front of the Atlantic Salt site to Nicholas Street, relocation of existing hydrants would be necessary as curbs would be relocated to accommodate the proposed alignment.
- **St. George Section:** Narrowing of the south sidewalk width from Stuyvesant Place to Wall Street would require replacement of the existing 12- and 24-inch diameter water mains located along Stuyvesant Place, in accordance with NYCDEP replacement age criteria. These criteria would also apply to the 12-inch diameter water main along the south sidewalk from Hamilton Avenue to Wall Street. It is also expected that relocation of existing hydrants would be necessary as curbs would be relocated to accommodate the proposed alignment.
- **Open Cut Section:** The replacement of a 12-inch diameter watermain in Eaton Place, installed circa 1937, would be required to accommodate the proposed alignment. This watermain would be replaced in accordance with NYCDEP water main replacement age criteria which mandates the replacement of water main infrastructure installed prior to 1970.

Upon completion of construction, the Proposed Project would not have a significant adverse impact upon water supply infrastructure. In addition, with the implementation of the Proposed Project, portions of the existing water system would be improved with the replacement of aging infrastructure.

Sanitary and Stormwater Sewers

Regarding sanitary sewers, based on preliminary utility survey results, it is expected that in-kind replacement of NYCDEP sanitary and combined sewer lines would be necessary within portions of the open-cut section of the proposed alignment. In-kind replacements are expected to involve approximately 150-foot linear segments (i.e., manhole-to-manhole) within the affected area. In addition, the CSO outfall at Alaska Street would require replacement.

The on-street and viaduct section of the proposed alignment would not involve modifications to existing sewer infrastructure. The ROW at-grade segments would require replacement of separate stormwater sewers where such conflicts have been identified. Additionally, there may be private utility lines and/or service

connections within the ROW at-grade segments, which would require potential replacement and/or relocation, pending further investigation. These would be addressed in accordance with the requirements of the appropriate agencies. Therefore, the Proposed Project would not result in any significant adverse impacts to wastewater infrastructure.

In terms of stormwater, the Proposed Project would result in a net increase in impervious surfaces along the proposed alignment. As such, it would be necessary to collect, treat, and ultimately discharge stormwater runoff from these surfaces. The proposed stormwater management strategy would aim to capture and treat runoff from the Proposed Project's footprint in efforts to consider the water quality and quantity requirements outlined under NYCDEP's Unified Stormwater Rule. Along the mixed traffic portion of the Proposed Project (South Avenue and Richmond Terrace), the BRT buses would use existing roadways. As such, there are expected to be minimal impervious surface increases and existing street drainage to NYCDEP storm sewers would be maintained.

New drainage connections into existing storm drainage system would be in conformance with the requirements and standards of NYCDEP.

However, along the other portions of the ROW and the Richmond Terrace portions of the Proposed Project, alterations to the existing roadway and ROW infrastructure would require utility modifications, both to collect stormwater generated by new impervious surfaces and to relocate and/or replace existing utilities that may conflict with the proposed improvements.

The *Basis of Design Report* (see Appendix E) outlines the applicable standards for the proposed drainage design. The Proposed Project includes a conceptual-level drainage design and recommendations for associated improvements. The proposed drainage design for the Proposed Project includes a combination of stormwater infiltration and direct discharge.

- **Detention** would involve excavation of drainage detention facilities under the proposed alignment that would serve as runoff storage areas for the peak period of the storm events. These detention facilities would discharge through an outlet control structure, and then to a NYCDEP drainage plan sewer.
- **Infiltration** would be utilized where the proposed alignment is located inland, away from the shore. This approach involves installation of open-bottom infiltration chamber systems, such as Chambermaxx, which have a low-profile shape that is ideal for sites with a relatively high groundwater table. The infiltration structures would be connected to catch basins on each side of the alignment. The drainage design was calculated to provide capacity to hold and infiltrate the 100-year storm, assuming an infiltration rate of six inches per hour. Where the infiltration approach is used, there is no requirement to treat stormwater if it is being discharge directly to the ground.
- **Direct Discharge** would be utilized where the proposed alignment is located near the shore. This approach would direct stormwater runoff to a

hydrodynamic separator to be treated and then discharged directly to the Kill van Kull. The concept is to have manufactured treatment devices spaced along the roadway to treat the runoff from groups of catch basis and then discharge to Kill van Kull. The calculations indicate that a treatment device would be needed every 1,000 feet along the shore where the direct discharge approach would be used.

Along the open-cut, the proposed stormwater design would comprise of a infiltration infrastructure.

Along the viaduct, stormwater runoff would be directed from the viaduct structure to an infiltration system spaced beneath the existing viaduct structure. Near the waterfront in the vicinity of Alaska Street, the stormwater runoff would be directed to hydrodynamic separators prior to discharge into the Kill Van Kull.

In areas where the proposed alignment is near the shoreline north of Richmond Terrace, stormwater runoff would be directed to a hydrodynamic separator for treatment before being discharged into the Kill Van Kull. A total of 12 new outfalls are proposed. The proposed drainage design would comply with applicable local, state and federal requirements for water quality, treatment and flow reduction/detainment.

Based on current design concepts, runoff from the Proposed Project would be accommodated by the proposed drainage design. As such, no significant adverse impacts to stormwater infrastructure are expected to occur as a result of the Proposed Project. In addition, the Proposed Project would have an overall beneficial effect through improvements to existing stormwater infrastructure and additional treatment of stormwater prior to discharge.

Conclusion

The Proposed Project involves alterations to existing roadways and infrastructure within and adjacent to portions of the proposed alignment. These alterations would necessitate the replacement and/or relocation of existing water and sewer infrastructure in accordance with NYCDEP requirements. Where required, such infrastructure would be replaced and/or relocated in-kind, such that there would be no long-term impacts to these services. Thus, these improvements would not result in any significant adverse impacts and portions of the existing water and sewer infrastructure would be improved with the replacement of aging infrastructure.

Additionally, since the Proposed Project would alter the drainage characteristics along portions of the proposed alignment (i.e., changes to grading and impervious surfaces), improvements to drainage infrastructure would be required to mitigate the effects of stormwater runoff. Based on the current concept design, the Proposed Project would result in improvements to drainage infrastructure including a combination of infiltration to groundwater and direct discharge (with treatment) to the Kill van Kull. These improvements would accommodate the anticipated stormwater runoff loads as required under the applicable regulations. As such, the Proposed Project would not result in significant adverse impacts upon water, sewer, and stormwater infrastructure.

13 Solid Waste and Sanitation Services

This chapter considers the potential for the Proposed Project to result in significant adverse impacts to solid waste and sanitation services. Under the guidelines of the *2021 CEQR Technical Manual*, this analysis evaluates the existing solid waste and sanitation services in the area that may be affected by the Proposed Project and determines the extent to which the Proposed Project would impact those services.

Regulatory Background

Solid waste and sanitation services within the study area are guided by New York City's Solid Waste Management Plan (SWMP) of 2006, which is provided for by the New York State Solid Waste Management Act of 1988. The New York City Department of Sanitation (DSNY) is the primary agency responsible for collecting and disposing of solid waste throughout New York City.

The City's SWMP, which was adopted in July 2006 and covers the period through 2025, follows the hierarchical solid waste management objectives of the State's policy: (1) waste reduction; (2) recycling; (3) composting, resource conservation, and energy production; and (4) landfill disposal.

The *2021 CEQR Technical Manual*, presents guidelines for determining whether a solid waste and sanitation services assessment is appropriate. The threshold for a detailed analysis is 50 tons (100,000 pounds) of solid waste per week. A project that would generate less than 50 tons of solid waste per week in the With-Action Condition is assumed to be within the City's waste management capacity. As such, under *CEQR*, a detailed solid waste assessment is typically not warranted for projects generating under 50 tons of solid waste per week.

Existing Conditions

Solid waste is generated by the various land uses throughout the study area. DSNY is responsible for the collection and processing or disposal of non-commercial municipal solid waste (i.e., solid waste generated by residential buildings, public schools, some not-for-profit institutions, non-residential facilities that are exempt from real estate taxes, and many City and state

agencies). Commercial solid waste is collected, processed and/or disposed by private carters. DSNY also maintains public litter baskets along the sidewalks at various locations throughout the study area.

According to NYC OpenData, the DSNY sanitation districts that are present along the study area include Staten Island (SI)-01 and SI-02.[1] There are no transfer stations or DSNY garages located within the study area. The SI-01 garage is located at 539 Jersey Street between Brook Street and Victory Boulevard. The SI-02 garage is situated at 2500 Richmond Avenue across from the Staten Island Mall. Both garages are situated well beyond the study area limits.[2]

No-Action Condition

Under the No-Action Condition, the Proposed Project would not be implemented. Therefore, the existing former North Shore Railroad ROW would remain abandoned and unimproved. In the No-Action Condition, there would be no change to the amount of solid waste generated along the former North Shore Railroad ROW as compared to existing conditions.

With-Action Condition

In the With-Action Condition, land uses located within the former North Shore Railroad right-of-way would change to facilitate construction of the Proposed Project. As detailed in **Chapter 3, Land Use, Zoning, and Public Policy**, some existing land uses located on public and private properties, containing parkland, transportation/utilities, and commercial businesses, would change because of the Proposed Project and would be incorporated into the proposed transportation ROW. The change to these land uses would result in incremental decreases in solid waste generation throughout the study area.

The With-Action Condition would also result in the construction of facilities at which commuters and MTA employees would be expected to dispose of solid waste. This would include the proposed BRT stations and park-and-ride facilities. However, solid waste at these facilities would not be generated as a result of the Proposed Project. Trash receptacles would be provided for disposal of solid waste generated elsewhere by other uses (e.g., households, restaurants, coffee shops) which would be carried by BRT users along the route. It is expected that DSNY would be able to provide pickup and carting of solid waste that would be disposed at the proposed BRT facilities, consistent with its mission and the City's SWMP. In addition, a minimal amount of solid waste (e.g., motor oil, worn out tires, etc.) would be generated from the maintenance of the BRT vehicles at the

[1] NYC Open Data. DSNY District Map. Available at https://data.cityofnewyork.us/City-Government/DSNY-District-Map-/uqhg-h4at. Accessed March 6, 2023.

[2] NYC Department of Sanitation Garage Locations. Available at https://www.nyc.gov/assets/dsny/downloads/pdf/operations/dsny_garage_locations.pdf Accessed March 20, 2023.

existing Castleton Depot. This operational solid waste would be managed in accordance with MTA's Asset Recovery Program.

Conclusion

No DSNY facilities would be displaced by the Proposed Project, nor would any new DSNY facilities be located within the study area. The Proposed Project is not anticipated to generate a substantial amount of solid waste that would overburden the city's capacity to handle solid waste or otherwise be inconsistent with the City's SWMP. The With-Action Condition would result in a nominal amount of solid waste disposal (of waste generated elsewhere) at proposed BRT facilities; however, this would not be new solid waste as a result of the Proposed Project. All refuse would be transported to permitted solid waste disposal facilities in accordance with the City's SWMP. DSNY is expected to have sufficient capacity to provide pickup and carting services to the proposed BRT stations. As such, the Proposed Project would not result in significant adverse impacts upon solid waste and sanitation services.

14 Energy

This chapter considers the energy impacts of the Proposed Project through an assessment of the Proposed Project's potential effects on utility energy. The *2021 CEQR Technical Manual* recommends a detailed analysis of energy impacts for projects that could substantially affect the transmission or generation of energy or cause substantial new consumption of utility energy (e.g., electricity, natural gas, or steam). As noted in the *2021 CEQR Technical Manual*, the incremental demand caused by most projects most often would not create a significant impact on energy supply. The Proposed Project would not substantially affect the transmission or generation of energy and would not result in new building development or BRT operations that require significant utility energy services. Therefore, the Proposed Project is not expected to result in significant adverse impacts related to energy.

Regulatory Background

Since 1999, the MTA Department of Capital Program Management has established, implemented, and maintained an Environmental Management System (EMS) certified to ISO 14001. The primary objective of an environmental management system is to reduce the impact of an organization's activities, products, and services on the environment; an ISO 14001 environmental management system provides a structured approach to achieve the organization's environmental objectives. This is done by considering environmental aspects and impacts of the operations and activities at all stages of a project and ensuring adherence to all applicable environmental laws and regulations.

Through this program, MTA has committed to ongoing efforts to apply energy efficient technologies and design and management techniques that contribute to energy conservation and carbon footprint reduction. Overall, the ISO 14001 EMS is used to monitor implementation of sustainable design in MTA projects.

Other relevant documents set forth existing goals and priorities of New York State and New York City related to increasing energy efficiency. The State Energy Plan, published in 2015 by the New York State Energy Research and Development Authority (NYSERDA), contains a section on transportation and sets forth the goal

of creating a cleaner public transportation system, including reduction in the MTA's energy use.

In 2022, New York City published an update to its OneNYC 2050 program, which includes a goal to increase the efficiency of the transportation network in New York City, including a more energy efficient transportation system and reduced emissions of the City's fleet.[1]

In accordance with the *2021 CEQR Technical Manual*, although significant adverse impacts are not anticipated, the following assessment documents the potential increase in utility energy consumption from the long-term operation of the Proposed Project. As the Proposed Project is anticipated to increase demand for electricity, the focus of this assessment is electric service.

Existing Conditions

Electricity used in New York City is generated both within and outside the City and is delivered to most New York City users by Con Edison, with a small number of users in the Rockaways receiving power from the Long Island Power Authority. Projected generation and transmission requirements are forecasted by both the New York State Independent System Operator (NYISO) and Con Edison, ensuring that the City's power supply and transmission systems have the capacity to meet expected future demand. In 2021, annual electricity usage in Con Edison's New York City and Westchester County service area totaled approximately 51 billion kilowatt hours (kWh).[2]

As detailed in **Chapter 2, Proposed Project and Alternatives**, the Proposed Project's approximately 8-mile alignment between West Shore Plaza and St. George Terminal would comprise approximately 4.8 miles of right-of-way from the former North Shore Railroad, and a total of 3.2 miles of City streets such as Richmond Terrace (0.5 miles) and South Avenue (2.7 miles). Currently, the former North Shore Railroad right-of-way is largely abandoned, and any existing energy demand on City streets is associated with existing roadway operations. Therefore, there is no energy consumption associated with the proposed alignment under existing conditions. Bus service is provided by a mixed fleet including CNG and Hybrid powered buses among others in the study area on the existing City streets.

No-Action Condition

Under the No-Action Condition, the Proposed Project would not be implemented, and the existing former North Shore Railroad right-of-way would remain abandoned and unimproved. Bus service on local streets would continue

[1] NYC Mayor's Office of Climate and Environmental Justice. OneNYC 2050 2022 Progress Report. April 2022 Available at https://onenyc.cityofnewyork.us/wp-content/uploads/2022/05/OneNYC-2022-Progress-Report.pdf. Accessed March 6, 2023.

[2] ConEdison. 2021 Annual Report. Available at https://investor.conedison.com/static-files/ee446afe-7d16-444d-a345-23bf524a8cf3. Accessed February 8, 2023.

to operate at existing levels. By 2040 MTA plans to have converted their entire fleet of buses to electric-propulsion models. Therefore, as under existing conditions, there would be a shift in energy consumption from traditional fuels to electric power associated with the No-Action Condition.

With-Action Condition

The Proposed Project would implement new BRT service between West Shore Plaza and St. George Terminal. The proposed alignment would include at-grade, elevated viaduct, and below-grade open-cut sections, with street-running portions along South Avenue and an exclusive two-lane median busway on Richmond Terrace. On the portion of the proposed alignment that would use the former North Shore Railroad right-of-way, BRT service would operate within a two-lane, dedicated busway with the potential for passing lanes at certain stations.

The proposed BRT service would re-purpose and utilize the existing taxi stand on the bus deck of the St. George Terminal as its eastern terminus and the existing West Shore Plaza shopping center as the western terminus. In between these termini, seven new BRT stations, with amenities such as platforms and shelters, would be constructed. Commuter parking lots would be provided at the proposed Livingston and Arlington stations and the existing surface parking lot at West Shore Plaza would be dedicated for commuter parking (expanding upon its current unofficial use for commuter parking). The seven proposed new BRT stations would be accessed via a combination of stairs, ADA-compliant ramps, and elevators. Additional elements that would likely be incorporated at stations include lighting, benches, trash receptacles, Closed Circuit TV cameras (CCTV), electronic signage, and wayfinding systems.

Energy consumption associated with the proposed stations, including lighting, elevator operations, electronic signage and CCTV, are anticipated to be minimal. The proposed new stations and additional elements such as elevators and lighting in and around the stations would incorporate modern, energy-efficient components including solar power generation, thereby reducing energy usage as much as possible.

The most substantial source of energy consumption resulting from the Proposed Project would be associated with the bus operations along the proposed alignment. BRT service under the Proposed Project would be provided on two routes, the S1 and S2. Each would utilize a fully electrically powered fleet. It is anticipated that existing MTA bus depots on Staten Island with available capacity, such as Castleton Depot, would be utilized for the storage, charging, inspection, and maintenance of the BRT fleet and that the depot will have already been upgraded as part of the MTA's separate electric bus initiative.

Electrically powered buses are estimated to use approximately 2.0 kWh/mile.[3] Based on the number of anticipated bus trips along the S1 and S2 proposed routes, the estimated annual electricity demand could be approximately 746,679 kWh. Compared with the annual electric usage in the ConEdison service area, this anticipated energy consumption is considered minimal and is not anticipated to affect the function or capacity of energy service.

Conclusion

As detailed above, the Proposed Project would not substantially affect the transmission or generation of energy and would not result in new building development or BRT operations that require significant utility energy services. Overall, the Proposed Project is not expected to result in significant adverse impacts related to energy.

MTA would implement the use of energy-efficient technologies where feasible in implementation and operations of the BRT service, including the use of a fully electrically powered fleet. Therefore, the Proposed Project would align with the ISO 14001 EMS and the goals and priorities set forth in the relevant policy documents that relate to energy usage in the City.

[3] Columbia University. Electric Bus Analysis for New York City Transit, May 2016. Available at http://www.columbia.edu/~ja3041/Electric%20Bus%20Analysis%20for%20NYC%20Transit%20by%20J%20Aber%20Columbia%20University%20-%20May%202016.pdf. Accessed March 6, 2023.

15 Transportation

This chapter considers the potential for the Proposed Project to result in significant adverse impacts on traffic operations and mobility, public transportation facilities and services, pedestrian elements and flow, safety of all roadway users (pedestrians, cyclists, transit users and motorists), on- and off-street parking, and freight rail service.

Introduction

The Staten Island North Shore Bus Rapid Transit (BRT) Project (Proposed Project) would operate within a two-lane, dedicated busway with potential passing lanes at certain stations on the portion of the proposed alignment that uses the former North Shore Railroad right-of-way (ROW). The BRT would have its eastern terminus at the St. George ferry terminal, and its western terminus at West Shore Plaza. The proposed BRT would operate in mixed traffic (with no exclusive lanes) on the portion of the alignment that uses South Avenue. As the BRT service travels west from the existing bus terminal at St. George, the BRT would operate on Richmond Terrace in a new, approximately 0.5-mile exclusive two-lane median busway, separated from general traffic by mountable curbs and/or other physical separation devices. The exclusive alignment would transition from Richmond Terrace to the former North Shore Railroad ROW at Nicholas Street via a new ramp. It would run along the former rail ROW for approximately 4.8 miles to a new Arlington Station at South Avenue near Brabant Street. Some buses would continue approximately 2.7 miles along South Avenue in mixed traffic to West Shore Plaza. In addition to the ramp at Nicholas Street, ramps will be provided to the exclusive busway at Bard Avenue, Alaska Street, and at the proposed Arlington Station to provide access to local streets.

The proposed alignment would utilize a reconfigured portion of the existing St. George Terminal bus deck as its eastern terminus and the existing West Shore Plaza as the western terminus. In between these termini, seven new BRT stations, with amenities such as platforms and shelters, would be constructed. In addition, the proposed BRT would serve three existing bus stops along South Avenue. The specific locations and layouts of the proposed BRT stations were determined based on their ability to maximize the transportation goals of the project while minimizing environmental impacts, where practicable. In addition to the proposed BRT service, existing bus routes would be partially re-routed to make use of the proposed busway and its travel time saving capabilities.

Methodology

According to *2021 CEQR Technical Manual* procedures for transportation analysis, a two-tiered screening process is undertaken to determine whether a quantified analysis is necessary. The first step, the Level 1 (Trip Generation) screening, determines whether the volume of peak hour person and vehicle trips generated by the Proposed Project would remain below the minimum thresholds for further study. These thresholds are:

- 50 peak hour vehicle trip ends;
- 200 peak hour subway/rail or bus transit riders; and
- 200 peak hour pedestrian trips.

If the Proposed Project results in increments that would exceed any of these thresholds, a Level 2 (Trip Assignment) screening assessment is performed. Under this assessment, project-generated trips that exceed Level 1 thresholds are assigned to and from the site through their respective networks (streets, bus and subway lines, sidewalks, etc.) based on expected origin-destination patterns and travel routes.

As a transit service improvement project, the Proposed Project would not directly generate new transportation demand through changed land use or developing new residential, commercial, or industrial land uses. Instead, the proposed BRT service accommodates existing bus transit demand with more direct, more frequent service. Because of this, it is anticipated that some trips being made by private automobile under Existing and No-Action conditions would shift to transit service under With-Action conditions. Despite this anticipated shift in travel modes, no credit is applied for the anticipated reduction in on-street general purpose traffic volumes at study area locations analyzed in this chapter. Trips resulting from the Proposed Project have two sources: first, new bus trips made by buses following the BRT's timetable, and second, trips made by boarding and alighting passengers to and from each of the BRT stations. Because of the special nature of this transit improvement project, the study area for detailed analysis was prioritized to include locations along the busway, near station entrances, and at ramps providing access to the busway for different bus routes.

Level 1 Screening Assessment

As described in **Chapter 2, Proposed Project and Alternatives,** the bus ridership projection was developed using the MTA's Regional Transit Forecasting Model (RTFM) for the selected alignment and station locations. The RTFM, which is built on Caliper's Transcad platform, is a variant of the 4-step ridership forecasting methodology of trip generation, distribution, mode choice and assignment. It is used to forecast changes in ridership on the various modes, resulting from changes in population, employment, and other socioeconomic factors, as well as changes in the transportation network. Ridership projections were developed using this model. These projections provide the ons (boardings) and offs (alightings) at each station, as well as the access mode used to reach each station, including the number of new walking trips and trips made by automobile.

Table 15-1 summarizes new bus trips as a result of the proposed timetables for the proposed S1 and S2 lines, and existing S53, S54, and S57 lines, each of which would operate on the busway. These represent a relatively small portion of the traffic under

future year With-Action conditions and were assigned directly to the With-Action conditions traffic network using proposed timetable information obtained through MTA. Table 15-1 summarizes the number of additional bus trips that would be assigned to various points in the network according to the proposed bus routes during the AM peak hour, PM peak hour and Saturday peak hour. In this table, inbound refers to eastbound trips along the busway towards St. George, and outbound refers to westbound trips along the busway away from St. George.

According to the BRT schedule, in total 54, 56, and 30 bus trips would be generated during the weekday AM, weekday PM and Saturday midday peak hours, respectively. It is worth noting that these totals would not be present for the entire length of the alignment, since different bus lines enter and exit the busway at different points, and only the S1 would run along the full length of the busway from St. George to West Shore Plaza. Details of the proposed station locations and the operating plan for bus lines utilizing the busway can be found in Chapter 2, Proposed Project and Alternatives, in Figure 2-2 and Figure 2-4.

Table 15-1 Peak Hour NYCT Bus Service Levels by Line

MTA Bus Line	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
S1	6	6	7	7	2	2
S2	9	6	9	7	4	4
S53	8	6	5	6	7	7
S54	4	2	4	3	-	-
S57	4	3	4	4	2	2
Total	**31**	**23**	**29**	**27**	**15**	**15**

The second source of trips generated by the Proposed Project would be new trips to and from each of the BRT stations made by riders. Travel forecasts for the Proposed Project were prepared using the MTA's RTFM model. Details for the projected ridership under No-Action and With-Action conditions can be found in Chapter 2, Proposed Project and Alternatives in Table 2-4. Data on transit service and demand are provided to the model to represent all transit travel occurring within New York City on MTA New York City Transit (MTA-NYCT), MTA Bus Company, and city ferries. Demand and service characteristics for the MTA Long Island Railroad (LIRR) and MTA Metro-North Railroad (MNR) are also represented in the model.

The ridership model provided forecasts of weekday AM period riders boarding and alighting at each station on the proposed alignment; weekday PM period riders were extrapolated based on 2019 bus ridership data. In addition, it provided overall system ridership, as well as the number of travelers accessing BRT stations by walking, driving (either being dropped off, i.e., pick-up/drop-off area/taxi/network provider, or driving their personal vehicle to park & ride), or transferring from another transit route or service

(i.e., bus routes, Staten Island Railway [SIR], ferry). The model outputs indicated that, in terms of access mode to each station:[1]

- Approximately 56 percent of travelers would access the BRT system by walking to the nearest station in the AM peak hour and approximately 21 percent of travelers would access the BRT system by walking in the PM peak hour.
- Some travelers would access the BRT system by automobile, either driving themselves (park & ride) or being driven by someone else (pick-up/drop-off). Approximately 8 percent of BRT trips would access the BRT system by driving in the AM peak hour, and approximately 11 percent of BRT trips would access the BRT system by driving in the PM peak hour.
- Most transfers from other transit services would occur at the St. George Station where many customers would transfer from the Staten Island Ferry to the BRT system. Transfers would account for approximately 37 percent of BRT boardings in the AM peak hour and approximately 68 percent of BRT boardings in the PM peak hour.
- The ridership model indicates that the proposed project would result in an overall reduction in regional vehicle-miles traveled (VMT) as a result of mode shift from private autos to the BRT service. No credit was taken for this reduction in traffic volumes in the traffic analysis.

Table 15-2 below summarizes projected peak hour ridership by access mode at each station location.

[1] Percentages add to greater than 100 percent due to rounding.

Table 15-2 Peak Hour Ridership Demand by Access Mode and Station

AM Peak Hour

Access Mode	Walk		Transfer*		Drive		Total	
Station Name	On	Off	On	Off	On	Off	On	Off
St George Terminal	0	1	587	2,528	37	-	623	2,530
New Brighton	395	45	268	19	-	-	663	64
Livingston	112	7	1	0	42	-	155	7
West Brighton	112	29	52	23	-	-	163	52
Port Richmond	291	103	149	86	-	-	440	189
Elm Park/ Morningstar Rd	139	25	0	0	-	-	140	25
Mariner's Harbor	216	42	0	0	-	-	217	42
Arlington Station	268	131	63	74	147	-	478	205
Forest Ave	1	13	4	23	-	-	5	36
Goethals Road	2	3	13	2	0	-	16	5
Teleport	70	69	-	-	-	-	70	69
West Shore Plaza	120	141	-	-	9	-	129	141
Total	1,727	609	1,136	2,756	236	-	3,098	3,365

PM Peak Hour

Access Mode	Walk		Transfer*		Drive		Total	
Station Name	On	Off	On	Off	On	Off	On	Off
St George Terminal	0	0	2,077	736	116	37	2,193	773
New Brighton	173	60	174	24	-	-	347	84
Livingston	26	32	0	2	104	42	130	76
West Brighton	101	88	49	98	-	-	151	185
Port Richmond	79	367	34	385	-	-	113	752
Elm Park/ Morningstar Rd	28	80	1	0	-	-	29	80
Mariner's Harbor	74	121	0	0	-	-	74	121
Arlington Station	230	452	74	176	166	147	470	775
Forest Ave	0	69	15	118	-	-	15	187
Goethals Road	12	0	28	0	1	0	41	1
Teleport	9	353	-	-	-	-	9	353
West Shore Plaza	15	732	-	-	1	9	16	741
Total	748	2,354	2,453	1,539	388	236	3,589	4,129

Note: Passengers who are included as transfer either depart from or arrive to the station via another transit mode. This includes trips to and from the station via other local bus routes at all stations. At St. George Terminal, this also includes transfers to the Staten Island Railway or ferry service.

At St. George Terminal, nearly all transfers are assumed to come from other bus lines within the terminal or the ferry service at the terminal. For stations aside from St. George Terminal, transferring riders were distinguished between direct transfers (i.e., riders transfer at the same stop) or walk transfers (i.e., riders would need to walk to a nearby bus stop to transfer). Drive trips were converted to auto or taxi trips using journey to work vehicle occupancy rates for the areas nearby the station. The number of vehicle trips at each station are presented in **Error! Reference source not found.**, and are comprised of park & ride trips (where such facilities are available) and pick-up/drop-off trips. Consistent with the *CEQR Technical Manual* guidance, new vehicle trips in excess of 50 vehicle trips at a station were incorporated to the traffic analysis and assigned through the roadway network.

Table 15-3 Weekday Peak Hour Private Auto Demand at Station Locations

	AM Peak Hour			PM Peak Hour		
Station Name	**Inbound**	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**
Park & Ride (PNR) Trips						
St. George Terminal	29	0	29	93	29	122
Livingston	39	0	39	96	39	135
Arlington	65	0	65	121	65	186
West Shore Plaza	9	0	9	1	9	10
Pick-Up/Drop-Off Trips[1]						
St. George Terminal	5	5	10	19	19	38
Livingston	0	0	0	1	1	2
Arlington	73	73	146	107	107	214
West Shore Plaza	0	0	0	0	0	0

1. Each kiss & ride trip has an inbound vehicle trip with the riders, and an outbound vehicle trip after the riders are dropped off at the station, or an inbound vehicle trip without the riders, and an outbound vehicle trip after the riders have been picked up

For the Saturday midday peak hour, traffic analyses were performed to provide an assessment of the effects of incremental bus trips as a result of the proposed schedule, and for operational and physical changes as a result of the proposed busway. Pick-up/drop-off and park & ride trips were not included in the Saturday midday peak hour analysis because these volumes are expected to be significantly less than during the weekday peak hours.

Error! Reference source not found. above summarizes all auto access trips made by passengers using station park & ride facilities or being driven by pick-up/drop-off at station locations during the AM and PM peak hours. New vehicle trips would be expected to exceed the *CEQR Technical Manual's* 50 vehicles per hour thresholds at the St. George station during the PM peak hour, the Livingston station during the PM peak hour, and the Arlington station during the AM and PM peak hours. During periods where vehicle trips would be expected to be less than 50 vehicle trips at one of the stations noted above, or new vehicle trips at other stations, were assumed to be accounted for as part of the background growth.

Level 2 Screening Assessment

As shown above, the number of trips generated or diverted by the Proposed Project would exceed the *2021 CEQR Technical Manual* Level 1 screening thresholds for vehicle and pedestrian trips during the peak hours analyzed. Project-generated trips were assigned through the surrounding street network based on expected routes to and from the proposed bus stops.

Traffic

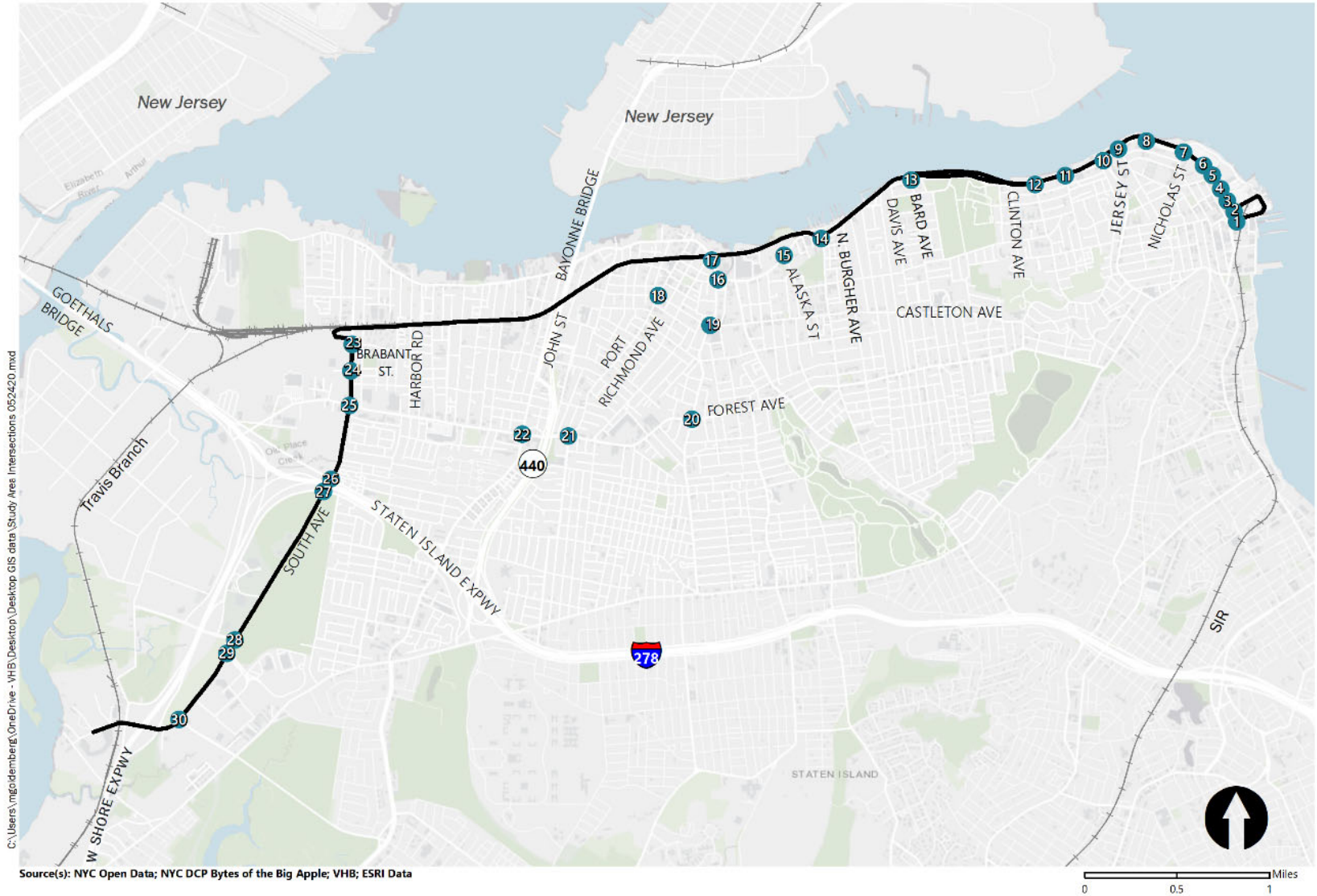
According to preliminary service schedules and station location plans, the Proposed Project is not expected to introduce a level of new study area vehicle trips, whether via bus or private autos, that would exceed the Level 2 screening threshold of 50 peak hour vehicle trips at most intersections in the selected study area. However, per *2021 CEQR Technical Manual* guidelines, as portions of the proposed alignment would be located within street segments, the effect of potential changes to traffic operations as a result of the Proposed Project would need to be assessed. These operational changes would be a result of reductions in traffic capacity, changes to signals and traffic controls due to new signals and the introduction of Transit Signal Priority (TSP), new access points and connections to the busway, and diversions associated with proposed turning prohibitions.

Overall, according to the selection criteria described above, the intersections selected for analysis fall into three categories:

1. intersections through which the proposed alignment passes directly;
2. intersections where there are access points to the proposed alignment; and
3. critical intersections which have the potential to see an appreciable increase in bus traffic or would otherwise be affected by the project.

In total, 30 intersections (24 signalized and 6 unsignalized) have been selected for detailed quantitative analysis. The intersections selected include locations along Richmond Terrace potentially impacted by the BRT ROW; locations where feeder routes have access to a ramp leading to/from the main ROW alignment; locations along South Avenue carrying feeder routes; and locations in the Port Richmond area potentially affected by feeder routes. All 30 analysis locations are shown in **Figure 15-1** and listed as follows.

Figure 15-1 Study Area Intersections and Proposed Alignment



1. Ferry Terminal Viaduct and Richmond Terrace and Bay Street (signalized)
2. Ferry Terminal Viaduct and Richmond Terrace (signalized)
3. Richmond Terrace and Schuyler Street (unsignalized)[2]
4. Richmond Terrace and Wall Street (signalized)
5. Richmond Terrace and Hamilton Avenue (signalized)
6. Richmond Terrace and Stuyvesant Place (unsignalized)
7. Richmond Terrace and Nicholas Street (signalized)
8. Richmond Terrace and St. Peters Place (signalized)
9. Richmond Terrace and Westervelt Avenue (signalized)
10. Richmond Terrace and Jersey Street (signalized)
11. Richmond Terrace and Franklin Avenue (signalized)
12. Richmond Terrace and Lafayette Avenue (signalized)
13. Richmond Terrace and Bard Avenue (signalized)
14. Richmond Terrace and Broadway (signalized)
15. Richmond Terrace and Alaska Street (unsignalized)
16. Richmond Terrace and Jewett Avenue (signalized)
17. Richmond Terrace and Heberton Avenue (unsignalized)
18. Castleton Avenue and Port Richmond Avenue (signalized)
19. Castleton Avenue and Jewett Avenue (signalized)
20. Forest Avenue and Jewett Avenue (signalized)
21. Forest Avenue and Willowbrook Road (signalized)
22. Forest Avenue and Morningstar Road and Richmond Avenue (signalized)
23. South Avenue and Brabant Street (signalized)
24. South Avenue and Cable Way (unsignalized)
25. South Avenue and Forest Avenue (signalized)
26. South Avenue and Goethals Road North (signalized)
27. South Avenue and Fahy Avenue and Glen Street (signalized)
28. South Avenue and Edward Curry Avenue (unsignalized)
29. South Avenue and Teleport Drive (signalized)
30. South Avenue and Travis Avenue (signalized)

Parking

A parking analysis identifies the capacity and utilization of on-street and off-street parking under Existing, No-Action, and With-Action conditions and a comparison of parking demand versus parking supply determines if a parking shortfall would occur under any of the analysis conditions. The ridership model constrained parking demand at the four BRT stations with park & ride facilities to the proposed parking supply: West Shore Plaza Station, Arlington Station, Livingston Station, and St. George Terminal; additional drive access demand was assumed to be pick-up/drop-off trips. As parking facilities would not be provided at the other BRT stations, the ridership model assumes that no park & ride activity would occur. Based on these assumptions, no assessment of demand on local on-street parking is needed.

[2] Richmond Terrace and Schulyer Street is an unsignalized intersection with no controlled approaches.

However, as the Proposed Project would eliminate on-street parking along an approximately 2,600-foot-long stretch of Richmond Terrace in the St. George area by the Staten Island Ferry Terminal, it was determined that a detailed parking analysis of this area was necessary. In general, this type of analysis encompasses a study area within a quarter mile of the project site. In the case where the results of the parking analysis indicate a shortfall in the parking capacity would exist within the quarter-mile study area, the study area could be extended to a half-mile of the project site in order to evaluate additional parking capacity and utilization and identify additional parking supply.

Transit

According to *2021 CEQR Technical Manual* guidance, if a Proposed Project would result in 50 or more new bus passengers being assigned to a single bus line (in one direction) during the peak hour, or if it would result in an increase in new passengers at a single subway station or on a single subway line of 200 or more, a more detailed bus or subway analysis would be warranted. Peak hour transfers to/from SIR service are anticipated to be low and do not exceed the threshold for analysis.

Table 15-4 below shows the projected peak hour transfers from the proposed BRT service to local buses in each direction at each of the proposed BRT stations as a result of the Proposed Project. The table also shows the total number of local bus lines available for transferring passengers to make connecting trips. Once these trips are distributed across the available bus lines, they fall below the threshold for detailed analysis.

Table 15-4 Weekday Peak Hour Bus Transfers at Station Locations

Station	Peak Hour Transfer Trips to Local Buses				Nearby # of Local Bus Routes
	AM Peak Hour		PM Peak Hour		
	On	Off	On	Off	
St George Terminal	587	2,528	2,077	736	2
New Brighton	268	19	174	24	2
Livingston	1	0	0	2	2
West Brighton	52	23	49	98	6
Port Richmond	149	86	34	385	6
Elm Park/ Morningstar Rd	0	0	1	0	6
Mariner's Harbor	0	0	0	0	2
Arlington Station	63	74	74	176	4
Forest Ave	4	23	15	118	2
Goethals Road	13	2	28	0	2
Teleport	-	-	-	-	4
West Shore Plaza	-	-	-	-	22

Transfers to the Staten Island Ferry and NYC Ferry service at St. George Terminal from the BRT largely consist of passengers who would have accessed the terminal via other access modes under the No-Action Condition. As such, a detailed analysis is not warranted under the *2021 CEQR Technical Manual*. However, since the Proposed Project is transit-

related, a qualitative discussion of transit services in Existing conditions, the No-Action Alternative, and the With-Action condition has been included for informational purposes.

Pedestrians

As shown previously in Table 15-2, pedestrian trips resulting from the Proposed Project, from walk trips and walk transfer trips, would exceed CEQR Level 1 screening analysis thresholds at specific bus stations. As outlined in the *2021 CEQR Technical Manual*, a detailed pedestrian analysis is warranted if the CEQR Level 2 screening assessment identifies pedestrian elements (e.g., sidewalks, crosswalks, and corner reservoir areas) within the immediate vicinity of the proposed stations are projected to increase by 200 or more pedestrians during a peak period. These pedestrian elements were studied with the purpose of understanding existing facility capacity and computing the required dimensions based on the anticipated volume growth that coincides with the development of the Proposed Project.

Level 2 pedestrian trip assignments were developed and locations where greater than 200 pedestrians are projected on pedestrian elements are summarized in table below. As such, detailed pedestrian LOS analysis has been conducted at the 14 pedestrian elements detailed below in Table 15-5 through Table 15-7 (the Richmond Terrace west sidewalk between Wall Street and Hamilton Avenue was also included for analysis to assess the effect of the Proposed Project's redesign of the sidewalk to accommodate the Richmond Terrace BRT lanes). Pedestrian trip assignments are provided in Appendix M-1.

Table 15-5 Crosswalk Projected Pedestrian Trip Summary

Crosswalks		Weekday AM Peak Hour	Weekday PM Peak Hour
Lafayette Avenue and Richmond Terrace	South	249	-
South Avenue and Teleport Drive	South	-	362

Table 15-6 Corner Reservoir Projected Pedestrian Trip Summary

Corner Reservoirs		Weekday AM Peak Hour	Weekday PM Peak Hour
Lafayette Avenue and Richmond Terrace	SE	279	-
	SW	286	-
Richmond Terrace and Clinton Avenue	SE	355	-
	SW	368	-

Table 15-7 Sidewalk Projected Pedestrian Trip Summary

Sidewalks	Weekday AM Peak Hour	Weekday PM Peak Hour
South sidewalk (E-W) of Richmond Terrace between Clinton Avenue and Lafayette Avenue	324	-
North sidewalk (E-W) of Richmond Terrace between Tysen Street and Clinton Avenue	417	-
East sidewalk (N-S) of Port Richmond Avenue between Church Street and Ann Street	-	400
West sidewalk (N-S) of Port Richmond Avenue between Church Street and Ann Street	301	-
North sidewalk (E-W) of Heusden Street between Van Pelt Avenue and Van Name Avenue	258	-
East sidewalk (N-S) of South Avenue between Arlington Place and Brabant Street	-	341
South sidewalk (E-W) of Teleport Drive east of South Avenue	-	361

It should be noted that the maximum pedestrian volume along each sidewalk was studied at the above locations. In some cases, such as the north sidewalk along Heusden Street between Van Pelt Avenue and Van Name Avenue, project-generated pedestrians would be less than the 200 pedestrian trip thresholds on specific sidewalk sections but would accumulate to greater than 200 pedestrian trips at one point (at the station's entrance). These sidewalk conditions were conservatively analyzed, as identified in **Appendix M-1**.

Detailed Analysis Methodologies

This section describes the detailed traffic, parking, transit, and pedestrian analyses, which were conducted using methodologies outlined in the *2021 CEQR Technical Manual*.

Traffic

The operation of all signalized and unsignalized intersection analysis locations were assessed using methodologies presented in the 2000 *Highway Capacity Manual* (*HCM*) using the Synchro version 11 software application. In addition, study area intersections located along Richmond Terrace in St. George were also analyzed using the Vissim microsimulation software application as the proposed lane reconfigurations needed to accommodate the center-running busway are best analyzed by using a microsimulation model. The HCM procedures evaluate the levels of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

- LOS A describes operations with very low delays, i.e., 10.0 seconds or less per vehicle. This occurs when signal progression is highly favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all.
- LOS B describes operations with delays in excess of 10.0 seconds up to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.

- LOS C describes operations with delays in excess of 20.0 seconds up to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping is noticeable at this level, although many still pass through the intersection without stopping.
- LOS D describes operations with delays in excess of 35.0 seconds up to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.
- LOS E describes operations with delays in excess of 55.0 seconds up to 80.0 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios.
- LOS F describes operations with delays in excess of 80.0 seconds per vehicle. This is considered unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios with cycle failures. Poor progression and long cycle lengths may also contribute to such delays. Often, vehicles do not pass through the intersection in one signal cycle.

Based on the *2021 CEQR Technical Manual* guidelines, LOS A, B, C, and D are considered acceptable, and LOS E and F indicate congestion at signalized intersections. These guidelines are applicable to individual lane groups and overall intersection levels of service.

For unsignalized intersections, delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line: LOS A describes operations with very low delay, i.e., 10.0 seconds or less per vehicle; LOS B describes operations with delays in excess of 10.0 seconds up to 15.0 seconds per vehicle; LOS C has delays in excess of 15.0 seconds up to 25.0 seconds per vehicle; LOS D has delays in excess of 25.0 seconds up to 35.0 seconds per vehicle; LOS E has delays in excess of 35.0 seconds up to 50.0 seconds per vehicle; and LOS F describes operation with delays in excess of 50.0 seconds per vehicle. LOS E and F are considered unacceptable to drivers per the *2021 CEQR Technical Manual* guidance for unsignalized intersections.

Significant Impact Criteria

The assessment of potential significant traffic impacts of a proposed project is based on significant impact criteria defined in the *2021 CEQR Technical Manual*. If a lane group in the future With-Action condition is within acceptable LOS A, B, C, or D, an increase in projected delay from the No-Action condition is not considered significant.

For a lane group at With-Action LOS E, an increase in projected delay of 5.0 or more seconds compared to the No-Action condition is considered a significant impact. For a lane group at With-Action LOS F, an increase in projected delay of 4.0 or more seconds compared to the No-Action condition is considered a significant impact. For unsignalized intersections, for the minor street to generate a significant impact, a total approach

volume of 90 passenger car equivalents (PCEs) must be identified in the With-Action condition in any peak hour.

Parking

The parking analysis identifies the extent to which parking is available and utilized under existing and future conditions. It takes into consideration anticipated changes in area parking supply and provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from additional demand generated by or a reduction in capacity associated with the Proposed Project. This analysis typically encompasses a study area within a quarter mile of the project. If the analysis concludes that there would be a shortfall in parking within the quarter-mile study area, the study area may be extended to a half-mile to identify additional parking supply.

For a project located outside of the New York City Central Business District (CBD) areas, such as this project, a parking shortfall that exceeds the number of available on-street and off-street parking spaces within a quarter mile of the Proposed Project may be considered significant. Additional factors, such as the availability and extent of transit in the area and the patterns of automobile usage by area residents, could be considered to determine the significance of the identified parking shortfall. If there is an adequate parking supply within a half-mile of the Proposed Project, the projected parking shortfall may not be considered significant.

Pedestrians

Pedestrian levels of service standards are determined based on walking speed, pedestrian spacing, and probabilities of pedestrian and vehicular conflict, and are assessed based on the methodologies presented in the *2010 HCM* and the *2021 CEQR Technical Manual*. These standards are primarily based on the space needs of people involved in various activities and are widely used for planning and design of facilities for pedestrians. Analysis of crosswalks, street corners, and sidewalks along key walking paths to and from the project are also performed to assess the adequacy of these pedestrian elements.

To evaluate sidewalks, the pedestrian flow per unit width (p/ft/min) is calculated based on the pedestrian flow and the effective walkway width.[3] The analysis of sidewalk conditions should consider "platoon" flow as is considered more representative of pedestrian activities within New York City. Platooning occurs when pedestrians move in groups or "platoons" as a result of pedestrian metering from a traffic signal, or from attractions such as subway stations or bus stops. The ratio of the walking speed over the pedestrian flow per unit width determines the average pedestrian space (sf/p). [4]

Crosswalk conditions are expressed as a measurement of the area available (the area consists of the crosswalk width multiplied by the crossing distance) and available pedestrian crossing time. The pedestrian flow is compared to the "time-space" available

[3] The effective walkway width is the space along the walkway that pedestrians could use that is free of obstruction. This width also takes account of the "shy distance" (the space between pedestrians and the obstacle such as a wall or building façade).

[4] The typical average pedestrian walking speed specified in the *2021 CEQR Technical Manual* is 4.4 feet per second (ft/s). For intersections located within the Senior Pedestrian Focus Areas or within vicinity of schools, an average pedestrian walking speed of 3.3 ft/s is used.

to determine the crosswalk level of service which is expressed as square feet per pedestrian (sf/p). This analysis also takes account of pedestrian conflicts in the crosswalk with turning vehicles.

Like crosswalks, street corners must provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the other street or passing around the corner). The analysis applies a measure of time and space availability based on the area of the corner reservoir, pedestrian crossing time available, and the estimated time used by circulating pedestrians.

The level of service standards for pedestrian elements are based on the time and space available per pedestrian during the analysis period. Level of service grades from A to F are assigned, with LOS A representative of free flow conditions without pedestrian conflicts and LOS F depicting significant capacity limitations and inconvenience. Table 15-8 defines the level of service criteria for crosswalks, corner area, and sidewalk conditions, as per the *2010 HCM*. The *2021 CEQR Technical Manual* identifies acceptable levels of service in non-CBD areas as LOS C or better, and mid-LOS D or better for CBD areas.

While the Proposed Project would primarily serve non-CBD areas, the section along Richmond Terrace is located within the St. George CBD. For both CBD and non-CBD areas the pedestrian analysis was analyzed assuming platoon pedestrian flow as pedestrian trips generated by the project are anticipated to be concentrated at the new bus stops.

Table 15-8 Level of Service Criteria for Pedestrian Elements

LOS	Sidewalks (Platoon Flow)	Corner Reservoirs and Crosswalks
A	> 530 sf/p	> 60 sf/p
B	> 90 and ≤ 530 sf/p	> 40 and ≤ 60 sf/p
C	> 40 and ≤ 90 sf/p	> 24 and ≤ 40 sf/p
D	> 23 and ≤ 40 sf/p	> 15 and ≤ 24 sf/p
E	> 11 and ≤ 23 sf/p	> 8 and ≤ 15 sf/p
F	≤ 11 sf/p	≤ 8 sf/p

Note: Units are provided in square feet of area per pedestrian (sf/ped)
Source: *2021 CEQR Technical Manual*

Significant Impact Criteria

The identification of significant pedestrian impacts is dependent on the area type (CBD or non-CBD) and is determined by the decrease of time and space available for pedestrians between the No-Action and With-Action conditions. The pedestrian analysis locations are in both CBD and non-CBD areas. The *2021 CEQR Technical Manual* identifies significant impacts for the pedestrian sidewalk, crosswalk, and corner elements on a sliding scale detailed below. With-Action pedestrian level of service that is considered acceptable (LOS C or better in non-CBD areas, and mid-LOS D or better in CBD areas) would not have a potential for significant impacts.

For sidewalks, the assessment of potential significant impacts is based on a sliding-scale formula provided in the *2021 CEQR Technical Manual*. Consideration as to whether the sidewalk being analyzed is in a CBD or non-CBD condition is necessary.

For sidewalks the formula used to determine the decrease in pedestrian space from the No-Action to With-Action condition that would trigger a significant impact is $Y \geq (X / 9.5) - 0.321$, where Y is the decrease in pedestrian space (sf/p) to be considered a potential significant impact and X is the No-Action pedestrian space (sf/p). If the decrease in pedestrian space is greater than Y and the With-Action level of service is considered to be unacceptable, the sidewalk is considered to be significantly impacted. **Table 15-9** and **Table 15-10** provide summaries of the sliding-scale guidelines provided in the *2021 CEQR Technical Manual*.

For corners and crosswalks, the assessment of potential significant impacts is also based on a sliding-scale formula provided in the *2021 CEQR Technical Manual*. The formula used to determine the decrease in pedestrian space from the No-Action to With-Action condition that would trigger a significant impact is $Y \geq (X / 9.0) - 0.31$, where Y is the decrease in pedestrian space (sf/p) to be considered a potential significant impact and X is the No-Action pedestrian space (sf/p). If the decrease in pedestrian space is greater than Y and the With-Action level of service is considered to be unacceptable, the corner or crosswalk is considered to be significantly impacted. **Table 15-11** and **Table 15-12** provide summaries of the sliding-scale guidelines provided in the *2021 CEQR Technical Manual*.

Table 15-9 Significant Impact Criteria for Sidewalks - Non-CBD Areas

No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)	No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)
>44.3	With-Action Condition <40.0	24.5 to 25.3	≥ 2.3
43.5 to 44.2	≥ 4.3	23.5 to 24.4	≥ 2.2
42.5 to 43.4	≥ 4.2	22.6 to 23.4	≥ 2.1
41.6 to 42.4	≥ 4.1	21.6 to 22.5	≥ 2.0
40.6 to 41.5	≥ 4.0	20.7 to 21.5	≥ 1.9
39.7 to 40.5	≥ 3.9	19.7 to 20.6	≥ 1.8
38.7 to 39.6	≥ 3.8	18.8 to 19.6	≥ 1.7
37.8 to 38.6	≥ 3.7	17.8 to 18.7	≥ 1.6
36.8 to 37.7	≥ 3.6	16.9 to 17.7	≥ 1.5
35.9 to 36.7	≥ 3.5	15.9 to 16.8	≥ 1.4
34.9 to 35.8	≥ 3.4	15.0 to 15.8	≥ 1.3
34.0 to 34.8	≥ 3.3	14.0 to 14.9	≥ 1.2
33.0 to 33.9	≥ 3.2	13.1 to 13.9	≥ 1.1
32.1 to 32.9	≥ 3.1	12.1 to 13.0	≥ 1.0
31.1 to 32.0	≥ 3.0	11.2 to 12.0	≥ 0.9
30.2 to 31.0	≥ 2.9	10.2 to 11.1	≥ 0.8
29.2 to 30.1	≥ 2.8	9.3 to 10.1	≥ 0.7
28.3 to 29.1	≥ 2.7	8.3 to 9.2	≥ 0.6
27.3 to 28.2	≥ 2.6	7.4 to 8.2	≥ 0.5
26.4 to 27.2	≥ 2.5	6.4 to 7.3	≥ 0.4
25.4 to 26.3	≥ 2.4	<6.4	≥ 0.3

Source: *2021 CEQR Technical Manual*

Table 15-10 Significant Impact Criteria for Sidewalks - CBD Areas

No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)	No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)
>34.7	With-Action Condition <31.5	19.7 to 20.6	≥ 1.8
34.0 to 34.6	≥ 3.3	18.8 to 19.6	≥ 1.7
33.0 to 33.9	≥ 3.2	17.8 to 18.7	≥ 1.6
32.1 to 32.9	≥ 3.1	16.9 to 17.7	≥ 1.5
31.1 to 32.0	≥ 3.0	15.9 to 16.8	≥ 1.4
30.2 to 31.0	≥ 2.9	15.0 to 15.8	≥ 1.3
29.2 to 30.1	≥ 2.8	14.0 to 14.9	≥ 1.2
28.3 to 29.1	≥ 2.7	13.1 to 13.9	≥ 1.1
27.3 to 28.2	≥ 2.6	12.1 to 13.0	≥ 1.0
26.4 to 27.2	≥ 2.5	11.2 to 12.0	≥ 0.9
25.4 to 26.3	≥ 2.4	10.2 to 11.1	≥ 0.8
24.5 to 25.3	≥ 2.3	9.3 to 10.1	≥ 0.7
23.5 to 24.4	≥ 2.2	8.3 to 9.2	≥ 0.6
22.6 to 23.4	≥ 2.1	7.4 to 8.2	≥ 0.5
21.6 to 22.5	≥ 2.0	6.4 to 7.3	≥ 0.4
20.7 to 21.5	≥ 1.9	<6.4	≥ 0.3

Source: *2021 CEQR Technical Manual*

Table 15-11 Significant Impact Criteria for Corners and Crosswalks - Non-CBD Areas

No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)	No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)
>26.6	With-Action Condition <24.0	15.0 to 15.8	≥ 1.4
25.8 to 26.6	≥ 2.6	14.1 to 14.9	≥ 1.3
24.9 to 25.7	≥ 2.5	13.2 to 14.0	≥ 1.2
24.0 to 24.8	≥ 2.4	12.3 to 13.1	≥ 1.1
23.1 to 23.9	≥ 2.3	11.4 to 12.2	≥ 1.0
22.2 to 23.0	≥ 2.2	10.5 to 11.3	≥ 0.9
21.3 to 22.1	≥ 2.1	9.6 to 10.4	≥ 0.8
20.4 to 21.2	≥ 2.0	8.7 to 9.5	≥ 0.7
19.5 to 20.3	≥ 1.9	7.8 to 8.6	≥ 0.6
18.6 to 19.4	≥ 1.8	6.9 to 7.7	≥ 0.5
17.7 to 18.5	≥ 1.7	6.0 to 6.8	≥ 0.4
16.8 to 17.6	≥ 1.6	5.1 to 5.9	≥ 0.3
15.9 to 16.7	≥ 1.5	< 5.1	≥ 0.2

Source: *2021 CEQR Technical Manual*

Table 15-12 Significant Impact Criteria for Corners and Crosswalks - CBD Areas

No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)	No-Action Ped Space (sf/p)	With-Action Ped Space Reduction (sf/p)
>21.4	With-Action Condition <19.4	12.3 to 13.1	≥ 1.1
21.3 to 21.4	≥ 2.1	11.4 to 12.2	≥ 1.0
20.4 to 21.2	≥ 2.0	10.5 to 11.3	≥ 0.9
19.5 to 20.3	≥ 1.9	9.6 to 10.4	≥ 0.8
18.6 to 19.4	≥ 1.8	8.7 to 9.5	≥ 0.7
17.7 to 18.5	≥ 1.7	7.8 to 8.6	≥ 0.6
16.8 to 17.6	≥ 1.6	6.9 to 7.7	≥ 0.5
15.9 to 16.7	≥ 1.5	6.0 to 6.8	≥ 0.4
15.0 to 15.8	≥ 1.4	5.1 to 5.9	≥ 0.3
14.1 to 14.9	≥ 1.3	<5.1	≥ 0.2
13.2 to 14.0	≥ 1.2		

Source: *2021 CEQR Technical Manual*

Vehicle and Pedestrian Safety

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high-crash locations, where five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three-year period for which data are available or where locations have been identified as along a Vision Zero Priority Corridor or Intersection. For these locations, crash trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the proposed project is located, traffic volumes, crash types and severity, and other contributing factors. Where appropriate, potential measures to improve traffic and pedestrian safety are identified.

Freight Rail

A portion of the ROW being utilized by the Proposed Project will run alongside an active freight rail track. The BRT is not anticipated to affect freight rail operations. A qualitative discussion of adjacent freight rail service is provided for informational purposes.

Existing Conditions

Traffic

Roadway Network

As shown in Figure 15-1, the traffic study area for the Proposed Project includes portions of the local street network which would be affected by the introduction of the approximately 8-mile-long BRT alignment. While the proposed BRT alignment would primarily be located within a dedicated ROW, portions of the BRT alignment would be in

street segments along Richmond Terrace near the St. George Terminal and along South Avenue near West Shore Plaza.

Richmond Terrace is a two-way arterial serving as the primary east-west corridor along the north shore of Staten Island. Between its western terminus at the intersection with Western Avenue and the intersection of St. Peters Place in the St. George neighborhood to the east, Richmond Terrace typically consists of one travel lane in both directions. East of St. Peters Place, Richmond Terrance typically consists of two travel lanes in both directions. Along the eastern segment between Snug Harbor Road and St. George Terminal, Richmond Terrace also includes a mix of conventional bike lanes and shared-bike lanes. The S40, S44 and S48 local bus routes and the S90, S94 and S98 limited-stop bus routes operate along portions of Richmond Terrace.

South Avenue is a two-way arterial that carries traffic in the northbound and southbound directions. South Avenue extends from Meredith Avenue to the south and Richmond Terrace to the north. South of the intersection with Forest Avenue, South Avenue typically operates with two travel lanes in each direction with additional turning lanes present at major intersections. Between Forest Avenue and Richmond Terrace, South Avenue typically consists of one travel lane in both directions. South of Goethals Road North, the corridor is characterized by commercial uses and undeveloped lands as it bisects Staten Island Industrial Park and marshlands. North of Goethals Road North and the Staten Island Expressway (Interstate 278), the corridor is characterized by residential and commercial uses as it travels through the Arlington neighborhood of Staten Island. The S40, S46, and S48 local bus routes; the S90, S96 and S98 limited-stop bus routes; and the SIM33 and SIM34 express bus routes operate along portions of South Avenue.

Traffic Volumes

An extensive traffic data collection program was conducted in October 2018 to compile data and observations necessary to establish the Existing conditions traffic volume network. Traffic volume data collected included 24-hour Automatic Traffic Recorder data as well as peak-period turning movement counts (TMC), vehicle classification, and conflicting pedestrian and bicycle counts.

The weekday AM, weekday PM, and Saturday peak hour existing condition traffic network was established to serve as the analysis baseline from which future projected conditions could be derived from. Per *CEQR Technical Manual* guidelines, traffic analyses are conducted for specific peak hours where project generated trips are expected to be highest and where the potential effects of a project would be greatest. The analysis peak hours were selected based on the TMC counts that were conducted during the weekday AM, weekday PM, and Saturday midday peak periods. According to traffic volume data, the weekday AM and PM, and Saturday midday peak hours were determined to be 7:30 to 8:30 AM, 5:00 to 6:00 PM, and 1:00 to 2:00 PM, respectively. Figures in **Appendix M-3** show existing traffic volumes during the weekday AM, weekday PM, and Saturday midday peak hours.

Levels of Service

Table 15-13 and **Table 15-14** provide an overview of the levels of service that characterize existing "overall" intersection conditions and individual lane groups, during the weekday

AM, weekday PM, and Saturday midday peak hours at signalized and unsignalized intersections, respectively. Due to differences in vehicular operations between AM, PM, and Saturday conditions, the number of lane groups differs between time periods. Intersection ID #3 Richmond Terrace and Schuyler Street, is an unsignalized intersection with no controlled approaches; therefore, levels of service results are shown for only 29 of the 30 analysis intersections. Detailed tables showing levels of service, v/c ratios, and delays for each intersection by lane group are provided in Appendix M-2.

Table 15-13 2019 Existing Conditions Signalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	18	15%	15%	1	4%	4%
B	29	24%	39%	10	42%	46%
C	43	36%	75%	12	50%	96%
D	28	23%	98%	1	4%	100%
E	2	2%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**120**	**100%**	-	**24**	**100%**	-
PM						
A	21	17%	17%	3	13%	13%
B	21	17%	34%	9	38%	50%
C	49	40%	75%	11	46%	96%
D	31	25%	100%	1	4%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**122**	**100%**	-	**24**	**100%**	-
Sat						
A	17	14%	21%	1	4%	4%
B	39	33%	48%	16	67%	71%
C	57	48%	96%	7	29%	100%
D	6	5%	99%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	119	100%	-	24	100%	-

Table 15-14 2019 Existing Conditions Unsignalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	10	56%	56%	5	100%	100%
B	4	22%	78%	0	0%	100%
C	1	6%	83%	0	0%	100%
D	0	0%	83%	0	0%	100%
E	3	17%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**18**	**100%**	-	**5**	**100%**	-
PM						
A	10	56%	56%	5	100%	100%
B	4	22%	78%	0	0%	100%
C	2	11%	89%	0	0%	100%
D	0	0%	89%	0	0%	100%
E	1	6%	94%	0	0%	100%
F	1	6%	100%	0	0%	100%
All	**18**	**100%**	-	**5**	**100%**	-
Sat						
A	11	61%	61%	5	100%	100%
B	5	28%	89%	0	0%	100%
C	2	11%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**18**	**100%**	-	**5**	**100%**	-

The summary overview of existing conditions indicates that at signalized intersections:

» All signalized intersections operate at LOS D or better in all analyzed peak hours.

» In the weekday AM peak hour, two lane groups at signalized intersections operate at unacceptable LOS E. All other lane groups operate at LOS D or better.

» In the weekday PM peak hour, all lane groups operate at LOS D or better.

» In the Saturday midday peak hour, all lane groups operate at LOS D or better.

Lane groups of signalized intersections operating at unacceptable levels of service are listed below:

» Intersection 16: Richmond Terrace & Jewett Avenue

- Northbound Jewett Avenue approach (AM)

» Intersection 19: Castleton Avenue & Jewett Avenue
  - Northbound Jewett Avenue approach (AM)

The summary overview of existing conditions indicates that at unsignalized intersections:

» All unsignalized intersections operate at LOS A during all analyzed peak hours.

» In the weekday AM peak hour, three lane groups at unsignalized intersections operate at unacceptable LOS E. All other lane groups operate at LOS C or better.

» In the weekday PM peak hour, two lane groups at unsignalized intersections operate at unacceptable LOS E or F. All other lane groups operate at LOS C or better.

» In the Saturday midday peak hour, all lane groups operate at LOS C or better.

Lane groups of unsignalized intersections operating at unacceptable levels of service are listed below.

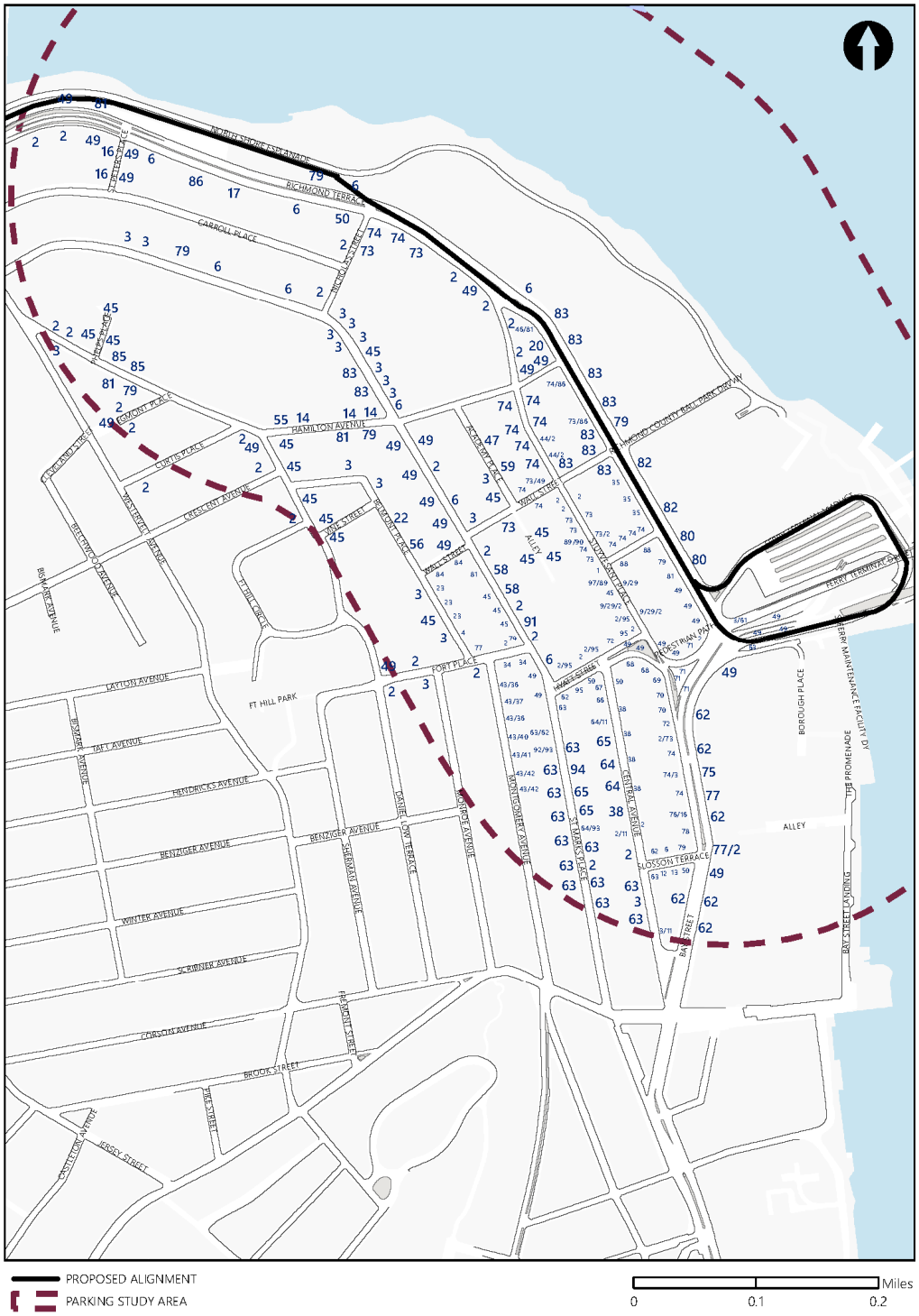
» Intersection 15: Richmond Terrace & Alaska Street
  - Northbound Alaska Street approach (AM & PM)
  - Southbound Alaska Street approach (AM)

» Intersection 28: South Avenue & Edward Curry Avenue
  - Eastbound Edward Curry Avenue left turn lane group (AM & PM)

Parking

A detailed field inventory was conducted on a typical weekday and Saturday in September 2019 to identify on-street parking regulations as well as the capacity and utilization of both on-street parking spaces and off-street public parking facilities within a quarter mile of Richmond Terrace between Bay Street and Nicholas Street. This quarter-mile distance is considered an acceptable walking distance to and from parking, per the *CEQR Technical Manual*. Figure 15-2 and Table 15-15 present the on-street parking regulations, and Figure 15-3 and Table 15-16 present the off-street public parking facilities.

Figure 15-2 2019 Existing Conditions On-Street Parking Regulations Map

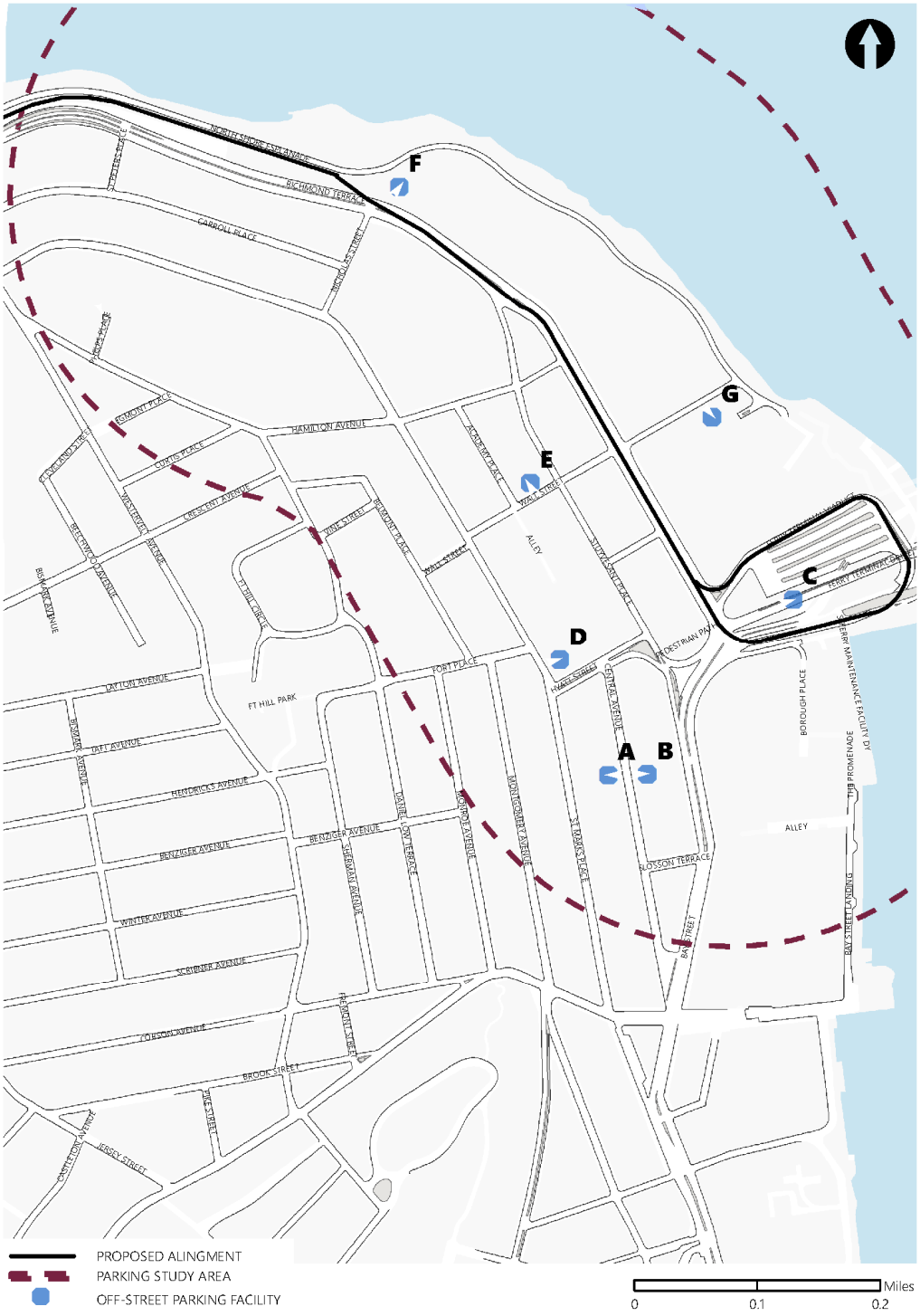


Note: See Table 15-13 for regulation key

Table 15-15 2019 Existing Conditions On-Street Parking Regulations Key

ID	Description	ID	Description
1	1 HOUR PARKING 8AM-7PM EXCEPT SUNDAY	51	OFFICIAL COURT VEHICLES
2	NO STANDING ANYTIME -->	52	SUPREME COURT JUDGES
3	NO PARKING ANYTIME -->	53	APPELLATE DIVISION JUDGES
4	NO STANDING 7AM-4PM SCHOOL DAYS -->	54	NO PARKING ANYTIME EXCEPT AUTHORIZED VEHICLES
5	DEPARTMENT OF EDUCATION (DOE)	55	NO PARKING 7AM-4PM SCHOOL DAYS -->
6	BUS STOP SIGN (BUS & HANDICAP SYMBOLS) NO STANDING -->	56	SPECIAL NIGHT REGULATION (MOON & STARS) SYMBOLS NO STANDING 11 PM-6:30AM INCLUDING SUNDAY <-->
7	NO PARKING 8AM-6PM MON THRU FRI EXCEPT AUTHORIZED VEHICLES <-->	57	NO STANDING 8AM-4PM MON THRU FRI EXCEPT AUTHORIZED VEHICLES -->
8	NO STANDING ANYTIME EXCEPT AUTHORIZED VEHICLES -->	58	NO PARKING 7AM-7PM EXCEPT SUNDAY -->
9	NO STANDING 8AM-6PM MON THRU FRI EXCEPT AUTHORIZED VEHICLES HICLES <-->	59	NO PARKING 8AM-6PM MON THRU FRI -->
10	DOCTORS & HEALTH DEPT VEHICLES	60	U S PROBATION OFFICERS VEHICLES
11	2 HR MUNI-METER PARKING 8AM-6PM MON THRU FRI -->	61	NO STOPPING ANYTIME -->
12	2 HR MUNI-METER PARKING 8AM-7PM EXCEPT SUNDAY <-->	62	2 HOUR METERED PARKING 8AM-1PM EXCEPT SUNDAY <-->
13	2 HR MUNI-METER PARKING 8AM-7PM EXCEPT SUNDAY -->	63	2 HOUR METERED PARKING MONDAY-FRIDAY 8AM-6PM <-->
14	NO PARKING 7AM-4PM SCHOOL DAYS	64	NO STANDING MONDAY-FRIDAY 8AM-6PM -->
15	NO STANDING (SINGLE ARROW) HANDICAP BUS (SYMBOL) W/ 4 ROUTES	65	NO STANDING MONDAY-FRIDAY 8AM-6PM <-->
16	NO PARKING 8AM-5PM MON THRU FRI <-->	66	NYP LICENSE PLATES ONLYMONDAY-FRIDAY 7AM-5PM -->
17	NO PARKING 8AM-8PM MON THRU FRI -->	67	AUTHORIZED VEHICLES ONLY DEPT OF BUILDINGS MONDAY-FRIDAY 7AM-5PM -->
18	NO STANDING ANYTIME EXCEPT AUTHORIZED VEHICLES <-->	68	AUTHORIZED VEHICLES ONLY NYC GOVERNMENT MONDAY-FRIDAY 7AM-5PM <-->
19	POLICE DEPT VEHICLES	69	AUTHORIZED VEHICLES ONLY NYC GOVERNMENT MONDAY-FRIDAY 7AM-5PM -->
20	1 HOUR PARKING 8AM-7PM INCLUDING SUNDAY <-->	70	AUTHORIZED VEHICLES ONLY NYCDOT MONDAY-FRIDAY 7AM-5PM <-->
21	NO STANDING ANYTIME TAXI STAND <-->	71	AUTHORIZED VEHICLES ONLY BOROUGH PRESIDENT MONDAY-FRIDAY 7AM-5PM <-->
22	SPECIAL NIGHT REGULATION (MOON & STARS) SYMBOLS NO STANDING 11PM-6:30AM INCLUDING SUNDAY -->	72	AUTHORIZED VEHICLES ONLY NYCDOT MONDAY-FRIDAY 7AM-5PM -->
23	NO STANDING 7AM-4PM SCHOOL DAYS <-->	73	1 HOUR METERED PARKING 8AM-7PM EXCEPT SUNDAY -->
24	NO STANDING EXCEPT AUTHORIZED VEHICLES <--> 7:30AM-4PM MON THRU FRI	74	1 HOUR METERED PARKING 8AM-7PM EXCEPT SUNDAY <-->
25	SCHOOL DAYS ONLY	75	NO STANDING BUS STOP -->
26	NO PERMIT ZONE	76	NO STANDING MONDAY-FRIDAY 7AM-7PM -->
27	BUS ZONE	77	2 HOUR METERED PARKING 8AM-7PM EXCEPT SUNDAY -->
28	PRISON VANS ONLY	78	NO STANDING MONDAY-FRIDAY 7AM-7PM <-->
29	NYSJ	79	NO STANDING BUS STOP <-->
30	NO STANDING 8AM-5PM MON THRU FRI (SINGLE ARROW) EXCEPT AUTHORIZED VEHICLES	80	NO STANDING ANYTIME TEMPORARY CONSTRUCTION NEGOTIATION -->
31	SURROGATE COURT JUDGE	81	BUS STOP HANDICAP NO STANDING -->
32	NO STANDING 8AM-4PM MON THRU FRI EXCEPT AUTHORIZED VEHICLES <-->	82	NO STOPPING ANYTIME <-->
33	DEPT OF BUILDINGS	83	AUTHORIZED VEHICLES ONLY POLICE DEPT <-->
34	NO PARKING 7AM-7PM EXCEPT SUNDAY <-->	84	AUTHORIZED VEHICLES ONLY DOE SCHOOL DAYS 7AM-4PM <-->
35	2 HOUR PARKING 8AM-7PM EXCEPT SUNDAY	85	NO STANDING FIRE ZONE -->
36	ACS (ADMINISTRATION FOR CHILDREN'S SERVICES) DEPT OF BUILDINGS	86	PARALLEL PARKING ONLY
37	DEPARTMENT OF BUILDINGS	87	NO STANDING SCHOOL DAYS 7AM-4PM
38	2 HR MUNI-METER PARKING 8AM-6PM MON THRU FRI <-->	88	AUTHORIZED VEHICLES ONLY NYSJ MONDAY-FRIDAY 7AM-5PM <-->
39	2 HR MUNI-METER PARKING 9AM-7PM EXCEPT SUNDAY<-->	89	1 HOUR METERED PARKING MONDAY-FRIDAY 5PM-7PM SAT 8AM-7PM -->
40	HPD	90	NO STANDING SCHOOL DAYS 7AM-5PM -->
41	SHERIFF'S OFFICE	91	AUTHORIZED VEHICLES ONLY US PROBATION MONDAY-FRIDAY 8AM-6PM <-->
42	PUBLIC ADMINISTRATOR VEHICLES	92	AUTHORIZED VEHICLES ONLY DEPT OF PROBATION MONDAY-FRIDAY 7AM-7PM -->
43	NO STANDING 8AM-6PM MON THRU FRI EXCEPT AUTHORIZED VEHICLES (SINGLE ARROW)	93	2 HOUR METERED PARKING MONDAY-FRIDAY 8AM-6PM -->
44	1 HOUR PARKING 8AM-7PM EXCEPT SUNDAY (ARROW)	94	AUTHORIZED VEHICLES ONLY DISTRICT ATTORNEY MONDAY-FRIDAY 8AM-6PM -->
45	NO PARKING ANYTIME <-->	95	2 HOUR METERED PARKING MONDAY-FRIDAY 8AM-7PM EXCEPT SUNDAY -->
46	1 HOUR PARKING 8AM-7PM INCLUDING SUNDAY -->	96	2 HOUR METERED PARKING MONDAY-FRIDAY 8AM-7PM EXCEPT SUNDAY <-->
47	NO STANDING ANYTIME EXCEPT VEHICLES WITH NYP LICENSE PLATES -->	97	TRUCK LOADING ONLY MONDAY-FRIDAY 7AM-5PM
48	NO STANDING ANYTIME TAXI STAND -->	98	AUTHORIZED VEHICLES ONLY BOROUGH PRESIDENT MONDAY-FRIDAY 7AM-5PM -->
49	NO STANDING ANYTIME <-->	99	NO STOPPING ANYTIME
50	BUS STOP SIGN (BUS & HANDICAP SYMBOLS) NO STANDING <-->		

Figure 15-3 2019 Existing Conditions Off-Street Parking Facilities Locations



Note: See Table 15-14 for list of off-street parking facilities

Table 15-16 2019 Existing Conditions Off-Street Parking Facilities

ID	Name	Location	License Number	License Capacity
A	Staten Island Courthouse Garage and Parking Lot	55 Central Avenue	NYCDOT Municipal Parking Facility	721 spaces
B	Allied 60 Bay Street LLC	55 Central Avenue	1386548	198 spaces
C	Ferry Terminal South #1 Municipal Parking Field	1 Bay Street	NYCDOT Municipal Parking Facility	222 spaces
D	Central Parking System of New York, Inc.	319-325 St. Marks Place	1372235	98 spaces
E	Allied St. George, LLC	25 Wall Street	1386534	171 spaces
F	Imperial Parking US, LLC (Impark)	75 Richmond Terrace	1421335	1,050 spaces
G	St. George Ferry Parking Corp.	55B Richmond Terrace	2086322	1,250 spaces

The number of total parking spaces and the number of occupied parking spaces was surveyed on both sides of each street within the quarter-mile study area during the weekday AM peak period (7:00 AM to 9:00 AM), weekday midday peak period (12:00 PM to 2:00 PM), weekday PM peak period (5:00 to 7:00 PM), and Saturday midday peak period (12:00 PM to 4:00 PM). Table 15-17 presents a summary of the results of the on-street parking utilization survey. Table 15-17 shows that on-street parking utilization rates are higher and approaching full utilization during the weekday AM peak period and weekday midday peak period at about 92 percent and 97 percent, respectively; compared to on-street parking utilization rates during the weekday PM peak period and Saturday midday peak period at about 78 percent and 76 percent, respectively.

Table 15-17 Existing On-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	1,521	1,406	115	92.4%
Weekday Midday Peak (12:00 PM to 2:00 PM)	1,518	1,461	57	96.2%
Weekday PM Peak (5:00 PM to 7:00 PM)	1,514	1,181	333	78.0%
Saturday Midday Peak (12:00 PM to 4:00 PM)	1,525	1,160	365	76.1%

Notes: The on-street parking capacity and utilization survey was conducted on Thursday, September 12, 2019 and Saturday, September 14, 2019. Numbers exclude police perpendicular parking on Richmond Terrace between Wall Street and Hamilton Street.

There are seven off-street public parking facilities within the quarter-mile study area with a combined licensed capacity of 3,710 parking spaces on weekdays and a combined licensed capacity of 3,414 parking spaces on Saturdays (the garage at 55 Central Avenue is closed on weekends; also, the surface lot at 319-325 St. Marks Place hosted a Farmers

Market on the day of the observation). The number of total parking spaces at each of these parking facilities was obtained from the licensed capacity generally posted at the entrance of a public parking facility. The number of occupied parking spaces was either surveyed from within the parking facility in the case of parking garages or from outside the parking facility in the case of surface lots, or by conducting personal interviews to the parking facility operators. Similar to on-street parking, off-street parking facilities were surveyed during the weekday AM peak period (7:00 AM to 9:00 AM), weekday midday peak period (12:00 PM to 2:00 PM), weekday PM peak period (5:00 to 7:00 PM), and Saturday midday peak period (12:00 PM to 4:00 PM). Table 15-18 presents a summary of the results of the off-street parking utilization survey. Table 15-18 shows that off-street parking utilization rates are higher and approaching half utilization during the weekday AM peak period and weekday midday peak period at about 45 percent and 43 percent, respectively; compared to off-street parking utilization rates during the weekday PM peak period, and Saturday midday peak period at about 26 percent and 33 percent, respectively.

Table 15-18 2019 Existing Conditions Off-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	3,710	1,672	2,038	45.1%
Weekday Midday Peak (12:00 PM to 2:00 PM)	3,710	1,611	2,099	43.4%
Weekday PM Peak (5:00 PM to 7:00 PM)	3,710	961	2,749	25.9%
Saturday Midday Peak (12:00 PM to 4:00 PM)	3,414	1,141	2,273	33.4%

Transit

The study area is served by three modes of scheduled public transportation: bus, ferry, and rail. All three modes serve St. George Terminal, an intermodal hub located at the intersection of Richmond Terrace and Bay Street. The St. George Terminal provides on-island transfers between the Staten Island Railway (SIR) and connections to MTA-NYCT bus routes as well as off-island transfers to Lower Manhattan via the Staten Island Ferry. The specifics of the modes are:

- Twenty-two **MTA-NYCT bus routes** serve St. George Terminal
- The **Staten Island Ferry**, operated by the NYCDOT, operates between St. George Terminal to Whitehall Terminal on the southern tip of Manhattan
- The **Staten Island Railway,** operated by a subsidiary of MTA-NYCT, has its northern terminus at St. George Terminal, and operates 24 hours a day, seven days a week, providing service between St. George and Tottenville
- The **NYC Ferry**, operated by Hornblower on behalf of the NYC Economic Development Corporation, operates between a dock adjacent to St. George Terminal and the west side of Manhattan

Bus

In Staten Island, MTA-NYCT operates 19 local routes, one Select Bus Service route, 11 limited-stop routes and 29 express routes to Manhattan.[5] The St. George Terminal is served by 22 MTA-NYCT bus routes. The cash fare for local buses is $2.75.

To determine the study area for the Existing Conditions analysis, a 400-foot buffer was placed around the proposed alignment. The study area includes any route that intersects the buffer, except for those only serving St. George Terminal and no other points in the buffer. The four, primary local/limited bus routes in the study area that link the North Shore with the St. George Terminal are the S40/90, S44/94, S46/96, and S48/98. The S53, S54, S57, S59 and S66 provide service to points south from the alignment buffer and are in the study area. Five express routes, SIM8, SIM8X, SIM 33, SIM33C and SIM34 are also included in the study area, as they have stops within the buffer.

Table 15-19 shows the 2018 average weekday ridership for the local routes in the study area, as well as the areas served by the bus routes. Ridership on these local bus routes account for 46% of all local Staten Island service. While the Select Bus Service route, S79 SBS, is the highest ridership local route in Staten Island, the S53, S48/98 and S44/94 rank second, third and fourth, respectively, in terms of local bus ridership in the borough.

Table 15-19 Staten Island Local Bus Ridership Summary

Bus Route	2018 Average Weekday Ridership	Percentage of SI Local Bus Ridership	Destinations Served
S40/90	4,072	5%	St. George Ferry Terminal - Matrix Global Logistics Park
S44/94	5,928	7%	St. George Ferry Terminal - New Springville
S46/96	6,435	8%	St. George Ferry Terminal - West Shore Plaza Shopping Center
S48/98	6,700	8%	St. George Ferry Terminal - Mariners Harbor
S53	8,340	10%	Port Richmond – Bay Ridge (Brooklyn)
S54	944	1%	West New Brighton - Eltingville
S57	1,183	1%	Port Richmond – Oakwood Heights
S59	3,065	4%	Port Richmond – Eltingville/Tottenville
S66	1,537	2%	St. George Ferry Terminal - Port Richmond
Subtotal	**38,204**	**45.5%**	
All Other Routes	**45,745**	**54.5%**	
SI Local Bus Total	**83,949**	**100%**	

Source: MTA-NYCT Average Weekday New York City Transit Bus Ridership

MTA-NYCT provides performance data for buses in its network across a variety of metrics. Table 15-20 provides a summary of select metrics for each local route in the study area as compared with all other local bus service across New York City. The average for the last

[5] http://web.mta.info/nyct/maps/bussi.pdf

12 months of available data was calculated for each metric (March 2019 through February 2020).

The metrics presented are:

- **Services Delivered** measures the percentage of scheduled buses that are provided during peak hours. A *higher* percentage indicates a better performing route.
- **Bus Speeds (mph)** measures how quickly buses travel along their route. A *higher* speed indicates a better performing route.
- **Additional Bus Stop Time** is the average time that customers spend waiting at a stop beyond their scheduled wait time. A *lower* time indicates a better performing route.
- **Additional Travel Time** is the average time customers spend onboard a bus beyond their scheduled travel time. A *lower* time indicates a better performing route.
- **Customer Journey Time Performance** is the percentage of customers whose journeys are completed within 5 minutes of the scheduled time. A *higher* percentage indicates a better performing route.

Table 15-20 Bus Performance Metrics for Study Area Compared to NYC and Staten Island Averages*

Bus Route	Service Delivered	Bus Speeds (mph)	Additional Bus Stop Time (min:sec)	Additional Travel Time (min:sec)	Customer Journey Time Performance
All Other NYC Local Routes**	97.4%	7.2	1:49	0:46	71.8%
All Other Staten Island Local Routes***	97.6%	13.7	2:00	0:11	70.7%
S40/90	96.8%	12.6	2:24	0:35	67.0%
S44/94	94.7%	10.3	2:08	0:42	66.8%
S46/96	99.5%	9.8	2:15	0:46	66.3%
S48/98	95.4%	8.9	2:21	0:54	66.6%
S53	98.3%	10.0	1:13	0:30	74.3%
S54	97.8%	11.2	2:35	1:08	65.2%
S57	95.3%	11.3	2:54	1:05	66.6%
S59	95.7%	13.1	2:07	1:13	67.6%
S66	97.3%	10.2	2:56	0:24	62.3%

* Average for the last 12 pre-COVID months of available data was calculated for each metric (March 2019 through February 2020); green highlights indicate route performs better than the citywide local bus average, and blue highlights indicate route performs better than both the citywide and Staten Island local bus average.
** Average of all non-study area local bus routes for which MTA-NYCT provides data
*** Average of all non-study area local bus routes for which MTA-NYCT provides data
Source: MTA-NYCT; http://busdashboard.mta.info/

All local buses in the study area travel at faster average speeds than the city-wide average but slower than other routes on Staten Island. In particular, the S59 averages nearly 6

mph faster than the city-wide local bus average. For the four-primary local/limited bus routes in the study area that link the North Shore with the St. George Terminal - S40/90, S44/94, S46/96, and S48/98 – better performance compared to city-wide service is limited to Additional Travel Time (the average time customers spend onboard a bus beyond their scheduled travel time) for some routes and Bus Speeds for all routes. Service Delivered, Additional Bus Stop Time and Customer Journey Time Performance generally perform worse than the city-wide average. Of note, the S53 outperforms the city-wide average across all metrics. Compared to the average local bus on Staten Island, the study area local buses generally perform worse. The S46/96, S53, and S54 all perform better than the average Staten Island local bus in terms of Service Delivered. Only the S53 outperforms the average Staten Island local bus in terms of Additional Bus Stop Time and Customer Journey Time Performance.

Ferry

The Staten Island Ferry, operated by NYCDOT, travels 5.2 miles between St. George Terminal and Whitehall Terminal on the southern tip of Manhattan. The ferry is a free service and travel time between Staten Island and Manhattan is approximately 25 minutes. The service carries over 12 million passengers annually and operates 24 hours a day, all year round.[6] Average weekday ridership is approximately 35,000 passengers, with five boats making 117 daily trips. During rush hours, the ferry runs on a four-boat schedule, with 15-minute headways; off-peak and weekend headways are 30 minutes. On weekends, three boats are used to make 96 trips each day.[7]

Rail

The Staten Island Railway (SIR) is operated by the Staten Island Rapid Transit Operating Authority (SIRTOA), a subsidiary of MTA-NYCT. The railroad operates 24 hours a day, seven days a week, providing local service between St. George in the north and Tottenville in the south. The cash fare is $2.75, the same as MTA subway and buses. Fares are collected when boarding or exiting at St. George Terminal and Tompkinsville stations only. Transfers from SIR to local buses or subways are free within two hours of the initial MetroCard swipe. In 2019, the average daily ridership was 21,183 and annual ridership was 7.7 million.[8]

In addition to full-time local service, the SIR also runs a weekday peak-direction express service. As of the year 2019, for weekday peak service to Manhattan, morning trains run express from New Dorp to St. George from 6:15 AM to 8:15 AM. In the afternoon, trains run express from St. George to Great Kills between 4:01 PM and 7:51 PM. Morning express trains also run from St. George to Great Kills from 7:01 AM to 8:01 AM. SIR trains are timed to meet arrivals/departures of the Staten Island Ferry.

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[6] New York City DOT, Ferries and Buses, Staten Island Ferry Facts Available at https://www1.nyc.gov/html/dot/html/ferrybus/ferry-facts.shtml Accessed May 18, 2023

[7] New York City DOT, Ferries and Buses, Staten Island Ferry Facts. Available at https://www1.nyc.gov/html/dot/html/ferrybus/ferry-facts.shtml Accessed May 18, 2023

[8] FTA National Transit Database. 2019 Annual Agency Profile for MTA Staten Island Railway. Available at https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2019/20099.pdf Accessed May 20, 2023.

Pedestrians

The existing operations of the study area sidewalks, crosswalks, and corner reservoirs were assessed during the two peak hours: weekday AM and weekday PM. The weekday pedestrian counts were conducted in May of 2023 during the peak periods; vehicle traffic counts used for the crosswalk analysis were conducted in 2018, however, due to the COVID-19 pandemic the pedestrian counts were performed after the vehicle traffic counts. Therefore, vehicle traffic volumes have been grown to the year 2023 using background growth rates identified in the CEQR Technical Manual and were used in the pedestrian analysis.

The count data was summarized into one-hour intervals and the following peak hours were selected for the analysis:

- Weekday AM: 8:00 AM to 9:00 AM
- Weekday PM: 4:00 PM to 5:00 PM

Sidewalks

Eight sidewalk locations within the study area were analyzed using the collected pedestrian data. As presented in the Table 15-21 below, all sidewalk locations included in the transportation analysis operate at LOS A for platoon conditions (per NYCDOT's typical guidance) during both analysis peak hours.

Table 15-21 Sidewalk: Existing LOS Summary

Location	Total Width (ft)	Obstruction Width (ft)	Effective Width (ft)	Available Circulation Space (ft^2/p) Weekday AM Peak Hour	Available Circulation Space (ft^2/p) Weekday PM Peak Hour	Platoon Conditions LOS Weekday AM Peak Hour	Platoon Conditions LOS Weekday PM Peak Hour
Clinton Ave and Richmond Terrace (E leg, S sidewalk)	4.5	3.0	1.5	1,980.0		A	
Clinton Ave and Richmond Terrace (W leg, N sidewalk)	6.2	3.0	3.2	6,336.0		A	
Port Richmond Ave and Ann St (N leg, E sidewalk)	7.2	3.0	4.2		978.3		A
Port Richmond Ave and Ann St (S leg, W sidewalk)	7.2	3.0	4.2	2,079.0		A	
Van Pelt Ave and Heusden St (E leg, N sidewalk)	3.0	1.0	2.0	3,960.0		A	

Table 15-21 Sidewalk: Existing LOS Summary

Location	Total Width (ft)	Obstruction Width (ft)	Effective Width (ft)	Available Circulation Space (ft^2/p)		Platoon Conditions LOS	
				Weekday		Weekday	
				AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
South Ave and Brabant St (N leg, W sidewalk)	9.5	3.0	6.5	1,430.0	1,119.1	A	A
South Ave and Teleport Dr (E leg, S sidewalk)	4.5	1.0	3.5		6,930.0		A
Richmond Terrace and Wall St (N leg, W sidewalk)	7.5	3.0	4.5	636.3	1,113.7	A	A

Crosswalks

Two crosswalk locations within the study area were analyzed using the collected pedestrian data. As presented in the Table 15-22 below, all crosswalk locations included in the transportation analysis operate at LOS A during both analysis peak hours.

Table 15-22 Crosswalks: Existing LOS Summary

Location	Length (ft)	Width (ft)	Available Circulation Space (ft^2/p)		Crosswalk Circulation LOS	
			Weekday		Weekday	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Lafayette Ave and Richmond Terrace (S leg)	37.0	11.0	1,629.0		A	
South Ave and Teleport Dr (S leg)	112.0	16.0		5,654.3		A

Corner Reservoirs

Four corner reservoir locations were analyzed using the collected pedestrian data within the study area. As presented in the Table 15-23 below, all corner reservoir locations included in the transportation analysis operate at LOS A during the weekday AM analysis peak hour.

Table 15-23 Corner Reservoir: Existing LOS Summary

Location	Peak Hour Volume		Available Circulation Space (ft^2/p)		Corner Circulation LOS	
	Weekday		Weekday		Weekday	
	AM	PM	AM	PM	AM	PM
Lafayette Ave and Richmond Terrace (SE corner)	14		1,275.5		A	
Lafayette Ave and Richmond Terrace (SW corner)	71		535.0		A	
Clinton Ave and Richmond Terrace (SE corner)	20		2,075.8		A	
Clinton Ave and Richmond Terrace (SW corner)	11		2,426.8		A	

Vehicular and Pedestrian Safety

According to the *2021 CEQR Technical Manual* criteria, an intersection is considered a high-crash location if five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three-year period for which data are available, or if it has been identified as along a Vision Zero Priority Corridor or Intersection. The safety assessment performed for this study was based on crash data obtained from NYCDOT for the most recent three-year period for which such data are available (2017 through 2019); crash data for the year 2020 was available but as it did not represent a typical year because of the COVID-19 pandemic this data was not used, consistent with NYC DOT guidance. This information is based on data provided by the New York State Department of Transportation (NYSDOT), New York State Department of Motor Vehicles (NYSDMV), and New York City Police Department (NYPD).

Table 15-24 provides a summary of the three-year crash data. As shown in Table 15-24, no existing intersection analyzed in the study area is considered a high-crash location due to the pedestrian/bicyclist injury crashes criteria. Eight locations are considered high-crash locations on account of being located along one of the five Vision Zero Priority Corridors in the study area – Forest Avenue, Castleton Avenue, Port Richmond Avenue, Broadway, and Bay Street. The eight locations that are considered high-crash locations are: Forest Avenue at South Avenue, Forest Avenue at Richmond Avenue/Morningstar Road, Forest Avenue at Willowbrook Road, Forest Avenue at Jewett Avenue, Castleton Avenue at Port Richmond Avenue, Castleton Avenue at Jewett Avenue, Broadway at Richmond Terrace, and Bay St/Richmond Terrace at Ferry Terminal Viaduct.

Table 15-24 Vehicle and Pedestrian Crash Summary

Intersection	Total Crashes by Year			Total Casualties		Pedestrian Crashes by Year			Bicycle Crashes by Year		
	2017	2018	2019	Fatalities	Injuries	2017	2018	2019	2017	2018	2019
Ferry Terminal Viaduct and Richmond Terrace and Bay Street	3	11	3	0	11	1	2	2	1	0	0
Ferry Terminal Viaduct and Richmond Terrace	0	0	0	0	0	0	0	0	0	0	0
Richmond Terrace and Schuyler Street	0	0	4	0	1	0	0	0	0	0	0
Richmond Terrace and Wall Street	1	1	3	0	2	0	0	0	0	1	0
Richmond Terrace and Hamilton Avenue	0	3	0	0	2	0	0	0	0	0	0
Richmond Terrace and Stuyvesant Place	1	0	0	0	0	0	0	0	0	0	0
Richmond Terrace and Nicholas Street	2	1	2	0	9	0	0	0	0	0	1
Richmond Terrace and St. Peters Place	3	0	2	0	6	0	0	0	0	0	0
Richmond Terrace and Westervelt Avenue	2	3	1	0	11	0	1	0	0	0	0
Richmond Terrace and Jersey Street	0	2	3	0	2	0	0	0	0	0	1
Richmond Terrace and Franklin Avenue	2	1	1	0	5	0	0	0	1	0	1
Richmond Terrace and Lafayette Avenue	3	4	0	0	7	0	0	0	0	0	0
Richmond Terrace and Bard Avenue	5	1	1	0	6	1	0	0	1	0	0
Richmond Terrace and Broadway	1	3	1	0	10	0	0	0	0	0	0
Richmond Terrace and Alaska Street	3	0	5	0	10	0	0	0	0	0	0
Richmond Terrace and Jewett Avenue	1	4	3	0	8	0	0	0	0	0	0
Richmond Terrace and Heberton Avenue	1	1	0	0	1	0	0	0	0	0	0
Castleton Avenue and Jewett Avenue	1	3	2	0	4	0	1	0	1	0	0
Castleton Avenue and Port Richmond Avenue	5	2	3	0	8	4	1	0	0	0	0
Forest Avenue and Jewett Avenue	5	7	3	0	7	1	0	2	0	0	0
Forest Avenue and Willowbrook Avenue	6	11	8	0	10	1	1	0	0	0	0
Forest Avenue and Richmond Avenue and Morningstar Road	11	8	12	0	15	0	1	1	0	0	0
South Avenue and Brabant Street	3	0	1	0	4	0	0	0	0	0	0
South Avenue and Cable Way	0	1	0	0	0	0	0	0	0	0	0
South Avenue and Forest Avenue	6	13	6	0	13	0	2	0	0	0	0
South Avenue and Goethals Road North	7	22	12	0	23	1	1	2	0	0	0
South Avenue and Fahy Ave. and Glen Street	5	10	8	0	18	0	0	0	0	0	0
South Avenue and Ed Curry Avenue	2	1	2	0	6	0	0	1	0	0	0
South Avenue and Teleport Drive	3	5	1	0	7	1	0	0	0	0	0
South Avenue and Travis Avenue	8	11	6	0	24	0	0	0	0	0	0

Denotes a high-crash location

Source: NYSDOT/NYSDMV (2017-2019)

Bay Street

Bay Street is a Vision Zero Priority Corridor. One analysis location is located along this corridor: Bay St/Richmond Terrace and Ferry Terminal Viaduct. Because of the *2021 CEQR*

Technical Manual's categorization of Vision Zero Priority Corridors as high-crash locations, this location is a high-crash location. Of the 11 crashes between multiple vehicles that occurred from 2017 through 2019 at this intersection, eight crashes involved one vehicle overtaking another. Of the six pedestrian/bicycle crashes that occurred from 2017 through 2019 at this intersection, three involved a vehicle going straight. Safety improvements addressing crashes involving pedestrians/bicycles and turning vehicles could include turn calming treatments, including the implementation of delineator poles and/or hardened centerlines or other striping. The intersection is signalized and operates in three phases, with a complex geometry of six legs due to the three Ferry Terminal ramps; high visibility crosswalks and pedestrian countdown signals exist only along the east side of the intersection. In 2023, NYCDOT added a leading pedestrian interval (LPI) to the intersection's signal phasing which would provide more time for pedestrians to cross and reduce interactions with vehicles and would be expected to improve pedestrian safety conditions.

Broadway

Broadway is a Vision Zero Priority Corridor. One analysis location is located along this corridor: Broadway and Richmond Terrace. Because of the *2021 CEQR Technical Manual's* categorization of Vision Zero Priority Corridors as high-crash locations, this location is a high-crash location. Of the five crashes between multiple vehicles that occurred from 2017 through 2019 at this intersection, four crashes involved one vehicle rear-ending another. There were no crashes involving pedestrians/bicycles from 2017 through 2019.

Castleton Avenue

Castleton Avenue is a Vision Zero Priority Corridor. A total of two analysis locations are located along this corridor: Castleton Avenue and Port Richmond Avenue, and Castleton Avenue and Jewett Avenue. Because of the *2021 CEQR Technical Manual's* categorization of Vision Zero Priority Corridors as high-crash locations, both locations being analyzed along Castleton Avenue are considered high-crash locations. Of the nine crashes between multiple vehicles that occurred from 2017 through 2019 at these two intersections, three crashes involved one vehicle rear-ending another. Of the seven pedestrian/bicycle crashes that occurred from 2017 through 2019 at these two intersections, four involved turning vehicles. In 2022, NYCDOT added a leading pedestrian interval to the intersection of Castleton Avenue and Jewett Avenue, which should contribute to a reduction in crashes involving pedestrians/bicycles at this location. Additional safety improvements addressing crashes involving pedestrians/bicycles and turning vehicles could include turn calming treatments, including the implementation of delineator poles and/or hardened centerlines or other striping.

Forest Avenue

Forest Avenue is a Vision Zero Priority Corridor. A total of four analysis locations are located along this corridor. Because of the *2021 CEQR Technical Manual's* categorization of Vision Zero Priority Corridors as high-crash locations, all four locations being analyzed along Forest Avenue are considered high-crash locations. Of the 87 crashes between multiple vehicles that occurred from 2017 through 2019, 25 crashes involved one vehicle rear-ending another, 17 crashes involved one vehicle overtaking another, and 11 involved turning vehicles. Of the nine pedestrian/bicycle crashes that occurred from 2017 through

2019, seven involved turning vehicles, four of which involved pedestrians not crossing at a crosswalk/signal. Safety improvements addressing crashes involving pedestrians/bicycles and turning vehicles could include turn calming treatments, including the implementation of delineator poles and/or hardened centerlines, soft wedges, or other striping. A summary of crashes that occurred along the Forest Avenue corridor analysis intersections during the three-year analysis period is provided below.

Forest Avenue and Jewett Avenue

A total of 15 crashes, including seven personal injuries and three pedestrian/bicyclist-related crashes, occurred at this intersection between 2017 and 2019. Based on a review of the crash data, of the three pedestrian/bicycle crashes that occurred from 2017 through 2019, all three involved a turning vehicle, two of which also involved pedestrians crossing without a signal or crosswalk. Of the 12 crashes between multiple vehicles, four crashes involved one vehicle rear-ending another, and three crashes involved one vehicle overtaking another. The intersection is signalized and operates in three phases (including a lagging, protected northbound/southbound left turn phase) with high visibility crosswalks striped along each approach and with pedestrian countdown signals. Both Forest Avenue and Jewett Avenue are two-way roadways.

Forest Avenue and Willowbrook Road

A total of 25 crashes, including 10 personal injuries and two pedestrian/bicyclist-related crashes, occurred at this intersection between 2017 and 2019. Based on a review of the crash data, of the two pedestrian/bicycle crashes that occurred from 2017 through 2019, one involved a right-turning vehicle, while the other involved a pedestrian crossing without a signal or crosswalk. Of the 23 crashes between multiple vehicles, eight crashes involved one vehicle rear-ending another, and five crashes involved one vehicle overtaking another. The intersection is signalized and operates in four phases (including an eastbound lead phase which includes a protected eastbound left turn movement, and a southbound lead phase) with high visibility crosswalks striped along each approach and with pedestrian countdown signals. Both Forest Avenue and Willowbrook Road are two-way roadways.

Forest Avenue and Richmond Avenue/Morningstar Road

A total of 31 crashes, including 15 personal injuries and two pedestrian/bicyclist-related crashes, occurred at this intersection between 2017 and 2019. Based on a review of the crash data, of the two pedestrian/bicycle crashes that occurred from 2017 through 2019, both involved pedestrians crossing against the signal. Of the 29 crashes between multiple vehicles, seven crashes involved one vehicle overtaking another, five crashes involved turning vehicles, and four crashes involved one vehicle rear-ending another. The intersection is signalized and operates in four phases (including a westbound lead phase which includes a protected westbound left turn movement, and a northbound lead phase which includes a protected northbound left turn movement) with high visibility crosswalks striped along each approach and with pedestrian countdown signals. Forest Avenue, Richmond Avenue, and Morningstar Road are two-way roadways.

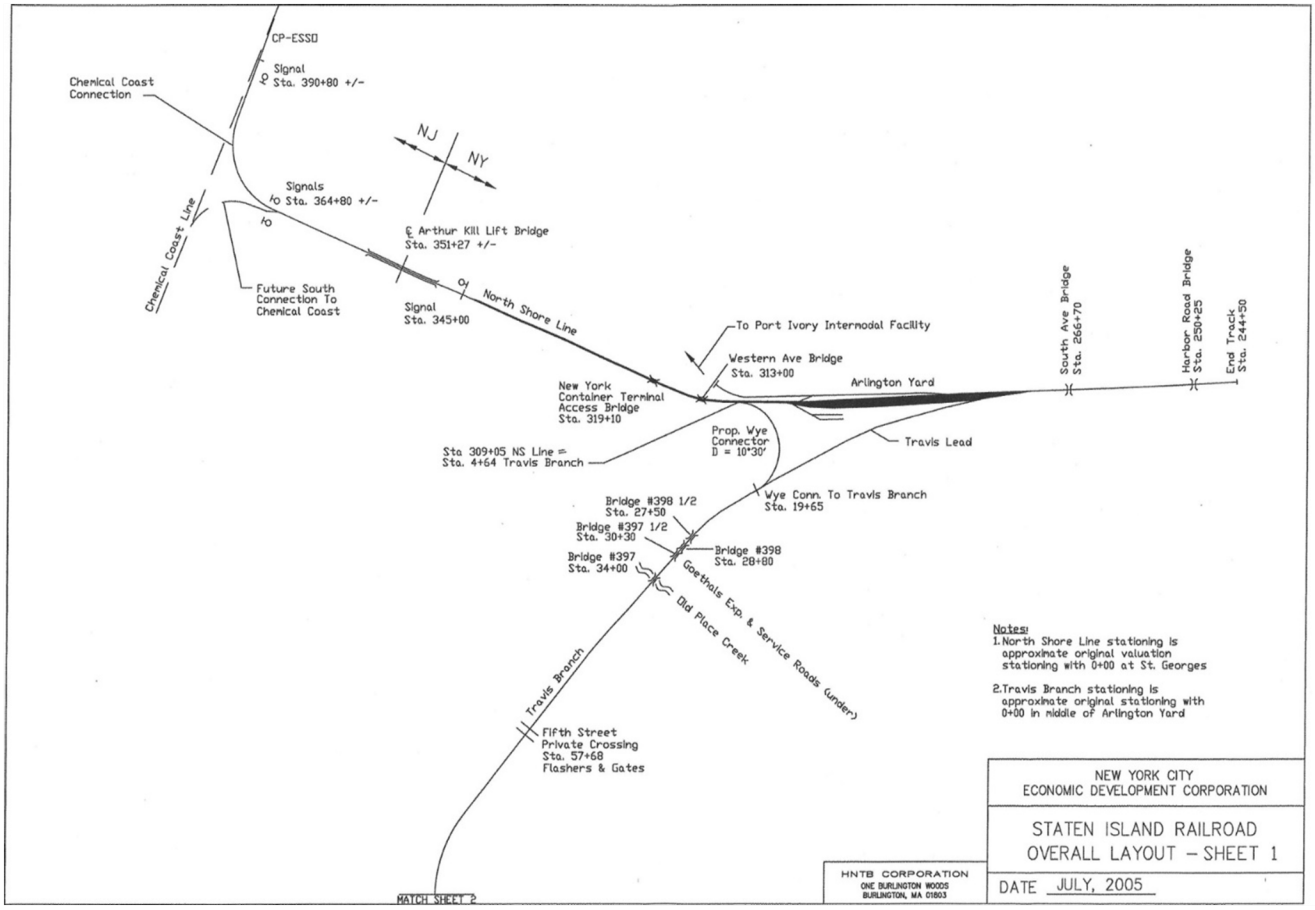
Forest Avenue and South Avenue

A total of 25 crashes, including 13 personal injuries and two pedestrian/bicyclist-related crashes, occurred at this intersection between 2017 and 2019. Based on a review of the crash data, of the two pedestrian/bicycle crashes that occurred from 2017 through 2019, both involved conflicts with turning vehicles and pedestrians crossing without a signal or crosswalk. Of the 23 crashes between multiple vehicles, nine crashes involved one vehicle rear-ending another. The intersection is signalized and operates in three phases (including a protected eastbound/westbound left turn phase) with high visibility crosswalks striped along each approach and with pedestrian countdown signals. Both Forest Avenue and South Avenue are two-way roadways.

Freight Rail

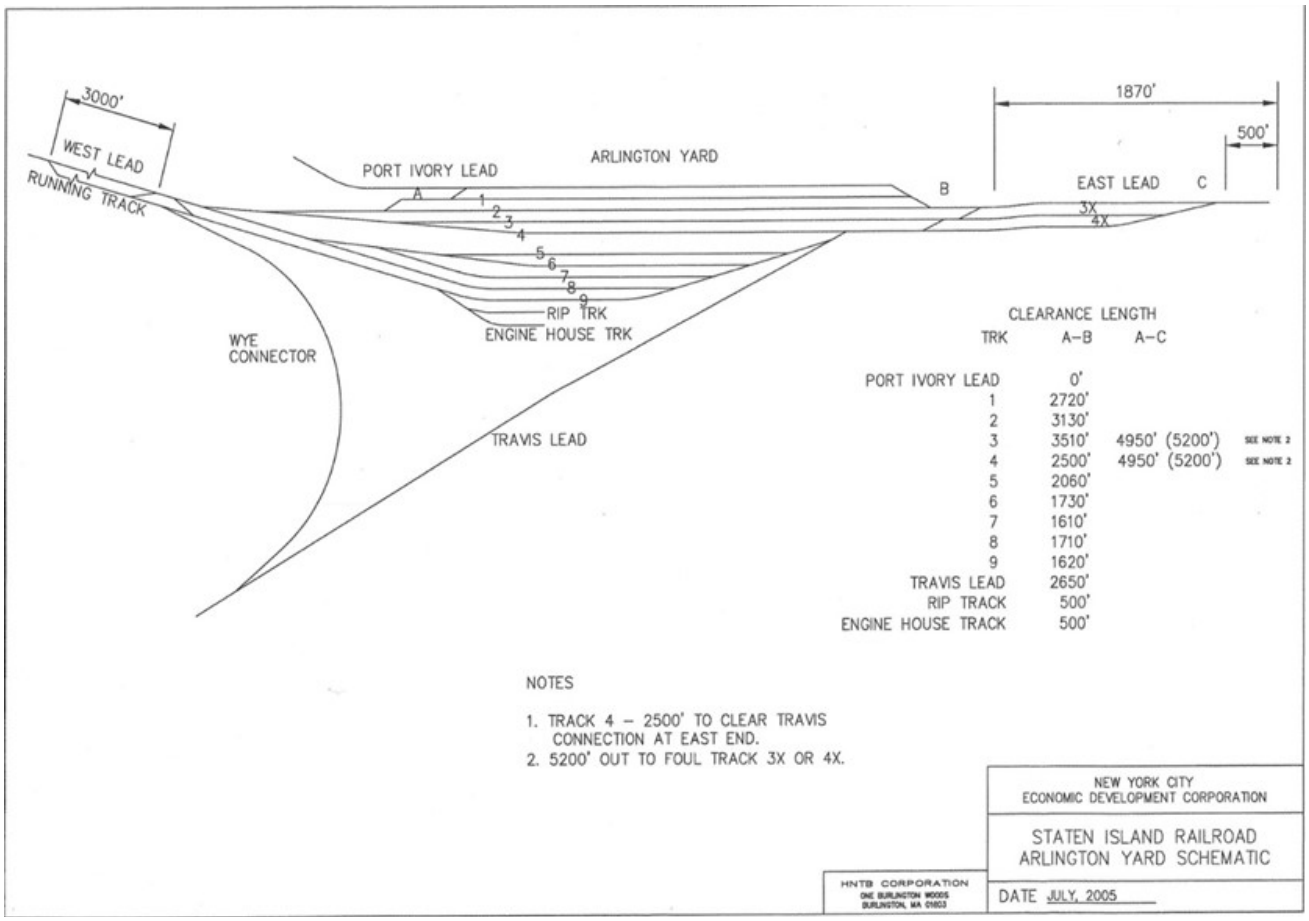
Currently, the ROW managed by the NYC Economic Development Corporation (NYCEDC), is largely abandoned except for the portion of the western section of the ROW that is used as a tail track which serves rail freight supporting the Port Authority of New York and New Jersey's (PANYNJ) Howland Hook Marine Terminal (HHMT). At present, freight trains are assembled at the Arlington Rail Yard, which stretches from the West Shore of Staten Island at Western Avenue, to a bumper block located under Union Avenue between Forest Court and Leyden Avenue (see **Figure 15-4** for overall yard schematic). Today, the trains that are assembled at Arlington Rail Yard are up to 8,000 feet in length. The rail yard is a major component of the Staten Island Railroad, which is owned by the City of New York, and operated by Conrail, a private railroad. The rail yard, which is overseen under an operating agreement between the NYCEDC and the PANYNJ, transports roughly 23,000 municipal solid waste (MSW) containers each year that arrive by barge to the HHMT from Queens and Manhattan. Similarly, Arlington Rail Yard transports roughly 40,000 international containers that arrive at HHMT from ocean-going vessels. Those international containers are destined for states to the west of New York.

Figure 15-4 Arlington Yard Schematic



As shown in Figure 15-5, Arlington Rail Yard is comprised of nine storage tracks, a lead track (aka "Port Ivory Lead") that extends to Union Avenue, a wye to turn a locomotive or train, as well as two short stub tracks for railcar repair. In total, there are approximately 40,000 feet of linear track. Global Container Terminal – New York, the operator of HHMT, uses the Port Ivory Lead track several times each day for "head room" to bring trains in and out of HHMT, which is directly north and west of the rail yard. Conrail uses the Port Ivory Lead track once each day to pull trains from Arlington Rail Yard across the Arthur Kill Lift Bridge (AKLB) to New Jersey and points west. On average, there are about 75 railcars that come into the rail yard, and 75 railcars that leave the rail yard, each day. On each train, there are between 125 and 150 containers. The outbound MSW train is set up every morning between 10:00am and 11:00am and departs Staten Island between 12:00pm and 1:00pm each afternoon, Monday through Friday. The outbound intermodal train with international shipping containers is then built in the late afternoon, anywhere from 3:00pm to 6:00pm depending on loading times, and departs Staten Island between 7:00pm and 8:00pm. Switching takes place all day to supply railcars to both intermodal and MSW operations. The entire Staten Island Railroad network, including Arlington Rail Yard, has double stack capacity that extends from Arthur Kill Lift Bridge to the north, to Union Avenue to the east, and the Travis Branch to the south.

Figure 15-5 Arlington Yard Track Detail



No-Action Condition

The No-Action condition is the future condition without the Proposed Project.

Traffic Street Network

No-Action Traffic Volume Growth

In the future No-Action alternative, it is expected that transportation demands in the vicinity of the project study area will increase due to long-term background growth as well as development that could occur pursuant to existing zoning. The 2035 No-Action traffic volumes reflect annual background growth rates recommended in the *CEQR Technical Manual*; these background growth rates account for small to moderately sized projects and general increases in travel demand not attributable to specific development projects. In addition, discrete demand from major developments in the vicinity of the project study area were also included in the No-Action traffic volumes.

For intersections within the St. George area, an annual background growth rate of 0.50 percent per year was applied for the 2018 through 2023 period and 0.25 percent per year was applied for the 2023 through 2035 period. For intersections in areas outside of St. George, a rate of 1.0 percent per year was applied for the 2018 through 2023 period and a 0.50 percent per year was applied for the 2023 through 2035 period.

In addition to annual background growth, the No-Action traffic networks reflect travel demand associated with major projects that are assumed to be completed by the 2035 project build year. As shown in Table 15-25, 15 projects were identified within or in the vicinity of the study area. As shown in Table 15-25, the discreet projected traffic demand from 11 of the No-Action developments were incorporated into the No-Action traffic networks. Traffic demand from four No-Action developments were assumed to be reflected as part of background growth as these developments are small to moderately sized and would be modest traffic generators. Consequently, the 2035 No-Action traffic volume network flow maps include the existing condition baseline, No-Action development demand, and the appropriate level of background growth. The total 2035 No-Action traffic volumes during the weekday AM, weekday PM, and Saturday midday peak hours are shown in Appendix M-4.

Table 15-25 No-Action Developments and Analysis Screening

Project Name	Development Summary	Screening
Bay Street Corridor	Residential: 2,557 units Commercial: 275,348 sf Community Facility: 46,799 sf Parking Facility: 1,290 spaces	Included
40 Bay Street	Residential: 53 units Commercial or Community Facility: 6,546 sf	Accounted for as part of background growth
Lighthouse Point	Residential: 109 units Commercial: 259,800 sf Parking Facility: 345 spaces	Included
St. George Waterfront Redevelopment [includes former New York Wheel (W) & Empire Outlets (O)]	Commercial: 95,100 sf (W)+490,000 sf (O) Parking Facility: 962 spaces (W)+1,250 spaces (O)	Included
160 Richmond Terrace	Residential: 77 units	Accounted for as part of background growth
River North (Liberty Towers)	Residential: 897 units Commercial: 28,074 sf Parking Facility: 409 spaces	Included
2111 Richmond Terrace Storage Facility	Self-Storage Warehouse: 305,076 sf	Included
110 Port Richmond Avenue Housing Development	Residential: 77 units	Accounted for as part of background growth
221 Port Richmond Avenue Housing Development	Residential: 48 units	Accounted for as part of background growth
Forest Avenue & South Avenue Cross Access Retail	Commercial: 300,000 sf (approx.)	Included
South Avenue Retail Development	Retail + Restaurant: 226,000 sf Parking Facility: 838 spaces	Included
Matrix Development	Warehouse: 2,400,000 sf	Included
Matrix West	Warehouse: 1,770,000 sf	Included

Table 15-25 No-Action Developments and Analysis Screening

Project Name	Development Summary	Screening
1441 South Avenue Office Development	Office: 325,000 sf Parking Facility: 672 spaces	Included
Citywide Ferry Service Expansion	Daily Riders (Avg. Weekdays): 5,940 Daily Riders (Avg. All Week): 5,420	Included

No-Action Traffic Improvements and Modifications

In addition to annual background growth and traffic from major No-Action developments, the 2035 No-Action traffic analysis incorporates mitigation measures and traffic improvements anticipated to be in place by 2035. These changes include improvements or mitigation measures proposed by No-Action developments, such as those detailed in the 2013 *St. George Waterfront Redevelopment FEIS (SGWR),* 2021 *River North FEIS,* 2019 *Bay Street Corridor Rezoning and Related Actions FFEIS,* 2017 *South Avenue Retail Development FEIS*, and 2018 *Teleport Site A EAS Technical Memorandum 2* (associated with the 1441 South Avenue Office Development project), as well as NYCDOT improvements. Two NYCDOT roadway improvement projects are planned within the study area, Sidewalk Improvement Project (SIP) 5562, which would provide protected bike lanes and additional pedestrian sidewalk, median, and corner areas for pedestrians along Richmond Terrace within the study area, and HWR700, which would expand and harden bicycle and pedestrian infrastructure within the vicinity of the intersection of Richmond Terrace and Bay Street; these improvements were incorporated into the No-Action condition analysis. Changes to the signal timing plans made by NYCDOT since the 2018 data collection were also incorporated, including implementation of new traffic signals after the traffic data collection was conducted at the intersection of Richmond Terrace and Alaska Street, and at the intersection of South Avenue and Ed Curry Avenue. **Table 15-26** summarizes the anticipated changes to traffic operations at analysis locations.

It should be noted that a number of proposed modifications included in the *SGWR* were omitted from the No-Action condition analyses per the instruction of NYCDOT or due to their incompatibility with other planned or implemented NYCDOT improvements. In particular, the proposed modification at Forest Avenue and Jewett Avenue is not compatible with the more recent signal timing plan. Since this proposed modification has been superseded by subsequent signal timing plan changes, it was not included as part of the No-Action analysis. In addition, several proposed modifications included in the 2013 *Staten Island Lighthouse Point EAS,* the 2019 *Bay Street Corridor Rezoning,* and the 2021 *River North FEIS* were also not included in the No-Action condition analyses as those proposed change have been superseded by NYCDOT proposed improvements. These omitted modifications include:

- a street direction reversal of Schuyler Street (from westbound to eastbound) between Richmond Terrace and Stuyvesant Place (SGWR);
- a street direction reversal of Wall Street (from eastbound to westbound) between Richmond Terrace and Stuyvesant Place SGWR);

- introduction of a signal with 120 second cycle length at the currently unsignalized intersection of Richmond Terrance and Schuyler Street (SGWR);
- addition of a northbound approach right turn bay at the intersection of Richmond Terrace and Wall Street (SGWR);
- modifications to signal phasing timings at the intersection of Richmond Terrace and Wall Street that are included in the *Staten Island Lighthouse Point EAS*;
- modifications to signal phasing timings at the intersection of Richmond Terrace and Jersey Street that are included in the *Bay Street Corridor Rezoning FEIS*, *Staten Island Lighthouse Point EAS,* SGWR, and *River North FEIS*.
- modifications to signal phasing timings at the intersection of Richmond Terrace and Franklin Avenue that are included in the *Bay Street Corridor Rezoning FEIS*
- addition of an eastbound approach left turn bay at the intersection of Forest Avenue and Jewett Avenue (SGWR)
- elimination of the northbound approach left turn bay and re-striping of the approach to one travel lane at the intersection of Forest Avenue and Jewett Avenue (SGWR)
- elimination of the southbound approach left turn bay and re-striping of the approach to one travel lane at the intersection of Forest Avenue and Jewett Avenue (SGWR)

Table 15-26 No-Action Traffic Operation Changes

Intersection	Proposed Traffic Changes	Source/Reference
Richmond Terrace and Ferry Terminal Viaduct and Bay Street	Signal phasing modification to introduce a LPI at this intersection	NYCDOT
Richmond Terrace and Wall Street	WB approach: Re-striping from 1 LTR lane to 1 L + 1 LTR	2013 *St. George Waterfront Redevelopment FEIS*
	NB approach: Re-striping from 1 T + 1 TR lane to 1 T + 1 R lane	SIP 5562
Richmond Terrace and Hamilton Avenue	NB approach: Re-striping from 1 T + 1 LT lane to 1 LT lane	SIP 5562
	SB approach: Re-striping from 1 T + 1 TR lane to 1 TR lane Signal timing modification	SIP 5562 2019 *Bay Street Corridor Rezoning FEIS*
Richmond Terrace and Stuyvesant Place	NB approach: Re-striping from 1 T + 1 LT lane to 1 LT lane SB approach: Re-striping from 1 T + 1 TR lane to 1 TR lane	SIP 5562 SIP 5562
Richmond Terrace and Nicholas Street/Garage Ramp	WB approach: Re-striping from 1 T + 1 LT lane to 1 LT lane	SIP 5562
	EB approach: Re-striping from 1 T + 1 TR lane to 1 TR lane	SIP 5562
Richmond Terrace and St. Peters Place	EB approach: Re-striping from 1 T + 1 TR lane to 1 TR lane	SIP 5562
Richmond Terrace and Westervelt Avenue	Signal timing modification	2019 *Bay Street Corridor Rezoning FEIS*
	Signal timing modification	2021 *River North FEIS*
Richmond Terrace and Jersey Street	WB approach: Re-striping No change to lane configurations proposed	2019 *Bay Street Corridor Rezoning FEIS*
Richmond Terrace and Alaska Street	Installation of traffic signal	NYCDOT
Castleton Avenue and Jewett Avenue	Signal phasing modification to introduce a LPI at this intersection	NYCDOT

Table 15-26 No-Action Traffic Operation Changes

Intersection	Proposed Traffic Changes	Source/Reference
Forest Avenue and Morningstar Road and Richmond Avenue	EB, WB, and NB approaches: Re-striping No change to lane configurations proposed	2017 *South Ave Retail Development FEIS*
South Avenue and Goethals Road North	Signal timing modification	2017 *South Ave Retail Development FEIS*
South Avenue and Edward Edward Curry Avenue	Installation of traffic signal	NYCDOT
South Avenue and Travis Avenue	WB approach: Re-striping to formalize existing 2 travel lanes operation	2018 *Teleport Site A EAS TM 2*
	Signal phasing modification	2018 *Teleport Site A EAS TM 2*
	Signal timing modification	2018 *Teleport Site A EAS TM 2*

Notes: NB=northbound; EB=eastbound; SB=southbound; WB=westbound
L=left-turn only lane; T=through only lane; R=right-turn only lane; Park= parking lane; LT=shared left-through lane; LTR=shared left-through-right lane; TR=shared through-right lane
Signal timing changes implemented by NYCDOT after the traffic data collection was conducted were incorporated but not detailed above.

Levels of Service

Table 15-27 and Table 15-28 provide an overview of the levels of service that characterize 2035 No-Action "overall" intersection conditions and individual lane groups, during the weekday AM, weekday PM, and Saturday midday peak hours. Intersection ID #3 Richmond Terrace and Schuyler Street, is an unsignalized intersection with no controlled approaches; therefore, levels of service results are shown for only 29 of the 30 analysis intersections. Detailed tables showing levels of service results for each intersection by lane group are provided in Appendix M-2.

Table 15-27 2035 No-Action Signalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	8	6%	6%	0	0%	0%
B	27	21%	27%	9	35%	35%
C	47	36%	63%	6	23%	58%
D	32	24%	87%	7	27%	85%
E	9	7%	94%	1	4%	88%
F	8	6%	100%	3	12%	100%
All	**131**	**100%**	-	**26**	**100%**	-
PM						
A	5	4%	4%	0	0%	0%
B	18	14%	18%	3	12%	12%
C	41	31%	49%	4	15%	27%
D	30	23%	72%	3	12%	38%
E	6	5%	76%	4	15%	54%
F	31	24%	100%	12	46%	100%
All	**131**	**100%**	-	**26**	**100%**	-
Sat						
A	11	8%	8%	2	8%	8%
B	17	13%	22%	2	8%	15%
C	48	37%	58%	7	27%	42%
D	24	18%	77%	2	8%	50%
E	8	6%	83%	7	27%	77%
F	22	17%	100%	6	23%	100%
All	**130**	**100%**	-	**26**	**100%**	-

Note: Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements.

Table 15-28 2035 No-Action Unsignalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	6	67%	67%	3	100%	100%
B	2	22%	89%	0	0%	100%
C	1	11%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**9**	**100%**	-	**3**	**100%**	-
PM						
A	6	67%	67%	3	100%	100%
B	0	0%	67%	0	0%	100%
C	2	22%	89%	0	0%	100%
D	0	0%	89%	0	0%	100%
E	1	11%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**9**	**100%**	-	**3**	**100%**	-
Sat						
A	6	67%	67%	3	100%	100%
B	1	11%	78%	0	0%	100%
C	2	22%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**9**	**100%**	-	**3**	**100%**	-

Note: Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements.

The summary overview of 2035 No-Action conditions indicates that at signalized intersections:

» In the weekday AM peak hour, four signalized intersections operate at LOS E or F. In addition, 17 lane groups at signalized intersections operate at LOS E or F. All other signalized intersections and individual lane groups at signalized intersections operate at LOS D or better.

» In the weekday PM peak hour, 16 signalized intersections operate at LOS E or F. In addition, 37 lane groups at signalized intersections operate at LOS E or F. All other signalized intersections and individual lane groups at signalized intersections operate at LOS D or better.

» In the Saturday midday peak hour, 13 signalized intersections operate at LOS E or F. In addition, 30 lane groups at signalized intersections operate at LOS E or F. All other signalized intersections and individual lane groups at signalized intersections operate at LOS D or better.

Lane groups operating at unacceptable levels of service are listed below.

» Intersection 1: Richmond Terrace & Ferry Terminal Viaduct & Bay Street
  - Eastbound Bay Street to Richmond Terrace left turn lane group (PM & SAT)
  - Southbound Richmond Terrace left turn lane group (PM)
  - Southwestbound Ferry Terminal Viaduct (Lower Level Exit) through lane group (PM & SAT)
  - Southwestbound Ferry Terminal Viaduct (Lower Level Exit) right turn lane group (PM)

» Intersection 2: Richmond Terrace & Ferry Terminal Viaduct
  - Westbound Ferry Terminal Viaduct (Upper Level Exit) left turn lane group (PM)
  - Westbound Ferry Terminal Viaduct (Upper Level Exit) right turn lane group (AM, PM, & SAT)

» Intersection 4: Richmond Terrace & Wall Street
  - Northbound Richmond Terrace through lane group (SAT)
  - Southbound Richmond Terrace approach (SAT)

» Intersection 7: Richmond Terrace & Nicholas Street & Garage Ramp
  - Eastbound Richmond Terrace approach (SAT)

» Intersection 8: Richmond Terrace & St. Peters Place
  - Eastbound Richmond Terrace approach (SAT)
  - Westbound Richmond Terrace approach (PM)

» Intersection 9: Richmond Terrace & Westervelt Avenue
  - Westbound Richmond Terrace approach (PM & SAT)
  - Northbound Westervelt Avenue approach (PM & SAT)

» Intersection 10: Richmond Terrace & Jersey Street
  - Eastbound Richmond Terrace shared through-right turn lane group (PM & SAT)
  - Westbound Richmond Terrace shared left turn lane group (AM & SAT)

» Intersection 11: Richmond Terrace & Franklin Avenue
  - Westbound Richmond Terrace approach (PM)

» Intersection 12: Richmond Terrace & Lafayette Avenue
  - Westbound Richmond Terrace approach (PM & SAT)

» Intersection 16: Richmond Terrace & Jewett Avenue

- Northbound Jewett Avenue approach (AM, PM, & SAT)
- Southbound Richmond Terrace approach (AM & PM)

» Intersection 19: Castleton Avenue & Jewett Avenue

- Westbound Castleton Avenue approach (PM & SAT)
- Northbound Jewett Avenue approach (AM & PM)

» Intersection 20: Forest Avenue & Jewett Avenue

- Eastbound Forest Avenue approach (AM, PM, & SAT)
- Westbound Forest Avenue approach (PM & SAT)
- Northbound Jewett Avenue left turn lane group (SAT)
- Northbound Jewett Avenue shared through-right turn lane group (AM & PM)
- Southbound Jewett Avenue shared through-right turn lane group (AM, PM, & SAT)

» Intersection 21: Forest Avenue & Willowbrook Road

- Eastbound Forest Avenue approach (PM & SAT)
- Westbound Forest Avenue approach (PM & SAT)
- Northbound Willowbrook Road approach (AM)

» Intersection 22: Forest Avenue & Morningstar Road & Richmond Avenue

- Eastbound Forest Avenue left turn lane group (PM)
- Eastbound Forest Avenue shared through-right turn lane group (AM, PM, & SAT)
- Westbound Forest Avenue left turn lane group (AM)
- Southbound Morningstar Road approach (PM)

» Intersection 25: South Avenue & Forest Avenue

- Eastbound Forest Avenue left turn lane group (PM & SAT)
- Eastbound Forest Avenue shared through-right turn lane group (PM & SAT)
- Westbound Forest Avenue left turn lane group (PM)
- Northbound South Avenue left turn lane group (SAT)
- Northbound South Avenue right turn lane group (SAT)
- Southbound South Avenue through lane group (SAT)

» Intersection 26: South Avenue & Goethals Road North

- Westbound Goethals Road North de facto left turn lane group (AM & PM)
- Westbound Goethals Road North de facto right turn lane group (AM, PM, & SAT)
- Southbound South Avenue approach (PM & SAT)

» Intersection 27: South Avenue & Fahy Avenue & Glen Street

- Eastbound Glen Street left turn lane group (AM, PM, & SAT)
- Northbound South Avenue right turn lane group (PM)
- Southbound South Avenue left turn lane group (PM & SAT)
- Southbound South Avenue through lane group (AM & PM)

» Intersection 28: South Avenue & Edward Curry Avenue

- Northbound South Avenue left turn lane group (AM & PM)

» Intersection 30: South Avenue & Travis Avenue

- Southbound South Avenue left turn lane group (AM & PM)

The summary overview of 2035 No-Action conditions indicates that at unsignalized intersections:

» All unsignalized intersections operate at LOS A in all analyzed peak hours.

» In the weekday AM peak hour, all lane groups at unsignalized intersections operate at LOS C or better.

» In the weekday PM peak hour, one lane group at unsignalized intersections operates at unacceptable LOS E. All other lane groups at unsignalized intersections operate at LOS C or better.

» In the Saturday midday peak hour, all lane groups at unsignalized intersections operate at LOS C or better.

Lane groups of unsignalized intersections operating at unacceptable levels of service are listed below.

» Intersection 17: Richmond Terrace & Heberton Avenue

- Eastbound Heberton Avenue approach (PM)

Parking

Under No-Action conditions, the demand for on-street and off-street parking spaces is expected to increase proportionally to the background growth for the quarter-mile study area. According to the *CEQR Technical Manual*, the annual growth rate for the St. George area in Staten Island is 0.5 percent for the first five years and 0.25 percent for the years beyond. Therefore, between 2018 Existing conditions and 2035 No-Action conditions the total growth rate would be about 5.57 percent. Additional demand generated by other development projects was assumed to be accommodated by on-site parking for each respective development with the exception of the *Lighthouse Point EAS*, which identifies an on-site parking shortfall of about 66 spaces during the weekday midday peak period, of about 79 spaces during the weekday PM peak period, and about 146 spaces during the Saturday midday peak period. Although the *St. George Waterfront Redevelopment FEIS* does not identify an on-site parking deficiency, there would be a loss of 22 on-street parking spaces as part of the project's proposed frontage on Richmond Terrace. The change in on-street parking supply is reflected in the No-Action analysis. Furthermore, under No-Action conditions, all off-street public parking facilities are expected to remain unchanged from Existing conditions.

Table 15-29 presents a summary of on-street parking utilization under No-Action conditions. Table 15-29 shows that the demand for on-street parking spaces is expected to surpass on-street parking capacity by about 113 parking spaces during the weekday midday peak period. Also, it shows that on-street parking would be approaching full utilization during the other time periods, with utilization rates at approximately 99 percent during the weekday AM peak period, at approximately 89 percent during the weekday PM peak period, and at approximately 91 percent during the Saturday midday peak period.

Table 15-29 No-Action On-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	1,499	1,485	14	99.1%
Weekday Midday Peak (12:00 PM to 2:00 PM)	1,496	1,609	-113	107.6%
Weekday PM Peak (5:00 PM to 7:00 PM)	1,492	1,326	166	88.9%
Saturday Midday Peak (12:00 PM to 4:00 PM)	1,503	1,371	132	91.2%

Indicates shortfall in parking capacity and, therefore, utilization rate above 100 percent

Table 15-30 presents a summary of off-street parking utilization under No-Action conditions. Table 15-30 shows that off-street parking utilization rates are higher and at approximately half utilization during the weekday AM peak period and weekday midday peak period at approximately 48 percent and 46 percent, respectively, compared to off-street parking utilization rates during the weekday PM peak period and Saturday midday peak period which are approximately 27 percent and 35 percent, respectively.

Table 15-30 No-Action Off-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	3,710	1,765	1,945	47.6%
Weekday Midday Peak (12:00 PM to 2:00 PM)	3,710	1,701	2,009	45.8%
Weekday PM Peak (5:00 PM to 7:00 PM)	3,710	1,014	2,696	27.3%
Saturday Midday Peak (12:00 PM to 4:00 PM)	3,414	1,205	2,209	35.3%

Transit

Under the No-Action condition, the Proposed Project would not be implemented, and the existing former North Shore Railroad ROW would remain abandoned and unimproved. Bus service on local streets would continue to operate at existing levels. The S53, S54 and S57 bus routes would not be modified. There are no large-scale mass transit projects that

are funded that would markedly change travel options on the North Shore of Staten Island. As such, operational conditions are expected to remain similar to existing conditions for bus, SIR and the Staten Island Ferry.

As part of NYC Ferry, NYCEDC introduced a new ferry route in 2021 from St. George to Lower Manhattan via Battery Park City as well as Midtown Manhattan from the West 39th Street Ferry Terminal at Pier 79. Managed by the NYCEDC but operated by Hornblower Cruises, the new route complements six other existing NYC Ferry routes. The one-way ferry fare is $4 with discounted fares of $1.35 for senior citizens, individuals with disabilities, and participants in Fair Fares., while the Staten Island Ferry would remain free of charge. It is estimated that travel time between St. George and Battery Park City would take 18 minutes, with an additional 17 minutes to Midtown West, for a total of 35 minutes. It is estimated that ridership on the new St. George NYC Ferry route would average 5,940 weekday passengers, and 5,420 weekend day passengers.[9] The ferry landing is located west of the St George Terminal along the North Shore Waterfront Esplanade at the end of Wall Street.

Pedestrians

Significant background development projects identified in the No-Action condition traffic analysis were reviewed for their vicinity to the pedestrian study areas. It is not anticipated that these developments will produce pedestrian traffic at the pedestrian elements studied. As such, background growth rates, in accordance with the *2021 CEQR Technical Manual,* were utilized to grow the 2023 Existing conditions pedestrian volumes to the 2035 No-Action condition.

Sidewalks

As presented in the Table 15-31 below, all sidewalk locations included in the transportation analysis continue to operate at LOS A for the platoon conditions during both analysis peak hours.

Table 15-31 Sidewalks: No-Action LOS Summary

Location	Total Width (ft)	Obstruction Width (ft)	Effective Width (ft)	Available Circulation Space (ft^2/p)		Platoon Conditions LOS	
				Weekday		Weekday	
				AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Clinton Ave and Richmond Terrace (E leg, S sidewalk)	4.5	3.0	1.5	1,819.2		A	
Clinton Ave and Richmond Terrace (W leg, N sidewalk)	6.2	3.0	3.2	5,821.6		A	
Port Richmond Ave and Ann St (N leg, E sidewalk)	7.2	3.0	4.2		898.9		A

[9] NYCEDC 2018/2019 NYC Ferry Expansion Feasibility Study

Table 15-31 Sidewalks: No-Action LOS Summary

Location	Total Width (ft)	Obstruction Width (ft)	Effective Width (ft)	Available Circulation Space (ft²/p) Weekday AM Peak Hour	Available Circulation Space (ft²/p) Weekday PM Peak Hour	Platoon Conditions LOS Weekday AM Peak Hour	Platoon Conditions LOS Weekday PM Peak Hour
Port Richmond Ave and Ann St (S leg, W sidewalk)	7.2	3.0	4.2	1,910.2		A	
Van Pelt Ave and Heusden St (E leg, N sidewalk)	3.0	1.0	2.0	3,638.5		A	
South Ave and Brabant St (N leg, E sidewalk)	9.5	3.0	6.5	1,313.9	1,028.2	A	A
South Ave and Teleport Dr (E leg, S sidewalk)	4.5	1.0	3.5		6367.4		A
Richmond Terrace and Wall St (N leg, W sidewalk)	7.5	3.0	4.5	584.7	1,023.3	A	A

Crosswalks

As presented in the Table 15-32 below, all crosswalk locations included in the transportation analysis continue to operate at LOS A during both analysis peak hours.

Table 15-32 Crosswalks: No-Action LOS Summary

Location	Length (ft)	Width (ft)	Available Circulation Space (ft²/p) Weekday AM Peak Hour	Available Circulation Space (ft²/p) Weekday PM Peak Hour	Crosswalk Circulation LOS Weekday AM Peak Hour	Crosswalk Circulation LOS Weekday PM Peak Hour
Lafayette Ave and Richmond Terrace (S leg)	37.0	11.0	1,487.9		A	
South Ave and Teleport Dr (S leg)	112.0	16.0		5,650.4		A

Corner Reservoirs

As presented in the Table 15-33 below, all corner reservoir locations included in the transportation analysis continue to operate at LOS A during the weekday AM analysis peak hour.

Table 15-33 Corner Reservoir: No-Action LOS Summary

Location	Peak Hour Volume		Available Circulation Space (ft^2/p)		Corner Circulation LOS	
	Weekday		Weekday		Weekday	
	AM	PM	AM	PM	AM	PM
Lafayette Ave and Richmond Terrace (SE corner)	15		1,171.4		A	
Lafayette Ave and Richmond Terrace (SW corner)	77		491.2		A	
Clinton Ave and Richmond Terrace (SE corner)	22		1,907.3		A	
Clinton Ave and Richmond Terrace (SW corner)	12		2,229.8		A	

Freight Rail

Under the No-Action condition, the Proposed Project would not be implemented and freight operations like existing conditions to support Arlington Yard are anticipated to occur. The PANYNJ has expressed their desire to preserve the ability to extend the existing freight rail track within the ROW's open cut to the east beyond Union Avenue to Van Name Avenue. This potential freight rail extension, which would occur independent of the Proposed Project, would allow the PANYNJ to achieve efficiency and economies of scale by enabling longer trains to be assembled. This potential extension is an unfunded project and a build year and conceptual plans have not been identified.

With-Action Condition

Traffic

Changes to Traffic Operations

For a large majority of the proposed BRT alignment, the BRT would not interface with surface streets as the alignment would be placed within the former North Shore ROW, which is an existing abandoned transportation corridor that is separated from the existing roadway network. Where the BRT has a feeder line that continues along South Avenue between Arlington and the West Shore Plaza terminus, there would simply be additional bus service running in mixed traffic, and general traffic operations will be unaffected. Similarly, where feeder routes come on and off the busway at the Alaska Street and Bard Avenue ramps, the only effects on local traffic operations would be the additional bus service on the surrounding streets. Near the western end of the BRT alignment, Roxbury Street would be narrowed in order to accommodate a reconfigured retaining wall between the street level and the busway, although traffic would be maintained in each direction and no changes would be made to overall parking capacity.

On Richmond Terrace, between Nicholas Street and the St. George Ferry Terminal, at least two general purpose traffic lanes would be maintained in each direction, as is the case under existing conditions. The following is a summary of the proposed changes along Richmond Terrace:

» Roadway space would be reallocated from the existing parking lane along Richmond Terrace, in order to accommodate the two new 11-foot-wide median busway lanes, as well as one foot on each side for physical separation and striping.

- In some limited areas along Richmond Terrace (for example, between Wall Street and Hamilton Avenue) the curb would be realigned further west, reducing the existing 15-foot-wide sidewalk on the west side of the street to 5 feet in width. This expropriation of sidewalk space is needed to provide space for the busway and to minimize lane offsets at intersections per NYCDOT design standards. In association with this action, the intersection of Richmond Terrace and Stuyvesant would be realigned to better accommodate left-turning vehicles from northbound Richmond Terrace onto Stuyvesant Street and to reduce the pedestrian crosswalk length.
    - The sidewalk on the west block face of Richmond Terrace between Wall Street and Hamilton Avenue would be reduced from 15 feet to 5 feet wide in order to accommodate perpendicular parking for the 120th Police Precinct as requested by NYPD. Since NYPD currently occupies up to 10 feet of the sidewalk in this section, this condition is no different than existing conditions.
- On the northbound Richmond Terrace approach of the intersection of Richmond Terrace and Wall Street, the curb would be realigned to provide a right-turn pocket in part of the current sidewalk space. At this location, the existing sidewalk is abutted by the plaza in front of the outlet center.
- A new ramp would bring the busway onto Richmond Terrace at Nicholas Street. In order to accommodate the busway, the intersection will be reconfigured from a conventional four-legged intersection to a five-legged intersection. A separate protected signal phase would be provided for buses traveling between the new ramp and the center busway, during which all other vehicular movements through the intersection would be prohibited, as well as the conflicting crosswalks.
- At the intersection of Richmond Terrace and Stuyvesant Place, a new dedicated left turn lane from northbound Richmond Terrace onto Stuyvesant Place would be provided, along with a protected left turn signal phase. When general traffic and buses in the busway are permitted to proceed in the northbound/southbound direction, left turns would be prohibited.
- At the intersection of Richmond Terrace and Hamilton Avenue, northbound left turns from Richmond Terrace onto Hamilton Avenue would be prohibited due to the busway. These left turning vehicles would be expected to turn at the intersection at Stuyvesant Place.
- At the intersection of Richmond Terrace and Wall Street, the protected left turn signal phase and dedicated left turn lane from southbound Richmond Terrace onto Wall Street would be eliminated. Two general purpose lanes would be maintained in each direction. In the southbound direction, left turns will be permitted from the left lane of a two-lane shared lane group. When the busway is given a protected phase, general southbound traffic will be stopped.
- At the intersection of Richmond Terrace and Schuyler Street, northbound left turns from Richmond Terrace onto Schuyler Street would be prohibited due to the busway. These left turning vehicles would be expected to turn at the intersection at Stuyvesant Place.

- The MTA and New York City Department of Transportation will study the activation of TSP along Richmond Terrace to reduce travel times for the BRT between the ferry terminal and the Nicholas Street ramp.
- Under existing conditions, there is a bicycle lane in the northbound direction of Richmond Terrace and "sharrows" shared lane markings in the southbound direction; and a protected two-way bike lane is proposed by NYCDOT in the No-Action condition. Between the entrance to the Ferry Terminal and Nicholas Street these bicycle facilities would be eliminated because they cannot be accommodated within the limited right-of-way alongside the bus lanes.
- Under existing conditions, the taxi pickup stand at the St. George Terminal is located on the upper bus terminal deck, immediacy adjacent to the ferry terminal entrance. The proposed terminal station in St. George would repurpose the existing taxi stand on the bus deck at St. George Terminal for BRT use. It is anticipated that the taxi stand would be relocated to the lower level of St. George Terminal.

Along the alignment, the BRT will require modifications to existing signalized intersections, as well as new signalized intersections at key crossing points. These modifications are described below, in order from the eastern end of the alignment in St. George to the western end of the alignment in Arlington. Please note that while the descriptions below note that many signals or crossings will be maintained, these may need to be physically shifted or slightly relocated in order to accommodate the changes in roadway geometry.

- Intersections along Richmond Terrace, from the pedestrian crossing in front of the Ferry Terminal, to the entrance ramp at Nicholas Street, will be outfitted with LRT (Light Rail Transit)-style signal heads, as specified in the MUTCD (Manual on Uniform Traffic Control Devices) Section 4D.27.18. These dedicated transit-only signals will control movement along the center busway. These LRT-style signal heads will be in addition to the existing signal heads present at each of these intersections, which will remain in place and will continue to control the non-transitway movements. At the intersections between the ferry terminal and Nicholas Street, all existing signalized pedestrian crossings will be maintained. At these intersections, the MTA and New York City Department of Transportation will study the activation of TSP equipment in order to prioritize bus operations along this corridor.
    - At Richmond Terrace and the pedestrian crossing in front of the Ferry Terminal and the Richmond County Surrogate's Court, the existing crosswalk and crosswalk signals will remain. The existing vehicle signals for general purpose lanes will remain. Additional LRT-style signals will be deployed in each direction to control access to/from the busway. Generally, the busway will be given the same phase as general purpose traffic along Richmond Terrace.
    - At Richmond Terrace and Schuyler Street, signage will be added to indicate that northbound left turns from Richmond Terrace onto Schuyler Street are prohibited. Also, signs will be added to prohibit crossings across Richmond Terrace, which is currently not marked with a crosswalk. All signage changes will be coordinated with the New York City Department of Transportation's Borough Engineering group.

- At Richmond Terrace and Wall Street, the existing crosswalks and crosswalk signals will remain. The existing vehicle signals for general purpose lanes will remain. Additional LRT-style signals will be deployed in each direction to control access to/from the busway. At this location, the busway will be given its own phase, separate from the general-purpose traffic along Richmond Terrace and along Wall Street. The signal will operate as a three-phase signal.
- At Richmond Terrace and Hamilton Avenue, the existing crosswalks and crosswalk signals will remain. The existing vehicle signals for general purpose lanes on Richmond Terrace will remain. Additional LRT-style signals will be deployed in each direction to control access to/from the busway. Generally, the busway will be given the same phase as general-purpose traffic along Richmond Terrace. Signage will be added to indicate that northbound left turns from Richmond Terrace onto Hamilton Avenue are prohibited.
- At Richmond Terrace and Stuyvesant Place, this intersection will be newly signalized. Crosswalks will be provided across Stuyvesant Place, as well as across Richmond Terrace on both sides of Stuyvesant place. Each crosswalk will have associated crosswalk signals. General traffic in the northbound and southbound directions of Richmond Terrace will be given new green/yellow/red ball signals. Traffic making a northbound left from Richmond Terrace onto Stuyvesant Place will be accommodated in a new left turn bay and will be given a green/yellow/red left arrow signal head. Generally, the busway will be given the same phase as through movements for general purpose traffic along Richmond Terrace. The northbound left will be given its own phase.
- At Richmond Terrace and Nicholas Street, the existing crosswalks and crosswalk signals will remain. The existing vehicle signals for general purpose lanes on Richmond Terrace and Nicholas Street will remain. Additional LRT-style signals will be deployed in each direction to control access to/from the busway. Generally, the busway will be given its own phase separate from general purpose traffic along Richmond Terrace and Nicholas Street.

At the time of the preparation of the Staten Island North Shore BRT EIS, NYCDOT's design comments and proposed design changes along Richmond Terrace were unaddressed. ~~Currently,~~ ~~a~~As part of MTA's planning process, the North Shore BRT ~~is being~~ has been evaluated in the Comparative Evaluation process with other MTA expansion and enhancement projects for inclusion in the MTA Twenty-Year Needs Assessment. Should the Proposed Project advance beyond the FEIS, MTA will continue to coordinate with NYCDOT to revisit and refine the proposed BRT design along Richmond Terrace between Nicholas Street and the St. George Ferry Terminal to develop a mutually agreed upon design that will better accommodate DOT's design changes and comments while meeting MTA's operational needs.

» A new signal at Jersey Street and Bank Street, tied into the controller at Richmond Terrace and Jersey Street. New green/yellow/red ball signals would be provided for the northbound approach of Jersey Street and for the eastbound/westbound approaches at Bank Street. Additional LRT-style signals will be deployed in each direction to control access to/from the busway. Generally, the busway will be given its own phase separate from general purpose traffic. Crosswalks and crosswalk signals

will be provided across the busway and Bank Street. The MTA and New York City Department of Transportation will study the activation of TSP equipment at this location in order to prioritize bus operations along the busway.

- At Bard Avenue, there will be an entrance to the busway. This entrance will be accessed via Bard Avenue and will be controlled by a lift-gate that can be opened by a signal from bus drivers. This entrance will be stop controlled for buses turning onto the busway. No signals will be required at this location.
- On Caddell Dry Dock property, near Elizabeth Avenue, there will be a new signal providing access across the busway between the northern portion and southern portion of Caddell property. There will be one crosswalk across the busway and associated crosswalk signals. There will be new green/yellow/red ball signals for the northbound/southbound approaches. LRT-style signals will be deployed in each direction to control access to/from the busway. Signage would indicate that no turns would be permitted onto or off the busway. The MTA and New York City Department of Transportation will study the activation of TSP equipment at this location in order to prioritize bus operations along the busway. The default phase would allow the crossing to go unless the busway phase is called.
- On Caddell Dry Dock property, at Broadway, there will be a new signal providing access across the busway between the northern portion and southern portion of Caddell property. There will be one crosswalk across the busway and associated crosswalk signals. There will be new green/yellow/red ball signals for the northbound/southbound approaches. LRT-style signals will be deployed in each direction to control access to/from the busway. Signage would indicate that no turns would be permitted onto or off of the busway. The MTA and New York City Department of Transportation will study the activation of TSP equipment at this location in order to prioritize bus operations along the busway. The default phase would allow the crossing to go unless the busway phase is called. The signal would also be tied into the phasing of the signal at Richmond Terrace and Broadway.
- Within Heritage Park, near Tompkins Court, there will be a new signal providing access across the busway between the to the park and the parking lot. There will be one crosswalk across the busway and associated crosswalk signals. There will be new green/yellow/red ball signals for the northbound/southbound approaches. LRT-style signals will be deployed in each direction to control access to/from the busway. Signage would indicate that no turns would be permitted onto or off the busway. The MTA and New York City Department of Transportation will study the activation of TSP equipment at this location in order to prioritize bus operations along the busway. The default phase would allow the crossing to go unless the busway phase is called.
- A new ramp would extend from the intersection of Richmond Terrace to the busway at Alaska Street. The southbound approach of the ramp to Richmond Terrace would be controlled by the traffic signal implemented at this intersection in the No-Action condition. Where this new ramp intersects with the busway, the northbound approach of the ramp would be controlled by a stop sign. Eastbound and westbound movement on the busway would be uncontrolled.
- On South Avenue, immediately north of the intersection of South Avenue and Brabant Street, there would be a new signalized intersection controlling access

into/out of the new Arlington Station bus terminal. New green/yellow/red ball signals would be provided for the northbound and southbound approaches of South Avenue, and for the eastbound approach of the bus terminal entrance. One crosswalk and associated crosswalk signals would be provided across South Avenue immediately north of the intersection, and one crosswalk and associated crosswalk signals would be provided across the bus terminal entrance.

» No modifications to the control devices would be made to any of the intersections between Arlington Station and West Shore Plaza.

Trip Distribution and Assignment of Traffic

Based on a combination of the proposed timetable for the BRT service, drive trips to station locations, and traffic movement reallocations due to proposed changes to intersection configurations, future year 2035 traffic increment flow maps were developed. The primary traffic movement reallocation under With-Action conditions would be that left turning vehicles along northbound Richmond Terrace at Schuyler Street and Hamilton Avenue would be redirected to a dedicated left turn lane at Stuyvesant Place due to proposed left turn prohibitions across the busway at their original locations. Separate park & ride traffic assignments have been made at local intersections at Arlington Station, Livingston Station, and St. George Terminal. Separate pick-up/drop-off assignments have been made at Arlington Station, Livingston Station, and the St. George terminal. Additionally, bus traffic was assigned to intersections and along the busway according to the proposed route and timetable for the S1, S2, S53, S54 and S57 buses. Automobiles using the upper-level entrance and entrance at the St. George ferry terminal are assumed to be using the taxi stand area to pick up and drop off passengers; under With-Action conditions these automobiles are rerouted to the lower-level entrance and exit. The traffic volume increment flow maps for the weekday AM, weekday PM, and Saturday midday peak hours can be found in **Appendix M-5.** These increment flow maps were then combined with the No-Action flow maps to generate the Total 2035 With-Action flow maps, which can be found in **Appendix M-6.**

Levels of Service

Table 15-34 and **Table 15-35** provide an overview of the levels of service that characterize 2035 With-Action "overall" intersection conditions and individual lane groups, during the weekday AM, weekday PM, and Saturday midday peak hours. Due to differences in vehicular operations between weekday AM, weekday PM, and Saturday midday peak hour conditions, the number of lane groups differs between time periods. In addition to the 29 intersections with results for Existing and No-Action conditions, With-Action results contains quantitative results for the newly signalized intersection at Richmond Terrace and Stuyvesant Street, as well as the new intersection at South Avenue and the Arlington Station entrance at Brabant Street, and the new intersection where the busway crosses Jersey Street near Bank Street, bringing the total number of analyzed intersections for the With-Action condition to 32. Detailed tables showing levels of service results for each intersection by lane group are provided in **Appendix M-2**.

Table 15-34 2035 With-Action Signalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	22	14%	14%	2	7%	7%
B	33	22%	36%	7	24%	31%
C	47	31%	67%	9	31%	62%
D	29	19%	86%	7	24%	86%
E	13	9%	95%	1	3%	90%
F	8	5%	100%	3	10%	100%
All	**152**	**100%**	-	**29**	**100%**	-
PM						
A	20	13%	13%	0	0%	0%
B	22	14%	28%	2	7%	7%
C	34	22%	50%	4	14%	21%
D	31	20%	70%	8	28%	48%
E	12	8%	78%	2	7%	55%
F	33	22%	100%	13	45%	100%
All	**152**	**100%**	-	**29**	**100%**	-
Sat						
A	26	17%	17%	4	14%	14%
B	26	17%	34%	3	10%	24%
C	51	34%	68%	12	41%	66%
D	19	13%	81%	2	7%	72%
E	11	7%	88%	3	10%	83%
F	18	12%	100%	5	17%	100%
All	**151**	**100%**	-	**29**	**100%**	-

Table 15-35 2035 With-Action Unsignalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	6	67%	67%	3	100%	100%
B	1	11%	78%	0	0%	100%
C	2	22%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**9**	**100%**	-	**3**	**100%**	-
PM						
A	6	67%	67%	3	100%	100%
B	0	0%	67%	0	0%	100%
C	2	22%	89%	0	0%	100%
D	0	0%	89%	0	0%	100%
E	1	11%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**9**	**100%**	-	**3**	**100%**	-
Sat						
A	6	67%	67%	3	100%	100%
B	1	11%	78%	0	0%	100%
C	2	22%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**9**	**100%**	-	**3**	**100%**	-

The summary overview of 2035 With-Action conditions indicates that at signalized intersections:

- In the weekday AM peak hour, four signalized intersections operate at unacceptable LOS E or F. In addition, 21 lane groups at signalized intersections operate at unacceptable LOS E or F. All other intersections and individual lane groups operate at LOS D or better.
- In the weekday PM peak hour, 15 signalized intersections operate at unacceptable LOS E or F. In addition, 45 lane groups at signalized intersections operate at unacceptable LOS E or F. All other intersections and individual lane groups operate at LOS D or better.

» In the Saturday midday peak hour, eight signalized intersections operate at unacceptable LOS E or F. In addition, 29 lane groups at signalized intersections operate at unacceptable LOS E or F. All other intersections and individual lane groups operate at LOS D or better.

Lane groups of signalized intersections operating at unacceptable levels of service are listed below.

» Intersection 1: Richmond Terrace & Ferry Terminal Viaduct & Bay Street
  - Eastbound Bay Street to Richmond Terrace left turn lane group (PM & SAT)
  - Southwestbound ferry terminal lower level exit through lane group (AM & PM)
  - Southwestbound ferry terminal lower level exit right turn lane group (AM, PM, & SAT)

» Intersection 2: Richmond Terrace & Ferry Terminal Viaduct
  - Westbound ferry terminal upper level exit left turn lane group (PM)

» Intersection 4: Richmond Terrace & Wall Street
  - Westbound Wall Street left turn lane group (PM & SAT)
  - Westbound Wall Street through-right turn lane group (PM & SAT)
  - Southbound Richmond Terrace through-left turn lane group (PM & SAT)
  - Northbound busway approach (PM)

» Intersection 6: Richmond Terrace & Stuyvesant Place
  - Northbound Richmond Terrace left turn lane group (AM, PM, & SAT)
  - Southbound Richmond Terrace approach (PM & SAT)

» Intersection 7: Richmond Terrace & Nicholas Street / Garage Ramp
  - Northbound Nicholas Street approach (PM & SAT)
  - Southbound Garage Ramp approach (PM & SAT)

» Intersection 8: Richmond Terrace & St. Peters Place
  - Westbound Richmond Terrace approach (PM)

» Intersection 10.2: Bank Street & Jersey Street
  - Eastbound busway approach (AM, PM, & SAT)

» Intersection 11: Richmond Terrace & Franklin Avenue
  - Westbound Richmond Terrace approach (PM)

» Intersection 12: Richmond Terrace & Lafayette Avenue
  - Westbound Richmond Terrace approach (PM & SAT)

» Intersection 13: Richmond Terrace & Bard Avenue
  - Eastbound Richmond Terrace approach (PM)

» Intersection 14: Richmond Terrace & Broadway

- Westbound Richmond Terrace approach (PM)
- Northbound Broadway approach (AM)

» Intersection 15: Richmond Terrace & Alaska Street

- Westbound Richmond Terrace approach (PM)

» Intersection 16: Richmond Terrace & Jewett Avenue

- Northbound Jewett Avenue approach (AM, PM, & SAT)
- Southbound Richmond Terrace approach (AM & PM)

» Intersection 19: Castleton Avenue & Jewett Avenue

- Westbound Castleton Avenue approach (PM & SAT)
- Northbound Jewett Avenue approach (AM & PM)

» Intersection 20: Forest Avenue & Jewett Avenue

- Eastbound Forest Avenue approach (AM, PM, & SAT)
- Westbound Forest Avenue approach (PM & SAT)
- Northbound Jewett Avenue left turn lane group (SAT)
- Northbound Jewett Avenue through-right turn lane group (AM & PM)
- Southbound Jewett Avenue through-right turn lane group (AM, PM, & SAT)

» Intersection 21: Forest Avenue & Willowbrook Road

- Eastbound Forest Avenue approach (PM & SAT)
- Westbound Forest Avenue approach (PM & SAT)
- Northbound Willowbrook Road approach (AM)

» Intersection 22: Forest Avenue & Morningstar Road & Richmond Avenue

- Eastbound Forest Avenue left turn lane group (PM)
- Eastbound Forest Avenue through-right turn lane group (AM, PM, & SAT)
- Westbound Forest Avenue left turn lane group (AM)
- Southbound Morningstar Road approach (PM)

» Intersection 23.1: South Avenue & Arlington Station Entry/Exit

- Northbound South Avenue approach (PM)

» Intersection 25: South Avenue & Forest Avenue

- Eastbound Forest Avenue left turn lane group (PM & SAT)
- Eastbound Forest Avenue through-right turn lane group (PM & SAT)
- Westbound Forest Avenue left turn lane group (PM)
- Northbound South Avenue left turn lane group (SAT)
- Northbound South Avenue right turn lane group (SAT)

- Southbound South Avenue through lane group (SAT)

» Intersection 26: South Avenue & Goethals Road North

- Westbound Goethals Road North left turn lane group (AM & PM)
- Westbound Goethals Road North right turn lane group (AM, PM, & SAT)
- Southbound South Avenue approach (AM, PM, & SAT)

» Intersection 27: South Avenue & Fahy Avenue & Glen Street

- Eastbound Glen Street left turn lane group (AM, PM, & SAT)
- Northbound South Avenue right turn lane group (PM)
- Southbound South Avenue left turn lane group (PM & SAT)
- Southbound South Avenue through lane group (AM & PM)

» Intersection 28: South Avenue & Edward Curry Avenue

- Northbound South Avenue left turn lane group (AM & PM)

» Intersection 30: South Avenue & Travis Avenue

- Southbound South Avenue left turn lane group (AM & PM)

The summary overview of 2035 With-Action conditions indicates that at unsignalized intersections:

» All unsignalized intersections operate at LOS A in all analyzed peak hours.

» In the weekday AM peak hour, all lane groups at unsignalized intersections operate at LOS C or better.

» In the weekday PM peak hour, one lane group at unsignalized intersections operates at unacceptable LOS E. All other lane groups at unsignalized intersections operate at LOS C or better.

» In the Saturday midday peak hour, all lane groups at unsignalized intersections operate at LOS C or better.

Lane groups of unsignalized intersections operating at unacceptable levels of service are listed below.

» Intersection 17: Richmond Terrace & Heberton Avenue

- Eastbound Heberton Avenue approach (PM)

Significant Adverse Traffic Impacts

Table 15-36 provides an overview of the number of lane groups analyzed that experience significant adverse traffic impacts.

Of the 32 intersections analyzed, the Proposed Project would result in significant adverse traffic impacts at 19 different intersections during one or more analyzed time periods. Of these, seven intersections would experience significant adverse traffic impacts during the weekday AM peak hour, 19 intersections would experience significant adverse traffic

impacts during the weekday PM peak hour, and six intersections would experience significant adverse traffic impacts during the Saturday midday peak hour.

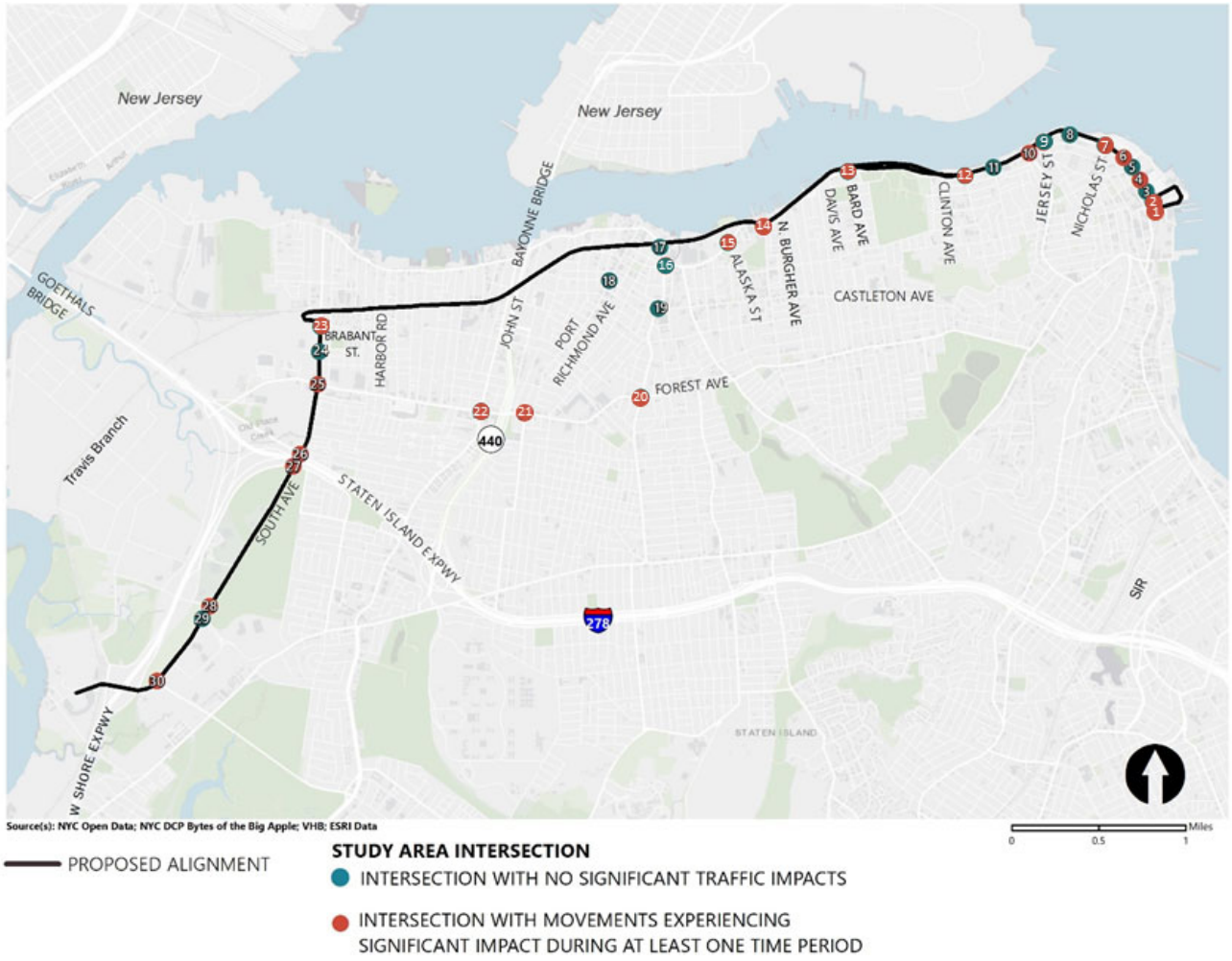
Detailed tables showing levels of service results for each impacted intersection by lane group are provided in Appendix M-2. A summary figure identifying which intersections have movements which experience traffic impacts due to the Proposed Project can be found in Figure 15-6.

Table 15-36 2035 With-Action Traffic Impact Summary

	By Lane Group	
Impact	**Count**	**Percent**
AM		
Yes	9	6%
No	152	94%
All	**161**	**100%**
PM		
Yes	29	18%
No	132	82%
All	**161**	**100%**
Sat		
Yes	9	6%
No	151	94%
All	**160**	**100%**
All Periods		
Yes	47	10%
No	435	90%
All	**482**	**100%**

Note: Due to differences in vehicular operation between AM, PM, and Saturday conditions, the number of lane groups differs between time periods.

Figure 15-6 Intersections with Movements Experiencing Significant Traffic Impacts



As described in the Methodology section, *2021 CEQR Technical Manual* criteria were applied to the comparison of With-Action to No-Action delay at each lane group to determine whether a study area location experiences a significant adverse traffic impact. For locations with significant adverse traffic impacts, efforts were made to determine whether a combination of signal timing optimizations or other changes would be able to mitigate the impacts, as discussed further below in the Mitigation section. Significant adverse traffic impacts to movements at signalized intersections according to *2021 CEQR Technical Manual* criteria are as follows:

» Intersection 1: Richmond Terrace & Ferry Terminal Viaduct & Bay Street

- During the AM peak hour, the southwest bound lower-level exit from the ferry terminal has impacts at two lane groups. Average lane group delay for the through movement to southbound Bay Street increases from 46.9 seconds per vehicle in the No-Action condition to 56.1 seconds per vehicle in the With-Action condition, an increase of 9.2 seconds per vehicle. Average lane group delay for the right turn movement to northbound Richmond Terrace increases from 42.7 seconds per vehicle in the No-Action condition to 92.2 seconds per vehicle in the With-Action condition, an increase of 49.5 seconds per vehicle.

- During the PM peak hour, the southwest bound lower-level exit from the ferry terminal has an impact. Average lane group delay for the right turn movement to northbound Richmond Terrace increases from 59.0 seconds per vehicle in the No-Action condition to 206.8 seconds per vehicle in the With-Action condition, an increase of 147.8 seconds per vehicle.
- During the Saturday midday peak hour, the southwest bound lower-level exit from the ferry terminal has an impact. Average lane group delay for the right turn movement to northbound Richmond Terrace increases from 35.5 seconds per vehicle in the No-Action condition to 65.0 seconds per vehicle in the With-Action condition, an increase of 29.5 seconds per vehicle.

» Intersection 2: Richmond Terrace & Ferry Terminal Viaduct

- During the PM peak hour, the westbound upper-level exit from the ferry terminal has an impact. Average lane group delay for the westbound left turn movement to southbound Richmond Terrace increases from 67.3 seconds per vehicle in the No-Action condition to 75.3 seconds per vehicle the With-Action condition, an increase of 8.1 seconds per vehicle.

» Intersection 4: Richmond Terrace & Wall Street

- During the PM peak hour, the westbound Wall Street approach has impacts at two lane groups. Average lane group delay for the westbound left turn movement to southbound Richmond Terrace increases from 32.4 seconds per vehicle in the No-Action condition to 62.0 seconds per vehicle the With-Action condition, an increase of 29.6 seconds per vehicle. Average lane group delay for the through movement to westbound Wall Street increases from 37.0 seconds per vehicle in the No-Action condition to 70.2 seconds per vehicle the With-Action condition, an increase of 33.2 seconds per vehicle.
- During the PM peak hour, the southbound Richmond Terrace shared lane group has an impact. As part of the Proposed Project, the separate left and through lane groups are combined into a single shared lane group. Average lane group delay increases from 30.5 seconds per vehicle in the No-Action condition to 87.4 seconds per vehicle in the With-Action condition, an increase of 56.9 seconds per vehicle.
- During the PM peak hour, the northbound busway approach has an impact. Average lane group delay in the With-Action condition would be 60.0; this lane group does not exist in the No-Action condition.
- During the Saturday midday peak hour, the westbound Wall Street approach has impacts at two lane groups. Average lane group delay for the westbound left turn movement to southbound Richmond Terrace increases from 28.6 seconds per vehicle in the No-Action condition to 82.5 seconds per vehicle the With-Action condition, an increase of 54.0 seconds per vehicle. Average lane group delay for the through movement to westbound Wall Street increases from 37.9 seconds per vehicle in the No-Action condition to 92.2 seconds per vehicle the With-Action condition, an increase of 54.3 seconds per vehicle.

» Intersection 6: Richmond Terrace & Stuyvesant Place

- During the AM peak hour, the northbound Richmond Terrace left turn movement has an impact. Average lane group delay would increase to 65.1 seconds per vehicle in the With-Action condition; this lane group would be unsignalized in the No-Action condition and would operate at close to free flow conditions.
- During the PM peak hour, the northbound Richmond Terrace left turn movement has an impact. Average lane group delay would increase to 72.4 seconds per vehicle in the With-Action condition; this lane group would operate at close to free flow conditions in the No-Action condition.
- During the PM peak hour, the southbound Richmond Terrace approach has an impact. Average lane group delay would increase to 85.1 seconds per vehicle in the With-Action condition; this lane group would be unsignalized in the No-Action condition and would operate at close to free flow conditions.
- During the Saturday midday peak hour, the northbound Richmond Terrace left turn movement has an impact. Average lane group delay would increase to 75.9 seconds per vehicle in the With-Action condition; this lane group would operate at close to free flow conditions in the No-Action condition.
- During the Saturday midday peak hour, the southbound Richmond Terrace approach has an impact. Average lane group delay would increase to 77.1 seconds per vehicle in the With-Action condition; this lane group would be unsignalized in the No-Action condition and would operate at close to free flow conditions.

» Intersection 7: Richmond Terrace & Nicholas Street/Garage Ramp

- During the PM peak hour, the northbound Nicholas Street approach has an impact. Average lane group delay increases from 32.8 seconds per vehicle in the No-Action condition to 124.8 seconds per vehicle in the With-Action condition, an increase of 91.9 seconds per vehicle.
- During the PM peak hour, the southbound Garage Ramp approach has an impact. Average lane group delay increases from 52.8 seconds per vehicle in the No-Action condition to 111.6 seconds per vehicle in the With-Action condition, an increase of 58.5 seconds per vehicle.
- During the Saturday midday peak hour, the northbound Nicholas Street approach has an impact. Average lane group delay increases from 34.9 seconds per vehicle in the No-Action condition to 75.5 seconds per vehicle in the With-Action condition, an increase of 40.6 seconds per vehicle.
- During the Saturday midday peak hour, the southbound Garage Ramp approach has an impact. Average lane group delay increases from 48.5 seconds per vehicle in the No-Action condition to 102.2 seconds per vehicle in the With-Action condition, an increase of 53.6 seconds per vehicle.

» Intersection 10.2: Bank Street & Jersey Street

- During the AM peak hour, the eastbound Bank Street approach has an impact. Average lane group delay would increase to 73.5 seconds per vehicle in the With-

Action condition; this lane group would be unsignalized in the No-Action condition and would operate at close to free flow conditions.

- During the PM peak hour, the eastbound Bank Street approach has an impact. Average lane group delay would increase to 69.0 seconds per vehicle in the With-Action condition; this lane group would be unsignalized in the No-Action condition and would operate at close to free flow conditions.
- During the Saturday midday peak hour, the eastbound Bank Street approach has an impact. Average lane group delay would increase to 81.1 seconds per vehicle in the With-Action condition; this lane group would be unsignalized in the No-Action condition and would operate at close to free flow conditions.

» Intersection 12: Richmond Terrace & Lafayette Avenue

- During the PM peak hour, the westbound Richmond Terrace approach has an impact. Average lane group delay increases from 259.6 seconds per vehicle in the No-Action condition to 270.1 seconds per vehicle in the With-Action condition, an increase of 10.5 seconds per vehicle.

» Intersection 13: Richmond Terrace & Bard Avenue

- During the PM peak hour, the eastbound Richmond Terrace approach has an impact. Average lane group delay increases from 15.7 seconds per vehicle in the No-Action condition to 167.7 seconds per vehicle in the With-Action condition, an increase of 152.0 seconds per vehicle.

» Intersection 14: Richmond Terrace & Broadway

- During the AM peak hour, the northbound Broadway approach has an impact. Average lane group delay increases from 52.5 seconds per vehicle in the No-Action condition to 59.2 seconds per vehicle in the With-Action condition, an increase of 6.7 seconds per vehicle.
- During the PM peak hour, the westbound Richmond Terrace approach has an impact. Average lane group delay increases from 38.8 seconds per vehicle in the No-Action condition to 62.0 seconds per vehicle in the With-Action condition, an increase of 23.2 seconds per vehicle.

» Intersection 15: Richmond Terrace & Alaska Street

- During the PM peak hour, the westbound Richmond Terrace approach has an impact. Average lane group delay increases from 54.3 seconds per vehicle in the No-Action condition to 60.3 seconds per vehicle in the With-Action condition, an increase of 6.0 seconds per vehicle.

» Intersection 20: Forest Avenue & Jewett Avenue

- During the PM peak hour, the eastbound Forest Avenue approach has an impact. Average lane group delay increases from 543.5 seconds per vehicle in the No-Action condition to 549.3 seconds per vehicle in the With-Action condition, an increase of 5.8 seconds per vehicle.

» Intersection 21: Forest Avenue & Willowbrook Road

- During the AM peak hour, the northbound Willowbrook Road approach has an impact. Average lane group delay increases from 58.9 seconds per vehicle in the No-Action condition to 67.6 seconds per vehicle in the With-Action condition, an increase of 8.7 seconds per vehicle.
- During the PM peak hour, the eastbound Forest Avenue approach has an impact. Average lane group delay increases from 275.8 seconds per vehicle in the No-Action condition to 285.2 seconds per vehicle in the With-Action condition, an increase of 9.4 seconds per vehicle.
- During the PM peak hour, the westbound Forest Avenue approach has an impact. Average lane group delay increases from 131.1 seconds per vehicle in the No-Action condition to 170.1 seconds per vehicle in the With-Action condition, an increase of 39.0 seconds per vehicle.
- During the Saturday midday peak hour, the westbound Forest Avenue approach has an impact. Average lane group delay increases from 469.1 seconds per vehicle in the No-Action condition to 485.5 seconds per vehicle in the With-Action condition, an increase of 16.4 seconds per vehicle.

» Intersection 22: Forest Avenue & Morningstar Road & Richmond Avenue

- During the PM peak hour, the eastbound Forest Avenue approach has impacts at two lane groups. Average lane group delay for the left turn movement to northbound Morningstar Road increases from 157.7 seconds per vehicle in the No-Action condition to 202.0 seconds per vehicle in the With-Action condition, an increase of 44.3 seconds per vehicle. Average lane group delay for the shared through-right increases from 188.2 seconds per vehicle in the No-Action condition to 192.7 seconds per vehicle in the With-Action condition, an increase of 4.5 seconds per vehicle.
- During the PM peak hour, the southbound Morningstar Road approach has an impact. Average lane group delay increases from 82.8 seconds per vehicle in the No-Action condition to 92.4 seconds per vehicle in the With-Action condition, an increase of 9.6 seconds per vehicle.

» Intersection 23.1: South Avenue & Arlington Station Entry/Exit

- During the PM peak hour, the northbound South Avenue approach has an impact. Average lane group delay in the With-Action condition would be 307.8. This intersection does not exist in the No-Action condition.

» Intersection 25: South Avenue & Forest Avenue

- During the PM peak hour, the eastbound Forest Avenue left turn movement has an impact. Average lane group delay increases from 57.1 seconds per vehicle in the No-Action condition to 65.3 seconds per vehicle in the With-Action condition, an increase of 8.2 seconds per vehicle.

» Intersection 26: South Avenue & Goethals Road North

- During the AM peak hour, the westbound Goethals Road North approach has an impact. Average lane group delay increases from 177.0 seconds per vehicle in the

No-Action condition to 210.1 seconds per vehicle in the With-Action condition, an increase of 33.1 seconds per vehicle.

- During the AM peak hour, the southbound South Avenue approach has an impact. Average lane group delay increases from 51.6 seconds per vehicle in the No-Action condition to 60.1 seconds per vehicle in the With-Action condition, an increase of 8.5 seconds per vehicle.
- During the PM peak hour, the westbound Goethals Road North approach has an impact. Average lane group delay increases from 333.0 seconds per vehicle in the No-Action condition to 393.4 seconds per vehicle in the With-Action condition, an increase of 60.4 seconds per vehicle.
- During the PM peak hour, the southbound South Avenue approach has an impact. Average lane group delay increases from 114.4 seconds per vehicle in the No-Action condition to 148.4 seconds per vehicle in the With-Action condition, an increase of 34.0 seconds per vehicle.

» Intersection 27: South Avenue & Fahy Avenue & Glen Street

- During the PM peak hour, the southbound South Avenue approach has impacts at two lane groups. Average lane group delay for the left turn movement to eastbound Fahy Avenue increases from 133.6 seconds per vehicle in the No-Action condition to 166.1 seconds per vehicle in the With-Action condition, an increase of 32.5 seconds per vehicle. Average lane group delay for the through movement increases from 130.6 seconds per vehicle in the No-Action condition to 139.6 seconds per vehicle in the With-Action condition, an increase of 9.0 seconds per vehicle.

» Intersection 28: South Avenue & Edward Curry Avenue

- During the AM peak hour, the northbound South Avenue left turn movement has an impact. Average lane group delay increases from 522.2 seconds per vehicle in the No-Action condition to 530.9 seconds per vehicle in the With-Action condition, an increase of 8.7 seconds per vehicle.
- During the PM peak hour, the northbound South Avenue left turn movement has an impact. Average lane group delay increases from 1288.1 seconds per vehicle in the No-Action condition to 1307.8 seconds per vehicle in the With-Action condition, an increase of 19.7 seconds per vehicle.

» Intersection 30: South Avenue & Travis Avenue

- During the PM peak hour, the southbound South Avenue left turn movement has an impact. Average lane group delay increases from 388.3 seconds per vehicle in the No-Action condition to 395.1 seconds per vehicle in the With-Action condition, an increase of 6.8 seconds per vehicle.

Significant adverse traffic impact to movements at unsignalized intersections according to *2021 CEQR Technical Manual* criteria are not expected.

Parking

Under With-Action conditions, the demand of on-street and off-street parking is expected to remain unchanged from No-Action condition because the Proposed Project would not be expected to generate additional parking demand within the quarter-mile study area. Parking demand generated by passengers accessing the BRT at West Shore Plaza, Arlington, and Livingston are completely accommodated within the park & ride lots at those station locations. At other stations, no significant parking demand is anticipated from BRT passengers.

However, the Proposed Project would eliminate on-street parking along Richmond Terrace between Bay Street and Nicholas Street in order to accommodate the proposed busway on Richmond Terrace (with the exception of the 90-degree parking associated to the police station situated on the west side of Richmond Terrace between Wall Street and Hamilton Avenue). The amount of on-street parking eliminated would be about 250 parking spaces.

Table 15-37 presents a summary of on-street parking utilization under With-Action conditions.

Table 15-37 With-Action On-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	1,291	1,485	-194	115.0%
Weekday Midday Peak (12:00 PM to 2:00 PM)	1,282	1,609	-327	125.5%
Weekday PM Peak (5:00 PM to 7:00 PM)	1,275	1,326	-51	104.0%
Saturday Midday Peak (12:00 PM to 4:00 PM)	1,271	1,371	-100	107.9%

Indicates shortfall in parking capacity and. Therefore, utilization rate above 100 percent.

The table shows that the demand for on-street parking spaces is expected to surpass on-street parking capacity by approximately 194 parking spaces during the weekday AM peak period, by approximately 327 parking spaces during the weekday midday peak period, by approximately 51 parking spaces during the weekday PM peak period, and by approximately 100 parking spaces during the Saturday midday peak period.

Table 15-38 presents a summary of off-street parking utilization under With-Action conditions, which is the same as No-Action conditions.

i. With-Action Off-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	3,710	1,765	1,945	47.6%
Weekday Midday Peak (12:00 PM to 2:00 PM)	3,710	1,701	2,009	45.8%
Weekday PM Peak (5:00 PM to 7:00 PM)	3,710	1,014	2,696	27.3%
Saturday Midday Peak (12:00 PM to 4:00 PM)	3,414	1,205	2,209	35.3%

Although there would be a shortfall in on-street parking capacity for most of the time periods analyzed under With-Action conditions, there would be enough available off-street parking capacity to accommodate the shortfall of on-street parking spaces. Table 15-39 presents a summary of the combined on-street and off-street parking utilization under With-Action conditions. Table 15-39 shows that the combined on-street and off-street parking utilization rates would be between around half and two-thirds of the overall on-street and off-street capacity, with utilization rates at approximately 65 percent during the weekday AM peak period, at approximately 66 percent during the weekday midday peak period, at approximately 47 percent during the weekday PM peak period, and at approximately 55 percent during the Saturday midday peak period.

‹. With-Action Combined On-Street & Off-Street Parking Utilization Summary

Time Period	Total Spaces	Occupied Spaces	Surplus (+)/ Shortfall (-)	Utilization Rate
Weekday AM Peak (7:00 AM to 9:00 AM)	5,001	3,250	1,751	65.0%
Weekday Midday Peak (12:00 PM to 2:00 PM)	4,992	3,310	1,682	66.3%
Weekday PM Peak (5:00 PM to 7:00 PM)	4,985	2,340	2,645	46.9%
Saturday Midday Peak (12:00 PM to 4:00 PM)	4,685	2,576	2,109	55.0%

As there would be enough off-street parking capacity to accommodate the on-street parking demand, there would be no impacts on parking as a result of the Proposed Project during any of the time periods analyzed.

Transit

Under the Proposed Project, BRT service would be provided on two new routes, the S1 and S2. Each would utilize a fully electrically powered fleet. It is anticipated that the Castleton Depot, an existing NYCT bus depot on Staten Island, would be utilized for the storage, inspection, and maintenance of the BRT fleet. The S1 would operate in the busway between St. George Terminal and the proposed Arlington Station before entering

mixed traffic on South Avenue to West Shore Plaza. This route would create connectivity between West Shore Plaza, communities along the route, and the St. George Terminal. The average running time is estimated at 25 minutes. Proposed stops are as follows:

- Eastern Terminus: St. George Terminal
- Seven busway stations: New Brighton, Livingston, West Brighton, Port Richmond, Elm Park/Morningstar Road, Mariners Harbor, Arlington
- Three on-street stops along South Avenue: Forest Avenue, Goethals Road North, Teleport
- Western Terminus: West Shore Plaza

The S2 would travel on the proposed busway between St. George and Arlington, with an average running time of 18 minutes. Proposed stops are as follows:

- Eastern Terminus: St. George Terminal
- Seven busway stations: New Brighton, Livingston, West Brighton, Port Richmond, Elm Park/Morningstar Road, Mariners Harbor, Arlington (western terminus for S2)

Additionally, three existing local routes would be extended to enter the busway to improve travel times to St. George Terminal. These feeder routes include the S53, S54, and S57. Two bus routes, the S90 (offering service between the Matrix Global Logistics Park and St. George Terminal) and the S96 (operating between West Shore Plaza and St. George Terminal), would be eliminated under the Proposed Project. In addition, the S46 would be truncated at the western end of its route to service the Teleport. The S40 would not have any routing changes and would maintain local service along Richmond Terrace. However, service would be reduced as the S40 would operate on 11-minute headways in the peak hour. The S90 bus route is a limited-stop version of the S40 (which would maintain local service under the Proposed Project). Accordingly, no geographic coverage of transit service would be lost with the elimination of the S90. The S96 bus route is a limited-stop version of the S46. While the S46 would be truncated to the Teleport, the proposed S1 BRT route would originate at West Shore Plaza with a stop at the Teleport. As such, the S1 would effectively provide the geographic coverage that would be lost.

For instances where existing service at bus stops would be affected by the truncation of lines or skipping of stops, a qualitative assessment of other nearby service was performed. Because bus service at nearby stops is maintained in all cases, no significant adverse impact is anticipated. Details for service changes at each stop can be found below.

- The S53 would enter the busway via the new ramp at Alaska Street and would serve the four BRT stations west of the entry point, including Port Richmond, Elm Park/Morningstar Road, Mariners Harbor, and Arlington. The route would operate between Arlington and Bay Ridge. Under the Proposed Project, the S53 would no longer stop at the following stops:
  - Castleton Avenue/Elizabeth Street (EB)
  - Castleton Avenue/Barker Street (WB)
  - Castleton Avenue/Taylor Street
  - Castleton Avenue/Clove Road

- Castleton Avenue/Jewett Avenue
- Castleton Avenue/Heberton Avenue
- Port Richmond Avenue/Harrison Avenue
- Port Richmond Avenue/Bennett Street (EB)
- Port Richmond Avenue/Ann Street (WB)
- Richmond Terrace/Park Avenue

The re-routing of the S53 effectively eliminates the first/last 1.1 miles from the route's northern terminus at Port Richmond Terminal. As noted above, sixteen stops (eight in each direction) would no longer be serviced by the S53. Eight local bus routes and two express bus routes would be accessible within one-quarter mile of the S53 stops that would be bypassed as a result of the re-routing to the proposed busway via Alaska Street. In addition, each stop (aside from the Castleton Avenue/Clove Road stop) would be serviced by at least two other bus routes. The stop at Castleton Avenue/Clove Road would be serviced by the S46. **Table 15-40** provides additional details on each bypassed stop, including other routes that would be serviced by the stop, accessible routes from the stop's location, and the distance of nearby accessible stops.

» The S54 would enter the busway via the new ramp at Bard Avenue and would serve the New Brighton and St. George BRT stations. The route would operate between St. George and Eltingville. Under the Proposed Project, the S54 would no longer stop at two stops; Richmond Terrace/North Burgher Avenue and Broadway/Richmond Terrace. The revised S54 route would travel within 800 feet of these stops. Additionally, the S40 serves Richmond Terrace/North Burgher Avenue and is within 400 feet of Broadway/Richmond Terrace (see **Table 15-40**).

» The S57 would enter the busway via the new ramp at Alaska Street and would serve the New Brighton and St. George BRT stations. The route would operate between St. George and New Dorp. Under the Proposed Project, the S57 would no longer stop at Richmond Terrace and Park Avenue. This stop would be accessible to the revised S57 route (within 100 feet) as well as local routes including the S40, S59, and S66 as shown in **Table 15-40**.

I. Bypassed Feeder Route Bus Stops

	Direction	Routes at Same Stop	Routes/Stops Nearby
Route S53 Bypassed Bus Stop			
Castleton Av/Elizabeth St	East	S46, S54	S44—Cary Av/Elizabeth St *~700 feet*
Castleton Av/Barker St	West	S46, S54	S44—Cary Av/Elizabeth St *~900 feet*
Castleton Av/Taylor St	East	S46, S54	S44—Cary Av/Taylor St *~700 feet*
Castleton Av/Taylor St	West	S46, S54	S44—Cary Av/Taylor St *~700 feet*
Castleton Av/Clove Rd	East	S46	S44, S94—Cary Av/Clove Rd *~800 feet* S54—Clove Rd/Castleton Av *~200 feet*
Castleton Av/Clove Rd	West	S46, S54	S44—Post Av/Clove Rd *~800 feet*
Castleton Av/Jewett Av	East	S46, S66	S54—Castleton Av/Clove Rd *~1,100 feet* Sim3, Sim35—Castleton Av/Jewett Av *~100 feet*
Castleton Av/Jewett Av	West	S46, S66	S54—Castleton Av/Clove Rd *~1,100 feet* Sim3, Sim35—Castleton Av/Jewett Av *~100 feet*
Castleton Av/Heberton Av	East	S46, S66	S57—Port Richmond Av/Harrison Av *~800 feet* S44, S94—Post Av/Decker Av *~1,400 feet* Sim3, Sim35—Castleton Av/Jewett Av *~900 feet*
Castleton Av/Heberton Av	West	S46, S66	S57—Port Richmond Av/Harrison Av *~800 feet* S44, S94—Post Av/Decker Av *~1,400 feet* Sim3, Sim35—Castleton Av/Jewett Av *~900 feet*
Port Richmond Av/Harrison Av	South	S57, S59, S66	S46—Castleton Av/Port Richmond Av *~300 feet*
Port Richmond Av/Harrison Av	North	S57, S59, S66	S46—Castleton Av/Port Richmond Av *~300 feet*
Port Richmond Av/Bennett St	North	S57, S59, S66	S40—Richmond Ter/Maple Av *~900 feet* S46—Castleton Av/Port Richmond Av *~1,100 feet*
Port Richmond Av/Ann St	South	S57, S59, S66	S40—Richmond Ter/Maple Av *~900 feet* S46—Castleton Av/Port Richmond Av *~1,100 feet*
Richmond Ter/Park Av #1 *(Terminal)*	North	N/A	S59, S66-Richmond Ter/Park Av *~100 ft* S57-Richmond Ter/Park Av #2 *~100 ft* S40—Richmond Ter/Park Av *~200 feet*
Richmond Ter/Park Av	South	N/A	S59, S66-Richmond Ter/Park Av *~100 ft* S57-Richmond Ter/Park Av #2 *~100 ft* S40—Richmond Ter/Park Av *~200 feet*
Route S54 Bypassed Bus Stop			
Richmond Ter/N Burgher Av	North	S40	S54-Richmond Ter/N Burgher Av *~100 feet*
Broadway/Richmond Ter *(Terminal)*	North	N/A	S40—Broadway/Richmond Ter *~400 feet* S54—Broadway/Wayne St *~800 feet*
Route S57 Bypassed Stop			
Richmond Ter/Park Av *(Terminal)*	North	N/A	S59, S66-Richmond Ter/Park Av *~100 ft* S57-Richmond Ter/Park Av #2 *~100 ft* S40—Richmond Ter/Park Av *~200 feet*

The Proposed Project would function as a transit improvement project with the goal of improving the customer experience for transit users in the study area. Accordingly, the timetables for the proposed S1 and S2 as well as the S53, S54, and S57 routes have been developed to sustain acceptable bus operations. The frequency of the proposed service accounts for the demand projected by the STOPS ridership model.

The projected combined daily ridership for the S1 and S2 in 2035 is 22,503. Based on anticipated peak ridership at St. George Terminal and historic temporal distribution patterns, the ability of the proposed service plan to accommodate demand on the BRT system was assessed. In the peak hour and in the peak direction, passenger demand is projected to be 47 passengers per bus in 2035. This anticipated peak demand of 47 passengers per bus is less than the vehicle capacity of 54 passengers (40 seated and 14 standing passengers) resulting in a demand-capacity ratio of 0.87. Additionally, the anticipated peak passenger demand associated with the feeder routes to be re-routed into the busway are similarly low with capacity demand ratios as follows:

- S53: 6 passengers per bus/0.11 demand-capacity ratio
- S54 13 passengers per bus/0.24 demand-capacity ratio
- S57: 30 passengers per bus/0.56 demand-capacity ratio

As a result, the proposed service plan is anticipated to sufficiently accommodate the passenger demand associated with the Proposed Project.

Transfers to the proposed or modified service along the BRT largely consist of passengers who would transfer to the S40 or other similar local routes in the No-Action Condition. Additionally, transfers to the ferry at St. George Terminal from the BRT largely consist of passengers who would have accessed the terminal via other access modes under the No-Action Condition. As described above in the Methodology section, the number of new trips that would transfer to local bus lines as a result of the Proposed Project is anticipated to fall below the *2021 CEQR Technical Manual* thresholds. Additionally, no changes to SIR or ferry operations would occur in the With-Action condition. Therefore, no significant adverse impacts to transit operations in the study area are anticipated as a result of the Proposed Project.

Pedestrians

Pedestrian trips generated by the Proposed Project were added to the 2035 No-Action condition pedestrian volumes to develop the With-Action condition peak hour volumes for both analysis peak hours.

Sidewalks

The 2035 With-Action condition results for the sidewalk locations were compared with the 2035 No-Action condition results for both peak hours. Improvements proposed as part of the Proposed Project to the north sidewalk along Heusden Street at the Mariner's Harbor station, which would widen this sidewalk to approximately 9 feet in width at the station entrance were incorporated.

It is noted that the total width of the west sidewalk along Richmond Terrace, between Wall Street and Hamilton Avenue, would be reduced as part of the Proposed Project by approximately five feet to accommodate the widening of the roadway in this section to accommodate the proposed bus lanes. However, the effective width at this sidewalk would be maintained and would be the same as in the No-Action condition.

As shown in the Table 15-41 below, the majority of sidewalks are expected to operate at LOS C or better in both peak hours. Two sidewalk locations, highlighted below, will operate at LOS D. Based on the significant adverse impact criteria in the *2021 CEQR Technical*

Manual, impacts would be triggered at these two locations as a result of the Proposed Project:

Weekday AM – Platoon Conditions

1.1 Clinton Ave and Richmond Terrace (E leg, S sidewalk)

Weekday PM – Platoon Conditions

1.2 South Ave and Teleport Dr (E leg, S sidewalk)

Significant impacts to these sidewalk locations were primarily due to the narrow widths of the sidewalks as well as existing obstructions, such as tree pits, building stoops, and utility poles.

i. Sidewalks: With-Action LOS Summary

Location	Total Width (ft)	Obstruction Width (ft)	Effective Width (ft)	Available Circulation Space (ft^2/p) Weekday AM Peak Hour	Available Circulation Space (ft^2/p) Weekday PM Peak Hour	Platoon Conditions LOS Weekday AM Peak Hour	Platoon Conditions LOS Weekday PM Peak Hour
Clinton Ave and Richmond Terrace (E leg, S sidewalk)	4.5	3.0	1.5	28.3		D	
Clinton Ave and Richmond Terrace (W leg, N sidewalk)	6.2	3.0	3.2	59.3		C	
Port Richmond Ave and Ann St (N leg, E sidewalk)	7.2	3.0	4.2		103.4		B
Port Richmond Ave and Ann St (S leg, W sidewalk)	7.2	3.0	4.2	138.0		B	
Van Pelt Ave and Heusden St (E leg, N sidewalk)	3.0	1.0	2.0	106.0		B	
South Ave and Brabant St (N leg, E sidewalk)	9.5	3.0	6.5	1,313.9	162.5	A	B
South Ave and Teleport Dr (E leg, S sidewalk)	4.5	1.0	3.5		36.7		D
Richmond Terrace and Wall St (N leg, W sidewalk)	7.5	3.0	4.5	584.7	1,023.3	A	A

Crosswalks

The 2035 With-Action Condition results for the crosswalk locations were compared with the 2035 No-Action Condition results for the weekday AM peak hour. As shown in the Table 15-42 below, the crosswalks are projected to operate at LOS A during both analysis peak hours. Therefore, based on the significant adverse impact criteria in the *2021 CEQR Technical Manual*, the Proposed Project would not result in any significant adverse impacts on any crosswalk element.

Table 15-42 Crosswalks: With-Action LOS Summary

Location	Length (ft)	Width (ft)	Available Circulation Space (ft^2/p)		Crosswalk Circulation LOS	
			Weekday		Weekday	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Lafayette Ave and Richmond Terrace (S leg)	37.0	11.0	140.7		A	
South Ave and Teleport Dr (S leg)	112.0	16.0		81.4		A

Corner Reservoirs

The 2035 With-Action condition results for the corner reservoir locations were compared with the 2035 No-Action condition results for both peak hours. As shown in the Table 15-43 below, the corners are projected to operate at LOS A or better during the weekday AM peak hour. Therefore, based on the significant adverse impact criteria in the *2021 CEQR Technical Manual*, the Proposed Project would not result in any significant adverse impacts on any corner element.

Table 15-43 Corner Reservoir: With-Action LOS Summary

Location	Peak Hour Volume		Available Circulation Space (ft^2/p)		Corner Circulation LOS	
	Weekday		Weekday		Weekday	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Lafayette Ave and Richmond Terrace (SE corner)	15		168.2		A	
Lafayette Ave and Richmond Terrace (SW corner)	77		154.4		A	
Clinton Ave and Richmond Terrace (SE corner)	22		439.3		A	
Clinton Ave and Richmond Terrace (SW corner)	12		484.8		A	

Freight Rail

The Proposed Project would allow for continued operations on the North Shore Railroad ROW as it exists today. Based on coordination with NYCEDC and PANYNJ, a 12-foot high AREMA-compliant crash wall would be installed between the BRT alignment and the existing Arlington Yard freight tracks. The length of the crash wall would account for a potential future eastward extension of the Arlington Yard freight tail track from Union Avenue to Van Name Avenue and potentially up to Granite Avenue. As such, the Proposed Project would not preclude either existing freight train movements or the potential future eastward expansion of Arlington Yard operations to accommodate increased activity at the Howland Hook Marine Terminal. No significant adverse impacts to freight rail service are anticipated as a result of the Proposed Project.

Conclusion

Traffic

Of the 32 intersections analyzed during the With-Action condition (30 existing intersections plus two intersections created by the Proposed Project), the Proposed Project would result in significant adverse impacts at 19 different intersections during one or more analyzed time periods. Of these, seven intersections would experience significant adverse traffic impacts during the weekday AM peak hour, 19 intersections would experience significant adverse traffic impacts during the weekday PM peak hour, and six intersections would experience significant adverse traffic impacts during the Saturday midday peak hour.

Parking

The Proposed Project would eliminate about 250 on-street parking spaces along Richmond Terrace between Bay Street and Nicholas Street to accommodate the proposed busway (with the exception of the 90-degree parking on Richmond Terrace associated the NYPD's 120th Precinct). This would result in shortfalls of available on-street parking spaces during the weekday AM, weekday midday, weekday PM, and Saturday midday periods with a maximum shortfall of about 327 parking spaces occurring during the weekday midday peak period. However, there would be enough available off-street parking capacity to accommodate the shortfall in on-street parking spaces under future conditions.

Transit

The Proposed Project would not generate a level of new person trips via public bus that would exceed the *2021 City Environmental Quality Review (CEQR) Technical Manual* analysis screening thresholds. Therefore, according to *CEQR Technical Manual* guidelines, the Proposed Project would not result in significant adverse transit impacts. The additional transit demand generated by the Proposed Project will be satisfied by the new BRT service.

Pedestrians

A pedestrian analysis was conducted for 14 pedestrian elements (nine pedestrian elements during the weekday AM peak hour, and five pedestrian elements during the weekday PM peak hour) located in the vicinity of the proposed bus stations. The Proposed Project would not result in significant impacts to the crosswalk and corner reservoir elements in the study area. Significant pedestrian impacts were identified at the following sidewalks:

Weekday AM – Platoon Conditions

» Clinton Ave and Richmond Terrace (E leg, S sidewalk)

Weekday PM – Platoon Conditions

» South Ave and Teleport Dr (E leg, S sidewalk)

Significant impacts to these sidewalk locations were primarily due to the narrow widths of the sidewalks as well as existing obstructions, such as tree pits, building stoops, and utility poles.

Vehicular and Pedestrian Safety

Crash data were obtained for the study area intersections from the New York City Department of Transportation (NYCDOT) for the most recent three-year period (2017 through 2019). This information is based on data provided by the New York State Department of Transportation (NYSDOT), New York State Department of Motor Vehicles (NYSDMV), and New York City Police Department (NYPD). According to the crash data, eight existing intersections analyzed in the study area would be considered high-crash locations as defined by NYCDOT criteria published in the *2021 CEQR Technical Manual*, due to being situated along a Vision Zero Priority Corridor. Potential safety improvements are proposed in the Safety section.

Freight Rail

The Proposed Project would allow for continued operations on the North Shore Railroad ROW in the Arlington Yard area and would not preclude either existing freight train movements or the potential future eastward expansion of Arlington Yard operations to Van Name Avenue accommodate increased activity at the Howland Hook Marine Terminal. As such, no significant adverse impacts to freight rail service are anticipated as a result of the Proposed Project.

16 Air Quality

Operation of the Proposed Project has the potential to affect localized air quality conditions, which could result in potential effects to public health and the environment. Therefore, analyses were conducted for the Proposed Project in accordance with the most current Air Quality Chapter of NYSDOT's The Environmental Manual (TEM), as well as other relevant guidance and protocols provided by the New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA). In addition, the air quality characteristics of the Proposed Project are identified and discussed within the context of the Clean Air Act (CAA) requirements and other applicable state and local air quality standards. Construction air quality impacts are also discussed to comply with the Air Quality Chapter of TEM.

Although the BRT buses would be all-electric and, therefore, would not emit air pollutants, the Proposed Project would create dedicated lanes for BRT transit service and thereby free up capacity for general-purpose vehicles on Richmond Terrace. In addition, the Proposed Project may alter traffic patterns on surrounding local streets (e.g., by changing transit local routes to serve as "feeders" to the BRT route). Therefore, a mobile source air quality analysis is warranted.

The air quality analysis includes a mesoscale (regional) and a microscale (local, or "hot-spot") analysis. The mesoscale analysis estimates the net change in emissions associated with the Proposed Project stemming from the projected changes in speed, vehicle miles traveled (VMT), and roadway type and configuration. The microscale analysis projects future carbon monoxide (CO) and particulate matter ($PM_{2.5}$) levels at intersections and parking areas where the greatest increase in traffic is projected and where sensitive uses, such as residences, are closest.

This chapter assesses future air quality conditions with and without the Proposed Project.

Regulatory Background

National Ambient Air Quality Standards

Ambient air quality is affected by air pollutants produced by both motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions while emissions from fixed facilities are referred to as stationary source emissions. As required by the CAA, primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: CO, NO_2, O_3, respirable PM ($PM_{2.5}$ and PM_{10}), SO_2, and lead. The primary standards represent levels that are requisite to protect public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary and secondary standards are the same for NO_2, O_3, lead, and PM, and there is no secondary standard for CO. The NAAQS are presented in **Table 16-1**. The NAAQS for CO, NO_2, and SO_2 have also been adopted as the ambient air quality standards for New York State but are defined on a 12-month basis rather than by calendar year.

Table 16-1 National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Averaging Period	Concentration
Carbon Monoxide (CO)	Primary	1-hour	35 ppm
		8-hour	9 ppm
Lead (Pb)	Primary and Secondary	Rolling 3-month Average	0.15 µg/m^3 [1]
Nitrogen Dioxide (NO_2)	Primary	1-hour	100 ppb
	Primary and Secondary	Annual	53 ppb [2]
Ozone (O_3)	Primary and Secondary	8-hour	0.070 ppm [3]
Particulates ($PM_{2.5}$)	Primary	Annual	12 µg/m^3
	Secondary	Annual	15 µg/m^3
	Primary and Secondary	24-hour	35 µg/m^3
Particulates (PM_{10})	Primary and Secondary	24-hour	150 µg/m^3
Sulfur Dioxide (SO_2)	Primary	1-hour	75 ppb [4]
	Secondary	3-hour	0.5 ppm

[1] Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[2] The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

[3] Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

[4] The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

Source: U.S. Environmental Protection Agency; New York State Department of Environmental Conservation, 2023

Relevant Air Pollutants for Analysis

Carbon Monoxide

Carbon monoxide (CO) is a colorless and odorless gas produced primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. Since CO is a reactive gas which does not persist in the atmosphere, CO concentrations can vary greatly over relatively short distances; elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis.

The Proposed Project would increase traffic volumes on streets near the project corridor and may result in local increases in CO levels. Therefore, the mobile source assessment considers critical intersections in the study area to evaluate

CO concentrations in the No-Action and With-Action Conditions to determine the potential for significant adverse impacts.

Lead

Airborne lead emissions are principally associated with industrial sources and motor vehicles that use gasoline containing lead additives. Most U.S. vehicles produced since 1975, and all produced after 1980, are designed to use unleaded fuel. As these newer vehicles have replaced the older ones, motor vehicle related lead emissions have decreased. As a result, ambient concentrations of lead have declined significantly. Nationally, the average measured atmospheric lead level in 1985 was only about one-quarter the level in 1975.

In 1985, USEPA announced new rules that drastically reduced the amount of lead permitted in leaded gasoline. The maximum allowable lead level in leaded gasoline was reduced from the previous limit of 1.1 to 0.5 grams per gallon effective July 1, 1985, and to 0.1 grams per gallon effective January 1, 1986. Monitoring results indicate that this action has been effective in significantly reducing atmospheric lead concentrations. Effective January 1, 1996, the CAA banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles, concluding the 25-year effort to phase out lead in gasoline. Even at locations in the New York City area where traffic volumes are very high, atmospheric lead concentrations are far below the national standard of 1.5 micrograms per cubic meter (three-month average). No significant sources of lead are associated with the Proposed Project. Based on the above information, an air quality analysis for lead is not warranted.

Nitrogen Oxides, Volatile Organic Compounds, and Ozone

Nitrogen oxides (NO_x) are of concern because of their role, together with volatile organic compounds (VOCs), as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants travel downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants.

Respirable Particulate Matter—PM_{10} and $PM_{2.5}$

Particulate matter (PM) is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. The constituents of PM are numerous and varied, and they are emitted from a wide variety of sources (both natural and originating in human activity). Natural sources include the condensed and reacted forms of naturally occurring VOCs; salt particles resulting from the evaporation of sea spray; wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and material from live and decaying plant and animal life; particles eroded from beaches, soil, and rock; and particles emitted from volcanic and geothermal eruptions and from forest fires. Naturally occurring PM is generally greater than 2.5 micrometers in diameter. Major human-caused sources of PM include the combustion of fossil fuels (e.g., vehicular exhaust, power generation,

boilers, engines, and home heating), chemical and manufacturing processes, all types of construction, agricultural activities, as well as wood-burning stoves and fireplaces. PM also acts as a substrate for the adsorption of other pollutants, which are often toxic, as well as some likely carcinogenic compounds.

As described below, PM is regulated in two size categories: particles with an diameter of less than or equal to 2.5 micrometers, or $PM_{2.5}$; and particles with an diameter of less than or equal to 10 micrometers, or PM_{10}, which includes the smaller $PM_{2.5}$. $PM_{2.5}$ is extremely persistent in the atmosphere and could reach the lower regions of the respiratory tract, delivering with its other compounds that adsorb the surfaces of the particles. $PM_{2.5}$ is mainly derived from combustion material that has been volatilized and then condensed to form primary PM (often soon after the release from an exhaust pipe or stack) or from precursor gases reacting in the atmosphere to form secondary PM. Since the Proposed Project would increase traffic volumes on streets near the project corridor, a PM analysis is warranted.

Sulfur Dioxide

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels such as oil and coal. Due to federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Therefore, an analysis of this pollutant is not warranted.

Existing Conditions

NAAQS Attainment Status and State Implementation Plan (SIP)

The Clean Air Act (CAA), as amended in 1990, defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by USEPA, the state is required to develop and implement a State Implementation Plan (SIP), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA. Richmond County complies with the NAAQS under the deadlines established by the CAA, followed by a plan for maintaining attainment status once the area is in attainment.

In 2002, USEPA re-designated New York City as in attainment for CO. Under the resulting maintenance plan, New York City is committed to implementing site-specific control measures throughout the city to reduce CO levels should unanticipated localized growth result in elevated CO levels during the maintenance period. The second CO maintenance plan for the region was approved by USEPA on May 30, 2014.

Manhattan, which had been designated as a moderate non-attainment area for PM_{10}, was reclassified by USEPA as in attainment on July 29, 2015.

The five New York City counties and Nassau, Suffolk, Rockland, Westchester, and Orange counties have been designated as a $PM_{2.5}$ Non-Attainment Area (New York Portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT NAA)

were re-designated as in attainment for the standard on April 18, 2014, and are now under a maintenance plan. USEPA lowered the annual average primary standard to 12 µg/m3, effective March 2013. EPA designated the area as in attainment for the 12 µg/m3 NAAQS, effective April 15, 2015.

Effective June 15, 2004, EPA designated Nassau, Rockland, Suffolk, Westchester, and the five New York City counties as in moderate nonattainment for the 1997 8-hour average ozone standard. In March 2008, EPA strengthened the 8-hour ozone standards. EPA designated these same areas as a marginal NAA for the 2008 ozone NAAQS, effective July 20, 2012. On April 11, 2016, as requested by New York State, EPA reclassified the area as a moderate NAA. New York State began submitting SIP documents in December 2014. On July 19, 2017, DEC announced that the New York Metropolitan Area (NYMA) was not projected to meet the July 20, 2018 attainment deadline and NYSCDEC therefore requested that EPA reclassify the area to "serious" nonattainment. EPA reclassified the NYMA from "moderate" to "serious" NAA, effective September 23, 2019, which imposed a new attainment deadline of July 20, 2021 (based on 2018-2020 monitored data).[1] As of Q3 2023, the NYMA remains a nonattainment area for ozone. On November 18, 2018, EPA proposed reclassifying the NYMA from moderate to serious nonattainment. On April 30, 2018, EPA designated the same area as a moderate NAA for the revised 2015 ozone standard. USEPA is currently reviewing revisions to New York's SIP plan. New York City is currently in attainment of the annual-average NO_2 standard. USEPA has designated the entire state of New York as "unclassifiable/attainment" of the 1-hour NO_2 standard effective February 29, 2012. Since additional monitoring is required for the 1-hour standard, areas will be reclassified once three years of monitoring data are available.

USEPA has established a 1-hour SO_2 standard, replacing the former 24-hour and annual standards, effective August 23, 2010. In December 2017, USEPA designated the entire state of New York as in attainment for this standard, except for Monroe County which was designated "unclassifiable."

Federal Conformity

Federal conformity regulations promulgated under the CAA require projects in non-attainment areas that receive federal funding to conform to the applicable SIP. An area's Metropolitan Planning Organization (MPO), together with the State, is responsible for demonstrating conformity, with respect to the SIP, on metropolitan long-range transportation plans and Transportation Improvement Programs (TIPs). As the study area is classified as a nonattainment area for O_3, a project level mesoscale analysis was conducted to demonstrate project-level conformity.

[1] The attainment deadline for the NYMA was not met and thus currently remains a nonattainment area.

Impact Criteria

The State Environmental Quality Review Act (SEQRA) regulations state that the significance of a likely consequence (i.e., whether it is material, substantial, large or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected. In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS (see Table 16-2) would be deemed to have a potential significant adverse impact.

Table 16-2: Background Pollutant Concentrations

Pollutant	Averaging Period	Location	Concentration
CO	1-Hour[1]	Queens College, Queens	1.9 ppm
	8-Hour	Queens College, Queens	1.6 ppm
SO_2	1-Hour	Queens College, Queens	5.77 µg/m^3
NO_2	1-Hour	Queens College, Queens	41.2 µg/m^3
	Annual	Queens College, Queens	15.3µg/m^3
$PM_{2.5}$	24-Hour[6]	Fresh Kills, Staten Island	16.1 µg/m^3
	Annual	Fresh Kills, Staten Island	6.3 µg/m^3
PM_{10}	24-Hour	Queens College, Queens	49.0 µg/m^3

Source**:** NYSDEC Region 2 – Air Quality Data, 2021, http://www.dec.ny.gov/docs/air_pdf/2021airqualreport.pdf

[1] 1-hour CO background concentration is based on the highest of the 2nd highest value of 3 years (2019-2021) of available monitoring data from NYSDEC.

[2] 8-hour CO background concentration is based on the highest of the 2nd highest value of 3 years (2019-2021) of available monitoring data from NYSDEC.

[3] 1-hour SO_2 background concentration is based on the maximum 99th percentile concentration averaged over three years of data from NYSDEC (2019-2021).

[4] 1-hour NO_2 background concentration is based on three-year average (2019-2021) of the 98th percentile of daily maximum 1-hour concentrations from available monitoring data from NYSDEC.

[5] Annual NO_2 background concentration is based on the maximum annual average from the latest three years of available monitoring data from NYSDEC (2019-2021).

[6] The 24-hour $PM_{2.5}$ background concentration is based on maximum 98th percentile concentration

Monitored Ambient Air Quality Levels

The NYSDEC maintains an air quality monitoring network and produces annual air quality reports that include monitoring data for CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2. To develop background levels, the latest available pollutant concentrations from monitoring sites located closest to the project site were used.

No-Action Condition

Under the No-Action Condition, the Proposed Project would not be implemented, and the existing former North Shore Railroad right-of-way would remain abandoned and unimproved. No-Action ambient air quality concentrations would remain similar to the existing condition.

With-Action Condition

Air Quality Methodology

Mobile Sources

Given that the Proposed Project would result in increases in and/or redistribution of traffic, analysis of mobile source air quality impacts is warranted to determine whether significant impacts would result.

Following NYSDOT TEM Chapter 1.1, a CO microscale/hot-spot screening analysis was conducted for intersections and roadways affected by the Proposed Project. This analysis was based on traffic analyses reflecting ETC (Estimated to Complete), ETC+10. As per the referenced guidance, if an intersection or roadway has a With-Action condition LOS of C or better, the intersection passes the screening, and no further analysis is required. If the intersection has a Level of Service (LOS) of D or below due to the Proposed Project, it is then screened by the criteria below:

- A 10 percent or more reduction in the source-receptor distance
- A 10 percent or more increase in traffic volume on affected roadways for ETC, ETC+10
- A 10 percent or more increase in vehicle emissions for ETC, ETC+10
- Any increase in the number of queued lanes for ETC, ETC+10
- A 20 percent reduction in speed, when Build estimated average speed is at 30 mph or less

If the intersections affected by the Proposed Project pass this screening criteria, no CO hot-spot analysis is required. If any of the intersections fail the screening by any of the criteria listed above, volume threshold screening, as detailed in Section 9.A.i.I-4 of the NYSDOT TEM Chapter 1.1, is conducted. If necessary, a detailed hot-spot analysis would be conducted. The emission factors applied within this screening are generated using USEPA's MOVES2014b emissions model. For this analysis, the volume threshold screening was immediately applied to the intersections that would become LOS D or worse in the With-Action Condition.

According to the ridership model (see Appendix F), VMT would be reduced under the With-Action Condition for ETC (2035) and ETC+10 (2045). VMT projections for analysis year ETC (2035) would experience the least reductions and the vehicular speeds are expected to remain unchanged for the three future analysis years in the project area. Therefore, ETC (2035) is the critical year.

The $PM_{2.5}$ analysis was conducted by the procedures prescribed in the NYSDOT TEM and the *USEPA Transportation Conformity Guidance for Quantitative Hot-spot Analysis in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.* A $PM_{2.5}$ hot-spot analysis is not required because of the following:

- Intersections affected by the Proposed Project that are at a LOS D, E, or F do not generate a significant number of diesel vehicles, or those intersections

that will change to a LOS D, E, or F are as a result of increased traffic volumes from non-diesel vehicles generated by the Proposed Project.

» New bus and transfer points that do not have a significant number of diesel vehicles congregating at a single location.

Vehicle Emissions

The latest version of USEPA Motor Vehicle Emissions Simulator (MOVES3) is used to estimated CO emission factors. Emissions are estimated for average projected free flow speeds provided by the traffic analysis. Applicable and up-to-date environmental and vehicular traffic data for MOVES are supplied by NYSDEC to accurately model project conditions.

Appropriate credits are used to accurately reflect the inspection and maintenance program.[2] County-specific hourly temperature and relative humidity data obtained from NYSDEC are used.

Traffic Data

Traffic data for the air quality analysis are derived from vehicle counts and other information developed as part of the traffic analysis. Peak traffic periods considered in the air quality analysis are the same peak periods selected for the traffic analysis and consist of the weekday AM, PM and Saturday Midday (MD) peak hours. These are the periods when the maximum changes in pollutant concentrations are expected based on overall traffic volumes and anticipated changes in traffic patterns due to the Proposed Project.

Analysis Year

The CO mobile source analyses were performed for the 2035 Build Year.

CO Microscale Analysis

A CO microscale screening analysis was conducted for intersections and roadways affected by the Proposed Project using the NYSDOT TEM Chapter 1.1 described above.

Following the NYSDOT TEM, microscale screening analyses were conducted for the year of expected highest emissions, which is 2035 (ETC). If the microscale analyses for the ETC do not indicate an exceedance of the applicable NAAQS, then no exceedances are expected in the other future years.

The Table 16-3 presents the LOS and volumes at all 32 intersections screened in the project area.

[2] The inspection and maintenance programs require inspections of automobiles and light trucks to determine if pollutant emissions from each vehicle exhaust system are lower than emission standards. Vehicles failing the emissions test must undergo maintenance and pass a repeat test to be registered in New York State.

Table 16-3 Overall Intersection Level of Service and Volumes

		2035 No Build									2035 Build									Build - No Build		
		AM			PM			SAT			AM			PM			SAT			DELTA		
Site ID	Intersection	LOS	Delay	Volume	LOS	Delay	Volume	LOS	Delay	Volume	LOS	Delay	Volume	LOS	Delay	Volume	LOS	Delay	Volume	AM	PM	SAT
100	Richmond Terrace & Ferry Terminal Viaduct & Bay Street	C	25.5	2,087	F	95.3	2,836	F	95.3	2,549	C	27.4	2,110	F	82.2	3,020	C	28.3	2,557	23	184	8
200	Richmond Terrace & Ferry Terminal Viaduct	B	19.8	1,540	C	28.5	2,332	C	24.3	2,265	A	7.8	1,580	B	15.9	2,459	A	6.8	2,281	40	127	16
400	Richmond Terrace & Wall Street	B	14.6	1,672	D	38.9	2,600	E	62.6	2,586	C	21.2	1,758	D	47.2	2,766	E	65.7	2,625	86	166	39
500	Richmond Terrace & Hamilton Avenue	B	13.3	1,228	C	22.0	1,704	D	46.3	1,463	A	6.4	1,314	C	22.2	1,842	C	26.6	1,502	86	138	39
600	Richmond Terrace & Stuyvesant Place										D	39.0	1,527	D	50.3	1,980	D	48.3	1,606	1,527	1980	1,606
700	Richmond Terrace & Nicholas Street/Garage Ramp	B	19.9	1,415	D	42.4	1,818	E	75.9	1,496	B	17.6	1,455	D	36.6	1,905	C	27.1	1,512	40	87	16
800	Richmond Terrace & St Peters Place	B	18.0	1,287	E	75.9	1,598	E	71.6	1,289	B	15.4	1,287	D	35.7	1,640	B	19.1	1,289	0	42	0
900	Richmond Terrace & Westervelt Avenue	C	20.8	1,495	E	56.0	1,835	E	64.5	1,518	C	20.4	1,495	C	28.6	1,877	C	21.5	1,518	0	42	0
1000	Richmond Terrace & Jersey Street	C	29.4	1,530	F	80.7	1,934	E	76.6	1,573	C	23.4	1,540	D	39.1	1,986	C	21.7	1,583	10	52	10
1020	Bank Street & Jersey Street (Bus way)										C	25.9	174	C	33.6	111	C	29.8	64	174	111	64
1100	Richmond Terrace & Franklin Avenue	C	25.4	1,432	F	122.8	1,921	C	26.6	1,450	C	25.5	1,432	F	122.4	1,921	C	26.6	1,450	0	0	0
1200	Richmond Terrace & Lafayette Avenue	C	28.9	1,423	F	151.4	1,923	D	41.6	1,491	C	28.9	1,423	F	155.5	1,950	D	41.6	1,491	0	27	0
1300	Richmond Terrace & Bard Avenue	B	17.6	1,561	B	18.9	1,944	C	33.2	1,496	B	17.7	1,567	F	85.3	2,086	C	33.2	1,496	6	142	0
1400	Richmond Terrace & Broadway	B	17.3	1,714	C	28.3	2,073	B	15.7	1,612	B	18.0	1,716	D	40.9	2,151	B	15.7	1,612	2	78	0
1500	Richmond Terrace & Alaska Street	D	35.1	1,663	D	38.6	2,015	C	33.9	1,631	C	26.4	1,684	D	42.8	2,096	C	34.0	1,649	21	81	18
1600	Richmond Terrace & Jewett Avenue	E	65.7	1,659	E	64.6	1,829	C	32.4	1,347	D	66.5	1,666	E	65.3	1,837	C	32.7	1,351	7	8	4
1700	Richmond Terrace & Heberton Avenue	A	2.3	1,435	A	3.2	1,586	A	1.3	1,090	A	2.3	1,442	A	3.2	1,594	A	1.3	1,094	7	8	4
1800	Castleton Avenue & Port Richmond Avenue	D	39.4	1,084	C	35.0	1,004	C	24.6	762	D	41.5	1,091	D	35.4	1,012	C	24.8	766	7	8	4
1900	Castleton Avenue & Jewett Avenue	D	41.4	1,305	F	182.3	1,661	F	82.7	1,316	D	41.4	1,305	F	182.3	1,661	F	82.7	1,316	0	0	0
2000	Forest Avenue & Jewett Avenue	D	51.7	1,782	F	340.3	2,881	F	290.8	2,963	D	51.7	1,785	F	342.5	2,889	F	290.8	2,963	3	8	0
2100	Forest Avenue & Willowbrook Road	D	35.3	2,429	F	185.9	3,163	F	324.0	3,343	D	36.7	2,445	F	203.3	3,197	F	330.7	3,347	16	34	4
2200	Forest Avenue & Morningstar Road & Richmond Avenue	D	44.1	2,803	F	91.6	3,710	F	116.5	3,634	D	44.3	2,820	F	95.5	3,759	F	116.5	3,634	17	49	0
2310	South Avenue & Arlington Station Entry/Exit										B	12.8	968	F	153.0	1,370	A	8.1	1,010	968	1370	1010
2300	South Avenue & Brabant Street	B	12.9	862	B	15.0	1,143	B	14.4	1,199	B	12.2	1,001	C	22.4	1,416	B	11.2	1,203	139	273	4
2400	South Avenue & Continental Place	A	0.7	798	A	0.5	1,053	A	0.8	1,110	A	1.2	897	A	1.3	1,267	A	0.8	1,116	99	214	6
2410	South Avenue & Cable Way	A	1.2	844	A	1.1	1,093	A	0.4	1,098	A	1.2	907	A	1.1	1,252	A	0.4	1,102	63	159	4
2500	South Avenue & Forest Avenue	C	24.4	2,026	E	58.3	3,347	E	68.8	3,649	C	25.1	2,089	E	60.9	3,506	E	68.8	3,653	63	159	4
2600	South Avenue & Goethals Road North	F	120.1	3,107	F	128.3	3,796	F	173.1	3,276	F	128.7	3,153	F	154.8	3,906	F	174.2	3,280	46	110	4
2700	South Avenue & Fahy Avenue & Glen Street	F	96.2	2,717	F	107.2	3,511	E	60.4	2,188	F	97.6	2,729	F	116.5	3,559	E	60.6	2,192	12	48	4
2800	South Avenue & Edward Curry Avenue	F	111.1	1,909	E	157.5	2,529	A	7.5	1,072	F	112.2	1,921	E	159.0	2,543	A	7.5	1,076	12	14	4
2900	South Avenue & Teleport Drive	B	17.6	2,263	B	13.9	2,359	A	8.2	1,111	B	17.6	2,275	B	14.1	2,373	A	8.2	1,115	12	14	4
3000	South Avenue & Travis Avenue	D	37.3	2,499	F	88.2	2,989	C	23.6	1,576	D	37.7	2,511	F	89.3	3,003	C	23.6	1,580	12	14	4

As shown in Table 16-3 and Table 16-4, five intersections failed the initial screening analysis, as they have a LOS of D or worse and an increase in the number of queued lanes under the With-Action Condition. A volume threshold screening was therefore conducted, and the results were compared to the thresholds in Table 3C (see Appendix N) of Section I-3 of the NYSDOT TEM Chapter 1.1

Table 16-4 Intersection for Volume Threshold Screening

	2035 No Build						2035 Build					
	AM		PM		SAT		AM		PM		SAT	
	LOS	Volumes	LOS	Volumes	LOS	Volumes	LOS	Volumes	LOS	Volumes	LOS	Volumes
Richmond Terrace & Stuyvesant Place*							C	1,527	D	1,980	D	1,606
Richmond Terrace & Bard Avenue	B	1,561	B	1,944	C	1,496	B	1,567	F	2,086	C	1,496
Richmond Terrace & Broadway	B	1,714	C	2,073	B	1,612	B	1,716	D	2,151	B	1,612
Castleton Avenue & Port Richmond Avenue	D	1,084	C	1,004	C	762	D	1,091	D	1,012	C	766
South Avenue & Arlington Station Entry/Exit*							B	968	F	1,370	A	1,010

*Intersection is uncontrolled under existing and No Build conditions

The emission factors applied within the volume threshold screening are from USEPA's MOVES3 model and represent the year of ETC. CO emission factors were generated for both idle and the free flow speed of 25 mph on local roadways in these intersections except 15 mph for the intersection of South Avenue & Arlington Station Entry/Exit.

- Idle = 2.90 grams per hour
- 25 mph = 2.44 grams per mile
- 15 mph = 3.26 grams per mile

Upon comparison to Table 3C volumes in the TEM, when applying the above emission factors, intersections in the project corridor would screen out if the traffic volume is less than 4,000 vehicles per hour (vph) at any approach of an intersection. All intersections have volumes well below 4,000 vph at any approach and, therefore, a detailed CO microscale analysis is not warranted or required.

As a result, the Proposed Project is not anticipated to result in any significant CO impacts and would not jeopardize attainment of the NAAQS for CO.

Parking Analysis

The Proposed Project would not cause any adverse air quality impacts related to parking because as noted in Table 15-3 in Chapter 15, Transportation, no significant vehicles would be added on the existing parking facilities according to the traffic analysis and, therefore, an assessment of emissions from such a facility is not warranted.

Mesoscale Analysis

According to the ridership model (see Appendix F), VMT would be reduced for the future With-Action Condition under ETC (2035) and ETC+10 (2045). Based on traffic projections, it is also assumed that vehicular speeds will remain unchanged for the three analysis years in the project area and, therefore, a mesoscale analysis is not warranted.

Conclusion

Following the procedures in the Air Quality Chapter of NYSDOT's The Environmental Manual (TEM), an air quality analysis was conducted to determine the potential microscale and mesoscale impacts from the Proposed Project.

The results of these analyses indicate that the Proposed Project is not expected to cause or exacerbate a violation of the NAAQS for any criteria pollutant on a microscale or localized basis, nor increase regional emission burdens. As such, the Proposed Project would not result in any significant air quality impacts once implemented and fully operational.

17 Greenhouse Gas Emissions and Climate Change

This chapter discusses greenhouse gas (GHG) emissions associated with the Proposed Project and assesses the consistency of the Proposed Project with the City's established GHG reduction goal. The evaluation included in this chapter also discusses the potential impacts of climate change on the Proposed Project. The discussion focuses on sea level rise and changes in storm frequency projected to result from global climate change and the potential future impact of those changes on the Proposed Project's infrastructure. Design measures to increase infrastructure resiliency and protect properties in flood-prone areas from risk and damage are also discussed.

Regulatory Background and Study Area

In accordance with the *2021 CEQR Technical Manual*, this GHG emissions analysis discloses GHG emissions that could result from the Proposed Project and assesses the consistency of the Proposed Project with the City's goals to reduce GHG emissions by 30 percent below 2005 levels by 2030. The following goals are considered in making the determination of whether a project is consistent with the City's GHG reduction goal:

- Build efficient buildings.
- Use clean power.
- Transit-oriented development and sustainable transportation.
- Reduce construction operation emissions.
- Use building materials with low carbon intensity.

The City's long-term sustainability plan, *PlaNYC: Getting Sustainability Done*, updated in April 2023, builds on the prior four plans, and is grounded in a comprehensive understanding of climate change impacts in the city as well as a complete picture of the City's GHG footprint. In addition to the development of climate-adaptation strategies for critical infrastructure, such as bridges, mass-

transit networks, telecommunication networks, tunnels, and roads, the 2023 plan aspires to center environmental justice and health equity in sustainability work.[1]

The New York City Panel on Climate Change (NPCC) is comprised of leading technical experts from academic institutions and industries; the NPCC serves as a technical advisory committee to the MTA's Climate Adaptation Task Force. As stated in its latest resiliency report, the Climate Adaptation Task Force is "*committed towards keeping MTA climate adaptation in lock-step with what the latest science … [to] ensure that the latest analyses, models, and projections are baked into MTA climate preparedness as we move forward.*"[2]

In addition to GHG emissions, the *2021 CEQR Technical Manual* states that a qualitative discussion of the potential effects of climate change on a proposed project may be appropriate. Because the Proposed Project is primarily located within a flood zone, the impact analysis includes qualitative discussions of climate-related hazards. The New York City Waterfront Revitalization Program (WRP), authorized by New York State's Waterfront Revitalization of Coastal Areas and Inland Waterways Act, establishes policies on development projects, waterfront planning and preservation within the City. The WRP acts as the City's Coastal Zone management tool and seeks to "*maximize the benefits derived from environmental conservation, public use of the waterfront, and environmental conservation while minimizing potential conflicts among these objectives*."[3] In accordance with the *2021 CEQR Technical Manual*, **Chapter 3, Land Use, Zoning, and Public Policy** of this FEIS analyzes the Proposed Project's consistency with Policy 6.2 of the WRP.

For purposes of this analysis, the study area is defined as 400 feet on either side of the Proposed Project's alignment, which is the area with the potential to experience direct effects from the project's construction and operation.

Existing Conditions

As stated in the *2021 CEQR Technical Manual*, climate change is anticipated to result in rising temperatures, changing precipitation patterns, rising sea levels, and increasing frequency of extreme weather events, including heavy downpours, heat waves, droughts, and high winds. The entire MTA travel region covers 5,000 square miles.[4] Within MTA's travel region, assets located along the coast have

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[1] City of New York, Office of the Mayor. " *PlaNYC: Getting Sustainability Done*". April 2023. Available at https://www.nyc.gov/office-of-the-mayor/news/274-23/mayor-adams-releases-planyc-getting-sustainability-done-new-york-city-s-strategic-climate-plan#/0 Accessed April 27, 2023.

[2] 2019 MTA Climate Adaptation Task Force Resiliency Report. Available at https://new.mta.info/document/10461. Accessed April 27, 2023.

[3] NYC Department of City Planning. *New York City Waterfront Revitalization Program – Overview.* Available at https://www.nyc.gov/site/planning/planning-level/waterfront/wrp/wrp.page. Accessed April 25, 2023.

[4] MTA. About the MTA. Available at https://new.mta.info/about. Accessed April 14, 2023.

increasing vulnerability due to sea level rise and storm surge.[5] For example, electrical systems can sustain damage and erosion from long-term exposure to saltwater.

The sections below describe existing conditions and potential climate change vulnerabilities of each alignment segment. Because most of the study area is in a flood hazard zone, existing climate-related hazards and potential impacts include coastal storm surges, extreme weather events, and sea level rise. Existing MTA bus service operates on existing North Shore roadways that are vulnerable to these hazards.

Weather-related power failures caused by heat waves or thunderstorms could take out power supplies at substations or along route segments, causing service delays and disruptions. Because winter precipitation is likely to increase in frequency and intensity, portions of the study area are susceptible to impacts from high winds, as well as ice or snow conditions. Winter precipitation may especially impact elevated segments of the study area, where ice and snow-removal may be more difficult.

Figures 17-1 to 17-7 depict the 2020 100- and 500-year flood zones within the project study area. Within the figures the 100-year flood zone is referenced as the 1 percent annual chance flood hazard while the 500-year flood zone is shown as the 0.2 percent annual chance flood hazard.

Section 1: St. George

This approximately one-mile-long section lies along the area adjacent to Richmond Terrace from the St. George Terminal, west to Jersey Street. Starting from the St. George Terminal heading west, portions of the study area between Richmond Terrace and the waterfront are within the 2020 100- and 500-year flood zones. From Nicholas Street to Jersey Street, the alignment lies entirely within the 2020 100- and 500-year flood zones, respectively (**Figure 17-1**).

Section 2: New Brighton Waterfront

This alignment section runs primarily along the Kill Van Kull shoreline in the New Brighton neighborhood. It encompasses the northern portions of the New Brighton neighborhood and the Snug Harbor Cultural Center and Botanical Garden. This segment is approximately 1.2 miles long. A majority of this alignment section lies within the 2020 100- and 500-year flood zones (**Figure 17-2**).

Near Snug Harbor, the former North Shore Railroad right-of-way is located north of Richmond Terrace adjacent to a narrow area of parkland. The former North Shore Railroad right-of-way was originally located on dry land to the north of this strip of parkland; but due to decades of continuous natural erosion and severe

[5] *2017 MTA Climate Adaptation Task Force Resiliency Report*. Available at https://new.mta.info/document/10456. Accessed April 14, 2023.

weather events, the North Shore's shoreline has been notably altered and eroded. Much of the ROW that was formerly on land is now submerged in the waters of the Kill Van Kull.

Additionally, larger vessels passing through the Kill Van Kull as a result of the Bayonne Bridge modification are anticipated to further exacerbate erosion. At present, the right-of-way and bulkhead in the vicinity of Sailors' Snug Harbor has sustained substantial storm damage and has largely been submerged by the Kill Van Kull.

Section 3: West Brighton Waterfront

The West Brighton Waterfront alignment section generally parallels the shoreline from Davis Avenue to the foot of Alaska Street, where the former North Shore Railroad right-of-way transitions from at-grade to a viaduct structure south of Heritage Park. This section is approximately 0.7 mile long. A majority of land within the northern portion of the study area lies within the 2020 100- and 500-year flood zones (**Figure 17-3**).

Figure 17-1 Flood Zones in 2020: St. George

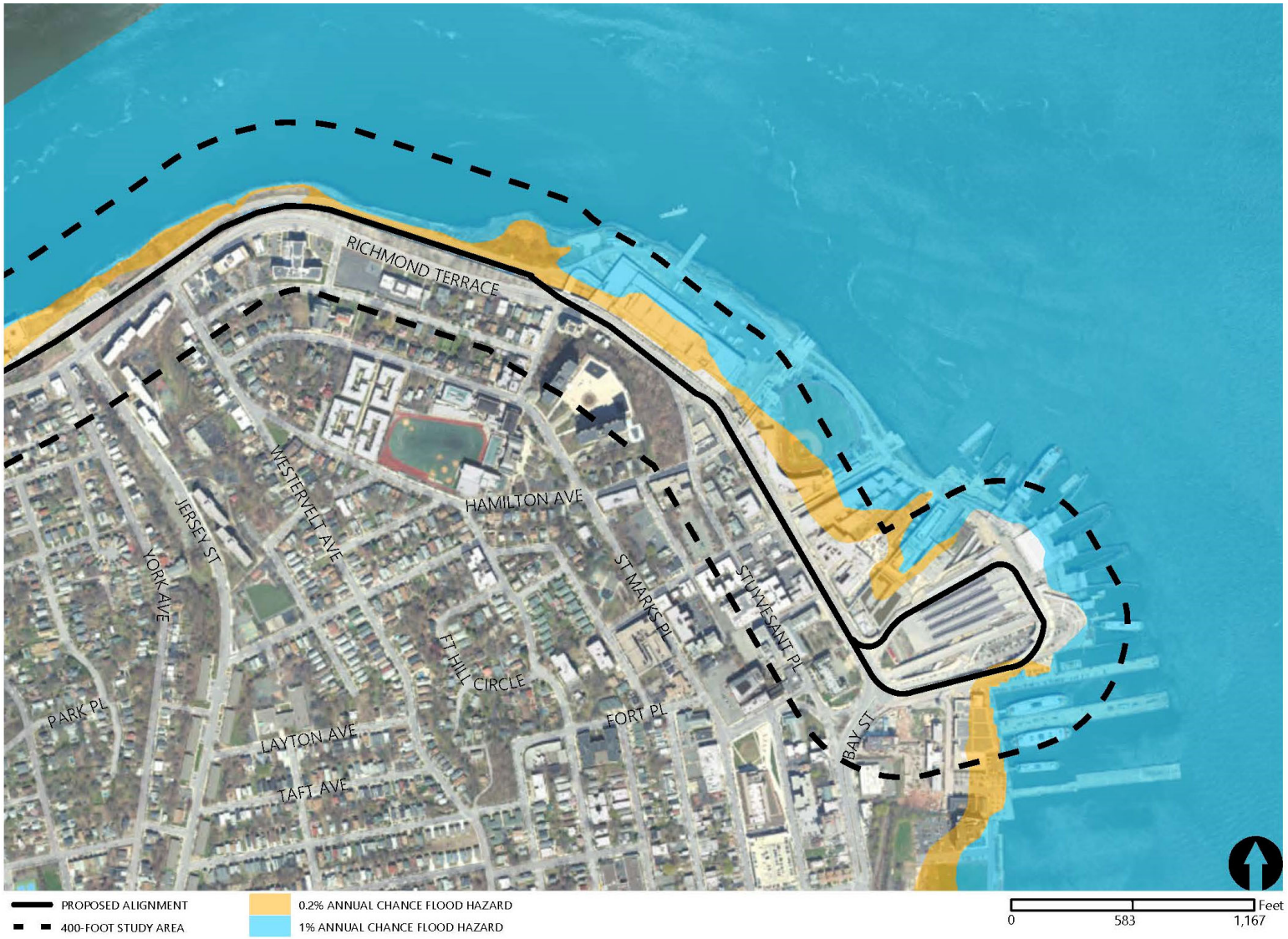


Figure 17-2 Flood Zones in 2020: New Brighton Waterfront

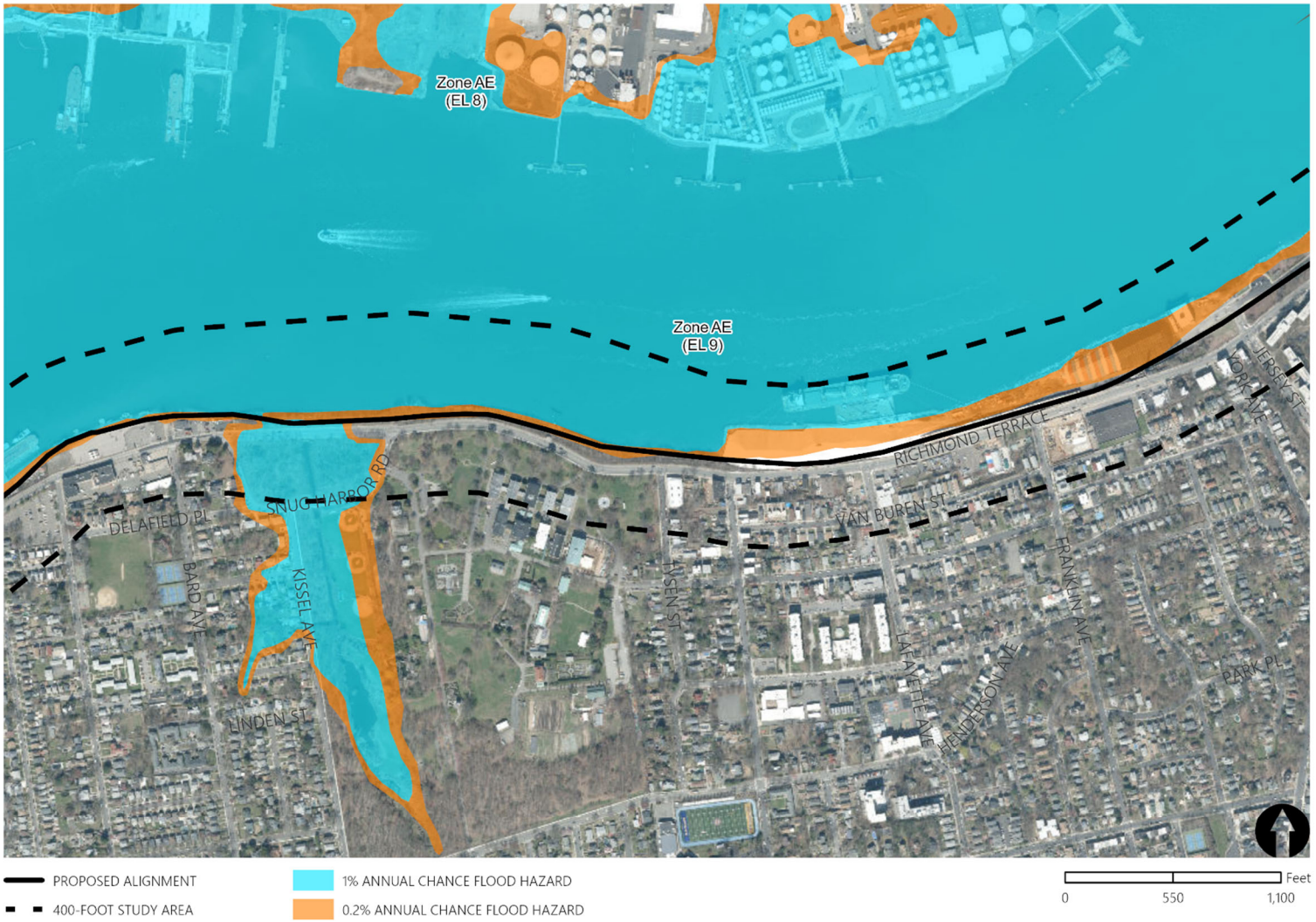
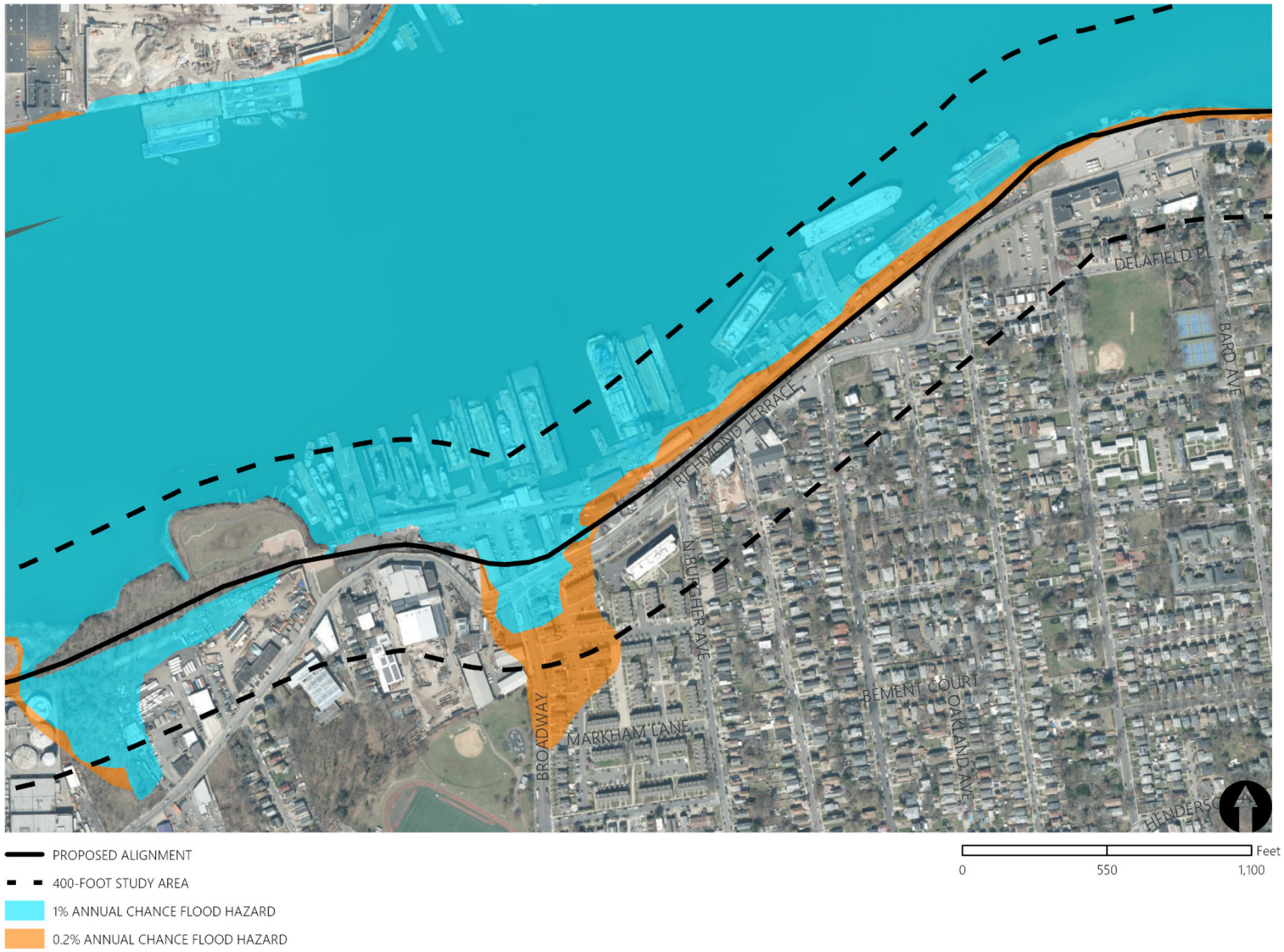


Figure 17-3 Flood Zones in 2020: West Brighton Waterfront



Section 4: Viaduct

This approximately 1.2-mile-long alignment section reuses the existing elevated viaduct section of the former North Shore Railroad right-of-way from Alaska Street west to John Street. Portions of the study area to the east of Richmond Terrace are located within the 100- and 500-year flood zone. The portion of the Viaduct section from Nicholas Avenue to John Street is outside of the 2020 100- and 500-year flood zones (**Figure 17-4**).

Section 5: Open-Cut Section

Section 5 of the alignment would be in a section of the former North Shore Railroad right-of-way that lies within an open cut. The open cut is approximately 0.9 miles long and is situated roughly 20 to 30 feet below grade with varying widths. In the western section of the cut near Van Name and Union Streets, the BRT alignment would be situated to safely coexist with the existing rail freight service. Near Roxbury Street, the proposed alignment would leave the open-cut and rise to grade below the South Avenue bridge. The open-cut section of the alignment is not located within the 2020 100- or 500-year flood zones (**Figure 17-5**).

Section 6: Arlington Station

This section follows the former right-of-way along an at-grade section from Harbor Road to South Avenue. Coming out of Arlington Station, the proposed BRT route would access South Avenue from a driveway located just north of Brabant Street. This segment is approximately 0.54 miles long. Except for the western-most portion of the study area around Cable Way, Arlington Station is not located within the 2020 100- or 500-year flood zone. Just north of Cable Way, off South Avenue, a minor portion of the study area overlaps the 2020 100- and 500-year flood zones (**Figure 17-6**).

Section 7: South Avenue

From the Arlington Station driveway located just north of Brabant Street, the BRT would be located within existing South Avenue to West Shore Plaza. This segment is approximately 2.70 miles long and most of the study area lies within the 2020 500-year flood zone (**Figure 17-7**). The study area for this alignment section does not overlap with the 2020 100-year flood zone.

Figure 17-4 Flood Zones in 2020: Viaduct

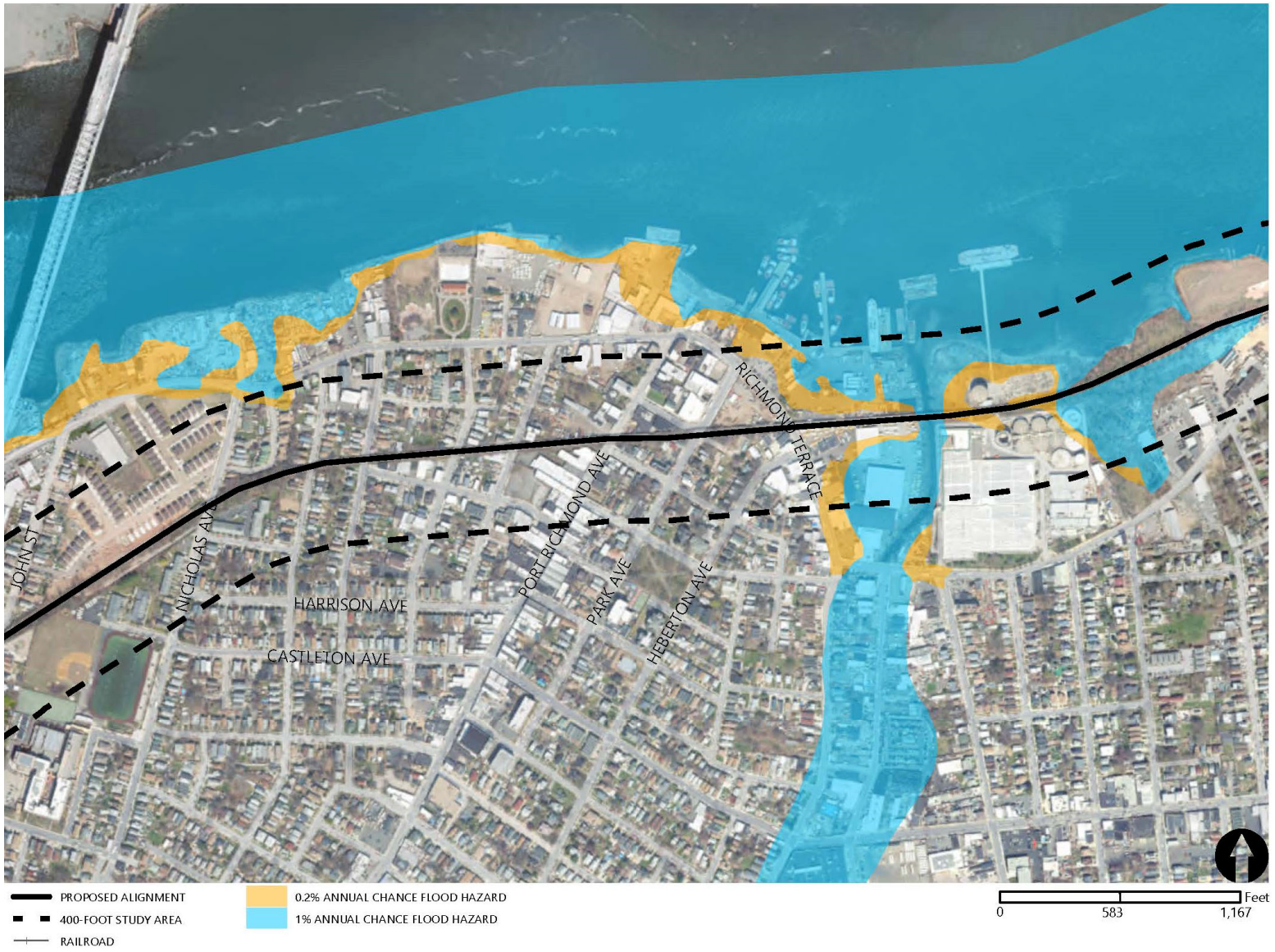


Figure 17-5 Flood Zones in 2020: Open-Cut Section

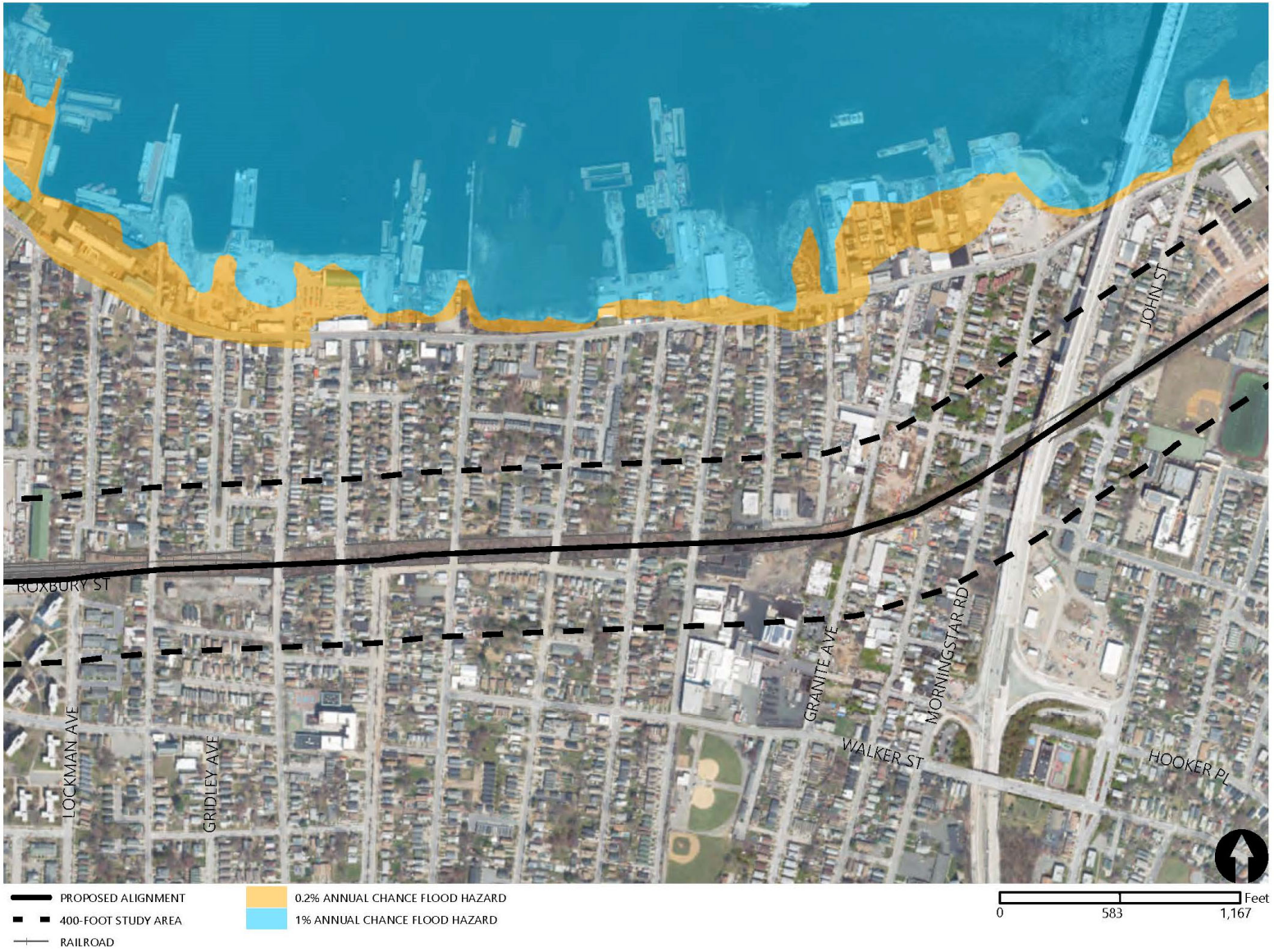


Figure 17-6 Flood Zones in 2020: Arlington Station

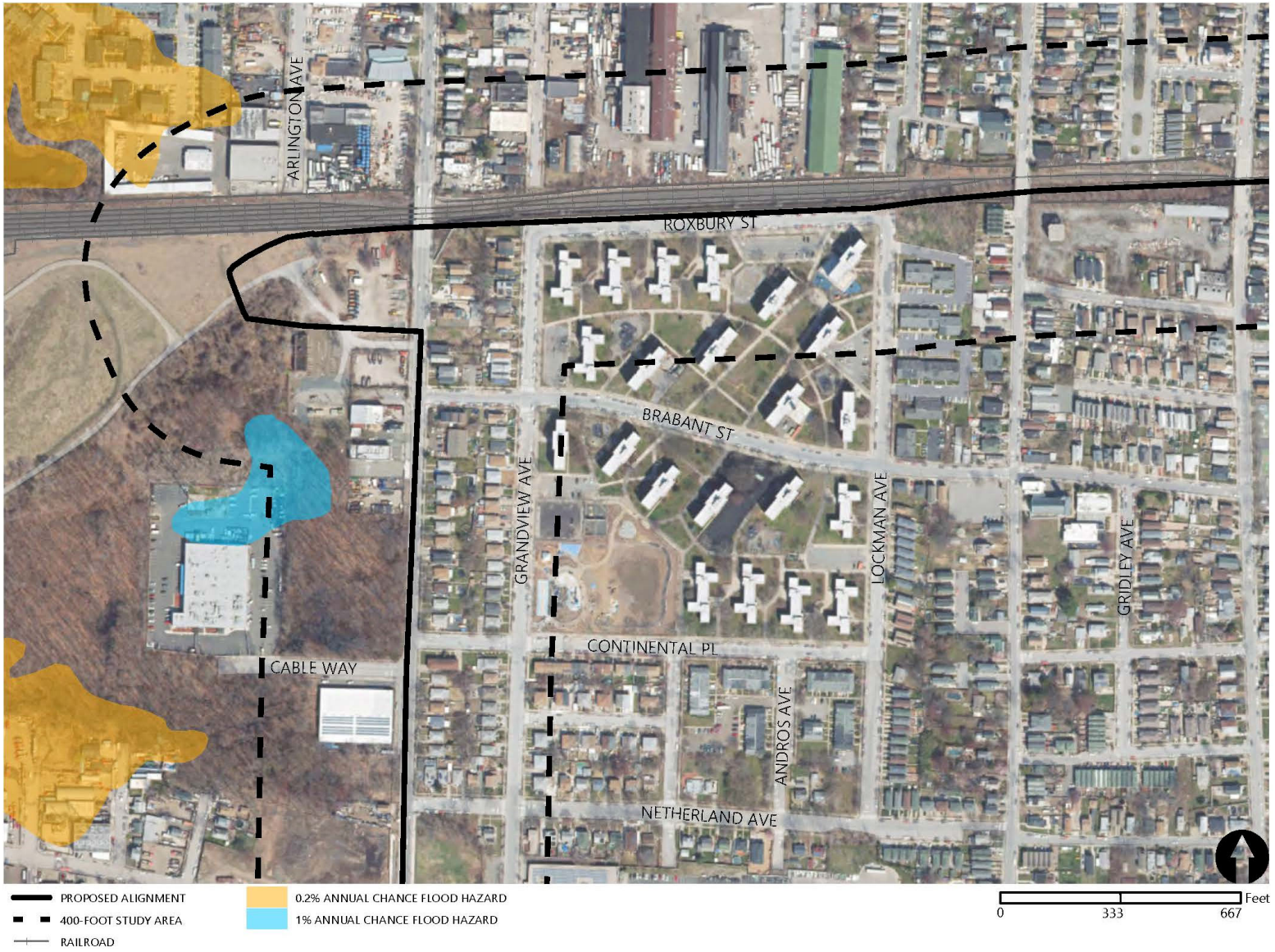
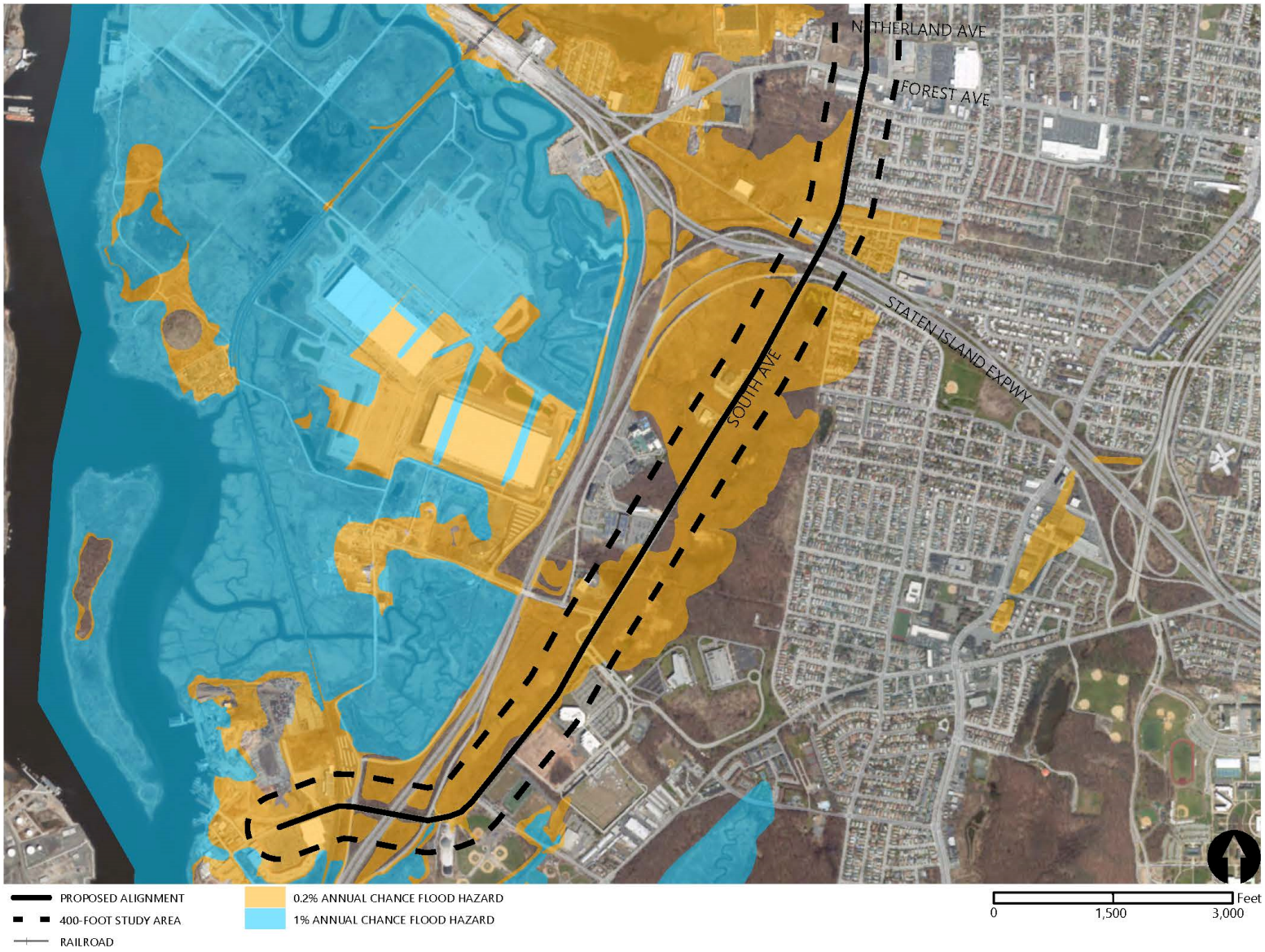


Figure 17-7 Flood Zones in 2020: South Avenue



No-Action Condition

In the No-Action Condition in 2035, the Proposed Project would not be implemented, and the former North Shore right-of-way would remain abandoned and unimproved. The No-Action Condition assumes that existing MTA bus service would continue to operate on Richmond Terrace and throughout the North Shore on a constrained roadway network.

Public transportation demands within the study area would continue to grow as the local population of residents and workers increases over time. If no new public transit services are implemented in the study area, it is anticipated that higher levels of traffic congestion would result in increased vehicle emissions. The No-Action Condition would not result in benefits to air quality, as there would be no implementation of transit alternatives that moderate the increase of vehicle emissions.

Likewise, climate risks would continue to persist within the study area. As noted in *MTA Adaptations to Climate Change, A Categorical Imperative* (Jacob et al., 2008), the primary climate change risks for MTA assets include: temperature rise, changes in precipitation, sea level rise, and coastal storm surge.[6] In the No-Action Condition, there would be no changes to existing bus routes and the potential impacts of climate change to public transit within the study area. Climate risks would continue to compound and synergistically interact. An example of this compounding effect would be flooding in a low-lying portion of the BRT ROW due to both rainfall and storm surge.

With-Action Condition

The air quality analysis documented in **Chapter 16, Air Quality** identifies whether implementation of the Proposed Project would result in any exceedances of the National Ambient Air Quality Standards (NAAQS) or any substantial increases or decreases in air pollutant emissions.

Construction of the Proposed Project is anticipated to cause both direct and indirect GHG emissions (see also **Chapter 21, Construction**). The Proposed Project conservatively assumes that only the two BRT routes would be served by electric buses. Once construction is completed and the BRT service is operational, the Proposed Project would reduce vehicle trips by providing the public with additional, efficient options for public transit. Similarly, the Proposed Project would not result in any significant air quality impacts once implemented and fully operational. Therefore, the increase in ridership of the BRT and subsequent minimization of on-road travel would reduce GHG emissions.

The newly proposed BRT routes are assumed to utilize a fully electric fleet, which would improve air quality by providing transit alternatives that moderate the

[6] Jacob, K., Rosenzweig, C., Horton, R., Major, D., and Gornitz, V. 2018. *MTA Adaptations to Climate Change. State of New York Metropolitan Transportation Authority*. Available at https://new.mta.info/document/10451. Accessed May 20, 2023.

increase of vehicle emissions. The Proposed Project would also improve mobility by reducing ever-increasing roadway congestion by attracting auto users to transit. In addition to improving mobility, the Proposed Project would support development in the study area, by enhancing the walkability, connectivity, and livability within the Staten Island communities. The Proposed Project would help maintain and enhance public transit, as well as efficient use of land in the study area.

It is anticipated that existing MTA bus depots on Staten Island would be utilized for the storage, inspection, and maintenance of the BRT fleet. Specifics of the bus depot locations would be further refined as the project advances. The MTA will be transitioning their existing bus fleet to electric buses and modifying their existing bus depots to enable charging, with a goal of operating an all-electric bus fleet by 2040. It is anticipated that any improvements to the bus depots to accommodate the transition to an all-electric bus fleet (such as LED lighting and signals) would increase efficiency and reduce electricity consumption as compared to the older systems, thereby reducing indirect emissions from electricity production.

Similar to the existing MTA bus depots, the new stations and additional elements such as elevators and lighting in and around the stations would incorporate modern, energy-efficient components, thereby reducing indirect emissions from electricity production.

Because the study area is located in a flood hazard zone, the potential impacts of climate change on the Proposed Project were evaluated and design options were considered to meet coastal flood resiliency standards. Climate risks have the potential to compound and synergistically interact; the primary climate changes risks for MTA assets include temperature rise, changes in precipitation, sea level rise, and coastal storm surge. An example of this compounding effect would be flooding in a low-lying portion of the proposed alignment due to both rainfall and storm surge. The potential effects of climate change would vary among the proposed alignment sections due to location and whether the section is at-grade, elevated viaduct, or a below grade open-cut section.

In accordance with the *2021 CEQR Technical Manual*, **Figure 17-8** through **Figure 17-14** depict the NYC DCP Flood Hazard Mapper 2050 FEMA 100-year flood level and 500-year flood level within the study area. Some portions of the proposed alignment would be located within year 2050 anticipated flood hazard zones. Where feasible, the conceptually designed BRT roadway alignment would be elevated to mitigate exposure to both potential hazards. There are some sections, especially where the BRT vehicles would use South Avenue, where flooding may occur. The BRT roadway would be designed with drainage systems designed to manage stormwater. However, in extreme events, the busway could flood, and the MTA could decide to temporarily close the busway.

In addition to FEMA flood levels, this section also provides projections for the future sea level rise, to the extent available, specifically in the area fronting Snug

Harbor. In the With-Action Condition, the former North Shore Railroad right-of-way would be modified in key areas to protect the future transit infrastructure and facilities from potential flooding and erosion that results from proximity to the Kill Van Kull. The design flood elevation (DFE) that was established for the proposed alignment at Snug Harbor accounted for location-specific base flood elevations (BFE) including sea-level rise and freeboard. The DFE for the busway design is also consistent with New York City Transit's Flood Resiliency Design Guidelines.

Section 1: St. George

The Proposed Project would utilize the existing elevated bus depot at the St. George Terminal as the eastern terminus, which would increase climate resilience and reduce flood risks at this waterfront terminal. The St. George Terminal includes walk or drop-off access only with no park-and-ride facilities. Because of the inundation of land and infrastructure within waterfront areas following Superstorm Sandy, resiliency measures were designed and have been (or are currently being) constructed to protect key transportation assets including Staten Island Railway's St. George Terminal Station and NYCDOT's St. George Terminal. These measures include the installation of flood walls, shifting of key infrastructure assets such as railroad signal houses, and other physical improvements. 2050 FEMA 100-year flood level and 500-year flood level within the study area predict that the eastern and northern portions of this alignment section would lie within the 2050 100-year flood zone (**Figure 17-8**).

Section 2: New Brighton Waterfront

New Brighton Station would be slightly elevated on fill and would include walk or drop-off access from Richmond Terrace only with no park-and-ride facilities. Livingston Station would be constructed north of Richmond Terrace between Davis Avenue and Bard Avenue primarily within an existing paved surface parking lot owned by Con Edison. This station would include surface parking; therefore, it is anticipated that some additional local, short vehicle trips to or from the parking lot have the potential to create indirect mobile source emissions.

2050 FEMA 100-year flood level and 500-year flood level within the New Brighton Waterfront section predict that the northern portions of this alignment section would lie within the 100-year flood zone (**Figure 17-9**). Both the 100-year flood level and 500-year flood level for 2050 are anticipated to extend south along Kissel Avenue, into the Snug Harbor Cultural Center and Botanical Garden.

Within the area through Snug Harbor spanning from Bard to Clinton Avenues, the Base Flood Elevation (BFE) was determined to be 14 feet due to adjacent 100-year flood zones. An additional 2 feet was added to BFE to account for sea-level rise, wave action and other hydrological effects. As such, the Design Flood Elevation (DFE) for the elevated busway within the New Brighton Waterfront

section was established at 16 feet.[7] The design would be built in a resilient manner that results in a structure that is taller in height and more visible as compared to infrastructure built at a lower, non-resilient design elevation.

Section 3: West Brighton Waterfront

West Brighton Station would be at approximately the same elevation as Richmond Terrace in this section and would include walk or drop-off access only with no park-and-ride facilities. The elevation of the busway throughout this section would generally be 6 to 12 feet above sea level; as a result, the busway may be subject to flooding from tidal action. The New York State Department of Environmental Conservation (NYSDEC) has indicated that the maintenance of the bulkhead along the North Shore is the responsibility of the respective property owners. As depicted in **Figure 17-10**, the north-western portion of the study area is within the projected 2050 FEMA 100-year and 500-year flood levels.

Section 4: Viaduct

The elevated Port Richmond Station would include walk or drop-off access only with no park-and-ride facilities. West of Alaska Street, the proposed alignment would ascend to the existing elevated viaduct structure. There are nine bridges along the length of the viaduct consisting of the Bodine Creek bridge and eight overhead roadway bridges (roadways pass below the viaduct) along the length of the viaduct at Richmond Terrace, Park Avenue, Port Richmond Avenue, Maple Avenue, Faber Avenue, Sharpe Avenue, Treadwell Avenue, and Nicholas Avenue. As depicted in **Figure 17-11**, a majority of the study area is within the projected 2050 FEMA 100-year and 500-year flood levels. However, because the viaduct is elevated, flooding concerns within this portion of the BRT ROW would be minimal compared to other alignment sections.

Section 5: Open-Cut Section

Elm Park/Morningstar Station and Mariners Harbor Station would include walk or drop-off access only with no park-and-ride facilities. Elm Park/Morningstar Station would be located approximately 22 feet below the existing street level at Morningstar Road. Mariners Harbor Station would be approximately 22 feet below the existing street level at Van Pelt and Van Name Avenues. Similar to the 2020 FEMA annual chance of flood hazard data, the projected 2050 FEMA 100-year and 500-year flood levels are largely outside of the study area for this alignment section (**Figure 17-12**). Two small sections of the study area are within the 2050 500-year flood levels – one to the north of Granite Avenue and one area beneath Bayonne Bridge.

[7] VHB/STV. Draft Basis of Design Report CM-0143 Environmental and Engineering Services for the Staten Island North Shore Bus Rapid Transit System. June 16, 2023. p.128

Section 6: Arlington Station

In this section Arlington Station would include walk access, a dedicated drop-off area and a park-and-ride facility. Arlington Station would be constructed west of South Avenue, north of Brabant Avenue and immediately south of the existing Arlington Yard. This station would include surface parking; therefore, it is anticipated that some additional local, short vehicle trips to or from the parking lot have the potential to create indirect mobile source emissions. **Figure 17-13** shows that the southeastern portion of this alignment section would lie within the 2050 FEMA 100-year and 500-year flood levels.

Section 7: South Avenue

West Shore Plaza, the western terminus of the Proposed Project, would include walk or drop-off access and designated commuter parking within an existing surface parking facility. This station's surface parking already exists and is informally used for commuter parking today; therefore, it is anticipated that few additional local, short vehicle trips would be generated to or from the parking lot and thus minimal indirect mobile source emissions would be created. Along South Avenue, three on-street stops (Teleport, Bloomfield, and Goethals Road) would have walk access only with no park-and-ride facilities. **Figure 17-13** shows that the entire at-grade South Avenue section would lie within the 2050 FEMA 100-year and 500-year flood levels.

Figure 17-8 Flood Zones in 2050: St. George

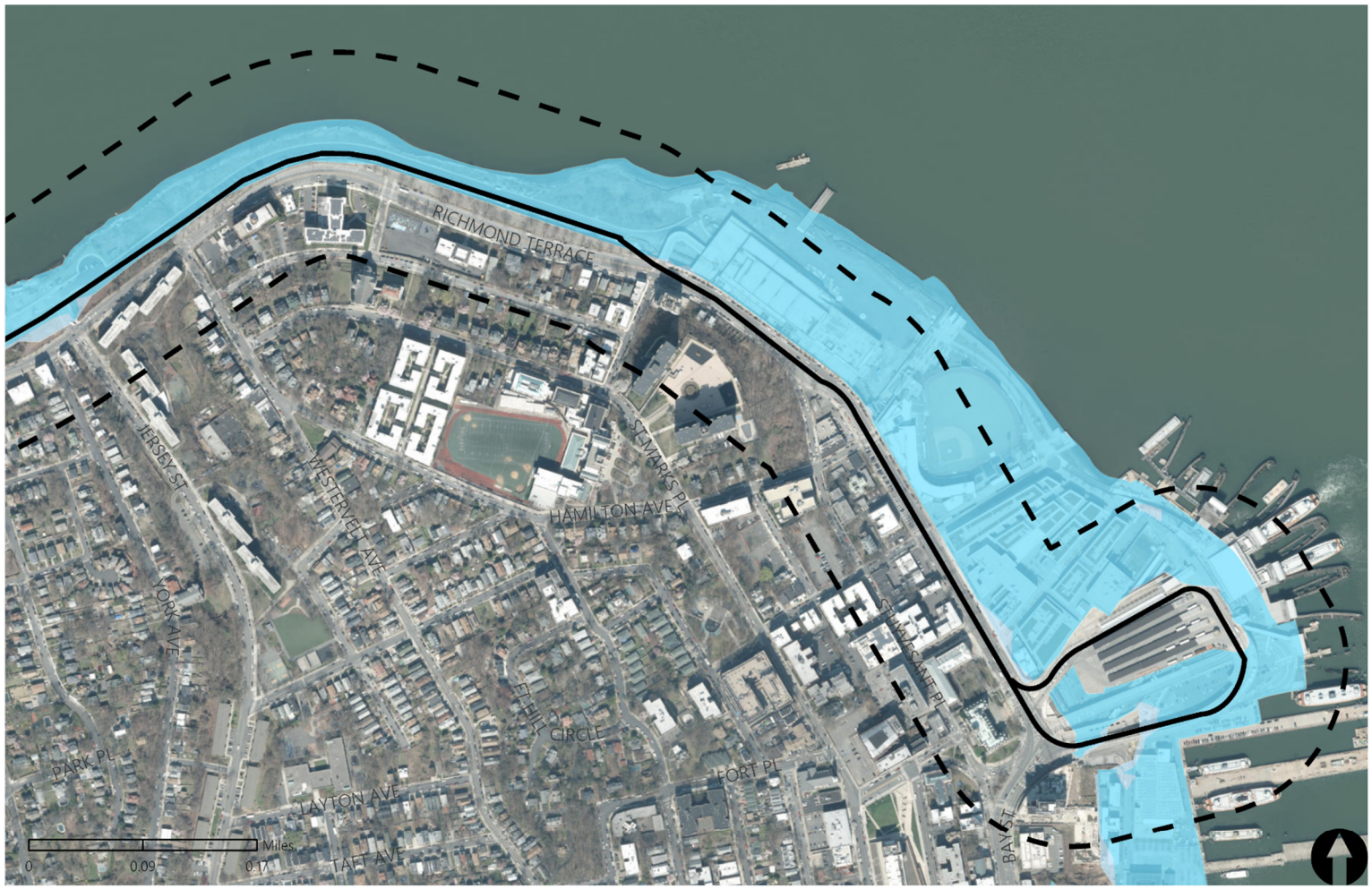


Figure 17-9 Flood Zones in 2050: New Brighton Waterfront

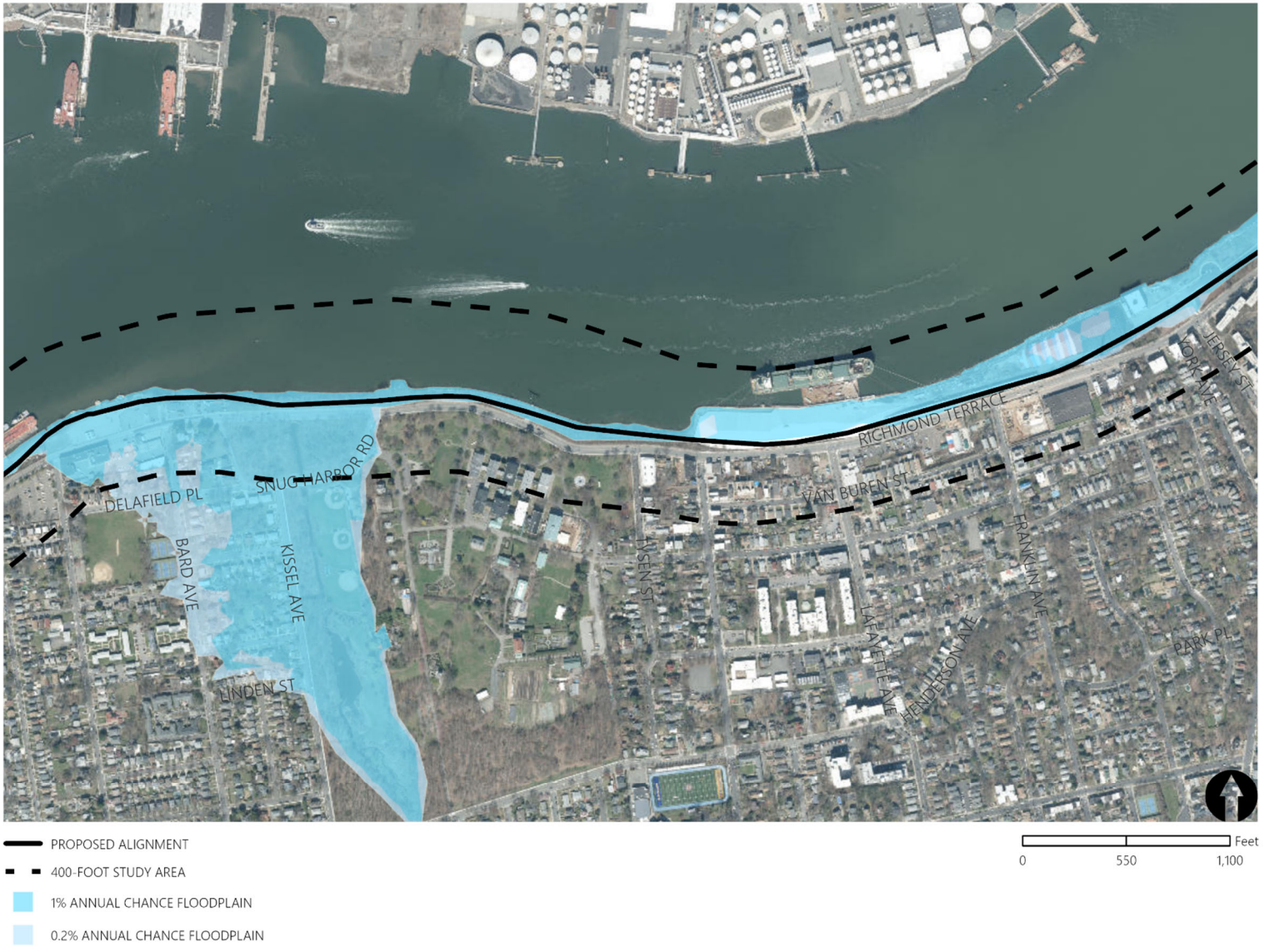


Figure 17-10 Flood Zones in 2050: West Brighton Waterfront

Figure 17-11 Flood Zones in 2050: Viaduct

Figure 17-12 Flood Zones in 2050: Open-Cut Section

Figure 17-13 Flood Zones in 2050: Arlington Station

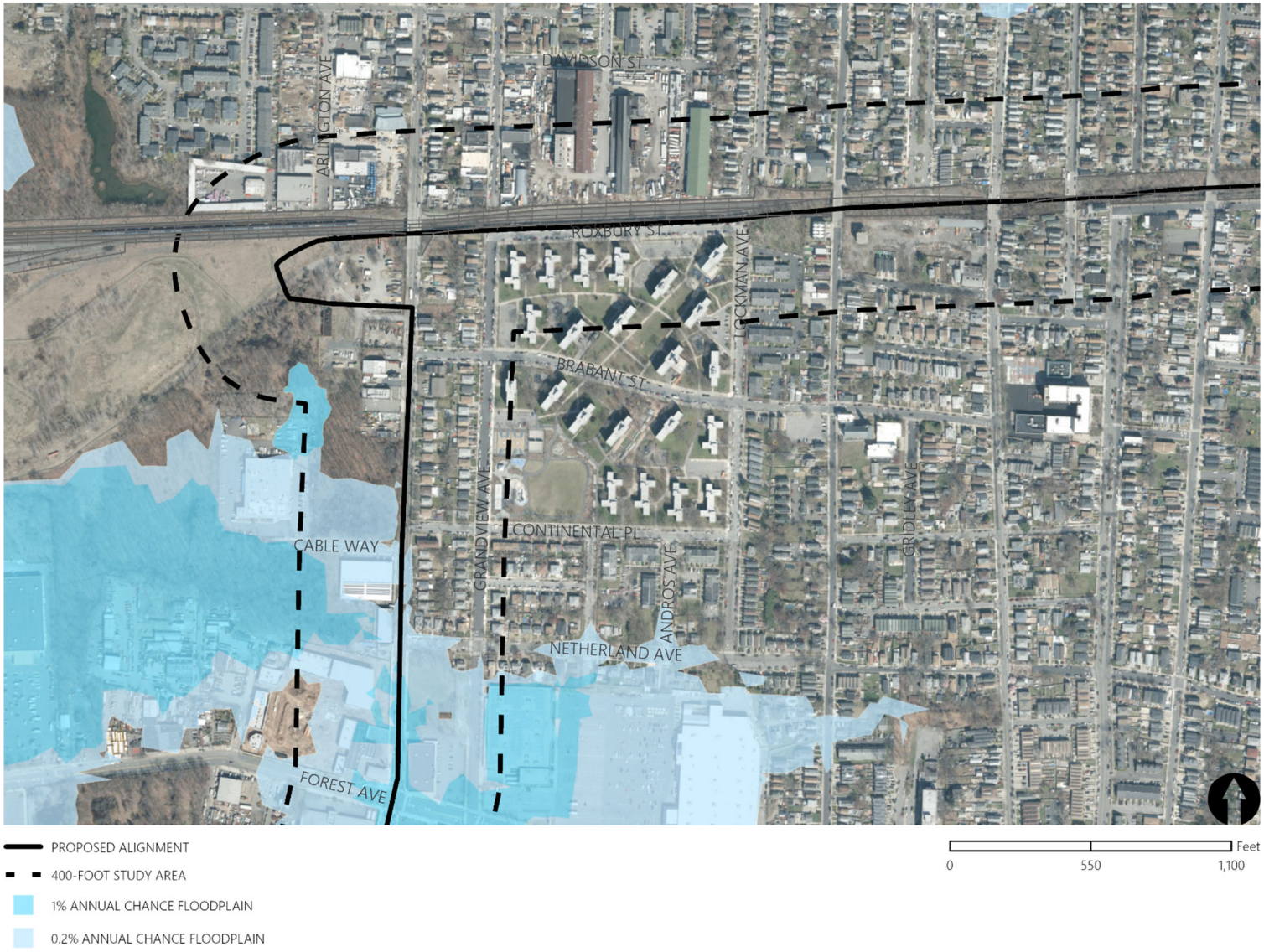
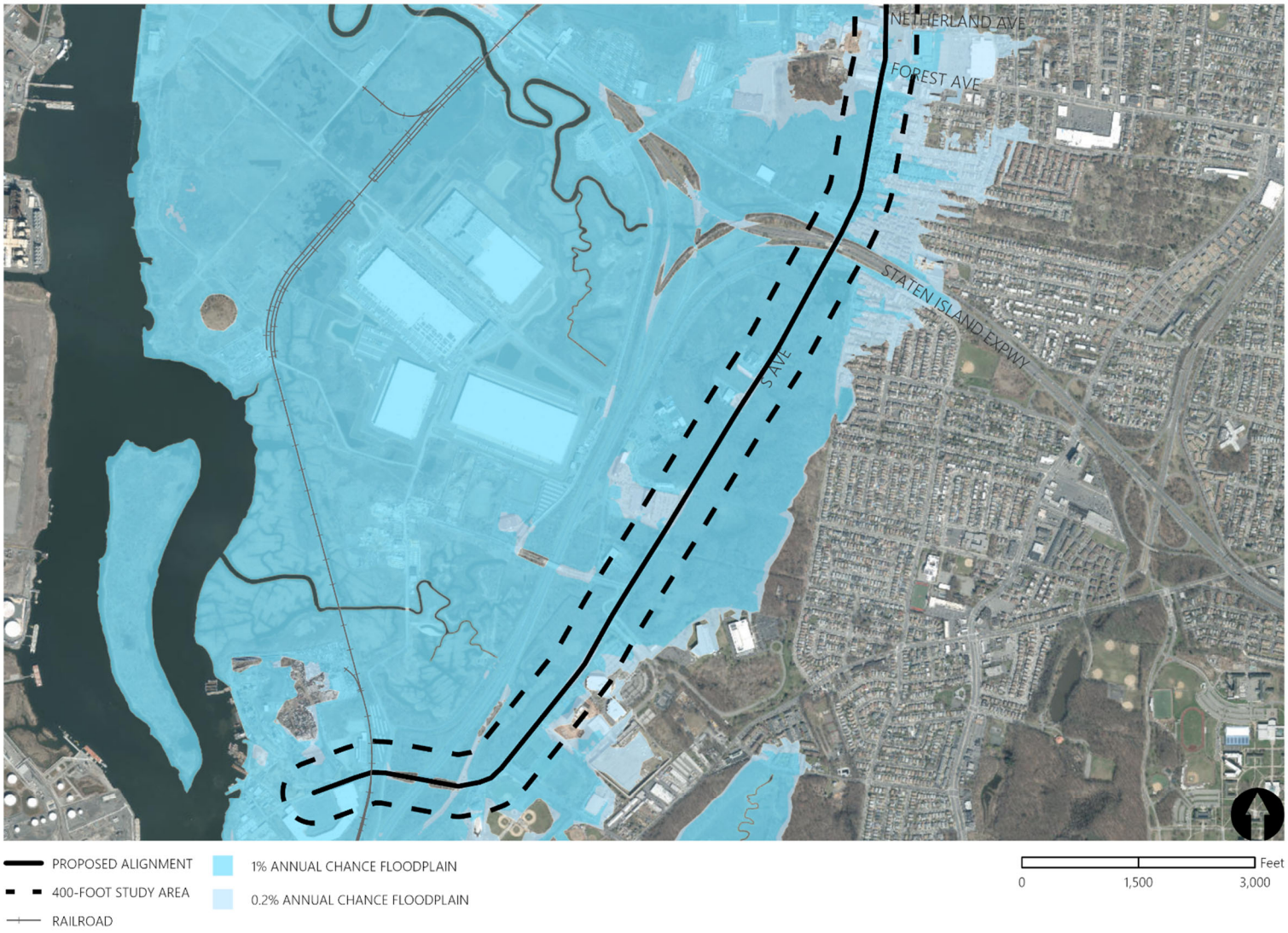


Figure 17-14 Flood Zones in 2050: South Avenue



Conclusion

The Proposed Project conservatively assumes that only the two BRT routes would be served by electric buses; however, the MTA anticipates an all-electric bus fleet by 2040. The transit service provided by the Proposed Project would reduce vehicle trips by providing the public with additional, efficient options for public transit thereby improving air quality.

Some portions of the proposed alignment would be located within year 2050 anticipated flood hazard zones. Where feasible, the conceptually designed BRT roadway alignment would be elevated to mitigate exposure to both potential hazards. There are some sections, especially where the BRT vehicles would use South Avenue, where flooding may occur, as it does today with the existing transit service. Where new construction is proposed, the busway would be designed with drainage systems to manage stormwater. However, in extreme weather events, the busway could flood, and the MTA could decide to temporarily close the busway.

Through implementation of the Proposed Project, MTA would continue to play a significant role in avoiding carbon emissions by enhancing public transit opportunities in a sustainable manner. A recent study released by the MTA noted that by providing a fuel-efficient transportation alternative, the MTA avoids an estimated 20 million metric tons of GHG emissions per year.[8] Moreover, by increasing mass transit options through capital expansions and aggressively reducing its vehicle and facility emissions, the MTA continuously mitigates the local accelerators of climate change. As a result, people living in the MTA's service region are among the most carbon-frugal in the nation. To that end, as a result of transit use in the New York City metropolitan area, the rate of transportation emissions locally is 1.9 metric tons of GHG emissions per capita, compared to the national average of 5.9 metric tons per capita.[9] Building upon this commitment, MTA has committed to reduce emissions from MTA operations by at least 85% by 2040, from a 2015 baseline.[10] Additional information on how MTA avoids emitting GHG emissions, strives for energy efficiency, and planned solar developments, is available online at https://new.mta.info/climate.

MTA's Department of Environmental Sustainability and Compliance, specifically the Climate Adaptation Task Force, is strategically involved in climate adaptation work throughout the MTA system. To increase climate resilience and examine

[8] MTA. MTA Avoids More Than 20 Million Metric Tons of Carbon Emissions Annually.Available at https://new.mta.info/document/109121. Accessed May 20, 2023.

[9] MTA. Climate and the MTA. Available at https://new.mta.info/climate. Accessed May 20, 2023.

[10] MTA. MTA Commits to Slash Greenhouse Gas Emissions by 85%. Available at https://new.mta.info/press-release/mta-commits-slash-greenhouse-gas-emissions-85-2040. Accessed May 20, 2023.

potential adaptive management strategies, the following suggested climate change considerations could be implemented during project design:[11]

- Elevate critical equipment (such as electrical equipment) and other critical transportation assets above FEMA 500-year flood elevations or higher.
- Acquire energy efficient emergency generators and high-capacity pump equipment.
- Develop rapid recovery plans.
- Use water-resistant materials in construction.
- Design stations with interior and exterior flood protections.
- Elevate lighting fixtures, which should also be energy efficient models.
- Independent of the North Shore BRT project, to reduce flood risks, protect fixed assets such as bus depots located at low elevations near the waterfront. Consider evaluating well-engineered floodgates for their feasibility and effectiveness during serious coastal storm surges.

[11] 2019 MTA Climate Adaptation Task Force Resiliency Report. Available at https://new.mta.info/document/10461. Accessed April 27, 2023.

18 Noise and Vibration

The Proposed Project would add new Bus Rapid Transit (BRT) operations to the study area and may alter traffic patterns on surrounding local streets. The resultant changes in vehicle and bus noise may have the potential to result in significant adverse impacts to noise receptors, such as residences, health care facilities, schools, and parks/open space.

This chapter presents the results of the noise and vibration impact study which includes background on noise and vibration, impact criteria for operational and construction activities, results of the impact assessment, and recommendations for mitigation to minimize potential significant adverse impacts. Noise and vibration effects during the construction-period are detailed in **Chapter 21, Construction**.

Regulatory Background

The noise and vibration impact assessment has been conducted per the guidance of the *CEQR Technical Manual,* the New York State Department of Environmental Conservation (NYSDEC) Program Policy for *Assessing and Mitigation Noise Impacts* (for compliance with SEQRA), and the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (for compliance with NEPA).

Noise and Vibration Descriptors

Noise is typically defined as "unwanted or undesirable sound." Noise is evaluated based on its potential to cause human annoyance. Since humans can hear certain frequencies or pitches of sound better than others, sound levels are measured and reported using a descriptor called the "A-weighted sound level (dBA)" which weights different frequencies of sound to correspond to human hearing. Because sound levels fluctuate from moment to moment, it is useful to characterize the range of levels that may exist over a certain amount of time. This is commonly done by using the following sound level metrics:

- The *Maximum A-weighted Level* (Lmax) represents the highest sound level generated by a source. For mobile sources, the maximum level typically occurs when the source is closest to the measurement or analysis location.
- The *Energy-average Level* (Leq) is a single value that is equivalent in sound energy to the fluctuating levels over a period. The Leq accounts for how loud events are during the period, how long they last, and how many times they occur. Typically, Leq sound

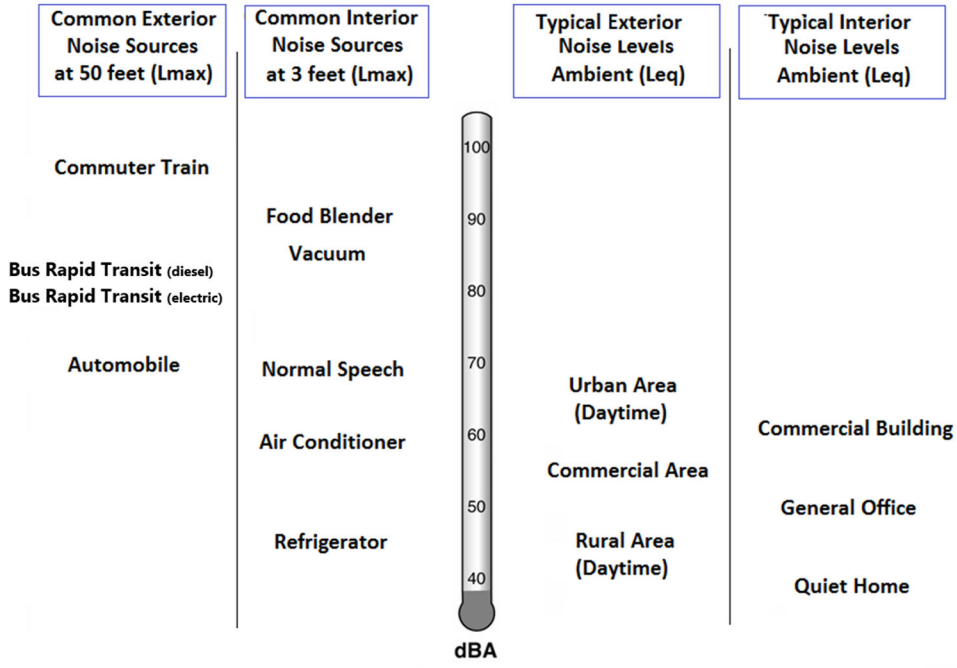
levels are used to describe the time-varying sound level over a 1-hour period and may be denoted as Leq_{1h}. Leq is commonly used to describe environmental noise and relates well to human annoyance.

» The *Day-night Average Level* (Ldn) is a single value that represents the sound energy over a 24-hour period with a 10-decibel (dB) penalty applied to sound that occurs between 10:00 PM and 7:00 AM when people are more sensitive to noise. Ldn accounts for how loud events are, how long they last, how many times they occur, and whether they occur at night. Ldn is commonly used to describe environmental noise and relates well to human annoyance at places people sleep.

» L_{10} is the sound level which is exceeded for 10 percent of the time during a given time period. Therefore, it represents the higher end of the range of sound levels. The unit is used in the 2021 *CEQR Technical Manual* to evaluate acceptable thresholds for noise exposure for new receptors that would be introduced by a proposed development.

Figure 18-1 shows typical A-weighted maximum (Lmax) and energy-average (Leq) sound levels for transit-related and non-transit sources.

Figure 18-1 Typical A-weighted Maximum Sound Levels

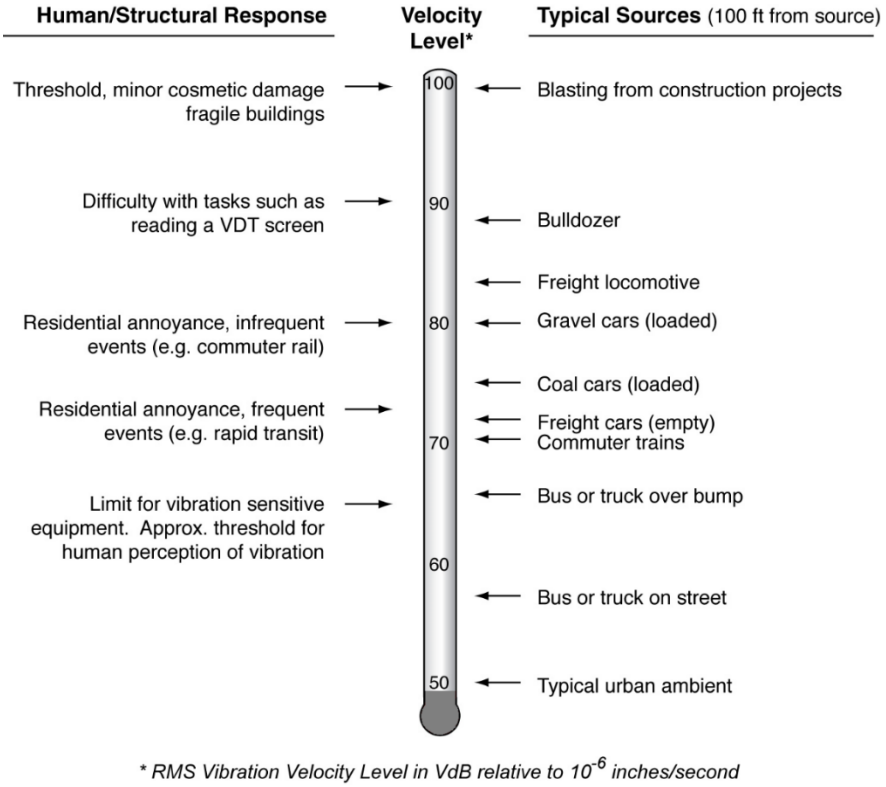


Sources: FTA 2018 and VHB 2023

Transit vehicles including buses and trains also generate ground-borne vibration (defined as the oscillatory motion of the ground), when forces associated with the wheel-rail or tire-pavement interaction are transmitted through the ground and into adjacent buildings. Vibration may be perceptible and disturb people or sensitive activities in nearby buildings.

Vibration levels are often expressed in decibel notation as "dBV" to differentiate them from sound decibels. **Figure 18-2** presents typical ground-borne vibration velocity levels from transportation and construction sources and the typical human and structural response.

Figure 18-2 Typical Ground-borne Vibration Levels



Source: FTA 2018

Noise and Vibration Receptor Categories

Noise-sensitive receptors include land uses where noise has the potential to cause human annoyance due to effects such as speech interference or sleep interference. Vibration-sensitive receptors include buildings where ground-borne vibration has the potential to cause human annoyance due to perceptible vibration or to affect sensitive operations within a facility. The FTA classifies land uses sensitive to noise into the following three categories. These FTA noise and vibration receptor categories are consistent with the *CEQR Technical Manual*.

- **FTA Noise Category 1:** Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.

- **FTA Noise Category 2:** Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity is assumed to be of utmost importance.
- **FTA Noise Category 3:** Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds and certain historical sites and parks with passive use are included in this category. Active parks such as playground and athletic fields are not considered to be sensitive to noise.

Historic properties are categorized for noise assessment based on their use. For example, a historic residence would be considered an FTA Noise Category 2 receptor. Historic properties which do not include noise-sensitive use, such as an historic industrial site, are not assessed for potential operational noise impact and do not warrant mitigation.

Most receptors, such as residences and institutional land uses, are sensitive to both noise and vibration. Since people are less sensitive to vibration in outdoor areas compared to inside buildings, vibration is not assessed in parks. Certain land uses include vibration-sensitive equipment such as high-tech manufacturing, microscopes or imaging equipment. These receptors are not typically sensitive to airborne noise. The FTA classifies land uses sensitive to vibration into the following categories.

- **FTA Vibration Category 1:** Buildings where vibration would interfere with operations that may be well below the threshold of human annoyance. These receptors include vibration-sensitive equipment within research facilities, hospitals, or high-tech manufacturing.
- **FTA Vibration Category 2:** Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels.
- **FTA Vibration Category 3:** Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters and churches where it is important to avoid interference with activities such as meditation and concentration on reading material.

There are some buildings, such as television studios, concert halls, recording studios and theaters that can be very sensitive to noise and/or vibration. Due to the sensitivity of these buildings, they may warrant special attention.

Historic structures are assessed for noise impact relating to potential human annoyance based on their use. For example, vibration in a historic home would be considered an FTA Vibration Category 2 receptor; however, vibration in an industrial building would not be assessed for potential human annoyance. As described in Chapter 21, Construction, all structures are evaluated for potential structural damage due to vibration and historic properties are often considered to be particularly sensitive to vibration and warrant lower vibration thresholds to minimize risk of damage.

Operational Noise Impact Criteria

The following presents operational noise impact criteria applicable to the Proposed Project including FTA impact criteria, NYSDEC noise impact guidelines, and the *CEQR Technical Manual* impact criteria. All three noise impact criteria are relatively similar. The *CEQR Technical Manual* indicates that FTA impact methods and criteria should be used for projects that receive federal funding. The NYSDEC noise impact guidelines are slightly less conservative than the FTA impact criteria. Therefore, the operational noise impact assessment is based on the FTA and CEQR impact criteria. See Chapter 21, Construction for information on the construction noise and vibration impact criteria.

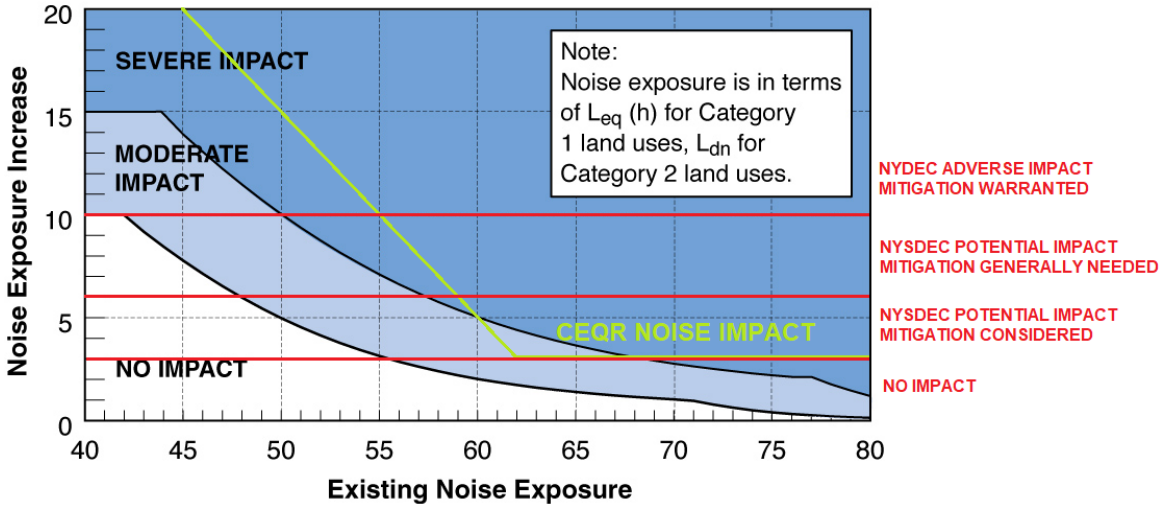
FTA Noise Impact Criteria

FTA noise impact criteria are founded on well-documented research on community reaction to noise and are based on changes in noise exposure using a sliding scale. Lower levels of transit noise are allowed in areas where existing noise levels are relatively low since the introduction of a new noise source can be more perceptible under these conditions. In neighborhoods where existing noise levels are higher, higher levels of transit noise are allowed since the existing noise will tend to mask the new source.

The noise impact criteria for human annoyance, presented in **Figure 18-3**, include the FTA, NYSDEC and CEQR criteria. All three criteria compare the existing outdoor noise to the increase in noise due to the Proposed Project. This figure shows that in areas where existing noise levels are lower, a greater increase in noise is allowable. In areas where existing noise levels are higher, a lower increase in noise is allowable. The FTA defines two levels of impact (severe and moderate), as well as no impact, as summarized below:

- **No Impact:** If the project noise exposure is less than the No Impact criteria, there would be no impact and there is no need to consider mitigation.
- **Moderate Impact:** In this range of noise impact, the change in the noise level is noticeable to most people but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and whether mitigation is reasonable. These factors include the existing noise level, the predicted level of increase over existing noise levels, the types and numbers of noise-sensitive land uses affected, the noise sensitivity of the properties, the effectiveness of the mitigation measures, community views, and the cost of mitigating noise to more acceptable levels.
- **Severe Impact:** Project-generated noise in the severe impact range can be expected to cause a significant percentage of people to be highly annoyed by the new noise and represents the most compelling need for mitigation. Severe impacts have the greatest adverse impact on the community, and mitigation should be strongly considered. Severe impact means that BRT operations are predicted to substantially increase noise exposures at sensitive land uses adjacent to the alignment.

Figure 18-3 FTA, NYSDEC and CEQR Noise Impact Criteria



Sources: FTA 2018, NYSDEC 2006 & VHB 2023

NYSDEC Noise Guidelines

The NYSDEC program policy provides guidance on the methods to assess potential noise impact and avoid or reduce adverse impacts (NYSDEC, 2001) from proposed or existing facilities. The NYSDEC policy addresses noise assessments and mitigation for both construction and operation of a Proposed Project.

As shown in **Figure 18-3** below, the NYSDEC policy includes guidelines for assessing noise impacts and mitigation. The following thresholds are used to assess impact:

- If long-term operations due to a proposed project would increase noise by 3 dB or less, there would be a minimal effect in future noise conditions and there is no need for mitigation.
- Changes in noise less than 3 dB are typically considered to be imperceptible in most environments. If a project would increase ambient noise levels by 3 to 6 dBA, there is potential for adverse noise impact for the most sensitive receptors, and there may be a need for mitigation.
- For increases in noise of 6 to 10 dBA, there is a greater potential for impact, and mitigation is generally needed. For increases in ambient noise of 10 dBA or more, mitigation is warranted where reasonable.

When a noise study indicates that a proposed action may result in a significant adverse impact, NYSDEC requires the applicant to implement reasonable and necessary measures to mitigate or eliminate the adverse effects. If a significant adverse impact is identified, in addition to physical mitigation measures, such as reducing sound at the source or installing noise barriers, an applicant should also consider best management practices (BMPs) to reduce noise by means of modifying noise-generating equipment, limiting the time of noisy operations, or relocating noise sources farther away from receptors. The NYSDEC noise impact guidelines are slightly less conservative than the FTA impact criteria and therefore the FTA impact criteria are used to evaluate potential impact.

CEQR Noise Impact Criteria

In accordance with the *CEQR Technical Manual*, noise impact at existing noise sensitive receptors according to the relative increase between the No-Action and Proposed Project sound levels. As shown in **Figure 18-3** the CEQR noise impact criteria are generally consistent with the FTA Severe Impact criteria. A significant impact would occur if the daytime period noise level significantly exceeds 65 dBA (Leq). The following thresholds are used to assess impact:

- If the No-Action noise level is 60 dBA or less, an increase of 5 dBA or greater with the Proposed Action would be an impact.
- If the No-Action noise level is 62 dBA or more, a 3 dBA increase or greater would be considered a noise impact.
- For nighttime noise occurring between 10:00 P.M. and 7:00 A.M., noise impact would occur if there is a change in noise levels of 3 dBA or more.

Noise is typically evaluated during the peak transportation periods for daytime noise. For the Proposed Project, this includes weekday morning peak, afternoon peak, and Saturday midday periods. Many areas within the study area currently have noise levels exceeding 65 dBA (Leq). In these areas, significant noise impact occurs if the No-Action noise levels area increased by 3 dBA (Leq) or greater.

The *CEQR Technical Manual* also includes noise exposure guidelines based on receptor type, as shown in **Table 18-1**, which are absolute noise limits which apply to new noise-sensitive receptors that would be introduced as part of the proposed project. Since the Proposed Action would not introduce new noise-sensitive receptors, these guidelines do not apply.

Table 18-1 Noise Exposure Guidelines for Use in City Environmental Impact Review[1]

Receptor Type	Time Period	Acceptable External Exposure	Marginally Unacceptable External Exposure	Marginally Unacceptable External Exposure	Clearly Unacceptable External Exposure
1. Outdoor area requiring serenity and quiet[2]		L10 ≤ 55 dBA			
2. Hospital, nursing home		L10 ≤ 55 dBA	55 < L10 ≤ 65 dBA	65 < L10 ≤ 80 dBA	L10 > 80 dBA
3. Residence, residential hotel, or motel	7 AM to 10 PM	L10 ≤ 65 dBA	65 < L10 ≤ 70 dBA	70 < L10 ≤ 80 dBA	L10 > 80 dBA
	10 PM to 7 AM	L10 ≤ 55 dBA	55 < L10 ≤ 70 dBA	70 < L10 ≤ 80 dBA	L10 > 80 dBA
4. School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient public health facility		Same as Residential Day (7 AM to 10 PM)	Same as Residential Day (7 AM to 10 PM)	Same as Residential Day (7 AM to 10 PM)	Same as Residential Day (7 AM to 10 PM)
5. Commercial or office		Same as Residential Day (7 AM to 10 PM)	Same as Residential Day (7 AM to 10 PM)	Same as Residential Day (7 AM to 10 PM)	Same as Residential Day (7 AM to 10 PM)
6. Industrial, public areas only	Note[3]	Note[3]	Note[3]	Note[3]	Note[3]

Notes:

(i) In addition, any new activity shall not increase the ambient noise level by 3 dB(A) or more.

[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.

[2] Tracts of land where serenity and quiet are extraordinarily important and serve as important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.

[3] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

Sources: New York City Department of Environmental Protection (adopted policy 1983), Table 19-2, 2021 *CEQR Technical Manual*

Operational Vibration Impact Criteria

FTA Vibration Impact Criteria

FTA vibration criteria are based on maximum levels for a single event and depend on the type of land use at the receptor and the frequency of bus pass-by events. **Table 18-2**

presents FTA's vibration impact criteria based on the land use category or special-use building and the frequency of bus pass-by events.

The Proposed Project would include a frequent number of events, so the ground-borne vibration impact criteria range from 65 to 72 VdB depending on the land use category. There is generally a very low potential for vibration impact from rubber-tired vehicles.

Table 18-2 FTA Ground-Borne Vibration Impact Criteria

	Ground-Borne Vibration Levels (VdB)[1]		
Land Use Category	**Frequent Events[2]**	**Occasional Events[3]**	**Infrequent Events[4]**
Category 1: Buildings where low vibration is essential for interior operations.	65	65	65
Category 2: Residences and buildings where people normally sleep.	72	75	80
Category 3: Institutional buildings with primarily daytime use.	75	78	83
TV Studio/ Recording Studios/Concert Hall	65	65	65
Auditorium	72	80	80
Theatre	72	80	80

Source: FTA 2018

[1] RMS vibration velocity levels are reported in VdB referenced to 1 micro inch per second (ips).

[2]"Frequent Events" is defined as more than 70 vibration events per day.

[3]"Occasional Events" is defined as between 30 and 70 vibration events per day.

[4]"Infrequent Events" is defined as less than 30 vibration events per day.

Existing Conditions

Noise and vibration receptors within the study area include residences, parks, schools, and other institutional land uses. Noise and vibration receptors have been identified throughout the study area and categorized according to the CEQR Noise Exposure Guidelines for Use in City Environmental Impact Review (CEQR Table 19-2) and FTA land use categories (FTA Table 4-3). Land use was identified using the New York City Zoning Tax Lot Database and field observations.

Ambient Noise Measurements

As shown in **Figure 18-4**, ambient noise measurements were conducted at 16 locations using sound level meters meeting the Type I certification according to the American National Standards Institute. Data collected included overall A-weighted and octave-band equivalent sound levels (Leq) and statistical sound level descriptors (Lmax, Lmin, L1, L10, L50, and L90). Measurements were conducted on Saturday November 16, 2019, Tuesday and Wednesday November 19-20, 2019, and Saturday November 23, 2019. A complete record of the measurements, including the specific measurement location, time of measurements, meteorological conditions, equipment used, and significant noise sources were documented.

Measurements were conducted for 20-minute periods during weekday morning and evening peak periods and 1-hour periods during the weekday FTA midday period (7:00

AM to 7:00 PM) at each location. Existing day-night average (Ldn) noise levels have been estimated based on the midday measurements according to FTA methods (FTA manual Appendix E Option 1 and 4) for determining existing noise conditions. Measurements were also conducted for 20 minutes during the Saturday afternoon peak period at six sites near intersections analyzed as part of the Traffic Analysis.

Table 18-5 presents the results of the ambient noise measurements including the site location, BRT alignment section, the Leq, Lmax, L01, L10, L50, L90, and Lmax sound levels. Sound levels range from 52 to 76 dBA (Leq) and 56 to 75 dBA (L10) at all measurement sites and periods. Ldn sound levels have been estimated to range from 50 to 69 dBA. The predominant source of noise in the study area is traffic on the roadway network including existing MTA bus routes such as the S40/90, S44/94, S46/96, S48/98, S53, S54, S57, S59 and S66.

Figure 18-4 Existing Noise Measurement Locations

Table 18-5 Existing Noise Measurements

Measurement Site/Location	BRT Section	Period[1]	Sound Level (dBA) Leq	Lmax	L01	L10	L50	L90	Lmin	Est. Ldn[2]
1/ Richmond Terrace between Hamilton and Wall	1 St. George	AM	60.8	70.0	65.4	64.5	59.1	56.2	49.3	59.3
		MD	61.3	76.9	69.4	64.5	59.1	52.5	48.1	
		PM	63.8	74.7	71.9	67.7	60.8	51.5	50.6	
		SAT	63.9	79.2	72.8	68.1	59.0	52.5	49.3	
M2/ Richmond Terrace between St. Peters and Nicholas	1 St. George	AM	69.6	86.2	77.2	72.6	67.2	61.3	57.5	68.3
		MD	70.3	86.2	77.5	74.3	67.4	58.7	51.1	
		PM	68.2	78.4	76.1	71.9	65.7	55.3	54.0	
M3/ Richmond Terrace between Jersey Street and Westervelt	1 St. George	AM	61.7	76.7	66.4	64.4	58.6	56.0	48.2	66.1
		MD	68.1	82.7	76.6	71.2	66.1	59.8	53.9	
		PM	75.5	99.4	84.8	72.1	65.9	59.0	54.9	
		SAT	66.1	79.0	75.0	69.4	63.5	55.1	51.6	
M4/ Richmond Terrace at Snug Harbor Park	2 New Brighton Waterfront	AM	59.7	74.8	64.7	61.4	58.9	56.4	53.0	56.7
		MD	58.7	74.8	64.6	60.8	57.8	55.0	51.8	
		PM	58.0	71.2	63.9	59.7	57.3	55.0	51.7	
M5/ Richmond Terrace at Elizabeth Avenue	3 West Brighton Waterfront	AM	74.4	79.5	77.2	73.1	68.2	61.6	56.5	68.7
		MD	70.7	92.7	79.4	73.3	67.6	60.3	54.9	
		PM	67.7	83.3	75.3	70.4	66.5	57.0	48.0	
M6/ Richmond Terrace between N. Burgher and Broadway	3 West Brighton Waterfront	AM	64.9	77.6	67.8	66.7	64.1	63.4	59.1	63.2
		MD	65.2	78.7	71.1	67.0	64.3	59.7	57.0	
		PM	62.1	79.0	69.9	63.9	60.9	51.8	49.0	
		SAT	66.8	74.5	70.5	63.7	58.7	52.4	48.6	
M7/ Park Avenue at BRT Alignment	4 Viaduct	AM	57.3	75.3	67.7	61.0	51.0	46.3	43.3	55.8
		MD	57.8	79.3	69.2	59.4	51.5	47.0	43.2	
		PM	58.4	82.0	69.6	58.6	47.9	44.6	42.8	
M8/ Sharpe Avenue at BRT Alignment	4 Viaduct	AM	55.7	73.7	66.3	57.7	51.0	47.6	45.8	58.1
		MD	60.1	84.2	71.2	60.7	51.8	47.7	45.1	
		PM	53.7	69.5	63.8	56.0	50.4	46.8	43.8	

Table 18-5 Existing Noise Measurements

Measurement Site/Location	BRT Section	Period[1]	Sound Level (dBA) Leq	Lmax	L01	L10	L50	L90	Lmin	Est. Ldn[2]
M9/ Riverside Lane at BRT Alignment	4 Viaduct	AM	58.5	78.0	70.7	60.3	53.3	50.6	50.0	55.6
		MD	57.6	79.0	67.3	60.0	53.9	47.4	46.1	
		PM	58.3	78.5	70.7	61.2	48.7	45.6	44.8	
M10/ John St near Bayonne Bridge	4 Viaduct	AM	60.1	73.0	68.1	62.1	58.2	56.4	54.5	57.1
		MD	59.1	75.4	66.6	61.7	57.3	54.9	52.0	
		PM	58.0	72.6	67.1	59.4	56.1	54.4	52.6	
M11/ Simonson Avenue at BRT Alignment	5 Open-Cut	AM	63.8	82.2	75.1	66.4	53.3	46.8	44.7	56.8
		MD	58.8	81.6	70.7	59.5	50.8	45.5	41.6	
		PM	56.8	74.7	69.7	58.7	48.0	45.3	44.0	
M12/ Bush Avenue at BRT Alignment	5 Open-Cut	AM	53.8	69.7	63.4	57.7	49.4	44.9	43.5	50.1
		MD	52.1	66.8	61.7	55.7	48.2	44.0	42.1	
		PM	52.5	67.2	63.1	57.2	46.2	42.0	40.3	
M13/ South Avenue at BRT Alignment	6 Arlington Station	AM	70.6	89.6	80.0	73.5	66.8	57.8	53.7	69.1
		MD	71.1	85.9	80.5	74.3	68.7	58.3	51.3	
		PM	71.6	85.7	81.2	74.5	69.4	58.7	54.1	
		SAT	67.9	93.6	76.7	71.3	64.0	50.9	46.4	
M14/ South Avenue between Forest and Amador	7 South Avenue	AM	68.7	80.1	75.5	72.2	67.6	53.3	52.3	66.7
		MD	68.7	82.9	74.4	71.8	67.9	50.4	49.1	
		PM	68.3	77.0	72.3	71.4	67.5	65.7	49.2	
M15/ South Avenue and Teleport Drive	7 South Avenue	AM	65.4	76.2	72.2	69.0	63.4	58.1	54.0	62.2
		MD	64.2	77.6	72.2	66.9	62.7	58.8	54.9	
		PM	64.0	73.8	72.0	66.7	62.4	58.4	55.2	
		SAT	62.9	93.9	70.3	65.2	55.9	49.7	47.1	
M16/ South Avenue and Travis Avenue	7 South Avenue	AM	66.4	75.4	72.8	69.3	65.0	61.5	58.1	62.6
		MD	64.6	79.7	73.4	67.1	62.5	59.0	51.6	
		PM	64.4	74.2	71.9	67.2	62.8	58.9	52.0	
		SAT	65.7	77.6	70.2	68.2	63.4	62.0	53.2	

[1] AM (morning peak), MD (midday between 7:00 AM and 7:00 PM), PM (evening peak), SAT (Saturday)
[2] Ldn estimated based on midday measurement result (minus 2 dBA); Source: VHB 2020

Existing noise conditions within each section of the Proposed Project are described below:

Section 1: St. George

Noise and vibration receptors within the St. George section of the study area include single-family residences, multi-family residences and institutional land uses such as the Staten Island Family Court, State Island Borough Hall, Richmond County Court, Assembly of Believers Church, and PS 59 Harbor View School. Existing noise levels measured at Sites 1, 2, and 3 within Section 1 ranged from 61 to 76 dBA (Leq).

Section 2: New Brighton Waterfront

Noise and vibration receptors within the New Brighton Waterfront section of the study area include single-family residences, multi-family residences and the Snug Harbor Cultural Center and Botanical Garden which includes parks for passive recreation, a music hall, and the Noble Maritime Collection museum. Existing noise levels measured at Site 4 within the Snug Harbor Cultural Center setback from Richmond Terrace within Section 2 ranged from 58 to 60 dBA (Leq).

Section 3: West Brighton Waterfront

Noise and vibration receptors within the West Brighton Waterfront section of the study area include single-family residences, multi-family residences, the Community Christian Center, and the Richmond Terrace Cemetery. Existing noise levels measured at Sites 5 and 6 within Section 3 ranged from 62 to 74 dBA (Leq).

Section 4: Viaduct

Noise and vibration receptors within the Viaduct section of the study area include primarily single-family and multi-family residences, the Port Richmond High School, and the Staten Island Buddhist Vihara. Existing noise levels measured at Sites 7, 8, 9, and 10 ranged from 54 to 60 dBA (Leq).

Section 5: Open-Cut Section

Noise and vibration receptors within the Open-Cut section of the study area include single-family and multi-family residences, the Deeper Life Bible Church, St. Clement's Roman Catholic Church, Calvary Chapel, Summerfield Staten Island United Church, and the Port Richmond Day Nursery. Existing noise levels measured at Sites 11 and 12 range from 52 to 64 dBA (Leq).

Section 6: Arlington Station

Noise and vibration receptors within the Arlington Station section of the study area include single-family residences, multi-family residences, and the Christian Church. Existing noise levels measured at Site 13 ranged from 68 to 72 dBA (Leq).

Section 7: South Avenue

Noise and vibration receptors within the South Avenue section of the study area include single-family residences, multi-family residences, and the Richmond County Youth

Complex. Existing noise levels measured at Sites 14, 15, and 16 ranged from 63 to 69 dBA (Leq).

No-Action Condition

Under the No-Action condition, the Proposed Project would not be implemented, and the existing former North Shore Railroad right-of-way would remain abandoned and unimproved. Bus service on local streets would continue to operate at existing levels on the roadway network. There would be no increase in noise or vibration due to BRT operations and there would be no potential for impact.

No-Action Traffic Noise

As described in Chapter 15, Transportation, traffic would be expected to increase due to long-term background growth and new developments that could occur including small, moderately sized, and large-scale projects. Increases in traffic would result in increases in traffic noise. Detailed traffic analyses have been conducted at 30 intersections within the study area including the development of volume network flow maps and turning movement counts.

The increase in traffic noise with the No-Action condition has been calculated based on proportional modeling of passenger car equivalents (PCEs) which are based on traffic volumes and the breakdown by vehicle type (i.e., automobiles, medium trucks, heavy trucks, and buses). The *2021 CEQR Technical Manual* describes the process to determine PCEs. Vehicle classes are defined to have the following PCEs based on typical vehicles speeds:

- Each automobile or light truck: 1 noise PCE
- Each medium truck: 13 noise PCEs
- Each bus: 18 noise PCEs
- Each heavy truck: 47 noise PCEs

No-Action noise increases are calculated using the following equation:

$$No - Action\ L_{eq}\ Increase = 10 * \log\left(\frac{No - Action\ PCE}{Existing\ PCE}\right)$$

Table 18-6 presents the results of the No-Action PCE traffic noise proportional modeling. This table shows that No-Action morning peak, afternoon peak, and Saturday noise levels would increase up to 1.6, 2.3, and 1.0 dBA, respectively. The greatest increase in noise would occur at intersection T4 at Richmond Terrace and Wall Street.

Table 18-7 presents the No-Action noise levels at each of the 16 noise measurement sites accounting for the increase in traffic noise with the No-Action condition. The peak morning No-Action noise levels would range from 55 to 76 dBA (Leq) and the peak afternoon No-Action noise levels would range from 54 to 77 dBA (Leq).

Table 18-6 No-Action PCE Traffic Noise Analysis

Intersection	Existing AM Peak PCE	Existing PM Peak PCE	Existing Saturday PCE	No-Action AM Peak PCE	No-Action PM Peak PCE	No-Action Saturday PCE	PCE Noise Increase AM Peak	PCE Noise Increase PM Peak	PCE Noise Increase Saturday
T1/ Richmond Terrace & Ferry Terminal Viaduct &	4,884	4,642	4,123	6,094	6,205	3,709	1.0	1.3	-0.5
T2/ Richmond Terrace & Ferry Terminal Viaduct	4,003	3,622	3,324	5,211	5,288	3,132	1.1	1.6	-0.3
T3/ Richmond Terrace & Schuyler Street	3,004	2,319	2,045	4,204	3,929	2,311	1.5	2.3	0.5
T4/ Richmond Terrace & Wall Street	3,012	2,312	2,061	4,179	3,935	2,394	1.4	2.3	0.7
T5/ Richmond Terrace & Hamilton Avenue	2,901	2,307	2,040	4,084	3,922	2,459	1.5	2.3	0.8
T6/ Richmond Terrace & Stuyvesant Place	2,994	2,316	2,048	4,227	3,930	2,382	1.5	2.3	0.7
T7/ Richmond Terrace & Nicholas Street	3,151	2,381	2,085	4,385	3,985	2,385	1.4	2.2	0.6
T8/ Richmond Terrace & St Peters Place	3,105	2,385	2,060	4,395	3,978	2,330	1.5	2.2	0.5
T9/ Richmond Terrace & Westervelt Avenue	3,366	2,646	2,298	4,601	4,144	2,736	1.4	1.9	0.8
T10/ Richmond Terrace & Jersey Street	3,532	2,682	2,269	4,885	4,169	2,754	1.4	1.9	0.8
T11/ Richmond Terrace & Franklin Avenue	2,818	2,524	2,053	4,055	4,040	2,577	1.6	2.0	1.0
T12/ Richmond Terrace & Lafayette Avenue	2,870	2,549	2,192	4,089	3,989	2,731	1.5	1.9	1.0
T13/ Richmond Terrace & Bard Avenue	2,765	2,461	2,141	4,009	3,890	2,469	1.6	2.0	0.6
T14/ Richmond Terrace & Broadway	3,247	2,611	2,259	4,467	4,033	2,532	1.4	1.9	0.5
T15/ Richmond Terrace & Alaska Street	3,215	2,535	2,210	4,555	3,927	2,815	1.5	1.9	1.1
T16/ Richmond Terrace & Jewett Avenue	4,047	3,077	2,810	5,333	4,334	2,362	1.2	1.5	-0.8
T17/ Richmond Terrace & Heberton Avenue	3,574	2,815	2,810	4,738	4,006	2,305	1.2	1.5	-0.9
T18/ Castleton Avenue & Port Richmond Avenue	3,426	2,112	1,857	3,690	2,255	1,715	0.3	0.3	-0.3
T19/ Castleton Avenue & Jewett Avenue	3,542	2,495	2,145	3,898	2,718	1,753	0.4	0.4	-0.9
T20/ Forest Avenue & Jewett Avenue	3,778	2,782	2,578	3,882	2,765	2,171	0.1	0.0	-0.7
T21/ Forest Avenue & Willowbrook Road	5,672	3,555	3,511	6,064	3,727	2,979	0.3	0.2	-0.7
T22/ Forest Avenue & Morningstar Road	6,124	4,600	4,421	6,538	4,783	3,613	0.3	0.2	-0.9
T23/ South Avenue & Brabant Street	2,815	1,838	2,180	2,998	1,918	1,781	1.2	1.5	-0.9
T24/ South Avenue & Cable Way	2,886	1,769	1,903	3,123	1,866	1,648	0.3	0.2	-0.6
T25/ South Avenue & Forest Avenue	5,327	3,436	3,674	5,795	3,683	3,583	0.4	0.3	-0.1
T26/ South Avenue & Goethals Road North	5,507	3,752	3,129	5,825	4,095	2,797	0.2	0.4	-0.5
T27/ South Avenue & Fahy Avenue & Glen Street	4,406	3,370	2,491	4,752	3,965	2,300	0.3	0.7	-0.3
T28/ South Avenue & Ed Curry Avenue	2,493	2,421	1,530	3,048	2,993	1,405	0.9	0.9	-0.4
T29/ South Avenue & Teleport Drive	3,000	2,318	1,477	3,584	2,655	1,353	0.8	0.6	-0.4
T30/ South Avenue & Travis Avenue	3,278	2,592	1,978	3,834	2,896	1,889	0.7	0.5	-0.2

Source: VHB 2023

Table 18-7 No-Action Traffic Noise Levels

Measurement Site/Location	Applicable Intersection	Existing AM Peak (Leq)	Existing PM Peak (Leq)	Existing Saturday (Leq)	Existing Est. Ldn	PCE Noise Increase AM Peak	PCE Noise Increase PM Peak	PCE Noise Increase Saturday (Leq)	No-Action AM Peak (Leq)	No-Action PM Peak (Leq)	No-Action Saturday (Leq)	No-Action Est. (Ldn)
M1/ Richmond Terrace between Hamilton and Wall	T5	60.8	63.8	63.9	59.3	1.5	2.3	0.8	62.3	66.1	64.7	61.6
M2/ Richmond Terrace between St. Peters and Nicholas	T8	69.6	68.2	N/A	68.3	1.5	2.2	0.5	71.1	70.4	N/A	70.5
M3/Richmond Terrace between Jersey Street and Westervelt	T10	61.7	75.5	66.1	66.1	1.4	1.9	0.8	63.1	77.4	66.9	68.0
M4/ Richmond Terrace at Snug Harbor Park	T12	59.7	58.0	N/A	56.7	1.5	1.9	1.0	61.2	59.9	N/A	58.6
M5/ Richmond Terrace at Elizabeth Avenue	T13	74.4	67.7	N/A	68.7	1.6	2.0	0.6	76.0	69.7	N/A	70.7
M6/ Richmond Terrace between N. Burgher and Broadway	T14	64.9	62.1	66.8	63.2	1.4	1.9	0.5	66.3	64.0	67.3	65.1
M7/ Park Avenue at BRT Alignment	T17	57.3	58.4	N/A	55.8	1.2	1.5	-0.9	58.5	59.9	N/A	57.3
M8/ Sharpe Avenue at BRT Alignment	T17	55.7	53.7	N/A	58.1	1.2	1.5	-0.9	56.9	55.2	N/A	59.6
M9/ Riverside Lane at BRT Alignment	T17	58.5	58.3	N/A	55.6	1.2	1.5	-0.9	59.7	59.8	N/A	57.1
M10/ John St near Bayonne Bridge	T17	60.1	58.0	N/A	57.1	1.2	1.5	-0.9	61.3	59.5	N/A	58.6
M11/ Simonson Avenue at BRT Alignment	T17	63.8	56.8	N/A	56.8	1.2	1.5	-0.9	65.0	58.3	N/A	58.3
M12/ Bush Avenue at BRT Alignment	T17	53.8	52.5	N/A	50.1	1.2	1.5	-0.9	55.0	54	N/A	51.6
M13/ South Avenue at BRT Alignment	T23	70.6	71.6	67.9	69.1	1.2	1.5	-0.9	71.8	73.1	67.0	70.6
M14/ South Avenue between Forest and Amador	T25	68.7	68.3	N/A	66.7	0.4	0.3	-0.1	69.1	68.6	N/A	67.1
M15/ South Avenue and Teleport Drive	T29	65.4	64.0	62.9	62.2	0.8	0.6	-0.4	66.2	64.6	62.5	63.0
M16/ South Avenue and Travis Avenue	T30	66.4	64.4	65.7	62.6	0.7	0.5	-0.2	62.3	66.1	64.7	61.6

Source: VHB 2023

With-Action Condition

The Proposed Project would implement new BRT service between West Shore Plaza and St. George Terminal and would change traffic conditions which have the potential to change noise conditions. This section summarizes the proposed BRT operations, the change in traffic noise based on proportional modeling, the change in noise due to BRT operations, the results of the operational noise and vibration impact assessment, and the evaluation of operational mitigation measures.

Operational Noise Impact Assessment

With-Action Traffic Noise

There would be relatively limited changes in traffic noise due to the Proposed Project. For most of the proposed BRT alignment, the BRT would not interface with surface streets as the alignment would be placed within the former North Shore ROW that is separated from the existing roadway network. Where the BRT continues along South Avenue between Arlington and the West Shore Plaza terminus, there would simply be additional bus service running in mixed traffic, and general traffic operations would be largely unaffected. As described in Chapter 15, Transportation, there would be changes on Richmond Terrace, between Nicholas Street and St. George such as realigning the intersection of Richmond Terrace and Stuyvesant, providing new dedicated turning lanes, and prohibiting certain turning movements.

Table 18-8 presents the results of the PCE traffic noise proportional modeling for the Proposed Project (2035). This table shows that With-Action traffic noise levels would be within a few tenths of a decibel at most intersections. The greatest change in traffic noise would be along Richmond Terrace. At Richmond Terrace and Wall Street, the greatest increse in traffic noise would be 5.1 dBA during the Saturday period.

Table 18-9 presents the With-Action traffic noise levels at each of the 16 noise measurement sites accounting for the increase in traffic noise with the Proposed Project. The peak morning With-Action traffic noise levels would range from 56 to 76 dBA (Leq) and the peak afternoon With-Action noise levels would range from 54 to 78 dBA (Leq).

Table 18-8 With-Action (2027) PCE Traffic Noise Analysis

Intersection	No-Action AM Peak PCE	No-Action PM Peak PCE	No-Action Saturday PCE	With-Action AM Peak PCE	With-Action PM Peak PCE	With-Action Saturday PCE	PCE Noise Increase AM Peak	PCE Noise Increase PM Peak	PCE Noise Increase Saturday
T1/ Richmond Terrace & Ferry Terminal Viaduct &	6,094	6,205	3,709	6,721	8,705	5,224	0.4	1.5	1.5
T2/ Richmond Terrace & Ferry Terminal Viaduct	5,211	5,288	3,132	6,321	7,654	4,915	0.8	1.6	2.0
T3/ Richmond Terrace & Schuyler Street	4,204	3,929	2,311	4,792	5,735	3,941	0.6	1.6	2.3
T4/ Richmond Terrace & Wall Street	4,179	3,935	2,394	7,343	9,948	7,665	2.4	4.0	5.1
T5/ Richmond Terrace & Hamilton Avenue	4,084	3,922	2,459	5,170	5,345	3,567	1.0	1.3	1.6
T6/ Richmond Terrace & Stuyvesant Place	4,227	3,930	2,382	5,429	5,723	3,528	1.1	1.6	1.7
T7/ Richmond Terrace & Nicholas Street	4,385	3,985	2,385	5,335	5,446	3,892	0.9	1.4	2.1
T8/ Richmond Terrace & St Peters Place	4,395	3,978	2,330	4,684	4,850	3,065	0.3	0.9	1.2
T9/ Richmond Terrace & Westervelt Avenue	4,601	4,144	2,736	4,894	5,169	3,490	0.3	1.0	1.1
T10/ Richmond Terrace & Jersey Street	4,885	4,169	2,754	5,436	5,095	3,833	0.5	0.9	1.4
T11/ Richmond Terrace & Franklin Avenue	4,055	4,040	2,577	4,417	4,696	3,382	0.4	0.7	1.2
T12/ Richmond Terrace & Lafayette Avenue	4,089	3,989	2,731	4,404	4,786	3,471	0.3	0.8	1.0
T13/ Richmond Terrace & Bard Avenue	4,009	3,890	2,469	4,382	4,686	3,223	0.4	0.8	1.2
T14/ Richmond Terrace & Broadway	4,467	4,033	2,532	4,873	4,723	3,405	0.4	0.7	1.3
T15/ Richmond Terrace & Alaska Street	4,555	3,927	2,815	5,325	5,014	3,851	0.7	1.1	1.4
T16/ Richmond Terrace & Jewett Avenue	5,333	4,334	2,362	5,712	4,911	2,927	0.3	0.5	0.9
T17/ Richmond Terrace & Heberton Avenue	4,738	4,006	2,305	5,269	4,390	2,666	0.5	0.4	0.6
T18/ Castleton Avenue & Port Richmond Avenue	3,690	2,255	1,715	3,769	2,454	1,825	0.1	0.4	0.3
T19/ Castleton Avenue & Jewett Avenue	3,898	2,718	1,753	4,049	3,111	2,266	0.2	0.6	1.1
T20/ Forest Avenue & Jewett Avenue	3,882	2,765	2,171	4,298	3,867	3,354	0.4	1.5	1.9
T21/ Forest Avenue & Willowbrook Road	6,064	3,727	2,979	6,595	4,742	4,168	0.4	1.0	1.5
T22/ Forest Avenue & Morningstar Road	6,538	4,783	3,613	6,874	5,752	4,758	0.2	0.8	1.2
T23/ South Avenue & Brabant Street	2,998	1,918	1,781	3,389	2,608	2,218	0.5	1.3	1.0
T24/ South Avenue & Cable Way	3,123	1,866	1,648	3,497	2,496	2,077	0.5	1.3	1.0
T25/ South Avenue & Forest Avenue	5,795	3,683	3,583	6,471	5,478	5,318	0.5	1.7	1.7
T26/ South Avenue & Goethals Road North	5,825	4,095	2,797	6,819	5,796	4,397	0.7	1.5	2.0
T27/ South Avenue & Fahy Avenue & Glen Street	4,752	3,965	2,300	5,419	5,157	3,137	0.6	1.1	1.3
T28/ South Avenue & Ed Curry Avenue	3,048	2,993	1,405	3,913	4,174	1,639	1.1	1.4	0.7
T29/ South Avenue & Teleport Drive	3,584	2,655	1,353	4,502	3,588	1,577	1.0	1.3	0.7
T30/ South Avenue & Travis Avenue	3,834	2,896	1,889	5,001	4,261	2,148	1.2	1.7	0.6

Source: VHB 2023

Table 18-9 With-Action Traffic Noise Levels

Measurement Site/Location	Applicable Intersection	No-Action AM Peak (Leq)	No-Action PM Peak (Leq)	No-Action Saturday (Leq)	No-Action Est. Ldn	PCE Noise Increase AM Peak	PCE Noise Increase PM Peak	PCE Noise Increase Saturday (Leq)	With-Action AM Peak (Leq)	With-Action PM Peak (Leq)	With-Action Saturday (Leq)	With-Action Est. (Ldn)
M1/ Richmond Terrace between Hamilton and Wall	T5	62.3	66.1	64.7	61.6	1.0	1.3	1.6	63.3	67.4	66.3	63.2
M2/ Richmond Terrace between St. Peters and Nicholas	T8	71.1	70.4	N/A	70.5	0.3	0.9	1.2	71.4	71.3	N/A	71.7
M3/Richmond Terrace between Jersey Street and Westervelt	T10	63.1	77.4	66.9	68	0.5	0.9	1.4	63.6	78.3	68.3	69.4
M4/ Richmond Terrace at Snug Harbor Park	T12	61.2	59.9	N/A	58.6	0.3	0.8	1.0	61.5	60.7	N/A	59.6
M5/ Richmond Terrace at Elizabeth Avenue	T13	76	69.7	N/A	70.7	0.4	0.8	1.2	76.4	70.5	N/A	71.9
M6/ Richmond Terrace between N. Burgher and Broadway	T14	66.3	64	67.3	65.1	0.4	0.7	1.3	66.7	64.7	68.6	66.4
M7/ Park Avenue at BRT Alignment	T17	58.5	59.9	N/A	57.3	0.5	0.4	0.6	59	60.3	N/A	57.9
M8/ Sharpe Avenue at BRT Alignment	T17	56.9	55.2	N/A	59.6	0.5	0.4	0.6	57.4	55.6	N/A	60.2
M9/ Riverside Lane at BRT Alignment	T17	59.7	59.8	N/A	57.1	0.5	0.4	0.6	60.2	60.2	N/A	57.7
M10/ John St near Bayonne Bridge	T17	61.3	59.5	N/A	58.6	0.5	0.4	0.6	61.8	59.9	N/A	59.2
M11/ Simonson Avenue at BRT Alignment	T17	65	58.3	N/A	58.3	0.5	0.4	0.6	65.5	58.7	N/A	58.9
M12/ Bush Avenue at BRT Alignment	T17	55	54	N/A	51.6	0.5	0.4	0.6	55.5	54.4	N/A	52.2
M13/ South Avenue at BRT Alignment	T23	71.8	73.1	67	70.6	0.5	1.3	1.0	72.3	74.4	68	71.9
M14/ South Avenue between Forest and Amador	T25	69.1	68.6	N/A	67.1	0.5	1.7	1.7	69.6	70.3	N/A	68.8
M15/ South Avenue and Teleport Drive	T29	66.2	64.6	62.5	63	1.0	1.3	0.7	67.2	65.9	63.2	64.3
M16/ South Avenue and Travis Avenue	T30	66.4	64.4	65.7	62.6	1.2	1.7	0.6	67.6	66.1	66.3	64.3

Source: VHB 2023

BRT Operations

BRT service under the Proposed Project would be provided on two routes, the S1 and S2. Each would utilize a fully electric-powered bus technology. The S1 would operate in the busway between St. George Terminal and the proposed Arlington Station before entering mixed traffic on South Avenue to West Shore Plaza. The S2 would travel on the proposed busway between St. George and Arlington. There would be seven busway stations along the study area and three on-street stops along South Avenue.

Additionally, three existing local routes would be extended to enter the busway to improve travel times to St. George Terminal. These feeder routes include the S53, S54, and S57 which would use the existing non-electric bus fleet. The S53 would enter the busway via Alaska Street and would operate between Arlington and Bay Ridge. The S54 would enter the busway via Bard Avenue and would operate between St. George and Eltingville. The S57 would enter the busway via Alaska Street and would operate between St. George and New Dorp. By 2040, MTA has committed to an all-electric bus fleet. The S40 would maintain local service along Richmond Terrace. Two bus routes, the S90, offering service between the Matrix Global Logistics Park and the St. George Terminal and the S96 operating between West Shore Plaza and St. George Terminal would be eliminated under the Proposed Project. **Table 18-10** presents the total number of electric and diesel buses during the daytime and nighttime for each BRT section.

The BRT alignment has been designed for an operating speed of 40 mph with the posted speed at 35 mph throughout most of the project limits. Electric buses are quieter than diesel buses, particularly at lower speeds and while idling at stations. The maximum noise level from electric buses is approximately 77 dBA at a distance of 50 feet and a speed of 50 mph compared to a maximum noise level of 79 dBA for diesel buses.

Table 18-10 Proposed BRT Operations by Section (2035) for Noise Assessment

	Buses During the Daytime (7:00 AM to 10:00 PM)			Buses During the Nighttime (10:00 PM to 7:00 AM)		
BRT Section	**Electric**	**Diesel**	**Total**	**Electric**	**Diesel**	**Total**
1. St. George	164	102	265	52	13	65
2. New Brighton Waterfront	164	102	265	52	10	62
3. West Brighton Waterfront	164	56	219	52	13	65
4. Viaduct	254	0	254	97	0	97
5. Open-Cut	254	0	254	97	0	97
6. Arlington Station	254	0	254	97	0	97
7. South Avenue	86	0	86	25	0	25

Source: VHB 2023

BRT Noise

Noise from BRT operations has been evaluated according to the methods described in the FTA's *Transit Noise and Vibration Impact Assessment Manual* taking in to account the number of bus operations, the bus technology (i.e., diesel or electric), and intervening

terrain such as the viaduct or open-cut sections. Noise has been evaluated at both ground-level and upper floor receptors. When the direct line-of-sight between a noise source and a receptor is broken by intervening objects such as buildings, terrain, or noise barriers, the noise level is reduced at the receptor.

For the viaduct and open-cut sections, ground-level receptors would not have a direct line of sight to the bus noise sources (assumed to be 3 feet above the busway surface in accordance with FTA guidance). A 42" solid concrete parapet at the edge of the viaduct and the viaduct deck both act to reduce noise from the bus since they break the line of sight between ground-level receptors and the bus noise sources. Similarly, when the bus is in the open-cut section, the top edge of the cut and/or the proposed retaining walls along the right-of-way would block the line of sight and reduce noise from the bus for ground-level receptors. Upper floor receptors (i.e. 2nd or 3rd floors) close the viaduct or open-cut alignments would generally have a direct line of sight to the bus noise sources and there would be no noise attenuation.

Noise Impact Assessment

Table 18-11 summarizes the results of the noise impact assessment including increases in traffic noise and the introduction of BRT operations (see Appendix 0-1, Noise Impact Table for a table of results for each impacted receptor and figures in Appendix 0-2, Operational Noise Figures).

There would be no noise impacts in Sections 1, 2, 3 or 7. There would be a total of 20 severe noise impacts at residences (35 dwelling units) primarily along the Viaduct Section and at upper floor receptor locations. Fifteen of these severe noise impacts would have project noise levels 65 dBA (Ldn) or greater. There would be a total of 141 moderate noise impacts at 135 residences (337 dwelling units) and at six institutional land uses primarily along the Viaduct and Open-Cut Sections of the project. Potential mitigation measures are detailed in Chapter 22, Mitigation.

Table 18-11 Summary of Noise Impacts Buildings (Dwelling Units)

	Severe			Moderate		
BRT Section	**Ground Level and Above**	**Upper Floor Only**	**Total**	**Ground Level and Above**	**Upper Floor Only**	**Total**
1. St. George	0	0	0	0	0	0
2. New Brighton Waterfront	0	0	0	0	0	0
3. West Brighton Waterfront	0	0	0	0	0	0
4. Viaduct	1 (1)	17 (30)	17 (27)	28 (97)	37 (117)	65 (214)
5. Open-Cut	2 (4)	0	2 (4)	8 (10)	68 (117)	76 (127)
6. Arlington Station	0	0	0	0	0	0
7. South Avenue	0	0	0	0	0	0
Total	**3 (5)**	**17 (30)**	**17 (31)**	**36 (107)**	**105 (234)**	**141 (341)**

Source: VHB 2023

Operational Vibration Impact Assessment

Vibration from rubber-tired vehicles rarely exceeds thresholds for human perception except in rare situations where there are substantial discontinuities in the pavement such as expansion joints. According to the FTA's generalized surface vibration curves, rubber-tired vehicles operating at 30 mph only generate vibration levels exceeding 72 VdB (the criterion for residential uses) within approximately 15 feet from the center of the travel lane. Additionally, where the BRT alignment is on structure or in a significant cut, vibration levels are typically reduced further due to the inefficient vibration propagation conditions. There are no vibration-sensitive receptors within 15 feet of the BRT alignment and therefore there would be no operational vibration impact.

Conclusion

A noise and vibration impact assessment has been conducted for the Proposed Project in in accordance with the *CEQR Technical Manual* guidelines and the NYSDEC Program Policy for Assessing and Mitigation Noise Impacts for compliance with SEQRA and the FTA Transit Noise and Vibration Impact Assessment Manual for compliance with NEPA.

Ambient measurements were conducted at 16 locations throughout the study area. The ambient sound levels range from 50 to 69 dBA (Ldn). No-Action morning peak, afternoon peak, and Saturday noise levels would increase up to 1.6, 2.3, and 1.1 dBA, respectively, due to increases in traffic volumes. The greatest increase in noise would occur at the intersection of Richmond Terrace and Wall Street.

With-Action noise conditions were assessed including changes to traffic and the introduction of BRT service. With-Action traffic noise levels would be within a few tenths of a decibel of the No-Action conditions at most intersections. There would be no noise impacts in Sections 1, 2, 3 or 7 of the Proposed Project. There would be a total of 20 severe noise impacts at residences (35 dwelling units) primarily along the Viaduct (Section 4) and at upper floor receptor locations. Fifteen of these severe noise impacts would have project noise levels 65 dBA (Ldn) or greater. There would be a total of 141 moderate noise impacts at 135 residences (337 dwelling units) and at six institutional land uses primarily along the Viaduct and Open-Cut (Section 5 and Section 6) portions of the Proposed Project.

Based on the above findings, the Proposed Project would have significant adverse impacts for noise in the study area prior to mitigation. Potential mitigation measures are detailed in ~~Chapter 22~~ Chapter 23, Mitigation

According to the FTA's generalized surface vibration curves, rubber-tired vehicles operating at 30 mph only generate vibration levels exceeding 72 VdB (the criterion for residential uses) within approximately 15 feet from the center of the travel lane. There would be no operational vibration impact due to the Proposed Project and no need for vibration mitigation.

19 Public Health

This chapter assesses the potential public health impacts of the Proposed Project on communities within the study area. Typically, public health analyses assess the potential for exposure to poor air quality, hazardous materials, noise, and contaminants in the soil and water, and impacts of those exposures, on public health; therefore, this public health analysis summarizes the impact findings of hazardous materials, water quality, air quality, and noise.

As indicated in the *2021 CEQR Technical Manual*, a public health assessment may be warranted if an unmitigated impact is identified in other analysis areas, such as air quality, water quality, hazardous materials or noise. The manual defines a public health assessment as "an analysis and statement of the public health implications posed by activities, a facility, release, or contaminated site under consideration. The public health assessment is an evaluation of relevant environmental data and health outcome data associated with a proposed project where environmental exposures may occur."

If unmitigated significant adverse impacts are identified in any one of these technical areas and the lead agency determines that a public health assessment is warranted, an analysis must be provided for that specific technical area, which would study and disclose the relationship between exposures and the risks to public health.

Regulatory Background and Study Area

According to the *2021 CEQR Technical Manual*, a public health assessment should include the identification of potential environmental exposures to the public as analyzed under other CEQR technical areas. Therefore, the resource findings related to hazardous materials, water and sewer infrastructure, air quality, and noise were considered in the evaluation of potential public health impacts and whether any unmitigated significant adverse impacts have been identified.

Each of the referenced chapters included herein describe the applicable regulatory compliance requirements, existing conditions, potential impacts of the No-Action Condition and With-Action Condition, and suggested mitigation measures specific to each resource, if needed. Please refer to the respective chapters of the resources noted above for more detailed information. A summary of the analyses is included in this chapter.

Existing Conditions

This section of the public health analysis summarizes the existing conditions described in the chapters for hazardous materials, water and sewer infrastructure, solid waste, air quality, and noise.

Hazardous Materials

Potential health exposures from hazardous materials in soil and dust include metals, hazardous compounds, or dust conditions that the public can be exposed to through ingestion, inhalation, or dermal contact. Health effects of exposure can lead to poisonings, gastroenteric illnesses, chronic illnesses, asthma, or respiratory complaints. The potential for health impacts associated with hazardous materials can be evaluated in terms of potential concentrations from the analysis in Chapter 11, Hazardous Materials. The baseline conditions concerning the potential for hazardous material contamination in areas that could be disturbed by the Proposed Project are presented in Chapter 11, Hazardous Materials. A hazardous material is any substance that poses a threat to human health or the environment. The corridor-level Phase I Environmental Site Assessments (ESAs) identified the presence of known hazardous waste or contamination and the presence of environmental problems due to past or current land uses through the of review of regulatory records, historical sources, physical setting sources, and ~~S~~site reconnaissance observations.

Properties along the Proposed Project alignment where contamination has the potential to affect the construction or operation of the Proposed Project (i.e., within the limits of disturbance) are summarized in Table 19-1. The Proposed Project alignment was evaluated for hazardous materials in three sections from east to west, through a review of historical records, a review of regulatory agency records, and site reconnaissance. Chapter 11, Hazardous Materials, presents detailed information on the Corridor Assessment results, including properties outside of the limits of disturbance. Information on all potentially contaminated properties can be found in Appendix L, Corridor Level Environmental Site Assessments.

Table 19-1 Summary of Hazardous Materials Corridor Assessment

Corridor-Level ESA Section	Property Description	Recognized Environmental Conditions (REC) and Environmental Concerns within the Limits of Disturbance
Section 1 (St. George to Jersey Street)	Former railroad and structures	Historic fill of unknown origin and suspect buried structures
	Several current and historic commercial and manufacturing facilities	Potential presence of petroleum-related, metal/polycyclic aromatic hydrocarbon (PAH)-related, and/or chlorinated-solvent-related contaminated soil and/or groundwater
	Three 55-gallon drums on a contractor's storage yard	Potential unreported releases or mismanagement
	Stockpiled soil along the Richmond Terrace retaining wall	Unknown source of the material which may contain fill material and suspect buried debris
	Potential areas were noted where could occur asbestos- and polychlorinated biphenyls (PCB)-containing materials and lead-based paint	These substances may be present in areas of older infrastructure, where caulking materials and paints may not conform to current standards
Section 2 (Jersey Street to Alaska Street)	Former inundated area subject to historic landfilling	Historic fill of unknown origin and suspect buried structures
	Former railroad	Potential for railroad-related contaminants deposited during former rail operations (including petroleum products, creosote from wood ties, and arsenic from herbicides) and adjacent industrial activities
	Current and historic commercial and manufacturing facilities	Potential presence of petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminated soil and/or groundwater
	Two properties potentially within the proposed alignment	Potential presence of petroleum-related, metal/PAH-related, and/or chlorinated-solvent-related contaminated soil and/or groundwater
	Potential areas were noted where could occur asbestos- and PCB-containing materials and lead-based paint	These substances may be present in areas of older infrastructure, where caulking materials and paints may not conform to current standards
	Filled and developed portion of the proposed alignment	Organic-rich deposits from historic landfilling have the potential to generate methane

Table 19-1 Summary of Hazardous Materials Corridor Assessment

Corridor-Level ESA Section	Property Description	Recognized Environmental Conditions (REC) and Environmental Concerns within the Limits of Disturbance
Section 3 (Alaska Street to South Avenue)	Area between Heritage Park and the Port Richmond Wastewater Resource Recovery Facility formerly inundated area subject to historic landfilling	Historic fill of unknown origin and suspect buried structures
	Former railroad and former railway storage yard	Potential presence of petroleum-related contaminants in soil and/or groundwater
	Several current and historic commercial and manufacturing facilities	Potential petroleum-related, metal/PAH-related, and/or chlorinated solvent-related contaminants in soil and/or groundwater
	Potential areas were noted where could occur asbestos- and PCB-containing materials and lead-based paint	These substances may be present in areas of older infrastructure, where caulking materials and paints may not conform to current standards
	Filled and developed portion of the proposed alignment	Organic-rich deposits from historic landfilling have the potential to generate methane

Source: Corridor Assessment of Staten Island North Shore Bus Rapid Transit (BRT) Project, Contract No. CM-0143, SSE No. 0000189595. Prepared for Metropolitan Transportation Authority - New York City Transit on November 4, 2019.

Water and Sewer Infrastructure

Water and sewer infrastructure include the water supply system and wastewater and stormwater conveyance and treatment. Chapter 12, Water and Sewer Infrastructure, describes the existing infrastructure within the study area. Chapter 10, Natural Resources, describes the location of water resources within the study area, including: surface waters, water quality, floodplains, and groundwater resources. Public drinking water is supplied from the Delaware and Catskill systems, which reaches Staten Island through the Richmond Tunnel. The Richmond Tunnel brings water to Staten Island through Brooklyn. From there, a grid of underground distribution mains brings water to the public. Existing distribution mains by section are discussed in Chapter 12.

Within the study area, stormwater runoff and sanitary wastewater are conveyed to an underground conveyance system that consists of a combination of separate and combined sewers. The study area lies within the Arthur Kill-Upper Bay watershed. According to a water quality report published by New York State Department of Environmental Conservation (NYSDEC) for all segments of the Arthur Kill-Upper Bay watershed (last revised December 2016), water quality in the Kill Van Kull is listed as 'Impaired' due to floatable debris, PCBs, oil, grease, and low dissolved oxygen, among other pollutants. The report lists urban/storm

runoff, combined sewer overflows, and toxic/contaminated sediment as known sources of pollution.[1]

Air Quality

Potential health exposures from inhalation of air pollutants such as fine particles, carbon monoxide, nitrogen dioxide, and ozone can lead to the exacerbation of asthma symptoms and can contribute to poor cardiovascular and respiratory health outcomes. Health effects may also occur from exposure to other pollutants from combustion and process emissions such as volatile organic compounds. The potential for health impacts associated with air quality conditions can be evaluated from the results of the analysis detailed in **Chapter 16, Air Quality**. The study area's air quality attainment status and existing pollutant concentrations within the study area, based on data from NYSDEC air monitoring stations, is discussed in **Chapter 16, Air Quality**. At the county level, Richmond County complies with the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, nitrogen dioxide, carbon monoxide, particulate matter (PM_{10}), and lead, but is designated as a nonattainment area for 8-hour ozone and an unclassified/maintenance area for particulate matter ($PM_{2.5}$). **Chapter 16, Air Quality**, presents detailed information on the attainment status and State Implementation Plan.

Noise

Prolonged exposure to high noise levels has the potential to decrease quality of life, raise blood pressure and myocardial infarctions. Chronic exposure to levels above 85 dBA will eventually harm hearing. The noise analysis identified noise-sensitive land uses within the study area and conducted ambient noise measurements at 16 different locations to characterize existing conditions. Noise-sensitive land uses include residences, parks, schools, and other institutional land uses. **Chapter 18, Noise**, states that the estimated ambient sound levels range from 50 to 69 dBA (Ldn). The predominant source of noise in the study area is traffic on the roadway network including existing MTA bus routes, which is typical of a developed, urban city environment.

No-Action Condition

In the No-Action Condition in 2035, the Proposed Project would not be implemented, and the former North Shore right-of-way would remain abandoned and unimproved. The No-Action Condition assumes that existing MTA bus service would continue to operate on Richmond Terrace and throughout the North Shore on a constrained roadway network.

Under the No-Action Condition, there would be no increase in the potential for the public to be exposed to project-related hazards within the study area,

[1] Much of New York City is served by a combined sewer system in which stormwater and wastewater are carried through a single pipe. When stormwater volumes in the system are high, a mix of stormwater and wastewater known as combined sewer overflow is discharged into nearby waterways. This discharge results in localized and periodic high levels of coliform bacteria, floatables, and reduced dissolved oxygen levels.

because the Proposed Project would not be built. Public transportation demands within the study area would continue to grow as the local population of residents and workers increases over time. If no new public transit services are implemented in the study area, it is anticipated that higher levels of traffic congestion would result in increased vehicle emissions. The implications of the No-Action Condition specific to each public-health related resource chapter is summarized below.

- **Hazardous Materials:** As noted above for the No-Action Condition, stockpiles of contaminated soil associated with the former New York Wheel Garage construction are expected to be removed by the City and/or the future New York Wheel tenant prior to, and independently of, the Proposed Project. MTA would not be responsible for any contamination associated with these stockpiles.
- **Water and Sewer Infrastructure:** In the No-Action Condition, there would be no changes to existing water supply infrastructure or to existing stormwater and sanitary sewer infrastructure. Ongoing natural and human-caused conditions such as flooding, storm surges, and development would result in gradual changes over time.
- **Air Quality:** The No-Action Condition would not result in benefits to public health in comparison to the With-Action Condition, which is anticipated to improve air quality by providing transit alternatives that moderate the increase of vehicle emissions.
- **Noise:** Under the No-Action Condition, there would be no increase in noise or vibration due to Bus Rapid Transit (BRT) operations and there would be no potential for impact. Independent of the Proposed Project, traffic would be expected to increase due to long-term background growth and new developments that could occur including small, moderately sized, and large-scale projects. Increases in traffic would result in increases in traffic noise. Morning peak, afternoon peak, and Saturday noise levels would increase up to 2.0, 3.8, and 3.3 dBA, respectively, due to increases in traffic volumes. The greatest increase in noise would occur at the intersection of Richmond Terrace and Wall Street.

With-Action Condition

The public health impact analysis distinctly focuses on any potential unmitigated significant adverse impacts pertaining to the following resources: hazardous materials, water quality, air quality, and noise. According to the *2021 CEQR Technical Manual*, if unmitigated significant adverse impacts are identified in any one of these technical areas and the lead agency determines that a public health assessment is warranted, an analysis must be provided for that specific technical area. Therefore, this section summarizes the potential impacts of the Proposed Project on those aforementioned resources and concludes whether there would be any potential unmitigated significant adverse impacts.

Hazardous Materials

Chapter 11, Hazardous Materials, presents the findings of the hazardous materials assessment, which evaluated the extent and nature of contamination of sites that would potentially be impacted by construction of the Proposed Project. Based on the review of preliminary construction plans for the Proposed Project and the identified Recognized Environmental Conditions and environmental concerns at or in close proximity to the proposed construction area, the potential exists to encounter contaminated soils during construction activities. In addition, based on the planned construction activities and anticipated depth to groundwater, dewatering may be required as part of construction, resulting in the potential for discharge of contaminated groundwater.

The types of contaminants that may be encountered include volatile organic compounds, semi-volatile organic compounds, PCBs, pesticides, herbicides, rodenticides, metals, methane, asbestos- and PCB-containing building materials and lead-based paints. All material affected by construction would be identified and properly managed during construction activities in accordance with applicable rules and regulations. It is anticipated that any significant adverse impacts related to hazardous materials could be mitigated, as described in Chapter 11, Hazardous Materials; therefore, there would be no significant adverse impacts to public health.

Water and Sewer Infrastructure

The water and sewer infrastructure assessment evaluated whether the Proposed Project would adversely affect the City's water distribution or sewer system. The Proposed Project would not result in residential or commercial development and is not expected to exceed the thresholds of the *CEQR Technical Manual* requiring a water and sewer infrastructure analysis. Upon completion of construction, the Proposed Project would not have a significant impact upon water supply infrastructure.

Chapter 12, Water and Sewer Infrastructure, includes an assessment of potential impacts on the stormwater infrastructure system because the Proposed Project would result in a net increase of impervious surfaces along the proposed alignment. New impervious surfaces would increase existing stormwater runoff and associated pollutants. Treatment of runoff from roadway surfaces would minimize this impact. As summarized in Chapter 10, Natural Resources, the Proposed Project would include the development of 12 new outfalls to collect stormwater runoff from these surfaces. The proposed stormwater management strategy would aim to be consistent with the requirements outlined under NYCDEP's Unified Stormwater Rule. In conclusion, there would be no significant adverse impacts to public health, as the Proposed Project is not anticipated to adversely affect the City's water distribution or sewer system.

Air Quality

Operation of the Proposed Project has the potential to affect localized air quality conditions, which could result in potential effects to public health and the environment. The air quality analysis identified whether implementation of the

Proposed Project would result in any exceedances of NAAQS or any substantial increases or decreases in air pollutant emissions.

The Proposed Project would create dedicated lanes for BRT transit service, thus adding to overall roadway capacity. Although the BRT buses would be all-electric and would, therefore, not emit air pollutants, the dedicated lanes would free up capacity for general-purpose vehicles on Richmond Terrace and other nearby roadways. According to the ridership model developed for the air quality analysis, vehicle miles traveled would be reduced under the With-Action Condition. **Chapter 16, Air Quality**, concludes that the Proposed Project is not expected to cause or exacerbate a violation of the NAAQS for any criteria pollutant on a microscale or localized basis, nor increase regional emission burdens.

The Proposed Project would not result in any significant air quality impacts once implemented and fully operational; therefore, there would be no significant adverse impacts to public health.

Noise

Changes in vehicle and bus noise have the potential to cause adverse impact to noise receptors, such as residences, health care facilities, schools, and parks/open space. Based on the findings documented in **Chapter 18, Noise**, the With-Action Condition would have significant adverse impacts for noise in the study area prior to mitigation. Prior to mitigation, there would be a total of 16 severe noise impacts and 122 moderate noise impacts. Severe noise impacts represent the most compelling need for mitigation to reduce the potential for significant adverse reactions. For moderate noise impacts, the change in noise level is noticeable to most people, but may not cause strong, adverse reactions from the community.

Two potential options to mitigate severe noise impacts include noise barriers along the BRT alignment or building sound insulation improvements. With mitigation, the Proposed Project would not be expected to have residual significant adverse noise impacts. In regard to construction noise impacts, controls to reduce noise would include, but are not limited to: contractors self-certifying that all construction tools and equipment have been maintained to not generate excessive or unnecessary noise and that the noise emissions would not exceed the levels specified in the Federal Highway Administration's Roadway Construction Noise Model User's Guide, January 2006; all construction equipment would be equipped with necessary noise reduction equipment including mufflers; vehicles would not be allowed to idle more than three minutes in accordance with New York City Administrative Code §24-163; and for impact equipment such as pile drivers and jackhammers, the quietest equipment shall be selected taking into consideration the structural and geotechnical conditions. Therefore, there would be no significant adverse impacts to public health.

Conclusion

As described in this chapter, the Proposed Project would not have adverse impacts to public health; therefore, mitigation of public health impacts is not

required. The conclusions from each applicable resource chapters are summarized below.

- **Hazardous Materials:** With the implementation of the identified mitigation measures and protocols, no significant adverse impacts related to contaminated materials would result from demolition and/or construction activities related to the Proposed Project. Following construction, there would be no further potential for significant adverse hazardous materials impacts.
- **Water and Sewer Infrastructure:** The Proposed Project is not expected to result in any impairments to water resources. With regard to stormwater infrastructure, the Proposed Project would have an overall beneficial impact through improvements to existing infrastructure and additional treatment of stormwater prior to discharge.
- **Air Quality:** The Proposed Project would not result in any significant air quality impacts once implemented and fully operational. The Proposed Project would improve air quality by providing transit alternatives that moderate the increase of vehicle emissions.
- **Noise:** With implementation of mitigation measures, there would be no significant adverse impacts to public health because the Proposed Project would not have residual significant adverse noise impacts.

20 Neighborhood Character

This chapter assesses the potential impacts of the Proposed Project on neighborhood character within the study area. As indicated in the *2021 CEQR Technical Manual*, neighborhood character is defined as the elements of the environment that combine to create the context and feeling of a neighborhood, including land use, socioeconomic conditions, community facilities, open space, shadows, historic resources, urban design, transportation, and noise. Not all these elements affect neighborhood character in all cases; a neighborhood usually draws its distinctive character from a few defining elements.

This chapter presents a preliminary assessment of neighborhood character; the assessment was prepared in conformance with the *CEQR Technical Manual* using information from the technical analyses presented in other relevant chapters of this FEIS.

Regulatory Background

According to the *2021 CEQR Technical Manual*, a neighborhood character assessment is generally needed when a proposed project has the potential to result in significant adverse impacts in certain technical areas (land use, zoning, and public policy; socioeconomic conditions; open space; shadows; historic and cultural resources; urban design and visual resources; transportation; or noise) or when the project may have moderate effects on several of the elements that define a neighborhood's character.

As described in **Chapter 2, Proposed Project and Alternatives**, the Proposed Project would involve the implementation of Bus Rapid Transit (BRT) service between West Shore Plaza and St. George Ferry Terminal.

As detailed in other relevant chapters of this FEIS, the Proposed Project has the potential to result in significant adverse impacts in certain technical areas that could define a neighborhood's character. Therefore, a neighborhood character analysis is warranted.

Methodology and Study Area

In accordance with the *CEQR Technical Manual* guidelines, the neighborhood character analysis draws from the assessments of other technical areas (land use,

zoning, and public policy; socioeconomic conditions; open space; shadows; historic and cultural resources; urban design and visual resources; transportation; or noise). In the absence of an impact on any of the relevant technical areas, a combination of moderate effects to the neighborhood could result in an impact to neighborhood character. A significant impact identified in one of the technical areas that contribute to a neighborhood's character is not necessarily equivalent to a significant impact on neighborhood character. Therefore, an assessment of neighborhood character is generally appropriate if a proposed project has the potential to result in any significant adverse impacts in the technical areas listed above.

Examples of possible changes in those technical areas that could result in an adverse effect on neighborhood character, should those technical areas be defining features of the neighborhood, are as follows:

- **Land Use, Zoning, and Public Policy:** If a proposed project would conflict with surrounding uses, conflict with land use policy or other public plans for the area, or change land use character, neighborhood character could be affected.
- **Socioeconomic Conditions:** If a proposed action results in direct or indirect displacement or addition of population, employment, or businesses; or substantial differences in population or employment density, neighborhood character could be affected.
- **Community Facilities and Services:** If a proposed action would displace or alter a community facility or increased demand on community facilities, neighborhood character could be affected.
- **Open Space:** If an action would result in a reduction or displacement of an open space or result in additional population that would place a substantial demand on open space, neighborhood character could be affected.
- **Shadows:** If a proposed project would cast an incremental shadow on sun-sensitive resources, neighborhood character could be affected.
- **Historic and Cultural Resources:** If a proposed action would result in substantial direct changes to a historic resource or substantial changes to public views of a historic resource, neighborhood character could be affected.
- **Urban Design and Visual Resources:** If a proposed action would result in substantially different building form, size, scale, or arrangement; block form, street pattern, or street hierarchy; streetscape elements; or substantial direct changes to a visual feature, such as unique and important public view corridors and vistas, or to public visual access to such a feature, neighborhood character could be affected.
- **Transportation:** When a proposed project would result in a change in traffic patterns or would substantially increase traffic volumes on residential streets, neighborhood character could be affected.
- **Noise:** When a proposed action would substantially increase noise levels in an area, neighborhood character could be affected.

As part of a neighborhood character analysis, the defining features of the neighborhood are identified and then a determination is made as to whether a project has the potential to adversely affect these defining features, either through the potential for a significant adverse impact or a combination of moderate effects in relevant technical areas. If the assessment concludes that a proposed project has the potential to adversely affect defining features of a neighborhood, a detailed analysis is undertaken to determine whether the project would result in a significant adverse impact on neighborhood character.

As recommended in the *CEQR Technical Manual*, the study area for the neighborhood character analysis is consistent with the study areas in the relevant technical areas assessed under CEQR that contribute to the defining elements of the neighborhood. As such, the study area for neighborhood character is consistent with the study area used for the analysis of land use, zoning, and public policy, including the area within 400 feet of the proposed 8-mile alignment between St. George Terminal and West Shore Plaza. To facilitate the analysis for the Proposed Project, as with other technical analyses, the proposed alignment and neighborhood character study area has been divided into seven sections. Each section and associated study area reflect a section of the alignment that is distinct from an engineering standpoint.

As noted above, portions of the approximately 8-mile proposed BRT alignment would run within the existing North Shore Railroad ROW and others would run within existing City roadways such as Richmond Terrace and South Avenue. As such, a substantial portion of the proposed alignment makes use of existing roadways or infrastructure, including the existing open-cut and viaduct portions of the ROW, and therefore would not be expected to significantly alter those defining elements of neighborhood character.

Therefore, to further refine the analysis, this assessment includes a summary of the Proposed Project's potential to adversely affect the contributing elements of neighborhood character, including each of the technical assessments reviewed in the relevant chapters of this FEIS. Based on an initial review of the contributing elements of neighborhood character, a preliminary assessment is presented with a focus on only those sections of the study area determined to have the potential for neighborhood character impacts. As detailed in the analysis below, Section 2: New Brighton Waterfront, was determined to have the potential for neighborhood character impacts. Therefore, a preliminary assessment is provided for Section 2, beginning with the identification of the defining features of the neighborhood and followed by an assessment of whether the Proposed Project would adversely affect those defining features within the framework of the above technical areas.

Project Potential to Adversely Affect the Contributing Elements of Neighborhood Character

This section evaluates the potential for the Proposed Project to result in an adverse impact on neighborhood character through significant adverse impacts identified or a combination of moderate effects in the various technical areas.

- **Land Use, Zoning, and Public Policy.** As discussed in Chapter 3, Land Use, Zoning, and Public Policy, the Proposed Project would be consistent with the area's existing land uses and would not result in a change in zoning regulations within the study area. The project would be compatible with and/or actively support all applicable public policies. As a result, the Proposed Project is not expected to have significant adverse impacts on land use, zoning, or public policy in the study area.
- **Socioeconomic Conditions.** As discussed in Chapter 4, Socioeconomic Conditions, the Proposed Project would result in direct business displacement, with a total of five full businesses and approximately 46 employees expected to be displaced. These displacements would occur to support the development of new BRT stations. These displacements do not represent a majority of study area businesses or employment for any given industry sector and their displacement would not adversely affect socioeconomic conditions in the study area as defined by the *CEQR Technical Manual*.
- **Community Facilities and Services.** As discussed in Chapter 5, Community Facilities and Services, the Proposed Project is not expected to introduce new utilization demands on community facilities, because it would not increase the number of residents or workers in the study area. The Proposed Project would be designed to maintain access at the New York City Police Department (NYPD) 120th Police Precinct at 78 Richmond Terrace including an allowance for a minimum of 37 combat parking spots and modifications and re-orientation to the existing retaining wall and front steps off Richmond Terrace to create enough space for combat parking. Because the precinct house is a City Landmark and listed on the National Register of Historic Places, these modifications would be coordinated with the New York City Landmarks Preservation Commission and the New York State Office of Parks, Recreation, and Historic Preservation.
- **Open Space.** As discussed in Chapter 6, Open Space, the Proposed Project would cross three open space resources: North Shore Esplanade, Snug Harbor Cultural Center and Botanical Garden, and Heritage Park. The North Shore Esplanade, located in Section 1: St. George, and Heritage Park, located in Section 3: West Brighton Waterfront, are not anticipated to experience significant adverse impacts as a result of the Proposed Project. The Proposed Project would potentially affect noise levels, shadows, and views in portions of the Snug Harbor parkland, located in Section 2: New Brighton Waterfront, and would require the use of approximately 0.36 acres of parkland north of the Snug Harbor Cultural Center and Botanical Garden across Richmond Terrace.
- **Shadows.** As discussed in Chapter 7, Shadows, the majority of project elements (e.g., station canopies, station platforms for level boarding, in-road, at-grade work to accommodate the BRT) associated with the implementation of the Proposed Project would be similar in height to existing structures in the North Shore Railroad ROW and therefore would not be expected to have significant shadows impacts. The shadows assessment focuses on the potential effects of shadows on the sunlight sensitive resources resulting from the alignment within Section 2: New Brighton Waterfront. As detailed, shadows on the identified

sunlight sensitive resources would be relatively limited in scope and would not impact the viability of vegetation or marine habitats in the area. Therefore, no significant shadow impacts are anticipated.

- **Historic and Cultural Resources.** As discussed in Chapter 8, Historic and Cultural Resources, the Proposed Project is expected to have one or more adverse effects to architectural resources in the Sailors' Snug Harbor State and/or National Register of Historic Places (S/NRHP)-listed Historic District, located in Section 2: New Brighton Waterfront, resulting from the visual and contextual changes that would be created by the Proposed Project. Anticipated effects to historic resources in the other study area sections would be limited to construction-related effects and may require a Construction Protection Plan.
- **Urban Design and Visual Resources.** As discussed in Chapter 9, Urban Design and Visual Resources, the Proposed Project wherever possible makes use of the existing North Shore Railroad ROW, adapting to the various physical conditions and settings in different sections of the proposed alignment. Therefore, no significant adverse impacts to urban design and visual resources are anticipated in Sections 1, 3, 4, 5, 6, and 7 as a result of the Proposed Project. In Section 2, the Proposed Project would result in an adverse impact to urban design and visual resources within Snug Harbor, as the historic context of the campus would be altered.
- **Transportation.** As discussed in Chapter 15, Transportation, significant adverse traffic impacts were identified at nineteen intersections, including five intersections along the proposed alignment within Section 1: St. George, and six intersections along the proposed alignment in Section 7 on South Avenue. Two sidewalk locations, one near the New Brighton station and one near the Teleport stop, were determined to have significant impacts due to the narrow widths of the sidewalks as well as the presence of existing obstructions. No other significant adverse transportation impacts resulting from the Proposed Project were identified.
- **Noise.** As discussed in Chapter 15, Noise and Vibration, the Proposed Project would not result in significant noise impacts in Sections 1, 2, 3 or 7 of the study area. The Proposed Project, prior to mitigation, would have noise impacts primarily at residences along the proposed alignment within the Viaduct (Section 4) and Open-Cut (Section 5 and Section 6) portions of the Proposed Project. Two potential options to mitigate severe noise impacts include noise barriers along the BRT alignment or building sound insulation improvements. With mitigation, the Proposed Project would not be expected to have residual significant adverse noise impacts.

The analyses detailed above indicate that the Proposed Project would not result in a combination of moderate effects that would adversely affect neighborhood character. In addition, the potential for the Proposed Project to result in an adverse impact on neighborhood character through significant adverse impacts identified in the various technical areas is limited to a subset of the study area sections. As detailed above, the Proposed Project makes use of the existing North Shore Railroad ROW, and as a result, installation of the proposed busway and various infrastructure

improvements necessary to facilitate the BRT service fit within the existing context of the ROW. With the use of the existing viaduct structure and open-cut portions of the ROW, changes to physical settings are limited to areas immediately surrounding the proposed alignment and station areas, and in many cases, would not be visible to pedestrians. Within the street-running portions along Richmond Terrace and South Avenue, though transportation impacts were identified for certain intersections, the overall effects of traffic would not be out of character with Section 1: St. George, and Section 7: South Avenue, which are already defined by vehicular activity, and thus the incremental changes would not constitute a significant impact on neighborhood character.

Based on the analysis of each of the contributing elements above, the Proposed Project has the potential to affect neighborhood character within Section 2 of the proposed alignment, and would not affect neighborhood character within Sections 1, 3, 4, 5, 6, and 7. Therefore, the following provides a preliminary assessment of neighborhood character impacts within Section 2: New Brighton Waterfront. Section 2 extends approximately 1.2-miles west from Section 1 along the Kill Van Kull shoreline from Jersey Street to Davis Avenue (see **Figure 2-5** in **Chapter 2, Proposed Project and Alternatives**). The analysis begins with the identification of the defining features of the section and then assesses whether the Proposed Project would adversely affect those defining features within the framework of the above technical areas.

Preliminary Assessment

Defining Features

Industrial Waterfront

A significant portion of the waterfront property within Section 2, from Jersey Street to Clinton Avenue, is occupied by Atlantic Salt, a terminal facility that provides road salt to the City of New York and other municipalities for winter de-icing. This industrial waterfront use, located along the north side of Richmond Terrace, has a large influence over the visual character of the area, and is therefore a defining feature of Section 2.

The Atlantic Salt facility contains a number of industrial features, including a tall brick smokestack that is visible through much of the eastern portion of Section 2, an at-grade industrial tunnel structure occupying approximately 850 feet of street-front along the Atlantic Salt property, as well as large piles of salt visible from the adjacent sidewalk. Other than these visible features, views northward into the property and through to the waterfront are obstructed by chain link fencing and trees that line much of the southern property line. With these barriers, the presence of the Atlantic Salt facility creates a long, inactive, and industrial street-front along Richmond Terrace.

The south side of Richmond Terrace in this portion of Section 2 contains a mix of land uses and associated building types, including up to five-story mixed-use buildings, single-story autobody shops and gas stations, parking facilities, and single-family housing. Workers and residents within this portion of Section 2 are cut off from the waterfront by the industrial waterfront use.

Snug Harbor Cultural Center & Botanical Garden

In contrast to the eastern portion of Section 2, the western portion is mainly occupied by the Snug Harbor Cultural Center & Botanical Garden, a significant open space, cultural center, and tourist destination within the study area. Snug Harbor is an S/NRHP-listed Historic District, New York City Landmarks (NYCL), and National Historic Landmark that consists of cultural facilities, a row of late nineteenth and early twentieth century historic buildings, and active recreational uses such as ballfields, open space, and trails. Historically, the campus was used as a haven for retired sailors.

On the north side of Richmond Terrace across from Snug Harbor is an area of informal New York City-owned parkland with dense tree cover between the roadway and the Kill Van Kull. Within this parkland is a wide stone overlook, directly north of the northern gated entrance to Snug Harbor, providing views to the water as well as flanking stairways leading down to a dock and walking path below. Currently, this area has fallen into a state of disrepair and the stairways leading down to the dock and the dock itself have been blocked off and closed due to safety concerns and a lack of state of good repair. These views are significant, particularly given the historic context of the Snug Harbor campus.

As a tourist destination and cultural center, Snug Harbor is one of the most well-known land uses within the study area, and its open spaces and historic buildings provide a unique landmark within Section 2: New Brighton Waterfront. Snug Harbor is therefore a defining feature of the area.

Potential to Affect the Defining Features

Overall, the Proposed Project would not adversely affect the defining features of Section 2: New Brighton Waterfront, either through a significant adverse impact in a singular technical area or through combination of moderate effects in the contributing technical areas.

Within Section 2, the Proposed Project would consist of the BRT alignment and two stations, including the New Brighton station to be located at the intersection of Tysen Street and Richmond Terrace just west of the Atlantic Salt property, and Livingston station, to be located along Richmond Terrace between Davis and Bard Avenues. The proposed alignment would run through the Atlantic Salt property adjacent to Richmond Terrace and through the existing tunnel structure on the property.

The proposed alignment adjacent to Snug Harbor would involve the construction of an elevated busway primarily within the existing ROW just north of Richmond Terrace. The proposed busway would primarily utilize City-owned right-of-way, and would require the conversion of approximately 0.36 acres of existing parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to the transportation right-of-way. The proposed busway would be reinforced concrete supported on concrete girders, resting on a reinforced substructure founded on piles. Pedestrians would still be able to access the waterfront at Snug Harbor.

As mentioned previously, Section 2 is defined primarily by the presence of the two largest land uses in the area, Atlantic Salt in the eastern portions of Section 2 and Snug Harbor in the western portions. Implementation of the proposed BRT within the Atlantic Salt property is not anticipated to significantly alter neighborhood character. A new transportation use along the Richmond Terrace frontage of the property would be compatible with the industrial waterfront uses. As detailed, visual conditions in this area are mostly defined by existing chain link fencing and vegetation obstructing significant views northward into the property and through to the waterfront. The presence of the proposed BRT alignment would not alter those conditions. The proposed busway would also run through the existing at-grade tunnel structure on the Atlantic Salt property, and therefore would be completely hidden from public view in that location. The proposed New Brighton station to be located immediately west of the Atlantic Salt property would not significantly alter visual conditions facing north from Richmond Terrace, particularly as compared to existing conditions on the Atlantic Salt property. Overall, the Proposed Project is not anticipated to alter conditions on the Atlantic Salt property in a manner that would result in significant impacts to neighborhood character.

As discussed above, potential adverse impacts related to open space, historic and cultural resources, and urban design and visual resources were identified in Section 2, specifically associated with Snug Harbor. **Chapter 9, Urban Design and Visual Resources** provides a detailed analysis of the Proposed Project's effects on views from Snug Harbor to the waterfront (see **Figure 9-9** through **Figure 9-11**). As detailed, the supportive structure that would be constructed to facilitate the proposed BRT service in this location would be visible from Snug Harbor and from the stone lookout platform across Richmond Terrace, which is currently blocked off and closed due to it being in a state of disrepair, and would obstruct existing views to the water from these locations.

Additionally, the Proposed Project could have contextual impacts on the Snug Harbor historic resources, altering the campus' existing setting. As detailed in **Chapter 8, Historic and Cultural Resources**, Snug Harbor historically maintained a prominent place along the Kill Van Kull shoreline, and views to and from the resource along this waterway were important to the setting for the former sailors housed there. In addition, the Proposed Project would require the use of approximately 0.36 acres of parkland north of the Snug Harbor campus along the shoreline.

However, although the Proposed Project would alter certain visual and contextual features associated with the Snug Harbor campus, the identified impacts are not anticipated to result in an overall impact to neighborhood character. The impacts identified are specific to views facing north from the Snug Harbor campus and the parkland and currently closed stone viewing platform just north of the campus across Richmond Terrace, and therefore they constitute a localized effect of the Proposed Project. The Proposed Project would not alter the physical or open space features of the Snug Harbor campus, nor would it alter the functioning of Snug Harbor as a tourist destination and cultural center. Pedestrians would still be able to access the waterfront at Snug Harbor via the existing stairways, if and when they are repaired and brought to a state of good repair.

With regard to the other contributing elements of neighborhood character, as detailed in the section above, no significant adverse impacts are anticipated that would affect the defining features of Section 2. The Proposed Project would not change the character of Section 2 traffic conditions, and no significant adverse noise impacts were identified in Section 2.

In terms of shadows, the analysis summarized above concluded that while the Proposed Project would result in shadow increments on the Snug Harbor parkland and Kill Van Kull, shadows would be relatively limited in scope and would not impact the viability of vegetation or marine habitats in the area. Similarly, shadows would be confined to the intertidal edge of the Kill Van Kull and are not expected to impact the viability of marine life. Therefore, the Proposed Project would not result in significant adverse shadows impacts that would affect neighborhood character.

Overall, the Proposed Project would not result in significant adverse impacts to the Section 2 neighborhood character. Though certain adverse impacts related to contributing elements of neighborhood character were identified, these impacts are anticipated to be localized to the visual and historic context of Snug Harbor, and would not affect the functioning or built features of the Snug Harbor campus that make Snug Harbor a defining feature of Section 2. The Proposed Project would not result in a combination of moderate effects to the contributing elements of neighborhood character. Therefore, no further assessment is warranted.

Conclusion

The Proposed Project is not expected to result in significant adverse impacts to the neighborhood character of the study area. The Proposed Project makes use of the former North Shore Railroad ROW, and therefore would not significantly alter the existing physical setting within which the Proposed Project would be constructed. Although adverse impacts related to certain contributing elements of neighborhood character were identified in the relevant technical analyses, these impacts are anticipated to be localized to the visual and historic context of the Snug Harbor Cultural Center and Botanical Garden and are not anticipated to alter the features that make the Snug Harbor campus a defining feature of Section 2. The Proposed Project would not result in a combination of moderate effects to the contributing elements of neighborhood character. Overall, the combined effect of changes to the defining elements would not create a significant adverse impact on neighborhood character.

21 Construction

Construction activities, although temporary in nature, can sometimes result in significant adverse impacts. A project's construction activities may affect a number of technical areas analyzed for the operational period, such as air quality, noise and traffic. This construction assessment evaluates the potential for the Proposed Project to result in significant adverse impacts during construction.

Introduction

The purpose of this chapter is to summarize the anticipated impacts during construction of the Proposed Project. In order to minimize overall impacts during construction, the Proposed Project would be designed, scheduled and staged to minimize disruption to abutting neighborhoods and the environment. Although some interference is unavoidable due to the nature of construction, the duration and severity of these effects would be implemented by implementing strong controls and best management practices (BMPs).

This chapter conceptualizes potential construction techniques, provides a preliminary construction schedule, identifies lay down and staging areas including those located beyond the right-of-way, and estimates the staffing and equipment required to construct the Proposed Project.

Construction Regulations & General Practices

Governmental oversight of construction in New York City is extensive and involves a number of City, State, and Federal agencies, each with specific areas of responsibility as noted below:

- The New York City Department of Environmental Protection (NYCDEP) enforces the New York City Noise Code, reviews and approves any Remedial Action Plans and Construction Health and Safety Plans, regulates water disposal into the sewer system and oversees dust control for construction activities.
- The New York City Fire Department (FDNY) has primary oversight of compliance with the New York City Fire Code and the installation of tanks containing flammable materials.

- The New York City Department of Transportation (NYCDOT) Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures.
- The New York City Landmarks Preservation Commission (LPC) approves studies and testing to prevent loss of archaeological resources and to prevent damage to architectural resources.
- The New York State Department of Environmental Conservation (NYSDEC) regulates disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. NYSDEC also regulates discharge of water into rivers and streams.
- The New York State Department of Labor (NYSDOL) licenses asbestos workers.
- The New York State Department of Transportation (NYSDOT) reviews and approves any traffic lane closures on its roadways, should any be necessary.
- The U.S. Environmental Protection Agency (USEPA) has wide-ranging authority over environmental matters, including air emissions, noise emission standards, hazardous materials, and the use of poisons. However, much of its responsibility is delegated to the state level.
- The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

Construction Schedule

As part of the constructability effort to support the Proposed Project, a preliminary construction schedule was developed to account for the construction effort required to implement the Proposed Project. The construction of the Proposed Project is anticipated to commence in February 2032 and be completed in late November 2034. Given the constrained and linear nature of the Proposed Project corridor, the constructability effort considers factors such as site logistics, geography and similar construction techniques. Given these factors, the construction duration is varied with areas extending for longer or shorter durations depending on the complexity of the work effort. Therefore, while the overall construction period could take up to three years, no one location across the Proposed Project corridor is anticipated to experience construction activities for the full duration of the three-year construction period.

Typical Construction Activities and Elements

An overview of typical construction activities and notable construction elements is provided below. In general, the construction effort across the corridor would follow a typical sequence that would proceed as follows:

- **Site Clearing and Preparation:** Prior to the active construction effort, clearing and grubbing of vegetation, including demolition and removal of remnant former North Shore Railroad station infrastructure and debris currently occupying the former North Shore right-of-way would occur. If not already paved, construction staging areas would be stripped of existing topsoil and stabilized with pavement or gravel. Once the work area is clear, site preparation activities would involve the mobilization of trailers and equipment and the installation of public safety measures like signage and fencing.
- **Utility Protection and Relocation:** Existing utilities would be replaced and/or relocated, as needed to ensure that construction activities could be conducted without impacting existing service connections. This work effort typically involves a backhoe to excavate the trench, a pavement cutter for work in paved areas (e.g. city streets), and the physical relocation or replacement of the utility lines prior to backfilling the trench. Boring may be required if new utility crossings are required while open trench methods would be used under streets and parking lots.
- **Sheet Piling Installation, Excavation, and Retaining Walls:** The installation of sheet piling would help to provide an unobstructed construction zone while maintain adjacent areas outside of the work area. Once the construction area is secured and excavation is complete, new cast in place footings for retaining walls and the retaining walls themselves would be constructed. Crawler cranes, diesel pile hammers and wheel loaders would be used for this effort.
- **Roadway Surfacing:** Upon completion of the retaining walls, the installation of an aggregate base and mainline paving operations would begin to build roadway surface of the new busway.
- **Station Construction:** Station construction would involve the installation of the platforms, shelters as well as associated pedestrian stairs, ramps, and/or pedestrian overpasses, and elevators.
- **Final Roadway Finishes:** This type of work would involve striping the busway and crosswalks and installation of new signals and signage as necessary.

South Avenue Bridge and Realignment of Roxbury Street

Construction operations beneath the South Avenue bridge would be required to create a passageway for the proposed busway through the south embankment of the existing South Avenue Bridge. The South Avenue Bridge would be closed for approximately one month while the south tail span of the bridge is temporary supported to allow a new retaining wall to be constructed. The construction of an additional retaining wall would be needed to allow the busway to occupy the

space between the south abutment and the existing bridge pier. The retaining wall would extend down to Lockman Avenue effectively creating space for the proposed busway between the active freight railroad line to the north and new retaining walls on the south. To accommodate this condition, the realignment of Roxbury Street to the south would be required.

Open-Cut

In the open-cut to Van Name Avenue, the work area would be roughly 30 feet wide and nearly 1,000 feet long. Large cranes would be used to install steel sheet piling on the north side of the work zone to facilitate the construction of a crash wall to isolate freight rail traffic from the proposed BRT busway. These same cranes would be repurposed for the installation of foundation piling, and the construction of the crash wall. A single crane would occupy the entire width of the 30 feet wide work zone so sequencing of the operations, movement of materials and trucks in and out of the work zone would have to be heavily coordinated.

Viaduct

Construction associated with the rehabilitation of the existing viaduct superstructure would involve the replacement of the existing ballasted track bed with lightweight concrete filler and installing an overlaying concrete deck section along with new barrier walls and/or steel railings. In roughly twelve areas, the viaduct's proximity to residences and businesses would not allow for the conventional forming of the concrete barrier wall on the viaduct superstructure. This would be addressed through the use of steel railings or precast concrete to eliminate the need for any construction work that would infringe upon the adjacent properties. The construction effort on the viaduct would be completed by two crews starting near the Maple Avenue and Port Richmond Avenue viaduct bridges and working to the east and west respectively.

Construction Operations through West Brighton Waterfront Section

Construction through this area would require the demolition of several existing buildings located on the north side of Richmond Terrace in the vicinity west of Broadway to North Burgher Avenue to facilitate the proposed busway and the West Brighton Station. Construction would involve significant retaining wall work requiring large cranes for sheet piling, foundation piles and wall forming operations. To accommodate sheeting and foundation work associated with the construction of the retaining wall work between Richmond Terrace and the busway, on-street parking would be temporarily eliminated on Richmond Terrace between Broadway and Bement Avenue (see Transportation subsection for further detail).

The construction of the proposed elevated busway just north of Richmond Terrace through Snug Harbor would require the installation of 29 spans. The proposed busway would require simple span construction utilizing precast concrete I-beams, foundations consisting of caissons spanned with cast in place pier caps. The construction of the busway is anticipated to involve two

independent construction operations as the work effort would begin in the middle of the busway and move simultaneous towards the east and west abutment locations.

Atlantic Salt Tunnel Structure

The proposed alignment would travel through an existing, ~~unused~~ at-grade tunnel structure on the Atlantic Salt property which is located north and parallel but below grade of Richmond Terrace.[1] The tunnel is currently used as a garage for the indoor servicing of loaders and a supply storage area. The work effort required to complete the construction of the proposed busway through the structure would be minimal, entailing concrete pouring for the surfacing of lanes and the construction of roadside barriers. Coordination with Atlantic Salt would be critical to manage an active construction site within their active operations area. This work would be scheduled in the summer, which is Atlantic's slow season and ideally focused on time periods or shifts where Atlantic Salt's work is off peak.

Construction of Nicholas Street Ramp

The proposed Nicholas Street ramp would be constructed on a combination of pile-supported structure and retained fill to accommodate the difference in grade between Bank Street and Richmond Terrace. Construction of the ramp would involve simple span construction using pre-cast concrete I-beams with foundations consisting of three caissons spanned with cast in place pier caps. Bank Street would remain open during daytime hours throughout construction in this area in order to maintain commuter access to the former New York Wheel garage which provides a substantial amount of parking for the St. George Terminal. To maintain this vehicular access while the ramp is being constructed, a temporary roadway would be built on adjacent staging area parcels north of Bank Street. Once the ramp is completed, Bank Street would be reconstructed with a slight shift to the north. Construction of the ramp is anticipated to occur at night between 9 PM and 5 AM.

Reconstruction of Richmond Terrace

The reconstruction of Richmond Terrace between Nicholas Street and the St. George Terminal would be required to facilitate a center-running two lane busway within Richmond Terrace. Work associated with this effort would involve pavement breaking, the demolition of the existing raised median within Richmond Terrace, sidewalk reconstruction, and the widening of Richmond Terrace from Hamilton Avenue to south of Wall Street. Work on this block face in front of the courthouse and police precinct would consist of stair reconstruction and alterations to the existing retaining walls and the landscaped berm in front of the precinct.

[1] Atlantic Salt has indicated than an existing structural conditions survey was performed for the tunnel structure; however, the receipt of that data is still pending. The tunnel structure is assumed to remain until additional structural conditions data by Atlantic Salt is provided and further evaluation is possible.

Construction Equipment

Construction equipment that would be required for clearing, excavation, debris removal, and construction would include crawler and hydraulic cranes, impact and vibratory pile drivers, excavators, jackhammers, loaders, concrete pumps and pavers, and haul trucks would be required for debris to be removed from the construction areas along the project corridor. All construction equipment and the operation of such equipment would comply or be provided with sufficient noise pathway controls as required by the New York City Noise Control Code.

Estimate of Construction Workers and Construction Period Trucks

During the construction, on average, a total of approximately 228 construction workers would be working on-site across the Proposed Project corridor on a typical day. Approximately 80 trucks would be required to support the average level of construction operations throughout the corridor. The staffing and delivery projections for the three-year construction period is detailed in Table 21-1. The most intensive construction activity is expected to occur in the second quarter of the year 2033 (Q2 2033) with approximately 467 daily construction workers and approximately 162 daily trucks arriving and departing from the multiple construction sites across the project corridor.

Table 21-1 Estimated Total Number of Daily Construction Workers and Truck Deliveries per Quarter

Quarter	Total Daily Workers	Total Daily Truck Deliveries
Q1 2032	55	19
Q2 2032	317	112
Q3 2032	347	122
Q4 2032	293	103
Q1 2033	253	90
Q2 2033	**467**	**162**
Q3 2033	420	147
Q4 2033	183	63
Q1 2034	107	37
Q2 2034	160	57
Q3 2034	107	37
Q4 2034	25	10
Peak	467	162
Average	228	80

Construction Hours

The City of New York regulates the hours of construction work through the New York City Noise Control Code, as amended in December 2005 and effective July 1, 2007. Construction is limited to weekdays between the hours of 7 AM and 6 PM, and noise limits are set for certain specific pieces of construction equipment. The City may permit work outside of these hours to accommodate: (1) emergency conditions; (2) public safety; (3) construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. The New York City Department of Buildings (DOB) issues these work permits.

In New York City, construction work typically occurs on weekdays and begins at 7:00 AM, with most workers arriving between 6:00 AM and 7:00 AM. Work typically ends at 4:30 PM or 5:00 PM, with some exceptions when certain critical tasks (e.g., finishing a concrete pour for a floor deck, completing the drilling of piles, or completing the bolting of a steel frame erected that day) require that the workday be extended beyond normal work hours. For work outside of normal construction hours, work permits are obtained from DOB prior to such work commencing. The numbers of workers and pieces of equipment in operation for work outside normal hours is generally limited to those needed to complete the particular authorized task.

Construction Staging Areas and Lane Closures

Construction staging areas, also known as “laydown areas”, are sites that would be used for the storage of materials and equipment, the provision of construction worker parking, and other construction-related activities. Staging areas of adequate size and proximity to the proposed alignment are essential to provide sufficient space and access for construction activities and also to minimize construction traffic through the study area.

Construction staging areas would be used for a variety of purposes including construction materials laydown, equipment staging, and construction worker parking. More specifically, a total of approximately 1,400 temporary off-street parking spots have been identified across the 17 potential staging locations situated throughout the proposed alignment. These spaces are spread throughout the alignment and the number of construction workers parking at any individual location is expected to vary from month to month as different sections of the alignment are constructed at different rates.

Construction access to the former North Shore right-of-way would be provided from access points at multiple staging locations. For example, access to the open cut would be provided from Arlington Station and a proposed staging area east of Lockman Avenue and Roxbury Street. Additional access could be provided from a staging area just south of the open cut off of Lake Avenue as well as at Alaska Street.

In addition, the Proposed Project would require up to two concrete batch plants in at the vicinity of Alaska Street. The Alaska Street batch plant would be situated within a staging area to the south of the former North Shore Railroad right-of-way and east of the Port Richmond WRRF. The contractor would likely look at a second batch plant located within the footprint of the proposed Arlington Station. These batch plants would also have on-site space to accommodate materials, support trucks, and miscellaneous equipment to support batch plant operations. As the Proposed Project would have reoccurring, concurrent concrete pouring operations, two batch plant locations were identified for both structural concrete and mainline paving operations.

Construction staging locations would primarily make use of properties that are contained within the development footprint of the Proposed Project (e.g., areas proposed for stations and park and ride lots at Arlington and Livingston Stations as well as the former North Shore Railroad right-of-way).

There are up to 17 potential construction staging areas, of these, 12 areas are contained within the development footprint of the Proposed Project. There are up to five areas that are located outside of the project footprint adjacent to the proposed alignment that would be used for construction staging. Potential staging areas identified beyond the development footprint include:

- An undeveloped portion of a privately-owned lot south of the open cut between Lake and Granite Avenues. This area may be used for material laydown, construction worker parking and access to the open cut.
- A privately-owned surface parking lot between Maple and Grove Avenues may be used for construction worker parking.
- A privately-owned surface lot between Richmond Terrace and Park Avenue, north of the viaduct may be used for construction worker parking and stair tower access to the viaduct.
- North of the viaduct and south of Heritage Park on undeveloped land owned by the MTA may be used as a laydown/staging area.
- On Bank Street north of Richmond Terrace and the right-of-way, property owned by DCAS would be used for construction worker parking, temporary roadway and as a laydown/staging area.

Temporary construction-related land use effects related to proposed staging areas that are beyond the Proposed Project footprint are noted below in the Construction Assessment section of this chapter.

Lane and Sidewalk Closures

Temporary lane and sidewalk closures are typical for construction projects in New York City. The Transportation assessment below notes the locations where construction activity on public streets or within nearby parcels would require the temporary closure of part of the street to general traffic. These temporary changes are anticipated to last for a short period of time (up to several months). To manage such closures a Maintenance and Protection of Traffic (MPT) would be

developed for NYCDOT's OCMC review and approval. The implementation of any temporary closures is typically coordinated with NYCDOT OCMC.

Construction Assessment

Construction-related assessments for several key technical areas analyzed in the FEIS are presented below.

Land Use

Construction associated with the Proposed Project would result in the temporary change in use of a limited number of parcels identified for staging in areas that are adjacent to the proposed alignment and outside of the development footprint of the Proposed Project. These staging areas are generally characterized as undeveloped parcels or paved surface lots. Given that the construction period is of a limited duration, construction activities would not permanently change the use of these parcels.

Beyond the proposed alignment, land use patterns in the study area would not permanently change as a result of construction activity associated with the Proposed Project. Existing land uses within the study area would continue to operate as under existing conditions with some level of intermittent disruption possible due to construction. No significant adverse impacts to land use during construction of the Proposed Project are anticipated.

Visual Resources

Construction would temporarily alter the visual environment along the proposed alignment by introducing construction equipment and related activities. As construction of the Proposed Project commences, various types of construction equipment including cranes, excavators, and trucks entering and exiting the former North Shore right-of-way would be utilized and visible to the public.

While most of the construction-related activities and staging would be located within the former North Shore right-of-way and on properties required for the proposed alignment, some areas adjacent to the proposed alignment would be used for construction staging. Staging areas would be generally used for construction material stockpiles, construction worker parking, access onto the former North Shore right-of-way, as well as equipment staging. Typically, staging areas would be surrounded by safety barriers or construction fencing and obscured from public view. Fencing would be uniform in appearance and contractors would be required to keep the staging areas and construction sites in a clean and orderly manner. While construction fencing along much of the proposed alignment would screen construction activity from view, construction would remain visible from the upper floors of adjacent buildings such as with the rehabilitation of the Port Richmond viaduct.

Construction staging would be temporary in nature and staging areas that are outside of the "constructive way" would be restored to their existing condition as soon as they are no longer needed. Temporary lane and/or road closures would be needed during the construction of the Proposed Project and are identified

below in the Transportation assessment. As a conservative measure, the construction period for the Proposed Project was assumed to be approximately three years. However, construction activities would be phased to minimize the construction duration at any particular location along the Proposed Project corridor so as to reduce potential construction effects on the surrounding communities. Construction of the Proposed Project would alter views of the project corridor during construction activities. However, these effects would be temporary in any given location along the project corridor. As such, no significant adverse impacts to visual resources are anticipated during the construction period.

Community Facilities

According to *CEQR Technical Manual*, the assessment of construction impacts on community facilities examines the potential for service disruption to project study area community facilities that may occur during construction activities.

Construction associated with the Proposed Project would not physically displace any community facilities or services within the project study area. As indicated in Chapter 5, Community Facilities, modifications to the 120th Precinct involving the reorientation of the precinct's front steps, and modifications to the existing landscaped berm and retaining walls fronting Richmond Terrace would be required to both maintain combat parking as requested by the NYPD and to accommodate the proposed busway on Richmond Terrace. Similar modifications to the front steps of the Staten Island Family Courthouse, an institutional use adjacent to the 120th Police Precinct would also be required. MTA would coordinate closely with the NYPD and New York State Unified Court System officials to ensure that work on the stair modifications would be staged in such a way as to not disrupt emergency response times or NYPD and courthouse operations. Construction associated with the stair reconstruction would be executed in a manner to allow sufficient ingress and egress to the precinct as well as access to the combat parked vehicles.

Potential impacts to community facilities and services due to construction, noise, and construction equipment emissions would be temporary, intermittent, and limited to the construction period. BMPs and abatement measures discussed throughout this section would be utilized to minimize the potential effect of construction on area community facilities. No significant adverse construction period impacts to community services are anticipated under the Proposed Project.

Open Space

As noted in Chapter 6, Open Space, the Proposed Project would involve the use of approximately 0.36 acres of Snug Harbor parkland north of Richmond Terrace. This parkland area, which is not signed as public open space includes undeveloped vegetated areas and does not contain any active recreational amenities. The construction of the elevated busway would necessitate the clearing of vegetation which generally functions as a buffer between the shoreline and Richmond Terrace as well as the use of parkland for construction

operations. It is anticipated that this parkland would be used for the storage of construction materials, forming packages, and equipment.

The contractor would use best efforts to maintain safe access to Heritage Park and the North Shore Esplanade in the vicinity of Nicholas Street and Richmond Terrace during the construction of the proposed busway so as not to impede the use of these resources during the construction period. MTA would coordinate with NYC Parks through the construction period and the contractor would apply for NYC Parks Construction Permits as work would be occurring on property under NYC jurisdiction. These areas would be restored to the extent practicable at the conclusion of the construction period.

Historic and Cultural Resources

According to the guidelines identified in the *CEQR Technical Manual*, construction impacts may occur on historic and cultural resources if vibration or in-ground disturbance associated with the construction of a project could undermine the structural integrity or foundation of nearby resources.

Archaeological Resources

Construction-related ground disturbance as part of the Proposed Project would vary across the alignment, depending on location and need. Types of ground disturbance would include construction of the proposed raised busway and its foundations along the Kill Van Kull shoreline; construction of retaining walls at various points along the entire alignment; removal of soil in conjunction with the retaining walls, especially south of the active railroad tracks at behind the present retaining wall in the Arlington Station section; construction of drainage features spaced along the alignment consisting of either drainage infiltration or drainage detention chambers; and construction of seven new bus stations along the alignment. If not already paved, construction staging areas would be stripped of existing topsoil and covered with gravel or pavement. Overall depths of the proposed ground disturbance associated with construction activity could range from a few inches to 15 feet below grade.

Given the construction activities noted above, the Proposed Project could result in an impact to potential archaeological resources along portions of the project corridor in Sections 1 (St. George), 2 (New Brighton Waterfront), 3 (West Brighton Waterfront) and 6 (Arlington Station). As noted in **Chapter 8, Historic and Cultural Resources**, as the design advances, geotechnical soil borings and/or subsurface testing would be required to determine if there is any potential for precontact or historic period archaeological resources to be impacted as a result of the Proposed Project.

Architectural Resources

As indicated in **Chapter 8, Historic and Cultural Resources**, the Architectural Survey conducted in support of the Proposed Project indicated that there are architectural resources either listed on, eligible for, or potentially eligible for the S/NRHP within the 90-foot Architectural Area of Potential Effect (APE) that was defined for the Proposed Project (**see Appendix J**). Construction-related impacts

to architectural resources are primarily centered on construction vibration. Depending on the degree of vibration from the Proposed Project, there could be construction-related physical impacts to architectural resources along the proposed alignment. If these impacts cannot be avoided, a Construction Protection Plan (CPP) would be implemented as mitigation in consultation with SHPO. In addition, construction of the Proposed Project could have physical impacts on the stone lookout structure and the stone retaining walls along the waterfront that are part of the Snug Harbor shoreline. Similarly, if these impacts cannot be avoided, then they would need to be mitigated through the implementation of a CPP. If these resources cannot be protected because they are within the construction footprint, additional mitigation would need to be developed in consultation with SHPO, LPC and other consulting parties.

Transportation

Detailed Analysis Methodology

Traffic

The potential for traffic impacts during construction was assessed for the peak quarter of construction activities. Nine key intersections out of the 30 intersections identified for detailed traffic analysis in Chapter 15, Transportation were analyzed based on the projected increment of construction-related vehicle traffic expected to travel through these intersections. The nine key study area intersections selected for analysis during the AM and PM construction peak hours are:

- Richmond Terrace and Jersey Street
- Richmond Terrace and Franklin Avenue
- Richmond Terrace and Lafayette Avenue
- Richmond Terrace and Bard Avenue
- Richmond Terrace and Broadway
- Richmond Terrace and Alaska Street
- Richmond Terrace and Jewett Avenue
- Richmond Terrace and Heberton Avenue
- South Avenue and Forest Avenue

The operation of all signalized and unsignalized intersection analysis locations were assessed using methodologies presented in the 2000 *Highway Capacity Manual* (*HCM*) using the Synchro Version 11 software application. The analysis procedures used to evaluate the construction impacts to traffic operations are the same as the ones described in the traffic analysis methodology and impact criteria described in Chapter 15, Transportation.

Parking

Based on *CEQR Technical Manual* procedures, an assessment of how the staging of the construction effort would affect the availability of on-street parking spaces

was performed. Where the construction effort would require the temporary removal of parking spaces, the approximate number of spaces removed, as well as the duration of their removal, was documented.

Construction Conditions

Traffic

Temporary Changes to Roadway Operations

Ten potential locations where construction activity on public streets or within nearby parcels would require the temporary closure of part of the street to general traffic or other operational changes were identified. These temporary changes are anticipated to each last for a short period of time (up to several months). Due to both the short-term nature of these operational changes, and the fact that none are immediately adjacent to sensitive areas such as a school, hospital or park, none of these temporary changes during construction conditions require detailed analysis. No significant long-term diversions are anticipated due to the construction of the Proposed Project.

1. The South Avenue bridge over the right-of-way would be reconstructed in order to accommodate the busway passing underneath. The bridge must be closed for one month while the south tail span is being temporarily supported to allow the lagging wall to be constructed without compromising the structure. During this temporary closure, detours would be signed for surrounding alternate routes, including Harbor Road, Union Avenue, Dehart Avenue, and Van Pelt Avenue. Because of the temporary nature of this closure, a detailed analysis is not required. During the temporary closure, delays along the detour routes would be monitored, and, if necessary, traffic enforcement agents (TEAs) would be deployed during the peak commuting hours.

2. Roxbury Street from Grandview Avenue to Lockman Avenue would be closed for the reconstruction of the retaining wall between Roxbury Street and the right-of-way, as well as for use as a material laydown area. Access to the parking lot on New York City Housing Authority property at Roxbury Street would be maintained during this period. Roxbury Street consists of a single block and does not carry any significant through-traffic. On-street parking on Roxbury Street would be lost temporarily during this closure but would be restored after construction. This closure is anticipated to last approximately two months.

3. Overpasses of the right-of-way at Harbor Road, Union Avenue, Dehart Avenue, Van Pelt Avenue, and Van Name Avenue may experience isolated weekend closures in order to provide for material delivery to the right-of-way below via crane, however these closures would be temporary, isolated, and would not persist throughout construction.

4. For a three-month period, Richmond Terrace between Van Street and Broadway would operate as one lane due to adjacent construction during all times of the day. During this time, traffic on Richmond Terrace would be maintained in the westbound direction (with westbound traffic shifted to the south side of the street), and a detour route via Alaska Street, Henderson Avenue, and Broadway would be signed to accommodate eastbound traffic. TEAs may be required at the detour points on Richmond Terrace for peak hours during this period. Because of the temporary nature of the detour, a detailed analysis is not required. During the temporary closure, delays along the detour route would be monitored, and, if necessary, TEAs would be deployed during the peak commuting hours.

5. On Richmond Terrace between Broadway and Bement Avenue, on-street parking would be temporarily eliminated for a six-month period, and traffic would be shifted to the south side of the roadway to accommodate retaining wall work between Richmond Terrace and the busway.

6. The staging of the intersection construction along Richmond Terrace at Tompkins Court, Broadway and near Pelton Place would all be staggered to facilitate traffic access from the waterfront businesses to Richmond Terrace, and to minimize the disruption of traffic operations.

7. Under the Proposed Project, construction of the elevated busway on-land, in the vicinity of Snug Harbor, would need some off-peak lane restrictions of Richmond Terrace over the course of several weeks to build sections of the bridge near Snug Harbor Road due to the close proximity of Richmond Terrace to the new bridge.

8. On Richmond Terrace between Clinton Avenue and Lafayette Avenue, retaining wall work on the north side of the street would require the temporary elimination of on-street parking on this section of Richmond Terrace for a five-month period. One lane in each direction would be maintained towards the south side of the street, with flaggers provided as necessary.

9. Bank Street is the main entrance in/out of the garage at the former New York Wheel site, which contributes a substantial amount of the available parking for the St. George Terminal. Bank Street would remain open throughout the construction in order to maintain this access. Therefore, daily public access through this active construction site is required and would be accommodated on a temporary roadway built on adjacent parcels to allow the west end of Bank Street to be shifted to move traffic off of the existing roadbed while the bridge is being constructed. Construction of the ramp between Bank Street and the Nicholas Street Ramp would occur at night, between 9PM and 5AM. During this nighttime construction, access to Bank Street and the lower entrance of the former New York Wheel garage would be prohibited. By

focusing construction efforts at nighttime, access to Bank Street and the garage would be maintained during peak commuting periods. No major diversions are anticipated.

10. Richmond Terrace between Nicholas Street and Bay Street would be reconstructed. However, two lanes of traffic in each direction would be maintained during the entire construction period—the same as under existing conditions. Therefore, no diversions are anticipated.

Construction Traffic Increment

Approximately 467 daily construction workers across multiple construction sites were projected during the Q2 2033 peak quarter; this peak quarter was selected as the critical analysis period for impacts because it has the highest level of worker trips and truck trips across the three-year construction period. Based on 2000 Census reverse journey to work data for the construction industry, it is expected that approximately 73 percent of the construction workers would be using a car to commute to work (approximately 287 auto vehicle trip arrivals and departures, as some workers would carpool). A modest portion of construction workers (about one half percent) would be expected to take taxi or use ride share services (approximately two construction workers). The remaining approximately 27 percent of construction workers would use transit or walk to the construction sites (approximately 133 transit and walk trip arrivals and departures). The traffic analysis assumes that construction workers would follow typical arrival and departure patterns; most arrivals (approximately 80 percent) occur during the 6 AM to 7 AM hour (the hour before the beginning of a regular day shift) and the same percentage of departure trips occurs during the end of the shift (the 5 PM to 6 PM hour). Additionally, it was assumed that work crews reporting to the multiple construction sites along the alignment are assumed to arrive and depart at the same time. The auto trips were distributed across the multiple construction sites proportionally to the surface area dedicated to employee parking at each site. Although the analysis was conducted in this manner in order to be conservative, construction worker trips may be staggered to not coincide with the background peak hours during the actual construction effort.

Approximately 162 daily trucks would arrive at and depart from the multiple construction sites during the Q2 2033 construction peak quarter. The total daily truck increment was assumed would be distributed across the ten-hour workday, with approximately 25 percent of the trucks arriving and departing during the AM construction peak hour at the beginning of the shift and five percent during the PM construction peak hour at the end of the shift. This total amount of truck trips is assumed to access and egress the multiple construction sites proportionally between the AM and PM construction peak hours; approximately 41 inbound and 41 outbound truck trips during the AM construction peak hour and approximately eight inbound and eight outbound truck trips during the PM construction peak hour. The truck delivery trips were distributed across the multiple construction sites proportionally to the surface area dedicated to staging/laydown at each site.

Table 21-2 below shows the total number of construction workers across the project per quarter, as well as the projected number of daily worker autos throughout the construction effort. Also shown are the total daily truck deliveries for each quarter of the construction effort.

Table 21-2 Daily Construction Vehicle (Autos + Trucks) by Quarter

Quarter	Total Workers	Daily Worker Autos	Daily Truck Deliveries	Total Daily Vehicles
Q1 2032	55	34	19	53
Q2 2032	317	193	112	305
Q3 2032	347	211	122	333
Q4 2032	293	179	103	282
Q1 2033	253	156	90	246
Q2 2033	467	285	162	447
Q3 2033	420	257	147	402
Q4 2033	183	111	63	174
Q1 2034	107	66	37	103
Q2 2034	160	97	57	154
Q3 2034	107	65	37	103
Q4 2034	25	14	10	24

Notes: Does not include worker taxi trips which are expected to be minimal (no more than two daily taxis in a given quarter).

Trip assignments were prepared separately for auto trips and truck trips during the AM construction (6:00 to 7:00 AM) and PM construction (5:00 to 6:00 PM) peak hours. As discussed above, construction worker auto trips were assigned to areas at the construction sites dedicated to employee parking while construction trucks were assigned to the areas dedicated to staging and laydown at each construction site.

Auto trips are related to construction workers travelling between their place of residence and one of the multiple construction sites based on the reverse journey to work trends at the census tracts located along and within the vicinity of the construction segments.

Truck trips are related to delivery vehicles providing construction materials, tools, and support services between warehouses, construction plants, and other industrial sites and one of the multiple construction sites. It is assumed that trucks would use Interstate 278 and/or New York State Route 440 to/from Richmond Terrace, and Richmond Terrace to access one of the multiple construction sites.

The AM and PM construction peak hour assignments are provided in Appendix P-2. Total 2033 Construction Condition traffic volume flow maps for the AM and PM construction peak hours can be found in Appendix P-3.

Nine key intersections out of the 30 intersections identified for detailed traffic analysis in Chapter 15, Transportation were analyzed based on the projected

increment of construction-related vehicle traffic expected to be travel through these intersections; it is expected that construction-related vehicle trips at these intersections would exceed the *CEQR Technical Manual* thresholds of 50 vehicles for detailed traffic analysis. The nine key study area intersections selected for analysis during the AM and PM construction peak hours are:

- Richmond Terrace and Jersey Street
- Richmond Terrace and Franklin Avenue
- Richmond Terrace and Lafayette Avenue
- Richmond Terrace and Bard Avenue
- Richmond Terrace and Broadway
- Richmond Terrace and Alaska Street
- Richmond Terrace and Jewett Avenue
- Richmond Terrace and Heberton Avenue
- South Avenue and Forest Avenue

Levels of Service

Existing Conditions

Tables 21-3 and 21-4 provide an overview of the levels of service that characterize 2018 existing conditions' "overall" intersection conditions and individual lane groups, during the AM and PM construction peak hours. Based on the Automatic Traffic Recorder (ATR) traffic volume data, background traffic volumes during the 6 to 7 AM construction peak hour are approximately 38 percent lower than during the 7:30 to 8:30 AM operational analysis peak hour, while the 5 to 6 PM construction peak hour is consistent with the operational analysis peak hour. Detailed tables showing levels of service results for each intersection by lane group are provided in Appendix P-1.

Table 21-3 2018 Existing Conditions Signalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	8	23%	23%	1	14%	14%
B	11	31%	54%	5	72%	86%
C	8	23%	77%	1	14%	100%
D	8	23%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**35**	**100%**	-	**7**	**100%**	-
PM						
A	6	17%	17%	1	14%	14%
B	8	23%	40%	4	57%	71%
C	12	34%	74%	2	29%	100%
D	9	26%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**35**	**100%**	-	**7**	**100%**	-

Table 21-3 2018 Existing Conditions Unsignalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	4	57%	57%	2	100%	100%
B	1	14%	71%	0	0%	100%
C	2	29%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**7**	**100%**	-	**2**	**100**	-
PM						
A	4	57%	57%	2	100%	100%
B	1	14%	71%	0	0%	100%
C	1	14%	86%	0	0%	100%
D	0	0%	86%	0	0%	100%
E	1	14%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**7**	**100**	-	**2**	**100**	-

Each of the nine intersections identified for analysis in the AM and PM construction peak hours were evaluated and found to operate at an overall acceptable level of service. Of the approximately 42 movements analyzed during the AM construction peak hour, all movements operate at acceptable levels of service. During the PM construction peak hour, one movement operates at an unacceptable level of service (LOS E).

2033 No-Action without Construction Condition

An annual growth rate of one percent per year was assumed for the first five years (years 2018 to 2023) and a growth rate of 0.50 percent per year was assumed for the subsequent ten years (years 2023 to 2033) as per the *CEQR Technical Manual* in order to estimate the background volumes for the 2033 No-Action without Construction condition. Vehicle trips for No-Action background development sites discussed in Chapter 15, Transportation, and expected to be developed in the area and completed by the year 2033, were assigned to the roadway network. It is expected that roadway improvements projects identified in Chapter 15, Transportation, would also be completed by the year 2033, including the conversion of the intersection of Richmond Terrace and Alaska Street from an unsignalized intersection to a signalized intersection.

Tables 21-3 and 21-4 provide an overview of the levels of service that characterize 2033 No-Action without Construction conditions' "overall" intersection and individual lane groups conditions during the AM and PM construction peak hours. Detailed tables showing levels of service results for each intersection by lane group are provided in Appendix P-1.

Table 21-4 2033 No-Action without Construction Conditions Signalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	8	21%	21%	1	13%	13%
B	11	28%	49%	6	75%	88%
C	9	23%	72%	1	13%	100%
D	10	26%	97%	0	0%	100%
E	1	3%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**39**	**100%**	-	**8**	**100%**	-
PM						
A	0	0%	0%	0	0%	0%
B	7	18%	18%	1	13%	13%
C	10	26%	44%	1	13%	25%
D	13	33%	77%	1	13%	38%
E	2	5%	82%	2	25%	63%
F	7	18%	100%	3	38%	100%
All	**39**	**100%**	-	**8**	**100%**	-

Table 21-4 2033 No-Action without Construction Conditions Unsignalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	2	67%	67%	1	100%	100%
B	1	33%	100%	0	0%	100%
C	0	0%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**3**	**100%**	-	**1**	**100%**	-
PM						
A	2	67%	67%	1	100%	100%
B	0	0%	67%	0	0%	100%
C	0	0%	67%	0	0%	100%
D	0	0%	67%	0	0%	100%
E	1	33%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**3**	**100%**	-	**1**	**100%**	-

Under future No-Action conditions in year 2033, similar to the existing conditions, each of the nine intersections would operate at an acceptable overall level of service during the AM construction peak hour. Five out of the nine intersections analyzed for the PM construction peak hour would operate at an unacceptable level of service (i.e., LOS E or F), compared to none in 2018 existing conditions. Of the 42 movements analyzed during the AM construction peak hour, one movement would operate at an unacceptable level of service. During the PM construction peak hour, ten movements would operate at unacceptable levels of service, compared to one movement in the existing conditions.

2033 Construction Condition

Construction activities would generate 231 construction worker auto and taxi trips and 41 construction truck trips during the AM construction peak hour, and 231 construction worker auto and taxi trips and eight construction truck trips during the PM construction peak hour. Construction trucks would be required to use NYCDOT-designated truck routes to get to the project area and would then use local streets to access the construction sites.

Tables 21-3 and 21-4 provide an overview of the levels of service that characterize the 2033 Construction conditions' "overall" intersection and individual lane groups conditions during the AM and PM construction peak

hours. Detailed tables showing levels of service results for each intersection by lane group are provided in Appendix P-1.

Table 21-5 2033 Construction Conditions Signalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	7	18%	18%	0	0%	0%
B	12	31%	49%	7	88%	88%
C	9	23%	72%	1	12%	100%
D	10	26%	97%	0	0%	100%
E	1	3%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%-
All	**39**	**100**	-	**8**	**100%**	-
PM						
A	0	0%	0%	0	0%	0%
B	5	13%	13%	0	0%	0%
C	12	31%	44%	1	13%	13%
D	11	28%	72%	2	25%	38%
E	4	10%	82%	2	25%	63%
F	7	18%	100%	3	38%	100%
All	**39**	**100%**	-	**8**	**100%**	-

Table 21-5 2033 Construction Conditions Unsignalized Intersection Level of Service Summary – Lane Groups & Intersections

	By Lane Group			By Intersection		
LOS	**Count**	**Percent**	**Cumulative %**	**Count**	**Percent**	**Cumulative %**
AM						
A	2	67%	67%	1	100%	100%
B	1	33%	100%	0	0%	100%
C	0	0%	100%	0	0%	100%
D	0	0%	100%	0	0%	100%
E	0	0%	100%	0	0%	100%
F	0	0%	100%	0	0%	100%
All	**3**	**100%**	-	**1**	**100**	-
PM						
A	2	67%	67%	1	100%	100%
B	0	0%	67%	0	0%	100%
C	0	0%	67%	0	0%	100%
D	0	0%	67%	0	0%	100%
E	0	0%	67%	0	0%	100%
F	1	33%	100%	0	0%	100%
All	**3**	**100%**	-	**1**	**100%**	-

Of the nine analysis intersections, significant impacts are not expected during the AM construction peak hour, while seven intersections would be significantly impacted during the PM construction peak hour. The following intersections would have significant impacts at one or movements:

- The intersections of Richmond Terrace with Jersey Street, Franklin Avenue, Lafayette Avenue, Broadway, and Alaska Street, and the intersection of South Avenue and Forest Avenue, would be significantly impacted during the PM construction peak hour and could be fully mitigated with signal timing modifications.
- The significant impact identified at the intersection of Richmond Terrace and Jewett Avenue during the PM construction peak hour could not be fully mitigated. Signal timing modifications would be expected to result in new traffic impacts at this intersections, and other measures, such as lane restriping, are limited due to the intersection's geometric constraints.

As construction of the Proposed Project is anticipated to take place over the three-year period between the beginning of 2032 and the end of 2034, overall construction worker staffing levels would vary throughout this period. As documented above in Table 21-2, construction trips would be lower in 2034 than in the previous two years. At the impacted locations identified above, a traffic

monitoring program would be implemented, and TEAs would be deployed where deemed necessary. Furthermore, although the construction worker shift changes were analyzed to occur during the AM and PM peak hours in order to be conservative, construction shift start and end times may be staggered in order to avoid increased congestion during these time periods.

Parking

A total of about 1,400 temporary potential off-street parking spots have been identified for construction worker parking across 17 different parcels for material laydown and staging. These spaces are spread out along the alignment, and the number of construction workers parking at any individual location is anticipated to vary from month to month as the different sections are completed at different rates. Because the total amount of parking spaces identified for off-street parking exceeds the anticipated peak period worker demand of about 333 vehicles, it is anticipated that construction worker parking would be fully accommodated off-street and there would be no demand for on-street parking as a result of worker trips during construction. Due to the temporary Roxbury Street closure, which would last for approximately two months, about 80 on-street parking spaces would be unavailable during the duration of construction on that street segment. The surrounding streets are residential in nature and are assumed to have sufficient on-street parking to offset this temporary loss of on-street parking on Roxbury Street. Parking would also be temporarily eliminated along Richmond Terrace between Broadway and Bement Avenue, for an approximately six-month long period. This would result in a temporary reduction of approximately 12 on-street parking spaces. Parking would be temporarily eliminated along Richmond Terrace between Clinton Avenue and Lafayette Avenue, for an approximately 5-month long period. This would result in a temporary reduction of approximately 19 on-street parking spaces. These temporary reductions in on-street parking spaces are minor and are not anticipated to have a significant effect on the supply of on-street parking in the surrounding neighborhoods during the construction period.

Air Quality

Construction of the Proposed Project is anticipated to occur over a three-year period with activity varying between an eight month to twenty-nine-month period across the Proposed Project corridor. The construction schedule starts out with clearing and grubbing activities that reflects the work involved. Traffic would be maintained on the roadway using staged construction and lane shifts. Furthermore, traffic diversion is not expected to last more than two years for any of the construction phases. Therefore, an air quality analysis for traffic during construction is not required.

Construction-related effects are short-term and include increases in particulate matter in the form of fugitive dust (from ground clearing and preparation, grading, stockpiling of materials, on-site movement of equipment, and transportation of construction materials), as well as exhaust emissions from material delivery trucks, construction equipment, and worker's private vehicles.

Dust emissions typically occur during dry weather, periods of maximum demolition, construction activities, or high wind conditions.

The Proposed Project would require at least one dedicated concrete batch plant in at the vicinity of Alaska Street and the contractor would likely look at a second batch plant located at the proposed Arlington Station. The batch plants would service the mainline paving operations.

The closure of Roxbury Street due to the construction of the proposed busway and associated retaining walls is not expected to result in any significant traffic disruptions as the closed section of the road is only 1,000 feet long and there appears to be sufficient parking in adjacent lots for the displacement of the street parking. The closest sensitive receptor is located at 150 feet from the batch plant at the proposed Arlington Station. Since no concrete bridge deck pour from December through March due to cold weather, the operation of the batch plants would last 26 months and be active for 10 hours of each weekday during operation. Based on these assumptions, any potential air quality impact would be considered temporary and the contractor would be required to adhere to MTA's construction mitigation protocol which would minimize any the potential impacts at nearby sensitivity receptors.

The following measures would be applied during construction:

Construction management of the Proposed Project would include environmental measures imposed on contractors within the contract limits and in areas adjacent to and/or affected by the work. As detailed in the NYSDOT Engineering Instruction 17-006, §107-11 Air Quality Protection, construction work would be planned and executed in a manner that would minimize air emissions. Air quality control measures for construction of the Proposed Project would include the following:

- Minimizing the period and extent of area being exposed or re-graded at any one time;
- Spraying construction areas and haul roads with water, especially during periods of high wind or high levels of construction activity;
- Wheel washing;
- Minimizing the use of vehicles on unpaved surfaces;
- Covering or spraying material stockpiles and truck loads;
- Keep equipment maintained and operating efficiently in a clean manner to mitigate any exhaust impacts;
- Using ultra-low sulfur diesel (ULSD) fuel in all non-road diesel construction equipment;
- Banning the idling of diesel-powered construction equipment for longer than three minutes, with some exceptions;
- Protect air intakes for buildings from diesel exhaust fumes; and
- Including more measures to control dust at the project site.

With the implementation of best practices, as outlined above, no significant adverse impacts would occur, and no further mitigation measures would be required.

Noise

This section presents the results of the construction noise assessment and recommended BMPs to reduce potential for construction noise effects.

Construction Noise Impact Criteria

Construction noise impact criteria applicable to the Proposed Project include:

- FTA construction noise guidelines (*Transit Noise and Vibration Impact Assessment Manual, Section 7*),
- NYSDEC *Assessing and Mitigation Noise Impacts* Program Policy,
- New York City Departments of Environmental Protection (NYCDEP) *Citywide Construction Noise Mitigation (Rules of the City of New York, Title 15, Chapter 28)*, and
- CEQR construction noise requirements (*CEQR Technical Manual*, *Chapter 22*).

FTA Construction Noise Guidelines

The FTA construction noise guidelines are not standardized criteria, but are guidelines typically used for federally-funded projects and when state or local construction noise limits do not have quantitative construction noise limits. As shown in Table 21-6, FTA evaluates construction noise based on an 8-hour daytime or 8-hour nighttime period (Leq8hr) for a typical work period. Construction noise is evaluated based on the type of equipment operating and the amount of time (usage factor) that equipment typically operates.

Table 21-6 FTA Construction Noise Guidelines

	Construction Noise Level (dBA)		
Land Use	**Daytime Leq8hr**	**Nighttime Leq8hr**	**30-day Average**
Residential	80	70	75 (Ldn)
Commercial	85	85	80 (Leq24hr)
Industrial	90	90	85 (Leq24hr)

Source: FTA 2018.

NYSDEC Construction Noise Guidelines

Since construction activities are short-term in relation to operational noise, less stringent thresholds are generally used to assess construction noise. According to NYSDEC policy, a proposed action should generally not raise ambient sound levels above 65 dBA in non-industrial settings or above 79 dBA in industrial environments. Therefore, given the temporary nature of construction noise, an increase in ambient noise of 10 dBA or more that would increase levels above 65 dBA is considered a reasonable construction noise threshold. Beyond these levels,

the NYSDEC policy recommends that Best Management Practices (BMP)s be used to reduce the effects of construction noise.

CEQR Construction Noise Guidelines

CEQR construction noise guidelines depend on the duration of construction. Construction of the Proposed Project would likely take approximately three years to complete depending on the method of project delivery and the specific construction methods used. However, since the Proposed Project is linear, construction activities in any given area would occur for a substantially shorter duration which would generally be less than two years. Construction noise should be limited to 85 dBA (Leq) or lower as it relates to potential public health effects.

Project Construction Noise Guidelines

Since the Proposed Project is within the City limits, the NYCDEP's *Citywide Construction Noise Mitigation* guidelines must be followed. These guidelines include requirements to utilize quieter models of certain types of construction equipment and to incorporate path noise controls (see *Construction Noise Mitigation* Section for further information). These guidelines represent a robust set of BMPs to reduce the potential effects of construction noise and inherently meet the requirements of the NYSDEC policy for incorporating BMPs. Therefore, construction noise impact will be assessed according to the FTA construction noise guidelines. If construction noise levels would exceed the FTA guidelines, there would be potential impact and the need for additional construction noise mitigation measures to further reduce noise conditions will be evaluated and recommended, as needed.

Construction Noise Impact Assessment

The Proposed Project includes a wide range of construction conditions including at-grade roadway construction, new bridges and viaducts, stations, and retaining walls. **Table 21-7** presents the maximum noise levels and usage factors from typical construction equipment used during each of these types of construction activities as well as the cumulative energy-average noise level (Leq8hr). The total construction noise level ranges from 84 to 90 dBA (Leq8hr) at a distance of 50 feet. **Table 21-8** presents the distances to potential construction noise impact prior to mitigation for each type of construction activity and residential, commercial, or industrial land uses. Construction noise impact at residential land uses would occur within 75 to 125 feet. Construction noise impact at commercial and industrial land uses would occur within 30 to 80 feet.

Table 21-7 Construction Noise Levels

Construction Equipment	Maximum Noise Level at 50 feet (dBA)	Usage Factor	Construction Noise Level (Leq8hr, dBA)				
			Retaining Walls	At- and Below-Grade BRT and Station	Viaduct/ Bridge with Retaining Walls	Bridge with Caissons	Roadway
Backhoe	80	40%		76	76		76
Crane	85	20%	78		78	78	
Excavator	85	40%			81	81	
Dump Truck	84	40%	80	80	80	80	80
Concrete Mixer	85	40%		81		81	81
Caisson Drill	85	20%				78	
Impact Pile Driver	95	20%	88		88		
Total Noise Level (Leq8hr) at 50 feet			**90**	**84**	**90**	**87**	**84**

Source: FTA, 2018 and VHB 2023

Table 21-8 Distances to Construction Noise Impact

Land Use Type (Impact Criterion)	Distance to Construction Noise Impact (feet)				
	Retaining Walls	At-grade and below-grade BRT and Station	Viaduct/ Bridge with Retaining Walls	Bridge with Caissons	Roadway
Residential (80 dBA Leq8hr, dBA)	125	75	125	100	75
Commercial (85 dBA Leq8hr, dBA)	80	50	80	65	50
Industrial Impact (90 dBA Leq8hr, dBA))	50	30	50	40	30

Source: VHB 2023

Construction noise impacts and the areas where construction noise levels may exceed the FTA construction noise guidelines prior to mitigation are presented in Figures (see Appendix P-6). The following summarizes locations where there may be construction noise impact prior to mitigation and a need for construction noise control measures such as those outlined in the NYCDEP's *Citywide Construction Noise Mitigation:*

» First row commercial and institutional receptors within approximately 50 feet and 30 feet, respectively, of the BRT alignment on Richmond Avenue near St. George, Snug Harbor Road, and Broadway.

- Residential receptors within approximately 75 feet of the BRT alignment on Richmond Avenue near Nicholas Street, Clinton Street, Pelton Street, and Burgher Avenue.
- Residential and commercial receptors within approximately 125 feet and 80 feet, respectively, of the BRT alignment on viaduct between Richmond Avenue and Nicholas Street.
- Residential receptors within 75 feet of the at-grade and below-grade BRT alignment between Nicholas Street and Van Name Avenue.
- Residential receptors within 125 feet of the below-grade BRT alignment with retaining wall construction between Van Name Avenue and Arlington Station.
- Residential and commercial receptors within 75 feet and 50 feet, respectively, of the BRT alignment on South Avenue between Arlington Station and Goethals Road North.

Construction Noise Mitigation

The NYCDEP's rule for *Citywide Construction Noise Mitigation Citywide* established standards and procedures to reduce noise levels from construction and established sound levels standards for specific noise sources. This rule prescribes the methods, procedures and technologies to be used at construction sites within the City to achieve noise mitigation when certain construction equipment or activities are conducted. These mitigation measures fulfill the need to provide BMPs for construction noise with respect to the NYSDEC noise policy and would also provide noise mitigation in relation to the impact assessment according to FTA guideline criteria.

The following controls to reduce noise at the source would be implemented to the extent feasible, practical and safe:

- Contractors would self-certify that all construction tools and equipment have been maintained to not generate excessive or unnecessary noise and that the noise emissions would not exceed the levels specified in the Federal Highway Administration's Roadway Construction Noise Model User's Guide, January 2006.
- All construction equipment would be equipped with necessary noise reduction equipment including mufflers.
- Where feasible, practical and safe, the use of back-up alarms would be minimized and/or quieter back-up alarms would be installed in accordance with OSHA standards.
- Vehicles would not be allowed to idle more than three minutes in accordance with New York City Administrative Code §24-163.
- The contractor shall utilize a training program to inform workers on methods that can minimize construction noise.

- For impact equipment such as pile drivers and jackhammers, the quietest equipment shall be selected taking into consideration the structural and geotechnical conditions.
- Should noise complaints occur during construction, the contractor shall use path noise control measures such as temporary noise barriers and jersey barriers.

In general, the quietest equipment and methods shall be used for excavators, dump trucks, cranes, auger drills, and concrete saws to the extent feasible and practical.

Conclusion

There would be potential construction noise impact prior to mitigation according to the FTA construction noise guidelines at residences within approximately 75 to 125 feet, commercial properties within approximately 50 to 80 feet, and industrial receptors within approximately 30 to 50 feet of the proposed BRT alignment. Construction noise mitigation measures, as described in the NYCDEP's rule for *Citywide Construction Noise Mitigation Citywide* would fulfill the need to provide BMPs for construction noise with respect to the NYSDEC noise policy and would also provide noise mitigation in relation to the impact assessment according to FTA guideline criteria.

Vibration

This section presents the results of the construction vibration impact assessment and recommended BMPs to reduce potential for construction vibration effects.

Construction Vibration Impact Criteria

Construction vibration impact criteria applicable to the Proposed Project include:

- FTA construction vibration guidelines (*Transit Noise and Vibration Impact Assessment Manual, Section 7*), and
- CEQR construction noise requirements (*CEQR Technical Manual, Chapter 22*).

FTA Construction Vibration Impact Criteria

During certain construction activities, there is the potential for an increased risk of structural damage to nearby buildings. Potential damage from vibration also depends on how the building is constructed. FTA criteria for potential structural damage are shown in Table 21-9. The criteria are presented in both VdB and peak-particle velocity (PPV) in inches per second (in/s). Structural damage is typically limited to impact-type construction equipment such as pile driving used in very close proximity to buildings (within 25 feet).

Table 21-9 FTA Criteria for Potential Structural Damage

Building Category	Vibration Criteria for Potential Damage to Structures	
	Vibration Level[1] (VdB)	Peak-Particle Velocity (in/s)
I. Reinforced-concrete, steel or timber	102	0.5
II. Engineered-concrete and masonry	98	0.3
III. Non-engineered timber and masonry	94	0.2
IV. Buildings extremely susceptible to vibration damage	90	0.12

Source: FTA 2018.
[1] Assumes a crest factor of 4 (12 dB)

CEQR Construction Vibration Impact Criteria

In accordance with the *CEQR Technical Manual*, there is an increased risk of vibration damage if the project is located within 90 feet of a New York City Landmark, a National Register-listed property, or within a New York City Historic District. Within this distance, the project is required to comply with the New York City Department of Buildings (DOB) Technical Policy and Procedure Notice (TPPN) #10/88 and Building Code C26-112.4. The DOB TPPN requires vibration monitoring to detect at an early stage the beginnings of damage so that construction procedures may be changed and to reduce the risk of construction damage.

Construction Vibration Impact Assessment

Certain construction activities and equipment such as impact or vibratory pile driving, drilling, rock removal with hoe rams or jackhammers, and bulldozers or loaded trucks have the potential to generate vibration that could increase the risk of structural damage. Table 21-10 presents the distances from construction equipment that would exceed the threshold for increased risk of damage based on the FTA construction vibration impact criteria for different building structures. Additionally, there would be potential vibration impact for construction within 90 feet of a New York City Landmark, a National Register-listed property, or within a New York City Historic District.

Impact pile driving such as those for foundations or sheet piling for retaining walls and support of excavation has the greatest potential for vibration impact. For most modern buildings fitting this category, the distance to impact from typical pile driving activities is 30 feet. For more sensitive buildings, potential construction vibration impact may extend up to 77 feet from impact pile driving.

Table 21-10 Distance to Construction Vibration Impact

Construction Equipment	Distance to Vibration Damage Threshold (feet)			
	Building Category I (0.5 in/s)	Building Category II (0.3 in/s)	Building Category II (0.2 in/s)	Building Category IV (0.12 in/s)
Impact Pile Driver (Typical)	30	42	55	77
Vibratory Pile Driver (Typical)	12	17	22	32
Caisson Drilling	8	11	15	20
Clam Shovel for Slurry Wall	14	19	25	35
Hydromill for Slurry Wall	3	4	5	7
Hoe Ram	8	11	15	20
Jackhammer	4	6	8	11
Large Bulldozer	8	11	15	20
Small Bulldozer	1	1	2	2
Loaded Trucks	7	10	13	18

Source: VHB 2023.

Construction Vibration Mitigation

Construction vibration control measures would be implemented to reduce the risk of damage at all buildings and structures that are within the vibration screening distances shown in Table 21-8. The greatest potential for construction vibration impact is associated with earth-moving activities and impact equipment. As needed for specific construction activities, vibration control measures would include the following:

- Utilizing less intensive impact driving equipment and methods for constructing retaining walls. These methods may include using vibratory or push-in sheet piling equipment or using a hydromill for slurry walls.
- Using concrete saws to aid in removing existing concrete and pavement when using impact equipment such as hoe rams or jackhammers.
- Utilizing smaller equipment such as small backhoes instead of larger equipment.
- Utilizing truck routes that avoid buildings and maintaining relatively smooth surfaces for trucks to travel.

For historic properties within 90 feet of construction activities, the project is required to comply with the DOB TPPN #10/88 and Building Code C26-112.4. The TPPN includes the following requirements:

- Establish a maximum vibration limit criterion for historic properties no greater than 0.5 inches per second.
- Institute a vibration monitoring program using seismographs to alert contractors of potential exceedances of the vibration limit so they can implement corrective measures as needed.

» Conduct photographic pre-construction surveys to identify existing cracks and utilize tell-tale crack gauges to identify potential increases in existing or introduction of new cracks to buildings.

Conclusion

There would be potential construction vibration impact prior to mitigation at nearby structures based on the type of building and their proximity to vibration-generating construction activities such as pile driving or impact equipment. Construction vibration control measures would be implemented to reduce the risk of damage at all buildings and structures that are within the vibration screening distances or for historic properties that are within 90 feet of construction activities.

Solid Waste

Construction of the Proposed Project would generate solid waste comprised of demolition debris and construction debris. Fill material removed from the project corridor during construction would be disposed of via private waste carters at a licensed facility in accordance with all governing regulations. Disposal of all construction debris would be handled by the contractor and managed in accordance with MTA's Asset Recovery Program.

Natural Resources

The following section identifies potential impacts to natural resources, as defined by the *CEQR Technical Manual*, that may occur during construction activity for the Proposed Project (see Chapter 10, Natural Resources). Impacts are considered for all active construction areas onsite including the proposed alignment, laydown areas and batch plants during the anticipated three years of project construction. Table 21-11 below summarizes major construction activities, potential affects to natural resources, and mitigating measures to minimize or avoid impacts.

Table 21-11 Summary of Potential Construction Impacts

Activity under Proposed Action	Potential Impact	Resource(s) Potentially Affected	Mitigating Measures
Storage of soils and materials; Concrete batch plant development and use	Introduction of contaminants, temporary sedimentation and turbidity increases, increased vehicle traffic around facilities.	Kill Van Kull, surface waters, littoral and freshwater wetlands, groundwater, wildlife.	Appropriate SESC including silt fence, turbidity barriers, and management and stabilization of loose materials; staging areas kept outside of sensitive wildlife habitats.

Table 21-11 Summary of Potential Construction Impacts

Activity under Proposed Action	Potential Impact	Resource(s) Potentially Affected	Mitigating Measures
Installation of piles or sheeting; Vibratory hammer use and pile driving	Displacement, injury, or death of wildlife resulting from noise or vibration; masking of communication among birds.	Littoral wetlands, aquatic habitat, terrestrial and aquatic wildlife, spawning fish, federally-protected fish species.	Avoidance of sensitive habitats and times (night use); in-water activity limited to a very small portion of the tidal shoreline; meet applicable noise standards as identified through EFH and ESA coordination; isolate in-water work areas; adhere to appropriate in-water timing restrictions as required by agencies.
	Subsurface substrate disruption, turbidity increases, direct impacts to benthic fauna.	Water quality and benthic fish or invertebrates.	Activities confined to degraded habitat areas; minimization of impact area to the greatest extent practicable; use of caissons to minimize areas of temporary impact. Isolation of in-water work areas; adherence to in-water timing restrictions as required.
Tree or vegetation clearing	Direct impacts to nesting birds and wildlife from construction machinery; indirect impacts including wildlife displacement or area avoidance.	Migratory birds, rare species, and low mobility wildlife (herptiles).	Adherence to tree clearing timing restrictions (April – August). Install and regularly maintain silt (exclusion) fencing adjacent to sensitive habitats as part of SESC.
	Habitat loss or degradation; Soil destabilization.	Vertebrate and invertebrate wildlife; rare species; water quality	Follow appropriate SESC measures; Avoidance and minimization of clearing in sensitive habitat areas; replant temporarily cleared areas with ecologically appropriate native vegetation upon construction completion.

Table 21-11 Summary of Potential Construction Impacts

Activity under Proposed Action	Potential Impact	Resource(s) Potentially Affected	Mitigating Measures
Machinery Use (Cranes, Loaders, etc.); Increased Boat and Vehicle Traffic	Indirect impacts through increased noise and visual disturbances-displacement or behavioral changes to wildlife; direct impacts to low-mobility wildlife.	General wildlife; State and federally-protected species, nesting and migratory birds.	Overall avoidance of sensitive wildlife habitats where possible; timing restrictions for certain activities near nesting birds (if required); use of appropriately functioning machinery (mufflers).
	Accidental spills or leaks of petroleum and other industrial contaminants.	Water quality, Aquatic wildlife habitat.	Avoidance of refueling areas near aquatic or sensitive wildlife habitats; proper maintenance of machinery and other equipment; plans for containing spills; containment measures (turbidity barriers, etc.) as needed.
Night Work and Night Lighting	Displacement or behavioral changes of wildlife; direct impacts from collisions; avoidance behavior of roosting birds.	Migratory, roosting or nesting birds.	Night work confined to areas of existing light pollution and disturbance; avoidance of lighting projection into airspace.

Water Quality

Construction of the Proposed Project would require soil disturbing activities such as grading and excavation of the ground surface. As these activities would disturb more than one acre of land a State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity would be required. To obtain coverage under this permit, the project sponsor would be required to prepare a Storm Pollution Prevention Plan (SWPPP). The principal objective of the SWPPP is to comply with the SPDES stormwater permit for construction activities by planning and implementing the following practices: (a) Reduction or elimination of erosion and sediment loading to water bodies during construction activities; (b) Control of the impact of stormwater runoff on the water quality of the receiving water; (c) Control of the increased volume and peak rate of runoff during and after construction; and (d) Maintenance of stormwater controls during and after completion of construction. The SWPPP would be prepared based on the latest edition of the *New York Standards and Specifications for Erosion and Sediment Control*.

Temporary construction-related effects to water quality are described below.

Temporary disturbances to open waters along the approximate 3,750 linear foot section of Kill Van Kull shoreline in the vicinity of Snug Harbor would be expected under the Proposed Project. Construction activities (including ground or below water substrate disturbances) may result in soil erosion, sediment transportation and increased turbidity. Soil exposure or movement during staging, or pier construction may produce these temporary impacts.

Temporarily exposed soils or runoff during construction activities (such as grading and filling); and the development of temporary concrete batch plants at the Arlington Station property and Alaska Street intersection have the potential to result in runoff into adjacent waterbodies and result in temporary turbidity increases. Spills of petroleum or other materials during fueling or other construction activities may also occur.

These temporary water quality impacts may be mitigated by soil erosion and sediment control (SESC) measures including appropriately installed silt fence, stabilization of temporarily exposed soils, and use of turbidity barriers. These measures will be implemented through an approved Soil Erosion and Sediment Control Plan.

Floodplains

The temporary placement of machinery, stockpiled materials, or other equipment is required in areas subject to flooding, particularly within the vicinity of the Kill Van Kull east of the Port Richmond Wastewater t Resource Recovery Facility (WRRF). Flooding in active construction zones or laydown areas has the potential to result in displacement of equipment or temporary increases in sediment or contamination in waterbodies. Temporary impacts associated with flooding may be mitigated through preparation prior to major storm events. Appropriately securing loose materials or the temporary relocation of equipment or materials in anticipation of impending storm event will help mitigate potential flood impacts. The temporary construction activities associated with the Proposed Project are not anticipated to result in significant losses of flood storage volumes or change flood patterns onsite or adjacent to the site.

Groundwater

Subsurface drilling and excavating into bedrock would be required for project activities near Snug Harbor, which may increase potential exposure to groundwater. Although groundwater is documented to be contaminated throughout the project area, temporary impacts associated with construction activities, such as the spilling of petroleum or other materials, have the potential to result in the introduction of additional contaminants into groundwater sources. These impacts may be mitigated through a plan for containing spilled materials and designating storage or fueling areas that are secured and away from locations sensitive to groundwater transfer and contamination such as waterbodies or freshwater wetlands.

Wetland Resources

Direct impacts to USACE jurisdictional or NYSDEC mapped freshwater wetlands are expected to be avoided as proposed construction, staging, and equipment locations are outside of freshwater wetlands (which have been delineated). Inadvertent indirect impacts may occur as a result of runoff and sediment transport from stockpiled material, temporarily exposed soils or concrete in staging areas. The project has been designed to avoid 100-foot NYSDEC regulated freshwater wetland adjacent areas that occur on the western end of the property boundary.

Under the Proposed Project, temporary construction activities that directly and indirectly disturb littoral zone wetlands would occur. Based on available USACE data, the Kill Van Kull depth in the project area typically ranges from 2 to 6 feet with a typical 5 foot variation in tide. Disruptions to littoral zone wetlands may occur as a result of stabilization and development of staging areas adjacent to the Kill Van Kull shoreline. These staging areas include Livingston Station (approximately 640 linear feet), New Brighton Station (approximately 300 linear feet), and Bank Street (approximately 1,460 linear feet).

Appropriate soil erosion and sediment control measures would be utilized such as proper installation of silt fence, and the containment of loose soils or raw concrete. These construction impacts to littoral zone wetlands would be fully addressed as part of NYSDEC Article 15 (Protection of Waters) and Article 25 (Tidal Wetlands) permitting and USACE Nationwide Permitting under Section 10 of the Clean Waters Act.

Upland Vegetation

In addition to permanent clearing of upland vegetation in the project alignment, it would be expected that temporary clearing or disturbance of vegetation would be required for access and staging. Vegetation required to be cleared includes secondary successional forest fragments, as well as mid and early successional (herbaceous dominant) communities characterized by past disturbance. This clearing includes the removal of vegetation in some tidal (NYSDEC defined) adjacent areas along the Kill Van Kull at New Brighton and Bank Street. Other areas requiring clearing of forest vegetation for temporary construction access include the proposed Alaska Street ramp and the Roxbury Street/Lockman Avenue staging areas. Impacts to upland vegetation communities resulting from temporary clearing may be mitigated by returning these areas to an equal or better ecological function or value by planting appropriate native species at these locations upon project completion.

Sensitive Species

The proposed construction would predominantly occur within an urban environment containing extensive historic and active anthropogenic disturbances. Significant terrestrial wildlife documented or presumed to occur within the study area consists principally of bird species adapted to urban environments. Because much of the Proposed Project would occur within existing disturbed areas, construction-related impacts to terrestrial species are anticipated to be minimal

and would be mitigated by avoidance and minimization measures to the greatest extent practicable. Protective measures would be designed and implemented in coordination with regulatory agencies as part of the City, State and Federal review and permitting processes.

Terrestrial Species

Foundation and sheet piling operations with the potential to generate significant noise and vibration disturbances are proposed for along the corridor in the areas between Lockman Avenue to Van Name Avenue, Alaska Street to Livingston Station/Bard Avenue, Clinton Avenue to the Atlantic Salt Tunnel Structure, and the Nicholas Street Ramp site. These areas are specifically identified as construction sections 2, 5, 7, and 11. The 1-mile section of the BRT line running between the proposed Arlington Station west of South Avenue to Van Name Avenue (Sections 1 and 2) would require large crawler cranes to drive steel sheeting, foundation piling, and for support of large form packages for both the footings and retaining walls. Although the construction footprint for this area is generally confined to an existing 30-foot wide footprint between live yard tracks and residential areas, these noise-generating activities have the potential to disrupt wildlife within the vicinity of the project area. These disturbances may result in area avoidance and/or interference with auditory communication (such as between birds). However, these potential impacts would be intermittent in nature owing to the short period of operation throughout the day at a given location. In addition, these activities would occur in urbanized areas already impacted by elevated ambient noise levels associated with traffic and industrial activities.

The presence of cranes may create a visual disturbance that results in temporary displacement of terrestrial wildlife including common nesting or migrating birds. Such species may avoid the project area for the duration of construction and would be expected to return to available nesting, foraging or roosting areas once the cranes have been removed. Because these machines are slow-moving, direct physical impacts (such as bird collisions) are not anticipated.

The construction of up to two concrete batch plants, one at Alaska Street, the other at the proposed Arlington Section is proposed for the duration of construction. The presence of these facilities may result in increases in construction vehicle traffic, as well as possible increases in noise, stormwater runoff, and dust with the potential to affect wildlife. These potential wildlife impacts are; however, minimized by limiting activities to areas currently surrounded by industrial and transportation activity and outside of sensitive wildlife nesting areas (see colonial bird discussion below).

Night-time construction activities are proposed for portions of the North Shore BRT project area, mostly at the alignment's eastern end. In addition to increased exposure to the same construction-related hazards encountered in daytime (noise, vibration, traffic, and dust), night-time construction presents additional hazards to wildlife. Diurnal birds may be flushed from their roosts by construction-related disturbance, causing them to fly into obstacles or into areas where they may be vulnerable to predation or vehicle strikes. Bright lights

required to illuminate construction areas have the potential to disorient birds that are migrating through the area during the night or change foraging behaviors.

Night work would be limited to predominantly commercialized areas which are less likely to be inhabited by wildlife species and existing light pollution is prevalent in these areas. This is expected to reduce the probability of impacts to wildlife relative to night construction. Artificial lights are expected to project below the air space heights typically associated with migratory bird collisions. Construction lights pointed downward toward the construction areas also reduces the probability of interference with migratory birds.

Temporary displacement of some foraging waterbirds or shorebirds such as herons or terns, or fish-foraging raptors such as bald eagles or ospreys may occur as a result of construction within the vicinity of Snug Harbor and along waterfront staging areas. Temporary shoreline disturbances may result in avoidance behaviors by fish-foraging birds. Based on the availability of similar shoreline habitat along the North Shore and the level existing regional disturbance, this minor displacement would not be expected to result in impacts to bird populations.

Rookeries, beach-nesting shorebirds, or shorebird nest colonies are not expected to occur within construction areas. A colony of 8-10 yellow-crowned night herons was identified approximately 640 feet south of the proposed footprint at Arlington Station during environmental evaluations. The construction area footprint was redesigned to avoid this colony and its associated wetland and upland habitats. A significant visual (tree) barrier exists between the nest and the proposed active construction area. In addition, the colony is surrounded by consistent ambient noise and disturbance from traffic, commercial businesses, and industries. As a result of these conditions, impacts to this colony are not anticipated as a result of construction.

No large raptor nests, such as osprey or eagle nests were observed or are currently known to exist within the construction area. There is potentially suitable nesting habitat (including artificial structures and trees) for nesting raptors along the shoreline of Snug Harbor. Although not anticipated to occur, populations of both osprey and bald eagle are regionally increasing and nesting in urbanized environments is becoming more common. Coordination with NYSDEC (and potentially USFWS) would be required if an eagle nest is established in the vicinity of the construction area prior to or during construction to avoid direct or indirect impacts to nesting birds.

Most of the terrestrial portions of the proposed construction area are highly developed and would not be expected to support significant populations of reptiles and amphibians. However, there is the limited possibility of low-mobility wildlife (such as frogs or turtles) entering workspaces during construction primarily near the Arlington Station construction area as well as areas along the Snug Harbor waterfront. Use of properly installed and regularly maintained exclusion (silt) fencing during construction would help isolate the workspace from adjacent wildlife habitats and prevent entry of these species. Based on the

existing habitat conditions and anticipated isolation of workspaces, significant direct impacts to low-mobility terrestrial wildlife are not expected.

Minor indirect impacts to built resources may occur during construction; however, impacts to existing structures potentially containing wildlife, such as bridges containing migratory birds, are largely avoided. Measures would be taken to deter nesting birds, such as barn swallows, from utilizing structures that may be disturbed during construction. The south span of the South Avenue Bridge (Section 1) would be temporarily supported to allow for a proposed abutment lagging wall to be constructed without compromising the structure. To avoid impacts to migratory birds that may utilize the bridge for nesting, the underside of the bridge would be tarped outside of the migratory bird nesting season (per the federal *Migratory Bird Treaty Act,* April 1 through August 31).

Although no work is proposed for the Bayonne Bridge (located in the vicinity of Section 3) as part of the Proposed Project, the former North Shore Railroad ROW crosses beneath the structure. If species such as peregrine falcon or barn owl were nesting on the bridge in proximity to this portion of the study area, their nesting behaviors may potentially be disrupted by noise or visual disturbances associated with construction activities or increased human presence beneath or near the structure. As with other locations, the amount of existing disturbance and noise at this location reduces the probability that the proposed activities would significantly disrupt bridge-nesting birds. Construction monitoring during the active breeding season or limiting work (typically within 300 feet) of a nest location during breeding are measures that are commonly utilized to avoid impacts to these nesting birds.

Tree nesting of common disturbance-tolerant bird species would be expected to occur throughout the construction area. Tree removal would be required at Arlington Station, at several staging areas, along portions of the rail alignment, and along a significant portion of the Snug Harbor shoreline under the Proposed Project. To avoid any direct impacts to nesting birds, eggs, and/or their young; any suitable nest trees (typically 6 inches in diameter or more) that require removal within the project area would be removed outside of active nesting season (see MBTA discussion above). This timing restriction would minimize the probability of any direct impacts to tree-nesting birds during construction.

Aquatic/Marine Species

The construction of the Proposed Project would require the use of hammers or pile drivers to install temporary steel sheeting and new piers. These structures would be forced down into the benthic zone of the Kill Van Kull, which could crush shellfish and other benthic organisms unable to vacate the area. In addition, the installation of these structures may agitate sediment into the water column, resulting in increased turbidity and possibly the release of pollutants, both of which could adversely impact fish, shellfish, and other marine life.

These impacts would be mitigated to the greatest extent practicable by installing containment structures around in-water work areas, such as turbidity curtains. These structures would be installed prior to construction and would remain in

place until construction completion. Although some benthic organism mortality may still occur, it is expected to be negligible relative to the limited amount of direct in-water work and the available habitat surrounding the construction zone.

Temporary impacts from construction noise, particularly from low frequency sounds from hammers or pile drivers used to install temporary sheeting, pilings, etc. have the potential to temporarily displace or injure fish, including Federally-endangered sturgeon, or other marine wildlife species sensitive to pressure changes. Physical changes include instantaneous or delayed mortality, physical injury, physiological changes, temporary or permanent loss in hearing, increased stress resulting in reduced fitness, and loss of ability to detect biologically relevant sounds (i.e. sounds from predators and prey, communication, acoustic cues for orientation).

Behavioral responses include any change in behavior from small and short-duration movements to changes in feeding or mating; alteration of migratory paths; and the disruption of finding of places for larval settlement. Anthropogenic sounds may interfere with detection of the overall acoustic scene (or soundscape) as well as affecting sound communication by fishes. Sounds in excess of 207 dB SEL_{cum} can cause mortality and potential mortal injury in fish. The threshold at which fish temporarily lose hearing is 186 dB $SEL_{cum.}$

The sounds produced by pile driving are impulsive, short and most of their energy lies below 500 Hz, though some energy may extend up to 1 kHz. The sound levels (both sound pressure and particle motion) vary substantially, depending on numerous factors such as pile diameter, hammer size, substrate characteristics, *etc*. The sounds produced by pile drivers are often very intense with SEL_{ss} often well-exceeding 180 to 200 dB re 1 $\mu Pa^2 s^{-1}$ and with very sharp rise times (Popper & Hawkins 2019; National Marine Fisheries Service 2018).

Impacts associated with in-water construction noise would be temporary and minimized to the greatest extent practicable. The in-water work involving hammering or driving for the Proposed Project is confined to a small area of intertidal/subtidal shallows near Snug Harbor. Coordination with the National Marine Fisheries Service would occur to both minimize impacts to Essential Fish Habitats (EFH) and avoid impacts to aquatic endangered species (sturgeon). In-water work would be scheduled as required so as to avoid sensitive time periods, such as fish spawning. In addition, prior to construction, work areas would be isolated to limit turbidity, prevent marine species from entering into areas where they may become entrapped, and to limit marine species' exposure to noise and vibrations associated with pile driving and other in-water construction activities.

It is expected that this combination of protective measures would result in the avoidance of significant adverse impacts to fisheries, fish habitats, or endangered species during construction.

Hazardous Materials

As described in **Chapter 11, Hazardous Materials**, the construction of the Proposed Project would require subsurface disturbance along the alignment for construction of the busway, stations, parking areas, and drainage facilities. Based

on the review of preliminary construction plans for the Proposed Project and the identified RECs and environmental concerns at or in close proximity to the proposed construction area, as noted in Chapter 11, Hazardous Materials, the potential exists to encounter contaminated soils during construction activities. In addition, based on the planned construction activities and anticipated depth to groundwater, dewatering may be required as part of construction, resulting in the potential for discharge of contaminated groundwater. The types of contaminants that may be encountered include volatile organic compounds (VOCs), Semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, herbicides and rodenticides, metals such as lead, cadmium, chromium, and mercury, as well as methane. In addition, asbestos- and PCB-containing building materials and lead-based paints may be encountered.

During detailed project design, Phase II ESAs would be performed for properties identified in the Phase I ESA as having the potential to contain contaminants that would be disturbed during construction. The Phase II ESAs would include subsurface testing of soil, soil gas, and/or groundwater to identify sources of environmental impacts. Based on the results of the Phase II ESAs, a number of best management practices could be implemented (e.g., remedial action plans, construction health and safety plans, asbestos abatement plans, waste management plans, etc.) that prevent exposure of hazardous and contaminated materials to construction workers or the public.

Additionally, if dewatering is required for construction, testing would be performed to ensure compliance with applicable discharge regulatory requirements. All material requiring disposal (e.g., miscellaneous debris, tires, contaminated soil, and any excess fill) would be characterized and disposed of off-site in accordance with applicable federal, state, and local requirements.

With the implementation of these protocols, no significant adverse impacts related to contaminated materials would result from demolition and/or construction activities related to the Proposed Project.

Utility Infrastructure

As noted in Chapter 12, Water and Sewer Infrastructure, construction of the Proposed Project would necessitate the in-kind replacement and/or relocation of existing water and sewer infrastructure at various locations in accordance with NYCDEP requirements. Existing water infrastructure identified for in-kind replacement and/or relocation in accordance with DEP criteria includes:

- A 12-inch diameter water main beneath Roxbury Street.
- Hydrant relocations along Bank Street from the turnaround near Atlantic Salt to Nicholas Street.
- Existing 12-inch and 24-inch diameter water mains located along Stuyvesant Place, a 12 inch water main along the south sidewalk between Hamilton Avenue and Wall Street. Existing hydrants in this area may also need to be relocated.

» An existing 12-inch diameter watermain in Eaton Place is expected to be replaced.

Within portions of the open-cut, and at-grade areas of the proposed alignment, in-kind replacement of sanitary sewers would involve approximately 150-linear segments from manhole to manhole.

Significant utility disruptions are not anticipated during the construction period as existing utilities would be temporarily supported and maintained in service until such time as replacement or relocation is operational.

Public Health and Safety

The Proposed Project would be designed, constructed and operated to comply with all relevant federal, state, and local safety regulations, including the New York State Uniform Fire Prevention Building Code; Americans with Disabilities Act (ADA), Occupational Safety and Health Administration regulations and National Fire Protection Association (NFPA) guidelines. Additionally, MTA has regulations in place (Safety Policy/Instruction 10.1.2) to ensure the security and safety of its employees and the general public. MTA also has a System Safety Program Plan that applies to all MTA facilities. MTA staff and contractors are trained in appropriate safety procedures under this safety plan. During construction, safe work plans would be developed to identify potential hazards, and safety measures to be implemented that are protective of workers along the project corridor and the general public in the surrounding vicinity.

In addition to the construction and operational considerations discussed throughout this chapter, specific plans would be developed to address public health concerns. Typically, construction projects in New York City include provisions for rodent control with provisions for this formalized in construction contracts for the project. These programs generally include typical rodent control measures such as surveying and baiting appropriate areas prior to construction and providing effective sanitation procedures in construction areas and adjoining properties. The program would also include the application of EPA or NYSDEC-registered rodenticides and the contractor would be required to implement the rodent control program in a manner that is not hazardous to the general public, domestic animals, and non-target wildlife.

Construction fencing, pedestrian safety signage and crossings, and any other forms of protection required to protect construction personnel and the general public from injury would be installed on the Project Site. All fencing, barricades, safeguards, and any other forms of protection would be in compliance with the NYCDOT, NYCDOB, OSHA, and any other authorities having jurisdiction.

Conclusion

Based on the foregoing analysis, potential construction-related effects of the Proposed Project would largely be temporary. Other than the construction-related impacts identified below, no significant adverse construction-related impacts are expected as a result of the Proposed Project.

Traffic

The traffic analysis assessed nine key intersections during the peak construction quarter (Q2 2033) for the AM and PM construction peak hours. No traffic impacts were identified during the AM construction peak hour, while seven intersections would be significantly impacted during the PM construction peak hour. Significant impacts at six intersections could be mitigated with signal timing modifications, while impacts identified at the intersection of Richmond Terrace and Jewett Avenue could not be mitigated. It should be noted that this is an examination of the worst-case scenario, for the peak quarter of construction-generated traffic over the approximately three-year construction period. At the impacted locations identified above, a traffic monitoring program would be implemented.

Noise

There would be potential construction noise impact prior to mitigation according to the FTA construction noise guidelines at residences within approximately 75 to 125 feet, commercial properties within approximately 50 to 80 feet, and industrial receptors within approximately 30 to 50 feet of the proposed BRT alignment. Construction noise mitigation measures, as described in NYCDEP's rule for *Citywide Construction Noise Mitigation Citywide* would fulfill the need to provide BMPs for construction noise with respect to the NYSDEC noise policy and would also provide noise mitigation in relation to the impact assessment according to FTA guideline criteria.

Vibration

There would be potential construction vibration impact prior to mitigation at nearby structures based on the type of building and their proximity to vibration-generating construction activities such as pile driving or impact equipment. Construction vibration control measures would be implemented to reduce the risk of damage at all buildings and structures that are within the vibration screening distances or for historic properties that are within 90 feet of construction activities.

22 Environmental Justice

The environmental justice analysis for the Proposed Project has been undertaken to identify and evaluate any disproportionate and adverse project impacts on minority or low-income populations. The concept of performing an environmental justice analysis is related to the establishment of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). The order requires federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. Executive Order 12898 also requires federal agencies to work to ensure greater public participation in the decision-making process.

Guidance on addressing environmental justice (EJ) and providing analysis to determine potential effects to communities is also provided in New York State Department of Environmental Conservation (NYSDEC) Commissioner Policy 29 (CP 29). An environmental justice analysis addresses environmental justice concerns and ensures community participation in the NYSDEC permit review process and the NYSDEC application of SEQRA, when applicable.

Methodology

The assessment of environmental justice for the Proposed Project involves three steps:

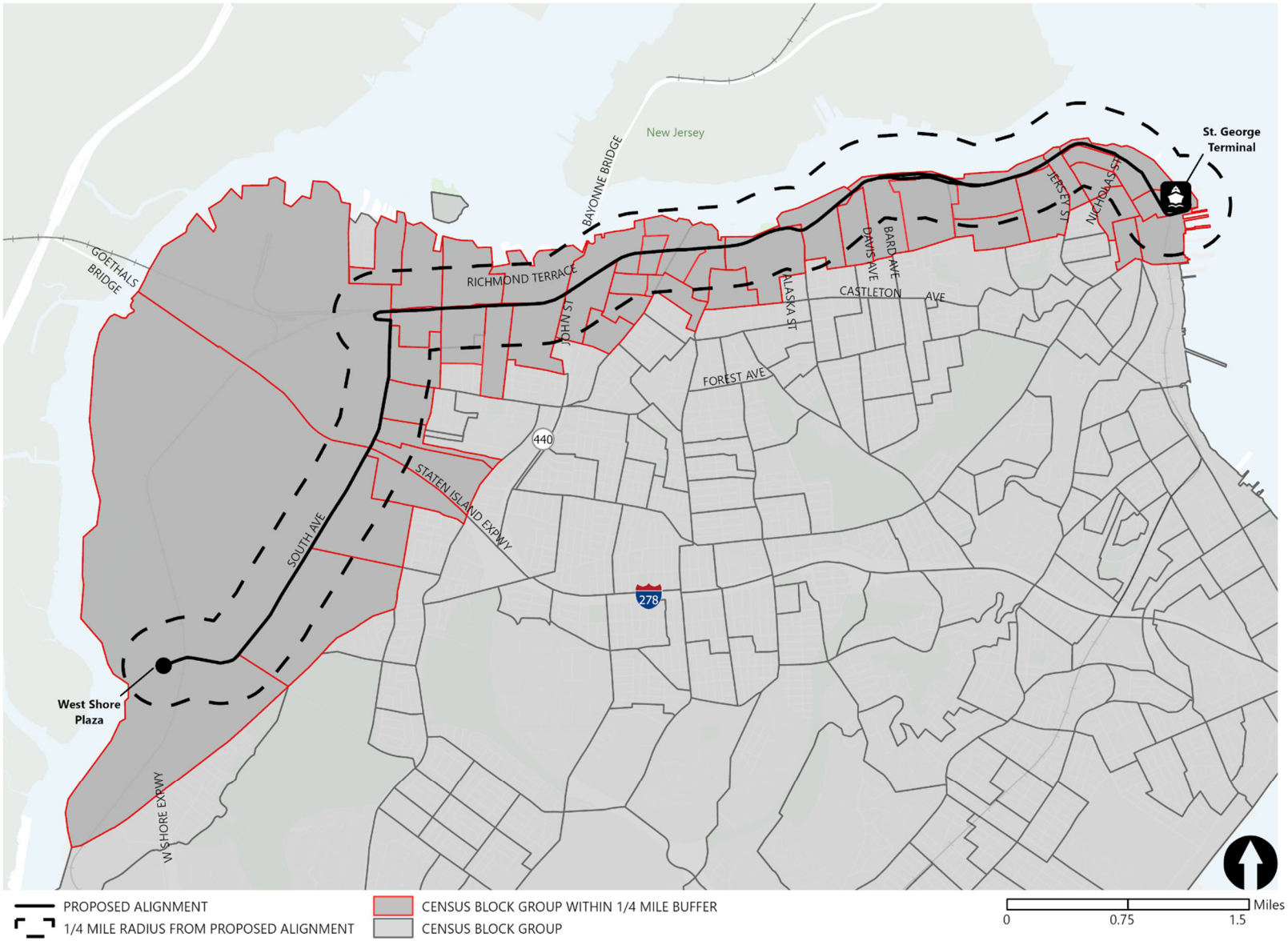
1. Identify potential environmental justice areas within the Proposed Project's area of potential effect, based on population and economic characteristics;
2. Identify the Proposed Project's potential adverse effects on environmental justice communities and areas; and,
3. Evaluate the Proposed Project's potential adverse effects on minority and low-income communities relative to its overall effects, in order to determine whether any potential adverse impacts on those communities would be disproportionate.

Delineation of Study Area

The study area for environmental justice analysis encompasses the area most likely to be affected by the Proposed Project and considers the area where

potential impacts resulting from construction and operation of the Proposed Project could occur. The environmental justice study area includes the census block groups intersecting the project study area within ¼-mile of the Proposed Project. As shown in **Figure 22-1**, the study area includes 43 block groups.

Figure 22-1 Study Area Census Block Groups



For the purposes of this EJ analysis, block group data have been determined appropriate as a unit of data to represent the potential presence of environmental justice population located within ¼-mile of the project site. (The ¼-mile radius is consistent with the study areas employed for respective technical analyses reported in this FEIS that may experience project impacts.) Block groups are the smallest census geography with data available for this environmental justice analysis.

A community is considered to be an environmental justice community if minority and/or low-income communities are present. Minority and low-income communities are defined as follows:

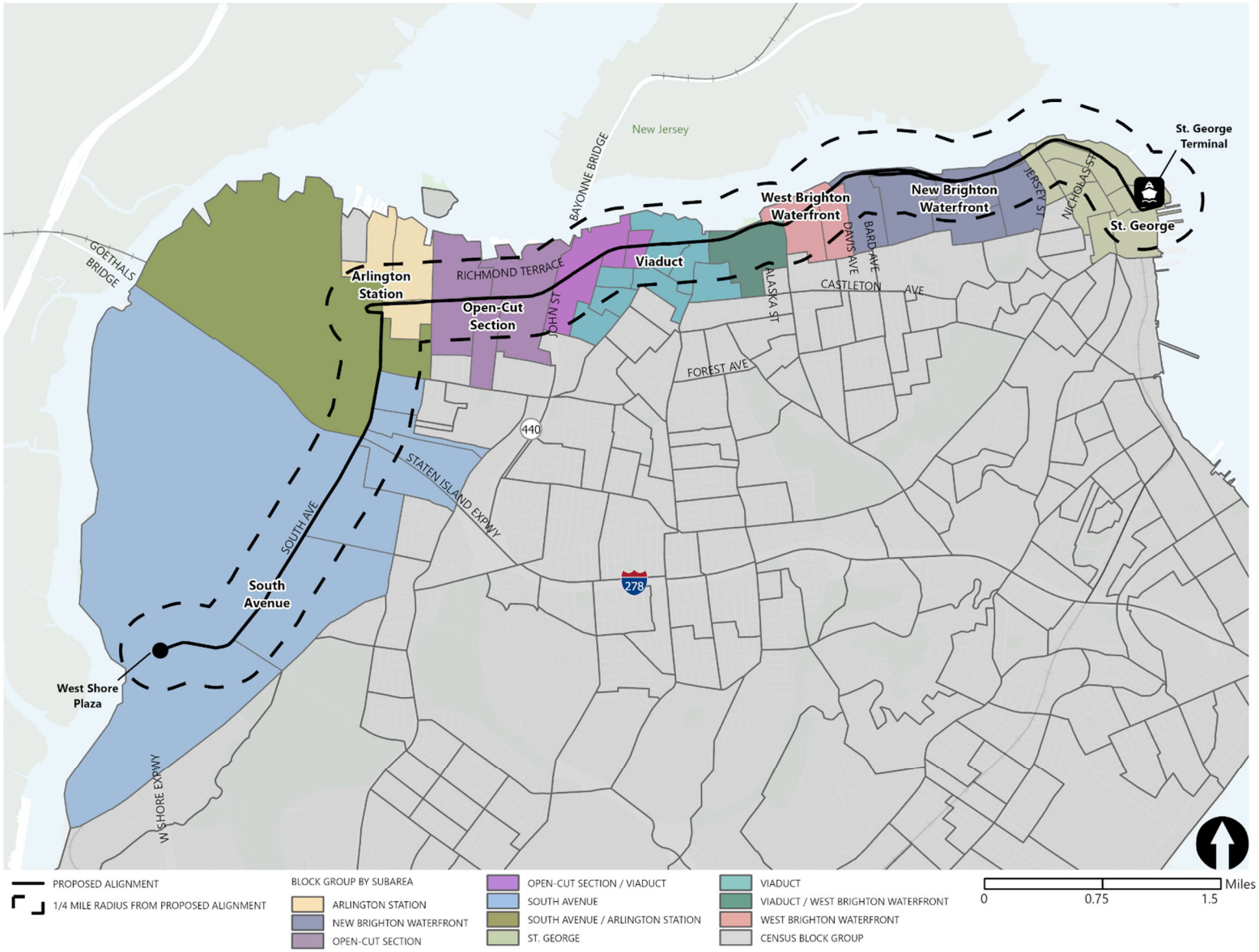
- **Minority Communities:** Minority populations are defined as including persons identified by the U.S. Census Bureau as American Indian, Asian and Pacific Islanders, African-American or Black, or Hispanic. For the purposes of this environmental justice analysis, Alaskan Natives and persons of some other race or two or more races as minority populations are conservatively considered to represent minority population. Following NYSDEC guidance for urban areas, this analysis defines minority communities as a census block group, or contiguous area with multiple block groups, e.g., a census tract, which by definition contains at least one block group, with a minority population equal to or greater than 51.1 percent of the total population.[1]
- **Income:** A low-income community is defined as a census block group, or contiguous area with multiple census block groups, e.g., census tract(s), having a low-income population equal or greater than 23.59 percent of the total population. A low-income population is a population having an income that is less than the poverty threshold, as defined by the U.S. Census Bureau. The 2023 US Census federal poverty level is defined as $30,000 for a family of four.

Existing Conditions

U.S. Census Bureau race, ethnicity and poverty status data were gathered from the 2021 American Community Survey (ACS) for the 43 block groups comprising the study area. In addition, census data were compiled for the study area, sub areas and Staten Island as a whole, in order to permit comparison of the study area's characteristics to the larger reference area. **Figure 22-2** illustrates the study area's sub-areas.

[1] NYSDEC Commissioner Policy 29, Available at https://www.dec.ny.gov/regulations/36951.html. Accessed May 11, 2023.

Figure 22-2 Study Area Census Block Groups by Sub Area



Identification of Populations of Concern within the Study Area

Based on the methodology described above, the data describing population in 36 of the study area's 43 block groups exceed the threshold for definition as minority; and 27 of the study area's 43 block groups exceed the threshold for definition as low-income communities (Figure 22-3). As shown in Table 22-1, approximately 74.5 percent of the population in the study area as a whole is minority—greater than the proportion of minority population to the total population of Staten Island, which is reported as approximately 40.4 percent.

As shown in Table 22-1, the percentage of the study area population that is low income is also higher (approximately 32.1 percent) than in Staten Island as a whole (approximately 22.4 percent). Given these data, almost the entire study area is considered to comprise one or more communities subject to environmental justice analysis and consideration (39 out of 43 block groups are either minority or low income).[2]

Table 22-1 Minority and Low Income Populations in the Study Area

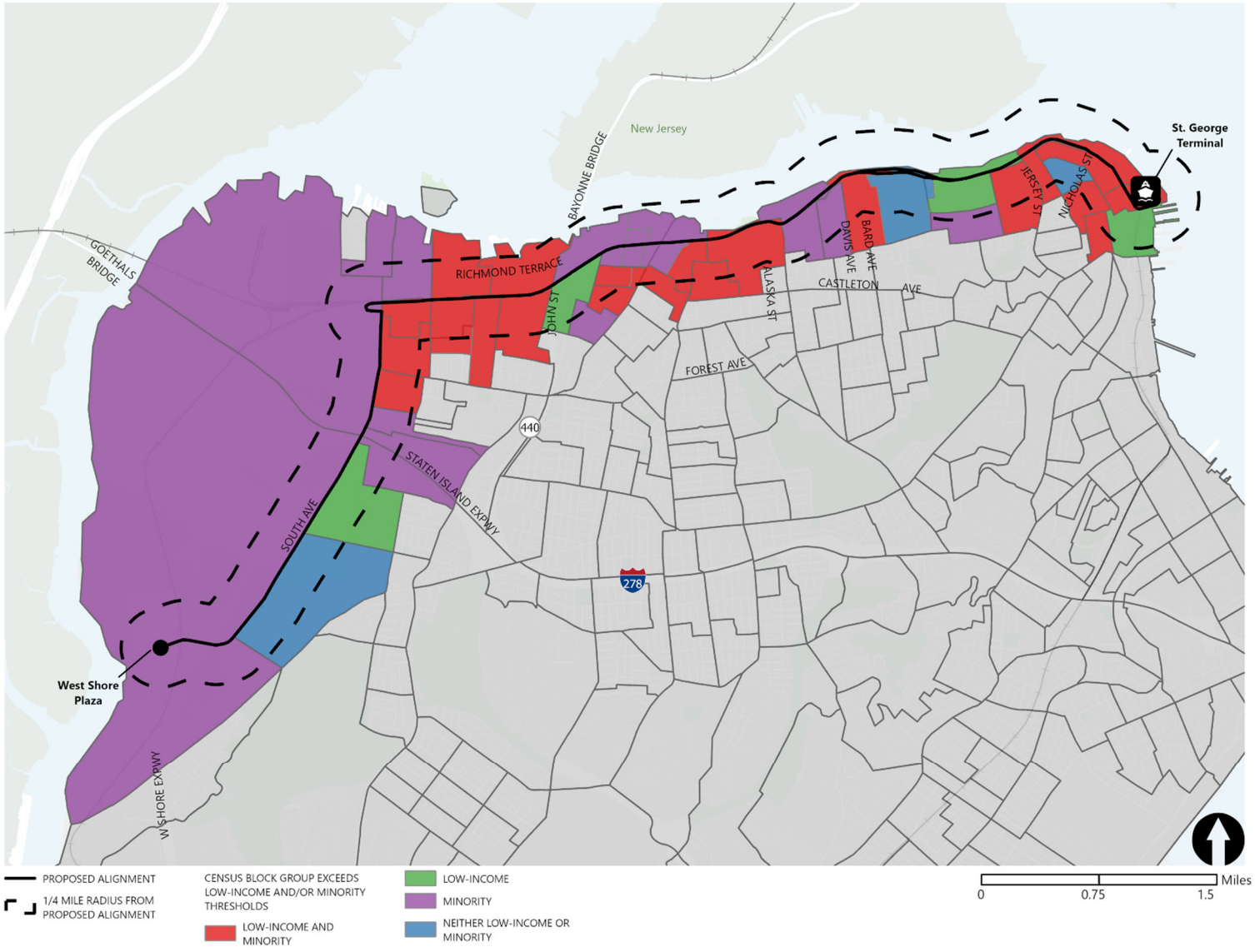
Geography	Population	Percent Minority	Percent Low-Income
Study Area*	**58,493**	**74.5**	**32.1**
Study Area Sub Areas			
St. George*	9,093	66.5	39.0
New Brighton Waterfront*	6,144	58.2	24.6
West Brighton Waterfront*	2,766	73.1	13.4
Viaduct*	10,045	88.2	43.5
Open-Cut Section*	8,818	83.2	40.3
Arlington Station*	8,196	92.2	33.2
South Avenue*	13,431	60.8	19.8
Staten Island	**487,972**	**40.4**	**22.4**

*Data derived at block group level

Source: US Census Bureau. *American Community Survey*. 2017-2021 American Community Survey 5-year Estimates. Accessed from https://data.census.gov/. Accessed on May 11, 2023.

[2] There is some overlap among sections where block groups are located in more than one section. As a result, the sum of data reported by section may exceed the total of data reported for the study area as a whole.

Figure 22-3 Study Area Census Block Groups that Exceed Low-Income and/or Minority Thresholds



Impacts and Mitigation

One key criterion for an environmental justice analysis is whether or not adverse impacts identified in each of the environmental analysis categories are disproportionate within communities of concern, i.e., would the impacts within the study area (within a minority or low-income community) be appreciably more severe or greater in magnitude than those that would be experienced in non-minority or non-low-income communities. Data as presented above indicates there are higher rates of presence of low income and minority communities along the study corridor than within Staten Island as a whole. However, the potential effects associated with the Proposed Project would not represent any potential for significant adverse impacts that would affect the surrounding environmental justice community(ies) in any way that would be appreciably more severe or greater in magnitude than non-EJ community areas. Finally, the Proposed Project would represent an improvement to MTA bus operations in Staten Island, specifically benefitting at-risk communities.

Therefore, the Proposed Project would not result in any disproportionate burden to environmental justice communities but would result in benefits to the communities served by MTA buses in Staten Island.

23 Mitigation

This chapter considers mitigation measures to address significant adverse impacts generated by the Proposed Project. The Proposed Project has the potential to result in significant adverse impacts to open space, historic and cultural resources, urban design and visual resources, transportation, noise, as well as traffic and noise during the construction period. Potential mitigation measures for each of these technical areas are identified below.

Open Space

As described in **Chapter 6, Open Space**, the Proposed Project in the Snug Harbor area would require the use of approximately 0.36 acre of parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to construct the new BRT corridor. The parkland area, which is located north of Richmond Terrace, would be used because portions of the original ROW are now submerged in the Kill Van Kull as a result of storm damage and ongoing coastal erosion. The elevated busway would be raised on columns through the park to maintain an elevation of 2 feet above the level of the 100-year flood; the design would not impede pedestrian access to the waterfront in shoreline pathway. Currently, the existing steps alongside the Kill Van Kull overlook are barricaded off and in a state of disrepair; however, once these stairs are brought to a state of good repair, access would be restored and the busway would not impede this access.

As currently designed, the Proposed Project would require alienation of 0.36 acre of dedicated parkland. Parkland alienation would constitute a significant adverse impact to the Snug Harbor Cultural Center and Botanical Garden. If the final design for the Proposed Project requires the conversion of parkland to ROW for the proposed busway, the City would initiate parkland alienation legislation, which would identify substitute parkland of similar function and value. If it were not possible to identify the substitute land at the time the alienation legislation is introduced, the need to identify substitute land would be clearly stated in the legislation.

MTA is working with NYC Parks to identify ways to minimize the use of parkland, to maintain access to the waterfront, and to implement design measures that would make the busway more compatible with the adjacent park use.

Historic and Cultural Resources

As described in Chapter 8, Historic and Cultural Resources, the Proposed Project in Section 2 includes the construction of a raised busway that would be above the elevation of Richmond Terrace in the vicinity of Snug Harbor. The Proposed Project would be visible from a number of contributing resources within the overall Sailors' Snug Harbor S/NRHP Historic District, including Buildings A-E, the chapel, the two gatehouses, the iron fence, and the ferry landing, which is currently is a state of disrepair and blocked off from access. As more fully discussed below, the New York State Office of Parks, Recreation, and Historic Preservation (SHPO) has indicated that the proposed undertaking would have an Adverse Effect upon the setting of Sailors' Snug Harbor, an NHL.[1]Upon submission of additional technical information, including an alternatives analysis, SHPO declined to provide any further comments on the project "until the question of federal funding and Section 106 review is resolved." [2]

The Proposed Project would alter the setting of the waterfront portion of Sailors' Snug Harbor and the viewscape from the portion of Sailors' Snug Harbor on the south side of Richmond Terrace. Sailors' Snug Harbor historically maintained a prominent place along the Kill Van Kull shoreline, and views to and from the resource along this waterway were important to the setting for the former sailors housed at this institution and therefore, the Proposed Project would result in a significant adverse impact. If these impacts cannot be avoided, then mitigation will need to be developed to address these visual and contextual impacts.

As described in Chapter 1, Introduction, MTA may apply for federal funding from the Federal Transit Administration (FTA) to build the Proposed Project. Many funding programs and approvals by FTA are subject to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800), which mandates that federal agencies consider the effects of their actions on any properties listed on or determined eligible for listing on the National Register and afford the federal Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. If the SHPO finds that there is an adverse effect, the Section 106 process requires consultation to seek ways to avoid, minimize, or mitigate the adverse effects. Agency consultation to resolve adverse effects involves the SHPO and potentially other entities called "consulting parties," which may include Native American tribes, local governments, permit or license applicants, and members of the public.

Consultation usually results in a Memorandum of Agreement (MOA), which outlines measures that the agency will take to avoid, minimize, or mitigate the adverse effects. In some cases, the consulting parties may agree that no such measures are possible, but that the adverse effects must be accepted in the public interest. The agency proceeds with its undertaking under the terms of the MOA.

If the Section 106 process is initiated in the future (if the MTA ultimately seeks federal funding for the Proposed Project), the MTA will coordinate with SHPO regarding

[1] Olivia Brazee, SHPO to Linda Tonn, MTA-NYCT. July 3, 2020.

[2] Olivia Brazee, SHPO to Naomi Delphin, MTA. August 17, 2023.

alternatives and mitigation. If the Section 106 process results in design changes that warrant additional SEQR review, MTA will conduct same at that time.

Urban Design and Visual Resources

As described in Chapter 9, Urban Design and Visual Resources, the Proposed Project in Section 2 north of Richmond Terrace operates in the vicinity of Snug Harbor. Under the Proposed Project, the raised busway would be visible from locations within Snug Harbor and would block some existing views to the water. As the Proposed Project may alter the context of portions of the Snug Harbor campus, for which views to the Kill Van Kull were important to the setting (as detailed in Chapter 8, Historic and Cultural Resources), and would obstruct a unique view and therefore diminish the quality of the pedestrian experience, the Proposed Project would have a significant adverse impact on the urban design characteristics and visual resources of the study area in Section 2.

As noted above, If the Section 106 process is initiated in the future (if the MTA ultimately seeks federal funding for the Proposed Project), the MTA will coordinate with SHPO regarding alternatives and mitigation. If the Section 106 process results in design changes that warrant additional SEQR review, MTA will conduct same at that time.

Transportation

Traffic Street Network

As detailed in Chapter 15, Transportation, of the 32 intersections analyzed, the Proposed Project would result in significant adverse impacts at 19 different intersections during one or more analyzed time periods. Of these, seven intersections would experience significant adverse traffic impacts during the weekday AM peak hour, 19 intersections would experience significant adverse traffic impacts during the weekday PM peak hour, and six intersections would experience significant adverse traffic impacts during the Saturday midday peak hour.

Where significant impacts were identified, potential traffic improvement measures, such as signal timing changes, were evaluated to determine whether these impacts could be mitigated during the traffic analysis peak hours. The operational effects these mitigation measures would have on each lane group's operation are detailed in the traffic levels of service results provided in Appendix M-2.

As shown in 0, significant adverse traffic impacts could be mitigated at three intersections during the weekday AM peak hour, nine intersections during the weekday PM peak hour, and one intersection during the Saturday midday peak hour. Significant adverse traffic impacts could not be mitigated at four intersections during the weekday AM peak hour, ten intersections during the weekday PM peak hour, and five intersections during the Saturday midday peak hour. The unmitigated impacts would be distributed to ten intersections (i.e., impacts at these intersections would be expected to be unmitigated during at least one of the peak hours analyzed): five of these intersections are in St. George at the eastern end of the proposed alignment; two along Richmond Terrace or Bank Street in the midsection of the alignment; and three are along South Avenue at the

western end of the alignment. At these intersections, traffic impacts could not be fully mitigated due to the projected increase in background traffic volumes from trips generated by background development projects expected to be constructed and occupied by the Proposed Project's build year and limited physical right of way to provide additional roadway capacity. For intersections along Richmond Terrace within the St. George area, the Proposed Project would reduce capacity for general purpose traffic in order to accommodate the proposed busway.

However, as a mobility enhancement project the Proposed Project would provide frequent, efficient and reliable transit; facilitate enhanced connections between neighborhoods and activity nodes along the North and West Shores of Staten Island; and facilitate the adaptive reuse of the abandoned North Shore Railroad right-of-way for the public good.

Table 23-1 Traffic Impact Mitigation Summary

Intersections	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour
No Significant Impact	25	14	26
Fully Mitigated Impact	3	9	1
Partially Mitigated Impact	0	0	0
Unmitigated Impact	4	9	4
Lane Groups	**Weekday AM Peak Hour**	**Weekday PM Peak Hour**	**Saturday Midday Peak Hour**
Total Number of Traffic Lane Groups Analyzed	161	161	160
Number of Impacted Traffic Lane Groups	9	29	9
Number of Unmitigated Traffic Lane Groups	6	17	7

Note: Traffic impacts were identified based on comparison of the 32 intersections analyzed under the With Action conditions

Implementation of these measures is subject to review and approval by NYCDOT. If any of these measures are deemed infeasible and no alternative mitigation measures can be identified at a particular location, then the identified significant adverse traffic impacts at such location would be unmitigated. Specific mitigation measures for each intersection are described below:

» Intersection 12: Richmond Terrace & Lafayette Avenue

- During the PM peak hour shift one second of green time from the northbound phase to the eastbound/westbound phase.

» Intersection 14: Richmond Terrace & Broadway

- Shift the westbound approach centerline one foot to the south and restripe the westbound approach from one 20-foot-wide travel lane to one 10-foot wide left

turn lane and one 11-foot wide shared through-right lane. This measure, in conjunction with the signal timing modifications identified below, would mitigate impacts during the AM and PM peak hours.

- During the AM peak hour shift one second of green time from the eastbound/westbound phase to the northbound/southbound phase.

» Intersection 15: Richmond Terrace & Alaska Street

- During the PM peak hour shift one second of green time from the northbound/southbound phase to the eastbound/westbound phase.

» Intersection 20: Forest Avenue & Jewett Avenue

- During the PM peak hour shift one second of green time from the northbound left/southbound left phase to the eastbound/westbound phase, and shift one second of green time from the northbound left/southbound left phase to the northbound/southbound phase.

» Intersection 21: Forest Avenue & Willowbrook Road

- During the AM peak hour, shift one second of green time from the exclusive southbound phase to the eastbound/westbound phase.
- During the PM peak hour, shift two seconds of green time from the exclusive southbound phase to the eastbound/westbound phase.
- During the Saturday Midday peak hour, shift one second of green time from the exclusive southbound phase to the eastbound/westbound phase.

» Intersection 22: Forest Avenue & Morningstar Road & Richmond Avenue

- During the PM peak hour, shift two seconds of green time from northbound/ northbound left phase to the eastbound/westbound phase, shift one second of green time from westbound left phase to the eastbound phase, and shift one second of green time from northbound left phase to the southbound phase.

» Intersection 25: South Avenue & Forest Avenue

- During the PM peak hour, shift one second of green time from the northbound/southbound phase to the eastbound/westbound phase.

» Intersection 28: South Avenue & Edward Curry Avenue

- During the AM peak hour, shift one second of green time from the eastbound phase to the northbound/southbound phase.
- During the PM peak hour, shift one second of green time from the eastbound phase to the northbound/southbound phase.

» Intersection 30: South Avenue & Travis Avenue

- During the PM peak hour, adjust the intersection's signal timing offset from 0 seconds to 36 seconds.

Intersections with impacted movements that could not be mitigated are listed below:

- Intersection 1: Richmond Terrace & Ferry Terminal Viaduct & Bay Street
  - Southwestbound ferry terminal lower-level exit through lane group (AM)
  - Southwestbound ferry terminal lower-level exit right turn lane group (AM, PM & SAT)
- Intersection 2: Richmond Terrace & Ferry Terminal Viaduct
  - Westbound ferry terminal upper-level exit left turn lane group (PM)
- Intersection 4: Richmond Terrace & Wall Street
  - Southbound Richmond Terrace through-left turn lane group (PM)
  - Westbound Wall Street left turn lane group (PM & SAT)
  - Westbound Wall Street through-right turn lane group (PM & SAT)
  - Northbound busway approach (PM)
- Intersection 6: Richmond Terrace & Stuyvesant Place
  - Northbound Richmond Terrace left turn lane group (AM, PM, & SAT)
  - Southbound Richmond Terrace approach (PM & SAT)
- Intersection 7: Richmond Terrace & Nicholas Street/Garage Ramp
  - Northbound Nicholas Street approach (PM & SAT)
  - Southbound Garage Ramp approach (PM & SAT)
- Intersection 10.2: Bank Street & Jersey Street
  - Eastbound busway approach (AM, PM, & SAT)
- Intersection 13: Richmond Terrace & Bard Avenue
  - Eastbound Richmond Terrace approach (PM)
- Intersection 23.1: South Avenue & Arlington Station Entry/Exit
  - Northbound South Avenue approach (PM)
- Intersection 26: South Avenue & Goethals Road North
  - Westbound Goethals Road North right turn lane group (AM & PM)
  - Southbound South Avenue approach (AM & PM)
- Intersection 27: South Avenue & Fahy Avenue & Glen Street
  - Southbound South Avenue through lane group (PM)
  - Southbound South Avenue left turn lane group (PM)

Pedestrians

As discussed in Chapter 15, Transportation, detailed analyses of pedestrian conditions were prepared for a study area consisting of 14 pedestrian elements (eight sidewalks, four corner reservoir areas, and three crosswalks) for the weekday AM and weekday PM peak

hours. In the 2035 With Action Condition, significant impacts were identified at the following locations due to a mix of increased pedestrian activities resulting from the Proposed Project as well as limited sidewalk capacity:

» Weekday AM
  - Clinton Ave and Richmond Terrace (E leg, S sidewalk)

» Weekday PM
  - South Ave and Teleport Dr (E leg, S sidewalk)

Significant impacts at these sidewalk locations could not be mitigated without widening the sidewalk and reducing the adjacent roadway width. Therefore, the projected impacts would remain unmitigated.

Noise

As described in Chapter 18, Noise, prior to mitigation, there would be a total of 20 severe noise impacts and 141 moderate noise impacts. Severe noise impacts represent the most compelling need for mitigation to reduce the potential for significant adverse reactions. For moderate noise impacts, the change in noise level is noticeable to most people, but may not cause strong, adverse reactions from the community. Mitigation of moderate noise impacts is considered based on the overall noise level, the types and numbers of noise-sensitive receptors, effectiveness of mitigation measures, and mitigation costs.

The majority of the severe noise impacts are at residential buildings in close proximity (i.e., within approximately 20 feet) of the viaduct in Section 4. Severe noise impact would generally occur at upper floor receptors where the viaduct would not be effective in reducing noise from the buses. Two potential options to mitigate severe noise impacts include noise barriers along the BRT alignment or building sound insulation improvements. The two noise mitigation options include:

» **Noise Mitigation Option 1:** Noise barriers along the edge of the viaduct near the impacted receptors would be effective in mitigating potential severe impact. The noise barriers would need to be approximately eight to 10 feet above the roadway surface. Such noise barriers would be expected to reduce noise from the buses approximately 10 dB. A total of seven noise barriers for a total 2,600 linear feet would be needed to mitigate severe noise impact (see Appendix 0-3, Operational Noise Figures with Mitigation) including:
  - A 250-foot-long barrier on the south side of the BRT alignment between Park Avenue and Port Richmond Avenue.
  - A 675-foot-long barrier on the north side of the BRT alignment near Port Richmond Avenue and Maple Avenue.
  - A 300-foot-long barrier on the south side of the BRT alignment near Maple Avenue.
  - Two 450-foot-long barriers on the north and south side of the BRT alignment between Sharpe Avenue and Treadwell Avenue.

- A 175-foot-long barrier on the south side of the BRT alignment near John Street.
- A 200-foot-long barrier on the south side of the BRT alignment near Morningstar Road.
- A 150-foot-long barrier west of Harbor Road.

With the introduction of noise barriers, visual conditions would still include an elevated viaduct structure within Section 4. Therefore, it is not anticipated that Noise Mitigation Option 1 would significantly alter existing visual conditions in Section 4, as described in Chapter 9, Urban Design.

» **Noise Mitigation Option 2:** Building sound insulation improvements such as replacing windows and doors with ones that provide greater outdoor-to-indoor noise reduction and providing air-conditioning systems to allow homeowners to keep their windows closed would be effective in mitigating potential severe noise impact. Such building improvements would generally be needed just for upper floors at residences with severe noise impact. Typically building sound insulation improvements are provided to three building façades with exposure to the BRT alignment. Sound insulation improvements would be recommended at the following residences:

- 56 Park Avenue
- 97 Ann Street
- 51 Maple Avenue
- 52 Maple Avenue
- 103 Ann Street
- 55 Faber Street
- 99 Ann Street
- 64 Faber Street
- 56 Sharpe Avenue
- 71 Faber Street
- 78 Faber Street
- 46 Treadwell Avenue
- 68 Sharpe Avenue
- 61 Treadwell Avenue
- 62 Treadwell Avenue
- 62 Treadwell Avenue
- 120 John Street
- 127 Morningstar Road
- 124 Harbor Road
- 41 Treadwell Avenue

The cost for the noise barriers is estimated to be $1,150,000 for 23,000 square feet of barriers at an estimated cost of $50 per square foot. The cost for residential sound insulation improvements is estimated to be $1,000,000 for improvements to 20 properties at approximately $50,000 per residence.

Construction

Transportation

As described in detail in Chapter 21, Construction, nine key intersections were examined during the construction peak quarter to determine whether there would be impacts to traffic during the construction period of the Proposed Project. Of the nine intersections analyzed, significant traffic impacts were not expected during the AM construction peak hour, while seven intersections would

be significantly impacted during either the PM construction peak hour. As construction of the Proposed Project is anticipated to take place over the three-year period between the beginning of 2032 and the end of 2034, overall construction worker staffing levels would vary throughout this period. At the impacted locations identified above, a traffic monitoring program would be implemented, and TEAs would be deployed where deemed necessary.

Noise and Vibration

As described in detail in **Chapter 21, Construction,** there would be potential construction noise impact prior to mitigation according to the FTA construction noise guidelines at residences within approximately 75 to 125 feet, commercial properties within approximately 50 to 80 feet, and industrial receptors within approximately 30 to 50 feet of the proposed BRT alignment. Construction noise mitigation measures, as described in NYCDEP's rule for *Citywide Construction Noise Mitigation Citywide* would fulfill the need to provide best management practices for construction noise with respect to the NYSDEC noise policy and would also provide noise mitigation in relation to the impact assessment according to FTA guideline criteria.

There would be potential construction vibration impact prior to mitigation at nearby structures based on the type of building and their proximity to vibration-generating construction activities such as pile driving or impact equipment. Construction vibration control measures detail in **Chapter 21, Construction** would be implemented to reduce the risk of damage at all buildings and structures that are within the vibration screening distances or for historic properties that are within 90 feet of construction activities.

24 Alternatives

Introduction

As described in the *2021 CEQR Technical Manual*, alternatives selected for consideration in an Environmental Impact Statement (EIS) are generally those which are feasible and have the potential to reduce, eliminate, or avoid adverse impacts of a proposed action while meeting some or all of the goals and objectives of this action. As described in **Chapter 1, Introduction** the MTA is assessing the proposed implementation of new and enhanced public transit service (Bus Rapid Transit) along the North and West Shores of Staten Island between South Avenue (West Shore Plaza, located near the intersection of South Avenue and Chelsea Road) and St. George (St. George Terminal, located near the intersection of Richmond Terrace and Bay Street) in Richmond County, New York. Refer to **Chapter 2, Project Description and Alternatives** for a detailed description of the Proposed Project.

This chapter notes those alternatives that were initially considered but not advanced for further analysis. The chapter also compares the effects of the No-Action Alternative in comparison to those of the Proposed Action.

Alternatives Considered and Rejected

As part of MTA's planning process, a number of alternatives analyses and supplementary studies were conducted which considered the viability of various project alternatives representing a mix of modes, routes, and termini for transit service. Early alternatives included alignments on Heavy Rail, Diesel Light Rail (DLRT), Electric Light Rail (LRT) operating on various routes, ferry service, and improved bus service. In 2012, after a public process, Bus Rapid Transit within the former North Shore Railroad ROW was selected as the preferred alternative. In 2018, screening concepts using Staten Island Railway (SIR) right-of-way, surface streets and routes occupying the lower level of St. George Terminal were developed because of the need to reconsider transit access and operation of a terminal station in St. George. More recently, an updated LRT Alternative was evaluated that would use former North Shore Railroad and SIR rights-of-way to access St. George Terminal. In 2019, after public input, Bus Rapid Transit was

again selected as the preferred alternative. Bus Rapid Transit proved to be the most viable option to meet the study area's needs for the reasons detailed in Chapter 2, Project Description and Alternatives.

No-Action Alternative

Both SEQRA and CEQR require the evaluation of a No-Action Alternative, under which the Proposed Project would not be constructed. This alternative serves as a baseline against which the environmental effects of a proposed project can be compared. The No-Action Alternative is evaluated for a future year in which the project would be fully operational, referred to as the "build year." For the Proposed Project, the build year is 2035, when the new transit system is planned to be complete and operating. The No-Action Alternative incorporates development and projects that can reasonably be expected to be in place at that time. These include known planned and future proposed developments identified in Chapter 3, Land Use, Zoning and Public Policy, as well as traffic improvements anticipated to be in place by 2035 (see Chapter 15, Transportation).

Under the No-Action Alternative, the Proposed Project would not be implemented, and the existing former North Shore Railroad right-of-way would remain abandoned and unimproved. Bus service on local streets would continue to operate at existing levels on a constrained roadway network, adding to existing congestion, delay, and lack of reliable transit options as the North and West Shores continue to grow. Without the Proposed Project in place, the ability to add enhanced public transit capacity to meet growing demand would be severely hindered. As such, the No-Action Condition would fail to meet the purpose and need of the Proposed Project.

Below the No-Action Alternative is specifically assessed relative to the Proposed Project with respect to each of the technical analysis areas presented in this ~~D~~FEIS.

Land Use, Zoning, and Public Policy

The No-Action Alternative would not require the acquisition of any property and would not result in any modifications in land use or zoning in the study area and along the former North Shore Railroad right-of-way, which would remain in its undeveloped condition. In the No-Action Alternative, general development patterns and current land use trends would continue. It is expected that future development projects, independent of the Proposed Project would consist of the redevelopment of underutilized properties, infill strategies resulting in the development of vacant land with new structures, or the adaptive reuse of structures with modifications to the interior space or use of existing buildings.

As specified in Chapter 3, the Proposed Project would require the conversion of some public and private property from existing uses to transportation right-of-way/station areas to facilitate construction of the Proposed Project that would not occur under the No-Action Alternative. However, the Proposed Project would largely occur within a dedicated transportation right-of-way or on city streets and would not substantially alter existing land use patterns or zoning. Similar to the

Proposed Project, the No-Action Alternative would not result in significant adverse land use or zoning impacts.

Unlike the No-Action Alternative, the Proposed Project would implement a reliable transportation option that would support growth and transportation infrastructure improvements that are already contemplated under existing public policies established by the City, as discussed in **Chapter 3, Land Use, Zoning, and Public Policy**.

Socioeconomics

In the No-Action Alternative, the former North Shore Railroad right-of-way would remain abandoned and unimproved. The study area would continue to develop based on market conditions. The No-Action Alternative would not result in direct residential or business displacement. Unlike the No-Action Alternative, the Proposed Project would result in limited business and employee displacement as noted in **Chapter 4, Socioeconomic Conditions**. However, under *CEQR*, these displacements would not represent a majority of area business or employment for any given sector. As such, the Proposed Project, like the No-Action Alternative would not adversely affect socioeconomic conditions in the study area under *CEQR*.

Community Facilities and Services

Neither the No-Action Alternative nor the Proposed Project would physically displace, adversely impact access to community services, or result in new utilization demands that would overburden existing community facilities and services within the study area. Under the No-Action Alternative, police vehicles would continue to occupy a parking lane and a portion of the sidewalk for angled "combat parking" in front of the 120th Police Precinct and Staten Island Family Courthouse between Hamilton Avenue and Wall Street in St. George. The NYPD refers to this parking style as combat parking (90-degree/perpendicular parking from the curb). The modifications to the frontage to the police and courthouse facilities to maintain combat parking and allow for the median busway as specified in the With-Action Condition would not occur in the No-Action Alternative as the busway would not be implemented. Similar to the Proposed Project, the No-Action Alternative would not result in significant adverse impacts on community facilities and services.

Open Space

In the No-Action Alternative, the former North Shore Railroad right-of-way would remain in its undeveloped condition and there would be no use or displacement of any parkland or facilities under the jurisdiction of NYC Parks. As such, the No-Action Alternative would not result in the potential open space effects to the North Shore Esplanade and Heritage Park parking area or require the use of 0.36 acres of parkland that would occur under the Proposed Project (see **Chapter 6, Open Space**).

Shadows

Under the No Action Alternative, the development of the former North Shore Railroad right-of-way would not occur. As such, this alternative would not cast any incremental shadows on the Kill Van Kull and a strip of vegetated parkland associated with Snug Harbor which were identified as sunlight-sensitive resources (see Chapter 7, Shadows). However, neither the Proposed Project nor the No-Action Alternative would result in significant adverse shadow impacts within the study area.

Historic and Cultural Resources

Under the No-Action Alternative, the Proposed Project would not be constructed. As such, no potential impacts to historic and cultural resources would occur. Unlike the Proposed Project, the No-Action Alternative would not result in a potential impact to archaeological resources or an adverse effect to architectural resources in the Sailors' Snug Harbor S/NRHP-listed Historic District (see Chapter 8, Historic and Cultural Resources).

Urban Design and Visual Resources

Under the No-Action Alternative, the Proposed Project would not be implemented, and the existing former North Shore Railroad right-of-way would remain abandoned and unimproved. Unlike the Proposed Project, the No-Action Alternative would not result in the construction of an elevated busway that would alter the waterfront views, pedestrian conditions, and historic context associated with the Snug Harbor Cultural Center & Botanical Garden. As such, the No-Action Alternative would not result in a significant adverse impact to urban design and visual resources surrounding the proposed alignment (see Chapter 9, Urban Design).

Independent of the Proposed Project, it is expected that several developments and initiatives would be undertaken by the Build Year that would have an effect on the visual character of the area, including upgrades to the streetscape and increased density of development just south of St. George.

Natural Resources

Under the No-Action Alternative, natural resources in the study area would remain similar to their existing conditions. However, ongoing natural and human-caused conditions such as flooding, storm surges, and development would result in gradual changes over time. In the No-Action Alternative, future proposed developments anticipated to be undertaken by the Build Year would occur on land that is already disturbed and surrounded by urban land uses. Unlike the Proposed Project, the No-Action Alternative would not require minor amounts of permanent fill in wetland-adjacent areas that would occur with the development of the proposed busway. However, neither the No-Action Alternative nor the Proposed Project would affect significant, sensitive or designated resources, or diminish the habitat of protected species. Like the Proposed Project, the No-Action Alternative would not result in natural resource impacts that are considered to be significantly adverse (see Chapter 11, Natural Resources).

Hazardous Materials

In the No-Action Alternative, the former North Shore right-of-way would remain abandoned and undeveloped. While ground disturbing activities related to the development of the right-of-way are not expected in the No-Action Alternative, changes in the use of the study area, including changes resulting in ground disturbing activities (e.g., soil excavation or construction), would likely occur. However, unlike the With-Action Condition, construction or ground disturbing activities in the No-Action Alternative may occur without the regulatory oversight of any required remediation and/or the implementation of appropriate health and safety protocols.

Water and Sewer Infrastructure

In the No-Action Alternative, there would be no changes to existing water supply or sewer infrastructure along the former North Shore Railroad right-of-way as the right-of-way would remain abandoned. Unlike the With-Action Condition, improvements to drainage infrastructure along the former North Shore Railroad right-of-way would not be implemented under the No-Action Alternative. Like the No-Action Alternative, the Proposed Project would not result in significant adverse impacts upon water, sewer and stormwater infrastructure.

Solid Waste and Sanitation Services

In the No-Action Alternative, there would be no change to the amount of solid waste generated along the former North Shore Railroad right-of-way as compared to existing conditions. Similar to the With-Action Condition, the No-Action Alternative would not result in significant adverse impacts to solid waste and sanitation services or overburden the City's solid waste management system.

Energy

Under the No-Action Alternative, there would be a shift in energy consumption in the transit system from traditional fuels to electric power as the MTA transitions their entire fleet of buses to electric propulsion models. Similar to the With-Action Condition, the No-Action Alternative would not substantially affect the transmission or generation of energy. Nether the Proposed Project nor the No-Action Alternative would result in significant adverse energy impacts.

Transportation

Traffic Street Network

In the No-Action Alternative, it is expected that transportation demands in the study area would increase due to long-term background growth as well as development that could occur pursuant to existing zoning. Growth in travel demand associated with major projects that are assumed to be completed by the 2035 project build year would also appear on local streets.

In the No-Action Alternative, of the 30 study area intersections analyzed, 20 intersections have at least one movement that operates at an unacceptable LOS E or LOS F compared with 22 intersections in the With-Action Condition with at

least one movement operating at unacceptable LOS E or F. In the No-Action Alternative, several geometrical and operational changes planned by NYCDOT and background development projects would be made in the transportation study area, however modifications associated with the center running busway on Richmond Terrace would not occur as in the With-Action Condition. Also, in the No-Action Alternative, bus-only access roads to the busway alignment, busway structures in the former North Shore Railroad ROW, and a bus-only ramp at Nicholas Street would not be built. The With-Action Condition would result in significant adverse traffic impacts at 16 different intersections. Significant adverse traffic impacts would not occur under the No-Action Alternative.

Parking

As noted in Chapter 15, in the No-Action Alternative there would be modest on-street parking shortfall in the St. George study area during the weekday analysis period in 2035. However, there would be sufficient off-street parking capacity to accommodate the on-street parking shortfall. In the With-Action condition, the Proposed Project would eliminate approximately 250 parking spaces along Richmond Terrace between Nicholas Street and the St. George Terminal. While there would be shortfall of on-street parking capacity in the With-Action Condition, like the No-Action Condition, there would be sufficient available off-street parking to accommodate the on-street parking shortfall.

Transit

In the No-Action Alternative bus service on local streets would continue to operate at existing levels. Transit users would not have a faster, higher capacity, more frequent and reliable method of travel in the No-Action Condition as compared with the With-Action Condition. The S53, S54, and S57 bus routes would not be modified to extend into a dedicated busway nor would the S90 and S96 be eliminated as in the With-Action Condition. Similarly, in the No-Action Alternative, the S46 would not be truncated and headways on the S40 would not be reduced as in the With-Action Condition. Like the With-Action Alternative, no changes to SIR, NYC Ferry, or NYCDOT ferry operations would occur in the No-Action Alternative. The No-Action Alternative, like the Proposed Project is not anticipated to result in significant adverse impacts to transit operations.

Pedestrians

In the No-Action Alternative, it is expected that there would be sufficient pedestrian infrastructure to accommodate the demand within the study area. While the majority of sidewalks are anticipated to operate at acceptable levels in the With-Action Condition, two sidewalk locations (Clinton Avenue and Richmond Terrace; South Avenue and Teleport Drive) would experience significant impacts due to narrow sidewalk widths and the presence of existing obstructions such as tree pits, utility poles and building stoops. Significant pedestrian impacts would not occur under the No-Action Alternative.

Freight Rail

Under the No-Action Alternative, freight rail operations to support Arlington Yard would continue similar to existing conditions. As noted in **Chapter 15, Transportation**, the PANYNJ has expressed their desire to preserve the ability to extend the existing freight rail track within the open-cut to the east beyond Union Avenue to Van Name Avenue.[1] Similar to the Proposed Project, the No-Action Alternative would not preclude either existing freight train movements or the potential future eastward expansion of Arlington Yard. Neither the No-Action Alternative, nor the Proposed Project are anticipated to result in significant adverse impacts to freight rail service.

Air Quality

Similar to the Proposed Project, the No-Action Alternative is not anticipated to result in significant adverse air quality impacts. As indicated in **Chapter 16, Air Quality**, no exceedances of National Ambient Air Quality Standards (NAAQS) for any criteria pollutants on a localized or microscale level, nor increases in regional emissions is anticipated.

GHG and Climate Change

In the No-Action Alternative in 2035, the Proposed Project would not be implemented, and the former North Shore Railroad right-of-way would remain abandoned and unimproved. The No-Action Alternative assumes that existing MTA bus service would continue to operate on Richmond Terrace and throughout the North Shore on a constrained roadway network.

In comparison to the Proposed Project, under the No-Action Alternative public transportation demands within the study area would continue to grow and with no new public transit services implemented, it is anticipated that higher levels of traffic congestion would result in increased vehicle emissions. Therefore, unlike the Proposed Project, the No-Action Alternative would not result in minimization of on-road travel and reduction of GHG emissions.

Climate risks would continue to persist within the study area in the No-Action Alternative. As noted in *MTA Adaptations to Climate Change, A Categorical Imperative* (Jacob et al., 2008), the primary climate changes risks for MTA assets include: temperature rise, changes in precipitation, sea level rise, and coastal storm surge.[1] Unlike the Proposed Project, under the No-Action Alternative, there would be no changes to existing bus routes and the potential impacts of climate change to public transit within the study area.

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[1] This potential extension is an unfunded project and a build year has not been identified.

[1] Jacob, K., Rosenzweig, C., Horton, R., Major, D., and Gornitz, V. 2018. *MTA Adaptations to Climate Change. State of New York Metropolitan Transportation Authority*. Available at https://new.mta.info/document/10451. Accessed May 11, 2023.

Noise

In the No-Action Alternative, as in the With-Action Condition, traffic volumes are anticipated to increase due to long-term background growth and new developments that could occur independent of the Proposed Project including small, moderately sized, and large-scale projects. These increases in traffic would result in increases in traffic noise that would be similar to traffic noise generated in the With-Action Condition. No significant adverse noise impacts would occur under the No-Action Alternative. In comparison, the Proposed Project would result in significant adverse impacts for noise prior to mitigation including: 20 severe noise impacts primarily along the viaduct at upper floor receptor locations, and 141 moderate noise impacts along the viaduct and open cut. However, with mitigation, the Proposed Project, like the No-Action Alternative would not result in significant adverse noise impacts.

Public Health

Under both the No-Action Alternative and the With-Action Condition, no unmitigated significant adverse impacts in any of the technical areas related to public health (water quality, air quality, noise or hazardous materials) would occur. Accordingly, the No-Action Alternative, like the With-Action Condition, would not result in significant adverse public health impacts.

Neighborhood Character

Under the No-Action Alternative, the North-Shore Railroad right-of-way would remain undeveloped and changes to the context or defining features of surrounding neighborhoods would not occur. Like the Proposed Project, the No-Action Alternative would not result in significant adverse impacts to neighborhood character.

Construction

In the No-Action Alternative, busway or station construction would not occur on the former North Shore Railroad right-of-way or along the proposed alignment. The impacts associated with the construction of the Proposed Project would not occur, including the anticipated significant adverse construction-related impacts identified in **Chapter 21, Construction**.

Environmental Justice

In the No-Action Alternative, a new BRT service would not be implemented, and bus service would continue to operate on the existing local roadway network. The No-Action Alternative, like the With-Action Condition, would not place a disproportionate burden on environmental justice communities within the study area. However, under the No-Action Alternative, environmental justice communities would not benefit from the transportation improvements like consistent and reliable travel times, improved transit capacity and connectivity between North Shore communities and the St. George Terminal that would be experienced in the With-Action Condition.

Conclusion

In the No-Action Alternative, a new Bus Rapid Transit (BRT) system would not be implemented, and the former North Shore Railroad right-of-way would remain unused as in its existing condition. As this abandoned transportation infrastructure would not be developed, significant adverse impacts related to open space, traffic, noise, urban design and visual resources and historic context alterations at Snug Harbor as well as construction-period traffic would not occur under the No-Action Alternative. However, as compared to the Proposed Project, the intended benefits associated with Proposed Project, including improved transit access, more consistent travel times and enhanced connectivity between established communities, activity, and business centers along the North and West Shores and the St. George Terminal, would not be realized.

25 Unavoidable Adverse Impacts

Unavoidable significant adverse impacts are defined as those that meet the following two criteria:

- There are no reasonably practicable mitigation measures to eliminate the impact; and
- There are no reasonable alternatives to the proposed actions that would meet the purpose and need for the actions, eliminate the impact, and not cause other or similar significant adverse impacts.

As described in **Chapter 23, Mitigation**, a number of the potential impacts identified for the Proposed Project could be mitigated. However, as described below, in some cases, impacts from the Proposed Project would not be fully mitigated.

Open Space

As discussed in **Chapter 6, Open Space**, the Proposed Project in the Snug Harbor area would require the use of approximately 0.36 acre of parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to construct the new BRT corridor. Parkland alienation would constitute a significant unavoidable adverse impact to the Snug Harbor Cultural Center and Botanical Garden. If the final design for the Proposed Project requires the conversion of parkland to ROW for the proposed busway, the City would initiate parkland alienation legislation, which would identify substitute parkland of similar function and value. If it were not possible to identify the substitute land at the time the alienation legislation is introduced, the need to identify substitute land would be clearly stated in the legislation.

Historic and Cultural Resources

As set forth in **Chapter 8, Historic and Cultural Resources,** the Proposed Project includes the construction of a raised busway that would be above the elevation of Richmond Terrace in the vicinity of Snug Harbor. Accordingly, the Proposed Project would alter the setting of the waterfront portion of Sailors' Snug Harbor

and the viewscape from the portion of Sailors' Snug Harbor on the south side of Richmond Terrace. Sailors' Snug Harbor historically maintained a prominent place along the Kill Van Kull shoreline, and views to and from the resource along this waterway were important to the setting for the former sailors housed at this institution and therefore, the Proposed Project would result in a significant adverse impact. If these impacts cannot be avoided, then mitigation will need to be developed to address these visual and contextual impacts. If mitigation is determined to not be feasible, the construction of a raised busway would constitute an unavoidable adverse impact.

Urban Design and Visual Resources

As described in Chapter 9, Urban Design and Visual Resources, the proposed BRT in Section 2 north of Richmond Terrace is in the vicinity of Snug Harbor. Under the Proposed Project, the proposed structure would be visible from locations within Snug Harbor and would block existing views to the water. As the Proposed Project may alter the context of the Snug Harbor campus, for which views to the Kill Van Kull were important to the setting (as detailed in Chapter 8, Historic and Cultural Resources), and would obstruct a unique view and therefore diminish the quality of the pedestrian experience, the Proposed Project would have a significant adverse impact on the urban design characteristics and visual resources of the study area in Section 2. If mitigation is determined to not be feasible, the construction of a raised busway would constitute an unavoidable adverse impact.

Transportation

Traffic Street Network

As detailed in Chapter 15, Transportation, of the 32 intersections analyzed, the Proposed Project would result in significant adverse traffic impacts at 19 different intersections, nine of which could not be mitigated, resulting in unavoidable adverse traffic impacts. Five of these intersections are in St. George at the eastern end of the proposed alignment, and three are along South Avenue at the western end of the alignment. Significant traffic impacts at these intersections were primarily due to high levels of delay along the impact traffic movements which are a result of projected background traffic generated by background growth and the development of several high-trip generating No-Action background development projects. Along Richmond Terrace in St. George, there would also be a reduction in capacity for general purpose traffic in order to accommodate the busway.

Pedestrians

As detailed in Chapter 15, Transportation, of the 14 pedestrian elements analyzed, two pedestrian elements (both sidewalks) would result in significant adverse traffic impacts that could not be mitigated. Significant impacts at these sidewalk locations could not be mitigated without widening the sidewalk and

reducing the adjacent roadway width. Therefore, the projected impacts would remain unmitigated.

Noise

As described in Chapter 18, Noise, prior to mitigation, there would be a total of 20 severe noise impacts and 141 moderate noise impacts. The majority of the severe noise impacts are at residential buildings in close proximity (i.e., within approximately 20 feet) of the viaduct in Section 4. Severe noise impact would generally occur at upper floor receptors where the viaduct would not be effective in reducing noise from the buses. Two potential options to mitigate severe noise impacts include noise barriers along the BRT alignment or building sound insulation improvements. If mitigation is determined to not be feasible, the severe noise impacts would constitute an unavoidable adverse impact.

Construction

Transportation

As discussed in detail in Chapter 21, Construction, of the nine key intersections analyzed during the construction peak quarter. Significant traffic impacts were not expected during the AM construction peak hour, while seven intersections would be significantly impacted during the PM construction peak hour of which one intersection would result in unavoidable traffic impacts.

It should be noted that as construction of the Proposed Project is anticipated to take place over the three-year period between the beginning of 2032 and the end of 2034, overall construction worker staffing levels would vary throughout this period. As a mitigation measure for the impacts identified, a traffic monitoring program would be implemented at the intersections projected to experience significant impacts during the peak quarter of construction, and traffic enforcement agents would be deployed where deemed necessary in consultation with New York City Department of Transportation. If severe adverse impacts continue, construction efforts would result in short-term unavoidable adverse impacts to the affected intersections.

26 Growth-Inducing Aspects of the Proposed Project

The term "growth-inducing aspects" generally refers to the potential for a proposed project to trigger additional development in areas outside of the project site (i.e., directly affected area) that would not experience such development without the proposed project. In particular, a project may result in "secondary" impacts as a result of induced development.

The *2021 City Environmental Quality Review (CEQR) Technical Manual* indicates that an analysis of the growth-inducing aspects of a proposed project is appropriate when the project:

- Adds substantial new land use, new residents, or new employment that could induce additional development of a similar kind or of support uses, such as retail establishments to serve new residential uses; and/or
- Introduces or greatly expands infrastructure capacity (e.g., sewers, central water supply).

As described in **Chapter 2, Proposed Project and Alternatives**, the Proposed Project would implement new and enhanced public transit service along the North and West Shores of Staten Island between South Avenue (West Shore Plaza, located near the intersection of South Avenue and Chelsea Road) and St. George (St. George Terminal, located near the intersection of Richmond Terrace and Bay Street) in Richmond County, New York.

Conclusion

The Study Area for this project is an 8-mile proposed alignment which would consist of approximately 4.8 miles of ROW from the former North Shore Railroad and a total of 3.2 miles of City roadways, such as Richmond Terrace (0.5 miles) and South Avenue (2.7 miles).

As a proposed transportation improvement project, the Proposed Project would not add new residential or commercial development and therefore it would not induce additional development of a similar kind or of support uses.

The Proposed Project serves an area with outstanding transportation needs and meets the demand for expanded transportation capacity through enhanced and priority transit service. The Proposed Project, which strengthens the transit system, provides an alternative transportation mode to the single-occupancy vehicle, thus reducing the potential for additional congestion on Staten Island's North Shore roadway network.

As described in **Chapter 12, Water and Sewer Infrastructure**, the Proposed Project would not introduce or greatly expand infrastructure capacity.

While providing a more reliable transportation alternative, the Proposed Project still would not stimulate development or result in induced growth.

27 Irreversible and Irretrievable Commitments of Resources

Resources, both natural and man-made, would be expended in the construction and operation of developments projected to occur as a result of the Proposed Project. These resources include the building materials used in construction; energy in the form of gas and electricity consumed during construction and operation of project-generated development by various mechanical and processing systems; and the human effort (time and labor) required to develop, construct, and operate various components of project-generated development. These are considered irretrievably committed because their reuse for some purpose would be highly unlikely.

The Proposed Project (as described in **Chapter 2, Proposed Project and Alternatives**), constitutes a long-term recommitment of land resources, thereby rendering land use for other purposes highly unlikely in the foreseeable future. Furthermore, funds committed to the design, construction/renovation, and operation of Proposed Project are not available for other projects.

Natural and man-made resources would be expended in the construction and operation of the Proposed Project. These natural resources include the use of land and energy. Man-made resources include the effort required to develop, construct, and operate the Proposed Project; building materials; financial funding; and vehicle use. These resources are considered irretrievably committed because it is highly unlikely that they would be used for some other purpose.

The Proposed Project would result in irreversible clearing and grading of vegetation within the North Shore Railroad ROW as well as modification to topography along the right-of-way. The loss of vegetation is considered an irreversible commitment of resources.

The actual building materials used in the construction of the Proposed Project (wood, steel, concrete, glass, etc.) and energy, in the form of gas and electricity, consumed during the construction and operation of the Proposed Project would also be irretrievably committed to the Proposed Project.

These commitments of resources and materials are weighed against the benefits of the Proposed Project. As described in **Chapter 1, Introduction**, the provision of

a reliable, direct transit connection along South Avenue and across the North Shore to St. George would address existing transportation needs by improving transit access, providing more consistent travel times, and supporting economic growth, thereby improving the overall quality of life for residents along the North and West Shores of Staten Island.

28 Response to Comments on the DEIS

Introduction

This chapter summarizes and responds to substantive comments on the Draft Environmental Impact Statement (DEIS) published on October 25, 2023 for the Staten Island North Shore Bus Rapid Transit (BRT) Project. Written comments were accepted from publication of the DEIS through the close of the public comment period, which ended on December 22, 2023. **Appendix Q** contains written comments received on the DEIS.

The following section lists the elected officials, organizations, and individuals that provided relevant comments on the DEIS (see *List of Elected Officials, Organizations, and Individuals Who Commented on the DEIS*). *Comments and Responses on the DEIS* contains a summary of the relevant comments and a response to each. These summaries convey the substance of the comments made, but do not necessarily quote the comments verbatim. Comments are organized by subject matter and generally parallel the chapter structure of the DEIS. Where more than one commenter expressed similar views, those comments have been grouped and addressed together. Pursuant to SEQR regulations, the lead agency must respond to substantive comments on the DEIS. Therefore, this document provides responses to comments related to the environmental review.

List of Elected Officials, Organizations, and Individuals Who Commented on the DEIS

Elected Officials

1. U.S. Representative Nicole Malliotakis, written statement dated November 29, 2023 (Malliotakis)
2. Staten Island Borough President Vito Fossella, written statement dated November 22, 2023 (Fossella)

Community Board

3. Nicholas Zvegintzov, Community Board 1, Staten Island Transportation Chair, written statement dated December 13, 2023 (Staten Island CB 1)

Organizations and Businesses

4. Linda Baran, President & CEO, Staten Island Chamber of Commerce, written statement dated November 16, 2023 (Staten Island Chamber of Commerce)
5. Jessica Vodoor, President & CEO of the Snug Harbor Cultural Center & Botanical Garden, written statement dated November 21, 2023 (Snug Harbor Cultural Center)
6. Ciro Galeno, Jr., Executive Director of the Noble Maritime Collection, written statement dated November 22, 2023 (Noble Maritime Collection)
7. Lisa Daglian, Executive Director of the Permanent Citizens Advisory Committee to the MTA, written statement dated November 22, 2023 (Permanent Citizens Advisory Committee to the MTA)
8. Janice Monger, CEO of the Staten Island Museum, written statement dated November 24, 2023 (SI Museum)
9. Shelagh Mahoney, President of Atlantic Salt, Inc., written statement dated November 30, 2023 (Atlantic Salt)
10. Mary Bullock, Port Richmond North Shore Alliance, written statement dated December 22, 2023 (Port Richmond North Shore Alliance)
11. Rose Uscianowski, Transportation Alternatives, written statement dated December 22, 2023 (Transportation Alternatives)
12. Neil Anastasio, President of the Forest Regional Residents' Civic Association, written statement dated November 26, 2023 (Forest Regional Resident's Civic Association)

General Public

13. Erica Taliento, written statement dated October 28, 2023 (Taliento)
14. Jackson Hurst, written statement dated November 1, 2023 (Hurst)
15. Dominic Perrotta, written statement dated November 5, 2023 (Perrotta)
16. John H, written statement dated November 6, 2023 (John H.)
17. Janet Dugo, written statement dated November 13, 2023 (Dugo)
18. Patrick Hyland, written statement dated November 15, 2023 (Hyland)
19. Tatiana Arguello, written statement dated November 21, 2023 (Arguello)
20. Erica Hagmueller, written statement dated November 22, 2023 (Hagmueller)
21. Martha Neighbors, written statement dated November 22, 2023 (Neighbors)
22. Lorri Senk, written statement dated November 23, 2023 (L. Senk)
23. Norman Senk, written statement dated November 23, 2023 (N. Senk)
24. Din Rosenthal, written statement dated November 25, 2023 (Rosenthal)

25. Lakshmi Rao Sankar, written statement dated November 27, 2023 (Sankar)
26. Dana Walker, written statement dated November 29, 2023 (Walker)
27. Justin Wood, written statement dated December 1, 2023 (Wood)
28. Lindy Peter Crescitelli, written statement dated December 2, 2023 (Crescitelli)
29. Derek Weng, written statement dated December 12, 2023 (Weng)
30. Susannah Abbate, written statement dated December 12, 2023 (Abbate)
31. Aidan Woutas, written statement dated December 13, 2023 (Woutas)
32. Anthony Avila, written statement dated December 21, 2023 (Avila)
33. John Kilcullen, written statement dated December 22, 2023 (Kilcullen)
34. Michael Harwood, written statement dated December 22, 2023 (Harwood)
35. N. Norberg, written statement dated December 22, 2023 (N. Norberg)
36. Ishita Gaur, written statement dated December 22, 2023 (Gaur)
37. William Morrish, written statement dated December 22, 2023 (Morrish)
38. Emily Paine, written statement dated December 22, 2023 (Paine)
39. Tamer Mahmoud, written statement dated December 22, 2023 (Mahmoud)
40. Daniel Hennessy, written statement dated December 22, 2023 (Hennessy)
41. Shana Norberg, written statement dated December 22, 2023 (S. Norberg)
42. Daniel Bodah, written statement dated December 22, 2023 (Bodah)
43. George McClain, written statement dated December 22, 2023 (McClain)
44. Terence Fitzpatrick, written statement dated December 22, 2023 (Fitzpatrick)
45. Sara Hertog, written statement dated December 23, 2023 (Hertog)
46. Lillian Lagazzo, written statement dated December 19, 2023 (Lagazzo)

Comments and Responses on the DEIS

Comments Received in Support of the Proposed Project

The following elected officials, organizations, and members of the interested public submitted written comments in support of the Proposed Project: U.S. Representative Nicole Malliotakis; Staten Island Borough President Vito Fossella; Permanent Citizens Advisory Committee to the MTA; Port Richmond North Shore Alliance; Jackson Hurst; Janet Dugo; Justin Wood; Aidan Woutas; Anthony Avila; William Morrish; Shana Norberg; Daniel Bodah; George McClain.

Comments Relating to EIS Analyses

Proposed Alternative

C.1 **Maximizing waterfront access and capacity for salt storage is essential to Atlantic Salt's fulfilling its customer obligations, and maximizing that same salt storage capacity is essential to the public safety and transportation resiliency functions of the New York City Department of Sanitation and the NYS DOT for winter deicing and road safety. The DEIS's assertion that its BRT Project will maximize waterfront access and capacity for salt storage is incorrect. The proposed BRT pathway will in fact significantly reduce salt storage capacity. The proposed BRT pathway will significantly reduce the square-footage of cargo laydown space at the western end of the terminal that is immediately adjacent to the shipping berth. The DEIS suggests no solutions for recapturing lost cargo laydown space elsewhere. Unfortunately, the current plan for the BRT will have a major negative impact on Atlantic's salt storage capacity. (Atlantic Salt, Inc.)**

Response: As described in Chapter 4, Socioeconomic Conditions, of the DEIS, MTA recognizes Atlantic Salt as a maritime business with unique waterfront operations that provide value locally and at the regional level. As described in Chapter 3, Land Use Zoning and Public Policy, of the DEIS, the existing right-of-way (ROW) bisects two active water-dependent industrial uses situated along the Kill Van Kull: Caddell Dry Dock and Atlantic Salt. Although these businesses previously operated when the North Shore Railroad was in active service through their property, they have continued to evolve in the absence of the rail line, and re-establishment of transit service along the existing ROW would likely be problematic for the viability of their current operations. As such, the Proposed Project would shift the BRT alignment to the south (closer to Richmond Terrace) within both properties to maintain an efficient transit corridor while enabling these property owners to maximize waterfront access for their business functions.

At a meeting with the MTA on October 31, 2019, Atlantic Salt representatives requested that the BRT alignment be placed as close to Richmond Terrace as possible because retaining base square footage on either end of the site was deemed by the Atlantic Salt representatives to be crucial to maintaining Atlantic Salt's stockpile capacity.

As described in Chapter 3, Land Use Zoning and Public Policy, of the DEIS, this shift in the ROW would involve property discussions (e.g., possible land exchanges) involving the City (owner of the right-of-way), Atlantic Salt and Caddell (owners of the property adjacent to the right-of-way), and the MTA. The intent of the property discussions is to exchange a portion of the existing ROW for an equivalent portion of the Caddell and Atlantic Salt properties. The exact location and dimensions of the property to be

exchanged are currently under discussion with the owners and would be refined through the final project design process.

Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with Atlantic Salt to refine the proposed BRT design to reflect a design that will accommodate Atlantic Salt's storage and salt operations needs to the extent practicable while meeting MTA's operational needs. As the final project design is advanced, further coordination is also required with the City for any change to the alignment of the existing ROW (including changes to the alignment within the Atlantic Salt property).

As described above, the proposed alignment has been conceptually designed to minimize impacts to waterfront businesses including Atlantic Salt. Based on discussions with representatives of Atlantic Salt at the October 31, 2019 meeting, MTA understands that had the BRT alignment utilized the existing ROW through Atlantic Salt, the impacts on Atlantic's salt storage capacity would be more severe as compared to the proposed alignment, which is south of the existing ROW.

C.2 **The DEIS erroneously describes the tunnel at Atlantic's location as "unused." The existing at-grade tunnel structure is not "unused" and serves as a garage for the indoor servicing of loaders and other machinery as well as storage supply space. (Atlantic Salt, Inc.)**

Response: Chapter 2, Project Description, and Chapter 21, Construction of the FEIS have been revised to remove the reference to the tunnel as unused. The FEIS has been revised to reflect the uses associated with the existing tunnel structure as reflected in the comment.

C.3 **Three or four loaders can be parked inside the tunnel for service and repairs. Dock work, ship unloading, and delivery truck loading is very hard on these machines. Housekeeping supplies, tools, and other equipment are kept in this space, and the tunnel is a warm, out-of-the-weather place for mechanics to work. No other space to relocate these functions is readily available or suggested by the DEIS. A new building for this work would further reduce Atlantic's cargo-storage capacity.**

Atlantic objects to the implication in DEIS Appendix E, the "Basis of Design Report" that the marine terminal can function over the long term with only one entry/exit gate. The ramp indicated in DEIS Figure 2-8 will not maximize salt-storage capacity, it will cause another large increment of such space to be lost. (Atlantic Salt, Inc.)

Response: See response to Comment C.1. As described above, the proposed alignment has been conceptually designed to minimize impacts to waterfront businesses including Atlantic Salt. Based on discussions with representatives of Atlantic Salt at the October 31, 2019 meeting, MTA understands that had the BRT alignment utilized the existing ROW through

Atlantic Salt, the impacts on Atlantic's salt storage capacity would be more severe as compared to the proposed alignment which is south of the existing ROW.

Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with Atlantic Salt to refine the proposed BRT design to reflect a design that will accommodate Atlantic Salt's storage and salt operations needs to the extent practicable while meeting MTA's operational needs. As the final project design is advanced, further coordination is also required with the City for any change to the alignment of the existing ROW (including changes to the alignment within the Atlantic Salt property).

C.4 **We support any effort to help improve the commute for Staten Islanders on the North Shore. In light of the potential upcoming study, we urge the MTA to consider some of the issues raised by the nearby community such as the possible elimination of a number of parking spots along Richmond Terrace, and its impact on Snug Harbor (Fosella).**

Response: The With-Action parking analysis is presented in Chapter 15, Transportation, beginning on page 15-71 of the Draft EIS. As presented, approximately 250 on-street parking spaces would be eliminated to accommodate the proposed busway on Richmond Terrace. Although there would be a shortfall in on-street parking capacity for most of the time periods analyzed under the No-Action and With-Action conditions, there would be enough available off-street parking capacity in this area to accommodate the shortfall of on-street parking spaces. The Existing Conditions description beginning on page 15-23 identifies the geographic locations of the off-street parking capacity within a quarter mile of the alignment including along the waterfront at the ferry terminal and further inland within the neighborhood (see Figure 15-3). The With-Action Combined On- and Off-street Parking Utilization Summary presented in Table 15-39 on page 15-71 of the Draft EIS shows that there would be an approximate parking surplus of between 1,700 and 2,100 on- and off-street spaces during the weekday and weekend peak periods in the vicinity of Richmond Terrace.

Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with NYCDOT to refine the proposed BRT design along Richmond Terrace to reflect a design that will accommodate NYCDOT's future design initiatives while meeting MTA's operational needs.

Through the Snug Harbor area, the Proposed Project would include an elevated busway. While the busway would primarily utilize city-owned right-of-way, as described in Chapter 6, Open Space, the alignment through this area would require the conversion of approximately 0.36 acres of existing parkland from the shoreline portion of the Snug Harbor Cultural

Center and Botanical Garden to right-of-way. The parkland area, which is located north of Richmond Terrace, would be used because portions of the former North Shore Railroad right-of-way are now submerged in the Kill Van Kull as a result of storm damage and ongoing coastal erosion. The elevated busway would be constructed on piers, which would allow pedestrians to continue to be able to access the waterfront at Snug Harbor by crossing under the busway. The existing steps alongside the Kill Van Kull overlook are barricaded off, which prohibits pedestrian access. However, once the stairs are brought to a state of good repair, access would be restored and the busway would not impede this access. Additionally, the elevated busway would not preclude any of the other waterfront/access projects currently planned and/or funded by Snug Harbor, the City, or federal government. As described in Chapter 6, the MTA would work with NYC Parks to identify ways to minimize the use of parkland to maintain access to the waterfront, and to implement design measures that would make the busway more compatible with the adjacent park use.

MTA has met with local, state and federal agencies throughout the planning process to coordinate the proposed design and potential impacts with planned projects. MTA has coordinated with NYC Parks and SHPO on proposed design elements and potential impacts, with the latest meeting occurring in April 2023. As the project moves forward beyond the Final EIS, key stakeholders would continue to be involved to advance design solutions and mitigation options if impacts cannot be avoided.

C.5 **Regarding St. George Access via Richmond Terrace - the Staten Island Chamber of Commerce (SICC) recommends that the proposed alignment in St. George via Richmond Terrace be revisited. NYCEDC recently acquired a stretch of the St. George waterfront that was part of the NY Wheel site and plans to oversee the esplanade piece of the property. When the Empire Outlets and NY Wheel projects were developed, they built over the existing right-of-way (ROW) which was included for use in the initial planning studies for the North Shore BRT. The current proposed alignment would pass along Borough Hall and other civic uses, including the NYPD 120th Precinct and Staten Island Family Court. This area is problematic since Richmond Terrace is very narrow and highly traversed by buses, trucks, and passenger vehicles. (SI Chamber of Commerce)**

Response: As described in Chapter 2, Proposed Project and Alternatives, the 2012 Staten Island North Shore Alternatives Analysis (SINSAA) identified and evaluated eight alternatives representing a mix of transportation modes, including Heavy Rail along the Staten Island Railway, Diesel Light Rail, and Electric Light Rail. The alternatives were compared in terms of their ability to meet the goals and objectives of the study. The SINSAA concluded that the BRT Alternative had the potential to reduce travel time, improve transit access, and attract new riders while having a lower capital cost than the other alternatives. The Supplement to the 2012 SINSAA (published in

June 2019) provided an updated evaluation that confirmed the feasibility of the BRT alternative. While Empire Outlets and the former NY Wheel project built over the right-of-way, the construction of these facilities was not coordinated with the MTA and the placement of structural columns and footings associated with the developments prohibit the use of the former North Shore right-of-way in these areas. Originally, the proposed St. George BRT terminal station was planned to be situated within a former surface parking lot adjacent to the St. George Terminal. Since 2012, significant new development along the North Shore including the construction of the Empire Outlets as well as resiliency-related improvements have impeded access to St. George for the recommended BRT project, including its planned terminal. Accordingly, these changes created a need to reconceptualize access to and a station at St. George for the BRT project. Seven conceptual options were developed that combined BRT access and terminal at St. George (see Appendix B for more detail). These options were differentiated by their use of the former North Shore right-of-way including areas beneath the former NY Wheel Parking Garage, Ballpark Station and Empire Outlets, as well as Bank Street, Richmond Terrace, areas beneath the St. George Terminal, and areas adjacent to MTA-Staten Island Railway facilities at St. George. In consultation with the NYCDOT, it was determined that alignments that travelled beneath St. George Terminal and its associated retail corridor were not feasible, primarily due to Maritime Transportation Security Act (MARSEC) restrictions and the inability to relocate critical NYCDOT equipment and/or facilities. Similarly, options that impacted the existing Staten Island September 11 Memorial and access to the Staten Island University Hospital (SIUH) Community Park were flawed and thus were not advanced.

C.6 **While I am pleased with the prospect of rapid transit being reinstated along the North Shore ROW, I am primarily concerned about the chosen method, which is BRT, as well as a few other aspects. My main concern in regard to the choice of BRT is my uncertainty about how well this chosen method will perform. Staten Island has an extensive bus network with numerous local services, and services that connect to Manhattan. However, these services are often seen as slow, crowded, and not always convenient. For instance, if you know a car ride takes ten minutes, the bus ride is guaranteed to take over twenty minutes. In my personal experience with the S53, on numerous occasions, I've seen my bus canceled, and when the next one arrives after twenty minutes, it's so crowded that I've been pressed up against the windshield, or I'd have to wait again for the next bus. While I can understand that some of these time-related problems occur due to buses being stuck in car traffic, which won't be the case for most of the BRT, I am still worried that these buses may encounter similar issues with overcrowding and delays. I believe that many other Staten Island residents will share similar concerns and may avoid and stay away from this service because of that. The**

choice of BRT was obviously made after several studies and evidence collected, but I still believe that either a Heavy Rail Transit (HRT) system or, in this case, the more feasible option, Light Rail Transit (LRT), would be much more suitable for the North Shore Branch and all proposed lines on Staten Island. Staten Island, while nowhere near as dense as the rest of the city by any means, is beginning to see development, especially on the North Shore. As density and population increase, so will traffic, unless we have quick, clean, reliable, and comfortable transit options that can help reduce car usage and traffic. A BRT should not be built simply because more houses are being built nearby; instead, the North Shore should be built up and developed in a more pedestrian- and biker-friendly way around the transit system, because there will be LRT or HRT that will be able to support and serve it. Overall, I'm super excited and grateful for the possibility of Rapid Transit along the North Shore, and I think it has the potential to be great. HOWEVER, I cannot stress enough the importance of choosing the LRT system over the BRT system. Thank you for allowing me to provide my input on this project. (Perrotta)

Response: As described in Chapter 2, Proposed Project and Alternatives, the 2012 Staten Island North Shore Alternatives Analysis (SINSAA) identified and evaluated eight alternatives representing a mix of transportation modes, including Heavy Rail along the Staten Island Railway, Diesel Light Rail, and Electric Light Rail. The alternatives were compared in terms of their ability to meet the goals and objectives of the study. The SINSAA concluded that the BRT Alternative had the potential to reduce travel time, improve transit access, and attract new riders while having a lower capital cost than the other alternatives. The Supplement to the 2012 SINSAA (published in June 2019) provided an updated evaluation that confirmed the feasibility of the BRT alternative.

The proposed BRT would function in a similar manner to Light Rail Transit (LRT) with an exclusive right-of-way and dedicated stations. The proposed BRT service would operate in an exclusive right-of-way from Arlington to St. George that is separated from the existing street network. As such, the BRT would not get stuck in traffic since it would run in an exclusive right-of-way, separating it from the unpredictability and congestion of traveling in mixed traffic. The proposed schedule is anticipated to meet demand in terms of crowding and schedule reliability. The exclusive right-of-way will also help maintain on-time performance by allowing vehicles to adhere more to planned schedules, due to its separation from mixed traffic. This will benefit riders by improving reliability and preventing bus overcrowding due to bus bunching or missed trips or stops that are common in congested on-street corridors.

C.7 **The plan holds great promise. Except it is not clear why, in Section 1, buses must proceed down Richmond Terrace (instead of using the existing SIR ROW at ground level). At Richmond Terrace, all buses leaving and arriving at St. George Terminal face a bottle neck due to limited land space, idling vehicles by Empire Outlets, events at the stadium, and vast, unregulated, illegal double-parking and lane-blocking by the personal and official vehicles of the NYPD's 120th Precinct. Why not expedite buses' arrival and departure from St. George Terminal via an appropriate corridor under the terminal and stadium to the right-of-way at Nicholas St.? (Norberg) I am aware that mall construction failed to ensure a turn-around facility for buses, but I am certain that it must be possible to use the parking area under the ferry terminal to receive and turn buses. (Hertog)**

Response. As described in Chapter 2, significant new development along the North Shore including the construction of Empire Outlets, resiliency-related improvements, and SIR operational considerations have impeded access to St. George for the BRT terminal station, as originally conceptualized in 2012. When Empire Outlets and the former NY Wheel project built over the right-of-way, the construction of these facilities was not coordinated with the MTA and the placement of structural columns and footings associated with the developments prohibit the use of the former North Shore right-of-way in these areas. Additionally, NYCDOT did not accept the use of the lower level of St. George Terminal for BRT operations due to safety and security concerns.

Refer to Comment C.5 for additional alignment information and Comment C.19 for 120th Precinct parking configuration.

C.8 **CB1 urges the MTA to collaborate with City, State, and US Government to complete the design for terminating the BRT in the existing SIRT station at St. George. This design was improperly ignored in the DEIS. The proposed routing into the bus terminal via Richmond Terrace is absolutely unacceptable for multiple reasons: increasing instead of decreasing transit times, eliminating parking, bus stops, and bike lane, adding to traffic obstruction, and retarding circulation instead of easing it. (Staten Island CB 1)**

Response: Refer to Comment C.5 related to access to St. George and Comment C.4 regarding Richmond Terrace. Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with NYCDOT to refine the proposed BRT design along Richmond Terrace to reflect a design that will accommodate NYCDOT's future design initiatives while meeting MTA's operational needs.

The proposed design modifications to the frontage of the 120th Precinct were developed in coordination with the NYPD so as not to impede their response times.

Funding Status

C.9 **Although we have not had the opportunity to research the point, and while we did not see discussion of it in the DEIS, any federal funding contribution to the BRT Project is likely to place great weight on elevating the BRT out of the flood zone. (Atlantic Salt, Inc.)**

Response: Federal funding is not being used in the current phase of the Proposed Project as planning activities are being funded through MTA and/or state funding sources. As described in Chapter 1, Introduction, of the DEIS (p.1-15), in the future the MTA may apply for federal funding from the Federal Transit Administration (FTA) or other federal sources for additional design and to construct the Proposed Project.

Analysis pursuant to the National Environmental Policy Act of 1969 (NEPA), Section 106 of the National Historic Preservation Act of 1966 (Section 106 review), and Section 4(f) of the U.S. Department of Transportation Act of 1966 (Section 4f) would occur after, and separately, from the current New York's State Environmental Quality Review Act (SEQRA) process should federal funding be sought in the future to progress the project into design and construction. FTA would serve as lead agency for future NEPA compliance. MTA and FTA have engaged in coordination throughout the early planning phases of the project and would coordinate to satisfy FTA and federal requirements if future NEPA compliance is undertaken.

Land Use, Zoning, and Public Policy

C.10 **We have many serious concerns about how the BRT Project is presented in the October 25, 2023 DEIS. It will have a very negative impact upon Atlantic Salt that will "substantially hinder" the achievement of the city's Waterfront Revitalization Policy (WRP) 2, Policy 2.1, and other policies. (Atlantic Salt, Inc.)**

Response: As described in Chapter 3, Land Use Zoning and Public Policy, of the DEIS, most of the areas along the Kill Van Kull shoreline are designated as a Significant Maritime and Industrial Area. The Proposed Project would advance WRP Policy 2.1G's directive to "target public investment to improve transportation access for maritime and industrial operations." Although access to Atlantic Salt would be modified, as described in the response to Comment 1, the proposed alignment was conceptually designed to minimize impacts to the extent possible to enable Atlantic Salt to continue their maritime operations.

Based on discussions with representatives of Atlantic Salt at the October 31, 2019 meeting, MTA understands that had the BRT alignment utilized the existing ROW through Atlantic Salt, the impacts on Atlantic's salt storage capacity would be more severe as compared to the proposed alignment which is south of the existing ROW.

Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with Atlantic Salt to refine the proposed BRT design to reflect a design that will accommodate Atlantic Salt's storage and salt operations needs to the extent practicable while meeting MTA's operational needs.

As described in Chapter 1, Introduction, of the DEIS, additional City actions will be required to implement the project, some of which include applications subject to the Uniform Land Use Review Procedure (ULURP), which is subject to approval by the City Planning Commission (CPC). During the ULURP process, CPC, acting as the City Coastal Commission, is required to make a WRP consistency finding. Therefore, once the Proposed Project advances through the final project design process and specific ULURP applications associated with that final design are subject to ULURP, WRP consistency findings will be made by CPC.

C.11 **In terms of "maximizing waterfront access and essential salt storage capacity", Atlantic Salt believes the proposal for the Jersey Street/Lafayette segment of the North Shore that were presented by the NYC Department of City Planning to the West Brighton Community Local Development Corporation and the NYS Department of State with funds under the Brownfield Opportunities Areas Program offer better solutions than the plan proposed in the MTA's October 25 DEIS. Instead of leveraging a valuable resource that the city has owned for 60 years—the 100-foot-wide Richmond Terrace ROW—the DEIS removes the BRT from the neighborhood's street life and hides the BRT in a tunnel that is badly needed to support an ongoing maritime operation. (Atlantic Salt, Inc.)**

Response: As described in Chapter 3, Land Use Zoning and Public Policy, of the DEIS, the West Brighton Brownfield Opportunity Area (BOA) study represents a unique opportunity to achieve the community's vision and revitalization of the area. The study resulted in a "Recommendations Action Agenda" with five key components: support and create neighborhood centers; create quality jobs and workplaces; improve access to waterfront, parks, and open space; improve connections and mobility; and address environmental challenges. The recommendations for improving connections and mobility are primarily focused on coordinating with MTA to implement the BRT in the North Shore ROW. As noted in Chapter 3, both the West Brighton and Port Richmond BOA studies call for the implementation of the BRT in the North Shore corridor as recommended by the 2012 Staten Island North Shore Alternatives Analysis.

As discussed in a meeting with Atlantic Salt representatives on October 31, 2019, with respect to consideration of using the full mapped width of Richmond Terrace for BRT use, MTA indicated that the existing city-owned former North Shore ROW extends through the Atlantic Salt site and that altering Richmond Terrace to utilize the mapped width of 100 feet would be

an independent city-sponsored study/action that is beyond the scope of the Proposed Project and outside the jurisdiction of the MTA. Should the Proposed Project advance, MTA will continue to coordinate with elected officials, businesses and local, state and federal agencies throughout the planning process to ensure consistency with the goals of the overall WRP with respect to the Proposed Project.

C.12 **The DEIS, by shrinking Atlantic's cargo handling and storage space while ignoring the reasonable alternative of deploying the city's 100-foot-wide right of way on Richmond Terrace for BRT use, raises the specter of interfering with maritime goals (Atlantic Salt, Inc.)**

Response: As noted in the response to Comment C.11 altering Richmond Terrace to utilize the mapped width of 100 feet would be an independent city-sponsored study/action that is beyond the scope of the Proposed Project and outside the jurisdiction of the MTA.

As noted in Chapter 4, Socioeconomic Conditions, of the DEIS, Atlantic Salt is recognized as a maritime business with unique waterfront operations that provide value to both the local and regional economy.

As described in Chapter 3, Land Use Zoning and Public Policy, of the DEIS, the former North Shore ROW bisects Atlantic Salt. While maritime-related industry previously operated when the North Shore Railroad was in active service through the property, the MTA recognizes that Atlantic Salt has continued to evolve in the absence of the rail line, and the re-establishment of transit service along the ROW would be problematic for the viability of Atlantic Salt's current operations. To that end, the Proposed Project would shift the BRT alignment to the south (closer to Richmond Terrace) within the property to maintain an efficient transit corridor while enabling Atlantic Salt to maintain waterfront access for their business function.

At a meeting with the MTA on October 31, 2019, Atlantic Salt representatives requested that the BRT alignment be placed as close to Richmond Terrace as possible because retaining base square footage on either end of the site was deemed by the Atlantic Salt representatives to be crucial to maintaining Atlantic Salt's stockpile capacity.

Should the Proposed Project advance through the final project design process, MTA will continue to coordinate with Atlantic Salt to refine the proposed BRT design to reflect a design that will accommodate Atlantic Salt's storage and salt operations needs to the extent practicable while meeting MTA's operational needs.

Socioeconomic Conditions

C.13 **We are concerned about this imposing on Snug Harbor land and the restaurant landscape like Blue. (Arguello)**

Response: Displaced commercial businesses are noted in Chapter 4, Socioeconomic Conditions, of the DEIS; and the Proposed Project would not displace Blue Restaurant.

See the response to Comment C.14 regarding Snug Harbor.

Open Space (including Waterfront Access)

C.14 **It is stated in the scoping document that Snug Harbor's public waterfront access will not be restricted by this design, but we do not understand that statement. How does the MTA envision the waterfront overlook that is part of the Sailors Snug Harbor historic district being incorporated into the busway, and how will the busway not impede public access? (Snug Harbor Cultural Center; Neighbors) I am not in favor of this proposed "final scope" that removes or reduces parkland to accommodate the BRT. (Rosenthal; Rao Sankar; Walker; Hagmueller; Noble Maritime Collection, SI Museum, Forest Regional Resident's Civic Association)**

Response: Through Snug Harbor, the Proposed Project would include an elevated busway. While the busway would primarily utilize city-owned right-of-way, as described in Chapter 6, Open Space, of the DEIS, the alignment through this area would require the conversion of approximately 0.36 acres of existing parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to right-of-way. The parkland area, which is located north of Richmond Terrace, would be used because portions of the former North Shore Railroad right-of-way are now submerged in the Kill Van Kull as a result of storm damage and ongoing coastal erosion. The elevated busway would be constructed on piers, and pedestrians would still be able to access the waterfront at Snug Harbor by crossing under the busway. The existing steps alongside the Kill Van Kull overlook are barricaded off which prohibits pedestrian access. However, once the stairs are brought to a state of good repair access would be restored and the busway would not impede this access. As described in Chapter 6, the MTA would work with NYC Parks to identify ways to minimize the use of parkland to maintain access to the waterfront, and to implement design measures that would make the busway more compatible with the adjacent park use.

C.15 **The shoreline in front of Snug Harbor is severely eroded. Snug Harbor's CPSD Master Plan envisioned restoring this shoreline for protection of the adjacent historic campus, as well as investing in this waterfront for public use. Recent projects announced by the city including the North Shore Revitalization Project, the Mayor's Greenway initiatives share these goals. Has the MTA coordinated this**

reduction of waterfront access with city agencies forwarding these recent plans? How do they anticipate the conflicts will be resolved? (Snug Harbor Cultural Center) The revitalization of Snug Harbor's parkland waterfront and the rebuilding of a public dock is central to Snug Harbor's capital master plan's vision, and this proposed scope of the BRT would effectively eliminate the vision of a vibrant waterfront parkland for the Snug Harbor community. The separation of the historic Snug Harbor campus from its waterfront context creates a significant negative impact on the historical context of the site, which is deeply connected to the waterfront and the maritime heritage of our community. (SI Museum)

How will the impact to the historical context of the Sailors Snug Harbor site be respected when the final designs for the busway are prepared? As noted, the site has multiple layers of designation both locally in NYC as well as at the state and national levels. We feel that the NYC Landmarks Commission should be consulted in the design process for the elevate busway- has this review occurred? (Snug Harbor Cultural Center, Neighbors)

Response: MTA has met with local, state and federal agencies throughout the planning process to coordinate the proposed design and potential impacts with planned projects. MTA has continued to coordinate with the NYC Parks and SHPO on proposed design elements and potential impacts, with the latest meeting occurring in April 2023. Additionally, the elevated busway would not preclude any of the other waterfront/access projects currently planned and/or funded by Snug Harbor, the City, or federal government. As the project moves forward beyond the Final EIS, key stakeholders would continue to be involved along with Snug Harbor representatives to advance design solutions and mitigation options if impacts cannot be avoided. While SEQRA is one phase of the planning lifecycle, additional opportunities for outreach and stakeholder input would occur during project development phases such as NEPA and Preliminary/Final Design should the project advance. MTA plans to continue outreach and collaboration with local, state and federal agencies if and when the project progresses.

C.16 **I oppose the plan for the elevated highway blocking access to the waterfront along the Kill Van Kull. (Abbate; Weng) Please find another solution which doesn't obstruct access. I understand there's an option for a streetlight along Richmond Terrace instead of the dedicated bus route. Please consider that. (Abbate)**

Response: Refer to Comment C.14 regarding waterfront access. The potential inclusion of a traffic light along Richmond Terrace is under the purview of the NYCDOT and not related to the MTA or the Proposed Project.

C.17 **As it concerns the impacts on the Snug Harbor parkland, open space, and historical significance, the plan should consider allowing for creation and access for a ferry slip on the water side of Richmond Terrace, in the Snug Harbor land. Historically, there was a boat slip there and it would be a benefit, as well as a mitigating factor, to include a well designed and landscaped boat slip to allow the revival of this historic connection to the maritime themed Snug Harbor Cultural Center. The EIS should look at how to incorporate waterfront access for such an additional transportation facility in connection with the proposed BRT. (Harwood)**

Response: As described in Chapter 6, Open Space (see p. 6-17) of the DEIS, the proposed BRT design would not impede access to the waterfront and shoreline pathway. The remnant dock at Snug Harbor is also noted in Chapter 6, Open Space. Any potential rehabilitation, improvement or introduction of ferry service at the dock location is beyond the purview of the MTA and scope of the Proposed Project. Potential dock infrastructure or ferry transit service would be studied independent of the Proposed Project by the City and/or Snug Harbor.

C.18 **The alienation of parkland along the Snug Harbor Esplanade is completely unacceptable and contrary to the City's goal of increased access to our waterfront. The MTA needs to reevaluate the design strategy here. (Kilcullen)**

Response: See response to Comment C.14.

Historic and Cultural Resources

C.19 **Snug Harbor's connection to the waterfront is an important, fundamental part of its history. Reading the DEIS, however, makes it difficult to understand how that connection will be recognized and maintained by the BRT Project. (Atlantic Salt, Inc.; Noble Maritime Collection)**

Response: Through Snug Harbor, the Proposed Project would include an elevated busway. While the busway would primarily utilize city-owned right-of-way, as described in Chapter 6, Open Space, of the DEIS, the alignment through this area would require the conversion of approximately 0.36 acres of existing parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to right-of-way. The parkland area, which is located north of Richmond Terrace, would be used because portions of the former North Shore Railroad right-of-way are now submerged in the Kill Van Kull as a result of storm damage and ongoing coastal erosion. The elevated busway would be constructed on piers, therefore pedestrians would still be able to access the waterfront at Snug Harbor by crossing under the busway. The existing steps alongside the Kill Van Kull overlook are barricaded off which prohibits pedestrian access. However, once the stairs are brought to a state of good repair access would be restored and the busway would not impede this access. As described in

Chapter 6, the MTA would work with NYC Parks to identify ways to minimize the use of parkland to maintain access to the waterfront, and to implement design measures that would make the busway more compatible with the adjacent park use.

MTA has met with local, state and federal agencies throughout the planning process to coordinate the proposed design and potential impacts with planned projects. MTA has continued to coordinate with the NYC Parks and SHPO on proposed design elements and potential impacts, with the latest meeting occurring in April 2023. Additionally, the elevated busway would not preclude any of the other waterfront/access projects currently planned and/or funded by Snug Harbor, the City, or federal government. As the project moves forward beyond the Final EIS, key stakeholders would continue to be involved to advance design solutions and mitigation options if impacts cannot be avoided.

Transportation

C.20 **It is absolutely insane that the plan proposed involves narrowing the existing sidewalks, with the report stating, "Significant adverse impacts are anticipated at two sidewalk locations" and "These potential impacts would remain unmitigated." The sidewalks on Richmond Terrace are already extremely narrow for the current use that even the NYC DOT listed it as a problem in need of fixing in their own analysis of the corridor. Narrowing the existing sidewalks to the point of near elimination while also adding two additional lanes of traffic to an already 4 lane road will make the simple act of existing on Richmond Terrace in St George one of absolute misery. Let alone the safety impacts to pedestrians this would cause. The very fact that this was seen as okay is a disgrace to the MTA and I can only hope that when you inevitably need to cooperate with NYC DOT on the right of way they give you the needed pushback on this absolute idiotic idea. (Taliento)**

Response: Chapter 15, Transportation, of the Draft EIS identifies unmitigatable pedestrian impacts at two sidewalks – the Richmond Terrace south sidewalk between Clinton Avenue and Lafayette Avenue during the weekday AM peak hour, and the Teleport Drive south sidewalk east of South Avenue during the weekday PM peak hour. As described in Chapter 15, significant impacts to these sidewalk locations were primarily due to the narrow widths of the sidewalks as well as existing obstructions, such as tree pits, building stoops, and utility poles. As described in Chapter 23, Mitigation, these impacts could not be mitigated without widening the sidewalk and reducing the adjacent roadway. The impacted sidewalks are expected to operate at levels of service (LOS) letter grade D during the impacted peak hours; the CEQR Technical Manual identifies mid-LOS D as the threshold for unacceptable pedestrian levels of service within the study area.

As described in Chapter 15, within the section of Richmond Terrace where the proposed two-lane median busway is proposed, the Richmond Terrace west sidewalk between Wall Street and Hamilton Avenue would be narrowed and pedestrian levels of service analysis was performed to assess the effect of the Proposed Project's redesign to this sidewalk. The sidewalk is approximately 15 feet wide with a portion of the sidewalk occupied by the New York City Police Department 120th Precinct's perpendicular "combat parking" arrangement leaving approximately five feet of the sidewalk that can be used by pedestrians. The Proposed Project would reduce the width of the sidewalk so that the 120th Precinct's parking would be accommodated on the roadway surface (and not on the sidewalk). To maintain the five feet of pedestrian walking space, the 120th Precinct building stairs and landscaping would be modified and re-oriented. This sidewalk is expected to operate at LOS A during the weekday AM and PM peak hours with the Proposed Project's design and would not be impacted by the Proposed Project.

C.21 **What would be the feasibility of maintaining a two-way busway on the north side of Richmond Terrace between Nicholas St. and St. George instead of the median? This may make it easier for buses to travel as unimpededly as possible on this high traffic stretch of the alignment as buses would have less a need to cross westbound traffic. This may also have the added effect of minimizing NYPD activities crossing the busway or interfering with the busway. Factors that appear to make a north side busway more feasible include the removal of median and removal of parking to support the busway installation, and lack of proposed intermediate stops between Nicholas St and St. George. (John H.)**

Response: The law in New York State requires motorists drive on the right side of the road. Aligning the busway to the north side of Richmond Terrace would result in westbound general traffic operating to the left of eastbound busway traffic which is not consistent with the law and would potentially alarm motorists.

C.22 **This is a great idea and long overdue!!! I like that this is extended down South Avenue connecting to our corporate parks and hotels. My only negative is maintain the S96 when enacted. Thanks so much for advancing this project! (Hyland)**

Response: A description of the Proposed BRT Service Plan begins on page 2-30 of the Draft EIS. As discussed, BRT service would be provided on 2 routes, the S1 and the S2, with a variety of local routes extended to use the busway (S53, S54, and S57) or maintained (S40). The S96, which operates between West Shore Plaza and St. George Terminal, is proposed to be eliminated under the Proposed Project. The S96 bus route is a limited-stop version of the S46. While the S46 would be truncated to the Teleport, the proposed S1 BRT route would originate at West Shore Plaza with a stop at the Teleport.

As such, the S1 would effectively provide the geographic coverage that would be lost with the proposed elimination of the S96.

C.23 **I really need to know how serious you could possibly be about this. We live in the neighborhood, we dine in the neighborhood, we shop in the neighborhood. You're taking away our parking. You expect us to go across the street and down a hill to park in a parking garage that is not accessible to the places that we go to. This is completely unacceptable as a person who has lived here for over 65 years and enjoys going to St. George and living in St. George. Do you really think that putting a bus from Port Richmond to the ferry, is going to bring the south shore to Staten Island ferry, it is not my children live in Great Kills. They've taken the ferry after a train ride where they had to sit with people who are on drugs they need to drive to come to dinner with us. They will no longer come to the North Shore, for any reason, if you take away their parking. This entire plan needs to be rethought. This is not what St. George needs. St. George needs people to come and spend money and keep St. George alive. Doing this and taking away parking spaces for those of us who have no problem paying for a parking spot on the street especially me who has a handicapped husband who I cannot push up, from the parking underneath the outlets that probably are going to close is ridiculous to think it can happen. Therefore, at least three nights a week when we enjoy going to our local restaurants will end and so will going to my favorite little stores to shop. please please consider what you are doing to our community. I am a paraplegic. I cannot go out unless we can park on the street in a legal parking spot where my van can open and a ramp can come down. I have had my wife learn how to park by the sidewalk so that she could help me out of the van as I am unable to walk. I enjoy going to dinner at various restaurants in St. George and mostly can find parking on Richmond Terrace and it has been convenient for us because it is flat and she is able to maneuver me in and out but seriously to take away those parking spots to put bus lanes in that I cannot utilize because my wheelchair does not fit on a New York City bus is not fair to me as a person who lives in this borough and has lived in this borough on the North Shore of Staten Island in the St. George area for over 65 years you really need to reconsider what you are doing to us as community members and leaders please do not take away our parking it is essential to my being able to get out of our home into a social setting your consideration is deeply appreciated and I would welcome the opportunity to speak with you. (Senk; N. Senk)**

Response: The With-Action parking analysis is presented in Chapter 15, Transportation, beginning on page 15-71 of the DEIS. As presented, approximately 250 on-street parking spaces would be eliminated to accommodate the proposed busway on Richmond Terrace. Although there would be a shortfall in on-street parking capacity for most of the time periods analyzed under the No Action and With-Action conditions, there

would be enough available off-street parking capacity in this area to accommodate the shortfall of on-street parking spaces. The Existing Conditions description beginning on page 15-23 identifies the geographic locations of the off-street parking capacity within a quarter mile of the project, including along the waterfront at the ferry terminal and further inland within the neighborhood (see Figure 15-3). The With-Action Combined On- and Off-street Parking Utilization Summary presented in Table 15-39 on page 15-71 of the Draft EIS shows that there would be an approximate parking surplus of between 1,700 and 2,100 on- and off-street spaces during the weekday and weekend peak periods in the vicinity of Richmond Terrace. Additionally, off-street parking options within the study area with ADA accessible spaces include Empire Outlets, Ferry Terminal South #1 Municipal Parking Field (9 spaces), Staten Island Courthouse Garage and Parking Lot (35 spaces)

C.24 **I do not approve this plan. It adds little benefit and encroaches too greatly on Snug Harbor and businesses on Richmond Terrace. I support John Kilkullen's comment that the MTA and EDC should be working together to improve ferry connections at Port Richmond and Mariners Harbor and points south. The old North Shore Railway ROW here is the easiest to be reboot. I do suggest that the NYC DOT provide a traffic light and pedestrian crosswalk to get across Richmond Terrace at the Sailor's Snug Harbor Gate. (Paine)**

Response: See Comment C.19 regarding Snug Harbor and Comment C.5 related to the Richmond Terrace alignment. The MTA supports improvement mobility, however; ferry connections at Port Richmond and other locations are beyond the scope of the Proposed Project. The inclusion of a traffic light and crosswalk at the Snug Harbor Gate is under the purview of the NYCDOT and not related to the MTA or the Proposed Project.

Transit Connectivity

C.25 **The BRT will provide a faster, more efficient line that will greatly benefit the community. It is hoped that it will also contribute to connecting Staten Island regionally to the NJ TRANSIT system. It seems that the North Shore Rapid Transit will only run to and from the West Shore Plaza, while the West Shore Rapid Transit will extend into New Jersey, particularly to Newark Liberty International Airport. The idea of the West Shore Rapid Transit traveling into New Jersey is great, but also believe the North Shore Rapid Transit should do the same. We recommend that the planned stretch of alignment that leaves the open cut and rises to grade (Arlington) section incorporate access to Newark Airport, MetroPark (Amtrak), and the Hudson Bergen Light Rail. While access to NJ is being looked at as part of the West Shore BRT plan, that plan is further out, and we believe a NJ connection needs to happen as part of North Shore BRT where planning is further along. (Dugo; Perrotta; Staten Island Chamber of Commerce)**

Response: The West Shore Alternatives Analysis is a separate project being undertaken by MTA, which will evaluate transit alternatives along Staten Island's West Shore. Depending on the selected alternative/alignment, connections would be provided to the North Shore BRT as well as New Jersey. While North Shore BRT and the West Shore Alternatives Analysis are being conducted independently of each other, the No Action Alternative for the West Shore project assumes that North Shore BRT would be operational before transit on the West Shore is constructed.

C.26 **Thank you for the opportunity to submit public comment regarding the North Shore BRT DEIS in support of this critical project that will improve transit access. As rider representatives and trusted advisors to the MTA, the Permanent Citizens Advisory Committee to the MTA (PCAC) regularly researches issues, recommends viable solutions, and advocates on behalf of the region's MTA riders, including those who use the Staten Island Railway and buses that serve Staten Island. Thousands of New Yorkers depend on bus connections to and from ferries on the North Shore to get around the borough, whether they live or work on Staten Island. This includes many who make the long commute from the St. George Ferry Terminal to JFK8, the Amazon Fulfillment Center. With a higher population density and a lower rate of car-ownership than the borough overall, Staten Island's North Shore is perhaps the most transit-dependent part of the borough. Despite this, the North Shore has for decades been drastically underserved by MTA service. The existing deficits on the North Shore's bus routes (the S40/S90, S44/S94, S46/S96, and S48/S98) are well known: severe overcrowding during peak commute periods; a lack of convenient transfers to other modes; and most bus trips running five or more minutes late. The status quo is simply unacceptable, and North Shore Bus Rapid Transit would help ensure**

that more New Yorkers can depend on transit on Staten Island. In moving forward with this project, the MTA would recognize this and right the wrong created by the closure of the North Shore Branch in 1953—making good on its promise to better serve Equity Areas. The North Shore BRT would also help advance economic development activity on Staten Island, including the New York City Economic Development Corporation's "Staten Island North Shore Action Plan." Between now and the target build date of 2035, we hope the MTA will study other projects that will complement this effort and deliver long-sought transit connections between Staten Island and New Jersey's Hudson, Essex, and Union Counties, as well as New York City. To do so, we recommend the MTA:

- **Improve existing Staten Island Railway service and stations, including installing loudspeakers at stations to provide real-time updates and information.**
- **Study the feasibility of extending the Hudson-Bergen Light Rail to the eventual Elm Park/Morningside Road North Shore BRT stop using the Bayonne Bridge, which was constructed with the possibility of adding rail in mind. This could be funded and operated by the Port Authority, the bi-state agency charged with advancing projects that better connect and serve New York and New Jersey.**
- **Work with the Port Authority to provide bus service between West Shore Plaza and Newark Liberty International Airport.**
- **Partner with local stakeholders to advance the goals outlined in the Staten Island North Shore Action Plan: enhancing station-adjacent land use and ensuring Staten Islanders can access housing near North Shore BRT stops.**
- **Ensure that North Shore BRT service is provided 24/7, 365 days a year.**
- **Coordinate bus schedules along the North Short BRT alignment to ensure timed connections to the Staten Island Ferry, Staten Island Railway and local bus routes, as described on page 2-33.**
- **Improve existing Express Bus service to get residents from other parts of Staten Island into and out of Manhattan more easily and reliably, to ensure that residents have viable transit options for reaching the Central Business District, particularly as Congestion Pricing begins.**

We look forward to seeing this project come to life and improve access to opportunities for residents of Staten Island and beyond. (Permanent Citizens Advisory Committee to the MTA)

Response: The MTA is in agreement with the Permanent Citizens Advisory Committee (PCAC) that the Proposed Project would help facilitate more dependable transit along the North and West Shores of Staten Island. As

described in Chapter 1, the North Shore's population is considerably transit-reliant and the lack of expanded transit capacity currently inhibits local economic growth and the quality of life for residents along the North and West Shores. The Proposed Project would help to address service and capacity issues, support economic growth, and meet projected ridership demand.

MTA has and will continue to coordinate with NYCEDC on the Staten Island North Shore Action Plan relative to the Proposed Project.

Regarding regional connections to New Jersey, please refer to Comment C.25.

While transportation improvements related to existing express and local bus service schedules, and SIR operations fall outside of the purview of the Proposed Project, these suggestions will be forwarded to the appropriate divisions within the MTA.

Public Notice and Stakeholder Coordination

C.27 **The changes to the MTA's Draft EIS and Final Scope Document require greater input from the community, and the one-month public comment period concluding on November 24, 2023 is unacceptable and provides insufficient time to allow our community's stakeholders to digest and understand the impacts of the MTA's plan. The MTA has not sufficiently alerted or circulated this plan to Community stakeholders and MTA's project representatives should present the scope to a Community Board meeting, have additional stakeholder discussions with directly impacted businesses and residents, and incorporate a more robust public input process. (Noble Maritime Collection; SI Museum; Forest Regional Resident's Civic Association; Hagmueller; Rosenthal; Rao Sankar; Walker; Arguello) Would like much more information about this and need more time to learn more and then comment more on all this. Thus also perhaps maybe need more time to perhaps maybe invite you to our local civic meetings to learn even more about this too. (Crescitelli)**

Response: MTA has and continues to coordinate with elected officials, community members, CB1, businesses and local, state and federal agencies throughout the planning process. Presentations were made to the CB1 Waterfront Committee in 2019 and on November 28, 2023. Additional meetings were conducted with elected officials (February 2022 and October 2023); the NYCEDC in April 2022; a joint meeting with the Staten Island EDC and Chamber of Commerce in October 2023; as well as a joint meeting with NYCEDC and the Department of City Planning on November 30, 2023. SEQRA is one phase of the planning lifecycle, and additional opportunities for outreach and stakeholder input would occur during project development phases such as NEPA and Preliminary/Final Design should the project advance. MTA plans to continue outreach and collaboration with local, state

and federal agencies if and when the project progresses.

Regarding the length of the public comment period please see Comment C.28.

C.28 **This BRT report was released and the public comment period ended in between sessions of the Community Board 1 Waterfront Committee meetings. It would be helpful if the public comment period could be extended to at a minimum to mid - December to allow Community Board 1 review, and permit a discussion with MTA representatives at either the upcoming November 28th CB1 Waterfront Committee meeting or a future meeting of this committee. (Snug Harbor Cultural Center; Arguello)**

Response: In accordance with the SEQRA, the public comment period for the Draft EIS was required to be a minimum of 30 days. The North Shore BRT Draft EIS comment period began on October 25, 2023 and concluded on December 22, 2023, which was nearly double the amount of time required under the statute. Presentations were made to the CB1 Waterfront Committee in 2019 and on November 28, 2023.

Capital and Operations & Maintenance (O&M) Costs

C.29 **I am a Tier I retiree with 42 years of City service. I also serve on Community Board #1SI. While we welcome the discussion of sorely needed transportation alternatives for not only CB1, but also for ALL of Staten Island, the BRT project as proposed with $1.3 Billion in construction costs and $24 million O&M annually- needs to be re-evaluated. This is a HUGE expenditure for only saving riders 5.6 minutes in their commute time. (Lagazzo)**

Response: Estimated capital costs and Operations and Maintenance (O&M) costs are detailed in Chapter 2 and Appendix H. The estimated capital cost associated with the Proposed Project represents a significant potential investment on behalf of the MTA. In addition to the capital cost prepared for the Proposed Project, an independent capital cost was prepared by the project sponsor which yielded a similar estimate. The estimated annual O&M costs for the proposed BRT is lower as compared to other transit modes such as LRT or heavy rail which require more intensive infrastructure and vehicle investments. Should the Proposed Project advance, the capital and O&M costs would be refined based on additional design efforts.

C.30 **The cost analysis of 'preferred' alternative does not impute the going-forward costs of the degraded transportation environment, especially street access to SI's most-traveled transportation node, thus under-costing this alternative. (Staten Island CB 1)**

Response: The O&M costs prepared for the Proposed Project were developed with current MTA unit costs and data inputs. The O&M costs also address roadway maintenance that would be required with the Proposed Project in

place. Costs associated with a "degraded transportation environment" would be speculative at best.

Other Comments

C.31 **Request for clear mapping and more complete renderings would make the impact analysis more transparent, user friendly, and easier to interpret. (Atlantic Salt, Inc.)**

Response: The document, graphics, and supporting material including a conceptual design have been reviewed by the MTA and the level of detail provided has been deemed sufficient for purposes of SEQRA. Additional design refinement would occur with supporting renderings and graphics during future project development phases (i.e., NEPA and Preliminary/Final Design) should the project advance.

C.32 **Atlantic Salt has a successful track record of free festivals that provide access to the waterway and promote the public's knowledge of the North Shore's working waterfront. (Atlantic Salt, Inc.)**

Response: The MTA acknowledges the vital role that Atlantic Salt plays both within the North Shore community and the larger region.

C.33 **Atlantic Salt has made substantial investments to preserve the shoreline, maximize cargo-storage capacity, and revitalize the working waterfront. (Atlantic Salt, Inc.)**

Response: The MTA is in agreement that coastal erosion on the North Shore is likely to be a continued problem. Regulatory agencies including the US Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC) have indicated that the responsibility to maintain the shoreline or bulkhead rides with ownership whether city or privately-owned (USACE/NYSDEC Project Briefing 12/17/18). The MTA applauds Atlantic Salt for the investments to improve their bulkhead.

C.34 **This comment is a plea to MTA to reconsider the current proposal for the raised BRT along Richmond Terrace, especially in front the historic landmark buildings on Snug Harbor Cultural Center & Botanical Garden's campus. While it is worth noting that at large the project provides improved public bus transit - much of it at grade, which is positive, the impact this will have on Snug Harbor will be incredibly negative. Looking at the "Snug Harbor Alternatives Analysis", and the Studio V "Snug Harbor Views - BRT Draft EIS copy" files, the recommended "Alternate 2" configuration, which builds out a new elevated BRT roadway structure over the destabilized shoreline or water at Snug Harbor is problematic in many ways. As an overall planning move, blocking waterfront views and access for generations in the name of reducing bus travel time is inconsistent with so many New York City and Federal priorities. Cities everywhere (Boston's Big Dig a prime example) are dismantling elevated vehicular roadways adjacent to the water with federal dollars. (https://www.nytimes.com/interactive/2021/05/27/climate/us-cities-highway-removal.html) We know removing elevated transportation infrastructure is successfully promoting economic growth, community connections, and the health and wellness of its citizens. It's hard to believe with the enormous cost and negative impacts of building an elevated structure (36' above sea level!), waterside of Richmond Terrace is a serious consideration in 2023. Can you please list the agency support that this project has beyond the MTA. Beyond the clear negative impacts to the shore site experience of the historic Snug Harbor, the design undermines shoreline resiliency, removes waterfront access, adds shadow to underwater ecologies, and other marine and environmental problems. Could cause bathymetry issues promoting sediment collection (possibility reducing the navigable waterway). The Kill Van Kull tidal straight is one of the busiest waterways in the NYC Port, and only 10 years ago finished the largest dredging job in the city to deepen it. Building a bus roadway over the waterfront in a coastal flood zone presents tremendous engineering challenges. Can you please list the agencies that this option will require approval from? Is it NEPA and LPC/SHPO, NYCDEC, NYCDEP, and Army Corps of Engineers? Are there other City, State or Federal approvals required? The site is zoned as a park (well into the water) so would also require NYC Parks approval or require their consent to convert existing parkland to a transportation use. As you note on the document that these permits from Parks are unlikely/difficult, why is it the recommended proposal? The Alternate 2 proposal is counter to the 2021 NYC Comprehensive Waterfront plan which talks about equity, access, and the "climate justice principle" that all New Yorkers should live, learn, work and play in safe, healthy, resilient and sustainable environments, even as the climate changes. This MTA proposal would cause harm to the health and quality of life of New Yorkers by putting vehicles over the water and blocking the waterfront. Are you looking to claim a zoning exemption? It is worth**

noting that this proposal is also counter to the NYC Zoning Section Article 6 Chapter 2 "Special Regulations Applying in the Waterfront Area". Only looking at the "General Purposes" section is enough to recognize that this proposal violates every single regulatory intent of the zoning code. https://zr.planning.nyc.gov/article-vi/chapter-2 We hope that MTA will reconsider this proposal for a more suited approach to solving North Shore's transportation challenges. This solution is problematic for many reasons listed above, but primarily because it negates the equity principles of building trust in underserved communities. It does not account for any of the direct impacts it will have on the social, physical and cultural resources in the North Shore. I urge MTA to reconsider this option. (Gaur)

Response: Thank you for your comments. The Proposed Project does not involve an over water causeway within the Kill Van Kull. Through Snug Harbor, the Proposed Project would include an elevated busway. While the busway would primarily utilize city-owned right-of-way, as described in Chapter 6, Open Space, the alignment through this area would require the conversion of approximately 0.36 acres of existing parkland from the shoreline portion of the Snug Harbor Cultural Center and Botanical Garden to right-of-way. The parkland area, which is located north of Richmond Terrace, would be used because portions of the former North Shore Railroad right-of-way are now submerged in the Kill Van Kull as a result of storm damage and ongoing coastal erosion. The elevated busway would be constructed on piers over land, and pedestrians would still be able to access the waterfront at Snug Harbor by crossing under the busway. The existing steps alongside the Kill Van Kull overlook are barricaded off which prohibits pedestrian access. However, once the stairs are brought to a state of good repair access would be restored and the busway would not impede this access. As described in Chapter 6, the MTA would work with NYC Parks to identify ways to minimize the use of parkland to maintain access to the waterfront, and to implement design measures that would make the busway more compatible with the adjacent park use and the Snug Harbor Campus.

As described in Chapter 7, shadows cast on the Kill Van Kull as a result of the Proposed Project would be relatively limited in scope and would not impact the viability of vegetation or marine habitats.

MTA has met with local, state and federal agencies throughout the planning process to coordinate the proposed design and potential impacts with planned projects. MTA has continued to coordinate with the NYC Parks and SHPO on proposed design elements and potential impacts, with the latest meeting occurring in April 2023. Additionally, the elevated busway would not preclude any of the other waterfront/access projects currently planned and/or funded by Snug Harbor, the City, or federal government. As the project moves forward beyond the Final EIS, key stakeholders would

continue to be involved to advance design solutions and mitigation options if impacts cannot be avoided.

The regulatory framework of the EIS is noted in Chapter 1, Introduction and both regulatory and future approvals are noted on p. 1-16.

As described in Chapter 3, Land Use, Zoning and Public Policy, the Proposed Project is being undertaken by the MTA, a state agency that is not subject to City zoning controls. However, because the City may base future land use decisions on this EIS, Chapter 3 describes both study area zoning and potential city land use actions. Specific to parkland as noted in Chapter 3, if parkland is acquired and converted to right-of-way, a zoning map amendment would be required to facilitate parkland alienation. A new zoning designation would be required for the alienated parkland and new parkland created in exchange. The Proposed Project, as described in Chapter 3, would be compatible with a number of public policy initiatives including North Shore 2030, Working West Shore 2030, the North and West Shore Brownfield Opportunity Areas. Refer to Comment C.10 regarding the coastal zone and WRP policies.

Lastly, the Proposed Project would help to uplift the North Shore's predominantly minority communities and open doors to increased economic prosperity, educational opportunities, and better access to Manhattan via the Staten Island Ferry. Additionally, it would improve connectivity for residents of other boroughs visiting Staten Island's cultural centers, restaurants, and local businesses, boosting Staten Island's economy. As the project advances, the MTA will continue to collaborate closely with elected officials, commuters, and key stakeholders during the design phase to address any concerns, ensuring the project's success in efficiently connecting Staten Island from east to west.

C.35 **One of the major impacts the present BRT proposal will have is on both the St. George area and its economic development. (I will let others comment on the negative impacts this project will have on our beloved Snug Harbor.) The Mayor recently highlighted exciting efforts in the Sept. 2023 Staten Island North Shore Action Plan. The Introduction pages to this plan stated by EDC President Kimball and Council Member (49CD) Kamilla Hanks point out… efforts… "to support more housing and economic development opportunities along the Richmond Terrace Corridor.' and "the growth potential for the North Shore of Staten Island is substantial." That being said, the community and government agencies, civic and area committees have spent many years (decades) to attract and develop the downtown Staten Island area for tourism and economic development. The bankruptcy of the Outlets and the defunct Wheel site continue to negatively impact the environment for potentially new and positive economic scenarios for this area. Certain elements of the BRT proposal will only further exacerbate the downturns we are already experiencing: (1) The elimination of 250 parking spaces from Nicholas Street to the Ferry Terminal will create parking hardships for individuals (especially the handicapped and mobility challenged) and burdens to businesses that depend on Richmond Terrace's street parking for patrons; (2) There will be no parking near the Ferry Hawks baseball stadium. Commercial and school buses load and unload patrons, teams and Access-A-Ride and private handicap transportation accessible vans will also be impacted; (3) I believe that response times for the 120th Precinct vehicles will be slowed with officers trying to navigate vehicles across/over the medians. We appreciate the consideration of transportation improvements for our borough's residents. We must work together with our Elected Offices to make this a viable outcome for ALL residents. Again, 5.6 minutes saved and the enormous expenditure of funds points to the need for greater discussion and modification. (Lagazzo)**

Response: MTA has and will continue to coordinate with NYCEDC and other city agencies with respect to the Staten Island North Shore Action Plan and the Proposed Project.

As described in Chapter 1, the North Shore's population is considerably transit-reliant and the lack of expanded transit capacity currently inhibit local economic growth and the quality of life for residents along the North and West Shores. The Proposed Project would help to address service and capacity issues, support economic growth, and meet projected ridership demand. The Proposed Project would help to uplift the North Shore's predominantly minority communities and open doors to increased economic prosperity, educational opportunities, and better access to Manhattan via the Staten Island Ferry. The Proposed Project would improve connectivity for

Manhattan residents visiting Staten Island's cultural centers, restaurants, and local businesses, boosting Staten Island's economy.

Refer to Comment C.19 regarding Richmond Terrace. The proposed design modifications to the frontage of the 120th Precinct were developed in coordination with the NYPD so as not to impede their response times.

C.36 **The proposed BRT viaduct along the North Shore of Staten Island would have numerous and significantly detrimental impacts to the North Shore neighborhoods of Staten Island. These impacts have been drastically understated or left wholly un-considered from the current NYC DOT proposal. The North Shore is the most dense, walkable, and diverse part of Staten Island, and it demands thoughtful, holistic urban design solutions. This is not what has been proposed by the NYC DOT. While we appreciate and advocate for well-conceived improvements to mass transit, the proposed intervention is poorly conceived, and reminiscent of an antiquated approach to traffic engineering which is heavy handed, single minded, and destructive to living and breathing neighborhoods. This BRT project is designed to catalyze gentrification through relatively low density, developer-driven, and far-flung housing to the south and west of Staten Island, while inflicting harm on the established, dense, diverse, historically and culturally rich neighborhoods at the very heart of Staten Island. The North Shore, being home to an enormous and diverse population of long time residents, families, and professionals, boasts inspiring views across the Kill van Kull and New York Harbor. These views matter in the lives of Staten Islander's hearts. From Richmond Terrace, looking out to the water and the city beyond, people can feel a simultaneous calm and connection - to our city skyline, and to the global trade routes represented in towering ships passing a stone's throw away. This is an incredible and valuable place serving the hearts and minds of millions that would be destroyed by the placement of the proposed, oversized, obtrusive, and un-necessary viaduct. The future for the North Shore, and for Staten Island as a whole, must be as a place of waterfront parks and culture! The North Shore Greenway and the Front Lawn of Snug Harbor - walking distance to many thousands of residents, and many millions of NYC residence and annual visitors - is central to that future. Snug Harbor is among the very first landmarks of New York City for good reason. Snug Harbor's iconic Front Five, and its connection to the Kill Van Kull Waterfront, are integral to its heritage and enjoyment by future generations. Snug Harbor is a vibrant home to arts and culture in Staten Island. The recent city-funded CPSD, prepared by some of our own cities most thoughtful professional designers, provides a much more compelling vision forward. The proposed water-side viaduct would decimate Snug Harbor's connection to the Kill van Kull waterfront, and limit its future potential as a public and culturally significant landscape. A connective system of parks, particularly between St. George Terminal,**

Snug Harbor, and beyond, is one of Staten Island's greatest opportunities. This opportunity will be lost if the NYC DOT's proposal advances. This will directly and negatively impact property values along the North Shore, and reduce access to quality public space for all North Shore residents. (Fitzpatrick)

Response: To clarify, the Proposed Project is not an NYC DOT proposal or action. The project sponsor and lead agency for the proposed BRT is the MTA.

Please refer to response to Comment C.4 regarding Snug Harbor and waterfront access, The intent of the Proposed Project is to provide frequent, and reliable transit service to facilitate transit equity, improved connectivity between neighborhoods, activity centers and employment destinations. As described in Chapter 1, the existing North Shore roadway network is physically constrained, and the unused North Shore Railroad right-of-way would offer new transit service largely separated from the existing constrained roadway network.

Should the Proposed Project advance, MTA will continue to coordinate with NYCEDC and other agencies to refine the proposed BRT to consider potential plans for a future Staten Island Waterfront Greenway. The elevated busway would not preclude any of the other waterfront/access projects currently planned and/or funded by Snug Harbor, the City, or federal government (See response to Comment C.4).

C.37 **I am excited by the progress on the future North Shore Bus Rapid Transit plan and can't wait to see the project fully funded and realized. However, I urge project planners to work with the NYC DOT to ensure that the BRT does not inhibit the goals of the Staten Island Waterfront Greenway in providing waterfront greenway access to cyclists and pedestrians between the Verrazzano and Goethals Bridges. With the right planning, public transit and greenway access along the Richmond Terrace Waterfront could complement one another in transforming the way we get around the North Shore. Similarly, I reject the idea that sidewalk space needs to be reduced in front of the 120th Precinct to allow for the on-street BRT portion on Richmond Terrace. Thirty years ago, plans were approved to move the station house for the 120th Precinct to a new location on Hill Street to alleviate the congestion caused by double parking in front of the existing station house. Those plans have been pushed for repeatedly since then, but they were never moved forward. Cutting down sidewalk space on Richmond Terrace during a time when development is increasing foot-traffic will only magnify the problems. A far better solution would be working with the City to have the station house moved. (Transportation Alternatives)**

Response: MTA has coordinated with NYCDOT and other city agencies throughout the planning process. Should the Proposed Project advance, MTA will continue to coordinate with NYCDOT and others to refine the proposed BRT to consider potential plans for a future Staten Island Waterfront Greenway. As described in Chapter 15, within the section of Richmond Terrace where the proposed two-lane median busway is proposed, the Richmond Terrace west sidewalk between Wall Street and Hamilton Avenue would be narrowed and pedestrian levels of service analysis was performed to assess the effect of the Proposed Project's redesign to this sidewalk. The sidewalk is approximately 15 feet wide and a portion of the sidewalk is occupied by the New York City Police Department (NYPD) 120th Precinct's perpendicular "combat parking" arrangement and approximately five feet of the sidewalk could be used by pedestrians. The Proposed Project would reduce the width of the sidewalk so that the 120th Precinct's parking would be accommodated on the roadway surface (and not on the sidewalk). To maintain the five feet of pedestrian walking space, the 120th Precinct building stairs and landscaping would be modified and re-oriented. This sidewalk is expected to operate at LOS A during the weekday AM and PM peak hours with the Proposed Project's design and would not be impacted by the Proposed Project. The NYPD was consulted in the development of the proposed BRT design and the potential relocation of the 120th Precinct is outside the scope of the Proposed Project and outside of the purview of the MTA. Any potential relocation would be made by the NYPD and City of New York.

C.38 **There is so much wrong with this proposal that I find it hard to believe a Staten Islander was involved! A few of the "highlights": a viaduct??? (cost to build, cost to maintain, what happens in bad weather, accidents???)! In other words, a ludicrous idea. The loss of parking spaces! Staten Island is not like Manhattan or the rest of the city! More right and left turn lanes and no left turn during certain hours! A more radical idea: the elimination of commercial traffic during rush hours: 7-9 am and 5-7 pm on major nearby arteries by the ferry. (Hennessy)**

Response: Currently, there is an existing, abandoned viaduct in the vicinity of Port Richmond that was associated with former passenger and freight rail service on the North Shore Railroad. The existing viaduct would be rehabilitated for BRT service as part of the Proposed Project. An elevated busway is proposed in the vicinity of Snug Harbor. Refer to Comment C.4 for additional detail.

The proposed BRT would be designed to applicable safety standards. As noted in Chapter 3, in extreme weather or flood events it is anticipated that the MTA would temporarily suspend BRT service. The elimination of commercial traffic would be subject to NYCDOT approval and is outside of the jurisdiction of the MTA.

C.39 **I think the idea of the BRT was flawed from the very beginning and the executive summary proves it. Parking is at a premium in St. George and taking away much needed parking on Richmond Terrace leading up to Nicholas Street would only make matters worse. In addition to that, utilizing Richmond Terrace up to Nicholas Street would create additional traffic and potential congestion at the intersection where the BRT would descend to Bank Street. What's even worse is requiring parkland and areas from Snug Harbor Cultural Center and the Botanical Garden to be allocated to the BRT is not acceptable. There is not much in the form of parkland on the North Shore, especially in New Brighton and St. George, not to mention that the Snug Harbor Cultural Center and Botanical Garden would be encroached upon and access to the waterfront would be hindered. While that area is currently a mess, it can be remedied with the proper landscaping and provides much needed access to a ferry landing, which can be utilized to bring visitors to Snug Harbor as well as a potential ferry stop on an expanded Fast Ferry service. This is an area where the MTA must work in conjunction with the EDC on developing ferry access points in Snug Harbor and in Port Richmond. Another major issue with this proposal is the reduction in sidewalks on certain parts of the route, which can create pedestrian access and potential safety issues. The current BRT proposal does provide anything in the form of added value that the S40/S90, S44/S94, S46/S96, and S48/S98 don't provide. It's just adding extra vehicles to the road and creating more congestion in areas where traffic is already an issue. It would be a question of a couple of minutes difference between the current bus system in place and the proposed BRT, which in my opinion, is not a significant enough change that justifies the BRT proposal. The best way to address the much maligned transportation system currently in place is to resurrect the North Shore Railroad in the form of a Rapid Transit Light Rail, pretty much bringing back the old Staten Island Railroad that once operated on the North Shore until 1953, when the transit system made it obsolete. The City is currently debating a light rail operation that would traverse between Queens and Brooklyn and Staten Island's North Shore Waterfront is a perfect candidate for such a proposal that would take vehicles off the road and not require much inconvenience to several neighborhoods or conversion of park space since the North Shore ROW is pretty much in place and would need to be rehabilitated in some areas and some new construction in others. More work and consideration needs to be done and provided to Staten Island for this project and the MTA needs to make it a point to meet with the various neighborhood Civics and hear them out! (Mahmoud)**

Response: Refer to Comment C.4 regarding Richmond Terrace. With respect to local bus service as compared to the proposed BRT, the proposed BRT service would operate in an exclusive right-of-way from Arlington to St.

George that is separated from the existing street network. As such, the BRT would not get stuck in traffic since it would run in an exclusive right-of-way, separating it from the volatility and congestion of traveling in mixed traffic that local buses are subject to. Refer to Comment C.6 for a discussion of LRT.

See Comment C.17 for ferry service at Snug Harbor.

MTA has and continues to coordinate with elected officials, community members, CB1, businesses and local, state and federal agencies throughout the planning process. Presentations were made to the CB1 Waterfront Committee in 2019 and on November 28, 2023. Additional meetings were conducted with elected officials (February 2022 and October 2023); the NYCEDC in April 2022; a joint meeting with the Staten Island EDC and Chamber of Commerce in October 2023; as well as a joint meeting with NYCEDC and the Department of City Planning on November 30, 2023. Meetings with these and other stakeholders would continue as the project moves forward beyond the Final EIS. While SEQRA is one phase of the planning lifecycle, additional opportunities for outreach and stakeholder input would occur during project development phases such as NEPA and Preliminary/Final Design should the project advance. MTA plans to continue outreach and collaboration with local, state and federal agencies if and when the project progresses.