



# SUFFOLK DOWNS REDEVELOPMENT

Expanded Environmental Notification Form/  
Expanded Project Notification Form

NOVEMBER 30, 2017

PREPARED BY



SUBMITTED TO  
Executive Office of Energy  
and Environmental Affairs  
Massachusetts Environmental  
Policy Act Office  
Boston Planning &  
Development Agency  
City of Revere

PROPONENT  
The McClellan Highway  
Development Company, LLC  
c/o The HYM Investment Group, LLC  
One Congress Street, 11th floor  
Boston, MA 02114

IN ASSOCIATION WITH  
DLA Piper  
CBT Architects  
Beals and Thomas, Inc.  
Stoss Landscape Urbanism  
LimnoTech  
ARUP  
SourceOne  
Vertex  
Haley & Aldrich







November 30, 2017

Brian P. Golden, Director  
Boston Planning and Development Agency  
One City Hall Square  
Boston, MA 02201

Re: **Suffolk Downs Redevelopment Project**  
Boston, MA

Dear Director Golden:

The HYM Investment Group, LLC ("HYM") on behalf of The McClellan Highway Development Company, LLC ("MHDC"), collectively the "Proponents," are pleased to submit the enclosed expanded Project Notification Form ("EPNF"), as a joint filing which also includes an Expanded Environmental Notification Form ("EENF") initiating review under the Massachusetts Environmental Policy Act ("MEPA"), for the construction of the Suffolk Downs Redevelopment Project ("Project") located at 525 McClellan Highway in East Boston (the "Site").

The Project involves redevelopment of the Site, which is a 161-acre underutilized thoroughbred horse racing facility located within East Boston and Revere, Massachusetts. Approximately 109 acres of the Site is in East Boston, and approximately 52 acres is in Revere. Existing facilities at the Site include a clubhouse, grandstand, thoroughbred racetrack, an administration building, maintenance buildings, horse barns and extensive surface parking areas. The Boston portion of the Site is in the Suffolk Downs Economic Development Area of the East Boston Neighborhood District, which is governed by Article 53 of the Code. The Code identifies the Suffolk Downs Economic Development Area as a Special Study Overlay Area, and establishes the Boston portion of the Site as a potential location for a Planned Development Area ("PDA"). The Project site was also recently identified in the Boston 2030 Plan as a key site for Boston's future growth and targeted for a new mixed-use development district. This EPNF represents the first step in the Article 80 Large Project Review process required by the Boston Zoning Code, and the concurrent filing of the EPNF represented the first step in agency and public review under MEPA. The EPNF/EENF is also being submitted to the City of Revere to initiate the review and approval process for the Revere portion of the Project.

Redevelopment of the Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods. HYM proposes that the Project include various improvements and benefits for the area, including the City of Boston, as follows:

- › Development of a new neighborhood with an active, lively and appropriate mix of uses (including residential, retail, office, lab, hotel, parking and other uses), connected and supported by new open space, neighborhood retail and civic spaces;
- › Provision of an extensive 40-acre publicly-accessible open space system which will include existing wetland features and both active and passive recreation areas;
- ›



- › Incorporation of extensive street-front retail anchored by two new retail squares, Beachmont Square and Belle Isle Square, as well as a new connecting "Main Street" retail district;
- › Construction of a new district attractive to employers of growing industries which will enhance and expand job creation and economic opportunity;
- › Incorporation of various kinds of housing to meet the needs of surrounding neighborhoods, including townhomes, apartments, condominiums, and senior housing;
- › Application of transit-oriented-development principles, through integration of two existing adjacent MBTA Blue Line Stations and alternative travel modes including new bicycle path connections and Hubway Stations;
- › Development of improved connections to adjacent neighborhoods of East Boston and Revere through the Site, including along new open space and pedestrian and bicycle pathways; and
- › Incorporation of forward-thinking climate change & resiliency strategies intended to address future sea level rise and other impacts of climate change.

In addition, the Site has been identified by the City of Boston as a suitable potential location for Amazon's second corporate headquarters. As part of the RFP issued by Amazon, an initial office building of approximately 520,000 square feet with ground floor retail space, and related infrastructure and open space improvements (the "Phase 1 Project") is being requested to be delivered by the end of 2019. In order to deliver the Phase 1 Project by 2019 and to unlock the substantial economic benefits to the region, the Proponents are requesting zoning relief as to height limitations currently applicable to the site of the Phase 1 Project, as well as a Phase 1 Waiver under and in accordance with MEPA. Additionally, it is the desire of the Proponents that the BPDA, after reviewing public and agency comments as well as any further responses to comments made by the Proponents, will issue a Scoping Determination Waiving Further Review of the Phase 1 Project pursuant to the Article 80B process.

The Proponents will publish notice of submission of the EPNF, as required by Section 80A-2(3) coincident with the filing of this EPNF. Requests for copies of the EPNF should be directed to Lauren DeVoe at 617-607-0091 or via e-mail at [ldevoe@vhb.com](mailto:ldevoe@vhb.com).

We look forward to working with you and your staff in your continuing review of the Project.

Sincerely,



Thomas N. O'Brien  
The McClellan Highway Development Company, LLC  
c/o The HYM Investment Group, LLC  
One Congress Street, 11<sup>th</sup> Floor  
Boston, MA 02114



# Suffolk Downs Redevelopment

Boston & Revere, Massachusetts

SUBMITTED TO **Executive Office of Energy & Environmental Affairs**

**MEPA Office**

100 Cambridge St., Suite 900 (9th Floor)  
Boston MA, 02114

**Boston Redevelopment Authority, d/b/a Boston Planning and  
Development Agency**

One City Hall Square, 9<sup>th</sup> Floor  
Boston, MA 02201

**City of Revere**

281 Broadway  
Revere, MA 02151

PROPONENT **The McClellan Highway Development Company, LLC**

**c/o The HYM Investment Group, LLC**

One Congress Street, 11th floor  
Boston, MA 02114

PREPARED BY **VHB**

99 High Street, 10<sup>th</sup> Floor  
Boston, MA 02110

*In association with:*

DLA Piper

CBT Architects

Beals and Thomas, Inc.

Stoss Landscape Urbanism

LimnoTech

ARUP

SourceOne

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Haley & Aldrich

November 30, 2017



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**A: MEPA Distribution List**

**B: Letter of Intent**

**C: Metes and Bounds\***

**D: BPDA Checklists**

**E: Greenhouse Gas Emissions Assessment Supporting Documentation**

**F: Wetlands and Waterways Supporting Documentation**

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**Commonwealth of Massachusetts**  
**Executive Office of Energy and Environmental Affairs**  
**Massachusetts Environmental Policy Act (MEPA) Office**

**Environmental Notification Form**

For Office Use Only

EEA#: \_\_\_\_\_

MEPA Analyst: \_\_\_\_\_

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **Suffolk Downs Redevelopment**

Street Address: **525 William F McClellan Highway, Boston, MA 02128**

Municipality: **Boston & Revere**

Watershed: **Boston Harbor**

Universal Transverse Mercator Coordinates:

Latitude: **42° 23' 51.219" N**

**335753, 4695847 UTM Zone 19N**

Longitude: **70° 59' 44.399" W**

Estimated commencement date: **February 2018**

Estimated completion date: **2038**

Project Type: **Mixed-use**

Status of project design: **Conceptual**

Proponent: **The McClellan Highway Development Company, LLC c/o The HYM Investment Group, LLC**

Street Address: **One Congress Street, 11<sup>th</sup> Floor**

Municipality: **Boston**

State: **MA**

Zip Code: **02114**

Name of Contact Person: **Lauren DeVoe**

Firm/Agency: **VHB**

Street Address: **99 High Street, 10<sup>th</sup> Floor**

Municipality: **Boston**

State: **MA**

Zip Code: **02110**

Phone: **617-607-0091**

Fax: **617-728-7782**

E-mail: **ldevoe@vhb.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?

☒ **Yes** ☐ **No**

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8))

☐ **Yes** ☒ **No**

a Special Review Procedure? (see 301CMR 11.09)

☐ **Yes** ☒ **No**

a Waiver of mandatory EIR? (see 301 CMR 11.11)

☐ **Yes** ☒ **No**

a Phase I Waiver? (see 301 CMR 11.11)

☒ **Yes** ☐ **No**

*(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)*

**A Greenhouse Gas Emissions analysis is included for the Phase 1 Project (see Section 3.2.2)**

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

**ENF Threshold**

**301 CMR 11.03(5)(b)(3)(c):** Construction of one or more New sewer mains ½ or more miles in length, provided the sewer mains are not located in the right of way of existing roadways

**301 CMR 11.03(5)(b)(4)(a):** New discharge to a sewer system of 100,000 or more gpd of sewage, industrial wastewater or untreated stormwater

**301 CMR 11.03(10)(b)(a):** Demolition of any exterior part of any Historic Structure listed in the Inventory of Historic and Archaeological Assets of the Commonwealth

**301 CMR 11.03(11)(b):** Any Project within a designated ACEC.

**EIR Threshold**

**301 CMR 11.03(1)(a)(2):** Creation of ten or more acres of impervious area.

**301 CMR 11.03(3)(a)(1)(b):** Alteration of 10 or more acres of any other wetlands (provided that a superseding order of conditions is required)

**301 CMR 11.03(6)(a)(6):** Generation of 3,000 or more new average daily vehicle trips (adt) on roadways providing access to a single location

**301 CMR 11.03(6)(a)(7):** Construction of 1,000 or more new parking spaces

Which State Agency Permits will the project require?

- › Executive Office of Energy and Environmental Affairs (EEA) – Public Benefits Determination for Landlocked Tidelands
- › Massachusetts Department of Transportation (DOT) – Vehicular Access Permit
- › Massachusetts Department of Conservation and Recreation (DCR) – Vehicular Access Permit
- › Massachusetts Department of Environmental Protection (DEP) – Superseding Order of Conditions (only on appeal, if necessary)
- › DEP – WM 15 NPDES General Permit Notice of Intent
- › DEP – Modification of NPDES Permit
- › DEP – Sewer Connection Permit (if required)
- › DEP – Beneficial Use Determination
- › Massachusetts Water Resources Authority (MWRA) – 8(m) Permit
- › MWRA – Direct Connect Permit (if required)
- › MWRA – Sewer Use Discharge Permit (or waiver) (if required)
- › MWRA – Temporary Construction Site Dewatering Permit (if required)
- › Massachusetts Bay Transit Authority (MBTA) – Agreement for Improvements (if required for signage, landscaping, etc.)

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

**At this time, the Proponent is not pursuing any state financial assistance or land transfer for the Master Plan Project, however, similar to other large scale mixed-use development projects, the Proponent remains open to exploring economic development partnerships with state agencies and funding sources.**

**No state funding or land transfer is being sought by the Proponent for the Phase 1 Project, however, financial assistance could be requested and then provided to Amazon for the redevelopment.**

**Commonwealth of Massachusetts**  
**Executive Office of Energy and Environmental Affairs**  
**Massachusetts Environmental Policy Act (MEPA) Office**

**Summary of Project Size & Environmental Impacts**

*(Refer to Chapter 1, Table 1-4 for Phase 1 Project impacts)*

	Existing	Change <sup>1</sup>		Total <sup>1</sup>	
		Program A	Program B	Program A	Program B
LAND					
Total site acreage	±161				
New acres of land altered <sup>2</sup>		0 <sup>2</sup>	0 <sup>2</sup>		
Acres of impervious area	±72	±51	±55	±123	±127
Square feet of new bordering vegetated wetlands alteration		0	0		
Square feet of new other wetland alteration		±3.5 Million (LSCSF) RFA TBD	±3.5 Million (LSCSF) RFA TBD		
Acres of new non-water dependent use of tidelands or waterways		0	0		
STRUCTURES					
Gross square footage	405,480 <sup>3</sup>	16.1 Million	16.1 Million	16.5 Million	16.5 Million
Number of housing units	0	7,500	10,000	7,500	10,000
Maximum height (feet)	88	132	132	220	220
TRANSPORTATION					
Vehicle trips per day <sup>4</sup>	890	32,430	32,870	33,320	33,760
Parking spaces	3,028	TBD	TBD	TBD	TBD
WASTEWATER					
Water Use (Gallons per day)	±30,000 <sup>5</sup>	±2,511,000	±2,695,000	±2,541,000	±2,725,000
Water withdrawal (GPD)	±30,000	±2,511,000	±2,695,000	±2,541,000	±2,725,000
Wastewater generation/treatment (GPD)	±177,000 <sup>6</sup>	±2,134,000	±2,299,000	±2,311,000	±2,476,000
Length of water mains (miles)	±0.9	±2.3	±2.3	±3.2	±3.2
Length of sewer mains (miles)	±2.7	±0.1	±0.1	±2.6	±2.6
Has this project been filed with MEPA before?					
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					

1 Programs A and B include the same Phase 1 Project. Impacts associated with the Phase 1 Project are detailed in Chapter 1, *Project Description and General Information*, Section 1.4.3.

2 The entire Project Site was previously developed/disturbed through initial filling and structures/parking associated with prior horse racing activity.

4 Program A and Program B trip generation represent the adjusted trip totals. The total unadjusted trip totals are 93,265 for Program A and 91,319 for Program B.

3 Existing square footage does not include horse barns.

4 Program A and Program B trip generation represent the adjusted trip totals. The total unadjusted trip totals are 90,802 for Program A and 89,920 for Program B.

5 Calculated based upon BWSC metered flow. Sufficient information regarding the existing Revere portion of the Project Site flow is not available; however, Revere's contributing flow appears to be negligible based upon limited available information.

6 Includes 27,000 GPD domestic and 150,000 associated with the existing on-site Concentrated Animal Feeding Operation ("CAFO"). Domestic flow calculated based upon 10 percent reduction in metered flow from BWSC. CAFO flow from MWRA Discharge Permit No. 4940368

Has any project on this site been filed with MEPA before?

☒ Yes (EEA # **13437 (Sales Creek Culvert Emergency Repairs); 14747 (Suffolk Downs Stabling Area and Racecourse Stormwater Improvements); 15006 (Caesar's Resort at Suffolk Downs/Mohegan Sun Massachusetts)**) ☐ No

## **GENERAL PROJECT INFORMATION – all proponents must fill out this section**

### **PROJECT DESCRIPTION:**

#### **Existing Conditions**

The "Master Plan Project" is proposed on an approximately 161-acre parcel of land (the "Project Site"). Of the 161 acres that make up the Project Site, approximately 109 are in Boston and approximately 52 are in Revere. The western side of the Project Site is bordered by a retail shopping center, properties containing fuel storage tanks owned by Irving Oil Terminals Inc. and Global Petroleum, and McClellan Highway (Route 1A). Winthrop Avenue is located to the north of the Project Site. The neighborhood north of Winthrop Avenue is Crescent Beach, which in turn borders Revere Beach and the Atlantic Ocean; the Project Site is located less than one mile from the beach. The MBTA Blue Line and Bennington Street (which connects East Boston to the City of Revere and is a key route for access to the Town of Winthrop via Saratoga Street, Route 145) lie east of the Project Site, and Waldemar Avenue is at the southern boundary. The Orient Heights residential neighborhood of Boston is located immediately south of the Project Site. Refer to Figure 1.1 for Project Site locus map and Figure 1.2 for Project Site context.

Figure 1.3 presents an aerial image of the existing site conditions. The Project Site includes a one-mile long oval race track, a vacant administration building, clubhouse, and grandstand, maintenance buildings, horse barns (many of which are currently vacant, dilapidated and in danger of falling) and supporting space for horse handlers and other support staff, as well as site access ways and surface parking. The race track itself is generally not available as a community amenity since the race track is not accessible for public use.

Refer to Chapter 1, *Project Description and General Information*, for additional information on existing conditions.

#### **Project Description**

The Master Plan Project is comprised of approximately 11 million square feet ("MSF") of development in Boston and approximately 5.5 MSF in Revere, and includes a dynamic mix of uses, such as commercial and innovation uses, diversity of residential uses, creative retail and business incubator/innovation space, as well as publicly-accessible open spaces. Redevelopment of the Project Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods. The Master Plan Project proposes various improvements and benefits for the area, including:

- › Development of a new neighborhood with an active, lively and appropriate mix of uses (including residential, retail, office, lab, hotel, parking and other uses), connected and supported by new open space, neighborhood retail and civic spaces;
- › Provision of an extensive 40-acre publicly-accessible open space system which will incorporate existing wetland features and both active and passive recreation areas;
- › Incorporation of extensive street-front retail anchored by two new retail squares, Beachmont Square and Belle Isle Square, as well as a new connecting "Main Street" retail district;



- › Construction of a new district attractive to employers of growing industries which will enhance and expand job creation and economic opportunity;
- › Incorporation of various kinds of housing to meet the needs of surrounding neighborhoods, including townhomes, apartments, condominiums, and senior housing;
- › Application of transit-oriented-development principles, through integration of two existing adjacent MBTA Blue Line Stations and alternative travel modes including new bicycle path connections and Hubway Stations;
- › Development of improved connections to adjacent neighborhoods of East Boston and Revere through the Project Site, including along new open space and pedestrian and bicycle pathways; and
- › Incorporation of forward-thinking climate change and resiliency strategies intended to address future sea level rise and other impacts of climate change.

Refer to Chapter 1, *Project Description and General Information*, for additional information.

#### Phase 1 Project

The Master Plan Project also includes an initial development phase which is responsive to the Request for Proposals (“RFP”) from Amazon for a second headquarters for the company (the “Amazon HQ2”). This initial phase includes an approximately 520,000-square foot office building with ground floor supporting retail, with an additional 520 structured parking spaces (215,000 SF), and related infrastructure and open space improvements within the southeastern corner of the Project Site near the Suffolk Downs MBTA Blue Line Station (the “Phase 1 Project”). The Project Site represents an extraordinary economic development opportunity for Boston, Revere, and the region with or without Amazon.

The Proponent is requesting a Phase 1 Waiver pursuant to 301 CMR 11.11(5) to allow for immediate construction of the Phase 1 Project prior to the completion of the MEPA review process and State and City of Boston and City of Revere permitting of the Master Plan Project. Refer to Section 1.12 for additional information regarding the Phase 1 Waiver request.

Key benefits and potential impacts associated with the Phase 1 Project are addressed in the following sections:

- › Chapter 2, *Urban Design* – Section 2.9
- › Chapter 3, *Sustainability/Green Building and Climate Change Resilience* – Section 3.2
- › Chapter 4, *Wetlands and Waterways* – Section 4.2
- › Chapter 5, *Transportation* – Section 5.3
- › Chapter 6, *Environmental Protection* – Section 6.1
- › Chapter 7, *Historic Resources* – Section 7.2
- › Chapter 8, *Infrastructure* – Section 8.2

#### **Alternatives**

Refer to Chapter 1, *Project Description and General Information*, for an analysis of Project Alternatives.

#### **Mitigation**

Appropriate mitigation for Master Plan Project-related impacts to the natural and built environment will be further determined at the completion of the impact analyses, as part of the subsequent DEIR/DPIR. Based on the proposed program and current level of design, the Master Plan Project is expected to include mitigation for potential impacts related to the following:

- › Transportation;

- › Air Quality and Greenhouse Gas (“GHG”) Emissions;
- › Hazardous Materials;
- › Wastewater;
- › Water (conservation measures);
- › Stormwater; and
- › Construction Period Impacts.

## Phasing

The Master Plan Project will be developed in stages over a range of approximately 15 to 20 years depending on market conditions. Although specific phasing is not proposed herein, the Proponent anticipates that build out of the Project Site will include early development near the two MBTA Blue Line stations, which are “front doors” of the Project Site, it being understood that flexibility of sequencing is critical.

The designs for future buildings will be developed based on the finally approved Master Plan Project. It is expected that the Master Plan Project will accommodate a variety of build-out scenarios. Each of the proposed buildings can be developed together with or independently of, and in differing sequences with, the others and the mix of uses presented in Table 1-1 of Chapter 1, *Project Description and General Information*, allows the Master Plan Project to remain responsive to evolving market conditions.

Depending on market conditions or other factors, uses are to be allocated to different buildings, while complying with the Master Plan Project’s use and dimensional limitations and requirements for site-wide amenities and improvements and mitigation commitments, all of which will be established through the MEPA process, the City of Boston Article 80 review process and City of Revere rezoning and development review processes. The flexibility of sequencing is critical to the Master Plan Project’s ability to respond to market conditions.

## **AREAS OF CRITICAL ENVIRONMENTAL CONCERN:**

Is the project within or adjacent to an Area of Critical Environmental Concern?

☒ **Yes** (Specify **Rumney Marshes**) ☐ **No**

if yes, does the ACEC have an approved Resource Management Plan? \_\_\_ Yes **X** No;

**Although the Area of Critical Environmental Concern (“ACEC”) does not have an approved Resource Management Plan, the “Rumney Marshes Area of Critical Environmental Concern Salt Marsh Restoration Plan,” dated May 2002, identifies disturbances to wetlands within the ACEC, as well as impairments to water quality, as threats to the ecological functions of the ACEC. The Plan outlines several projects supporting improvements to Belle Isle Marsh in the vicinity of the Project Site. The Master Plan Project is not anticipated to result in adverse impacts to wetlands located within the Rumney Marshes ACEC, and will improve the quality of stormwater runoff discharging to Belle Isle Marsh as described in Chapter 8, *Infrastructure*.**

Will there be stormwater runoff or discharge to the designated ACEC? **X** Yes \_\_\_ No; If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

**The Master Plan Project drainage system will significantly improve the quality of stormwater runoff that discharges to Sales Creek and the Rumney Marshes ACEC relative to the existing condition. Refer to Chapter 8, *Infrastructure*, for additional information.**

**RARE SPECIES:**

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see [http://www.mass.gov/dfwele/dfw/nhesp/regulatory\\_review/priority\\_habitat/priority\\_habitat\\_home.htm](http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm))

☐ Yes ☒ No

**HISTORICAL /ARCHAEOLOGICAL RESOURCES:**

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?

☒ Yes **The Project Site is included in the inventory of Historic and Archaeological Assets of the Commonwealth (MHC No. BOS.ABQ)** ☐ No

If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☒ Yes (Specify: **The race track, connected clubhouse and grandstand, administration building, pump house, and barns are expected to be removed**) ☐ No

**WATER RESOURCES:**

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? X Yes \_\_\_ No; if yes, identify the ORW and its location.

**The Massachusetts Surface Water Quality Standards lists Belle Isle Inlet and the tributaries thereto, including:**

- › **Sales Creek, which bisects the Project Site in a northwest-southeast direction, and**
- › **the unnamed intermittent stream that extends parallel to the eastern straightaway (backstretch) of the race track along the eastern Project Site boundary.**

*(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)*

Are there any impaired water bodies on or within a half-mile radius of the project site? X Yes \_\_\_ No; if yes, identify the water body and pollutant(s) causing the impairment:

- 1) **Lynn Harbor – fecal coliform**
- 2) **Chelsea Creek (Chelsea River) – debris/floatables/trash, ammonia (un-ionized), fecal coliform, dissolved oxygen, PCB in fish tissue, petroleum hydrocarbons, sediment screening value (exceedance), taste and odor, turbidity, other**
- 3) **Mill Creek – fecal coliform, PCB in fish tissue, other**
- 4) **Belle Isle Inlet – fecal coliform, PCB in fish tissue, other**

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? \_\_\_ Yes X No

**STORMWATER MANAGEMENT:**

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

**The Master Plan Project includes a new stormwater management system that will significantly improve stormwater runoff quality as compared to existing conditions. A combination of conventional**

and low impact development best management practices is anticipated to be implemented. The proposed system will be designed to comply with the 2008 DEP Stormwater Management Handbook, as well as the Massachusetts Wetlands Protection Act and City of Boston and City of Revere Stormwater requirements. Refer to Chapter 8, *Infrastructure*, for additional detail.

#### **MASSACHUSETTS CONTINGENCY PLAN:**

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes X No \_\_\_ ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome Classification):

DEP has assigned two RTNs to releases of oil or hazardous materials identified at the Project Site. RTN 3-14857 was assigned in February 1997 to the detection of petroleum, metals, and polycyclic aromatic hydrocarbons ("PAHs") in soil and nickel in groundwater. A Class B-1 Response Action Outcome Statement ("RAO") was submitted to DEP on February 17, 1998. RTN 3-34499 was assigned in September 2017 to the detection of arsenic in soil. RTN 3-34499 is in Phase I, the Initial Site Investigation phase of the MCP and has not been Tier Classified. Refer to Chapter 6, *Environmental Protection*, for additional detail.

Is there an Activity and Use Limitation (AUL) on any portion of the project site? \_\_\_ Yes X No

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? \_\_\_ Yes X No;

#### **SOLID AND HAZARDOUS WASTE:**

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:

*(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)*

Demolition debris waste will be separated and legally disposed of in regional landfills. Any material which cannot be separated (structural steel, electrical, metal plumbing) will be sorted and recycled. Asphalt, brick and concrete from the demolition will be stockpiled on-site and processed for use as site fill material during construction. Any steel located within concrete will be removed and recycled. During construction, wood, metals, gypsum, cardboard and plastic will be segregated and sent to recycling facilities. All construction debris will be sent to a solid waste sorting facility for separation of any recyclable materials. Overall, the Master Plan Project is expected to divert at least 75 percent of construction debris from landfills.

Will your project disturb asbestos containing materials? X Yes \_\_\_ No; if yes, please consult state asbestos requirements at <http://mass.gov/MassDEP/air/asbhom01.htm>

Surveys for asbestos containing materials have been conducted of the Project Site buildings and have confirmed the presence of asbestos-containing materials. Prior to demolition, a comprehensive asbestos survey will be conducted in accordance with Massachusetts regulations 310 CMR 715 and 453 CMR 6.00 and asbestos containing materials will be properly abated by a Massachusetts-licensed abatement contractor and inspected by a Massachusetts-licensed Project Monitor.

Describe anti-idling and other measures to limit emissions from construction equipment:

**The Master Plan Project will enforce anti-idling measures consistent with MGL Chapter 90 Section 16A. In addition, all diesel construction machinery will be fitted with oxidation catalysts to reduce emissions.**

**DESIGNATED WILD AND SCENIC RIVER:**

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? \_\_\_\_Yes **X**No; if yes, specify name of river and designation:

## ATTACHMENTS:

1. List of all attachments to this document.

**Appendix A – MEPA Distribution List**

**Appendix B – Letter of Intent**

**Appendix C – Metes and Bounds**

**Appendix D – BPDA Checklists**

**Appendix E – Sustainability Backup**

**Appendix F – Wetlands and Waterways Supporting Documentation**

**Appendix G – Transportation Supporting Documentation**

**Appendix H – Environmental Supporting Documentation**

**Appendix I – Stormwater Management Supporting Documentation**

2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries.

**Refer to Figure 1.1 Locus Map**

3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.

**Refer to Figure 1.3 Existing Conditions**

4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts.

**Refer to Figure 4.1 Areas of Critical Environmental Concern, Figure 4.2 On-Site Wetland Resource Areas, and Figure 7.1 Historic Resources Within ¼ Mile of Project Site. As noted and further discussed in Chapter 4, *Wetlands and Waterways*, the Project Site is exempt from licensing under Chapter 91.**

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase).

**Refer to Figures 1.6a Program A Conceptual Site Plan and Figure 1.6b Program B Conceptual Site Plan**

6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).

**Refer to Appendix A – MEPA Distribution List**

7. List of municipal and federal permits and reviews required by the project, as applicable

**Refer to Table 1-3 of Chapter 1, *Project Description***

**LAND SECTION** – all proponents must fill out this section

**I. Thresholds / Permits**

- A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1))  
☒ Yes ☐ No; if yes, specify each threshold:

**301 CMR 11.03(1)2. Creation of ten or more acres of impervious area**

**II. Impacts and Permits**

- A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change		Total	
		A	B	A	B
Footprint of buildings	±14	±45	±49	±59	±63
Internal roadways	±11	±12	±12	±23	±23
Parking and other paved areas	±47	(±6)	(±6)	±41	±41
Other altered areas	±89	(±51)	(±55)	±38	±34
Undeveloped areas <sup>1</sup>	±0	±0	±0	±0	±0
Total: Project Site Acreage	±161	-	-	±161	±161

- B. Has any part of the project site been in active agricultural use in the last five years? ☐ Yes ☒ No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?
- C. Is any part of the project site currently or proposed to be in active forestry use? ☐ Yes ☒ No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:
- D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ☐ Yes ☒ No; if yes, describe:
- E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ☐ Yes ☒ No; if yes, does the project involve the release or modification of such restriction? ☐ Yes ☐ No; if yes, describe:
- F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ☐ Yes ☒ No; if yes, describe:
- G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? ☐ Yes ☒ No; if yes, describe:

**III. Consistency**

- A. Identify the current municipal comprehensive land use plan

**Boston: Imagine Boston 2030 (2017)**

**Revere: City of Revere FY2010 – 2015 Strategic Plan**

<sup>1</sup> The entire Project Site was previously developed/disturbed through initial filling and structures/parking associated with development and use of the Project Site to accommodate prior horse racing activity.



B. Describe the project's consistency with that plan with regard to:

- 1) economic development **Refer to Chapter 1, *Project Description and General Information***
- 2) adequacy of infrastructure **Refer to Chapter 8, *Infrastructure***
- 3) open space impacts **Refer to Chapter 2, *Urban Design***
- 4) compatibility with adjacent land uses **Refer to Chapter 1, *Project Description and General Information*, and Chapter 6, *Environmental Protection***

The Project Site has been identified by both plans as a priority location for new mixed-use development. Given its historical high traffic generation and its location near Boston's urban core, the Project Site is directly and fully served by existing mass transit, highways and utility infrastructure networks. Today, it exists, in many respects as akin to an undeveloped site, but one that is fully connected and integrated into an urban fabric and network. With the planned closure of the existing horse racing complex, the Project Site is perfectly positioned and ready for its next evolution and redevelopment that is fitting for the 21<sup>st</sup> Century.

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)

**Metropolitan Area Planning Council ("MAPC"), *MetroFuture: Making a Greater Boston Region* (2008)**

D. Describe the project's consistency with that plan with regard to:

***MetroFuture: Making a Greater Boston Region* ("MetroFuture") is a comprehensive regional plan for the Boston metropolitan area, prepared by the MAPC. The plan provides a complete set of implementation strategies, recommendations, and action steps for regional growth and development. MetroFuture focuses on six key elements for growth and development in the region. Each of these is supported by more specific sub-goals and objectives. The Master Plan Project is consistent with many of these, and directly meets the following goals:**

- › **Sustainable Growth:** Most new growth will occur through reuse of previously developed land and buildings. Originally filled through the early 20<sup>th</sup> century to accommodate a speculative residential development that was never realized, the Project Site was developed as a thoroughbred horse racing complex in the 1930s. In it's heyday through the 1930s, 40s and 50's, races typically attracted as many as 20,000 daily spectators. In recent years the Project Site has remained largely underutilized and many of the existing structures have become dilapidated and unsuitable for reuse. Consistent with plans outlined in MetroFuture, the Master Plan Project will replace these existing structures and reenergize the Project Site with a modern sustainable mixed-use development.
- › **Housing Choices:** Low-income households will be able to find affordable, adequate, conveniently located housing...and they will be able to avoid displacement. *The Project Site is strategically located between affordable and family oriented neighborhoods and downtown Boston. The proposed housing units will be designed to attract a wide variety of residents, from young workers and families to empty nesters and multi-generational households. These residential buildings will be interspersed with the commercial buildings ensuring vibrancy throughout the Project Site and creating several new neighborhoods on the Project Site.*
- › **Energy, Air, Water and Wildlife:** The region will use progressively less energy for electricity, heating, cooling and transportation. *The Project Site will be designed to high standards of energy efficiency.*

## RARE SPECIES SECTION

### I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? \_\_\_\_ Yes X No; if yes, specify, in quantitative terms:

*(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)*

- B. Does the project require any state permits related to **rare species or habitat**? \_\_\_\_ Yes X No.
- C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? \_\_\_\_ Yes X No.
- D. D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

## WETLANDS, WATERWAYS, AND TIDELANDS SECTION

### I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? **X** Yes \_\_\_ No; if yes, specify, in quantitative terms:

**301 CMR 11.03(3)(a)b. Alteration of ten or more acres of any other wetland, provided that a permit is required.**

- B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? **X** Yes \_\_\_ No; if yes, specify which permit:

- › **Boston Conservation Commission and Revere Conservation Commission – Order of Conditions**
- › **DEP – Superseding Order of Conditions (if necessary)**
- › **DEP – WM 15 NPDES General Permit Notice of Intent (for discharges to Outstanding Resource Waters)**
- › **Executive Office of Energy and Environmental Affairs (“EEA”) – Public Benefits Determination for Landlocked Tidelands**

- C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

### II. Wetlands Impacts and Permits

- A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? **X** Yes \_\_\_ No; if yes, has a Notice of Intent been filed? \_\_\_ Yes **X** No; Will the project require a Variance from the Wetlands regulations? \_\_\_ Yes **X** No.

**On-site wetland resource areas consisting of Bordering Vegetated Wetland, Bank, Riverfront Area, and Land Subject to Coastal Storm Flowage were confirmed in Orders of Resource Area Delineation (“ORAD”) issued by the Boston Conservation Commission on September 28, 2017, and by the Revere Conservation Commission on October 4, 2017. LUWW was also identified on-site, but was not requested to be confirmed in the ORAD, as it is located entirely within other resource areas.**

- B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

**Permanent impacts to wetland resources areas are anticipated to be limited to the filling of Land Subject to Coastal Storm Flowage to address resiliency and future sea level rise, and the potential siting of stormwater management facilities within the 25-foot Riverfront Area. The impacted buffer zones and resource areas have been previously heavily disturbed. Refer to Chapter 4.0, *Wetlands and Waterways*, for additional discussion regarding wetland impacts. Potential impacts to off-site wetlands associated with required off-site improvements will be evaluated as the Project is advanced and such off-site mitigation measures (i.e. transportation improvements) are identified.**

- C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

	Area (square feet) or Length (linear feet)		Temporary or Permanent Impact
	A	B	
<b>Coastal Wetlands</b>			
Land Under the Ocean	0	0	None
Designated Port Areas	0	0	None
Coastal Beaches	0	0	None
Coastal Dunes	0	0	None
Barrier Beaches	0	0	None
Coastal Banks	0	0	None
Rocky Intertidal Shores	0	0	None
Salt Marshes	0	0	None
Land Under Salt Ponds	0	0	None
Land Containing Shellfish	0	0	None
Fish Runs	0	0	None
Land Subject to Coastal Storm Flowage	±3,495,000	±3,495,000	Permanent
<b>Inland Wetlands</b>			
Bank (lf)	0	0	None
Bordering Vegetated Wetlands	0	0	None
Isolated Vegetated Wetlands	0	0	None
Land under Water	0	0	None
Isolated Land Subject to Flooding	0	0	None
Bordering Land Subject to Flooding	0	0	None
Riverfront Area <sup>1</sup>	TBD	TBD	TBD

- D. Is any part of the project:

- 1) proposed as a **limited project**? \_\_\_ Yes **X** No; if yes, what is the area (in sf)? \_\_\_\_
- 2) the construction or alteration of a **dam**? \_\_\_ Yes **X** No; if yes, describe:
- 3) fill or structure in a **velocity zone** or **regulatory floodway**? \_\_\_ Yes **X** No.
- 4) dredging or disposal of dredged material? \_\_\_ Yes **X** No; if yes, describe the volume of dredged material and the proposed disposal site:
- 5) a discharge to an Outstanding Resource Water (ORW) or an Area of Critical Environmental Concern (ACEC)? **X** Yes \_\_\_ No.
- 6) subject to a wetlands restriction order? \_\_\_ Yes **X** No; if yes, identify the area (in sf):
- 7) located in buffer zones? **X** Yes \_\_\_ No; if yes, how much (in sf) **819,000**<sup>2</sup>

- E. Will the project:

- 1) be subject to a local wetlands ordinance or bylaw? **X** Yes (**Revere Only**) \_\_\_ No.
- 2) alter any federally-protected wetlands not regulated under state law? \_\_\_ Yes **X** No. If yes, what is the area (sf)?

<sup>1</sup> Minor work within the Riverfront Area may be required for the installation of stormwater management facilities. Pursuant to 310 CMR 10.58(4)(d)(1), areas used for structural stormwater management measures are excluded from Riverfront Area impact calculations, provided there is no practicable alternative to siting these structures within Riverfront Area and provided a wildlife corridor is maintained. For the purposes of MEPA, these impacts will be quantified in the DEIR/DPIR as the Project is advanced.

### III. Waterways and Tidelands Impacts and Permits

- A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? ☒ Yes \_\_\_ No; if yes, is there a current Chapter 91 License or Permit affecting the project site? \_\_\_ Yes ☒ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

**The Project Site is no longer subject to Chapter 91 jurisdiction. Refer to Appendix G.**

- B. Does the project require a new or modified license or permit under M.G.L.c.91? \_\_\_ Yes ☒ No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? Current \_\_\_ Change \_\_\_ Total \_\_\_  
If yes, how many square feet of solid fill or pile-supported structures (in sf)?

- C. For non-water-dependent use projects, indicate the following: **N/A**

Area of filled tidelands on the site: \_\_\_\_\_

Area of filled tidelands covered by buildings: \_\_\_\_\_

For portions of site on filled tidelands, list ground floor uses and area of each use: \_\_\_\_\_

Does the project include new non-water-dependent uses located over flowed tidelands?

\_\_\_ Yes \_\_\_ No

Height of building on filled tidelands \_\_\_\_\_

- D. Is the project located on landlocked tidelands? ☒ Yes \_\_\_ No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

**Under 301 CMR 13.02(1) a public benefit determination is required for any project that files an ENF after November 15, 2007, is required to file an Environmental Impact Report, and is completely or partially located in tidelands or landlocked tidelands. A request for a public benefits determination for the Master Plan Project has been provided in Section 4.6 of Chapter 4, *Wetlands and Waterways*. While a public benefits determination is not required respecting the Phase 1 Project pursuant to 301 CMR 13.02(1), the Secretary may elect to make a public benefits determination for projects that do not fall within 301 CMR 13.02(1) and information has been provided respecting the public benefits of the Phase 1 Project.**

- E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? \_\_\_ Yes ☒ No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:
- F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ☒ Yes \_\_\_ No; (NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

- G. Does the project include dredging? \_\_\_ Yes ☒ No;

### IV. Consistency:

- A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ☒ Yes \_\_\_ No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

**Refer to Section 4.7 of Chapter 4, *Wetlands and Waterways*.**

- B. Is the project located within an area subject to a Municipal Harbor Plan? \_\_\_ Yes ☒ No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

## WATER SUPPLY SECTION

### I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? \_\_\_\_ Yes X No; if yes, specify, in quantitative terms:
- B. Does the project require any state permits related to **water supply**? \_\_\_\_ Yes X No; if yes, specify which permit:

**Water supply for the Master Plan Project will be provided by the Boston Water and Sewer Commission ("BWSC") and the Revere municipal water system. The City of Boston and the City of Revere are both MWRA water community members. BWSC and Revere water comes from the Quabbin Reservoir and the Wachusett Reservoir, located about 65 miles and 35 miles west of Boston, respectively. The safe yield of the reservoir system is 320 MGD. In 2016, the MWRA withdrew 208 MGD.**

**The addition of 2.5 - 2.6 MGD of demand for the Master Plan Project represents less than one-percent of the MWRA's safe yield. Based on the 2016 withdrawal reported by MWRA, the water demand from the Project will not exceed the safe yield from the Quabbin and Wachusett reservoir system. Assuming that the safe yield has been fully permitted by the MWRA, the additional demand from the Master Plan Project would not require a new state permit. However, this section of the form has been completed to facilitate review.**

- C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

### II. Impacts and Permits

- A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change		Total	
		A	B	A	B
Municipal or regional water supply	±30,000 gpd	±2,511,000 gpd	±2,695,000 gpd	±2,541,000 gpd	±2,725,000 gpd
Withdrawal from groundwater	0 gpd	0 gpd	0 gpd	0 gpd	0 gpd
Withdrawal from surface water	0 gpd	0 gpd	0 gpd	0 gpd	0 gpd
Interbasin transfer	0 gpd	0 gpd	0 gpd	0 gpd	0 gpd

*(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)*

- B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? X Yes \_\_\_\_ No

**The addition of 2.6 MGD of demand for the Master Plan Project represents less than one-percent of the MWRA's safe yield. Based on the 2016 withdrawal reported by MWRA, the water demand from the Project would not exceed the safe yield from the Quabbin and Wachusett reservoir system. The existing system has sufficient capacity to support the Phase 1 Project.**

- C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? \_\_\_\_ Yes \_\_\_\_ No; if yes, attach a map of the drilling sites and a

summary of the alternatives considered and the results. \_\_\_\_\_

**The Master Plan Project does not involve a new or expanded withdrawal from a groundwater or surface water source.**

- D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? **320 MGD (safe yield from MWRA Quabbin and Wachusett reservoirs)** Will the project require an increase in that withdrawal? \_\_\_\_ Yes **X** No; if yes, then how much of an increase (gpd)?
- E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? **X** Yes \_\_\_\_ No. If yes, describe existing and proposed water supply facilities at the project site:

**Approximately 3.2 miles of new water mains are proposed in association with the Master Plan Project. Water mains will be extended from the BWSC and City of Revere supply systems, both of which are fed from the MWRA.**

- F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

**Assuming that the MWRA safe yield has been fully permitted by the MWRA, the additional demand from the Project would not require a new interbasin transfer.**

- G. Does the project involve:

- 1) new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? \_\_\_\_ Yes **X** No
- 2) a Watershed Protection Act variance? \_\_\_\_ Yes **X** No; if yes, how many acres of alteration?
- 3) a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? \_\_\_\_ Yes **X** No

### III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

**The Proponent will obtain required permits from the respective authorities having jurisdiction. Compliance with the permit conditions will ensure conformance with water conservation policies.**



## WASTEWATER SECTION

### I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? **X** Yes \_\_\_ No; if yes, specify, in quantitative terms:

**301 CMR 11.03(5)(b)(4)(a) New discharge to a sewer system of 100,000 or more gpd of sewage, industrial wastewater or untreated stormwater**

- › **The Master Plan Project will generate over two million GPD of sewage as presented in Section II.A. below.**

**301 CMR 11.03(5)(b)(3)(c) Construction of one or more New sewer mains ½ or more miles in length, provided the sewer mains are not located in the right of way of existing roadways**

- › **Approximately 2.6 miles of new sewer mains are proposed in association with the Master Plan Project.**

- B. Does the project require any state permits related to **wastewater**? \_\_\_ Yes **X** No; if yes, specify which permit:

**The following state permits are not anticipated for the Master Plan Project, but may be required depending on the Project Site tenants and/or capacity:**

- › **Sewer Connection Permit – DEP**
- › **Direct Connect Permit – MWRA**
- › **Sewer Use Discharge Permit – MWRA**

**In addition, DEP review of modification, replacement and/or closure of the existing CAFO National Pollution Discharge Elimination System ("NPDES") permit will be required.**

- C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

### II. Impacts and Permits

- A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change		Total	
		A	B	A	B
Discharge of sanitary wastewater	±27,000	±2,284,000	±2,449,000	±2,311,000	±2,476,000
Discharge of industrial wastewater	±150,000	(±150,000)	(±150,000)	0	0
TOTAL	±177,000	±2,134,000	±2,299,000	±2,311,000	±2,476,000
Discharge to groundwater	0	0	0	0	0
Discharge to outstanding resource water	0	0	0	0	0
Discharge to surface water	0	0	0	0	0
Discharge to municipal or regional wastewater facility	±177,000	±2,134,000	±2,299,000	±2,311,000	±2,476,000
TOTAL	±177,000	±2,134,000	±2,299,000	±2,311,000	±2,476,000

- B. Is the existing collection system at or near its capacity? \_\_\_\_ Yes X No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

**The City of Boston and City of Revere are both MWRA members for sewage disposal. Continued coordination with BWSC and the Revere Water and Sewer Division will be undertaken as the Master Plan Project is advanced to address the capacity of the existing collection systems relative to the Master Plan Project. The existing BWSC system has sufficient capacity to support the Phase 1 Project. It is anticipated that the Proponent will fund or undertake Infiltration and Inflow ("I/I") mitigation projects as the Master Plan Project advances, in accordance with the policies of the receiving municipalities.**

- C. Is the existing wastewater disposal facility at or near its permitted capacity? \_\_\_\_ Yes X No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

**Wastewater from the Project will be conveyed to the MWRA's Deer Island wastewater treatment plant ("WWTP") via the BWSC, City of Revere Water and Sewer Division, and MWRA systems. The WWTP has an average daily flow of approximately 350 MGD. In July 2017, the WWTP processed a peak instantaneous flow of approximately 940 MGD. The addition of 2.4 MGD of wastewater flow from the Master Plan Project represents approximately 0.7 percent of the WWTP average daily capacity. The existing system has sufficient capacity to support the Phase 1 Project.**

- D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? X Yes \_\_\_\_ No; if yes, describe as follows:

**Approximately 2.6 miles of new sewer mains are proposed in association with the Master Plan Project.**

- E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

**No interbasin transfer of wastewater is anticipated.**

*(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)*

- F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? \_\_\_\_ Yes X No
- G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? \_\_\_\_ Yes X No; if yes, what is the capacity (tons per day):
- H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

**Coordination with applicable agencies will be undertaken as the Master Plan Project is advanced. Water conservation measures such as low-flow plumbing fixtures and stormwater reuse for irrigation and potentially other purposes will limit the use of potable water to the extent practicable. Inflow and infiltration mitigation at a minimum removal ratio of 4:1 in Boston and 10:1 in Revere for each gallon of wastewater added will be provided for the Project. Refer to Chapter 8, *Infrastructure*, for additional discussion regarding wastewater mitigation and water conservation measures.**

### III. Consistency

- A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

**The Proponent will obtain required permits from the respective authorities having jurisdiction. Compliance with the permit conditions will ensure conformance with wastewater management policies.**

- B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? \_\_\_Yes \_\_\_No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

**N/A – a Sewer Extension Permit is not required**

## TRANSPORTATION SECTION (TRAFFIC GENERATION)

### I. Thresholds / Permit

- A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? **X** Yes \_\_\_ No; if yes, specify, in quantitative terms:

**301 CMR 11.03(6)(a)(6): Generation of 3,000 or more new average daily vehicle trips (adt) on roadways providing access to a single location**

**301 CMR 11.03(6)(a)(7): Construction of 1,000 or more new parking spaces**

- B. Does the project require any state permits related to **state-controlled roadways**? **X** Yes \_\_\_ No; if yes, specify which permit:

**DOT – Vehicular Access Permit**

**DCR – Vehicular Access Permit**

- C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

### II. Traffic Impacts and Permits

- A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change		Total	
		A	B	A	B
Number of parking spaces	3,028	TBD	TBD	TBD	TBD
Number of vehicle trips per day	890	32,430	32,870	33,320	33,760
ITE Land Use Code(s):		221, 222, 255, 310, 710, 760, 820	221, 222, 255, 310, 710, 760, 820		

- B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change		Total	
		A	B	A	B
1. Route 1A north of Waldemar Ave.	60,900	19,500	20,000	80,400	80,900
2. Winthrop Ave. east of Tomasello Dr.	32,300	3,500	3,400	35,800	35,700
3. Winthrop Ave. west of Tomasello Dr.	31,500	7,300	7,300	38,800	38,800

- C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

**The mitigation measures associated with the Master Plan Project will be determined as part of the Transportation Impact Assessment ("TIA") that will be prepared for the DEIR/DPIR.**

How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

**The Master Plan Project will include strong pedestrian connections to the Beachmont and Suffolk**

**Downs MBTA Blue Line Stations. Walking and biking to/from and within the Project Site will be encouraged by the provision of a pedestrian-friendly site layout, which features an extensive network of sidewalks, bike lanes, bike paths, and crosswalks at key points both within the Project Site and connecting to the existing pedestrian network. Bike racks will be provided throughout the Project Site at various building locations. Additionally, a comprehensive Transportation Demand Management (“TDM”) plan will be developed for the Master Plan Project. Details of the TDM plan are introduced in Chapter 5, *Transportation*, of this document and will be discussed in further detail in the TIA that will be prepared for the DEIR/DPIR.**

- D. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site?   X   Yes        No; if yes, describe if and how will the project will participate in the TMA:

**The Master Plan Project will join a local TMA to maximize mobility in and around the Project Site. The Master Plan Project will work with the TMA to take advantage of the nearby public transportation options as well as connecting the proposed pedestrian and bicycle facilities to existing nearby facilities.**

- E. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities?   X   Yes        No; if yes, generally describe:

**The Master Plan Project is adjacent to the Beachmont and Suffolk Downs MBTA Blue Line Stations. The Master Plan Project is also located in close proximity to Logan International Airport.**

- F. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

**The Master Plan Project is located approximately one mile from Runway 22 at Boston’s Logan International Airport. The Master Plan Project is required to file one or more 7460-1 Notices of Proposed Construction or Alteration with the FAA because buildings within the Master Plan Project will exceed a maximum height<sup>1</sup> of 200 feet above grade level (“AGL”) or otherwise exceed FAA notice standards stipulated in 14 CFR Part 77.13(a)(2). These notices will be submitted to the FAA following the completion of the MEPA process. Notices of Actual Construction (FAA Form 7460-2, Part 1 and Part 2) will be submitted during construction as appropriate. The Proponent does not anticipate filing a Request for Airspace Review Form with the Massachusetts Department of Transportation Aeronautics Division because the Project Site is located within an air approach to Logan International Airport and exempt from this permit requirement pursuant to 780 CMR 111.7(1)(b) and MG.L. Ch. 90, section 35B.**

### III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

**The Master Plan Project will implement a substantial transportation mitigation plan that will accommodate vehicles, pedestrians, bicycles and mass transit. The Master Plan Project will be designed to encourage pedestrian and bicycle travel, and will include features such as sidewalks and bike paths within the Project Site and connecting to the existing off-site pedestrian network. The Master Plan Project will also include a comprehensive TDM program geared towards optimizing multimodal mobility and reducing the impact of passenger vehicles on the surrounding roadway network.**

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<sup>1</sup> Height for FAA purposes is measured to highest point of the building, as opposed to zoning height, as presented previously, which measures to the top of structure on the last occupied floor.

## TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

### I. Thresholds

- A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? \_\_\_\_ Yes X No; if yes, specify, in quantitative terms:
- B. Does the project require any state permits related to **roadways or other transportation facilities**? \_\_\_\_ Yes X No; if yes, specify which permit:
- C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

## ENERGY SECTION

### I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))?  
\_\_\_ Yes X No; if yes, specify, in quantitative terms:
- B. Does the project require any state permits related to **energy**? \_\_\_ Yes X No; if yes, specify which permit:
- C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

## AIR QUALITY SECTION

### I. Thresholds

- A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? \_\_\_\_ Yes X No; if yes, specify, in quantitative terms:
- B. Does the project require any state permits related to **air quality**? \_\_\_\_ Yes X No; if yes, specify which permit:
- C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.



## SOLID AND HAZARDOUS WASTE SECTION

### I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? \_\_\_ Yes **X** No; if yes, specify, in quantitative terms:
- B. Does the project require any state permits related to **solid and hazardous waste**? **X** Yes \_\_\_ No; if yes, specify which permit:

**A DEP Beneficial Use Determination will be required for the re-use of crushed painted or coated concrete and masonry demolition debris as on-site fill material. DEP and the local board of health will be notified in accordance with 310 CMR 16.03 using the Exempt Recycling and Organics Management Notification Form at least 30 days prior to starting the crushing of concrete and masonry at the Project Site.**

- C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

### II. Impacts and Permits

- A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? \_\_\_ Yes **X** No; if yes, what is the volume (in tons per day) of the capacity:
- B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? \_\_\_ Yes **X** No; if yes, what is the volume (in tons or gallons per day) of the capacity:
- C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

**Solid waste will be generated during demolition and construction and will be managed in accordance with Massachusetts solid waste regulations. All demolition debris waste will be separated and legally disposed of in regional landfills. Any material which cannot be separated (structural steel, electrical, metal plumbing) will be sorted and recycled. Asphalt, concrete, brick and painted concrete from the demolition will be stockpiled on-site and processed under a DEP Beneficial Use Determination for use as site fill material during construction, or will be legally disposed of in out-of-state landfills. Unpainted concrete will be crushed and reused on-site. Any steel located within concrete will be removed and recycled. During construction, wood, metals, gypsum, cardboard and plastic will be segregated and sent to recycling facilities. All construction debris will be sent to a solid waste sorting facility for separation of any recyclable materials. Overall, the Master Plan Project is expected to divert at least 75 percent of construction debris from landfills. Recycling of demolition debris is a preferred alternative. Asphalt, brick, concrete, metal, and wood are banned from Massachusetts landfills.**

- D. If the project involves demolition, do any buildings to be demolished contain asbestos?  
**X** Yes \_\_\_ No

- E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

**Asbestos containing and regulated materials will be properly removed and disposed prior to demolition of the structures at the Project Site. It is anticipated that soils excavated for construction will be reused on-site and that off-site transportation and disposal, recycling, or reuse will not be necessary. Historical urban fill materials emplaced at the Project Site during its original development in the 1890s will be isolated with clean soils, hardscape such as pavement and sidewalks, and buildings to prevent exposure to the urban fill after redevelopment.**

**The redevelopment project will also eliminate the Concentrated Animal Feeding Operation ("CAFO") and its potential associated impacts to stormwater that are currently being managed under a United States Environmental Protection Agency National Pollution Discharge Elimination System permit.**

**The redeveloped uses of the Project Site will generate solid wastes from retail, residential, and office operations but these uses will strive to recycle as much waste as practicable to minimize operating costs. Future Project Site uses are not anticipated to generate hazardous waste.**

### III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

**The Massachusetts 2010-2020 Solid Waste Master Plan provided strategies to maximize efficiency of materials use, increase recycling and build markets. As described above, this Master Plan Project is utilizing these strategies, including:**

- › **Re-using asphalt, brick and concrete (coated and uncoated) through the use of a DEP approved Beneficial Use Determination;**
- › **Diverting approximately 75 percent of the Construction and Demolition Debris generated by the project to recyclers and other re-use markets; and**
- › **Proposing that the end-users of the redevelopment comply with the Master Plan Project's strategies by maximizing recycling and re-use of wastes generated by each business.**

## HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

### I. Thresholds / Impacts

- A. Have you consulted with the Massachusetts Historical Commission? \_\_\_ Yes X No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? \_\_\_ Yes \_\_\_ No (N/A); if yes, attach correspondence

**The filing of this EENF/EPNF will initiate the required review under MEPA and the Massachusetts Historical Commission's ("MHC's") State Register Review process.**

- B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? X Yes \_\_\_ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? X Yes \_\_\_ No; if yes, please describe:

**The Suffolk Downs race track, connected clubhouse and grandstand, administration building, pump house, and barns are listed in the Inventory of Historic and Archaeological Assets of the Commonwealth, and are anticipated to be removed.**

- C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? \_\_\_ Yes X No; if yes, does the project involve the destruction of all or any part of such archaeological site? \_\_\_ Yes X No; if yes, please describe:
- D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

### I. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

**The Master Plan Project will have a direct impact on the Project Site, which is included in the Inventory of Historic and Archaeological Assets of the Commonwealth, due to the removal of the race track, connected clubhouse and grandstand, administration building, pump house, and barns.**

### III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

**As noted above, submittal of this EENF/EPNF initiates MHC review. MHC review will continue through the Master Plan Project.**

**Submittal of this EENF/EPNF will also initiate review of the Master Plan Project by the Boston Landmarks Commission ("BLC") in connection with the BPDA's Article 80B, Large Project Review process, in association with the Boston Environment Department. Removal of the Project Site buildings within the City of Boston that are over 50 years of age is subject to Article 85 of the Boston Code (Demolition Delay). An Article 85 application will be submitted to the BLC in connection with the Master Plan Project.**

**The Proponent will work with MHC, BLC, and others, to ensure appropriate historic signage and displays are included in the Master Plan Project.**

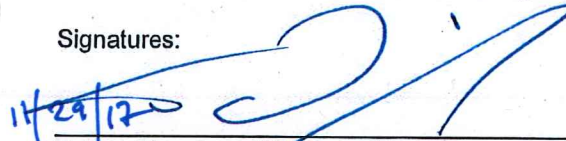

**CERTIFICATIONS:**

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

**Boston Herald, East Boston Times, and Revere Journal (on or before December 6, 2017)**

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

<u>11/29/17</u>		<u>11/29/17</u>	
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing NPC (if different from above)

Thomas O'Brien

Name

Lauren DeVoe

Name

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# 1

## Project Description and General Information

In accordance with the Massachusetts Environmental Policy Act ("MEPA") Massachusetts General Law ("MGL") Chapter 30, Section 61-62I and the regulations promulgated thereunder set forth at 301 CMR 11.00, and Article 80B of the City of Boston Zoning Code and Enabling Act (the "Boston Code"), The McClellan Highway Development Company, LLC ("MHDC", or the "Proponent"), an affiliate of The HYM Investment Group, LLC ("HYM"), respectfully submits this joint Expanded Environmental Notification Form and Project Notification Form ("EENF/EPNF") for the construction of a new transit-oriented mixed-use community at the former Suffolk Downs horse racing facility (the "Master Plan Project") set within the neighborhood of East Boston and the City of Revere, Massachusetts (the "Project Site"). This filing is also being submitted to the relevant officials and departments in the City of Revere to initiate development planning and review for the Revere portion of the Project Site.

Overall, the Master Plan Project consists of approximately 11 million square feet ("MSF") of development in Boston (which equates to an approximately 2.3 floor area ratio) and approximately 5.5 MSF in Revere set (which equates to an approximately 2.5 floor area ratio), all within many buildings to be constructed individually or in development phases over a 15- to 20-year period. In addition, the Project Site has been identified by the City of Boston and the City of Revere as a suitable potential location for Amazon's second corporate headquarters. As part of its Request for Proposals ("RFP") for a second headquarters for the company (the "Amazon HQ2"), Amazon is seeking an initial approximately 500,000-square foot ("SF") office building, and related infrastructure and open space improvements, to be delivered by the end of 2019. The Project Site represents an extraordinary economic development opportunity for Boston, Revere, and the region with or without Amazon.

This chapter provides an overview of the proposed redevelopment and existing site conditions, and describes the key elements of the Master Plan Project. This chapter also presents Master Plan Project-related benefits, a description of alternatives to the Master Plan Project, an overview of the regulatory context, a summary of agency and community outreach efforts, the identity of the development team, and the Proponent's request for a Phase 1 Waiver in connection with the proposal to Amazon for its second headquarters campus made by the City of Boston and the City of Revere.

## 1.1 Proposed Project Overview

Strategically located within the urban fabric of East Boston and Revere, the approximately 161-acre former Suffolk Downs thoroughbred horse racing facility owned by the Proponent is one of the largest development sites in the Northeast. The Project Site provides the unique opportunity for a new transit-oriented mixed-use neighborhood with the ability to evolve with the ever-changing needs of the community and market conditions.

The proposed conceptual redevelopment plan, or Master Plan Project, involves redevelopment of the approximately 161-acre underutilized Project Site, which is comprised of approximately 109 acres in East Boston and approximately 52 acres in Revere. Existing facilities at the Project Site include the clubhouse, grandstand, thoroughbred horse racing track (the "race track") with infield, a vacant administration building, maintenance buildings, horse barns (many of which are dilapidated and in danger of falling) and extensive surface parking areas. The Boston portion of the Project Site is in the Suffolk Downs Economic Development Area ("EDA") of the East Boston Neighborhood District, which is governed by Article 53 of the Boston Code. The Boston Code identifies the Suffolk Downs EDA as a Special Study Overlay Area, and establishes the Boston portion of the Project Site as a potential location for a Planned Development Area ("PDA"). The Project Site was also recently identified as one of the future growth areas for Boston in the *Imagine Boston 2030*<sup>1</sup> city-wide plan and has long been thought of as a key area for economic development by the City of Revere. The Revere portion of the Project Site is within Planned Development District 1 ("PDD1"), which is governed by Section 17.22 of Zoning Ordinances of the City of Revere (the "Revere Code"). The Revere Code allows for Planned Unit Developments within PDD1 by special permit as outlined in Section 17.20, and Section 17.22 of the Revere Code separately allows for additional development in the PDD1 district by special permit.

Redevelopment of the Project Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods. MHDC proposes that the Master Plan Project include various improvements and benefits for the area and City of Boston and the City of Revere, as follows:

- › Development of a new neighborhood with an active, lively, and appropriate mix of uses (including residential, retail, office, lab, hotel, parking and other uses), connected and supported by new publicly-accessible open space and neighborhood retail, and civic spaces;
- › Provision of an extensive approximately 40-acre publicly-accessible open space system, which will incorporate existing wetland features and both active and passive recreation areas;

<sup>1</sup> <http://imagine.boston.gov/>

- › Incorporation of extensive ground-floor retail, including retail set within two retail squares, Belle Isle Square and Beachmont Square, and a connecting “Main Street” retail district;
- › Construction of a new district attractive to employers of growing industries, which will enhance and expand job creation and economic opportunity;
- › Incorporation of various kinds of housing to meet the needs of surrounding neighborhoods, including townhomes, apartments, condominiums, and senior housing;
- › Application of transit-oriented-development (“TOD”) principles, through integration of the two existing adjacent MBTA Blue Line stations and alternative travel modes, including new bicycle paths, bicycle parking and public bikeshare stations, such as Hubway;
- › Development of improved connections to adjacent neighborhoods of East Boston and Revere through the Project Site, including along new open space and pedestrian and bicycle pathways; and
- › Incorporation of forward-thinking climate change resiliency strategies intended to address predicted sea level rise and other impacts of climate change.

## 1.2 Project History and Background

Once a coastal marshland, the Project Site was originally filled through the early 20<sup>th</sup> century to accommodate a speculative residential development that was never realized. Instead, the Project Site became a thoroughbred horse racing complex in the 1930s. In its heyday in the 1930s, 40s and 50s, races typically attracted as many as 40,000 daily spectators and contained as many as 12,000 parking spaces. Since then, the race track complex has remained in continuous use to this date drawing as many as 24,000 spectators for horse races and other events. As such, the Project Site avoided many of the historical industrial uses that occupied similar urban lands in Boston in the 20th century. However, given its historical high traffic destination and its location near Boston’s downtown urban core, Suffolk Downs is directly and heavily served by existing mass transit, highways, open space and utility infrastructure networks. Today, while the Project Site is set within the urban fabric of East Boston and Revere, large portions of the Project Site are not publicly-accessible and are essentially cut-off from the surrounding neighborhoods.

The horse racing track and stable operations at the Project Site are planned to cease at the time that construction commences for the first building on the Project Site. With the anticipated closure of the existing horse racing complex, the Project Site is perfectly positioned and ready for its next evolution and redevelopment that is fitting for the 21<sup>st</sup> Century.

### **1.2.1 Previous Redevelopment Plans**

In November 2011, Governor Deval Patrick signed into law Chapter 194 of the Acts of 2011: An Act Establishing Expanded Gaming in the Commonwealth with the goal of economic investment and job creation in the Commonwealth. The Massachusetts Gaming Commission (“MGC”) worked to fulfill its mandate to expand gaming by offering up to three gaming licenses within three separate geographic locations, one of which included the Boston metro area. To compete for the license, Sterling Suffolk Racecourse, LLC, MHDC’s predecessor as owner of the Project Site, filed an ENF in January 2013 and, subsequently, a DEIR/EPNF in September 2013 for review of the proposed Caesar’s Resort at Suffolk Downs project. At the time of the initial filings, the proposed project included two host communities—Boston and Revere—requiring the casino proponent to negotiate agreements with both. As part of the public review process, it was concluded that the casino project would have one host community—Revere—and that casino facilities would be planned for the Revere portion of the Project Site only. Therefore, to document the change in site and project changes to accommodate gaming facilities solely within Revere, a Notice of Project Change (“NPC”) was filed in January 2014 by a new proponent, Mohegan Sun Massachusetts (“MSM”). The revised casino development consisted of an approximately 965,000-square foot gaming facility. On March 28, 2014, the MEPA office issued a scope for a Supplemental DEIR (“SDEIR”) for the study of reduced potential environmental impacts based on the project changes described in the NPC. In response, MSM filed a SDEIR in June 2014. Subsequent to the successful completion of MEPA, the MGC chose another competing bid for the casino and, therefore, the casino project did not move forward. Eventually, Sterling Suffolk Racecourse, LLC sold the Suffolk Downs property to MHDC in May 2017.

## **1.3 Site Context and Existing Conditions**

The Project Site is currently home to the Suffolk Downs race track facility, which opened in 1935 and remains New England’s only operating thoroughbred race track. Most of the original structures still exist on-site, as described more fully below in Section 1.3.1.

As shown in Figure 1.2, the western side of the Project Site is bordered by land that includes a retail shopping center, properties containing fuel storage tanks owned by Irving Oil Terminals Inc. and Global Petroleum (the “oil tank farm”), and McClellan Highway (Route 1A). Winthrop Avenue is located along the northern boundary of the Project Site. The neighborhood north of Winthrop Avenue is Crescent Beach, which in turn borders Revere Beach and the Atlantic Ocean; the Project Site is located less than one mile from the beach and ocean. Washburn Avenue, the MBTA Blue Line, and Bennington Street (which connects East Boston to the City of Revere and is a route for access to the Town of Winthrop (via Saratoga Street, Route 145) lie



east of the Project Site. Waldemar Avenue and the Orient Heights residential neighborhood of East Boston are located immediately south of the Project Site.

Beyond Bennington Street, to the east, lies the Belle Isle Reservation where the Massachusetts Department of Conservation and Recreation ("DCR") manages a natural area with pathways, benches, and an observation tower; the reservation is part of the 241-acre Belle Isle Marsh, the last remaining salt marsh in Boston.

### **1.3.1 Existing Site Conditions**

Figure 1.3 presents an aerial image of the existing site conditions. The approximately 161-acre Project Site consists of a race track, a vacant administration building, a clubhouse, grandstand, maintenance buildings, horse barns (many of which are dilapidated and in danger of falling) and supporting space for horse handlers and other support staff, as well as site access ways and extensive surface parking. The race track consists of a one-mile oval racing surface with an infield and surrounding open space, which is not available as a community amenity since the race track is not accessible for public use.

Figures 1.4 and 1.5a through 1.5b present photographs of current site conditions. Sales Creek crosses the Project Site along the East Boston and Revere municipal border line and connects portions of the Revere watershed with the coastal Belle Isle Marsh, which is within walking distance of the Project Site. Sales Creek is primarily a manmade drainage channel that runs from approximately the northwest corner of the Project Site through the northern portion of the race track infield and continues east of the Project Site and connects to the Belle Isle Inlet and the Rumney Marshes Area of Critical Environmental Concern ("ACEC"). The portion of the Project Site north of Sales Creek includes stables used as part of the race track facilities.

There is also an existing pond on the Project Site, originally constructed in the 1930s (the "infield pond"), as well as other wetlands resource areas. These wetland resources will be preserved and integrated into the proposed open space system that is planned as part of the Master Plan Project, providing an open space oasis within the new urban district of the Master Plan Project.

The main access points to the Project Site are from Route 1A to the west, via Tomasello Road (aka and referred to herein as Tomasello Drive), which is a private way, as well as via Winthrop Avenue at the north end of the Project Site. A secondary access from McClellan Highway (Route 1A) is available via Furlong Drive, which provides access to the retail shopping center located northwest of the Project Site. Two mass transit stops on the MBTA Blue Line (the Suffolk Downs and Beachmont stations) currently serve the Project Site. Refer to Chapter 5, *Transportation*, for a description of existing vehicular site access and circulation, and public transit.

### **1.3.2 Site Metes and Bounds**

Refer to Appendix C for the description of the metes and bounds of the Project Site and accompanying site survey plan.

## **1.4 Project Description**

As previously described, the Project Site straddles the cities of Boston and Revere, and has already been designated by both cities for major mixed-use development. The Master Plan Project offers a dynamic mix of uses on the Project Site, including, commercial uses (office, lab, innovation/business incubator space), residential uses, street front retail, as well as an extensive open space system.

The Master Plan Project has been designed to have a strong and interconnected urban design framework that offers the potential to connect to the surrounding neighborhoods and has the ability to incorporate the proposed mix of uses.

The following sections describe the Master Plan Project's guiding principles, proposed development programs and uses, building design approach, including sustainable elements, key site improvements, and timing.

### **1.4.1 Project Guiding Principles & Aspirations**

The following are the key goals and objectives of the Master Plan Project:

- › Create a vibrant mixed-use, walkable community;
- › Provide a variety of housing types, including townhomes, apartments, condominiums, and senior housing to meet the needs of surrounding neighborhoods;
- › Provide sufficient publicly-accessible open space that preserves existing open space areas and enhances those areas with both active and passive spaces;
- › Activate the public realm with open space amenities and extensive ground-floor retail aimed at serving the on-site users and complementing existing retail in the surrounding neighborhoods;
- › Enhance and expand job creation and economic opportunity by providing employment opportunities near new and existing residential areas;
- › Leverage the proximity to public transit to limit traffic impacts and provide easy access to workplaces and entertainment venues in other Boston neighborhoods; and,
- › Approach sustainability and resilience district-wide with forward-thinking climate change resiliency strategies, as well as specific measures for individual building development through the incorporation of green building design.

### 1.4.2 Proposed Master Plan Project Program

The proposed Master Plan Project offers a dynamic mix of uses on the Project Site, encouraging commercial and innovation uses, diversity of residential uses, creative retail and business incubator/innovation space, as well as parks and community spaces. The Master Plan Project will be anchored at the two existing MBTA Blue Line stations and then will radiate through the Project Site along a network of new streets, neighborhood retail districts and open spaces.

Given the scale of the Project Site, the Master Plan Project is a long-term development that will be implemented in phases over a period of 15-20 years. The Master Plan Project is, therefore, being conceived with an overall development program that provides a degree of flexibility to balance different residential and commercial uses as development proceeds. For planning purposes, the Master Plan Project is being presented in this EENF/EPNF with two programs, both having the same total floor area, but with different mixes of uses. Refer to Table 1-1 below for further details on each of these development programs. Figures 1.6a and 1.6b present the two development programs for the Master Plan Project described and analyzed herein.

**Table 1-1 Master Plan Project Program Options**

Use/Element	Program A	Program B
Commercial Office	Up to 8.0 MGSF	Up to 5.25 MGSF
Residential	Up to 7.45 MGSF (+7,500 units)	Up to 10.4 MGSF (+10,000 units)
Retail	550,000 GSF	Up to 450,000
Hotel	500,000 GSF (+830 Rooms)	Up to 400,000 (+670 rooms)
<b>Total<sup>1</sup></b>	<b>16,500,000</b>	<b>16,500,000</b>

GSF Gross Square Feet, as defined in the applicable zoning codes.

1 Represents a not-to-exceed/maximum build-out; to be developed in multiple buildings each of which can be developed together or independently of the others and in differing sequences. Depending on market conditions or other factors, uses may be allocated to different buildings, or reallocated as applicable, while remaining consistent with the overall proposed mix of uses, site-wide improvements and mitigation commitments to be established through the MEPA, Boston Article 80, and Revere zoning review processes. The flexibility of sequencing is critical to the Master Plan Project's ability to respond to market conditions.

Program A is essentially a "pro-commercial" program that includes up to 8.0 MSF of commercial office space and up to 7.45 MSF of residential space (7,500 units). Program B is a "pro-residential" program with less commercial office space (up to 5.25 MSF) and more residential space (up to 10.4 MSF, or approximately 10,000 units). The two programs also include retail and hotel space totaling up to 1.05 MSF in Program A and 0.85 MSF in Program B. The amount of commercial office space in Program A was sized to meet the full Amazon requirement as outlined in the Amazon HQ2 RFP.

These two programs are intended to be illustrative of end points on a spectrum, and the actual mix of uses when the Master Plan Project is completed will likely fall somewhere between the two. As discussed throughout this EENF/EPNF, these two program options are being used for planning purposes to allow for an analysis of the different impacts of commercial and residential space and the development of conservative mitigation plans that will allow for future flexibility based on analysis of the most impactful scenario with respect to each potential impact.

### 1.4.3 Proposed Phase 1 Project Program

As is well known, Amazon has issued a RFP for a city to host Amazon HQ2, and the City of Boston, with the support of the City of Revere, has identified Suffolk Downs as a desirable potential site for Amazon HQ2 in its response to the RFP. Suffolk Downs appears to be the only location in single-ownership within the Boston metropolitan area that can accommodate Amazon's stated desire for up to 8.0 MSF of office space with direct access to public transportation and proximity to an international airport. The requirements identified in the Amazon HQ2 RFP also include the availability of a building with approximately 500,000 SF of office space that can be occupied by the end of 2019. To meet this requirement, the Proponent has identified a location for an initial office building in the southeastern corner of the Boston portion of the Project Site adjacent to the Suffolk Downs MBTA Blue Line station (the "Phase 1 Project Site"). Table 1-2 below summarizes the proposed development program for the potential initial phase of the Amazon HQ2 campus (the "Phase 1 Project").

**Table 1-2 Phase 1 Project Development Program**

<b>Use/Element</b>		<b>Size</b>
Commercial Office		520,000 GSF <sup>1</sup>
Structured Parking		Up to 520 spaces
GSF	Gross Square Feet, as defined in the applicable zoning codes.	
1	In the form of two approximately 260,000-GSF buildings and excludes approximately 215,000-GSF of structured parking a portion of which will be below-grade.	

The Phase 1 Project Site currently contains a portion of the Suffolk Downs race track and infield, as well as other previously disturbed areas, including landscaped areas, the infield pond, and portions of an internal driveway. The Phase 1 Project will utilize existing roadways and can be constructed without compromising the planning and approval process for development on the balance of the Project Site. The building design and site-wide improvements for the construction of the Phase 1 Project have been further advanced than other aspects of the Master Plan Project. The proposed site plan is shown in Figure 1.7. In summary, the Phase 1 Project will consist of:

- › Two approximately 260,000-gross square foot office buildings with supporting corporate uses/amenities;

- › Approximately 520 structured parking spaces (520 of the existing surface parking spaces will be taken out of service and no net new parking spaces will result from the Phase 1 Project);
- › Approximately 12 acres of existing open space to remain as-is and an additional approximately 1.2 acres of open space to be improved by the Phase 1 Project, including pedestrian access to the Suffolk Downs MBTA station;
- › New internal access driveway that connects the Phase 1 Site to Tomasello Drive (private roadway);
- › Utility improvements/upgrades resulting in improved water quality through an upgraded drainage system;
- › Pedestrian facilities, including an on-site accessible walkway to the MBTA Suffolk Downs station; and
- › Bicycle facilities, including on-site long- and short-term bicycle storage in accordance with the City of Boston Bicycle Guidelines and a new Hubway public bikeshare station.

No Phase 1 Project construction will take place within wetland resource areas with the exception of Land Subject to Coastal Storm Flowage ("LSCSF") (some work in the previously disturbed buffer zone is also required).

#### **1.4.4 Master Plan Project Elements**

##### **Open Space Network**

The Master Plan Project has been planned to reconnect East Boston and Revere with an approximately 40-acre publicly-accessible open space network that represents approximately 25 percent of the overall Project Site area. Key open spaces elements proposed include:

- › An approximately 15-acre central common;
- › A landscaped amphitheater;
- › Active and passive recreation areas;
- › Playgrounds;
- › Dog parks; and
- › Several neighborhood plazas.

As described more fully in Chapter 2, *Urban Design*, the open space network will incorporate existing wetland features on the Project Site and offer a diversity of experiences including active, passive, recreational ecological, environmental, and programmed uses. The Project Site and its open space network will be porous and open to the public and the neighbors.

The vibrant future publicly-accessible open spaces, plazas, and recreation proposed as part of the open space network will attract and benefit not just users on-site, but also those from the surrounding neighborhoods. Furthermore, the Master Plan Project will be integrated into the local urban fabric through a robust bicycle path network and walkable neighborhood streets. The publicly-accessible open space system, including pedestrian and bicycle pathways also sets up strong relationship with and will seek to provide connections to adjacent neighborhoods in East Boston and Revere and to the surrounding regional assets, such as the East Boston Greenway, Belle Isle Marsh, Constitution Beach and Revere Beach.

### **Sustainability and Resiliency**

Given its scale, redevelopment of the Project Site presents a unique opportunity to incorporate sustainable design and climate change resiliency elements in a comprehensive/district-wide manner from the early planning stages. Sustainability is a key theme for the Master Plan Project, including the Phase 1 Project, as it proposes to redevelop an underutilized urban site, use land efficiently by increasing density as a mixed-use TOD, and encourages non-automobile and low carbon modes of transportation.

The Phase 1 Project and Master Plan Project expect to exceed requirements for compliance with Article 37 of the Boston Code by demonstrating that early design elements would meet the Leadership in Energy and Environmental Design ("LEED") version 4 green building rating system ("LEEDv4"), or equivalent requirements necessary to be LEED certifiable. The buildings in Revere will meet comparable LEED environmental standards. As demonstrated in Section 3.5 of Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, based on preliminary energy modeling, the Phase 1 Project will exceed the current Stretch Energy Code requirement for energy efficiency and result in stationary source greenhouse gas ("GHG") emissions reductions. The Proponent is committed to design the future Master Plan Project buildings to meet and/or exceed the current Stretch Energy Code (to be demonstrated in the subsequent DEIR/DPIR filing).

The Project Site will be designed to address anticipated climate change impacts, including more frequent extreme weather events and future sea level rise, with an elevated street system and infrastructure network. The approximately 40-acre open space system will be designed and configured to help mitigate these climate change challenges. As discussed more fully in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, and Chapter 8, *Infrastructure*, the Project Site already has access to existing infrastructure to facilitate resilient Project Site utility infrastructure with water and sewer connections from two separate municipal systems and access to two independent electrical power grids.

### **Healthy Community Design**

The Master Plan Project will include a welcoming and well-designed bicycle and pedestrian system to encourage sustainable modes of transportation, promote health and wellness, and enhance social interactions and idea sharing within the mixed-use community. Multiple public bikeshare stations will be incorporated throughout the Project Site, to connect cyclists to destinations on-site and beyond.

Two on-site publicly-accessible walking and biking loops, each over one-mile long, will link the open space network and promote unique opportunities for health and wellness. By providing easy access to the outdoors, a key design goal of the Master Plan Project is to encourage community members to lead active and healthy lifestyles while also engaging them in the larger outdoor environment.

### **Site Access/Circulation**

Two important retail squares at the Suffolk Downs and Beachmont MBTA Blue Line Stations called Belle Isle Square and Beachmont Square, respectively will create pedestrian-friendly access to the stations with active retail uses, multi-modal transportation opportunities, including bicycle stations encouraging public transit usage to and from the Project Site.

As it is built-out, the Master Plan Project will provide for significant enhancements to the key vehicular access points, as illustrated in Figure 5.5. Primary vehicular access to the Project Site will continue to be provided by Tomasello Drive, a privately-owned roadway through the site, with connections to Route 1A and Winthrop Avenue (Route 145/Revere Beach Parkway). Widening of Tomasello Drive and Route 1A will also be implemented as part of the Master Plan improvements. Tomasello Drive at Route 145 (Revere Beach Pkwy/Winthrop Avenue) will provide additional access connections. To the east of the Tomasello Drive/Winthrop Avenue access, a right-turn in/right-turn out access driveway is proposed to provide access to the northern end of the Project Site. To the east of the right-turn in/right-turn out access driveway a full-access signalized access driveway is proposed, which will facilitate access to the retail corridor and the "spine road" that runs north/south on the Project Site. As a secondary access opportunity, Furlong Drive, a public way from Route 1A to the Shops at Suffolk Downs, will both provide a connection between Route 1A and Tomasello Drive via a publicly-accessible driveway through the shopping plaza.

Refer to Section 5.2.8 of Chapter 5, *Transportation*, for further details on site access/circulation.

### **Parking**

The majority of the parking spaces constructed to support the Master Plan Project will be provided in structured parking facilities, with only limited on-street parking provided to support street front retail uses. To utilize parking more efficiently and reduce the parking garage footprint on-site, parking for commercial uses will be

made available on a shared basis for use by residents, hotel guests, shoppers, and other visitors. These commercial garages are largely vacant in the evenings, night and weekends and can accommodate additional residential, hotel and retail parking, as needed.

Refer to Section 5.2.9 of Chapter 5, *Transportation*, for further details on the proposed parking approach for the Master Plan Project. A more comprehensive parking analysis that quantifies shared parking will be developed and included in the DEIR/DPIR to clearly demonstrate how the projected parking needs of the Master Plan Project will be met in the future.

#### **1.4.5 Anticipated Master Plan Build-Out**

The Master Plan Project will be developed in stages over a range of approximately 15 to 20 years depending on market conditions. Although specific phasing is not proposed herein, the Proponent anticipates that build out of the Project Site will include early development near the two MBTA Blue Line stations, which are “front doors” of the Project Site, it being understood that flexibility of sequencing is critical.

##### **Amazon HQ2 and the Phase 1 Project**

As discussed previously, the requirements identified in the Amazon HQ2 RFP include the availability of a building with approximately 500,000 SF of office space that can be occupied by the end of 2019. To satisfy this requirement, the Proponent will need to commence building construction of the Phase 1 Project around February of 2018.

##### **Master Plan**

The designs for future buildings will be developed based on the finally approved Master Plan Project. It is expected that the Master Plan Project will accommodate a variety of build-out scenarios. Each of the proposed buildings can be developed together with or independently of, and in differing sequences with, the others and the mix of uses presented in Table 1-1 allows the Master Plan Project to remain responsive to evolving market conditions.

Depending on market conditions or other factors, uses are to be allocated to different buildings, while complying with the Master Plan Project’s use and dimensional limitations and requirements for site-wide amenities and improvements and mitigation commitments, all of which will be established through the MEPA process, the City of Boston Article 80 review process and City of Revere rezoning and development review processes. The flexibility of sequencing is critical to the Master Plan Project’s ability to respond to market conditions.



## 1.5 Summary of Public Benefits

This section summarizes the many anticipated public benefits associated with the Phase 1 Project and Master Plan Project.

### 1.5.1 Phase 1 Project Benefits

- › Potential to unlock the extraordinary economic development and activity associated with the larger Amazon HQ2 development and discussed further below in Section 1.12.
- › Approximately 12 acres of existing open space to remain as-is and an additional approximately 1.2 acres of open space to be improved by the Phase 1 Project, including pedestrian access to the Suffolk Downs MBTA station.
- › Incorporate sustainable and high-performance building strategies into the design of the Phase 1 Project to achieve a LEEDv4 certifiable Gold level.
- › The Phase 1 Project will exceed the Stretch Energy Code requirement for 10 percent energy efficiency above code. Preliminary energy modeling indicates a 25 percent energy usage savings and 23 percent reduction in stationary source GHG emissions for the Phase 1 Project.
- › Phase 1 Project finished floor elevation will be elevated to 22 feet Boston City Base ("BCB"), which is over 52 inches above the 100-year FEMA flood elevation, to account for sea level rise and localized storm surge associated throughout the anticipated life of the buildings.
- › The Phase 1 Project stormwater management system will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively).
- › Encourage the use of alternative modes of transportation, including public transit and bicycling, through:
  - Enhanced on-site pedestrian access to the MBTA Suffolk Downs station;
  - On-site bicycle storage; and
  - Installation of a Hubway public bikeshare station.
- › Create approximately 400 new construction jobs and approximately 2,500 new permanent jobs.

### 1.5.2 Master Plan Public Benefits

#### Community Benefits

- › Transform an underutilized urban site into a new dynamic mixed-use neighborhood anchored by quality public transit and open space that responds to surrounding uses.

- › Enhance job creation and economic development through the incorporation of commercial uses, including an innovation center, office, lab, retail and hotel uses.
- › Materially increase housing units in the area which is key priority for the Boston portion of the Project Site, as noted in the *Housing Boston 2030* plan.<sup>2</sup>
- › Provide a range of housing types (i.e., varying sizes) that will serve a broader set of households (i.e., empty nesters, seniors, families and singles).
- › Increase affordable housing by up to nearly 1,000 units through the implementation of Boston's inclusionary housing programs.
- › Provide an expansive approximately 40-acre publicly-accessible open space network, designed to create connections to adjacent neighborhoods in East Boston and Revere and to the surrounding regional assets, such as the East Boston Greenway, Belle Isle Marsh, Constitution Beach and Revere Beach, which open space network represents approximately 25 percent of the overall Project Site area.

#### **Public Use and Enjoyment**

- › Provide public access to an expansive open space network.
- › Create multi-functional open spaces that provide relaxing and restorative places to walk, run, and recreate.
- › Offer a new network of walking and bicycle environment throughout the Project Site, as well as an opportunity to connect to regional systems, including the East Boston Greenway and Revere Beach Parkway.
- › Create new retail areas which are anticipated to activate the Project Site and encourage increased public use and enjoyment.

#### **Urban Design and Public Realm**

- › Connect the Project Site to the adjacent surrounding neighborhoods through a new framework of the new on-site open space and street networks.
- › Provide a pedestrian- and bicycle-friendly environment with accommodations integrated throughout the Project Site.
- › Activate the public realm, including three distinct neighborhood retail districts, a landscaped amphitheater, dog-friendly open spaces and playgrounds.
- › Provide ground-level amenities with local restaurants and on-site retail able to spill out onto adjacent sidewalks and open space areas, which development will also augment the market for already existing retail and restaurants in the surrounding neighborhoods.

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2 [https://www.boston.gov/sites/default/files/housing\\_a\\_changing\\_city-boston\\_2030\\_full\\_plan\\_1.pdf](https://www.boston.gov/sites/default/files/housing_a_changing_city-boston_2030_full_plan_1.pdf)

**Transportation**

- › Improve connections and transportation access through a cohesive fabric of new urban streets, walking paths, and bicycle connections.
- › Create a true TOD community by locating a dense mix of uses immediately adjacent to two public transit stops.
- › Create retail squares near the Suffolk Downs and Beachmont MBTA Blue Line stations with multi-modal transportation opportunities, including Hubway bicycle stations, encouraging the use of alternative transportation modes to access the Project Site.
- › Emphasize walk-ability and bike-ability and proximity to mass transit to further reduce the Master Plan Project's overall environmental impact.
- › Address potential long-term transportation infrastructure needs in the Project Site area through the identification of feasible improvements capable of minimizing the Master Plan Project's potential transportation impacts.
- › Provide for significant enhancements to the key vehicular access points as the Master Plan is built-out.
- › Provide mostly structured parking facilities with only limited on-street parking provided to support street front retail uses.
- › Utilize a shared parking approach within the commercial parking to accommodate the parking needs of other uses (residential, hotel, and retail) to use parking more efficiently and reduce the parking garage footprint on-site.

**Resiliency**

- › Proactively plan for the effects of future climate change for anticipated increases in sea level rise and storm surge, precipitation, and extreme temperatures.
- › Major portions of the Project Site will be raised and re-graded to provide protection against storm surge and potential sea level rise impacts.
- › A network of open spaces will be strategically designed to accommodate potential flooding impacts associated with sea level rise to provide further protection to the nearby buildings and areas outside the Project Site.
- › The stormwater management system will be integrated into the open space network and will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively).

**Environment/Sustainability*****Green Building Design***

- › Exceed compliance with Article 37 of the Boston Code for the Master Plan Project by designing future buildings to be LEED certifiable Silver.
- › Design buildings in Revere to generally meet the same LEED certifiable standards as buildings in Boston.

***Energy Conservation/GHG Emissions Reductions***

- › Incorporate energy conservation measures for the Master Plan Project building typologies (office, multi-family residential, hotel and retail) that aim to exceed the Stretch Energy Code requirement for energy efficiency and result in stationary source GHG emissions reductions.

***Water Quality/Stormwater Management and Conservation***

- › Materially improve the quality of stormwater runoff on the approximately 161-acre Project Site, which currently has very limited stormwater pollution prevention measures, by treating for the first inch of rainfall through the incorporation of several stormwater best management practices.
- › Mitigate peak stormwater runoff rates up to and including the 100-year design storm.
- › Mitigate peak stormwater runoff rates up to and including the 100-year design storm.
- › Evaluate potential application of low-impact development techniques and stormwater quality enhancement features, such as biofiltration, green roofs, and reuse of runoff for landscape irrigation, as design progresses.
- › Incorporate low-flow plumbing fixtures and other water conservation and reuse techniques to reduce overall water usage and wastewater generation.
- › Reduce water use demand for irrigation needs through a combination of efficient system design, water reuse, and drought-tolerant plantings.
- › End the Concentrated Animal Feeding Operations (“CAFO”) associated with the existing thoroughbred race track. Ending the horse stabling operations will have a positive impact on the water quality of the surrounding streams and wetlands.

***Wetlands Resources***

- › Incorporate existing heavily-disturbed wetland resources, particularly Sales Creek and the infield pond, into the proposed extensive approximately 40-acre open space system with enhanced public access.
- › Ensure that current on-site wetlands continue to maintain historic flows and functionality.
- › Plan and design future Master Plan Project development to retain existing on-site open space areas.

**Infrastructure**

- › Provide for sufficient Inflow/Infiltration mitigation, as required by each municipality, to mitigate potential capacity issues in the regional wastewater collection system.
- › Protect public water supply through backflow protection to mitigate cross-contamination concerns.

**Extraordinary Economic Benefits**

- › Over the term of the Master Plan Project's development, create approximately 14,000 new construction jobs and 25,000 to 50,000 new permanent jobs.
- › Create substantial net new annual real estate tax revenue for both Boston and Revere, as well as state sales and business tax revenue for the Commonwealth.

## **1.6 Project Alternatives**

This section provides a summary of site development alternatives considered in the early planning and conceptual design of the Master Plan Project.

### **1.6.1 Alternatives Development**

The following are key site constraints and considerations, and goals and objectives that guided the development of planning for the Master Plan Project:

**Site Constraints & Considerations**

- › Limited vehicular access
- › Provide appropriate edges that address a broad range of existing uses from industrial (oil tank farm) to transit infrastructure (Blue Line train tracks) to residential neighborhoods
- › FAA restrictions on building heights making it difficult to build to the maximum heights allowed under zoning in certain respects

**Project Goals & Objectives**

- › Create a vibrant mixed-use, walkable community
- › Provide a variety of housing types to meet the needs of surrounding neighborhoods and region
- › Provide significant publicly-accessible open space
- › Preserve existing wetland resources
- › Activate the public realm
- › Enhance and expand job creation and economic opportunity
- › Leverage the proximity to public transit to limit traffic impacts
- › Apply sustainable and resilient design district-wide

### 1.6.2 Project Alternatives

The following project alternatives have been considered in the redevelopment of the Suffolk Downs property:

- › No-Build Alternative, which represents the existing conditions, as described previously in Section 1.3;
- › As-of-Right Build Alternative;
- › Manufacturing/Airport Support Facilities Build Alternative; and
- › Preferred Alternative, which represents the Master Plan Project, as described in Section 1.4 and analyzed herein.

The No-Build Alternative would leave in place the existing conditions at the Project Site. It would remain an underutilized horse racing facility with vacant and dilapidated buildings, including the grandstand and clubhouse and vast paved parking areas.

The existing zoning and land use controls of both municipalities allow for approximately 14 million square feet of development, do not allow for residential uses without special approval, and do not have significant open space requirements. Therefore, an As-of-Right Build Alternative would consist of the following two development scenarios:

1. Primarily commercial uses, such as a suburban-style office park; or
2. Primarily retail uses, such as destination or big box retail.

The As-of-Right Alternative would likely result in a significant amount of traffic from not only the metro area, but the region. Without on-site residential uses, both development scenarios of the As-of-Right Alternative conflict with the stated goals of the City of Boston in its recent *Imagine Boston 2030* plan, which identifies the Project Site for mixed-use development, including residential development. Further, this project alternative would likely result in limited open space and would result in materially less economic development for the Project Site and region.

The Manufacturing/Airport Support Facilities Build Alternative would include more industrial/manufacturing-intensive and/or airport support uses, as allowed by current underlying zoning. Airport support uses would include warehouse and distribution uses and other similar uses and could include a significant amount of parking. This project alternative would result in a relatively low density, low-rise industrial district. By constructing lower, horizontal warehousing-style buildings built to currently-allowed densities, materially less open space would potentially be afforded compared to the Preferred Alternative. Depending on the industrial-type use, this alternative could result in more water and wastewater impacts and would likely introduce more truck traffic to the Project Site compared to the other build alternatives. This alternative is anticipated to be the least desirable for the Project Site with the surrounding residential neighborhoods.

## 1.7 Regulatory Context

This section lists the anticipated permits and approvals as well as the local planning and regulatory controls applicable to the Master Plan Project. The Proponent will continue to meet with state agencies and other stakeholders, as needed, through the joint MEPA/Boston/Revere review process.

### 1.7.1 Anticipated Permits/Approvals

Table 1-3 below presents a preliminary list of anticipated reviews and approvals of the Master Plan Project by governmental agencies based on currently available information. It is possible that some of the listed reviews and approvals will not be required, or that additional reviews or approvals that will be required are not listed below.

**Table 1-3 Anticipated Project Permits and Approvals**

Agency/Department	Permit/Approval/Action
<b>Federal</b>	
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System ("NPDES") and Construction General Permit Modification, replacement and/or closure of existing NPDES permit respecting Concentrated Animal Feeding Operation ("CAFO")
Federal Aviation Administration	Determination of Non-Hazard to Air Navigation
<b>State</b>	
Executive Office of Energy and Environmental Affairs	Massachusetts Environmental Policy Act Review Determination for Public Benefit review for landlocked tidelands
Massachusetts Department of Environmental Protection	Sewer Connection Permit (if required depending on future tenants) Environmental Results Program ("ERP") Certification for Engines Superseding Orders of Conditions (if required)* Notice of Construction/Demolition Asbestos Notices (if necessary) Modification, replacement and/or closure of existing NPDES permit respecting CAFO underground Injection Control Registration Beneficial Use Determination (if necessary)
Massachusetts Department of Transportation	Vehicular Access Permit*
Massachusetts Water Resources Authority	8m Permit (if required) Sewer Use Discharge Permit (or waiver) (if required depending on future tenants) Direct Connect Permit (if required) Temporary Construction Site Dewatering Permit (if required)
Massachusetts Historical Commission	Determination of No Adverse Impact (if necessary)*
Massachusetts Department of Conservation and Recreation	Access Permit
Massachusetts Bay Transportation Authority	Agreement for improvements (i.e., signage, landscaping) at the Suffolk Downs and/or Beachmont MBTA stations (if required)*

**Table 1-3 Anticipated Project Permits and Approvals (Continued)**

<b>Agency/Department</b>	<b>Permit/Approval/Action</b>
<b>City of Boston</b>	
Boston Planning and Development Agency	Article 80B Large Project Review Adequacy Determination and Related Agreements* Zoning Relief for Phase 1 Project (if necessary) Planned Development Area and Development Plan Approval Cooperation Agreement Development Impact Project Agreement Affordable Housing Agreement Certificate of Compliance and Consistency*
Boston Zoning Commission	Zoning Relief for Phase 1 Project (if necessary) Planned Development Area and Development Plan Approval
Boston Civic Design Commission	Project Design Review (by building)
Boston Landmarks Commission	Article 85 Demolition Delay Review
Boston Conservation Commission	Order of Conditions (under the Wetland Protection Act)*
Boston Fire Department	Permits and Approvals for Fuel Storage, Fire Safety Equipment, Alarm System, Sprinkler, Standpipe, Smoke Control and Hydrant* Asbestos Removal Permit (if necessary)
Boston Public Works Department	Street Occupancy Permit
Boston Transportation Department	Construction Management Plan* Permits and Approvals for Curb Cuts Street Opening/Closing, and Street Lighting* Transportation Access Plan Agreement*
Boston Public Improvements Commission	Specific Repair Plan Excavation Support License (if required)
Boston Water and Sewer Commission	Sewer Connection and Cross Connection and Extension Permits* Water Permit* Hydrant Permit* Site Plan Approval*
Boston Public Safety Commission	Fuel Storage License and Garage Permit*
Inspectional Services Department	Building Permits* Demolition Permits Foundation Permits* Electrical and Gas Permits*
Boston Employment Commission	Boston Residents Construction Employment Plan*
<b>City of Revere</b>	
Revere City Council	Special Permit and/or a Zoning Code Amendment
Revere Conservation Commission	Order of Conditions (under the Wetlands Protection Act and City of Revere Wetlands Bylaws)
Revere Department of Public Works	Sewer and Water Connection/Extension Permits
Site Plan Review Committee	Site Plan Review
Revere Project Review Board	Review in connection with the issuance of Special Permit
Revere Planning Board	Review in connection with the Zoning Code Amendment (if applicable) Subdivision Plan Approval
Revere Inspectional Services Department	Building Permits, Demolition Permits, Foundation Permits, Electrical and Gas Permits

\* Denotes permit/approval may also be required for the Phase 1 Project. Refer to Section 1.12 for further information.



## 1.7.2 Federal

### **Federal Aviation Administration**

All projects subject to Federal Aviation Administration ("FAA") jurisdiction are subject to requirements respecting issuance of Determinations of Non-Hazard to Air Navigation from the FAA. The Master Plan Project, including the Phase 1 Project, will comply with all requirements of the FAA.

### **U.S. Environmental Protection Agency**

The Master Plan Project, including the Phase 1 Project, will comply with all requirements of the US Environmental Protection Agency in accordance with the NPDES and Construction General Permit ("CGP"), to approve a Storm Water Pollution Prevention Plan ("SWPPP"), and to approve closure of the CAFO currently used by the Suffolk Downs horse stables. The existing NPDES permit for the CAFO may be modified or replaced for an interim period after the stables are vacated and before the infrastructure supporting the CAFO are permanently removed.

## 1.7.1 Commonwealth of Massachusetts

The Proponent has held numerous meetings with various elected officials and state agencies prior to the filing of this EENF/EPNF, including:

- › MEPA
- › Department of Environmental protection ("DEP")
- › Department of Transportation ("DOT")
- › Massachusetts Bay Transit Authority ("MBTA")
- › DCR
- › Massachusetts Water Resources Authority ("MWRA")
- › Massachusetts Port Authority ("Massport")

### **Executive Office of Energy and Environmental Affairs**

Both the Phase 1 Project and Master Plan Project are undergoing MEPA review pursuant to the filing of this joint EENF/EPNF. The Project Site contains historically-filled former tidelands that are subject to the Massachusetts Public Tidelands Act (*M.G.L Chapter 91*). However, DEP has previously concluded that the Project Site is considered "Landlocked Tidelands" and is, therefore, not subject to any requirement for a Chapter 91 license or the use and dimensional regulations otherwise applicable under Chapter 91. For such Landlocked Tidelands, the Secretary of Energy and Environmental Affairs is required to make a "public benefits determination" which finds that the proposed project has substantial public benefits.

**Massachusetts Department of Environmental Protection**

The Master Plan Project will comply with all requirements of the DEP, which is expected to include an Environmental Results Program ("ERP") Certification for Engines, a Notice of Construction/Demolition, Superseding Orders of Conditions (if required), Asbestos Notices (if necessary), Underground Injection Control Registration(s) for proposed stormwater infiltration systems, Beneficial Use Determination(s) for reuse of demolition materials and review of NPDES approvals for closure of the CAFO. The existing NPDES permit for the CAFO may be modified or replaced for an interim period after the stables are vacated and before the infrastructure supporting the CAFO are permanently removed.

**Massachusetts Water Resources Authority**

The Master Plan Project will comply with all requirements of the MWRA. Permits from MWRA may include an 8m Permit, Direct Connect Permit, Sewer Use Discharge Permit (or waiver) and/or Temporary Construction Site Dewatering Permit. These MWRA permits will be confirmed based upon design and tenants as the Master Plan Project is advanced.

**Massachusetts Highway Department/Massachusetts Turnpike Authority**

An access permit is required from the Massachusetts Highway Department / Massachusetts Turnpike Authority of the DOT for projects that have direct access to a state highway layout and exceed certain parking or traffic thresholds. The Master Plan Project will comply with all requirements of the Massachusetts Highway Department / Massachusetts Turnpike Authority in connection with the Master Plan Project, including the Phase 1 Project.

**Massachusetts Bay Transportation Authority**

The Master Plan Project will comply with all requirements of the Massachusetts Bay Transportation Authority, which may enter into an agreement concerning pedestrian improvements at the Suffolk Downs and/or Beachmont MBTA stations in connection with the Master Plan Project.

**Department of Conservation and Recreation**

The Master Plan Project will comply with all requirements of the DCR, which may enter into agreements or issue approvals concerning improvements to Revere Beach Parkway or easement rights for areas adjacent to Sales Creek that are held by the DCR.

**Massachusetts Historical Commission**

There are no historic resources at the Project Site which are listed on the National or State Registers of Historic Places. The Suffolk Downs grandstand, clubhouse and race track are included on Massachusetts Historical Commission ("MHC's") Inventory

of Historic and Archaeological Assets of the Commonwealth. The Proponent will consult with MHC regarding the historic impacts from development of the Project Site. In connection with the demolition of the grandstand, clubhouse and race track, the Proponent intends to dedicate one or more locations on the Project Site to commemorate its history and will work with the MHC and other interested parties, including former employees, to recognize this legacy.

### 1.7.2 City of Boston

The Proponent has held numerous meetings with various elected officials and City of Boston departments prior to the filing of this EENF/EPNF, including:

- › Mayor Walsh
- › BPDA
- › Boston Water and Sewer Commission ("BWSC")
- › Boston Transportation ("BTD")
- › Boston Conservation Commission
- › Boston Public Works Department ("BPWD")
- › Boston Environment Department ("BED")
- › Boston Police Department ("BPD")

#### **Boston Planning and Development Agency ("BPDA") / Boston Zoning Commission ("BZC")**

The Master Plan Project, including the Phase 1 Project, will comply with all requirements of the BPDA and Boston Zoning Commission in connection with issuance of permits and approvals related to the Master Plan Project. MHDC intends to seek approval of a Planned Development Area ("PDA"). In a PDA, a Development Plan approved by the BPDA and the BZC establishes a new zoning overlay district and substitutes for the use, dimensional, parking and loading requirements otherwise applicable to the Project Site. Prior to approval of any zoning relief, including a PDA, the Master Plan Project will be required to undergo Large Project Review under Article 80 of the Boston Code.

Under Article 80B of the Boston Code, which governs Large Project Review, a comprehensive public review is required at the early design stage, to evaluate project impacts and require appropriate mitigation measures, for projects that add 50,000 square feet or more of gross floor area (or 100,000 square feet or more for rehabilitation work or change in use). Large Project Review begins with the filing of this Expanded PNF with the BPDA. After a public and agency comment period, the BPDA issues a Scoping Determination, setting forth elements of the Proposed Project described in the PNF that the project proponent must study, analyze, and mitigate. After the issuance of the Scoping Determination, MHDC must prepare a Draft Project Impact Report ("DPIR") that details the project's impacts and proposed

measures to mitigate, limit or minimize those impacts, and the BPDA must publish notice of receipt of the DPIR. Thereafter, based on its review of the DPIR and any public comments, the BPDA issues a Preliminary Adequacy Determination ("PAD"), which may waive the need for further review. If further review is required following the PAD, MHDC must submit a Final Project Impact Report ("FPIR") for further review. Based on its review of the FPIR and any comments received the BPDA issues a Final Adequacy Determination.

Following completion of the Article 80 process, the design development and construction documents for the project are subject to BPDA review and approval, and MHDC will enter into agreements, including with the BPDA and the Boston Transportation Department, reflecting various mitigation commitments made during the Article 80 process. Agreements for compliance with the City of Boston's construction employment policies are also required. Under the Boston Code, the Commissioner of Inspectional Services will only issue a building permit for a project subject to Large Project Review after the Director of the BPDA has issued a Certification of Compliance pursuant to Section 80B-6 of the Boston Code, which is a finding that the construction plans and specifications for the project comply with the terms of the Final Adequacy Determination, agreements executed with City agencies, and other provisions of the Boston Code.

As noted, a PDA process will also be completed. The Boston portion of the Project Site is in the Suffolk Downs EDA of the East Boston Neighborhood District, a district which is governed by Article 53 of the Boston Code. Per Section 53-24 of the Boston Code, EDAs were established within the East Boston Neighborhood district to encourage economic development that is of "a quality and scale appropriate to the surrounding neighborhoods, and to encourage the diversification and expansion of Boston's and East Boston's economy, with a special emphasis on the creation and retention of job opportunities". Due to the scale and underutilized nature of the Boston portion of the Project Site, the Boston Code identifies the Suffolk Downs EDA as a Special Study Overlay Area, which is an area where further comprehensive planning studies may be appropriate. Additionally, Section 53-44 of the Boston Code establishes the Boston portion of the Project Site as a potential location for a PDA.

The City of Boston's *Imagine Boston 2030* plan supports the redevelopment of the Project Site into a resilient mixed-use neighborhood with a focus on housing given the public transportation connections to downtown and highway connections to the greater metropolitan area. In its plan, the City views redevelopment of the Project Site as an opportunity to strengthen connection between Downtown and East Boston via vehicular, pedestrian, and bike path networks.

The Boston portion of the Project Site is subject to certain currently-existing dimensional, use and design requirements and restrictions outlined in the Boston Code. Currently, the Boston Code allows for general office, hotel, general retail, local retail, non-take-out restaurant, research laboratory, hospital uses and various other commercial uses within the Suffolk Downs EDA, but residential uses are not currently

permitted on the Boston portion of the Project Site without zoning relief. The Suffolk Downs EDA also limits development to a maximum floor area ratio ("FAR") of 2.0 and a maximum building height of 45-55 feet. MHDC is proposing the development in Boston of approximately 11 million square feet (which would result in an FAR of approximately 2.3), within height districts that have various maximum building heights ranging from 50 feet to 220 feet, through creation of a PDA that establishes a comprehensive long-term development plan with the flexibility to respond to future changes in building design and in market demand for space and the way it is used. In particular, Section 3-1A.a of the Boston Code allows for a Master Plan PDA to be established for a proposed development area of at least five acres, and MHDC intends to seek approval for a Master Plan PDA that will establish the development concept (including the planning objectives and character of the development), the proposed uses of the area, the range of dimensional requirements contemplated for each of the proposed uses, and the proposed phasing of construction, with design review for particular buildings to be conducted as development proceeds.

The Phase 1 Project is expected to commence prior to completion of the PDA Development Plan process, and will therefore involve additional zoning relief. The Phase 1 Project is expected to comply with the by-right zoning requirements of the Suffolk Downs EDA with the exception of height limitations. While the proposed height will be within the limits being proposed for the PDA, expedited zoning relief will be needed to allow for the issuance of a building permit for a building of this height prior to completion of the full Article 80 and PDA development plan approval process. This relief is needed prior to completion of the PDA Development Plan process and could be granted as an amendment to the Suffolk Downs EDA zoning, allowing for the Phase 1 Project zoning relief. To allow for expedited zoning relief to be granted respecting the Initial Building, the Proponent will request a Scoping Determination waiving (for the Phase 1 Project only) the requirement of further review as permitted under Boston Code Section 80B-5.3(d). As contemplated by Section 80B-5.3(d), the waiver of further review may, if necessary, be conditioned on subsequent review of schematic design plans by the BPDA and Boston Civic Design Commission ("BCDC").

### **Inclusionary Housing**

The Inclusionary Development Policy ("IDP"), approved by the BPDA in December 2015, established as City of Boston policy that any residential project seeking zoning relief under the Boston Code must set aside a number of units at least equal to 13 percent of its market rate units as affordable to households at specified levels of income within a project. The Proponent will work with the BPDA to be in compliance with the Inclusionary Development Policy.

**Boston Employment Commission**

As noted above, MHDC will enter into agreements reflecting the various mitigation commitments made during the Article 80 process. It is expected that this will include an agreement with the Boston Employment Commission respecting a Boston Residents Construction Employment Plan. The Master Plan Project will comply with all applicable requirements of the Boston Employment Commission.

**Boston Civic Design Commission**

The Master Plan Project will comply with all requirements related to review of the Master Plan Project and Phase 1 Project design by the BCDC. Under Article 28 of the Boston Code, the BCDC is authorized to review the schematic designs of large-scale development projects (gross floor area over 100,000 square feet) and projects of special significance as determined by the BCDC (projects located near areas of special historic significance or designated landmark districts or projects visually prominent from significant open space or public right-of-way, among others). The purpose of the BCDC review is to assist and advise city officials with the design review of projects that affect the public realm, and to provide a forum for the general public and the professional design community to participate in the shaping of the city's physical environment. The BCDC review is advisory to the BPDA and the Mayor of Boston. The procedure for BCDC review is more particularly set out in Section 28-13 through 28-16 of the Boston Code. It is anticipated that BCDC review for the Master Plan Project will be conducted on a building-by-building basis as development proceeds.

**Boston Transportation Department**

As noted above, MHDC will enter into agreements reflecting various mitigation commitments made during the Article 80 process. It is expected that these will include a Transportation Access Plan Agreement and an agreement respecting a Construction Management Plan with the BTM. MHDC will also seek BTM permits and approvals for curb cuts, street opening/closing, and street lighting. The Master Plan Project will comply with all applicable requirements of BTM.

**Boston Public Improvements Commission**

The Master Plan Project will comply with all applicable requirements of the Boston Public Improvements Commission, which is expected to approve Specific Repair Plans and excavation support licenses (if required).

**Boston Public Safety Commission**

The Master Plan Project will comply with all applicable requirements of the Boston Public Safety Commission, which is expected to approve Fuel Storage Licenses and Garage Permits in connection with individual buildings and parking structures for the Master Plan Project.

**Boston Water and Sewer Commission**

The Master Plan Project will comply with all requirements of the Boston Water and Sewer Commission, which is expected to approve Sewer Connections and Cross Connections and Extension Permits, Water Permits, Hydrant Permits, and Site Plan Approvals in connection with the Master Plan Project.

#### **Boston Inspectional Services Department**

The Master Plan Project will comply with all requirements of the Boston Inspectional Services Department, which is expected to issue Building Permits, Demolition Permits, Foundation Permits, Electrical and Gas Permits in connection with the Master Plan Project.

#### **Boston Conservation Commission**

The Project Site includes wetland areas, including Sales Creek, and any construction within the Project Site will be subject to certain requirements under the Massachusetts Wetlands Protection Act (the "WPA"). Review under the WPA will be conducted by the Boston Conservation Commission.

The existing resource areas and buffer zones to wetland resource areas are heavily disturbed or have been altered by the previous uses. MHDC expects to preserve existing wetland areas as part of a significant public open space network to be included in the Master Plan Project. The WPA requires that an Order of Conditions be obtained from the Boston Conservation Commission for any work in Boston within jurisdiction.

#### **Boston Fire Department**

Permits and approvals for Fuel Storage, Fire Safety Equipment, Alarm System, Sprinkler, Standpipe, Smoke Control and Hydrant, and asbestos removal (if necessary) require review of various aspects of the Master Plan Project including garage layout and life safety systems and are typically sought when construction drawings and specifications are available for review by the Boston Fire Department. The Master Plan Project will comply with all requirements of the Boston Fire Department in connection with issuance of such permits and approvals as necessary.

#### **Boston Landmarks Commission**

Under Article 85 of the Boston Code, buildings older than 50 years cannot be demolished without review for historic significance by the Boston Landmarks Commission ("BLC"). As noted above, most of the existing structures at Suffolk Downs are more than 50 years old and, as noted above, are included on the Commonwealth's Inventory of Historic and Archaeological Assets. The Proponent intends to dedicate one or more locations on the Project Site to commemorate its history and will consult with the BLC regarding the historic impacts from development of the Project Site and, working with the BLC and other interested parties, including former track employees, to recognize this legacy.

**Article 25 Flood Hazard District**

Section 25 of the Boston Code establishes the Flood Hazard District, a zoning overlay district which includes all special flood hazard areas within the City of Boston as established by FEMA on the latest Flood Insurance Rate Maps and associated Flood Insurance Study. Development within these areas must comply with applicable federal, state, and local regulations.

**1.7.3 City of Revere**

The Proponent has held numerous meetings with various elected officials and City of Revere entities/departments prior to the filing of this EENF/EPNF, including:

- › Mayor Arrigo
- › City Councilors
- › Economic Development Department
- › Department of Planning
- › Conservation Commission
- › Department of Public Works, including the Water/Sewer Division

**Revere City Council / Revere Project Review Board / Site Plan Review Committee**

Under existing provisions of the Revere Code, the Revere portion of the Project Site is subject to zoning that allows for a 2.0 FAR as of right and up to a 3.0 FAR pursuant to a special permit. This equates to approximately 4.5 million SF of as-of-right development, and up to approximately 6.8 million SF with a special permit. Allowed building heights vary with provisions allowing for certain buildings to be up to 180, 200 and 250 feet depending on the use and location. Allowed uses under the PDD1 zoning include office, retail, restaurant and hotel, with other uses (e.g., residential) by special permit. To facilitate the development of the Project Site in Revere as a mixed-use community with a substantial amount of commercial development, as well as residential uses, the Proponent is seeking to create a new Suffolk Downs Overlay District ("SDOD"), which would be subject to approval by the Revere City Council. The Proponent intends to seek to have the SDOD become a new overlay zoning district, the effect of which will be to allow for the provisions of the underlying zoning district to cease to have any application to the land in the SDOD and for such land to be developed in accordance with the provisions of the new overlay zoning, which will include provisions that provide for approved uses, approved maximum heights, approved floor area ratio limitations, approved parking requirements, and provisions for other regulations applicable to property within the SDOD. The Proponent expects that the SDOD will provide for approval of an overall development program for the Master Plan Project and subsequent site plan review for individual buildings prior to issuance of a building permit for each building.



**Revere Planning Board**

The Master Plan Project will comply with all requirements of the Revere Planning Board in connection with issuance of permits and approvals respecting the Master Plan Project, including review in connection with any Zoning Code Amendment and Subdivision Plan Approvals.

**Revere Conservation Commission**

The Project Site includes wetland resource areas, including those associated with Sales Creek, and any construction within the resource areas on the Project Site or within associated buffer zones will be subject to certain requirements under the WPA, and to the extent the same is within Revere will also be subject to requirements of the City of Revere Wetlands Bylaw (the "Revere Wetlands Bylaw"). Review under both of these laws will be conducted simultaneously by the Revere Conservation Commission.

The Proponent expects to preserve existing wetland areas as part of a significant publicly-accessible open space network to be included in the Master Plan Project. The WPA and Revere Wetlands Bylaw requires that an Order of Conditions be obtained from the Revere Conservation Commission for any work in Revere within jurisdiction.

The Master Plan Project will comply with all requirements of the WPA, the City of Revere Wetlands Bylaw and the Revere Zoning Code, including any requirements of the Revere Conservation Commission in connection with issuance of permits and approvals related to the Master Plan Project.

**Revere Floodplain District**

Chapter 17.46 of the Revere Zoning Ordinance establishes the Floodplain District, a zoning overlay district which includes all special flood hazard areas within the City of Revere as established by FEMA on the latest Flood Insurance Rate Map ("FIRM") and associated Flood Insurance Study ("FIS"). Chapter 17.12.030 of the Revere Zoning Ordinance provides an exemption for land that is located within the Floodplain District based on the FIRM, but which is above the base flood elevation specified on the Flood Insurance Rate Map. This requires a certification by a professional engineer or surveyor as well as a finding by the Revere Conservation Commission that the land lies above said base flood elevation. As discussed later herein, the limits LSCSF, and therefore the associated portions of the Project Site subject to the Floodplain District, have been confirmed through an Order of Resource Area delineation issued by the Revere Conservation Commission.

**Revere DPW Sewer and Water Divisions**

The Master Plan Project will comply with all requirements of the Revere DPW, which has jurisdiction over Sewer and Water Connection/Extension Permits in connection with the Master Plan Project.

### Revere Inspectional Services Department

The Master Plan Project will comply with all applicable requirements of the Revere Inspectional Services Department, which is expected to issue Building Permits, Demolition Permits, Foundation Permits, Electrical and Gas Permits.

## 1.8 Planning Initiatives

The following list identifies plans and provides a summary of key opportunities and challenges where the Project Site is referenced/discussed.

### State/Regional

- › Executive Order 385, Planning for Growth
- › Commonwealth's Sustainable Development Principles
- › Clean Energy and Climate Plan for 2020
- › MAPC's MetroFuture
- › MPO's Journey to 2030

### City of Boston

- › *Imagine Boston 2030*, the city-wide plan prepared for the City of Boston.
  - Redevelop as a resilient mixed-use neighborhood with a focus on housing and direct public transit connections to downtown Boston.
  - Given the transportation the connections to downtown and highway connections to the greater metropolitan area, the Project Site has been identified as a possible new mixed-use district.
  - Opportunity to strengthen connection between Downtown and East Boston via vehicular, pedestrian, and bike path networks.
- › *Housing Boston 2030*, a plan to produce 53,000 new units of housing to help the city retain a strong middle class while strengthening and stabilizing Boston's neighborhoods.
- › *Go Boston 2030 Vision and Action Plan*, a blueprint of the City's guiding transportation principles (equity, economic opportunity, and climate responsiveness), and its top policies (repairs to roads and bridges, restructuring all bus routes, and reducing traffic fatalities and crashes).<sup>3</sup>
- › Climate Action Plan 2015 - 2021<sup>4</sup>
- › Climate Ready Boston<sup>5</sup>

3 <http://goboston2030.org/en/>

4 <http://www.cityofboston.gov/climate/bostonsplan/>

5 <https://www.boston.gov/departments/environment/climate-ready-boston>

- › Climate Ready East Boston<sup>6</sup>
- › Open Space Plan<sup>7</sup>
- › East Boston Master Plan<sup>8</sup>

#### **City of Revere**

- › Plan Revere Community Based Visioning Process (last update May 2015)
- › City of Revere FY2010-2015 Strategic Plan (draft)<sup>9</sup> identifies redevelopment of the Project Site into a vibrant mixed-use district for with primarily commercial and retail spaces.

## **1.9 Community Outreach**

The Proponent is committed to maintaining an open dialogue with all interested parties. As part of the local review and approval process, the Proponent has engaged early in a highly public and transparent process to inform city and state agencies, elected officials, community representatives, and the general public about the Master Plan Project.

To date, the Proponent has held dozens of meetings with various civic organizations, community representatives, elected officials, municipal departments and state agencies, including, but not limited to those listed below. In addition, three BPDA-sponsored public meetings were held on November 15<sup>th</sup>, 18<sup>th</sup> and 28<sup>th</sup> to further introduce the Master Plan Project.

Public review and engagement for the Master Plan Project will continue as part of the joint MEPA/Article 80 review process, as well as the City of Revere rezoning process. In addition, the BPDA-established Impact Advisory Group ("IAG") will continue to have an opportunity to give input on behalf of the community during the Article 80-B, Large Project Review for the Master Plan Project, as well as future individual Project Components, as required.

#### **Local Community Organizations**

- › Boston Harbor Now
- › Save the Harbor Save the Bay
- › Walk Boston
- › A Better City (ABC)

6 <https://www.boston.gov/departments/environment/climate-ready-east-boston>

7 [http://documents.boston.gov/parks/pdfs/OSRP\\_2015-2021.pdf](http://documents.boston.gov/parks/pdfs/OSRP_2015-2021.pdf)

8 <http://www.bostonplans.org/planning/planning-initiatives/eastbostonmasterplan>

9 <http://www.revere.org/docs/RevereStrategicPlan-2010-2015-PublicCommentDraft.pdf>

**City of Boston Community Organizations**

- › Jeffries Point Neighborhood Association
- › Orient Heights Abutters and Neighborhood Council
- › Eagle Hill Civic Association
- › Maverick Association of Residents
- › Gove Street Citizens
- › Waldemar Avenue Residents
- › East Boston Harborview Association
- › East Boston Main Streets
- › East Boston Chamber of Commerce
- › East Boston Social Centers
- › East Boston Neighborhood Health Center
- › East Boston Greenway

**City of Revere**

- › Beachmont Neighborhood
- › Friends of the Belle Isle Marsh
- › Beachmont Improvement Committee

**1.10 Project Proponent and Development Team**

The Proponent and applicant, The McClellan Highway Development Company, LLC, is an affiliate of The HYM Investment Group, LLC. HYM is a Boston-based real estate firm with extensive experience developing some of the area's largest and most complex mixed-use districts and neighborhoods.

The following lists the key members of the development team for the Master Plan Project (the "Project Team"):

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## **1.11 Legal Information**

### **1.11.1 Legal Judgments or Actions Pending Concerning the Proposed Project**

To the Proponent's knowledge, there are no legal judgments or actions pending concerning the Master Plan Project, except that the Project Site is subject to a consent decree entered into by the prior owner for wastewater discharges associated with the horse racing and stabling operations that will be terminated when construction begins on the Project Site. The consent decree is filed in the U.S. District Court for the District of Massachusetts on August 22, 2012 in United States of America v. Sterling Suffolk Racecourse, LLC ("SSR"), Civil Action No. 12-11556, as amended (the "EPA Consent Decree"). The EPA Consent Decree requires the prior owner, SSR, to pay certain penalties, maintain certain pollution-control systems and measures on the Project Site related to the CAFO located there, and report to certain government agencies on SSR's compliance with the EPA Consent Decree. Under agreements between the Proponent and SSR, SSR is responsible for compliance with the EPA Consent Decree and closure of the CAFO in accordance with the EPA Consent Decree. To Proponent's knowledge SSR is in compliance with all such obligations.

### **1.11.2 History of Tax Arrears on Property Owned in Boston by the Applicant**

There is no known history of tax arrears on property owned by the Proponent in the City of Boston or City of Revere.

### **1.11.3 Site Control/Public Easements**

The Proponent owns fee title to the Project Site and acquired the property by virtue of a deed dated as of May 26, 2017 and recorded with the Suffolk County Registry of Deeds on May 30, 2017 in Book 57996, Page 314 and filed with the Suffolk Registry District of the Land Court as Document No. 870416. The property is legally described on the exhibits provided in Appendix C. The Proponent is not aware of any public

easements into, through or affecting the Project Site other than typical utility easements, cross-easement agreements with abutting property owners, minor encroachment easements with abutters, and adjacent public rights of way, easements and rights granted to the Commonwealth of Massachusetts related to certain ownership rights near and related to Sales Creek.

## **1.12 Standards for Phase 1 Waiver**

As mentioned previously, pursuant to 301 CMR 11.11(5), the Proponent is requesting to permit the immediate construction of approximately 520,000 gross square feet of office space (in the form of two approximately 260,000-square foot buildings with up to 520 structured parking spaces), and associated infrastructure and site improvements (i.e., the "Phase 1 Project") prior to the completion of the MEPA review process. The Phase 1 Project is identified in Figure 1.7.

As described previously, the Phase 1 Project is proposed in the southeastern corner of the Boston portion of the Project Site immediately adjacent to the Suffolk Downs MBTA station. The Phase 1 Project Site currently contains a portion of the Suffolk Downs race track and infield, as well as other previously disturbed areas and a jurisdictional resource area regulated under the WPA (Bank and LSCSF). Construction activities are anticipated within the buffer zone, but no construction is anticipated within jurisdictional resource area in connection with the Phase 1 Project, with the exception of LSCSF.

The Phase 1 Project does not meet or exceed any Mandatory EIR review threshold and remains below ENF Review Thresholds related to land alteration, parking, water and wastewater. Refer to Table 1-4 below. As demonstrated in the following sections, the Phase 1 Project fully complies with the standards for a Phase 1 Waiver. The Secretary may grant a Phase 1 Waiver if the Secretary finds the absence of such a waiver will:

- › Result in undue hardship for the proponent; and
- › Not serve to avoid or minimize Damage to the Environment.

More specifically, pursuant to 301 CMR 11.11(4), Determination of a Phase 1 Waiver, the Secretary may issue a Phase 1 Waiver allowing the first phase of a project to proceed prior to the completion of an EIR if:

- › The potential environmental impacts of phase one, taken alone, are insignificant;
- › Ample and unconstrained infrastructure facilities and services exist to support phase one;
- › The project is severable, such that phase one does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized, or mitigated; and



- › The Agency Action on phase one will contain terms such as a condition or restriction in a permit, contract, or other relevant document approving or allowing the agency action, or other evidence satisfactory to the Secretary, so as to ensure compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

### **1.12.1 Strict compliance would result in undue hardship to Proponents**

Amazon's requirements for the selection of Amazon HQ2 include a requirement for 500,000-SF of office space that can be occupied in December 2019 as the initial phase of the larger approximately eight million-square foot headquarters campus. In order to meet this requirement, construction will need to commence in or about February 2018, and the permitting and construction of the Phase 1 Project will therefore need to proceed on a fast-track basis while the comprehensive master planning process is ongoing. If the Proponent is required to undergo a full environmental review process with respect to the Phase 1 Project, it will not be possible to deliver the required 500,000 square feet of office space on schedule and the Boston area will likely be removed from consideration by Amazon as a potential site for the Amazon HQ2 development, eliminating the considerable and extraordinary economic development opportunity (approximately 50,000 new jobs in a leading global "new economy" company) for the region and the Commonwealth. The Phase 1 Project alone is estimated to create approximately 400 temporary jobs and 2,500 permanent jobs.

This would impose an undue hardship on the Proponent and on the cities of Boston and Revere, each of which is eager to be considered for the Amazon HQ2 project and its many benefits. State and City officials have indicated that they are willing to consider significant incentives in connection with the Amazon HQ2 project, including financial incentives and streamlined permitting, which, in turn, will result in the generation of much needed jobs and revenue for the region for many years to come. Full MEPA review would result in undue and unnecessary hardship to the Proponent, the State, and the Cities of Boston and Revere, which can be avoided by a Phase 1 Waiver.

### **1.12.2 Strict compliance would not serve to avoid or minimize Damage to the Environment**

The Proponent has identified a suitable location for the Phase 1 Project, within the Boston portion of the Project Site, adjacent to the Suffolk Downs MBTA Blue Line station, allowing Amazon employees to have exceptional access to public transportation via the Blue Line. This location, to be developed through initial development encompassing approximately 25 acres of the approximately 161-acre Project Site, on land at the periphery (southeast corner) of the Project Site, will not compromise the master planning process. The development of the Phase 1 Project

will have limited net incremental impacts. All race track and off-track betting operations will cease before the Phase 1 Project opens, thereby mitigating impacts of the Phase 1 Project's operations. The Phase 1 Project will utilize existing roadways on the Project Site and will not require construction within any jurisdictional wetland resource areas, except for filling in LSCSF, undertaken to address Phase 1 Project resiliency. There will be no net increase in parking spaces as existing parking spaces will be removed from service to compensate for new parking spaces to be constructed in the building.

The Phase 1 Project will not result in significant environmental impacts as it does not meet or exceed any Mandatory EIR review thresholds. The Phase 1 Project is located within a previously developed site. Further, as demonstrated in this EENF/EPNF, the Phase 1 Project will improve the environment, not damage it, because adequate measures to avoid, minimize, and mitigate the potential Phase 1 Project-related impacts will be employed, as necessary.

No state funding or land transfer is being sought by the Proponent for the Phase 1 Project, however, financial assistance could be requested and then provided to Amazon in connection with a decision to locate Amazon HQ2 at the Project Site.

This EENF/EPNF includes analyses for GHG emissions and climate resiliency for the Phase 1 Project (refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*). As with the Master Plan Project, the Phase 1 Project Site will be designed to be resilient to both coastal and inland flooding and will implement measures to reduce climate impacts such as increased heat and precipitation. Additionally, the buildings will be designed to account for increased temperatures, as described more fully in Chapter 3. Planting, reflective materials and stormwater management measures will be implemented to reduce other future climate impacts.

This EENF/EPNF provides an EIR-level analysis of the potential environmental impacts of the Phase 1 Project, and potential mitigation measures, as detailed below, so strict compliance with MEPA would not result in any additional avoidance or minimization of environmental impacts.

### **1.12.3 The potential environmental impacts of Phase 1, taken alone, are insignificant**

The principal areas of potential environmental inquiry under MEPA for the Phase 1 Project are land and stormwater management/water quality, wetlands and waterways, transportation (traffic, transit, and parking), air quality, GHG emissions, climate change resiliency, hazardous materials, historic resources, water and wastewater, and construction. As summarized below and detailed in the supporting chapters of this EENF/EPNF, the Phase 1 Project will not have negative impacts in these areas. Similarly, the Phase 1 Project will not result in negative impacts in other areas of environmental or community impacts required to be studied under Article 80, such as urban design, sustainability/green building, wind, shadow, solar glare, daylight, noise,

groundwater/geotechnical and construction. Key benefits and potential impacts associated with the Phase 1 Project are addressed in the following sections:

- › Section 2.9 of Chapter 2, *Urban Design*
- › Sections 3.2 of Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*
- › Section 4.2 of Chapter 4, *Wetlands and Waterways*
- › Sections 5.1.2 and 5.3 of Chapter 5, *Transportation*
- › Section 6.1 of Chapter 6, *Environmental Protection*
- › Section 7.2 of Chapter 7, *Historic Resources*
- › Section 8.2 of Chapter 8, *Infrastructure*

Table 1-4 below demonstrates the Phase 1 Project does not meet or exceed any Mandatory EIR review threshold and remains below ENF Review Thresholds related to land alteration, parking, water and wastewater. Further, the Phase 1 Project includes new stormwater management and resiliency measures that will improve water quality and better manage flooding.

**Table 1-4 Summary of Insignificant Environmental Impacts for Phase 1 Project**

<b>MEPA Review Threshold</b>	<b>Estimated Impact<sup>1</sup></b>	<b>Matching Agency Action/Permit</b>
Land – Alteration	-0- acres	
Land – Impervious Surface	+6 acres created	
Other Wetlands	Work within 100-ft buffer +9 acres LSCSF altered	Boston Order of Conditions
New Vehicle Trips	2,652 unadjusted <sup>2</sup> (1,492 adjusted)	MassDOT Indirect Access Permit (if required)
New Parking Spaces	-0- <sup>3</sup>	
Water Demand	43,000 gpd	
Wastewater Generation	39,000 gpd	
Historic Resources	Construction within a portion of the race track <sup>4</sup>	MHC consultation for historic resources (if required)

gpd      gallons per day

1      None meet or exceed a Mandatory EIR threshold; impacts in **bold** are below an ENF threshold.

2      Based on 10<sup>th</sup> Edition ITE rates

3      Approximately 520 structured parking spaces will be provided within the new building, and approximately 520 existing surface parking spaces associated with the Suffolk Downs race track and existing off-track betting operations will be taken off-line as part of the Phase 1 Project.

4      The race track is included in MHC's Inventory as a contributing element to the National Register eligibility of the Suffolk Downs complex, but not listed in the State or National Registers of Historic Places.

**Land and Stormwater Management/Water Quality**

The Phase 1 Project will result in approximately six acres of new impervious area associated mostly with the new building and new paving for the access road and pedestrian walkways. The Phase 1 Project Site is almost entirely pervious (dirt race track and landscaped infield) with the exception of an on-site driveway.

The Phase 1 Project will include a stormwater management system designed to mitigate potential impacts to the existing watershed from the newly developed area. Proposed stormwater management measures will control peak runoff rates, provide water quality treatment, promote groundwater recharge, and sediment removal. The elements of the Phase 1 Project stormwater management system are described further in Section 8.2.1 of Chapter 8, *Infrastructure*.

**Wetlands and Waterways**

The Phase 1 Project does not meet or exceed any MEPA Review Threshold related to wetlands (Bank), floodplain, or waterways. The Phase 1 Project includes work within the 100-foot buffer area, but does not include any work within jurisdictional wetlands resource areas, except LSCSF. Therefore, the Phase 1 Project will require a local Order of Conditions from the Boston Conservation Commission.

The Phase 1 Project Site does not include any lands subject to Chapter 91 licensing jurisdiction; however, a portion consists of landlocked tidelands. Refer to Chapter 4, *Wetlands and Waterways*, for a Request for a Public Benefit Determination for the Phase 1 Project, if one is required.

**Traffic, Parking, and Transit**

The Phase 1 Project is projected to generate approximately 2,652 unadjusted new daily vehicle trips (1,492 adjusted) which is below the Mandatory EIR Review Threshold related to transportation. Refer to Section 5.3 of Chapter 5, *Transportation* for a complete study of Phase 1 Project traffic impacts. In addition, there are no new parking spaces planned as part of Phase 1, which does not exceed any ENF Threshold.

The Phase 1 Project will provide approximately 520 structured parking spaces. Approximately 520 existing surface parking spaces associated with the Suffolk Downs race track and existing off-track betting operations will be taken off-line as part of the Phase 1 Project (as shown on Figure 1.7) resulting in no net new parking spaces.

The location of the Phase 1 Project Site adjacent to the Suffolk Downs MBTA Blue Line station makes it a suitable location for transit-oriented development resulting in far less single-occupancy vehicles traveling to the Phase 1 Project Site than an office building not accessible by public transit. The number of estimated new transit trips will not cause the MBTA Blue Line to meet or exceed any capacity thresholds. Most of the Phase 1 Project-generated transit ridership is in the non-critical, or reverse commute, direction. The location of the Phase 1 Project, adjacent to the Suffolk

Downs MBTA Blue Line station, makes it a suitable location for transit-oriented development resulting in far less single-occupancy vehicles traveling to the Phase 1 Project Site than an office building not accessible by public transit.

The Phase 1 Project is estimated to generate approximately 1,176 new transit trips each weekday. Most of the Phase 1 Project-generated transit ridership is in the non-critical, or reverse commute, direction. On weekdays, approximately 283 new transit trips (263 entering and 20 exiting the site) are projected during the morning peak hour, and 242 new transit trips (24 entering and 218 exiting the site) are projected during the evening peak hour. The number of estimated new transit trips would result in a nominal increase to peak direction passenger loading on the MBTA Blue Line. The Phase 1 Project would not cause the MBTA Blue Line to exceed any capacity thresholds that would not otherwise be exceeded under 2024 No-Build conditions. Refer to Chapter 5, *Transportation*, for a complete analysis of the potential transportation impacts of the Phase 1 Project.

To further encourage the use of alternative modes of transportation, the Proponent is committed to installing a Hubway public bike share station within the Phase 1 Project Site.

Refer to Chapter 5, *Transportation*, for a complete analysis of the potential transportation impacts of the Phase 1 Project.

### **Air Quality**

No significant adverse air quality impacts from the Phase 1 Project are anticipated on a local level (microscale) or regional level (mesoscale) given the Phase 1 Project is not expected to generate a significant amount of vehicular traffic, as discussed in the section above.

### **Sustainable Design/Greenhouse Gas Emissions**

The Phase 1 Project will exceed the City of Boston Article 37 green building requirements by targeting a LEED Gold certifiable development using the LEEDv4 for Core & Shell Developments ("LEED-CS") rating system.

Consistent with the current MEPA Greenhouse Gas Emissions Policy and Protocol, the Phase 1 Project will be designed and operated to achieve reductions in both stationary source and mobile source GHG emissions. Based on the building energy model, the Phase 1 Project will reduce energy use by approximately 25 percent, which equates to approximately 23 percent reduction in stationary source CO<sub>2</sub> emissions when compared to a base case. Refer to Section 3.5 of Chapter 3, for additional information on the building energy optimization measures proposed for the Phase 1 Project.

Refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency* for further information.

**Climate Change Resiliency**

As described in Chapter 3, *Sustainable Design/Green Building and Climate Change Resiliency*, at the early stage of conceptual design, the Proponent has begun to identify preliminary site design and building-related resiliency measures to address the potential impacts described above. The Phase 1 Project will be designed to be resilient to both coastal and inland flooding, as well as extreme temperatures. Refer to Section 3.6.2 of Chapter 3 for further details.

**Hazardous Materials**

No regulated impacts to groundwater have been identified within the Phase 1 Project Site and none are anticipated based on the history of the property and the results of groundwater testing completed for the Phase 1 Project Site, as well as the larger Project Site. The Phase 1 Project Site was filled prior to the original development of the race course in the 1930s. The urban fill was previously determined to be a background condition and was addressed in a Response Action Outcome (“RAO”) Statement submitted to DEP in February 1998. The RAO statement concluded there was No Significant Risk to human health, public welfare, safety, and the environment. Urban fill and other hazardous materials discovered during construction activities will be handled in accordance with federal and state regulations.

**Historic Resources**

Construction of the Phase 1 Project will not create an adverse effect on any historic resources listed in the National or State Registers of Historic Places. The Phase 1 Project is sited in the southeastern corner of the Master Plan Site and will include construction within a small portion of the Suffolk Downs race track (Figure 1.7). As described in Chapter 7, *Historic Resources*, the Suffolk Downs complex is listed in the Inventory of Historic and Archaeological Assets of the Commonwealth. The race track is identified as a contributing element to the history of the Suffolk Downs complex. Retention of the race track is not feasible to meet the programmatic requirements of the Phase 1 Project, nor is retention of the race track feasible in connection with the future redevelopment of the Project Site. Appropriate recognition honoring the history of the Project Site, including signage and display of pictures and memorabilia, will be included in the Phase 1 Project and the Master Plan Project.

**Water and Wastewater**

As presented in Chapter 8, *Infrastructure*, the Phase 1 Project is estimated to generate approximately 39,000 gallons per day of sanitary sewage and use approximately 43,000 gallons per day of potable water. These projections fall below the MEPA Review Thresholds requiring an ENF. The Phase 1 Project buildings will

include low-flow and low-consumption plumbing fixtures. In addition, the reuse of roof runoff will be considered for irrigation to reduce potable water usage.

### **Construction**

Phase 1 Project construction will not require demolition of existing structures, thus, significantly reducing construction waste. To mitigate temporary construction impacts, a Construction Management Plan will be prepared for review by the City. All work will be completed in compliance with state and federal regulations.

#### **1.12.4 Ample and unconstrained existing infrastructure facilities and services exist to support Phase 1**

As discussed in Chapter 8, *Infrastructure*, adequate infrastructure facilities and services are available within the area to serve the Phase 1 Project, including water supply, sanitary sewer, and drainage systems. Gas, electric, telephone and telecommunications utilities are also located proximate to the Phase 1 Project Site. The Proponent will continue to work with the utility providers to verify demands and serviceability to the Phase 1 Project.

The traffic and transit analysis results for the Phase 1 Project presented in Chapter 5, *Transportation*, demonstrate that the Phase 1 Project-related vehicle traffic and transit trips can be handled by the existing roadway and public transit networks.

#### **1.12.5 Phase 1 is severable from other Project phases**

The Phase 1 Project is a severable project phase that will be completed with only minimal infrastructure improvements, as described above. It does not require the completion of any other development phase of the Master Plan Project. Further, construction of the Phase 1 Project will not impair or restrict the means by which potential environmental impacts from any other project components may be avoided, minimized, or mitigated for the full build.

#### **1.12.6 Phase 1 will ensure due compliance with MEPA**

The state approvals anticipated for the Phase 1 Project include: a MWRA Temporary Dewatering Permit (if required); a DOT Access Permit (if required); possibly an agreement with the MBTA if any improvements, such as landscaping and/or signage are to be made at the Suffolk Downs MBTA Blue Line station; and a Chapter 91 Public Benefits Determination (if required). A DEP Superseding Order of Conditions is also possible given a Local Order of Conditions is required, but highly unlikely. The subsequent technical chapters include sufficient information/analysis to demonstrate the Phase 1 Project will adequately meet performance standards for these required state permits and approvals.

The Master Plan Project will require additional state permits and approvals, as listed in Table 1-3. These approvals will not be issued prior to commencement of any other phase until after the EEA Secretary has certified that the EIR for the Master Plan Project complies with MEPA. Therefore, MEPA compliance for the Master Plan Project is assured.

#### **1.12.7 Conclusion**

Based on the above evaluation of the standards for a Phase 1 Waiver, the Proponent respectfully submits that the Phase 1 Waiver is warranted.





Source: ArcGIS World Topo Map

 Project Site

Figure 1.1

Locus Map

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Source BING




-  Project Site
-  Phase 1 Project Site
-  Town Line

Figure 1.2  
Project Site Context

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Source BING

- Project Site
- Phase 1 Project Site
- Town Line

Figure 1.3  
Existing Conditions

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Source:  
Digital orthophotograph, MassGIS 2014.

Figure 1.4  
Existing Site Photographs  
Key Map  
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





1 Suffolk Downs MBTA Blue Line Station (October 20, 2017)



2 Project Site entrance looking north at the intersection of Tomasello Drive with Route 1A (October 20, 2017)



3 View looking east down Tomasello Drive (October 20, 2017)



4 Track and infield (October 20, 2017)



5 Grandstand building from Tomasello Drive (October 20, 2017)



6 Vacant former administration building from surface parking lot (October 20, 2017)

Source:  
Photographs taken by Beals and Thomas, Inc.

Figure 1.5a  
Existing Site Photographs

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





7 Grandstand building from surface parking lot (October 20, 2017)



8 Eastern property boundary along Washburn Avenue (October 20, 2017)



9 View westerly from intersection of Winthrop Avenue and Revere Beach Parkway to the Project Site entrance at the intersection of Tomasello Drive with Winthrop Avenue (October 20, 2017)



10 Typical view of barns and stable area (January 6, 2017)



11 Sales Creek within infield (July 13, 2017)



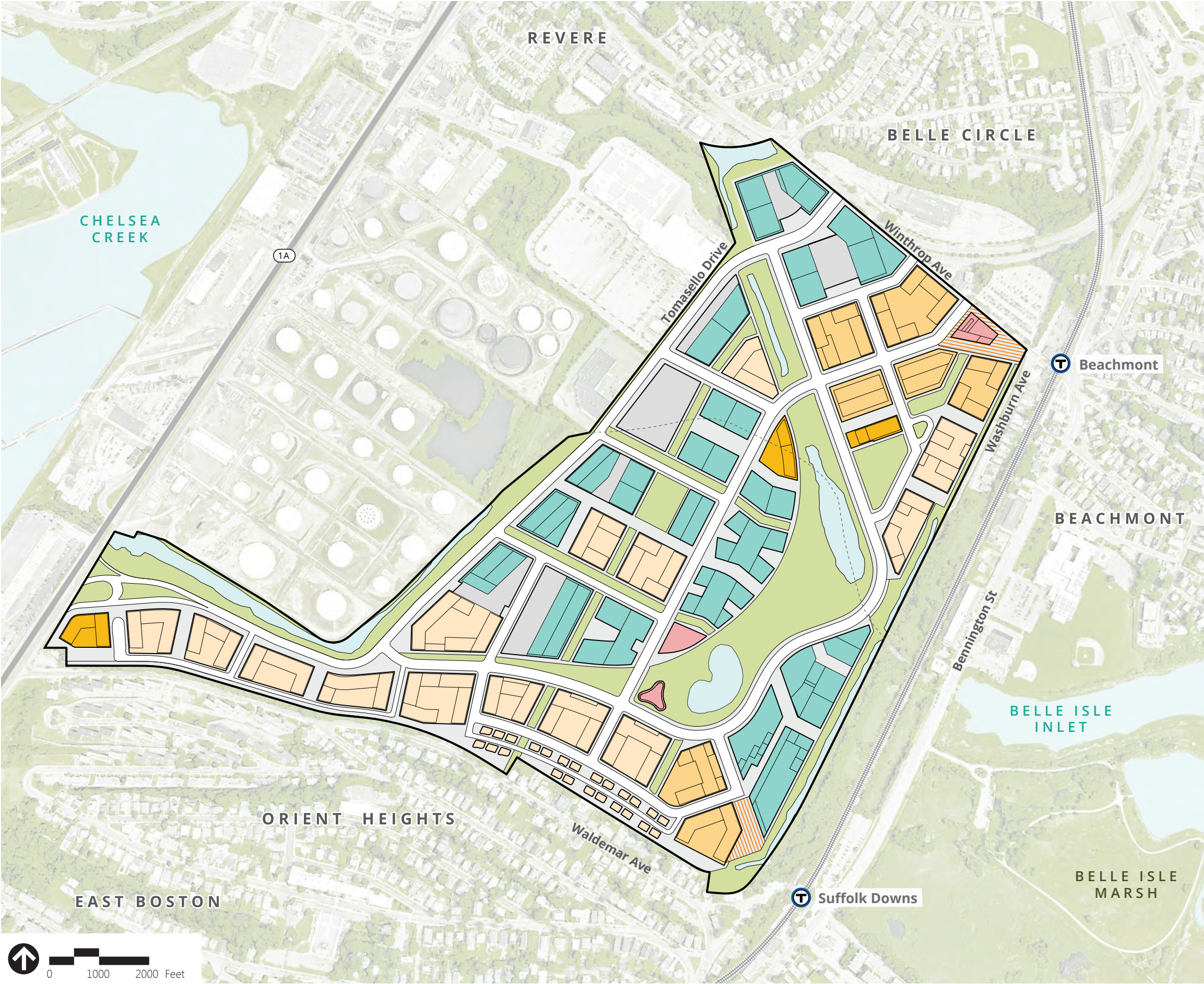
12 View of the infield pond (May 25, 2017)

Source:  
Photographs taken by Beals and Thomas, Inc.

Figure 1.5b  
Existing Site Photographs

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





- Commercial
- Residential
- Retail
- Hotel
- Mixed-use
- Urban Square

Figure 1.6a  
Conceptual Master Plan Project - Program A





- Commercial
- Residential
- Retail
- Hotel
- Mixed-use
- Urban Square

Figure 1.6b  
Conceptual Master Plan Project - Program B





- Office Amenity Access
- Office Access
- B.O.H. Access

Figure 1.7  
Phase 1 Project Site Plan



# 2

## Urban Design

This chapter addresses the urban design approach for the Master Plan Project, as well as the Phase 1 Project. Within the context of the City of Boston's *Imagine Boston 2030* plan and the City of Revere's Strategic Plan, as well as the Commonwealth's planning initiatives, the Master Plan Project provides the opportunity to create a new vibrant mixed-use community with an extensive approximately 40-acre publicly-accessible open space network representing about a quarter of the Project Site.

### 2.1 Summary of Key Findings and Benefits

Redevelopment of the Project Site offers a unique opportunity to create a new mixed-use neighborhood anchored by quality public transit and an extensive open space network that integrates the surrounding natural resources. The Master Plan Project has been planned to have a strong urban design framework that connects to the surrounding context and has the flexibility to adapt to different programs.

The key findings and benefits related to urban design include:

- › **A Dynamic Mixed-Use Program** – The Master Plan Project offers a dynamic mix of uses that aim to encourage commercial and innovation uses, a variety of housing types, street front neighborhood retail, as well as an extensive publicly-accessible open space network.
- › **Creation of Multiple Neighborhoods** – The Master Plan Project provides different styles of living for a diverse population, including families, empty nesters, seniors, and younger workers, including recent graduates. The planned new neighborhoods respond to the existing context of Orient Heights, Winthrop Avenue, Beachmont, the Belle Isle Marsh, and the East Boston Greenway while also reinforcing the framework of the new on-site open space and street networks.
- › **Expansive Publicly-Accessible Open Space Network** – The conceptual master plan has been designed to reconnect East Boston and Revere with an approximately 40-acre publicly-accessible open space network that represents approximately 25 percent of the overall Project Site area. The open space network allows for the creation of multi-functional open spaces that provide relaxing and restorative places to walk, run, and recreate while also serving to manage stormwater and to be resilient to future climate change impacts.

- › **Improved Connections and Transportation Access** – The mix of uses will be interspersed throughout the Project Site to create a cohesive fabric of new urban streets, walking paths, and bicycle accommodations and connections. Two important retail squares, adjacent to the Suffolk Downs and Beachmont MBTA Blue Line stations, will provide for pedestrian-friendly access to public transit and create multi-modal transportation opportunities, including bicycle stations, which encourage the use of alternative transportation modes to access the Project Site.
- › **Public Realm Activation** – Key community amenities will be incorporated throughout the Project Site to activate the public realm, including three distinct neighborhood retail districts, a landscaped amphitheater, and active and passive recreation areas (including dog-friendly open spaces and playgrounds). Additionally, ground-level amenities are planned, with local restaurants and on-site retail able to spill out onto adjacent sidewalks and open space areas, which will support already existing retail and restaurants in the surrounding neighborhoods.
- › **Healthful Living** – The Proponent and Project Team recognize that the built and natural environments in which people live, work, and play greatly influence our health and well-being. Therefore, the Master Plan Project is planned with an extensive walking and bicycling network throughout the Project Site.

## 2.2 Urban Context

As shown in Figure 2.1, the Project Site is uniquely positioned between the thriving neighborhoods of Orient Heights in East Boston and Beachmont in Revere, as well as being in close proximity to other neighborhoods of both East Boston and Revere. It is also situated in the corridor between two great urban beaches: Revere Beach and Constitution Beach. East of the Project Site, on the other side of the MBTA Blue Line tracks and Bennington Street, is the Belle Isle Marsh Reservation, which is an extraordinary natural and open space resource for the Project Site and surrounding area.

One of the Project Site's greatest strengths is its two direct connections to the MBTA Blue Line - Beachmont and Suffolk Downs stations. Using the Blue Line, the Project Site is just five minutes from Logan Airport and 11 minutes from State Street, in the heart of Boston's financial district. The Blue Line also offers connections to South Station and its commuter rail lines via the Silver Line, and to North Station and Back Bay Station and their respective commuter rail lines via the Orange Line.

The Project Site is also directly served by Route 1A, a major north/south state highway, which provides direct connections southbound via the two Boston Harbor Tunnels to Interstate 93 (North-South Highway Corridor) and Interstate 90 (East-West Highway Corridor). In addition, Route 1A provides connections to Route 16, Route 1 and Revere Beach Parkway.

Urban design challenges related to the Project Site include an oil tank farm to the west and the MBTA Blue Line train tracks to the east, both of which limit access to the Project Site. The Project Site is also subject to potential risk of coastal flooding from projected sea level rise given its proximity to Belle Isle Marsh and Chelsea Creek.

## 2.3 Planning Principles and Design Goals

The following are key goals and objectives of the Master Plan Project

- › Create a vibrant mixed-use, walkable community;
- › Provide a variety of housing types, including townhomes, apartments, condominiums, and senior housing to meet the needs of Boston and Revere residents;
- › Provide sufficient publicly-accessible open space that preserves existing natural resources, and includes both active and passive spaces;
- › Activate the public realm with open space amenities and extensive ground-floor retail aimed at serving the on-site users and complementing existing retail in the surrounding neighborhoods;
- › Enhance and expand job creation and economic opportunity by providing employment opportunities near new and existing residential areas;
- › Leverage the proximity to public transit to limit traffic impacts and provide easy access to workplaces and entertainment venues in other Boston neighborhoods;
- › Approach sustainability and resilience district-wide with forward-thinking climate change resiliency strategies, as well as specific measures for individual development through the incorporation of green building design.

## 2.4 Master Plan Framework

The Master Plan Project has been planned around the goals of connectivity and accessibility for this currently unconnected site. The conceptual design of the Master Plan Project is arranged around a strong open space and public realm framework that provides an opportunity to reconnect the East Boston and Revere neighborhoods surrounding the Project Site, as shown in Figures 2.2a-f.

Approximately 40 acres of open space, which represents approximately 25 percent of the Project Site, is designed to provide a contiguous network of open spaces (Figure 2.3) that offer a diversity of experiences including ecological, environmental, active, passive, recreational and programmed uses. The Project Site and its public space will be porous, connected, and open to the public and the community (Figure 2.2c). The publicly-accessible open space network also sets up a with strong relationship and potential connectivity to surrounding regional assets, such as the East Boston Greenway and Revere Beach (Figure 2.2f).

The Master Plan Project responds sensitively to surrounding context particularly to the Orient Heights neighborhood which shares the south-west boundary with the Project Site. A series of townhomes are planned along the lower edge of Orient Heights to create a scale transition of mid-rise housing. The orientation of the massing for these buildings will allow for continued views to the sky and to the 15-acre central common.

Surrounding the open space armature is a Main Street Retail District that runs through the middle of the Project Site linking the Beachmont and Suffolk Downs MBTA Blue Line Stations. Along the Main Street corridor are a series of nodes that create opportunities for creation of public squares and plazas. These include Beachmont Square at the Beachmont MBTA Blue Line Station and Bell Isle Square at the Suffolk Downs MBTA Blue Line Station, both anchoring the Main Street with attractive transit connections (Figure 2.2d). This formation of the Main Street Retail District and the open space system forms the important master plan framework around which three distinct neighborhoods (Figure 2.2e) will be created, and which offer distinct urban experiences based on proximity to the public realm and surrounding context and live and work building typologies. These neighborhoods respond to the existing context of Orient Heights, Winthrop Avenue and Beachmont while also responding to the new framework of the on-site open space and street networks. A series of pedestrian, bicycle and vehicular connections will link these on-site neighborhoods to the open space and retail districts as well as McClellan Highway (Route 1A) and Winthrop Avenue (Figure 2.4).

Within this structure, a series of urban block clusters (Figure 2.5) are set up to create a community environment where pedestrian walkways and open spaces create opportunities for interaction and play. This organization also provides for flexibility respecting development of individual blocks as they evolve through time, while still upholding overall urban design and master plan principals.

The height and massing strategy for the Master Plan Project has been developed keeping in mind the scale of adjacent neighborhoods and transitions, to allow for access to sunlight to public spaces, creating appropriately scaled development and maximizing views for all buildings while creating privacy. The height strategy also responds to the FAA height limits given the proximity of Logan Airport.

### **2.4.1 Adaptability of the Master Plan Project**

The Master Plan Project is set up to be highly flexible and adaptable to allow for changes in program and how the Project Site is built out over time. The Master Plan Project framework is centered around a robust urban structure of open spaces and a street network that creates a series of clusters of activity. Such organization allows for flexibility to develop a varying mix of uses while still upholding the overall urban design and Master Plan Project principles. To this end, the same overall plan has the ability to accommodate a variety of different mixes of uses, including either mix of

uses presented in Programs A and B (Table 1-1 of Chapter 1, *Project Description and General Information*). Similarly, the overall height strategy remains the same while principles of shaping the massing apply to all uses.

## 2.4.2 Transit-Oriented Squares

Two important transit-oriented squares called Belle Isle Square (Figure 2.6) and Beachmont Square (Figure 2.7) are proposed in proximity to the Suffolk Downs and Beachmont MBTA Blue Line Stations, respectively. The key goal of these urban squares is to create lively pedestrian-friendly access to the stations with active retail uses and multi-modal transportation opportunities, including bicycle Hubway stations to encourage public transit usage to and from the Project Site.

Beachmont Square is located near the Beachmont MBTA Blue Line Station and adjacent to Winthrop Avenue in Revere. Beachmont Square offers a direct pedestrian and bicycle connection into the Project Site from the Beachmont MBTA Blue Line Station. A new urban plaza surrounded by retail, housing and an innovation/incubator office building will draw pedestrians from the MBTA stations to the Project Site through publicly-accessible open space and along the Main Street Retail District. Through these links, direct and easy access is provided to both commercial and residential uses.

Beachmont Square is inspired by the tradition of urban squares in and around Boston and Revere and will be an active and vibrant environment for a diversity of demographic groups to enjoy the public space, wait for the bus or train or visit retail establishments. The design of the square will incorporate comfortable opportunities for pedestrians to sit and walk in the square while also providing for direct connectivity of all modes of transportation around the edges of the square including the MBTA buses, shuttles, bicycles, ride share pick-ups and connection to the MBTA Blue Line. Bicycle parking will be accommodated on the square and displays indicating real-time transit data will be provided.

Belle Isle Square is located immediately adjacent to Suffolk Downs MBTA Blue Line Station and at the pedestrian crossroads of the Orient Heights neighborhoods and the Project Site. This offers a unique and distinct arrival space and a plaza unencumbered by automobiles. A direct pedestrian and bicycle connection into the Master Plan Project will be established through a retail street with active ground floor uses and mixed-use development above. This connection leads directly to the large 15-acre central common, inviting visitors to engage directly with it from the Suffolk Downs MBTA Blue Line Station. Similar to Beachmont Square, the design of the urban square will encourage opportunities for pedestrian interaction while providing for direct connectivity for all modes of transportation around the edges of the square including the MBTA buses, shuttles, bicycles, ride share pick-ups and connection to the MBTA Blue Line. Bicycle parking will be accommodated on the square and displays indicating real-time transit data will be provided.

### 2.4.3 Main Street Retail District

Street level retail and neighborhood amenity uses will be a core element of the overall development. Up to 550,000 SF of retail and active ground floor uses will be created in three distinct retail districts. Both the Belle Isle and Beachmont Squares are designed to be linked with a 'Main Street' that straddles the length of the Project Site (Figure 2.8), and provides an active and lively environment to be enjoyed both by the users of the Project Site and the surrounding neighborhoods.

Street level retail will also be a core element of the overall development. Three distinct retail districts will be located on the Project Site with up to 550,000 square feet of street front retail. They include Beachmont Square (near the Beachmont MBTA Blue Line Station), Belle Isle Square (near the Suffolk Downs MBTA Blue Line Station), and a new Main Street Retail District (located in the heart of the Project Site). This will augment already existing retail and restaurants in the surrounding neighborhoods.

The Master Plan Project's creative retail strategy will focus on attracting a diversity of shops and restaurants that will spill out onto its urban streets, keeping the community active and engaged.

The retail program within this mixed-use development could include restaurants, coffee shops and cafes, as well as entertainment spaces, a grocery store and pharmacy, and convenient amenity stores and services such as banks, clothing stores, cleaners, hair and nail salons, bicycle shops, veterinary and pet boarding facilities, and other uses. The neighborhood will also embrace an active and healthy lifestyle by including uses such as fitness, CrossFit and/or climbing gyms. Furthermore, the Project Site will also attract existing local restaurants and businesses and cultivate an authentic retail vibe for the community which will not only serve those on-site and residents, but also surrounding neighborhoods. In order to seek local participation in the retail elements of the Master Plan Project the Proponent will reach out to existing businesses in East Boston and Revere as the vision moves forward.

Two of the retail districts, Beachmont Square and Belle Isle Square, will be located adjacent to the two existing MBTA Blue Line stations. These two areas will consist of street-level retail along tree-lined primary streets that will extend into the heart of the Suffolk Downs mixed-use district. These nodes will connect with both the central common and the new Main Street retail district. The Beachmont Square, Belle Isle Square and Main Street districts will, when complete, create a continuous retail corridor that starts at one Blue Line station, traverses through the heart of the new mixed-use community and connects to the other Blue Line subway station. Along the way it will connect and cross the heart of the approximately 40-acre open space network creating opportunities and synergy between the retail areas and the open space network.

## **2.4.4 Residential and Commercial Areas**

The residential and commercial uses will be interspersed throughout the Project Site to ensure a dynamic mixed-use environment that is woven together in a cohesive fabric of new urban streets, walking paths, open spaces and bicycle connections. Key civic and public realm amenities will also be incorporated throughout the Project Site including Belle Isle Square, Beachmont Square, a landscaped amphitheater, dog-friendly playgrounds. In addition, ground-level amenities will be encouraged, with local restaurants and on-site retail able to spill out onto adjacent sidewalks and open space areas.

### **Residential**

Up to 10,000 housing units of a variety of unit types and sizes are proposed as part of the Master Plan Project. Units will be designed to attract a wide variety of residents, from families to empty nesters, younger workers, including recent graduates, and multi-generational households. The residential buildings will be interspersed with the commercial buildings ensuring vibrancy throughout the Project Site and creating several new neighborhoods on the Project Site.

### **Commercial**

The commercial component of the Master Plan Project is proposed to accommodate Amazon's entire eight million square-foot commercial office requirement (Program A). Under either Program A or B, commercial uses will be located on portions of the Project Site that include areas adjacent to the two existing MBTA Blue Line stations, with such uses radiating through the Project Site along a network of new streets, neighborhood retail districts, and open spaces.

### **Retail**

Street-level retail is a core element of the Master Plan Project. Up to approximately 550,000 SF of retail is proposed, which will create and include three distinct neighborhood retail districts. These planned districts, as described above, are:

1. Beachmont Square (adjacent to the MBTA Beachmont station on the Blue Line);
2. Belle Isle Square (adjacent to the MBTA Suffolk Downs station on the Blue Line);  
and
3. A Main Street Retail District (located in the heart of the Project Site).

The retail space is planned to generally be located on the ground floor of mixed-use buildings in order to create a lively streetscape and a true live-work-shop-play environment. The neighborhood retail program is anticipated to include restaurants, coffee shops and cafes, as well as a grocery store, pharmacy, bicycle shop and entertainment spaces. Employees, residents and visitors will also augment demand for existing retail and restaurants in the surrounding neighborhoods. In addition, if



the Amazon HQ2 proposal is successful Amazon will have the opportunity to include its retail stores and concepts within these on-site retail districts, such as Amazon Go, Whole Foods, and Amazon Books.

The Master Plan Project will also embrace greater Boston's active and healthy lifestyle by including fitness facilities and specialty gyms (i.e. rock climbing, cycling). Furthermore, the Project Site is expected to attract existing local restaurants and businesses to cultivate an authentic retail vibe for the community, which will not only serve on-site residents and users, but also surrounding neighborhoods.

### **Hotel**

Hotel space with up to approximately 830 rooms is proposed as part of the Master Plan Project. These accommodations will support the office and residential uses for both business travelers and other visitors from out of town. Furthermore, the surrounding innovative retail, restaurants, and nightlife planned as part of the Master Plan Project will appeal to visitors and provide ample entertainment during their stay.

## **2.5 Master Plan Height and Massing**

The height and massing strategy for the Master Plan Project has been developed keeping in mind the scale of adjacent neighborhoods and transitions, to allow for access to sunlight to public spaces, creating appropriately scaled development and maximizing views to all developments while creating privacy. While the overall height strategy (Figure 2.9) is governed by the FAA height limits, the massing of various buildings has been carefully crafted to achieve the above goals (Figure 2.10a and 2.10b).

The Project Site has been categorized into a series of distinct neighborhoods that offer a varying character based on the arrangement of buildings, height, and massing. Belle Isle Square and Beachmont Square are strategically located adjacent to the two MBTA Blue Line stations and offer a vibrant mix of uses with ground floor retail and welcoming connections. Lower scale townhomes are planned next to the Orient Heights neighborhood to provide a transition from this existing neighborhood. In addition, the mid-rise buildings beyond the townhomes are planned to be oriented in a north south direction to allow for views into the new approximately 15-acre central common.

## **2.6 Open Space Network**

The built and natural environments in which we live, work and play greatly influence our health and well-being. Redevelopment of the Project Site allows for the opportunity for ecological planning and for the community, developer and cities to work together to find a balance between the natural and built environments. This

opportunity will allow the creation of multi-functional open spaces that provide relaxing and restorative places to walk, run and recreate right outside one's front door while also providing urban habitats, mitigating climate change impacts and managing storm water. Such easy access to the outdoors encourages community members to lead active and healthy lifestyles while also engaging them in their larger, natural environments.

Key open spaces within the development will include an approximately 15-acre central common, landscaped amphitheater, passive and active recreational areas, playgrounds, dog runs and several neighborhood plazas (Figure 2.11). This new open space network will incorporate existing wetland features on the Project Site and will seek to provide connections via community paths to Revere Beach, Belle Isle Marsh, the East Boston Greenway and other nearby open spaces. The vibrant publicly-accessible open space, plazas, and recreation spaces provided in this new development will therefore attract and benefit not just on-site users but also those from the wider neighborhood.

Furthermore, the Master Plan Project will be integrated into the local urban fabric through a robust bicycle network and walkable neighborhood streets (Figure 2.12). The Master Plan Project will include a welcoming and well-designed bicycle and pedestrian system to encourage sustainable modes of transportation, promote health and wellness and enhance social interactions and idea sharing within this one-of-a-kind mixed-use community. The Master Plan Project will also include Boston and Revere Hubway stations, connecting cyclists to destinations within the community and beyond.

## **2.7 Public Realm Improvements**

The creation of a vibrant, public realm is at the core of the Master Plan Project. This is achieved through pedestrian-friendly and publicly accessible streetscapes, a diverse network of outdoor open spaces, including access to existing and new landscape amenities, active recreation and community programming, as well as a thriving mixed-use neighborhood with retail, food and beverage amenities.

### **2.7.1 Streetscape Concepts**

The conceptual master plan proposes a network of four primary types of streets, including: a landscaped parkway/boulevard; interior streets designed to the BTDC Complete Streets Guidelines; and 'green spines' that will be designed to act as part of the stormwater strategy, in addition to supporting the circulation and urban accessibility strategy; and a pedestrian-only active strip or 'sporty spine' (Figure 2.13).

- › **Landscaped Parkway/Boulevard:** Running alongside the central common, generally from South to North, the primary landscape boulevard is inspired by the Olmsted parkway found throughout Boston. It serves as the primary means of entry into and out of the Project Site for vehicles and cyclists and allows for pedestrian connections to the central common, the Suffolk Downs and Beachmont MBTA Blue Line stations, and Sales Creek. The Boulevard is envisioned to have generous planting, bicycle circulation, and on-street parking in key locations where access to the central common and important retail nodes is needed.
- › **Complete Streets:** Consistent with BTG Guidelines, streets will be designed with bike lanes, expanded pedestrian realm, vehicular access, public transit and street trees along primary circulation routes across the Project Site from North to South and East to West.
- › **Green Spines:** Connecting the central common to the westernmost edge of the Project Site through the 'sporty spine' (described below), these streets will function to collect stormwater and utilize it to create a green, lush pedestrian-friendly route within the Project Site.
- › **Sporty Spine:** A pedestrian-only corridor that connects to the green spines and is designed as a series of active play and exercise areas accessible to pedestrians of all ages and abilities.

### 2.7.2 Pedestrian Access/Circulation and Accessibility

As shown in Figure 2.12, pedestrian access & circulation plan, the layout of the development blocks and open spaces within the masterplan have been designed to create a network of safe pedestrian and cycle routes through the Project Site. These paths connect to both Suffolk Downs and Beachmont MBTA Blue Line stations, and provide several circular recreational routes within the Project Site. For example, the multi-use trail through the central common connects via the green corridors to the north-south orientated active sporty spine which spans the Project Site from the boundary with Orient Heights north to Sales Creek. This roughly one-mile loop is paired with a second larger loop of roughly 1.5 miles which extends from the central common to Tomasello Drive and back.

In addition to circulation within the Project Site, pedestrian routes are located so that they connect to the adjoining Orient Heights and Winthrop Avenue and can be connected to a wider network of regional paths in the future, which include potential extension of the East Boston Greenway up through Revere Beach.

As part of the stormwater and flood control strategy some of the open spaces are lower in elevation than the development blocks. The grading within the Project Site has been designed to ensure that these elevation changes are all accessible via gentle slopes that meet ADA requirements. Refer to the completed BPDA Accessibility Checklist based on conceptual design in Appendix D.

## **2.8 Open Space Plan and Landscaping**

The proposed open space plan for the Master Plan Project has been designed around an approximately 15-acre central common that incorporates Sales Creek and the infield pond. The central common (Figure 2.13) incorporates a large flexible lawn, a public plaza, and ecological planting within areas that function as part of the stormwater management system.

The central common is connected to the two entrance plazas adjacent to the Suffolk Downs and Beachmont MBTA Blue Line stations, and the other open spaces within the Project Site, via a series of green corridors. The two green corridors that extend west from the central common provide access to a linear open space that traverses the Project Site along a north-south orientation from the Orient Heights boundary to Sales Creek. This 'sporty spine' is designed as a series of play, exercise, and sports interventions connected by walking, running, and cycling trails. Together, the 'sporty spine' and the central common provide a wide range of active and passive recreation opportunities on the Project Site.

### **2.8.1 Stormwater Management and Vegetation**

The stormwater strategy on-site is a core aspect of the landscape approach. Stormwater is collected throughout the Master Plan Project and within the central common and is utilized to help with irrigation needs within the central common and the interior streetscapes. A robust tree canopy will be created within the central common and streetscapes throughout the Project Site to provide shade, habitat, beauty and to aid in reduction of heat island impacts.

## **2.9 Phase 1 Project Proposed Design**

The Phase 1 Project is located adjacent to the Suffolk Downs MBTA Blue Line Station and along the southern boundary of the Project Site and the MBTA Blue Line corridor with views to the existing infield of the race track and Belle Isle Marsh. The Phase 1 Project takes advantage of these assets while providing a welcoming and pleasant experience for both pedestrians and building occupants with enhanced access to Suffolk Downs Station. The Phase 1 Project includes two buildings – Building 1 and Building 2 – that share a central north-south open-air walkway that presents an opportunity for relaxation, collaboration and innovation for office tenants (Figure 2.14).

Approximately 215,000 SF of internalized structured parking space is provided as part of these two buildings, accommodating up to approximately 520 parking spaces. Building 1 and Building 2 are connected by a single below-grade level of parking (Figure 2.15-2.17). Building 2 accommodates three additional levels of above-grade parking.

Both Building 1 and Building 2 are approximately 120 feet in height and each holds approximately 260,000 SF of office space, of which 20,000 SF are office amenities for activating public realm (Figure 2.18).

The northern side of the Phase 1 Project is provided with a view and access to the existing infield while the southern side is provided with views to Belle Isle Marsh on the upper levels and the adjacency to Suffolk Downs MBTA Blue Line Station. By providing two buildings versus one larger building, the west side of the parcel is broken down into two 230-foot facades, providing a more appropriate scale for those strolling down from and to the Suffolk Downs MBTA Blue Line Station.

Along the open-air walkway, which is designed to provide a more intimate experience, the massing of both buildings incrementally steps away from the walkway as the building gets taller and a series of outdoor terraces are generated. These terraces are adequately sized to accentuate the intimate nature of this area and are visually connected to create a sense of community. Furthermore, by terracing the massing, more daylight gets into both the open-air walkway and inside the buildings, making the entire spaces feel more open and inviting.

The building design of the Phase 1 Project reinforces the overall Master Plan Project framework by creating a well-defined street wall along future public ways and a strong base, middle, and top to human scale. The proposed pedestrian passageway between the two Phase 1 Project buildings aims to break up the massing, and create a safe and active urban space by animated ground floors and building terraces. The design of the buildings also aims to establish a strong presence along the central common reinforcing its curved design.

### **2.9.1 Phase 1 Project Open Space**

The Phase 1 Project places a premium on the adjacency to open space. Active recreation and views to existing landscape features such as Belle Isle Marsh, and future features such as the 15-acre central common, are prioritized and dictate the orientation of the buildings.

The Phase 1 Project open space includes a total of approximately 13.2 acres of publicly accessible open space comprised three key components as described below:

- › Approximately 12 acres of existing open space will be made accessible to the public. The existing open space, which is currently not accessible to the public, includes the infield pond, portions of the grassy infield area and the race track. The infield and race track allow for active recreation and pedestrian access into the open space from the Phase 1 Project buildings and drive.
- › Approximately 0.4 acres of open spaces will be improved in association with the construction of a pedestrian walkway between and around the two buildings. The walkway between the two buildings is designed as an open space element that provides connectivity through the block and between the buildings, but

also provides opportunities for seating and landscaping elements which will provide a much more intimate experience. This walkway is activated both by lobby entrances, as well as a row of small incubator office spaces. This open space corridor will link the two buildings physically and visually.

- › Approximately 0.8 acres of public realm improvements connecting the Phase 1 Project Site to the Suffolk Downs MBTA Blue Line Station, as further described in Section 2.9.2.

The Phase 1 Project open space program has been designed to assume Phase 1 may exist as stand-alone office buildings and will be superseded by the open space program for the Master Plan Project.

### **2.9.2 Phase 1 Project Public Realm Improvements**

As shown in Figure 1.7, the Phase 1 Project is limited to only a small portion of the Project Site's proposed roadway network and public realm. As such, the Phase 1 Project streetscape design approach will be similar overall to the larger Master Plan Project approach as far as quality of the public realm area and focus on pedestrian-friendly streets and universal accessibility throughout. The primary area of focus in the public realm will be the link between the infield open space and the Suffolk Downs MBTA Blue Line Station, as well as landscapes and areas of public access immediately adjacent to the proposed buildings. As such, the proposed internal access drive and public realm will be fully accessible, safe, and designed to enhance connectivity between key elements including the central common and the Suffolk Downs MBTA Blue Line Station.

The Phase 1 Project will include a new drive which will provide additional vehicular and pedestrian access along the eastern border of the open space and will be designed as a landscaped boulevard. Both newly planted and existing trees will be utilized to provide shade and create a comfortable pedestrian environment along the roadway from the Project Site entrance to the Phase 1 Project buildings and along the open space.

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Figure 2.1  
Urban Context

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



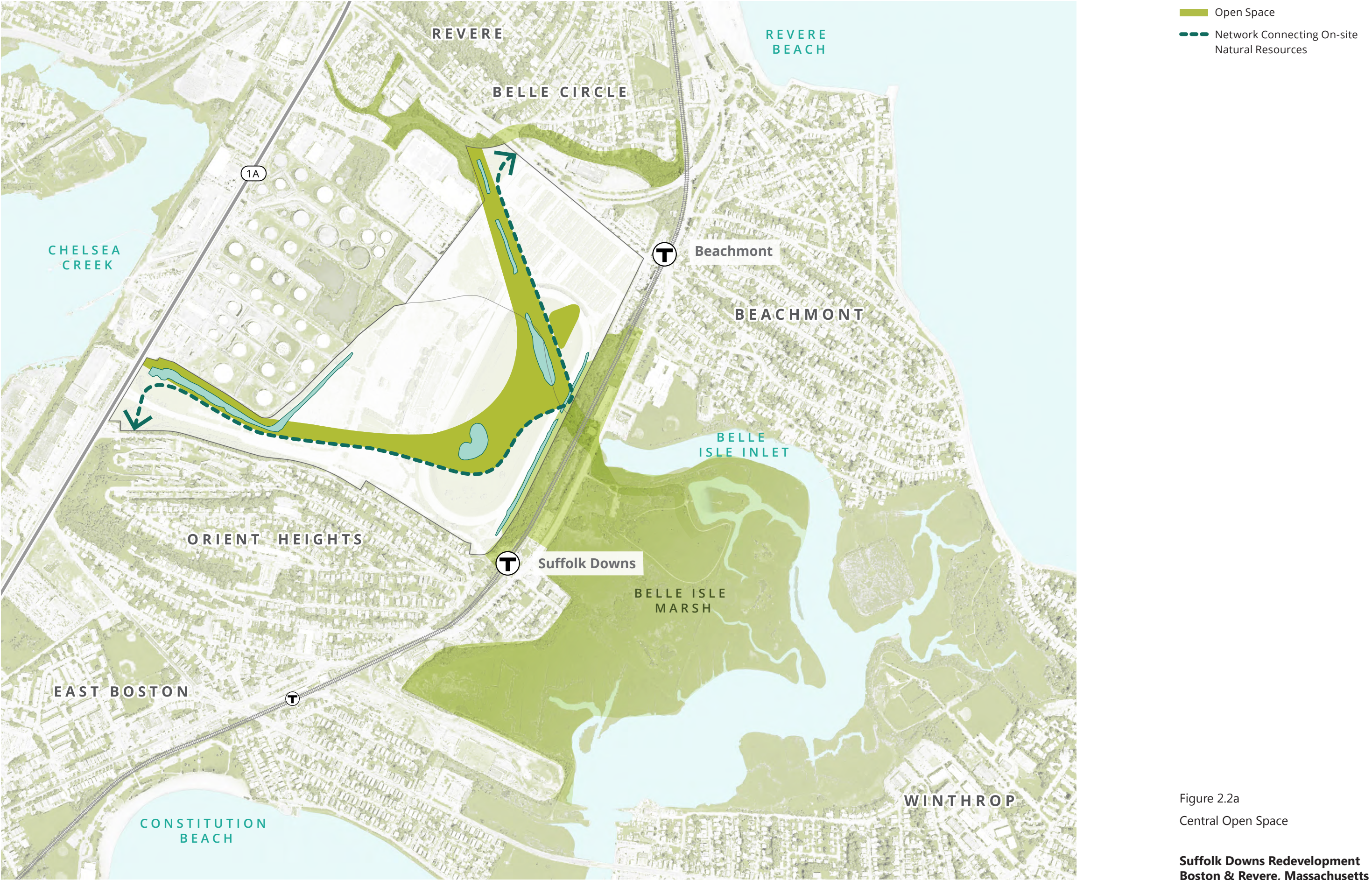


Figure 2.2a  
Central Open Space

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



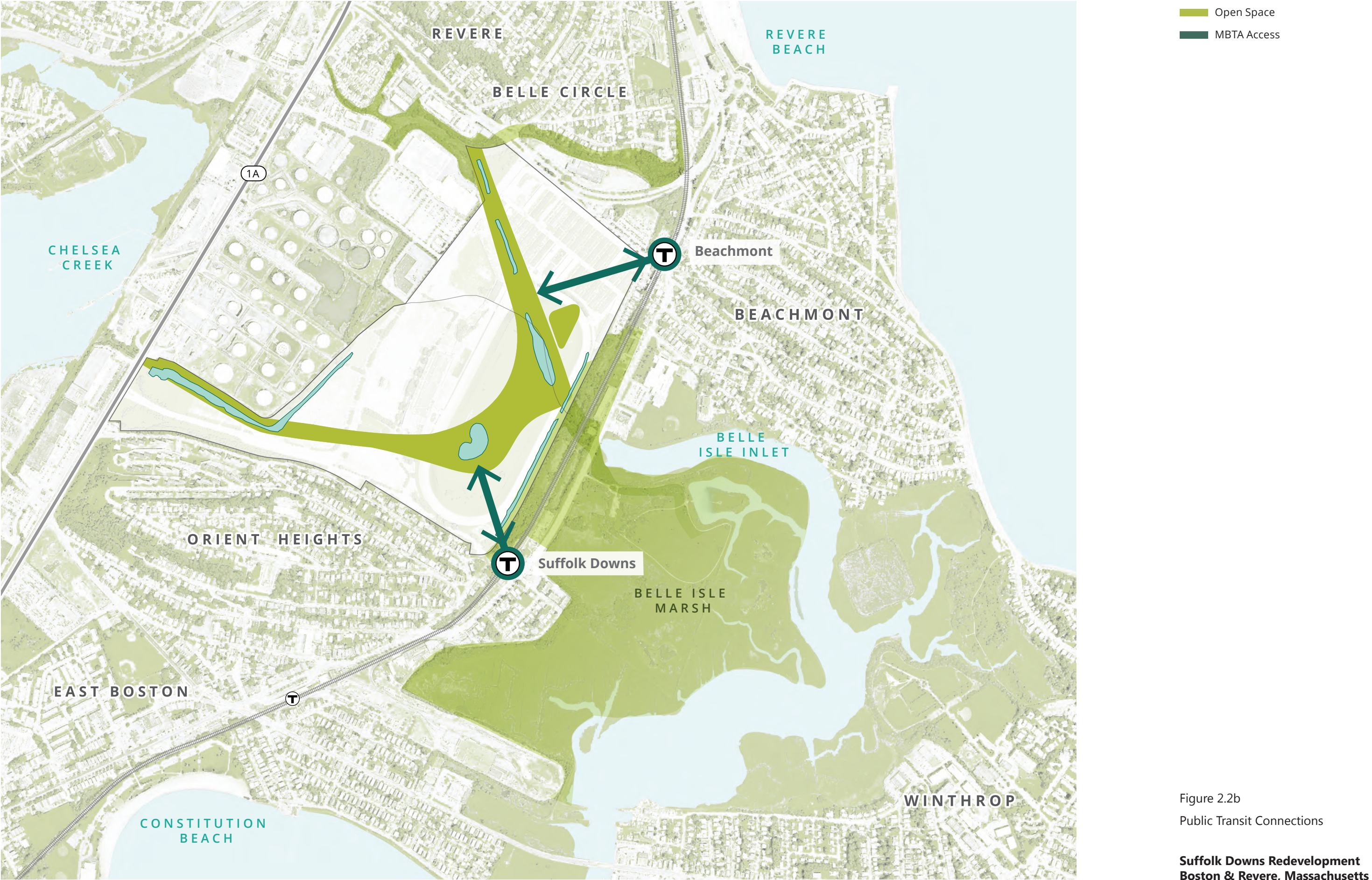


Figure 2.2b  
Public Transit Connections



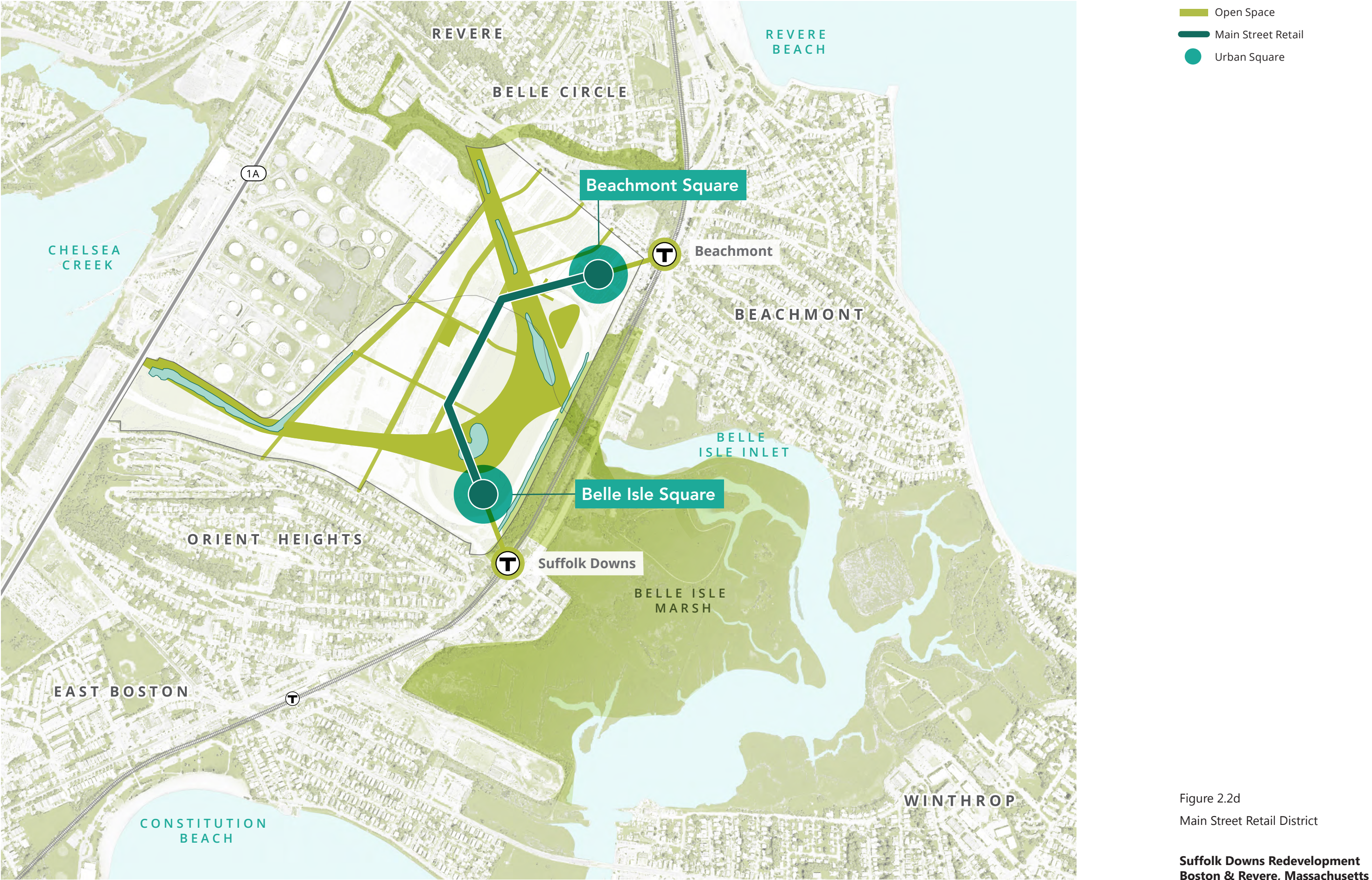


- Open Space
- Connected Open Space Network

Figure 2.2c  
Porous and Connected Project Site

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**









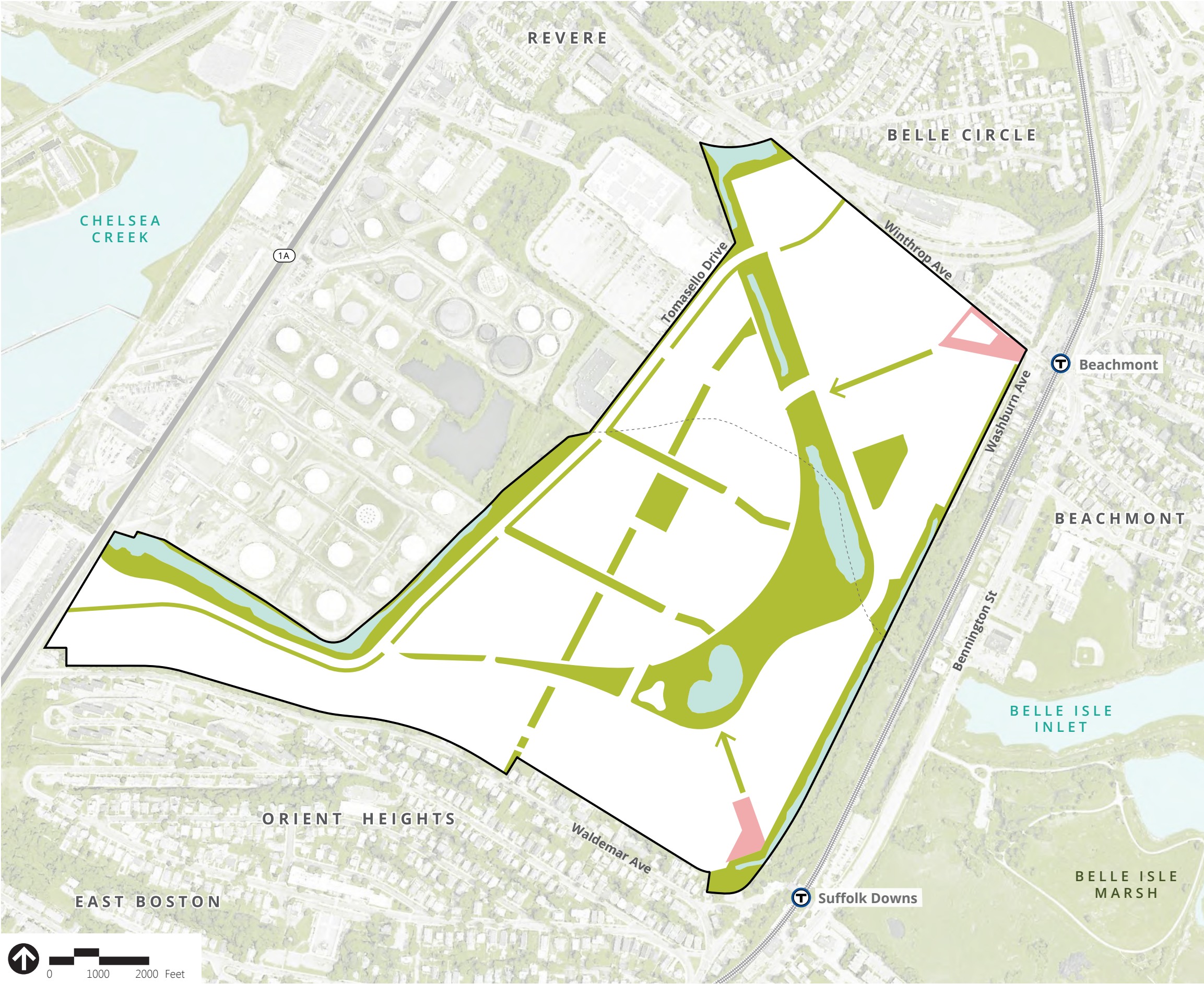




- Open Space
- Multi-Modal Connections

Figure 2.2f  
Potential Connectivity to East Boston  
Greenway and Revere Beach





- Open Space
- Urban Square

Figure 2.3  
Open Space Network





Figure 2.4  
Street Network





- Open Space
- Urban Square
- Street Network
- Urban Blocks

Figure 2.5  
Urban Block Clusters





Figure 2.6  
Belle Isle Square Rendering

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Figure 2.7  
Beachmont Square Rendering

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

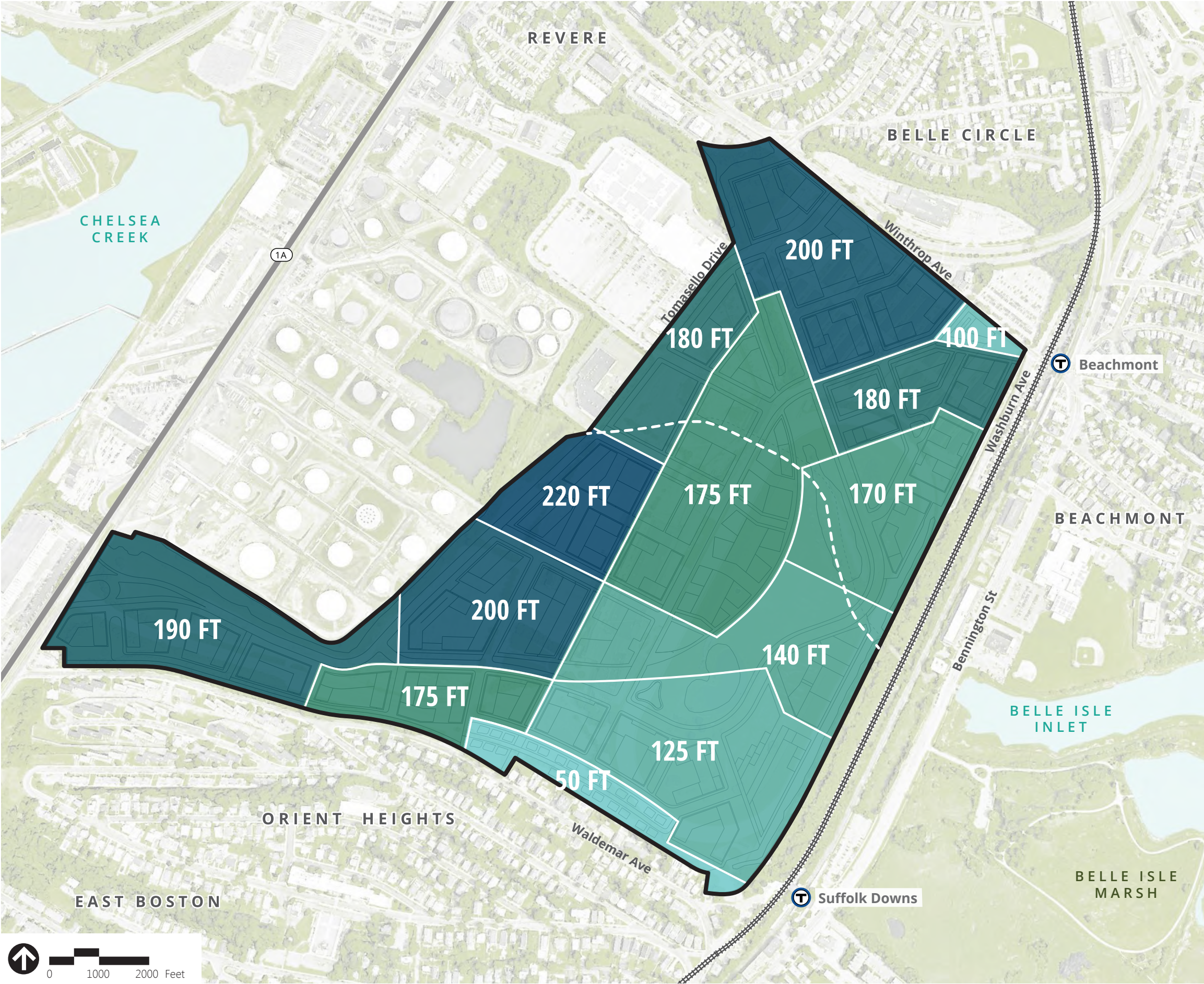




- Retail
- Urban Square
- Civic / Cultural Node
- Plaza

Figure 2.8  
Conceptual Retail and Active Ground Floor  
Uses





Notes  
The proposed heights of all future buildings will be in compliance with the height requirements of the Federal Aviation Administration associated with Boston-Logan International Airport.

Figure 2.9  
Building Height Strategy





Figure 2.10a  
Master Plan Project Aerial Rendering From  
Revere Beach  
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Figure 2.10b  
Building Massing Strategy



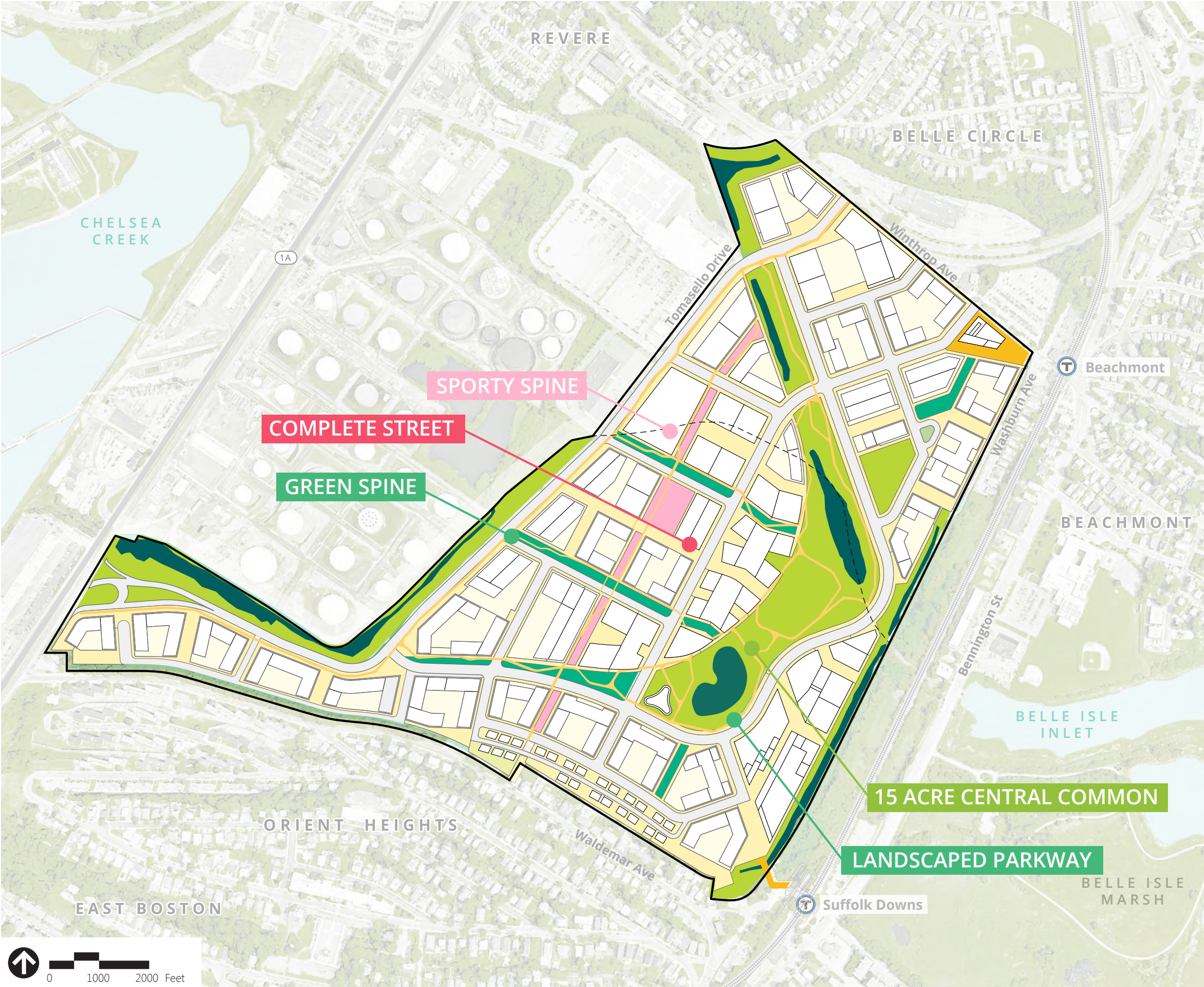


Figure 2.11  
Conceptual Landscape Plan



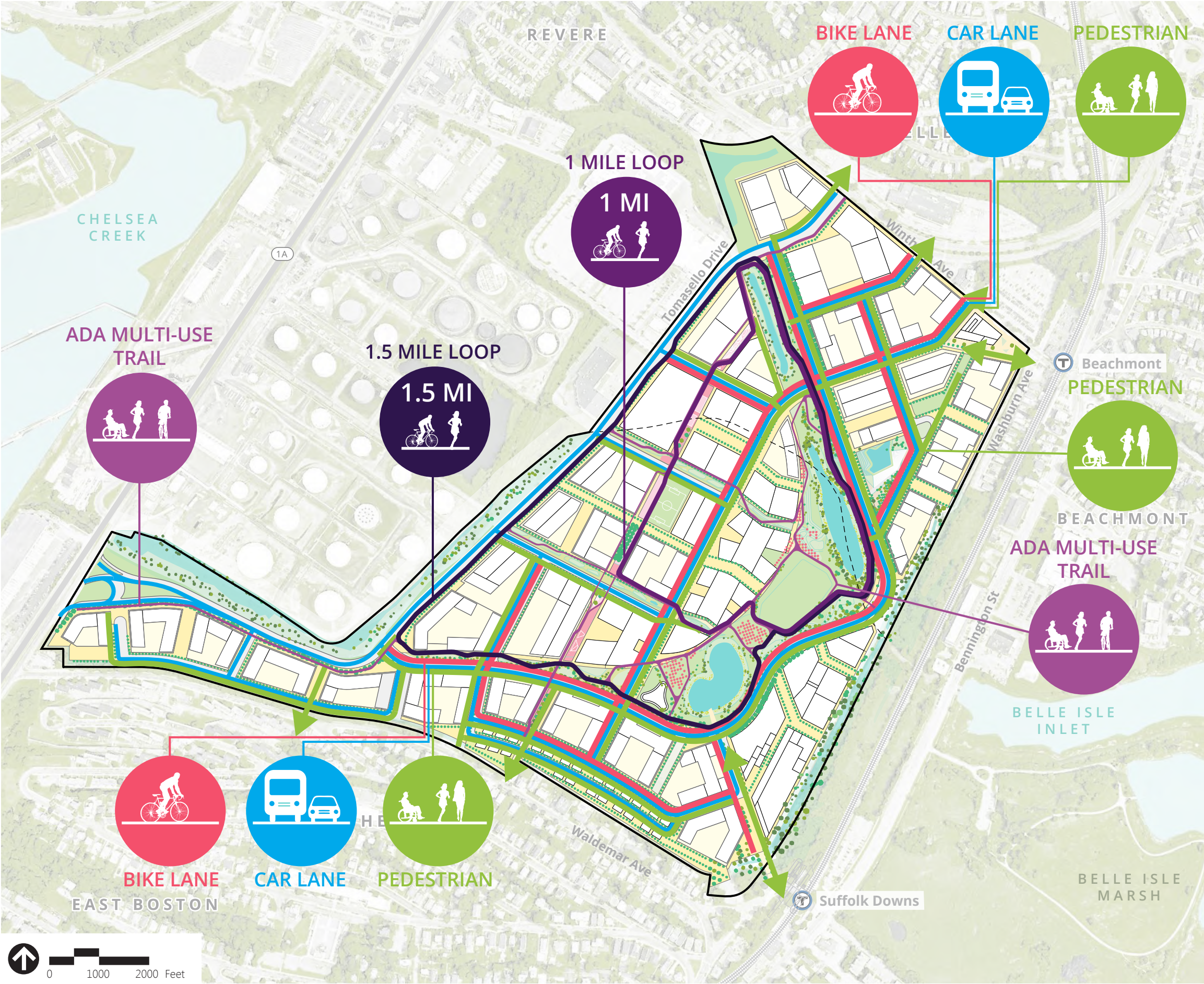


Figure 2.12  
Pedestrian Access & Circulation Plan



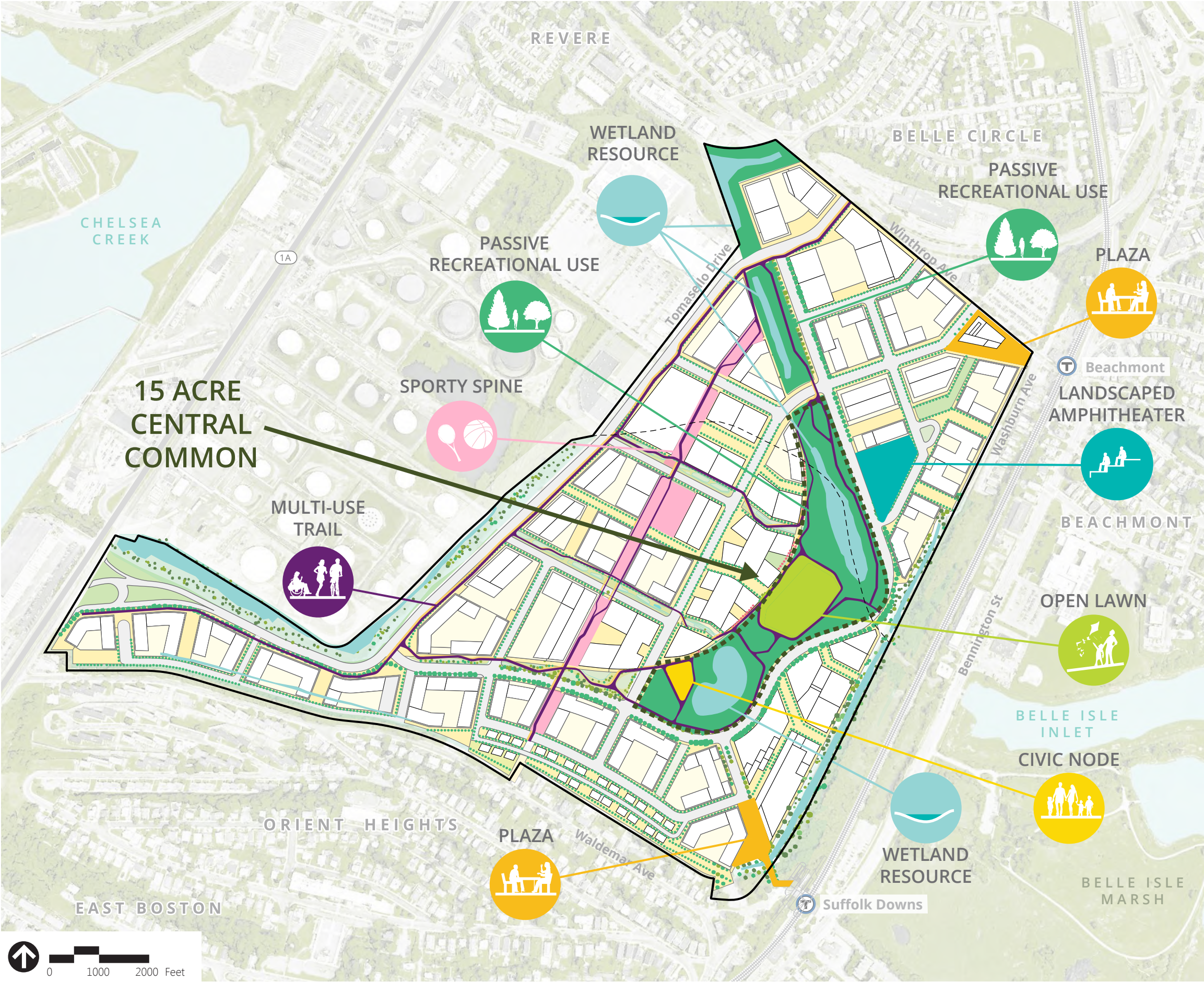


Figure 2.13  
Open Space Program

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



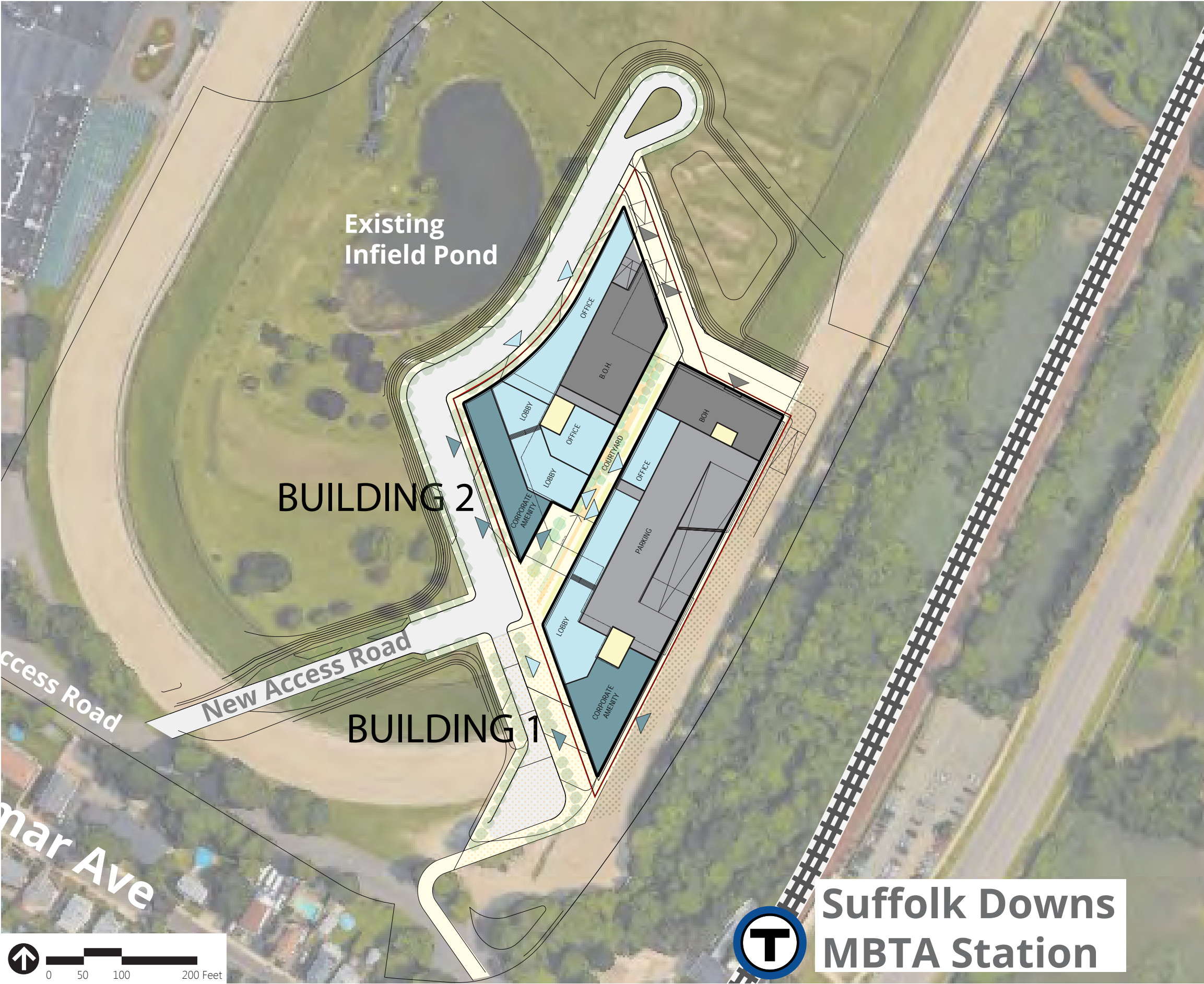


Figure 2.14  
Phase 1 Project Ground Floor Plan



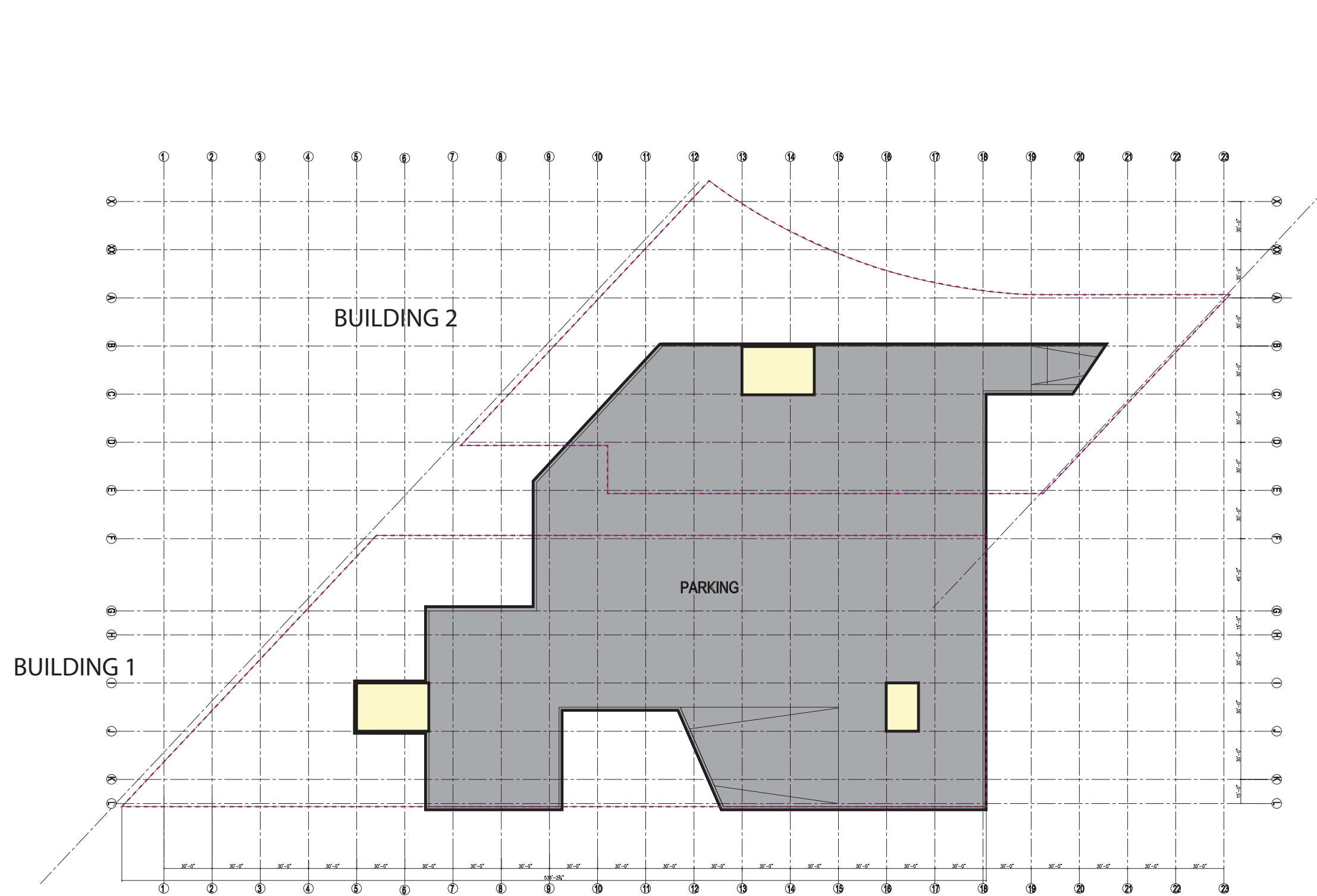
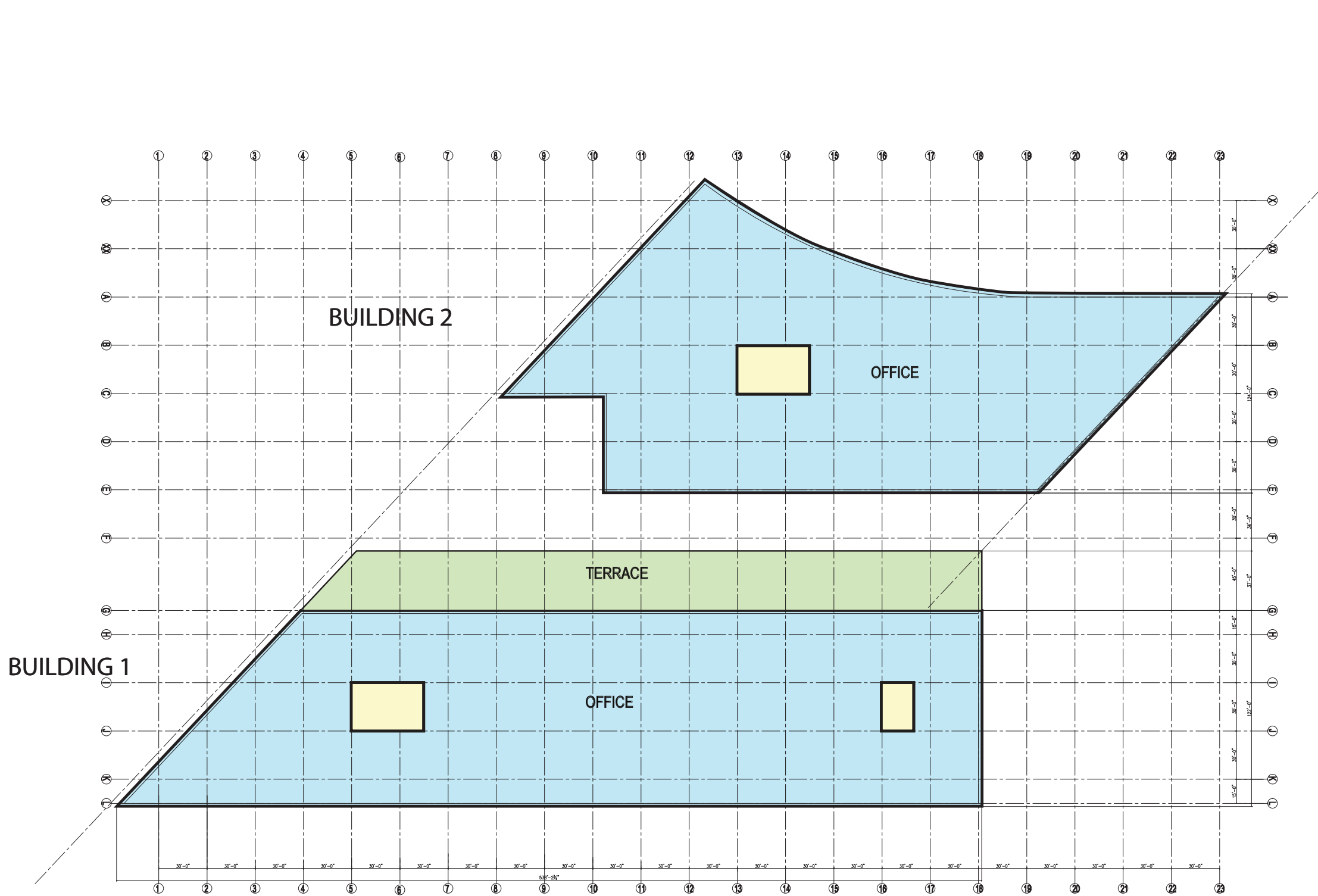
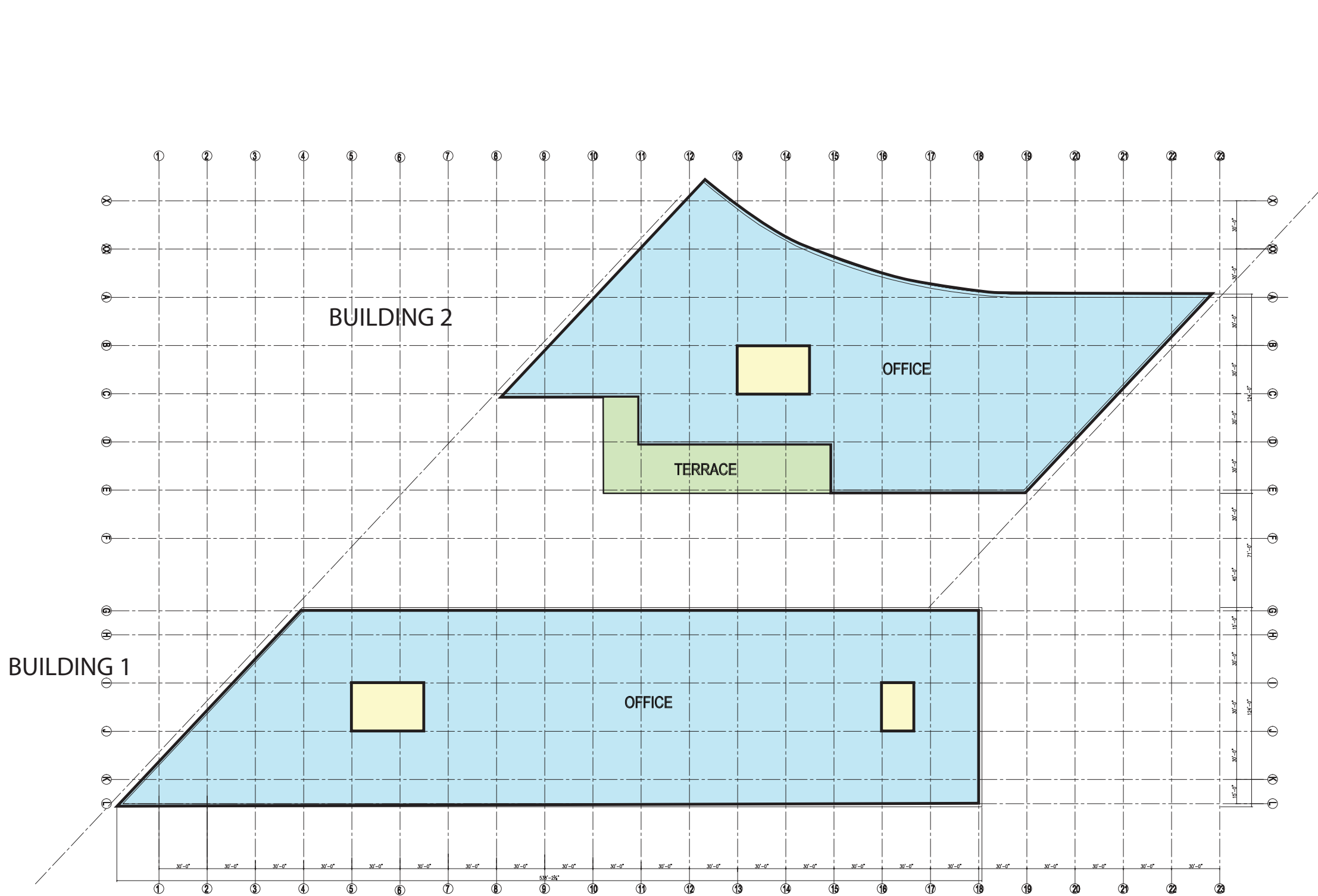


Figure 2.15  
Phase 1 Project Basement Parking



- Office
- Terrace
- Core

Figure 2.16  
Phase 1 Project Office Level 3 Plan



- Office
- Terrace
- Core

Figure 2.17  
Phase 1 Project Office Typical Floor Plan



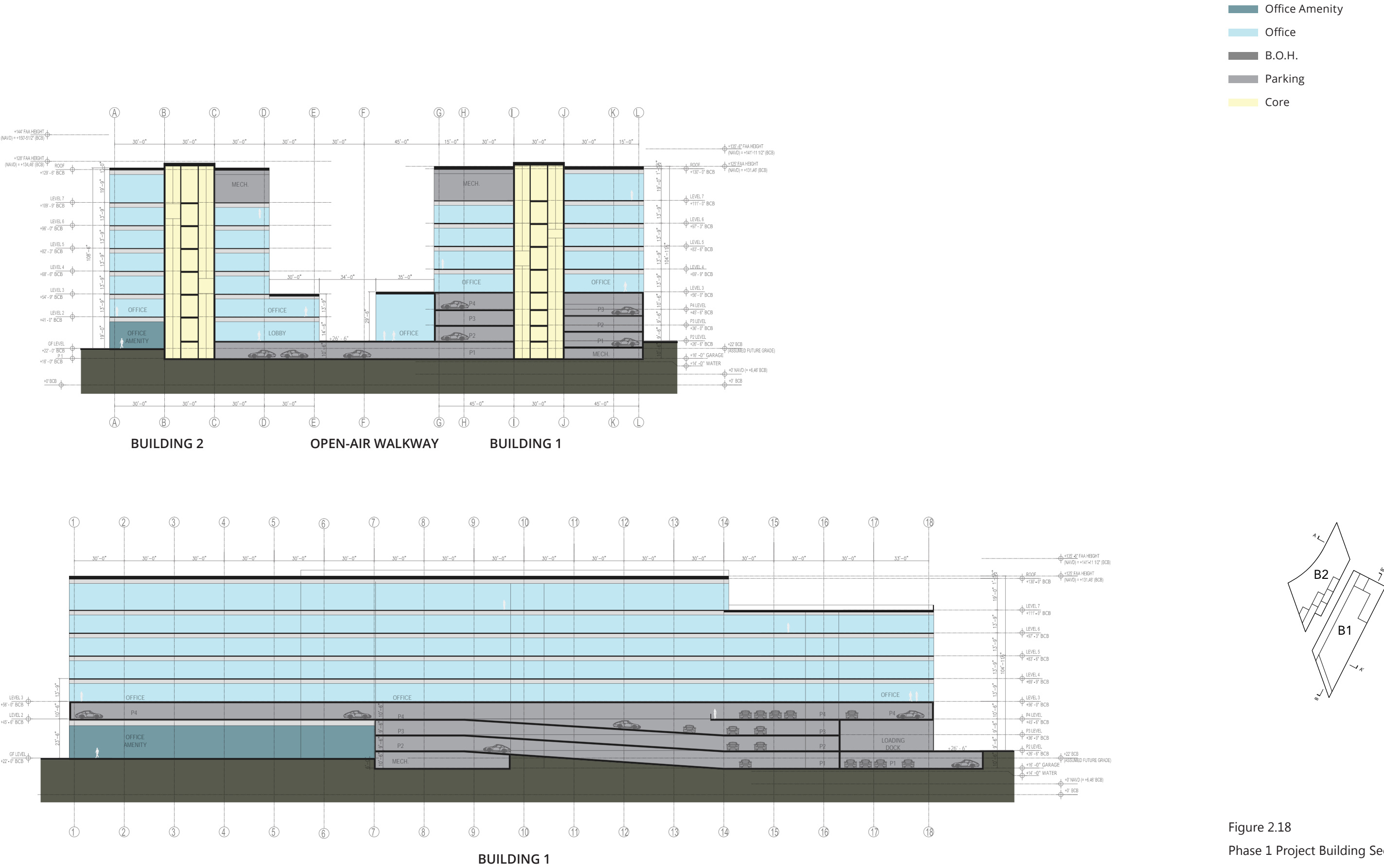


Figure 2.18  
Phase 1 Project Building Sections

# 3

## Sustainability/Green Building and Climate Change Resiliency

The following chapter describes the overall approach to sustainable design, construction, and operation for the Phase 1 Project and overall Master Plan Project. Included is a preliminary assessment of green building design, in compliance with the requirements of Article 37 of the Boston Code relative to the City's Green Building policies and procedures ("Article 37"). This chapter also discusses the approach to preparing for predicted climate change, in accordance with the BPDA Climate Change Preparedness and Resiliency Policy (the "Resiliency Policy"). The required Climate Change Preparedness and Resiliency Checklist (the "Resiliency Checklist") has been completed for the Proposed Project and is provided in Appendix B.

The EEA has developed the current MEPA Greenhouse Gas Emissions Policy and Protocol (the "MEPA GHG Policy"), which requires project proponents to identify and describe feasible measures to minimize related mobile and stationary source GHG emissions. Greenhouse gases ("GHG") include several air pollutants such as Carbon Dioxide ("CO<sub>2</sub>"), methane, hydrofluorocarbons, and perfluorocarbons. This evaluation makes use of the terms CO<sub>2</sub> and GHG interchangeably.

The GHG emissions assessment presented herein demonstrates that the conceptual design of the Phase 1 Project includes measures to reduce overall energy usage and associated stationary source GHG emissions in support of GHG reduction goals set by both the Commonwealth and the City of Boston. This assessment satisfies the MEPA GHG Policy because it estimates potential Phase 1 Project-related GHG emissions, including mobile source GHG emissions and incorporates reasonable and feasible mitigation measures to reduce such emissions for the Build Condition. Appendix E provides the complete building model results and other materials in support of the GHG assessment.

### 3.1 Summary of Key Findings and Benefits

Given its scale, redevelopment of the Project Site presents a unique opportunity to incorporate sustainable design and climate change resiliency elements in a comprehensive manner from the early planning stages. Sustainability is a key theme for the Master Plan Project, including the Phase 1 Project as it proposes to redevelop an underutilized urban site, use land efficiently by increasing density in a mixed-use

TOD and include facilities/systems internal to the Project Site that aim to discourage single-occupancy vehicles and promote low carbon modes of transportation.

The key findings related to sustainability and climate change include:

- › The Phase 1 Project and Master Plan Project intend to exceed compliance with Article 37 of the Boston Code by designing buildings to meet LEEDv4 under the applicable green building rating system for the given building typology.  
The future buildings in Revere will generally meet the same LEED Standards as buildings in Boston.
- › The Phase 1 Project will exceed the Stretch Energy Code requirement for 10 percent energy efficiency above code. Preliminary energy modeling indicates a 25 percent energy usage savings and 23 percent reduction in stationary source GHG emissions for the Phase 1 Project.  
Energy modeling for the Master Plan Project building typologies (office, multi-family residential, hotel and retail) will be submitted as part of the DEIR/DPIR. At this early stage, design of the future buildings is also targeting exceeding the Stretch Energy Code requirement for energy efficiency and will result in stationary source GHG emissions reductions.
- › The Master Plan Project is proactively planning for the effects of future climate change for increases in sea level rise and storm surge, precipitation and temperatures.
- › Major portions of the Project Site will be raised and re-graded to provide protection against storm surge and potential sea level rise impacts.
- › A network of open spaces will be strategically designed to accommodate potential flooding impacts associated with sea level rise to provide further protection to the nearby buildings and areas outside the Project Site.
- › The stormwater management system for the Master Plan Project, including the Phase 1 Project, will be integrated into the open space network and will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively).

## 3.2 Phase 1 Project Impacts

As described in Chapter 1, *Project Description and General Information*, the Phase 1 Project includes construction of up to 520,000 square feet of office use set in two buildings with up to 520 structured parking spaces (equating to approximately 215,000 square feet) for which the Proponent is requesting a Phase 1 Waiver under MEPA and its implementing regulations, as discussed in Section 1.12.



### **3.2.1 Compliance with Article 37 and Resiliency**

In compliance with Article 37 of the Boston Code, the Phase 1 Project will be certifiable under the LEED for Core & Shell Developments ("LEED-CS") LEEDv4 rating system with a target of Gold. Refer to Figure 3.1 for the draft LEED checklist for the Phase 1 Project. The Proponent intends to register the Phase 1 Project under LEED v4 under the applicable rating system. The checklist currently reflects 54 points as 'yes' with an additional 19 'maybe' points, which at this early stage in design, it is anticipated that the Phase 1 Project could achieve Gold certifiable if at least six 'maybe' points are achieved.

Climate change resiliency measures have been incorporated into the site and building design for the Phase 1 Project. Refer to Section 3.6 for further details.

### **3.2.2 Greenhouse Gas Emissions Assessment**

Based on preliminary building energy modeling, the Phase 1 Project is projected to generate approximately 1,988 tons per year ("tpy") in stationary source CO<sub>2</sub> emissions, which represents an approximately 23 percent reduction compared to the Base Case. This reduction in stationary source GHG emissions is a result of approximately 25 percent overall energy efficiency for the Phase 1 Project. Refer to Table 3-1 for a summary of proposed building improvements and Table 3-2 for the estimated energy savings and associated stationary source CO<sub>2</sub> emissions reductions.

The Phase 1 Project is not expected to generate a significant level of mobile source GHG emissions because the estimated number new trips do not exceed any transportation-related Mandatory EIR Review Thresholds under MEPA (approximately 2,775 unadjusted daily vehicle trips). The overall GHG mobile source emissions will be estimated in the DEIR/DPIR for the Master Plan Project.

## **3.3 Regulatory Context**

The following sections provide an overview of the state and local regulatory context related to sustainability/green building design, energy efficiency and GHG emissions, and climate change resiliency.

### **3.3.1 MEPA Greenhouse Gas Emissions Policy & Protocol**

The MEPA GHG Policy is an initiative that requires project proponents to identify and describe feasible measures to minimize both mobile and stationary source GHG emissions generated by their proposed project(s). Mobile sources are vehicles traveling to and from a project. Stationary sources are on-site boilers, heaters, and/or internal combustion engines (direct sources), as well as the consumption of energy in the form of fossil fuels (indirect sources) and electricity. GHGs include

several air pollutants, including CO<sub>2</sub>, methane, hydrofluorocarbons, and perfluorocarbons.

The MEPA GHG Policy states that all projects undergoing MEPA review requiring the submission of an EIR must quantify the project's GHG emissions and identify measures to avoid, minimize, or mitigate such emissions. In addition to quantifying project-related GHG emissions, the MEPA GHG Policy requires proponents to quantify the effectiveness of proposed improvements in terms of energy savings and therefore potential emissions reductions. The goal of the MEPA GHG Policy is to identify and implement measures to minimize or reduce the total GHG emissions anticipated to be generated by that respective project.

### **3.3.2 Massachusetts Stretch Energy Code**

As part of the *Green Communities Act of 2008*, Massachusetts developed the optional Stretch Energy Code that gives municipalities the option to enact a more strenuous energy performance code for buildings than the conventional state building code. The Stretch Energy Code increases the energy efficiency code requirements for new construction (both residential and commercial) and for major residential renovations or additions in municipalities that adopt it.

Effective January 1, 2017 the current Stretch Energy Code, as adopted by both the cities of Boston and Revere, requires projects to achieve, at minimum, a 10 percent energy efficiency improvement when compared to the state's base energy code (the "Base Energy Code"). Projects may demonstrate the energy use savings by either meeting the performance standard of 10 percent better than ASHRAE 90.1-2013, or using a prescriptive methodology based on IECC 2015.

### **3.3.3 Draft MEPA Climate Adaptation and Resiliency Policy**

In September 2014, the MEPA Office issued a draft policy for addressing potential impacts associated with climate change. The policy's intent is to facilitate the consideration and assessment of risk and vulnerabilities of a project or action under foreseeable scenarios or conditions associated with climate change to identify potential mitigation measures.

### **3.3.4 Article 37 of Boston Zoning Code**

Article 37 submittal requirements include completing a LEED scorecard to demonstrate that a project is being designed and constructed to meet the minimum requirements to achieve a LEED Certified level (all LEED prerequisites and achieve at least 40 points) without requiring the Proponent to register and/or certify the project through the GBCI a third-party verification, or "LEED certifiable". With the LEEDv4 rating system effective as of October 31, 2016, the BPDA requires initial Article 80-B, Large Project Review submissions to demonstrate LEED certifiable status using LEEDv4.

The Boston Interagency Green Building Committee ("IGBC") advises the BPDA on a proposed project's compliance with the provisions of the article. The Committee consists of representatives of city agencies, including the BPDA, BED, BTD, the Inspectional Services Department and the Mayor's Office.

### **Boston Green Building Credits**

Appendix A of Article 37 lists Boston Green Building Credits, which are credits that may be included in the calculation toward achieving a LEED certifiable project. These credits were developed by the City and are intended to address local issues unique to development within Boston. The credits include the following categories: Modern Grid, Historic Preservation, Groundwater Recharge, and Modern Mobility.

#### **3.3.5 Greenovate Boston Climate Action Plan**

In 2010, the Boston Climate Action Leadership Committee and Community Advisory Committees presented the City's first climate action plan: *Sparkling the Climate Revolution 2010*. The report contained wide-ranging recommendations for reducing Boston's contribution to climate change, addressing the changes we cannot avoid, and engaging the Boston community in the effort. Following an update in 2011, which set a goal of reducing GHG emissions by 25 percent by 2020 (*A Climate of Progress*), Mayor Walsh released the *Greenovate Boston 2014 Climate Action Plan Update*, which reported on the City's progress towards reducing GHG emissions and preparing for the impacts of climate change. This report documents that, since 2005, community-wide GHG emissions have decreased by 17 percent, and the City of Boston has made significant progress preparing for climate change. The City, through the BPDA, uses the Article 80 Development Review process to include an assessment of likely effects of climate change in new development.

#### **3.3.6 BPDA Climate Change Preparedness and Resiliency Policy**

In conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the BPDA requires projects subject to Boston Zoning Article 80 Large Project Review to complete the Resiliency Checklist to assess potential adverse impacts that might arise under future climate conditions, and any project resiliency, preparedness, and/or mitigation measures identified early in the design stage. The Resiliency Checklist is reviewed by the IGBC.

### **3.4 Sustainability/Green Building Design Approach**

Sustainability is a key theme for the Master Plan Project as it proposes to redevelop an underutilized urban site, reuse land efficiently by increasing density in a mixed-use TOD, and provide for infrastructure/systems internal to the Project Site that aim to discourage single-occupancy vehicles and promote low-carbon modes of transportation.



The Master Plan Project has developed a holistic approach to sustainability through strategies that address the Project Site, water efficiency, energy efficiency, materials, indoor environmental quality and resilience. Both the Phase 1 Project and Master Plan Project intend to track sustainable features and demonstrate compliance with the LEEDv4 rating system, in accordance with Article 37. The Phase 1 Project design is targeting a Gold certifiable level (60-79 points) while the Master Plan Project typologies, which are not designed, are currently in the Certified certifiable (40-49 points) or Silver certifiable (50-59 points) range of points but the Proponent will be targeting LEED Silver or higher for most of the buildings. Specific LEED target levels will be determined as each building moves forward.

As part of the sustainable design approach, rating systems complementary to LEED will be evaluated further for applicability to the Master Plan Project. Other rating systems include those related to site development, such as SITES and/or LEED for Neighborhood Development ("LEED-ND"), infrastructure, such as Envision, and health and wellness, such as the WELL Building Standard and Fitwel. The sustainable design strategies for the Phase 1 and Master Plan Projects are discussed in more detail as follows.

### **3.4.1 Phase 1 Project**

The Phase 1 Project is being designed to achieve LEED Gold certifiable using the LEED-CS rating system. Refer to Figure 3.1 for the draft LEED checklist for the Phase 1 Project, which currently reflects 54 points as 'yes' with an additional 19 'maybe' points. At this early stage in design, it is anticipated that the Phase 1 Project could achieve Gold certifiable if at least six 'maybe' points are achieved.

The Phase 1 Project is targeting a variety of credits and points across the eight LEED categories, as well as the Boston Green Building Credits under Article 37, as addressed further below.

#### **Integrative Process**

The design team has and will continue to work in an integrated manner to define sustainability and LEED goals for the Phase 1 Project. Preliminary energy modeling has been conducted to establish an energy goal and a water budget will also be developed.

#### **Location and Transportation**

The Phase 1 Project is a TOD that will seek to encourage low carbon, non-automobile transportation. Strategies include:

- › Locate the Phase 1 Project on previously developed land, and retain and enhance approximately 13 acres of existing on-site open space area.

- › Locate the Phase 1 Project within approximately ¼-mile of the existing, dense residential neighborhood of Orient Heights in East Boston and close to numerous diverse uses recognized by LEED requirements.
- › Locate the Phase 1 Project in an area served by public transportation, including two rapid transit stations along the MBTA Blue Line, both of which are within a ½-mile walk. The Suffolk Downs station is adjacent to the Phase 1 Project Site and will directly serve the Phase 1 Project while the Beachmont MBTA Blue Line station to the north is also within a ½-mile walk.

Additionally, three bus lines (450, 459, and 119) are located within a ½-mile walk with stops on William McClellan Highway. While this does not meet LEED criteria for bus service (¼ mile), there is bus access within a short walk (approximately eight minutes). As the Master Plan Project is built out, internal site transportation will further improve access to the Phase 1 Project, including potential additional MBTA bus service.

- › Incorporate on-site short term and long-term bicycle storage and shower facilities. The Phase 1 Project is not currently located within proximity to an existing bike path/network as the East Boston Greenway terminates close to the Orient Heights T station. However, the Master Plan Project plans to connect the East Boston Greenway to Revere Beach to further encourage the use of this alternative mode of transportation.
- › The Proponent is committed to working with Hubway, Boston's public bike share provider, to install a public bicycle share station as part of the Phase 1 Project.
- › Incorporate electrical vehicle ("EV") supply equipment in two percent of the parking spaces proposed within the building. These spaces will be clearly identified and reserved for plug-in EVs. Additionally, preferred parking or a discounted parking rate will be designated for low-emitting/fuel-efficient vehicles.

### **Sustainable Sites**

The Phase 1 Project Site will be developed with low impact development ("LID") principles and best management practices (BMPs). Strategies include:

- › Develop and implement an erosion and sedimentation control plan for all construction activities for the Phase 1 Project.
- › Incorporate significant on-site stormwater collection and re-use strategies. The majority of stormwater will be managed on-site and the Phase 1 Project is anticipated to improve overall stormwater quality with little to no impact to the municipal stormwater system.
- › Preserve/create open space.
- › Reduce heat island effect through a combination of strategies, including the use of hardscape materials with a low solar reflectance and high-albedo roofing materials. A robust tree canopy both within the central common, at points along the 'sporty' and 'green' spines (as described in Chapter 2, *Urban Design*) and

along the main roadways will be established to provide shade, as well as complement the open space network.

- › Consider installation of green roof area to further reduce heat island effect in conjunction with a cost-benefit analysis of rooftop renewable energy systems.
- › Design site lighting for the Phase 1 Project to meet the uplight and light trespass requirements for all applicable exterior luminaires to comply with all internally illuminated signage requirements.
- › Develop and implement tenant design and construction guidelines to educate tenants about implementing sustainable strategies in their fit-out, and provide a guidance document describing the sustainable strategies in the base building design.

### **Water Efficiency**

Potable water will be used efficiently both outdoors and indoors for the Phase 1 Project. Strategies include:

- › Reduce outdoor water use for landscape requirements by over 50 percent through the use of non-potable water for irrigation and selection of drought-tolerant plantings.
- › Reduce indoor potable water use through the use of low- and ultra-low flow water fixtures.
- › Install water metering to sub meter at least two end uses, for example, non-potable water and irrigation.

### **Energy, Atmosphere & GHG Emissions**

The Phase 1 Project will be designed to be energy efficient, minimize GHG emissions, and be able to be operated and maintained in an efficient manner. Strategies include:

- › Implement enhanced commissioning activities, including building envelope commissioning and, potentially, monitoring-based commissioning as design advances.
- › Incorporate energy conservation measures ("ECMs") to exceed the Stretch Energy Code. In addition, the Proponent will continue to evaluate and consider the feasibility of on-site renewable energy systems as design advances. (Refer to Section 3.4 below for further details.)
- › Install energy metering for base building energy sources and for future tenant spaces to enable metering energy consumption for all systems dedicated to their space on at least a per floor basis.
- › Select refrigerants that are non-ozone depleting and have low global warming potential.



- › Reduce energy consumption and associated GHG emissions by exploring opportunities for procuring off-site renewable energy, green power, or carbon offsets aligned with LEED requirements.

### **Materials and Resources**

Materials will be selected for their health and life cycle environmental impacts, as well as require recycling in operation and for construction and demolition. Strategies include:

- › Divert at least 75 percent of the total construction and demolition material generated for the Phase 1 Project, across four material streams.
- › Select materials that have health product declarations and/or declare labels and environmental product declarations to enable the Project Team to make informed decisions about products.
- › Select materials with high-levels of recycled content, and consideration for regional materials, as well as specifying wood that is FSC-certified wood.

### **Indoor Environmental Quality**

Strategies to provide a healthy and comfortable indoor environment include:

- › Install entryway systems and MERV 13 filters to minimize cross-contamination to enhance indoor air quality.
- › Specify low-emitting materials that meet low-VOC content and testing requirements.
- › During Construction, the construction manager will be required and responsible for developing and implementing an indoor air quality management plan during construction and pre-occupancy that meets SMACNA guidelines.
- › Provide quality views to the outdoors for the majority of occupants.

### **Innovation in Design**

The Phase 1 Project will explore innovation in design credits for green building education, green cleaning, active design, and pest and waste management. Additionally, a LEED AP BD+C accredited professional will be a part of the design team.

### **Regional Priority Credits**

The goal of the Regional Priority (RP) credits is to enhance the ability of LEED project teams to address critical environmental issues across the country and around the world. Regional Priority credits encourage project teams to focus on their local environmental priorities. The Phase 1 Project is targeting achievement of at least one regional priority credit for Boston related to energy efficiency. Rainwater Management is also a 'maybe' point.

**Boston Green Building Credits**

The Phase 1 Project is exploring the achievement of two of the Boston Green Building Credits to support Article 37 compliance, as described below. The Phase 1 Project is not associated with any historic assets. While the Modern Grid credit is not applicable to the Phase 1 Project it will be explored as part of the Master Plan Project.

**Groundwater Recharge**

As discussed in Chapter 8, *Infrastructure*, opportunities for infiltration may be limited due to high groundwater and low permeability. However, Sales Creek appears to be the local groundwater discharge point, as well as the hydrogeologic divide on-site, which indicates that sufficient flow will be maintained to this system.

**Modern Mobility**

As discussed in Chapter 5, *Transportation*, the transportation demand management strategies are meeting the prerequisites for transportation coordinator and association, sharing information on non-automotive options, bike storage and parking ratios. The Phase 1 Project is exploring which high value and four basic strategies can be achieved.

**3.4.2 Master Plan Project Sustainable Design Strategies**

This section demonstrates how the Master Plan Project will apply LEEDv4 ratings systems to each of the four (4) key building typologies, as follows:

- › **Office:** LEED for Core & Shell Developments (LEED-CS);
- › **Multi-Family Residential:** LEED for New Construction and Major Renovations (LEED-NC);
- › **Hotel:** LEED-NC for Hospitality; and
- › **Retail:** LEED for Retail.

Refer to Figures 3.2a through 3.2d for preliminary LEED checklists by building typology and LEED rating system. All checklists except Retail (Certified) indicate a LEED certifiable Silver level at this conceptual master plan level. Each building typology in the Master Plan Project is pursuing a variety of credits and points across the eight (8) LEEDv4 credit categories, as well as the Boston Green Building Credits under Article 37, as discussed further below.

**LEED Master Site Credit Approach**

The LEED certifiable compliance approach for the Master Plan Project includes an overall LEED Master Site that identifies and addresses applicable site-wide credits across the proposed buildings. This approach is useful in streamlining LEED credit documentation for projects that include multiple new buildings with shared infrastructure, pedestrian-oriented circulation, and extensive open space. Under this

approach, each future building would then automatically achieve the site-wide credits, as applicable to the building-specific rating system.

### **Integrative Process [All Typologies]**

All building typologies of the Master Plan Project will work in an integrated manner to define sustainability and LEED goals for the particular building or set of buildings within a development phase. The Proponent has conducted early phase energy modeling to establish an energy goal and will develop a water budget.

### **Location and Transportation**

The Master Plan Project is a TOD that will seek to encourage low-carbon, non-automobile transportation. The following strategies are applicable to all building typologies.

- › Develop dense, mixed-use development located on previously developed land while retaining a significant amount of existing on-site open space area.
- › Locate development within ¼-mile of the existing, dense residential neighborhood of Orient Heights in East Boston and close to numerous diverse uses recognized by LEED requirements.
- › The Master Plan Project is located in an area served by public transportation, including two rapid transit stations along the MBTA Blue Line, both of which are adjacent to the Project Site. The vast majority of the Project Site is within a ½-mile walk of the two MBTA Blue Line Stations (Suffolk Downs and Beachmont). Additionally, three bus lines (450, 459, and 119) are located within a ½-mile walk with stops on William McClellan Highway and servicing the Beachmont MBTA Station (119 route). As the Master Plan Project is built out, there are opportunities to expand MBTA bus service into the Project Site and provide for internal site transportation/shuttle to further improve access to public transit.
- › The Master Plan Project intends on providing low-carbon transportation within the Project Site to enhance mobility internally, as well as to access public transportation and minimize demand for on-site infrastructure for single occupancy automobiles.
- › Incorporate bicycle facilities (storage and changing facilities in individual buildings, as required by LEED, and internal bike connections/lanes) throughout the Project Site, and provide the missing link to connect the East Boston Greenway to the existing bike networks and pedestrian paths in Revere and continuing to the North Shore.
- › Incorporate five Hubway Bike Stations, one adjacent to each of the Blue Line Stations and three within the interior of the larger site.
- › Incorporate EV supply equipment in two percent of the parking spaces proposed within the building. These spaces will be clearly identified and reserved for plug-



in EVs. Additionally, preferred parking or a discounted parking rate will be designated for low-emitting/fuel-efficient vehicles.

### **Sustainable Sites**

The Suffolk Downs site will be developed with LID principles and BMPs. The following strategies are applicable to all building typologies except where noted.

- › Develop and implement an erosion and sedimentation control plan for all construction activities for the individual buildings and/or development phases.
- › Incorporate on-site stormwater collection, and re-use strategies throughout the Project Site to improve overall stormwater quality with little to no impact to the municipal stormwater system.
- › Create an approximately 40-acre publicly-accessible open space network within the Master Plan Project.
- › Reduce heat island effect through a combination of strategies, including the use of hardscape materials with a low solar reflectance and high-albedo roofing materials. A robust tree canopy both within the central common area at points along the 'sporty spine' and main roadways, and within other green linear open space areas will be established to provide shade and complement the large amount of on-site open space. Green roof area will be further evaluated through a cost benefit analysis with renewable energy systems.
- › Design site lighting to meet the uplight and light trespass requirements for all applicable exterior luminaires to comply with all internally illuminated signage requirements.
- › For the Office, Retail, and Residential building typologies, develop and implement tenant design and construction guidelines to educate tenants about implementing sustainable strategies in their fit-out, and provide a guidance document describing the sustainable strategies in the base building design. (Note, one point could also be achieved as an ID credit for developing tenant guidelines for the Multi-Family Residential buildings.)

### **Water Efficiency**

Potable water will be used efficiently both outdoors and indoors for the Master Plan Project. The following strategies are applicable to all building typologies except where noted.

- › Reduce outdoor water use for landscape requirements by over 50 percent through the use of non-potable water for irrigation and selection of drought-tolerant plantings.
- › Reduce indoor potable water use through the use of low- and ultra-low flow water fixtures.

- › Install water metering to sub meter at least two end uses, for example, non-potable water and irrigation.
- › To reduce potable water demand stormwater will be collected and reused for landscape irrigation.

### **Energy, Atmosphere & GHG Emissions**

The Master Plan Project will be designed to be energy efficient, minimize GHG emissions and able to be operated and maintained in an efficient manner. The following strategies are applicable to all building typologies except where noted.

- › Implement enhanced commissioning activities, including building envelope commissioning and, potentially, monitoring-based commissioning as design advances.
- › Incorporate ECMs to exceed the Stretch Energy Code. The Master Plan Project will also evaluate on-site renewable energy systems on a building by building basis for solar PV and solar thermal systems in the next submission phase.
- › Select refrigerants that are non-ozone depleting and have low global warming potential.
- › For the Office and Retail building typologies, install metering for all base building energy sources and for future tenant spaces to enable metering energy consumption for all systems dedicated to their space. Residential buildings will implement unit level metering for electricity and water such that tenants receive bills and pay directly for their own consumption.

### **Materials and Resources**

Materials will be selected for their health and life cycle environmental impacts as well as require recycling in operation and for construction and demolition. The following strategies are applicable to all building typologies.

- › Aim to divert and/or recycle 50 percent of the applicable construction and demolition material, across three material streams. Select materials that have health product declarations and/or declare labels and environmental product declarations to enable the Project Team to make informed decisions about products.
- › Select materials with high levels of recycled content, considered to be regional materials, and FSC-certified wood.

### **Indoor Environmental Quality [All Typologies]**

Strategies to provide a healthy and comfortable indoor environment for all building typologies include:

- › Install entryway systems and MERV 13 filters to minimize cross-contamination to enhance indoor air quality.
- › Specify low-emitting materials that meet low-VOC content and testing requirements.
- › Designing to thermal comfort standards per ASHRAE 55.
- › During Construction, the construction manager will be required and responsible for developing and implementing an indoor air quality management plan during construction and pre-occupancy that meets SMACNA guidelines.
- › Designing for daylight, views, and interior lighting and lighting controls to create visually comfortable spaces for most occupants.

### **Innovation in Design**

The Master Plan Project will explore innovation in design credits for tenant guidelines (multi-family residential), green building education, green cleaning, active design, and pest and waste management. Additionally, a LEED AP BD+C accredited professional will be a part of the design team.

### **Boston Green Building Credits**

The Master Plan Project is exploring the achievement of three of the Boston Green Building Credits to support Article 37 compliance, as described below.

### ***Modern Grid***

Central Plant options will be explored as the Master Plan Project develops on a life cycle cost basis for its feasibility. The options will explore co-generation and tri-generation options as well as multiple plant options applicable to the full build-out scenario for the Master Plan Project.

### ***Groundwater Recharge***

As discussed in Chapter 8, *Infrastructure*, opportunities for infiltration may be limited due to high groundwater and low permeability. However, Sales Creek appears to be the local groundwater discharge point, as well as the hydrogeologic divide on-site, which indicates that sufficient flow will be maintained to this system.

### ***Modern Mobility***

As discussed in Chapter 5, *Transportation*, the TDM strategies are meeting the prerequisites for transportation coordinator and association, sharing information on non-automotive options, bike storage and parking ratios. The Proponent will continue to consider which high value and four basic strategies can be achieved as future buildings are realized.



### 3.5 Preliminary Energy Conservation/GHG Emissions Reduction Approach

The Proponent has undertaken preliminary energy modeling for the Phase 1 Project, which demonstrates that with a performance-based approach, the overall energy usage reduction will comply with the current Stretch Energy Code (ASHRAE 90.1-2013). The preliminary energy model also demonstrates energy cost savings that will exceed the minimum requirements of LEEDv4 energy performance. The preliminary results and assumptions for the Phase 1 Project are provided in the following sections. Energy modeling for the Master Plan Project by building typology (i.e. office, multi-family residential, hotel and retail) will be completed in the next phase of permitting.

#### 3.5.1 Methodology

To provide for energy efficiency and reduced stationary source GHG emissions, the Proponent has evaluated the following key planning and design criteria:

- › Methods to reduce overall energy demand through appropriate design and sizing of systems; and
- › Methods to incorporate cost-effective energy-optimizing systems.

The Phase 1 Project was modeled with the currently proposed building geometry, HVAC system type, occupancy schedule, and ventilation rates for the buildings.

Direct stationary source CO<sub>2</sub> emissions include those emissions from the facility itself, such as boilers, heaters, and internal combustion engines. Indirect stationary source CO<sub>2</sub> emissions are derived from the consumption of electricity, heat, or cooling from off-site sources, such as electrical utility or district heating and cooling systems. The direct and indirect stationary source CO<sub>2</sub> emissions from the proposed building sources are calculated through an energy analysis procedure that combines the IES Virtual Environment<sup>1</sup> model with Excel spreadsheets for pre and post-processing based on assumptions for the Phase 1 Project's building elements, such as (but not limited to) the specific type of use(s) and users of the buildings, building configuration and architecture type, building envelope (walls/windows), interior fit-out (where known), and HVAC equipment efficiency ratings.

The GHG mitigation measures can be divided into the buildings' construction materials, architecture, and the heating and cooling processes. The following section presents the specific proposed building improvements (and their correlating energy modeling parameters for reference, where applicable) that are assumed to be included as part of the Phase 1 Project for the purpose of this analysis. The specific proposed improvements will likely be subject to design modifications as necessary

1 "Virtual Environment". *Integrated Environmental Solutions Limited (IES)*. Glasgow, Scotland.

to achieve the GHG emissions reduction based on the final building program and tenants and design.

### **Energy Model and Analysis Conditions**

The energy analysis is used to estimate the amount of annual energy consumption by simulating a year of building operations based on typical yearly weather and user inputs. The model estimates buildings' electricity and gas usage based on building design and system assumptions using Appendix G of ASHRAE 90.1-2013<sup>2</sup>. The amount of consumed energy is then converted into the amount of CO<sub>2</sub> emitted using the standardized conversion factors. CO<sub>2</sub> emissions were quantified for (1) the Base Case corresponding to the minimum requirements of ASHRAE 90.1-2013 and (2) the Design Case, which includes all energy saving measures that were deemed to be reasonable and feasible. The stationary source assessment calculated CO<sub>2</sub> emissions for the following build conditions:

- › **Build Condition with MA Building Code (the "Base Case")** - The Project assuming typical construction materials and building equipment/systems that meet the minimum requirements of the base code. This baseline is established by the energy code as being defined by ASHRAE 90.1-2013.
- › **Build Condition with Energy Conservation Measures (the "Design Case")** - The Project assuming building design and system improvements that meet the MEPA GHG Policy and the Stretch Energy Code.

### **3.5.2 Phase 1 Project**

The following provides a summary of the building energy modeling for the Phase 1 Project, which includes approximately 520,000 square feet of office space set in two office buildings and up to 520 structured parking spaces (approximately 215,000 square feet of building area). The parking structure will require lighting and is assumed to be 100 percent ventilated. Natural ventilation of the parking areas will be considered as design moves forward as a strategy to further reduce energy usage by reducing or eliminating the need for ventilation systems.

Descriptions of the noteworthy building improvements and resulting building energy savings and stationary source GHG emissions reductions for the Project are presented below. Specific improvements may be subject to design modification, as needed, to achieve the desired GHG emissions reductions for the final building program and design. Other beneficial improvements or measures that are expected to result in further reductions of stationary source GHG emissions, but were not accounted for by the energy model, are also discussed.

<sup>2</sup> American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., *ASHRAE 90.1-2013-Energy Standard for Buildings Except Low-Rise Residential Buildings*, Appendix G, 2013.

The proposed design was based on several key energy efficiency strategies which include:

- › Efficient building envelope that exceeds minimum code values for glazing (i.e. both U-value and solar heat gain coefficient (SHGC)) and insulation value of the roof, R-40.
- › High efficiency condensing boilers to meet heating demands
- › Dedicated outside air system with energy recovery
- › Floor-by-floor VAV reheat units serving active chilled beams
- › High efficiency air-cooled chiller plant with variable frequency drives
- › Low lighting power densities to be achieved from LED lighting and lighting control systems.

The above strategies, further detailed in Table 3-1 below, are part of the Design Case for the building energy modeling. As shown in Table 3-2 below, these improvements assumed in the preliminary building energy model demonstrate the Phase 1 Project would result in an estimated energy savings of 25 percent equating to a 23 percent reduction in Project-related stationary source GHG emissions. This overall energy savings indicates the Phase 1 Project will exceed the Stretch Energy Code requirement of at minimum 10 percent energy efficiency.



**Table 3-1 Phase 1 Project Key Energy Model Assumptions**

<b>Modeling Parameter</b>	<b>Base Case<sup>1</sup></b>	<b>Design Case</b>
<b>Building Envelope</b>		
Roof Insulation	U-value = 0.032 (R-30)	U value = 0.025 (R-40)
Wall Assembly – Opaque	U value = 0.055	Same as baseline
Wall Assembly – Spandrel/Shadow Box	U value = 0.055	U value = 0.200
<b>Fenestration and Shading</b>		
Vertical Glazing U-Factor	U factor = 0.42	U factor = 0.35
Vertical Glazing SHGC	0.40	0.25
Overall % Window to Wall Ratio	40%	60%
<b>HVAC</b>		
HVAC System	VAV with Reheat System Type 7	Dedicated outside air unit w/ energy recovery serving active chilled beams
Primary Cooling	On-site chiller plant <sup>o</sup>	On-site chiller plant – air cooled chiller with free cooling
CHW Loop Supply Temp / Delta-T	44°F/12°F	57°F/6°F
CHW Loop Temp Reset Parameters	44°F-54°F for OAT 80°F-60°F	57°F-63°F for OAT 80°F-60°F
Primary Heating	On-site boiler plant	On-site condensing boiler plant
HW Loop Supply Temp/Delta-T	180°F/50°F	140°F/30°F
Service Hot Water Type	Electric resistance storage water heater	Condensing hot water heater
<b>Lighting</b>		
Lighting Power Density (LPD)	0.82 W/sf	0.6 W/sf All LED Lighting design
Daylight Dimming Controls	In side-lighted areas	All perimeter spaces
Parking Garage Lighting	Standard Lighting	LED Lighting design

1 The Base Case represents current ASHRAE 90.1-2013 standards.

### **Stationary Source Greenhouse Gas Emissions Assessment**

The total estimated annual electricity use, natural gas consumption, and associated emissions for the Phase 1 Project is presented in Table 3-2 below.

**Table 3-2 Phase 1 Project Stationary Source CO<sub>2</sub> Emissions**

	Total Energy Consumption			CO <sub>2</sub> Emissions		
	Electricity (MMBtu/yr)	Natural Gas (MMBtu/yr)	Total (MMBtu/yr)	Electricity (tons/ yr) <sup>1</sup>	Natural Gas (tons/ yr)	Total (tons/ yr)
<b>Two Office Buildings</b>						
Base Case	12,060	18,630	30,689	1,320	1,090	2,410
Design Case	10,285	12,787	23,072	1,126	748	1,874
End-Use Savings	1,775	5,843	7,618	194	342	536
<b>Percent Savings</b>			<b>25%</b>			<b>22%</b>
<b>Parking Garage Area</b>						
Base Case	1,512	0	1,512	165	0	165
Design Case	1,042	0	1,042	114	0	114
End-Use Savings	470	0	470	51	0	51
<b>Percent Savings</b>			<b>31%</b>			<b>31%</b>
<b>Overall Phase 1 Project</b>						
Base Case	13,572	18,630	32,202	1,485	1,090	2,575
Design Case	11,327	12,787	24,114	1,240	748	1,988
End-Use Savings	2,245	10,924	8,088	246	342	588
<b>Percent Savings</b>			<b>25%</b>			<b>23%</b>

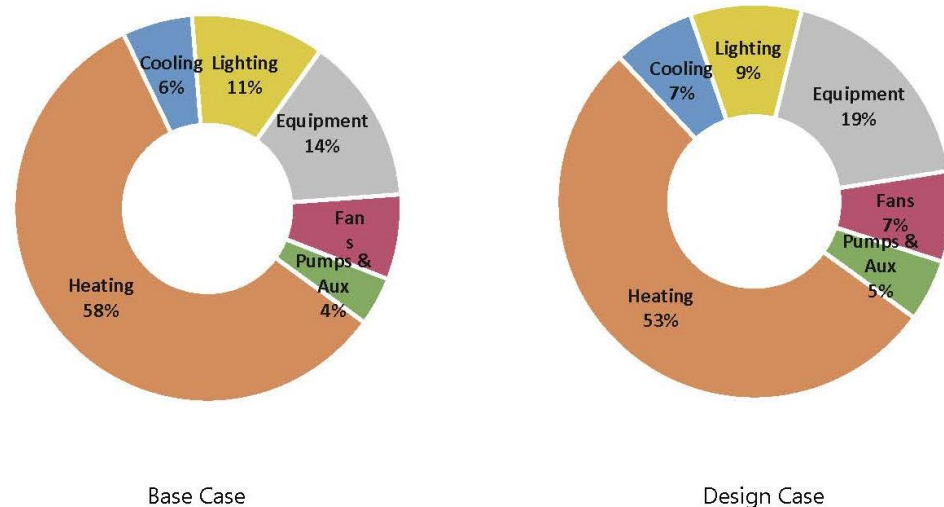
1 tons/yr = short tons per year

Under the Base Case, the stationary source CO<sub>2</sub> emissions associated with the Phase 1 Project office buildings are estimated to be 2,410 tons per year (Table 3-2). With the building design and system improvements outlined in Table 3-1, the estimated energy use reduction for the office buildings is approximately 25 percent compared to the Base Case, which equates to an approximately 22 percent reduction (536 tpy) in stationary source CO<sub>2</sub> emissions.

Under the Base Case, the stationary source CO<sub>2</sub> emissions associated with the Phase 1 Project structured garage area is estimated at 165 tons per year. With implementation of LED lighting as the key proposed energy conservation measure over the Base Case, the estimated energy use reduction is approximately 31 percent resulting in a 31 percent reduction (51 tpy) in stationary source GHG CO<sub>2</sub> emissions.

When combining the Phase 1 Project office buildings and structured parking areas, the overall energy savings over the Base Case is 25 percent, which amounts to approximately 588 tons per year reduction in CO<sub>2</sub> emission (a 23 percent reduction in stationary source GHG emissions).

Graph 3.1 below presents a breakdown of the overall Phase 1 Project energy use by end use for both the Base Case and the Design Case.

**Graph 3.1 Energy Usage by End Use for the Phase 1 Project<sup>1</sup>**

<sup>1</sup> These charts represent the office buildings and the associated parking garage

### Energy Use Intensity

Energy Use Intensity ("EUI") is a tool used to provide a common basis of comparison of energy use for various building uses. It is the total amount of energy used at a project over a one-year period, divided by the square footage of that building and represents the energy consumed by a building relative to its size. Based on a recent U.S. Department of Energy ("DOE") research report, the median EUIs for a prototype Large and Medium Office Buildings in the Commonwealth are 75.2 and 37.1 kBtu/sf, respectively, under ASHRAE 90.1-2013.<sup>3</sup> Table 3-3 below provides the as-modeled EUI for the Phase 1 Project under the Base and Design Cases.

**Table 3-3 Phase 1 Project Energy Use Intensity**

Energy Use Index (kBtu/sf-yr)		
Base Case <sup>1</sup>	Design Case <sup>2</sup>	Percent Improvement
59	44	25%
<sup>1</sup> The Base Case represents current Base Energy Code ASHRAE 90.1-2013 standards. <sup>2</sup> These represent the office buildings and does not include the associated garage which is not conditioned space.		

<sup>3</sup> "Cost-Effectiveness of the ASHRAE Standard 90.1-2013 for the State of Massachusetts". *US Department of Energy*. December 2015. The prototypical Large Office is 498,600 sf and 12 floors, while the prototypical Medium Office is 53,600 sf and three floors.



The EUIs and conditioned areas of the Phase 1 Project are within the range of the prototype office space in the DOE study. The Prototype Benchmark EUIs are for theoretical buildings with designs that do not exactly reflect the Project they are being compared against. As such, differences between the modeled EUIs and the Benchmarks are expected. For the Phase 1 Project, the Design Case EUI represents significant improvement over the Base Case EUI, which demonstrates the Proponent's commitment to constructing a green project.

### **Other Phase 1 Project Beneficial Stationary Source GHG Emission Measures**

The following sections describe the additional building design and operational measures that were not assumed or quantified as part of the preliminary building energy model, but will be considered as measures to provide additional stationary source GHG benefits. These measures, if implemented, could yield further energy savings and stationary source GHG emissions reductions over the life of the Phase 1 Project. As discussed earlier in Section 3.4.1, the design of the Phase 1 Project is targeting LEED Gold certifiable using the LEED-CS rating system and a summary of the sustainable measures and credits were presented earlier.

#### ***Building Commissioning, Energy Use Tracking, and Sub-Metering***

The purpose of commissioning buildings is to ensure building mechanical, electrical and plumbing (MEP) systems are installed and operational as designed. The intent of the process is to realize energy performance and savings over the life of a Project as well as ensure a reduction in associated stationary source GHG emissions. The Phase 1 Project is pursuing enhanced commissioning under the LEEDv4 criteria as well as building envelope commissioning to go beyond commissioning of only MEP systems.

The Phase 1 Project will install sub-metering for building energy consumption systems (e.g. electricity, chilled water and natural gas) so that energy information can be gathered by tenant on at least a per-floor basis. This enables the Proponent and Tenants to understand where energy is being used and can identify if corrective measures are required to realize energy performance.

Annual reporting under the Building Energy Reporting and Disclosure Ordinance, will also encourage ongoing improvement to reduce overall energy use.

#### ***Plug Loads***

The Proponent is committed to using Energy Star appliances and equipment where available and reasonably practicable. The Phase 1 Project is core & shell so that plug loads are not within the Proponent's control. The use of Energy Star appliances and equipment will be encouraged by the Proponent. Consistent with DOER policy, the energy use of the plug loads can be reduced by 10 percent in the Design Case when using Energy Star equipment. Such equipment would result in additional energy savings and reductions in associated stationary source GHG emissions. Compared to

standard office equipment (non-Energy Star rated), Energy Star-qualified office equipment imaging products and appliances use 30 to 75 percent less electricity.<sup>4</sup>

### ***Net Zero Energy***

The Phase 1 Project is committed to constructing a building that exceeds minimum stretch energy code requirements and that will not preclude the advancement toward net zero, as technology becomes available over the life span of the Phase 1 Project. The Phase 1 Project is currently being designed and constructed towards this goal by reducing energy demand through incorporation of an efficient building envelope and systems, such as a well-insulated building envelope including an R-40 roof, active chilled beam system with dedicated outdoor air system and advanced energy metering to be able to track and monitor end use energy consumption.

The Phase 1 Project is also working toward the goal of net zero by evaluating on-site renewables solar PV and solar thermal systems. The Phase 1 Project will have a “solar ready” rooftop, meaning the structure would be designed to accommodate a future system and space for conduit routing for interconnection would be provided.

In addition, the Phase 1 Project will incorporate best management practices by developing tenant design guidelines to explain the sustainable design strategies in the base building design that can contribute to the tenant fit out energy efficiency as well as make recommendations for an energy efficient fit out.

As technology becomes available, and operational processes are refined, the Phase 1 Project will evaluate opportunities for improving efficiency during equipment and system life cycles and upgrades with favorable ROIs for energy efficiency retrofits.

### ***Water Efficiency/Wastewater Reduction***

Water efficiency is not only important for conserving potable water and reducing wastewater generation, but also for reducing energy. Nationally, about four percent of electricity use can be attributed to the treatment of potable water and wastewater, excluding the energy use associated with water heating. Potable water will be used efficiently both outdoors and indoors for the Phase 1 Project. Potable water demand will be reduced through strategies such as using non-potable water for irrigation, drought tolerant plantings, low- and ultra-low flow water fixtures, and water metering.

### ***Preliminary Clean and Renewable Energy Analysis***

A variety of clean and renewable energy sources were evaluated or are currently being evaluated for the Phase 1 Project, including solar, geothermal, steam, wind, and combined heat and power (“CHP”). Solar is currently under consideration for the

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4 According to the Energy Star website: <http://www.energystar.gov/index.cfm?c=ofc>.

Phase 1 Project as the others have been deemed not applicable or infeasible for the reasons described below.

To further reduce energy consumption and GHG emissions, solar photovoltaic (PV) and solar thermal systems have been evaluated for the Phase 1 Project. The roof areas of the Phase 1 Project are unshaded and are therefore feasible for such systems.

### ***Solar Photovoltaic (PV)***

Solar PV system feasibility analysis has been undertaken for a roof mounted system across the two Phase 1 Project buildings. Only the highest roof areas have been included in the analysis as lower roof areas will be shaded throughout the year and are intended to be occupied as amenity space for occupants. The analysis included 20 percent of the roof area for solar PV allowing space for mechanical systems and setbacks for safety and maintenance and the potential for additional uses on the roof.

The rooftop PV arrays could produce approximately three percent of the total building energy consumption and offset approximately 60 metric tons of CO<sub>2</sub> per year, a four percent reduction. Details of the PV assessment are presented in the Appendix.

A simple payback analysis indicates a payback of approximately 12 years which accounts for a continuation of the federal incentive of 30 percent of the total installed cost, as well as an estimation of feed-in tariff rates for the forthcoming Solar Massachusetts Renewable Target "SMART" program in Massachusetts. It is very important to note that the details and rate structure of the SMART program are yet to be finalized. Any proposed system on the Phase 1 Project would also be subject to declining blocks (i.e. rate structures) depending on when the system would be permitted under the SMART program. These blocks are currently estimated to be filled up on a 6-month basis.

Additionally, it is anticipated that a tariff will be implemented in 2018 on the import of foreign PV panels which could significantly impact the pricing of panels and systems throughout the US.

Given the current uncertainty in the solar PV market both federally and at the state level, the Phase 1 Project will continue to assess the feasibility of a roof mounted solar PV system as the design develops. This analysis has shown however, that a solar PV system is the best use of available roof area for a renewable energy system for the Phase 1 Project and therefore the Phase 1 Project will be built to be "solar ready" to maintain the flexibility of installing solar.

### ***Solar Thermal***

There is more than enough available roof area for a solar thermal system as domestic hot water demand in an office building is very low. A system that would offset 65 percent of the heating load associated with domestic hot water would require



approximately 7,000 square feet of roof space and 73 evacuated tube panels. The system was sized to eliminate overproduction of hot water in the summer (i.e. peak).

This translates to approximately three percent in energy savings and a two percent carbon footprint reduction. A simple payback analysis indicates a payback of approximately 22 years. Refer to the Appendix E for additional details.

Solar thermal has not been recommended as it competes with solar PV for roof area, and solar PV is currently indicated to be a more cost-effective approach to producing renewable energy on-site.

### **Co-Generation/Geothermal/CHP Systems**

While the energy strategy is currently based on an individual building basis, the Proponent will evaluate the efficiency and cost effectiveness of a central plant (or plants) to take advantage of energy efficiency via co or tri-generation by recovering waste heat and generating electricity. To maximize its feasibility a central plant would be analyzed for Project Site-wide implementation at the full build condition and, if deemed feasible, each future building could be designed to be future-ready to connect to the central system.

### **Wind**

*Large Turbines.* Turbines greater than 100 kW are often sited in low-density areas where a consistent wind resource, unaffected by the built environment, maximizes the payback rate for the installed equipment. Siting such facilities in low-density areas minimizes wind turbulence, a major contributor to reduced performance and longevity of large-scale wind turbines. A large turbine is not currently being considered for the Project Site due to the proximity to Boston-Logan International Airport, which would create additional FAA permitting issues that would be difficult to manage in the Phase 1 Project timeframe.

- › *Small Turbines:* Turbines of less than 100 kW include small pole-mounted units and modest tower-mounted units up to about 250 feet tall. Similar to a large turbine, small turbines are not being considered due to the proximity to Logan Airport which would create additional FAA permitting issues that would be difficult to manage in the Phase 1 Project timeframe.
- › *Building-integrated Turbines:* Building-integrated turbines include small turbines, generally less than one kW to about five kW, that are mounted on building roofs or parapets, or otherwise attached to a building. Examples of such installations include Boston City Hall, Massport Logan Office Center, and the Museum of Science wind turbine lab. The Proponent intends to consider PV technology for the Phase 1 Project with the potential to be "PV ready" allowing for the possible future installation of PV panels above the rooftop. Installing PV panels would leave little, if any, room to include building-integrated turbines. As a full rooftop-mounted PV array on the Phase 1 Project could generate approximately 215 MW,

significantly more than what could be generated from building-integrated turbines, this technology will likely not be pursued as part of this Phase 1 Project.

### **Hybrid Vehicles and Electric Charging Station**

The Proponent will install preferred parking spaces for alternative-fuel vehicles. In addition, parking spaces on-site will be equipped to support EV charging stations and will be provided within the new garage. Electric vehicles do not have any tailpipe emissions (such as NOx or particulates-both of which contribute to respiratory illness) and emit practically no engine heat reducing the high temperature in congested corridors.

### **Energy Efficiency Assistance**

The Proponent intends to take advantage of the Mass Save New Construction Program for both the Phase 1 Project and the future build-out of the Master Plan Project. This program is designed to incentivize energy efficient design for new commercial, industrial and governmental facilities. Eversource and National Grid act as Mass Save Program Administrators (PA), both of whom currently provide electricity and natural gas to the Project Site. The utilities offer technical assistance and provide the incentives for implementing the eligible energy measures identified during the design phase of the Phase 1 Project. The utilities must be involved during the design phase to help determine the cost-benefit of incorporating each measure into the Phase 1 Project energy plan and identify any additional measures that may be available.

The Program offers a custom performance track (vs. the prescriptive track), wherein the whole-building energy modeling software is used to compare energy usage of the as-designed building to that of a baseline code-compliant reference building. The utilities pay incentives on the basis of the calculated savings variance. The custom track is the best option to ensure both the Phase 1 and Master Plan Projects will achieve the desired energy, financial, and GHG emissions reductions goals.

### **Mobile Source GHG Emissions Assessment**

Under MEPA review, all projects filing an EIR are required to assess mobile GHG emissions and Ozone Precursors (for projects in an Ozone non-attainment area) as part of a mesoscale air quality analysis. The Phase 1 Project is projected to generate approximately 2,652 unadjusted new daily vehicle trips (1,492 adjusted), which is below the Mandatory EIR Review Threshold related to transportation. Since the traffic projections are below the MEPA EIR Threshold and the BPDA Development Review Guideline threshold for a mesoscale analysis, a quantitative mesoscale has not been conducted for the Phase 1 Project. As presented in 5.3.7 of Chapter 5, *Transportation*, the Proponent will work with the future tenant for the Phase 1 Project to incorporate TDM measures to encourage alternative modes of

transportation to reduce single-occupancy vehicles travelling to/from the Phase 1 Project resulting in reduced mobile source GHG emissions.

### **3.5.3 Master Plan Project**

As the Master Plan Project program and building design advances, the design team will consider further load reduction at the building level, where both possible and cost-effective, through increasing building envelope performance, passive design, and/or mechanical and electrical systems design. While the energy strategy is currently based on an individual building basis, the Proponent will evaluate the feasibility based on life cycle cost of a central plant (or plants) to take advantage of energy efficiency via co-generation or tri-generation by recovering waste heat and generating electricity. To maximize its feasibility, a central plant would be analyzed for a Project Site-wide implementation at the full build condition and, if deemed feasible, each future building could be designed to be future-ready to connect to the central system.

There are key energy efficiency strategies for each type of building use that could be incorporated into the final Master Plan Project. Most of these buildings would likely incorporate efficient window to wall ratios, improved building envelope through glazing and roof insulation, lower lighting densities through LED lighting and lighting control systems and improves/more efficient HVAC systems used for heating and cooling. As design of the Master Plan advances, the potential for a central plant along with the individual building improvements will be assessed to achieve reduced energy usage and corresponding stationary source GHG emissions reductions.

#### **Other Beneficial Stationary Source GHG Emission Measures**

##### ***Building Commissioning, Energy Use Tracking, and Sub-Metering***

The Master Plan Project will also implement enhanced commissioning under the LEEDv4 criteria, as well as building envelope commissioning to go beyond commissioning of the MEP systems.

Sub-metering will be installed to monitor energy by major end use and/or tenant in commercial and retail building typologies and will be explored for hotel buildings. Residential buildings will have unit level metering for electricity and water consumption.

##### ***Net Zero***

The Master Plan Project is committed to constructing buildings that exceed minimum stretch energy code and will not preclude the advancement toward net zero, as technology becomes available over the life span of the Project. Sub-metering and energy management systems will be installed to enable proactive monitoring and tracking of energy consumption to optimize performance.



The Master Plan Project will evaluate opportunities for renewable energy systems such as solar PV and solar thermal as well as evaluate the cost benefit to a central plant approach which would utilize energy most efficiently by producing heat, cooling and electricity.

### **Preliminary Clean and Renewable Energy Analysis**

The site provides significant potential for the combination of energy systems. It is noteworthy that the combination of those configurations can be employed to optimize owner and site-specific requirements. Three energy infrastructure configurations are highlighted for illustrative purposes:

#### ***Traditional Supply***

- › Electricity generated through on-site renewables and imported by the local utility.
- › Heating load served via traditional plant.
- › Cooling load served via traditional plant.

#### ***District Energy (Tri-generation)***

- › Electricity served by a combination of an on campus CCHP plant, generated through on-site renewables and imported by the local utility.
- › Heating load served via CCHP plant waste heat and traditional plant.
- › Cooling load served via CCHP plant waste heat and traditional plant.

#### ***High Efficiency Distributed Electrification***

- › Electricity generated through on-site renewables and imported by the local utility.
- › Heating and cooling loads served by point-of-use heat pumps connected into grouping of assets via thermal district energy.
- › High performance building and best available all electric technology assumed.

District energy systems, which will be considered as an option for this site, provide many benefits:

- › Reduced energy costs due to equipment efficiency, operational control, and effective use of waste heat.
- › Building use improvements due to the reduction of HVAC equipment (i.e. boilers, A/C units) typically required that will allow more productive use of the square footage.
- › Reliability improvements due to the high reliability factor (99.99 percent) in comparison to commercial-grade HVAC equipment.
- › Added resiliency due to available continuous thermal and electrical production during utility disruptions and storm events.
- › Inherent flexibility and scalability that can be coordinated with the construction phases of the Master Plan Project.

**On-Site Renewables**

Renewable energy sources can be integrated and deployed under any energy infrastructure configuration to impact the site's sustainability, reliability and costs effectiveness. Notable options to serve the site's electrical and thermal loads include:

- › Solar- PV and thermal: Rooftop, carport, awnings, open space applications
- › Wind- building mounted
- › Geothermal – open space planning
- › Storage- battery, thermal
- › Waste heat recovery from data center operations or other heat producing processes that may be located in the vicinity of the development

A self-sustained electrical and thermal infrastructure can incorporate multiple generation technologies to further reduce energy costs, greenhouse gas emissions and increase reliability and sustainability. Nearby critical infrastructure and an enabling load profile presents a unique opportunity to integrate energy systems of the future. This allows designers to embed sustainability, resilience, cost effectiveness, livability and flexibility at the core of the Site's design. Finally, as a blank canvas the site enables modularity and flexibility in regard to the scale and timing of energy system deployment, depending on the phasing of the development and tenant specific needs.

**Mobile Source GHG Emissions Assessment**

A quantitative mesoscale air quality analysis consistent with EPA and DEP guidelines will be conducted for the Master Plan Project in the DEIR/DPIR filing. In addition, it is anticipated that as the Master Plan Project continues through the Article 80 review process, a microscale assessment may be required and conducted for the Master Plan Project as well.

### **3.6 Climate Change Preparedness and Resiliency**

Impacts from climate change are expected to result in rising sea levels, more frequent extreme storms, and more extreme weather events/temperatures. The following sections describe how the predicted effects of climate change and potential resiliency measures have been considered in the design of the Master Plan Project, including the Phase 1 Project.

As required by the BPDA for all Large Project Review projects, the Proponent has considered anticipated changes in climate, as described below and reflected in the Resiliency Checklist provided in Appendix D. The portion of the Project Site in Revere will generally meet the same standards for resiliency as the portion located in Boston.

### **3.6.1 Predicted Future Conditions**

The Proponent has surveyed climate change publications and data to evaluate potential future conditions over the life of the Master Plan Project including changes in temperature, precipitation, and flooding events.

#### **Extreme Precipitation**

Boston and surrounding cities and towns are expected to experience more frequent and more extreme precipitation events due to climate change. Increases in the intensity of precipitation events cause stormwater infrastructure to reach capacity faster with greater volumes of precipitation runoff. To prevent these potentially destructive consequences, stormwater infrastructure needs to be designed to accommodate the expected increases in precipitation intensity and stormwater management needs to be applied across the local watershed.

The Master Plan Project will include a stormwater management system designed to convey a 6-inch storm-event and the 8.8-inch storm event as recommended by the BWSC. The 6-inch depth represents the 2100 10-year storm depth and the 8.8-inch depth represents the 2100 100-year storm depth under the medium emissions scenario. The stormwater management system will be integrated into a network of open spaces that will be strategically designed to accommodate potential flooding impacts associated with sea level rise, providing further protection to the nearby buildings and areas outside the Project Site.

Stormwater reuse for irrigation purposes will also be incorporated into the stormwater management plan.

#### **Sea Level Rise**

New England is expected to experience a rise in sea level as a result of climate change. To develop a design elevation for future resiliency, the Project Team considered the following publications:

#### ***FEMA Flood Insurance Rate Maps***

Although the coastal floodplain delineated by FEMA on its Flood Insurance Rate Maps ("FIRMs") does not account for future sea level rise, it is useful to understand current flood risk as a basis for exploration of future flood risk.

#### ***CZM Report***

The Massachusetts Office of Coastal Zone Management's ("CZM's") 2012 Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning ("CZM Report"), provided projections of expected sea level rise for Boston at several points in the future under different emission scenarios: Lowest; Intermediate Low; Intermediate High; and Highest.



The CZM Report gave planners and designers a resource for 'bathtub model' evaluations of assets and infrastructure. These maps, when combined with sea level rise projections provided a basic flood elevation evaluation tool.

The following reports build upon the static sea level rise analysis provided in the CZM report.

### ***DOT-FHWA Study***

The DOT and Federal Highway Administration ("FHWA") took the CZM sea level rise information one-step further than the 'bathtub' model, by creating a dynamic flooding model. The MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery ("MassDOT-FHWA Study") provided flood elevations generated by a hydrodynamic model coupled with a wave simulation model, over the topography and bathymetry of the greater Boston area. This model provides the most accurate publicly available site-specific flooding model with sea level rise in Boston for certain planning years and emission scenarios.

### ***Climate Ready Boston's BRAG Report***

On June 1, 2016, a publication was issued by the City of Boston and the Green Ribbon Commission for the Climate Ready Boston project. The Boston Research Advisory Group ("BRAG") Report Climate Change and Sea Level Rise Projections for Boston ("BRAG Report") provided results focused on the City of Boston proper for three climate scenarios: Lowest Emissions; Intermediate Emissions; and Highest Emissions. The BRAG was established in 2015 to develop a consensus on possible climate changes and sea level rise that would impact the City of Boston by years 2030, 2050, 2070 and 2100. The report lists a Maximum and a Likely Range for all scenarios studied. The BRAG report expanded the analysis of sea level rise beyond that, which was completed in previous reports and forms the basis for sea level rise estimates on this project and sea level rise goals identified in the BPDA's Resiliency Checklist 2017 update (pending).

The BRAG Report indicates a five percent probability that sea level rise will be higher than three feet by 2070 and a 65 percent probability that sea level rise will be higher than three feet by 2100.

### **Extreme Weather Conditions**

In addition to sea level rise and flooding, additional climate change issues predicted for Massachusetts, per the EEA's 2011 Massachusetts Climate Change Adaptation Report, include an increase in extreme weather events. These may consist of drought, tropical rainfall patterns (i.e., increased precipitation) and extreme heat and cold stretches, increases in the number of days with extreme heat (i.e., temperatures greater than 90°F and 100°F) and/or fewer days of snow yet increased winter

precipitation. Project-related resiliency measures aimed at addressing these potential events are discussed below.

### **3.6.2 Phase 1 Project Resiliency Measures**

At the early stage of conceptual design, the Proponent has begun to identify preliminary site design and building-related resiliency measures to address the potential impacts described above. The Phase 1 Project will be designed to be resilient to both coastal and inland flooding, and the building will be designed to account for increased temperatures as described below.

#### **Coastal Flooding**

The Phase 1 Project is located within the one percent annual chance floodplain delineated on FEMA FIRM panel 25025C0038J, and is subject to coastal flooding with a base flood elevation ("BFE") of 11 feet NAVD88 (17.5 feet BCB). See section 3.6.3 for further discussion on sources of potential floodwaters.

The portions of the permanent roadway that will be constructed with Phase 1 Project will be designed with a minimum top of curb elevation of 20.83 feet, which is 40-inches above the 100-year FEMA flood elevation. Twelve inches of freeboard will be added to the BFE of the buildings to account for localized storm surges not previously considered in the BRAG Report and MassDOT-FHWA study, resulting in a Finished Floor Elevation ("FFE") of 22 feet BCB.

#### **Inland Flooding**

Inland flooding will be mitigated consistent with the Master Plan Project, as outlined in Section 3.6.3 below.

#### **Increased Temperatures**

Strategies to mitigate the impacts of increased average temperatures and extreme heat on the Phase 1 Project buildings will be consistent with the Master Plan Project, as detailed in Section 3.6.3 below.

### **3.6.3 Preliminary Master Plan Project Resiliency Measures**

At the early stage of conceptual design, the Proponent has begun to identify preliminary site design and building-related resiliency measures to address the potential impacts described above. Additionally, due to the Project Site's existing access to water and sewer from two separate municipal systems, and access to electricity from two independent electrical power grids, its utility infrastructure already provides a level of resilience. The Project Site will be designed to be resilient to both coastal and inland flooding, and the buildings will be designed to account for increased temperatures as described below.

***Coastal Flooding***

The Project Site is located within the one percent annual chance floodplain delineated on FEMA FIRM panel 25025C0038J, and is subject to coastal flooding with a BFE of 10 to 11 feet NAVD88 (16.5 to 17.5 feet BCB), the Project Site is adjacent to Belle Isle Inlet and Chelsea Creek, and near Broad Sound. These three waterbodies are potential sources of flooding. The primary source of flooding on the Project Site is storm surge. Low points on the Project Site constitute potential flood paths from Bennington Street, the easternmost point of the Project Site at the Beachmont MBTA Blue Line Station, and the western side of the Project Site proximate to Chelsea Creek.

The proposed Master Plan Project site design approach takes these vulnerabilities into account and seeks to greatly reduce risk across the majority of the Project Site in the following ways. Key portions of the Project Site will be raised to provide protection against anticipated impacts of future flooding. In areas where this elevation cannot be reached, mitigating design features will be used to reduce the risk of flooding such as temporary barriers, maintaining emergency access, and adaptable ground-floor space. Critical components of buildings that cannot be raised above projected sea-level rise elevations will be moved to the second floor.

The stormwater management system is integrated within the network of open spaces, and therefore these spaces are designed to hold water and will help to reduce the risk of flooding to the adjacent buildings, and adjacent areas outside the Project Site.

***Inland Flooding***

For peak runoff, two-year, 10-year and 100-year, 24-hour design storms were used to evaluate pre- and post-construction runoff conditions. To accommodate increased future storm intensity, BWSC recommendations regarding the 10-year and 100-year were used (6.0 inches and 8.8 inches, respectively).

The proposed approximately 15-acre central common drains to Sales Creek. Sales Creek is protected from tidal flows by the Bennington Street tide gates and a stormwater pumping station. During lower tides, Sales Creek flows directly to Belle Isle Inlet via culverts under Bennington Street. During higher tides, flow in Sales Creek is pumped to Belle Isle Inlet via the Bennington Street pump station. Refer to Section 8.4.2 of Chapter 8, *Infrastructure*, for further discussion regarding stormwater management and the avoidance of impacts on the Bennington Street pump station.

The Project Site will be designed to manage storm events up to the 100-year storm at a peak flow less than or equal to that of the existing site.

***Increased Temperatures***

Strategies to mitigate the impacts of increased average temperatures and extreme heat on future buildings include:

- › Efficient building envelope that exceeds minimum code values for glazing (i.e. both U-value and solar heat gain coefficient [“SHGC”]) and insulation value of the roof, R-40;
- › Operable windows will be implemented in the residential buildings and considered for the hotel and office buildings;
- › The building mechanical systems will use a 95°F peak day for sizing of systems, which exceeds ASHRAE Fundamentals 2017 of 90.6°F;
- › A robust and diverse urban canopy located both in the central common and throughout the street network; and
- › The open/green space and tree canopy will serve to mitigate heat island impacts and make the Project Site more resilient to increasing temperatures.



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## LEED v4 for BD+C: Core and Shell

### Project Checklist

Y ? N

1			Credit	Integrative Process	1
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9	3	8	Location and Transportation		20
			Credit 1	LEED for Neighborhood Development Location	20
2			Credit 2	Sensitive Land Protection	2
		3	Credit 3	High Priority Site	3
3	3		Credit 4	Surrounding Density and Diverse Uses	6
3		3	Credit 5	Access to Quality Transit	6
		1	Credit 6	Bicycle Facilities	1
		1	Credit 7	Reduced Parking Footprint	1
1			Credit 8	Green Vehicles	1

6	2	3	Sustainable Sites		11
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Assessment	1
		2	Credit 2	Site Development - Protect or Restore Habitat	2
1			Credit 3	Open Space (30% Site Area incl. Bldg Footprint)	1
	2	1	Credit 4	Rainwater Management	3
2			Credit 5	Heat Island Reduction	2
1			Credit 6	Light Pollution Reduction	1
1			Credit 7	Tenant Design and Construction Guidelines	1

5	1	5	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit 1	Outdoor Water Use Reduction (50% reduction or no irrigation system)	2
3		3	Credit 2	Indoor Water Use Reduction (3 pts = 35% reduction)	6
		2	Credit 3	Cooling Tower Water Use (no cooling tower on project)	2
1			Credit 4	Water Metering	1

16	7	10	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit 1	Enhanced Commissioning	6
9	5	4	Credit 2	Optimize Energy Performance (9 pts = 19% energy cost savings)	18
1			Credit 3	Advanced Energy Metering	1
		2	Credit 4	Demand Response	2
	1	2	Credit 5	Renewable Energy Production	3
1			Credit 6	Enhanced Refrigerant Management	1
		2	Credit 7	Green Power and Carbon Offsets	2

Project Name: Suffolk Downs Redevelopment - PHASE 1 PROJECT  
Date: 11/27/2017

5	2	7	Materials and Resources		14
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		6	Credit 1	Building Life-Cycle Impact Reduction	6
1	1		Credit 2	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1		1	Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit 5	Construction and Demolition Waste Management	2

6	2	2	Indoor Environmental Quality		10
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit 1	Enhanced Indoor Air Quality Strategies	2
2	1		Credit 2	Low-Emitting Materials	3
1			Credit 3	Construction Indoor Air Quality Management Plan	1
	1	2	Credit 4	Daylight	3
1			Credit 5	Quality Views	1

5	1	0	Innovation		6
4	1		Credit 1	Innovation	5
1			Credit 2	LEED Accredited Professional	1

1	1	2	Regional Priority		4
	1		Credit 1	Regional Priority: Rainwater Management (2 points)	1
1			Credit 2	Regional Priority: Energy Performance (8 pts = 17%)	1
		1	Credit 3	Regional Priority: Indoor Water Use Reduction (4 pts = 40% reduction)	1
		1	Credit 4	Regional Priority: High Priority Site or Renewable Energy (2 pts = 3%)	1

54	19	37	TOTALS	Possible Points:	110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110					

Figure 3.1

Phase 1 Project LEED Scorecard

**Suffolk Downs Redevelopment**  
**Boston & Revere, Massachusetts**



# LEED v4 for BD+C: New Construction and Major Renovation Project Checklist

Project Name: Suffolk Downs Redevelopment - RESIDENTIAL  
Date: 11/20/2017

Y ? N

1			Credit	Integrative Process	1
---	--	--	--------	---------------------	---

9	4	3	Location and Transportation		16
			Credit 1	LEED for Neighborhood Development Location	16
1			Credit 2	Sensitive Land Protection	1
		2	Credit 3	High Priority Site	2
3	2		Credit 4	Surrounding Density and Diverse Uses	5
3	2		Credit 5	Access to Quality Transit	5
1			Credit 6	Bicycle Facilities	1
		1	Credit 7	Reduced Parking Footprint	1
1			Credit 8	Green Vehicles	1

4	3	3	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
	1		Credit	Open Space (30% Site Area incl. Bldg Footprint)	1
	2	1	Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

4	4	3	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit	Outdoor Water Use Reduction (50% reduction or no irrigation system)	2
2	1	3	Credit	Indoor Water Use Reduction (1.1 gpf toilets + 1.8 gpm showers)	6
	2		Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

12	6	15	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit	Enhanced Commissioning	6
6	4	8	Credit	Optimize Energy Performance (6 pts = 13% energy cost savings)	18
		1	Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	1	2	Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
		2	Credit	Green Power and Carbon Offsets	2

4	3	6	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1		1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit	Construction and Demolition Waste Management	2

11	4	1	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
2	1		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1	1		Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
2	1		Credit	Daylight	3
1			Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

5	1	0	Innovation		6
4	1		Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

0	2	2	Regional Priority		4
	1		Credit	Regional Priority: Rainwater Management (2 points)	1
	1		Credit	Regional Priority: Energy Performance (8 pts = 17%)	1
		1	Credit	Regional Priority: Indoor Water Use Reduction (4 pts = 40% reduction)	1
		1	Credit	Regional Priority: High Priority Site or Renewable Energy (2 pts = 3%)	1

50	27	33	TOTALS	Possible Points: 110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110				

Figure 3.2a

Conceptual Master Plan LEED  
Scorecard - Residential

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



# LEED v4 for BD+C: Core and Shell

## Project Checklist

Project Name: Suffolk Downs Redevelopment - OFFICE

Date: 11/27/2017

Y ? N

1			Credit	Integrative Process	1
---	--	--	--------	---------------------	---

### 10 6 4 Location and Transportation 20

			Credit 1	LEED for Neighborhood Development Location	20
2			Credit 2	Sensitive Land Protection	2
		3	Credit 3	High Priority Site	3
3	3		Credit 4	Surrounding Density and Diverse Uses	6
3	3		Credit 5	Access to Quality Transit	6
1			Credit 6	Bicycle Facilities	1
		1	Credit 7	Reduced Parking Footprint	1
1			Credit 8	Green Vehicles	1

### 5 3 3 Sustainable Sites 11

Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Assessment	1
		2	Credit 2	Site Development - Protect or Restore Habitat	2
	1		Credit 3	Open Space (30% Site Area incl. Bldg Footprint)	1
	2	1	Credit 4	Rainwater Management	3
2			Credit 5	Heat Island Reduction	2
1			Credit 6	Light Pollution Reduction	1
1			Credit 7	Tenant Design and Construction Guidelines	1

### 5 3 3 Water Efficiency 11

Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit 1	Outdoor Water Use Reduction (50% reduction or no irrigation system)	2
3		3	Credit 2	Indoor Water Use Reduction (3 pts = 35% reduction)	6
	2		Credit 3	Cooling Tower Water Use	2
1			Credit 4	Water Metering	1

### 16 7 10 Energy and Atmosphere 33

Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit 1	Enhanced Commissioning	6
9	5	4	Credit 2	Optimize Energy Performance (9 pts = 19% energy cost savings)	18
1			Credit 3	Advanced Energy Metering	1
		2	Credit 4	Demand Response	2
	1	2	Credit 5	Renewable Energy Production	3
1			Credit 6	Enhanced Refrigerant Management	1
		2	Credit 7	Green Power and Carbon Offsets	2

### 4 3 7 Materials and Resources 14

Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		6	Credit 1	Building Life-Cycle Impact Reduction	6
1	1		Credit 2	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1		1	Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit 5	Construction and Demolition Waste Management	2

### 6 2 2 Indoor Environmental Quality 10

Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit 1	Enhanced Indoor Air Quality Strategies	2
2	1		Credit 2	Low-Emitting Materials	3
1			Credit 3	Construction Indoor Air Quality Management Plan	1
	1	2	Credit 4	Daylight	3
1			Credit 5	Quality Views	1

### 5 1 0 Innovation 6

4	1		Credit 1	Innovation	5
1			Credit 2	LEED Accredited Professional	1

### 1 1 2 Regional Priority 4

	1		Credit 1	Regional Priority: Rainwater Management (2 points)	1
1			Credit 2	Regional Priority: Energy Performance (8 pts = 17%)	1
		1	Credit 3	Regional Priority: Indoor Water Use Reduction (4 pts = 40% reduction)	1
		1	Credit 4	Regional Priority: High Priority Site or Renewable Energy (2 pts = 3%)	1

### 53 26 31 TOTALS Possible Points: 110

Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

Figure 3.2b

Conceptual Master Plan LEED  
Scorecard - Office

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





# LEED v4 for BD+C: Hospitality

## Project Checklist

Project Name: Suffolk Downs Redevelopment - HOTEL

Date: 11/20/2017

Y	?	N				
1			Credit	Integrative Process	1	
8	4	4	Location and Transportation			16
			Credit	LEED for Neighborhood Development Location	16	
1			Credit	Sensitive Land Protection	1	
		2	Credit	High Priority Site	2	
3	2		Credit	Surrounding Density and Diverse Uses	5	
3	2		Credit	Access to Quality Transit	5	
		1	Credit	Bicycle Facilities	1	
		1	Credit	Reduced Parking Footprint	1	
1			Credit	Green Vehicles	1	
4	3	3	Sustainable Sites			10
Y			Prereq	Construction Activity Pollution Prevention	Required	
1			Credit	Site Assessment	1	
		2	Credit	Site Development - Protect or Restore Habitat	2	
	1		Credit	Open Space (30% Site Area incl. Bldg Footprint)	1	
	2	1	Credit	Rainwater Management	3	
2			Credit	Heat Island Reduction	2	
1			Credit	Light Pollution Reduction	1	
5	4	2	Water Efficiency			11
Y			Prereq	Outdoor Water Use Reduction	Required	
Y			Prereq	Indoor Water Use Reduction	Required	
Y			Prereq	Building-Level Water Metering	Required	
1	1		Credit	Outdoor Water Use Reduction (50% reduction or no irrigation system)	2	
3	1	2	Credit	Indoor Water Use Reduction (3 pts = 35% reduction)	6	
	2		Credit	Cooling Tower Water Use	2	
1			Credit	Water Metering	1	
12	4	17	Energy and Atmosphere			33
Y			Prereq	Fundamental Commissioning and Verification	Required	
Y			Prereq	Minimum Energy Performance	Required	
Y			Prereq	Building-Level Energy Metering	Required	
Y			Prereq	Fundamental Refrigerant Management	Required	
5		1	Credit	Enhanced Commissioning	6	
6	4	8	Credit	Optimize Energy Performance (6 pts = 13% energy cost savings)	18	
		1	Credit	Advanced Energy Metering	1	
		2	Credit	Demand Response	2	
		3	Credit	Renewable Energy Production	3	
1			Credit	Enhanced Refrigerant Management	1	
		2	Credit	Green Power and Carbon Offsets	2	

4	3	6	<b>Materials and Resources</b>			<b>13</b>
Y			Prereq	Storage and Collection of Recyclables	Required	
Y			Prereq	Construction and Demolition Waste Management Planning	Required	
		5	Credit	Building Life-Cycle Impact Reduction	5	
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2	
1		1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2	
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2	
1	1		Credit	Construction and Demolition Waste Management	2	

11	4	1	<b>Indoor Environmental Quality</b>			<b>16</b>
Y			Prereq	Minimum Indoor Air Quality Performance	Required	
Y			Prereq	Environmental Tobacco Smoke Control	Required	
2			Credit	Enhanced Indoor Air Quality Strategies	2	
2	1		Credit	Low-Emitting Materials	3	
1			Credit	Construction Indoor Air Quality Management Plan	1	
1	1		Credit	Indoor Air Quality Assessment	2	
1			Credit	Thermal Comfort	1	
1	1		Credit	Interior Lighting	2	
2	1		Credit	Daylight	3	
1			Credit	Quality Views	1	
		1	Credit	Acoustic Performance	1	

5	1	0	<b>Innovation</b>			<b>6</b>
4	1		Credit	Innovation	5	
1			Credit	LEED Accredited Professional	1	

0	2	2	<b>Regional Priority</b>			<b>4</b>
	1		Credit	Regional Priority: Rainwater Management (2 points)	1	
	1		Credit	Regional Priority: Energy Performance (8 pts = 17%)	1	
		1	Credit	Regional Priority: Indoor Water Use Reduction (4 pts = 40% reduction)	1	
		1	Credit	Regional Priority: High Priority Site or Renewable Energy (2 pts = 3%)	1	

50	25	35	TOTALS			Possible Points:	110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110							

Figure 3.2c

Conceptual Master Plan LEED  
Scorecard - Hotel

**Suffolk Downs Redevelopment**  
**Boston & Revere, Massachusetts**



# LEED v4 for BD+C: Core and Shell

## Project Checklist

Project Name: Suffolk Downs Redevelopment - RETAIL  
Date: 11/20/2017

Y ? N

1			Credit	Integrative Process	1
---	--	--	--------	---------------------	---

13	3	4	Location and Transportation		20
			Credit 1	LEED for Neighborhood Development Location	20
2			Credit 2	Sensitive Land Protection	2
		3	Credit 3	High Priority Site	3
3	3		Credit 4	Surrounding Density and Diverse Uses	6
6			Credit 5	Access to Quality Transit	6
1			Credit 6	Bicycle Facilities	1
		1	Credit 7	Reduced Parking Footprint	1
1			Credit 8	Green Vehicles	1

5	3	3	Sustainable Sites		11
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Assessment	1
		2	Credit 2	Site Development - Protect or Restore Habitat	2
	1		Credit 3	Open Space (30% Site Area incl. Bldg Footprint)	1
	2	1	Credit 4	Rainwater Management	3
2			Credit 5	Heat Island Reduction	2
1			Credit 6	Light Pollution Reduction	1
1			Credit 7	Tenant Design and Construction Guidelines	1

3	3	5	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit 1	Outdoor Water Use Reduction (50% reduction or no irrigation system)	2
2	1	3	Credit 2	Indoor Water Use Reduction (2 pts = 30% reduction)	6
		2	Credit 3	Cooling Tower Water Use	2
	1		Credit 4	Water Metering	1

11	5	17	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit 1	Enhanced Commissioning	6
4	4	10	Credit	Optimize Energy Performance (4 pts = 12% energy cost savings)	18
1			Credit 3	Advanced Energy Metering	1
		2	Credit 4	Demand Response	2
		3	Credit 5	Renewable Energy Production	3
1			Credit 6	Enhanced Refrigerant Management	1
		2	Credit 7	Green Power and Carbon Offsets	2

4	3	7	Materials and Resources		14
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		6	Credit 1	Building Life-Cycle Impact Reduction	6
1	1		Credit 2	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1		1	Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit 5	Construction and Demolition Waste Management	2

6	3	1	Indoor Environmental Quality		10
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit 1	Enhanced Indoor Air Quality Strategies	2
2	1		Credit 2	Low-Emitting Materials	3
1			Credit 3	Construction Indoor Air Quality Management Plan	1
	2	1	Credit 4	Daylight	3
1			Credit 5	Quality Views	1

5	1	0	Innovation		6
4	1		Credit 1	Innovation	5
1			Credit 2	LEED Accredited Professional	1

1	1	2	Regional Priority		4
	1		Credit 1	Regional Priority: Rainwater Management (2 points)	1
1			Credit 2	Regional Priority: Energy Performance (8 pts = 17%)	1
		1	Credit 3	Regional Priority: Indoor Water Use Reduction (4 pts = 40% reduction)	1
		1	Credit 4	Regional Priority: High Priority Site or Renewable Energy (2 pts = 3%)	1

49	22	39	TOTALS	Possible Points:	110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110					

Figure 3.2d

Conceptual Master Plan LEED  
Scorecard - Retail

**Suffolk Downs Redevelopment**  
**Boston & Revere, Massachusetts**





# 4

## Wetlands and Waterways

This chapter examines the wetland resource areas under the jurisdiction of the WPA that are present on the Project Site; analyzes potential impacts to and benefits of the Master Plan Project related to wetland resource areas; and discusses compliance with state wetland and waterways regulations. The Master Plan Project requires the issuance of a Public Benefit Determination under the provisions of the Massachusetts Public Waterfront Act (M.G.L. Chapter 91) by the EEA Secretary as it is located on landlocked tidelands. To assist the Secretary in determining compliance with this requirement, this chapter also provides a summary of the Master Plan Project's public benefits.

### 4.1 Summary of Key Findings and Benefits

The key findings related to wetlands and waterways include:

- › The Project Site was filled in the early 20<sup>th</sup> century in association with a proposed residential development which was not undertaken, and subsequently began use as a thoroughbred horse racing facility in the 1930's. Consequently, the Project Site is significantly developed and heavily disturbed.
- › The Master Plan Project will incorporate existing wetland resources, including Sales Creek and the infield pond, into the extensive 40-acre open space system with enhanced public access.
- › The Project Site includes jurisdictional wetland resource areas including Land Under Waterbodies and Waterways, Inland Bank (Bank), Bordering Vegetated Wetland, Riverfront Area, and Land Subject to Coastal Storm Flowage. Additionally, a state-jurisdictional 100-foot buffer zone extends from Bank and Bordering Vegetated Wetland, and a local 100-foot buffer zone extends from Land Subject to Coastal Storm Flowage in Revere.
- › Phase 1 Project WPA jurisdictional area impacts are limited to Land Subject to Coastal Storm Flowage, both of which are previously disturbed. No adverse impacts will result from the Phase 1 Project.
- › The Master Plan Project will materially improve the quality of stormwater runoff on the 161-acre Project Site, which currently has little to no stormwater pollution prevention measures.
- › The existing buffer zones to wetland resource areas are heavily disturbed or have been altered by the previous uses. The Master Plan Project will alter areas within the state buffer zones to Bank and Bordering Vegetated Wetland, and the local



Revere buffer zone to Land Subject to Coastal Storm Flowage. Work within these areas will be carefully planned to avoid and minimize impacts.

- › The Master Plan Project stormwater management system, including the Phase 1 Project, will be integrated into the open space network and will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance which to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively)
- › The Master Plan Project will be designed to mitigate peak runoff rates up to and including the 100-year design storm as well as provide treatment for the first inch of rainfall to ensure that current on-site wetlands continue to maintain historic flows and functionality.
- › The Master Plan Project will end the CAFO associated with the existing thoroughbred horse track. Ending the horse stabling operations will have a positive impact on the water quality of the surrounding streams and wetlands.
- › The Master Plan Project and Phase 1 Project will meet all applicable wetland regulations.
- › A portion of the Project Site is located on landlocked tidelands outside of Chapter 91 jurisdiction and will require a Public Benefit Determination from the EEA Secretary.

## **4.2 Phase 1 Project Impacts**

The Phase 1 Project will comply with all applicable wetlands and waterways regulations. Impacts related to wetlands and waterways resulting from the Phase 1 Project will be avoided and minimized to the extent practicable, as described below.

### **4.2.1 Impacts to Wetland Resource Areas**

Work within areas under the jurisdiction of the WPA for the Phase 1 Project will be limited to the alteration of LSCSF and the 100-foot buffer associated with the Bank of the infield pond and the H-Series Intermittent Stream.

Work within LSCSF consists of construction of portions of the proposed buildings and access road, as well as associated utilities and stormwater management system. The portions of the Phase 1 Project Site within LSCSF will be graded to address resiliency and future sea level rise as described in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*.

Work within the 100-foot buffer zone consists of construction of portions of the buildings, the roadway system, stormwater management facilities, and associated site preparation work. Portions of the buffer zone in which work is proposed are

generally previously disturbed and contain turf grass, common lawn weed, invasive species, dirt horse racing track and asphalt associated with existing parking facilities.

#### **4.2.2 Impacts to Landlocked Tidelands**

Portions of the Phase 1 Project will be located on landlocked tidelands which, pursuant to 310 CMR 9.04(2), are exempt from Chapter 91 licensing.

#### **4.2.3 Off-Site Impacts**

There are currently no planned off-site infrastructure improvements for the Phase 1 Project. However, if off-site infrastructure improvements are required, and if those off-site infrastructure improvements have potential impacts to off-site wetland resource areas, the Proponent will work with the appropriate state and local agencies to address any potential impacts that are identified.

### **4.3 Regulatory Context**

Due to the location of the Project Site, existing conditions, and proposed activities associated with the Master Plan Project, it is subject to the WPA as described below.

#### **4.3.1 Massachusetts Wetlands Protection Act**

Wetland resources areas on the Project Site that are regulated as Areas Subject to Protection under the WPA (MGL Chapter 131 § 40 and associated regulations at 310 CMR 10.00) include:

- › Land Under Waterbodies and Waterways ("LUWW");
- › Inland Bank ("Bank");
- › Bordering Vegetated Wetlands ("BVW");
- › Riverfront Area; and
- › LSCSF.

Additionally, although not itself considered a state resource area, there is a 100-foot jurisdictional buffer zone to Bank and BVW. Revere also maintains a local 100-foot buffer zone from LSCSF. These jurisdictional areas are described below in Section 4.4, *Existing Conditions*.

Work within wetland resource areas and associated buffer zones will require Orders of Conditions from the Boston and Revere Conservation Commissions. The City of Boston has not enacted a local wetlands ordinance, therefore the portions of the Master Plan Project that lie within the City of Boston are subject only to the WPA and its associated regulations. In addition to state requirements, wetland resource areas and buffer zones are addressed by the City of Revere Wetlands By-law and Title 16 of the Revere City Ordinances.

### **4.3.2 Areas of Critical Environmental Concern**

Portions of the Project Site lie within the Belle Isle Marsh portion of the Rumney Marshes Area of Critical Environmental Concern ("ACEC"), which was designated in 1988 in accordance with 301 CMR 12.00. Certain activities typically permissible under the WPA regulations, such as loss of BVW with replication, are not allowed in ACECs. Refer to Figure 4.1 for the extents of the ACEC on the Project Site. The portions of the Project Site lying within the ACEC have been historically altered and previously disturbed by existing uses on the Project Site. The Master Plan Project endeavors to enhance functionality and improve public access to this resource.

### **4.3.3 Massachusetts Public Waterfront Act (Chapter 91)**

A portion of the Project Site is located within landlocked tidelands which are exempt from licensing under the provisions of Chapter 91, Section 18(b) and 310 CMR 9.04(2). Historic tidelands on-site are entirely separated by public ways from flowed tidelands; do not lie within 250 feet of the high-water mark; and are not located within a Designated Port Area. Therefore, pursuant to 310 CMR 9.02, the filled tidelands are categorized as landlocked tidelands that are not subject to Chapter 91 licensing requirements, as further described in Section 4.5.2 below.

Under the provisions of Chapter 91, Section 18(b)(ii) and 301 CMR 13.00, a Public Benefits Determination from the EEA Secretary is required for all projects which require an EIR and are located on landlocked tidelands. Documentation to support such a determination is provided in Section 4.6, *Public Benefit Determination*.

## **4.4 Existing Conditions**

Wetland resource areas were delineated on the Project Site by a Professional Wetland Scientist on June 29, July 6, and July 11, 2017, in accordance with the WPA, Sections 401 and 404 of the United States Clean Water Act (33 USC 1344), and the Revere Wetlands Protection Ordinance. The resource areas identified included Bank, BVW, Riverfront Area, and LSCSF. Refer to Figure 4.2 for On-Site Wetland Resource Areas. These resource areas were confirmed in Orders of Resource Area Delineation ("ORAD") issued by the Boston Conservation Commission on September 28, 2017, and by the Revere Conservation Commission on October 4, 2017. LUWW was also identified on-site, but was not requested to be confirmed in the ORADs, as it is located entirely within other resource areas.

The on-site resource areas and associated buffer zones are previously heavily disturbed by buildings, roads, paved and unpaved areas and other improvements. Vegetation, where existing, is dominated by invasive plant species and turf grass. Soils generally consist of urban fill and the Project Site does not contain rare species habitat.

Several features on the Project Site are associated with multiple wetland resource areas, as described below.

#### **4.4.1 Sales Creek**

Sales Creek is a perennial stream that flows in a southeasterly direction across the Project Site, beginning at a culvert that carries Sales Creek under Winthrop Avenue, and proceeding behind the shopping plaza to the north toward a pair of culverts under Tomasello Drive. The creek then daylights within a fenced area south of Tomasello Drive and west of the existing horse stables. This section of Sales Creek is characterized by steep slopes rising up from the creek. The creek then connects via culverts to the section within the race track infield to the south. Sales Creek exits the Project Site via a culvert from the race track infield under Washburn Avenue.

Sales Creek is isolated from tidal flows by the Bennington Street tide gates and a stormwater pumping station. During lower tides, Sales Creek flows via gravity to Belle Isle Inlet through culverts under Bennington Street. During higher tides, flow in Sales Creek is pumped to Belle Isle Inlet by the Bennington Street pump station which is owned and operated by the DCR. The Master Plan Project will be designed to maintain peak runoff rates up to and including the 100-year storm event to ensure that flow is not increased to the pump station.

Resource areas associated with this system include Riverfront Area, Bank, BVW, and LUWW, which are further described below.

#### **Riverfront Area**

Pursuant to 310 CMR 10.58(2)(a)3a, Riverfront Area extends 25 feet parallel from the Mean Annual High Water ("MAHW") of rivers in Boston. In addition, pursuant to 310 CMR 10.58(2)(a)3b, Riverfront Area extends 25 feet parallel from the MAHW of rivers in densely developed areas as designated by the EEA Secretary. Revere was designated as Densely Developed on March 12, 1999. Accordingly, the jurisdictional Riverfront Area associated with Sales Creek is 25-feet on both sides. Since Sales Creek travels through two culverts that are each greater than two hundred feet in length, the Riverfront Area ends and begins perpendicular to each end of the culverts. The Riverfront Area is previously disturbed.

#### **Bank**

According to 310 CMR 10.54, Bank is the portion of the land surface which normally abuts and confines a water body. The upper boundary of Bank in non-tidal rivers is coincident with MAHW and was determined utilizing bankfull indicators, including changes in slope, changes in vegetation, stain lines, changes in bank material, and bank undercuts.



**BVW**

According to 310 CMR 10.55, BVWs are freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. BVWs are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. Portions of historically disturbed BVW border on the area of Sales Creek within the infield of the race track. Vegetation is dominated by invasive plant species such as common reed (*Phragmites australis*).

**LUWW**

According to 310 CMR 10.56, LUWW is the land beneath any creek, river, stream, pond or lake. LUWW extends to the Mean Annual Low Water ("MALW") elevation associated with Sales Creek. The limits of LUWW associated with Sales Creek lie entirely within the boundaries of Bank.

**4.4.2 H-Series Intermittent Stream**

An unnamed intermittent stream extends parallel to the eastern straightaway of the race track along the eastern Project Site boundary, adjacent to Washburn Avenue. Resource areas associated with this system include Bank and LUWW. Intermittent streams are not categorized as rivers, and therefore no Riverfront Area is associated with such a stream.

**Bank**

The upper boundary of Bank was determined utilizing bankfull indicators, including changes in slope, changes in vegetation, stain lines, changes in bank material, and bank undercuts.

**LUWW**

LUWW extends to the MALW elevation associated with the intermittent stream. The limits of LUWW lie entirely within Bank.

**4.4.3 Infield Pond**

The infield pond is located within the southern portion of the race track infield. Resource areas associated with this system include Bank and LUWW.

**Bank**

Portions of the Bank are lined with small cobbles, and a number of drainage channels are located adjacent to the pond. The level of the pond is regulated by a water control structure at the northern edge of the pond, which artificially controls the mean annual flood level. Therefore, the first observable break in slope was used to delineate the upper boundary of Bank.

## **LUWW**

LUWW extends to the MALW elevation associated with the pond. The limits of LUWW lie entirely within Bank.

### **4.4.4 Westerly Bordering Vegetated Wetland**

A BVW associated with a separate intermittent stream is located to the north of the main entrance at Tomasello Drive. The BVW extends easterly along the Project Site boundary perpendicular to McClellan Highway (Route 1A), then proceeds northerly adjacent to the on-site parking areas and off-site berm associated with the adjacent oil tanks owned by Irving Oil Terminals Inc.

Hydrological indicators such as water staining and saturated surface areas were observed within the BVW. The BVW and surrounding upland have been historically disturbed.

### **4.4.5 Land Subject to Coastal Storm Flowage**

According to 310 CMR 10.04, LSCSF means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater. It is coterminous with the Special Flood Hazard Area ("SFHA") defined in the currently effective or preliminary FEMA FIS or FIRM. Portions of the Project Site are located in Zone AE, elevations 16.46 feet and 17.46 feet BCB as shown on FIRM panels 25025C0019J and 25025C0038J, effective March 16, 2016. As of October 30, 2017, there are no Letters of Map Change affecting the Project Site.

The one-percent annual chance floodplain extends from Broad Sound via Belle Isle Inlet, as well as from Boston Inner Harbor via the Chelsea Creek. The horizontal limit of LSCSF was established by topographic survey and is depicted on Figure 3.3 and Figure 4.2.

### **4.4.6 Rumney Marshes ACEC**

According to the ACEC website, "the Rumney Marshes ACEC has been characterized by the U.S. Fish and Wildlife Service as 'one of the most biologically significant estuaries in Massachusetts north of Boston.' The area includes approximately 1,000 acres of highly productive saltmarsh, tidal flats, and shallow subtidal channels." As indicated in the designation document, the Rumney Marshes area was designated as an ACEC largely due to the quantity and quality of resources existing in a relatively undisturbed state within a significantly developed area.

According to the designation document, the ACEC extends along Sales Creek, with the associated limits being the extent of WPA jurisdiction, excluding the 100-year floodplain (LSCSF). Therefore, on the Project Site, the ACEC limits are coincident with

the 100-foot buffer zone to Bank and BVW along Sales Creek. Where the Creek flows through culverts, the ACEC limit is coincident with the edges of the culverts, because culverts transmitting streams are considered to contain the resource area LUWW, but do not have Bank, and therefore do not have an associated 100-foot buffer zone (see Figure 4.1). Similarly, no Riverfront Area is present as the culverts are longer than 200-feet.

The portions of the ACEC on the Project Site are generally heavily disturbed given the historic use of the property, and include portions of the race track infield, stables, paved areas and other disturbed areas, including areas populated by invasive species.

#### **4.4.7 Coastal Zone Management (CZM) Policies**

The Project Site is located within the Massachusetts Coastal Zone and, as the Master Plan Project will be a non-water dependent project, must be consistent with the regulatory policies established by CZM under the federally approved Massachusetts Coastal Zone Program.<sup>1</sup>

The Massachusetts Coastal Program establishes 20 enforceable program policies and nine management principles intended to embody the coastal policy of the Commonwealth. As detailed in Section 4.7, the Master Plan Project is consistent with these goals to activate the waterfront and protect natural resources.

### **4.5 Regulatory Compliance**

The Master Plan Project has been designed to comply with the WPA and Chapter 91 as described below.

#### **4.5.1 Massachusetts Wetlands Protection Act**

The DEIR/DPIR will provide a discussion of applicable performance standards for individual resource areas, and how the Master Plan Project will meet those standards.

#### **4.5.2 Massachusetts Public Waterfront Act (Chapter 91)**

DEP determined in a June 23, 2000 letter that the Project Site is no longer considered subject to Chapter 91 jurisdiction, as on-site tidelands are landlocked. DEP's determination was reaffirmed in its March 26, 2013 comment letter on the Caesar's Resort ENF. Refer to Appendix G. Applicable sections of the June 23, 2000 letter are excerpted below:

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<sup>1</sup> Massachusetts Office of Coastal Zone Management Policy Guide, Executive Office of Energy and Environmental Affairs, October 2011.

*"Much of property (Bk 21541, Pg 247; Doc. # 553756) was originally salt marsh elevated above mean high water. Smaller portions of property were open, tidal channels and upland. The flowed tideland areas were filled pursuant to Chapter 311 of the Acts of 1894 and a series of licenses and state reclamation plans issued in the 1930s. Those licenses also authorized the permanent exclusion of tidal action on the site through the construction of tide gates and other structures and the artificial re-engineering of prior channels (and digging new channels) as drainage channels. A more recent authorization in 1993 allowed the replacement of these tide gates and further excavation of drainage channels.*

*The result of these activities is a site consisting predominantly of upland fill and some drainage features. The filled tidelands are now landlocked (entirely separated from flowed tidelands by public ways including among others, State Highway Route 1A, Revere Beach Parkway, Saratoga Street and Bennington Street) and greater than 250 feet from the high-water mark (see 310 CMR 9.02). According to 310 CMR 9.02, therefore, the Department has determined that the filled tidelands are no longer subject to jurisdiction. The ditches and drainage basin are not flowed tidelands, due to the tide gates, nor are they natural rivers or streams. Instead, the areas containing water appear to be freshwater drainage conduits to prevent flooding of the filled areas.*

*The situation at Suffolk Downs is distinguishable from the jurisdictional status of areas such as along the Charles River where the Department has extended jurisdiction over filled tidelands. These distinguishable cases involve a natural pond, river, or stream which is clearly navigable and remains connected to flowed tidelands even if interrupted by a lock, culvert, or other intervening connection structure. On the other hand, the drainage created at this site for flood control does not constitute a natural pond, river, or stream. In addition, the drainage pipes, culverts and channels do not, and were intended not to, preserve tidal flow or navigation. The inundated lands under certain sections of the drainage channels may arguably, as a technical matter, be impressed with some residual public rights, however, the Department has determined that the interest is so minimal, remote, and alienated that we do not believe that remnant interest is germane to Chapter 91. The Department has therefore decided not to assert jurisdiction under these circumstances...."*

Based on the assertion above, the only approval the Master Plan Project requires relating to Chapter 91 is a Public Benefits Determination, as described in Section 4.6 below.

## **4.6 Public Benefit Determination**

The regulations at 301 CMR 13.00 requires the Secretary to consider the following when making a Public Benefit Determination:

- › Purpose and effect of the development;
- › The impact on abutters and the surrounding community;



- › Enhancement of the property;
- › Benefits to the public trust rights in tidelands or other associated rights;
- › Community activities on the development Site;
- › Environmental protection and preservation;
- › Public health and safety; and
- › General welfare.

While a public benefits determination is not required for the Phase 1 Project, pursuant to 301 CMR 13.02(1), the Secretary may conduct a public benefits determination for the Phase 1 Project. Public benefits for the Phase 1 Project are discussed in Section 1.12 in Chapter 1, *Project Description and General Information*. The Phase 1 Project unlocks the opportunity for the extraordinary economic development and activity associated with the larger Amazon HQ2 development in Boston.

The following sections describe how the Master Plan Project provides appropriate public benefits and is adequately protective of the Public Trust rights inherent in tidelands.

#### **4.6.1 Purpose and Effect of the Development**

The purpose of the Master Plan Project is to redevelop the existing underutilized Project Site into a dynamic, mixed-use development. Redevelopment of the Project Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods.

#### **4.6.2 Impact on Abutters and Surrounding Community**

The Master Plan Project is expected to provide a net benefit to abutters and the surrounding communities by transforming an underutilized urban site into a dynamic mixed-use neighborhood anchored by quality public transit and open space that responds to the surrounding natural resources. Construction of the Master Plan Project and associated improvements is expected to bring approximately 14,000 construction jobs and 25,000 to 50,000 permanent jobs to the region over the course of the 15 to 20-year construction period. Economic benefits will continue to accrue as the development progresses.

Additionally, an extensive 40-acre publicly accessible open space system, new street front retail opportunities, provision of new housing, including affordable housing, and new on-site and off-site pedestrian and bicycle connections, are proposed as part of the Master Plan Project.

The Master Plan will also result in alterations to on-site and off-site roadways to improve traffic flow through and around the Project Site, as discussed in Chapter 5, *Transportation*. Finally, the Master Plan will result in stormwater management

improvements which will improve water quality within the Project Site and will bring the Project Site into compliance with applicable regulations, including the Massachusetts Stormwater Management Standards, as discussed in Chapter 8, *Infrastructure*.

#### **4.6.3 Enhancement to Project Site**

The Project Site currently contains a thoroughbred race track and appurtenant buildings and facilities, as well as Tomasello Drive. Enhancements to the Project Site through the Master Plan Project include construction of a vibrant mixed-use development with significant recreational, open space and retail amenities, which will revitalize the Project Site. In addition, the construction of new, permanent roadways, off-site transportation improvements, and stormwater management facilities will improve traffic safety and stormwater runoff quality. The Master Plan Project will result in stormwater management improvements which will improve water quality within the Project Site.

#### **4.6.4 Benefits to Public Trust Rights in Tidelands or Other Associated Rights**

The traditional public trust rights in tidelands, including the right to fish, fowl and navigate, have long been precluded at the Project Site by historic filling and subsequent development. However, the modern expression of these traditional public trust rights on filled land isolated from the existing water will be realized by improving public access to and enjoyment of the Project Site. Additional benefits include:

- › New pedestrian and bicycle accommodations;
- › An open space network of approximately 40 acres;
- › Increased public access to the Project Site;
- › Improved overall traffic circulation/safety via alterations to Tomasello Drive;
- › Construction of a new access roadway network;
- › An improved stormwater management system that will contribute to improved water quality; and
- › Significant recreational amenities and open space proposed throughout the Project Site.

#### **4.6.5 Community Activities on the Development Site**

The Master Plan Project will provide new opportunities for community activity through the addition of new civic nodes, street front retail opportunities, and an expansive 40-acre publicly-accessible open space network designed to reconnect East Boston and Revere.

#### 4.6.6 Environmental Protection and Preservation

The Proponent is committed to redeveloping the Project Site in accordance with all applicable local, state and federal environmental protection regulations. Table 1-3 in Chapter 1, *Project Description and General Information*, provides a list of the local, state and federal permits or approvals anticipated to be required.

#### 4.6.7 Public Health and Safety, and General Welfare

The Master Plan Project will promote public health and safety through implementing a site design which provides safe and accessible facilities. Improvements include additional open space, landscaping, accessible ramps and crosswalks, pedestrian and bicycle accommodations, and appropriate lighting to provide a safe well-lit environment for residents and patrons.

In addition, the proposed stormwater management system will result in increased treatment of runoff, resulting in improvements in the quality of the stormwater discharged to Belle Isle Marsh and the Boston Harbor, as described in Chapter 8, *Infrastructure*.

Finally, the Master Plan Project will improve general welfare within the surrounding community by increasing the productivity of an underutilized property; providing both construction-period and permanent jobs to regional residents; and offering improved tax revenue to the Cities of Boston and Revere.

#### 4.6.8 Protection of Groundwater

Construction of the Master Plan Project is not expected to have adverse impacts on groundwater conditions. Additional information is provided in Section 6.2.6 of Chapter 6, *Environmental Protection*.

### 4.7 Consistency with CZM Policies

The Project Site is located within the Massachusetts Coastal Zone and therefore must be consistent with the regulatory policies established by CZM under the federally approved Massachusetts Coastal Program.<sup>2</sup>

Listed below are the CZM policies followed by a summary of consistency with those applicable policies:

***Coastal Hazards Policy #1: Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches,***

<sup>2</sup> Massachusetts Office of Coastal Zone Management Policy Guide, Executive Office of Energy and Environmental Affairs, October 2011.

***coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean.***

A portion of the Project Site is located within Land Subject to Coastal Storm Flowage that has been previously disturbed, including the original filling of tidelands undertaken through the early 20<sup>th</sup> century. The Master Plan Project will improve resiliency to sea level rise and extreme storms as outlined in Section 3.6.

***Coastal Hazards Policy #2: Ensure that construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Flood or erosion control projects must demonstrate no significant adverse effects on the project site or adjacent or downcoast areas.***

No construction is located within water bodies. Construction located adjacent to water bodies such as the infield pond will implement sufficient erosion control measures to prevent sedimentation.

***Coastal Hazards Policy #3: Ensure that state and federally funded public works projects proposed for location within the coastal zone will:***

- › Not exacerbate existing hazards or damage natural buffers or other natural resources.
- › Be reasonably safe from flood and erosion-related damage.
- › Not promote growth and development in hazard-prone or buffer areas, especially in velocity zones and Areas of Critical Environmental Concern.
- › Not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvement Acts.

The Master Plan Project is not a state- or federally-funded public works project; accordingly, this standard is not applicable.

***Coastal Hazards Policy #4: Prioritize acquisition of hazardous coastal areas that have high conservation and/or recreation values and relocation of structures out of coastal high-hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.***

This policy does not apply. The Master Plan Project is not located within a coastal high hazard area.

***Energy Policy #1: For coastally dependent energy facilities, assess siting in alternative coastal locations. For non-coastally dependent energy facilities, assess siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.***

This policy does not apply. The Master Plan Project is not an energy facility.



***Energy Policy #2: Encourage energy conservation and the use of renewable sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.***

The Proponent is evaluating the applicability of renewable energy sources, including rooftop solar, for future phases of the Master Plan Project. These opportunities will be further discussed as the design is advanced. Refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, for a discussion relating to Master Plan Project energy needs.

***Growth Management Policy #1: Encourage sustainable development that is consistent with state, regional, and local plans and supports the quality and character of the community.***

The Master Plan Project will incorporate sustainable design elements, and is consistent with regional, state, and local plans. Master Plan Project sustainability is discussed further in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*.

***Growth Management Policy #2: Ensure that state and federally funded infrastructure projects in the coastal zone primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.***

The Master Plan Project is not a state- or federally-funded infrastructure project; accordingly, this standard is not applicable.

***Growth Management Policy #3: Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.***

The Master Plan Project will replace an existing, underutilized use and structures and reenergize the Project Site with a modern, sustainable, mixed-use development.

***Habitat Policy #1: Protect coastal, estuarine, and marine habitats—including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats—and coastal freshwater streams, ponds, and wetlands to preserve critical wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.***

The Master Plan Project will be designed to comply with the Massachusetts Wetlands Protection Act, and will submit Notices of Intent to the Boston and Revere Conservation Commissions for applicable phases of work. Wetland

resource areas both on the Project Site and off-site will be protected during the construction period as necessary and the proposed stormwater management system will improve water quality of stormwater runoff.

***Habitat Policy #2: Advance the restoration of degraded or former habitats in coastal and marine areas.***

The wetland resource areas on the Project Site are previously disturbed due to the historic filling and development. Opportunities to restore degraded resource areas will be evaluated as the Master Plan Project is advanced.

***Ocean Resources Policy #1: Support the development of sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects significant ecological resources (salt marshes, dunes, beaches, barrier beaches, and salt ponds) and minimizes adverse effects on the coastal and marine environment and other water-dependent uses.***

The Master Plan Project does not include aquaculture; accordingly, this standard is not applicable.

***Ocean Resources Policy #2: Except where such activity is prohibited by the Ocean Sanctuaries Act, the Massachusetts Ocean Management Plan, or other applicable provision of law, the extraction of oil, natural gas, or marine minerals (other than sand and gravel) in or affecting the coastal zone must protect marine resources, marine water quality, fisheries, and navigational, recreational and other uses.***

The Master Plan Project does not include extraction of oil, natural gas, or marine minerals; accordingly, this standard is not applicable.

***Ocean Resources Policy #3: Accommodate offshore sand and gravel extraction needs in areas and in ways that will not adversely affect marine resources, navigation, or shoreline areas due to alteration of wave direction and dynamics. Extraction of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment or shoreline stabilization.***

The Master Plan Project does not involve offshore sand and gravel extraction; accordingly, this standard is not applicable.

***Ports and Harbors Policy #1: Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity, and public health and take full advantage of opportunities for beneficial re-use.***

The Master Plan Project does not involve dredging or disposal of dredged materials; accordingly, this standard is not applicable.

***Ports and Harbors Policy #2: Obtain the widest possible public benefit from channel dredging and ensure that Designated Port Areas and developed harbors are given highest priority in the allocation of resources.***

The Master Plan Project does not involve dredging, a Designated Port Area, or harbor area; accordingly, this standard is not applicable.

***Ports and Harbors Policy #3: Preserve and enhance the capacity of Designated Port Areas to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts control by virtue of ownership or other legal authority.***

The Project Site is not located within a Designated Port Area; accordingly, this standard is not applicable.

***Ports and Harbors Policy #4: For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.***

The Project Site contains landlocked tidelands, which are separated from the immediate waterfront by public ways, and do not support waterfront recreational uses; accordingly, this standard is not applicable.

***Ports and Harbors Policy #5: Encourage, through technical and financial assistance, expansion of water-dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of physical and visual access.***

The Project Site is not located within a Designated Port Area, nor immediately adjacent to a developed harbor or urban waterfront; accordingly, this standard is not applicable.

***Protected Areas Policy #1: Preserve, restore, and enhance coastal Areas of Critical Environmental Concern, which are complexes of natural and cultural resources of regional or statewide significance.***

The Project Site is located within the Rumney Marshes Area of Critical Environmental Concern, which receives stormwater discharge from the Project Site via Sales Creek. The Master Plan Project will result in improvements to the stormwater quality discharged to Rumney Marshes, due to the higher level of treatment provided by the proposed stormwater management system, and elimination of the Concentrated Animal Feeding Operation associated with the horse racing use. Additional restoration opportunities will be evaluated as the Master Plan Project is advanced.

***Protected Areas Policy #2: Protect state designated scenic rivers in the coastal zone.***

There are no state- or federally-designated scenic rivers within the Project Site; accordingly, this standard is not applicable.

***Protected Areas Policy #3: Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.***

Refer to Chapter 7, *Historic Resources*, for a detailed evaluation of the Master Plan Project's approach to historic resources.

***Public Access Policy #1: Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.***

A portion of the Project Site is located on landlocked tidelands and is therefore not subject to Chapter 91 licensing. A request for a public benefits determination respecting the Master Plan Project, and information regarding the public benefits of the Phase 1 Project have been provided in Section 4.6.

***Public Access Policy #2: Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities. Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance, and public support facilities. Ensure that the adverse impacts of developments proposed near existing public access and recreation sites are minimized.***

The Master Plan Project proposes significant improvements to open space and pedestrian accessibility. The proposed development will support a mix of uses and will minimize impacts to existing public access and recreational sites.

***Public Access Policy #3: Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities, giving highest priority to regions of high need or limited site availability. Provide technical assistance to developers of both public and private recreation facilities and sites that increase public access to the shoreline to ensure that both transportation access and the recreation facilities are compatible with social and environmental characteristics of surrounding communities.***

Although the Project Site is not immediately adjacent to the shoreline, the Master Plan Project proposes to provide significant recreational opportunities, and incorporates the various wetlands and waterways, particularly Sales Creek and the infield pond, as central features of the Project Site.



***Water Quality Policy #1: Ensure that point-source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.***

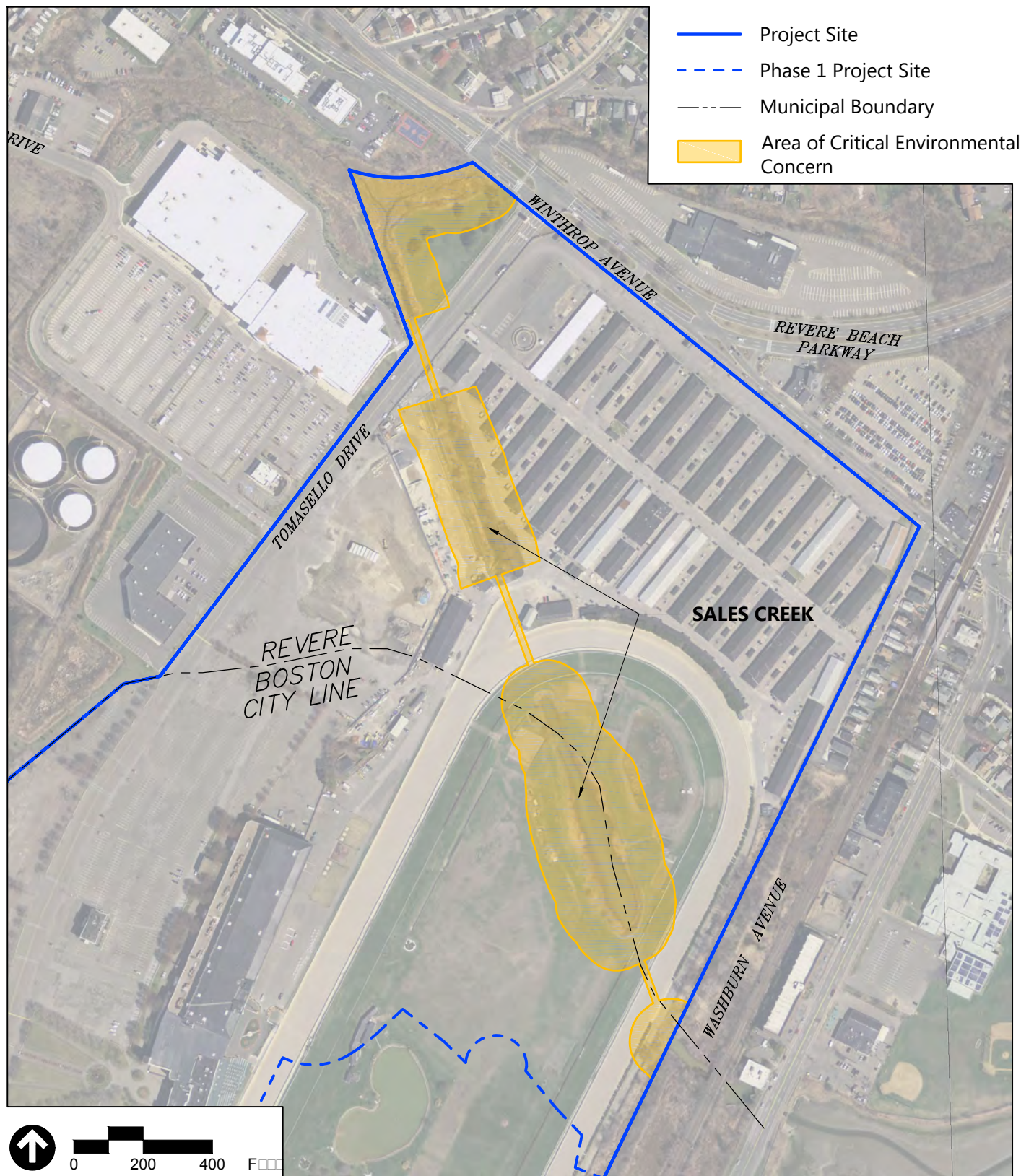
The quality of stormwater discharging to Sales Creek, and ultimately the Boston Harbor, will be improved by the reduction in total suspended solids in compliance with the DEP Stormwater Handbook. Refer to Section 8.4 for additional detail.

***Water Quality Policy #2: Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.***

As outlined in Section 8.4, the stormwater management system for the Master Plan Project will be designed to comply with applicable water quality regulations, including the Massachusetts Stormwater Handbook, and the proposed drainage system will significantly improve the quality of stormwater runoff from the Project Site as compared to existing conditions.

***Water Quality Policy #3: Ensure that subsurface waste discharges conform to applicable standards, including the siting, construction, and maintenance requirements for on-site wastewater disposal systems, water quality standards, established Total Maximum Daily Load limits, and prohibitions on facilities in high-hazard areas.***

There are no subsurface waste discharges proposed as part of the Master Plan Project; accordingly, this standard is not applicable.



Source:

Area of Critical Environmental Concern limits established based upon "Designation of Portions of the Cities of Boston, Lynn, and Revere, and the Towns of Saugus and Winthrop as the Rumney Marshes Area of Critical Environmental Concern with Supporting Findings" dated August 22, 1988.

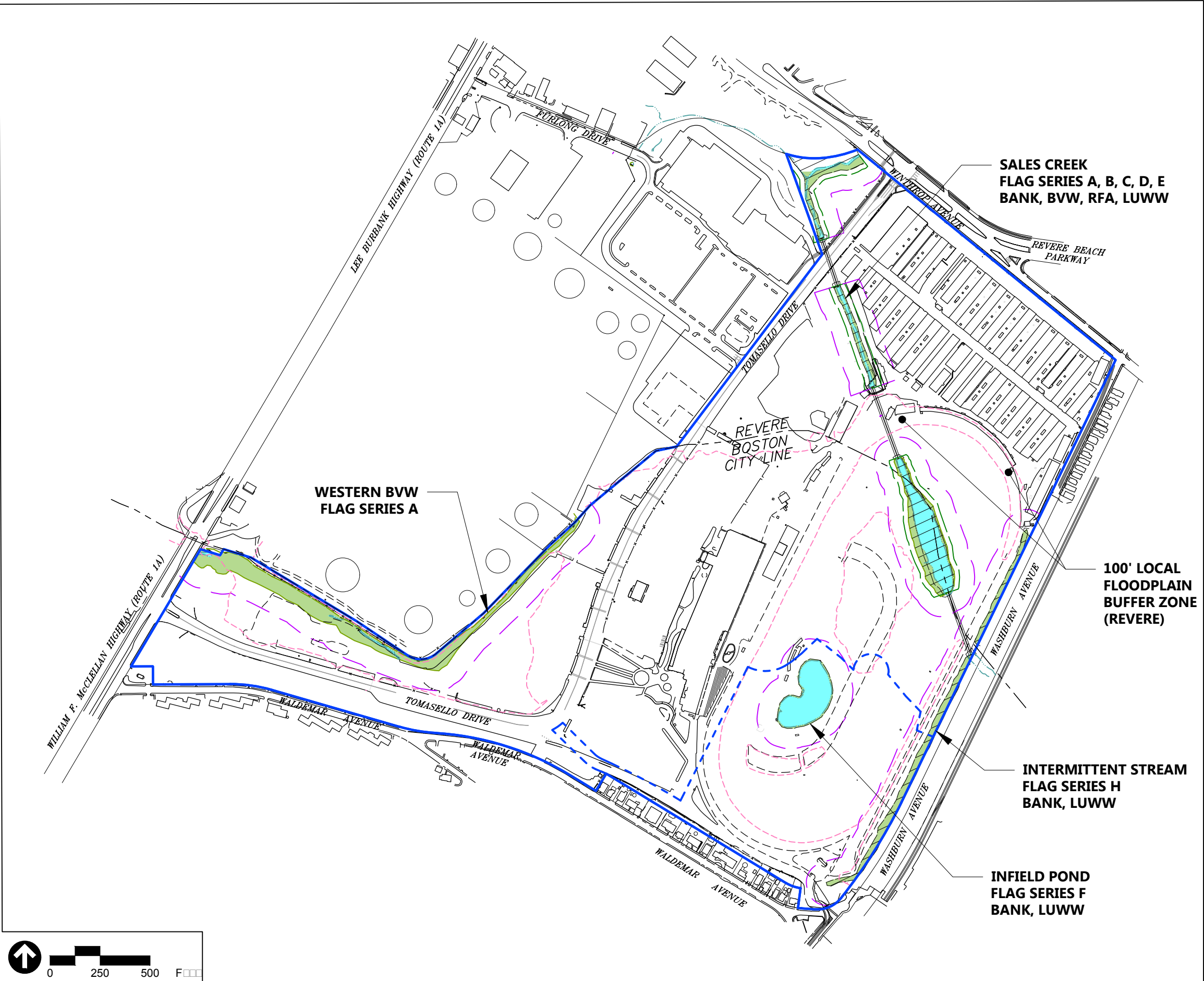
Digital orthophotograph, MassGIS 2014.

Figure 4.1

Areas of Critical Environmental Concern

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





- Project Site
- Phase 1 Project Site
- Top of Bank/Mean Annual High Water
- Approximate Top of Bank/Mean Annual High Water
- Bordering Vegetated Wetland Boundary
- Approximate Boundary of Bordering Vegetated Wetland
- 100' Buffer Zone Boundary
- 25' Riverfront Area Boundary
- 100-year Floodplain (Land Subject to Coastal Storm Flowage) Boundary
- Edge of Water
- Municipal Boundary
- Bank or Bordering Vegetated Wetland
- Water Bodies/Waterways
- Outstanding Resource Waters
- BVW Bordering Vegetated Wetland
- RFA Riverfront Area
- LUWW Land Under Water Bodies and Waterways

Source:  
Wetland Resource Areas confirmed by Orders of Resource Area Delineation issued by the Boston and Revere Conservation Commissions (MassDEP File No. 006-1546 dated September 20, 2017 and MassDEP File No. 061-0705 dated October 4, 2017, respectively).

The 100 year flood line is published by FEMA with a base flood elevation (BFE) determined. The BFE was established across the Project Site by determining the BFE on the surface created by the topographic survey.

Outstanding Resource Water limits established based upon 314 CMR 4.00 Massachusetts Surface Water Quality Standards.

Figure 4.2  
On-Site Wetland Resource Areas

# 5

## Transportation

### 5.1 Executive Summary

This chapter presents an evaluation and summary of existing and future transportation infrastructure and operations for the Phase 1 Project as well as the Master Plan Project. The chapter is organized into three primary sections. This section provides an overview of the Phase 1 Project and overall Master Plan Project, including a discussion of the program elements of each. The transportation study methodology is then discussed, including provision of a comprehensive Transportation Impact Assessment ("TIA") for the Phase 1 Project to support the Phase 1 Waiver request. The Master Plan Project will be studied comprehensively in the subsequent DEIR/DPIR that will be prepared and submitted subsequent to this EENF/EPNF filing. The Proponent will work with MassDOT, DCR, BTDA, BPDA, and the City of Revere regarding the comprehensive assessment of transportation impacts, mitigation, and improvements as the Master Plan Project progresses through required permitting and development review processes.

The second section of this chapter provides a summary of the overall development plan (the Master Plan Project), which contemplates up to 16,500,000 square feet of development for the Master Plan Site over a 15 to 20-year period of time. Key elements of the second section of this chapter include the following preliminary study of the overall Master Plan Project development plan:

- › Anticipated preliminary Project trip generation of morning and evening peak commuter periods and average weekday daily trips.
- › The overall transportation analysis strategy that will be employed to clearly study and mitigate the Master Plan Project in a forthcoming DEIR/DPIR.

The purpose of this effort is to help initially define and quantify the key aspects of the overall Master Plan Project Program. This will help key reviewing and regulatory entities (including the BPDA, BTDA, City of Revere and MassDOT), the Proponent, and the public better understand the scale of the Master Plan Project and help to frame an appropriate scope that will be put in place to study the impacts of the Master Plan Project as part of a forthcoming DEIR/DPIR that would be prepared in support of the Master Plan Project.

The third section of this chapter focuses solely on the Phase 1 Project, as discussed in detail previously in Chapter 1, *Project Description and General Information*. A comprehensive TIA has been developed to quantify, understand, and mitigate the



transportation impacts of the Phase 1 Project and to develop appropriate transportation improvements to support this first phase of the overall development plan. This study has been developed to conform with both MassDOT TIA Guidelines<sup>1</sup>, as well as to BTD's "Transportation Access Plans Guidelines" and uses standard methodologies, including the Institute of Transportation Engineers' Trip Generation manual (10<sup>th</sup> Edition) and local travel characteristics as defined in *Access Boston 2000-2010*. The Study analyzes the following as part of the evaluation of 2017 Existing Conditions:

- › Vehicle traffic on study area roadways and intersections;
- › Parking conditions;
- › Loading and service activities;
- › Pedestrian and bicycle operations; and
- › Public transportation services.

In addition, this study quantifies and assesses the transportation impacts that are expected within the Phase 1 Project area under future conditions.

The purposes of these analyses are to:

- › Define and quantify existing transportation conditions in the Phase 1 Project study area;
- › Estimate the transportation impacts that will be generated under future conditions based on the anticipated program for the Phase 1 Project;
- › Develop a set of mitigation strategies and improvement measures which will help to lessen the transportation effects of the Phase 1 Project; and
- › Demonstrate that these transportation mitigation efforts will meet or exceed BPDA, BTD, and MassDOT requirements, and will serve as public benefits.

### **5.1.1 Proposed Development Program**

#### **Master Plan Project**

The Master Plan Project contemplates 16,500,000 square feet of development supporting a dynamic mix of uses on the Project Site, encouraging creative retail and retail incubators, commercial and innovation uses, diversity of residential uses as well as open space and community spaces.

The new mixed-use neighborhood at Suffolk Downs can accommodate Amazon's entire eight million square-foot commercial office requirement. Portions of the commercial component of the Master Plan Project will be focused near the two existing MBTA Blue Line stations and then will radiate through the Project Site along

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<sup>1</sup> *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

a network of new streets, neighborhood retail districts and open spaces. The entire commercial program will be within walking distance of the two Blue Line stations.

As defined under Program A (the more impactful program from a transportation perspective), the Project Site will also include up to 7,450 housing units, 550,000 square feet of street front retail, and supporting off-street parking and open space. Several hotels with up to 835 rooms are also planned.

This development plan will be interspersed throughout the Project Site to ensure a dynamic mixed-use environment that is woven together in a cohesive fabric of new urban streets, walking paths, open spaces and bicycle connections. Ground-level amenities will be encouraged, with local restaurants and on-site retail able to spill out onto adjacent sidewalks and open space areas. Table 1-1 (presented previously) provides a detailed breakdown of the Master Plan Project program.

### **Phase 1 Project**

The Phase 1 Project is proposed in the southeastern corner of the Boston portion of the Project Site immediately adjacent to the Suffolk Downs MBTA Blue Line station (the "Phase 1 Project Site"). The Phase 1 Project Site currently contains a portion of the Suffolk Downs race track and infield, as well as other previously disturbed areas, including landscaped areas, an infield pond, and portions of an internal driveway and surface parking.

The building design and associated site-wide improvements of the Phase 1 Project have been further advanced, as it is currently contemplated as the initial phase of development for Amazon HQ2. The approximately 520,000-gross square foot office building (studied as a Corporate Headquarters) with up to 520 structured parking spaces Phase 1 Project is part of the overall Master Plan Project program (included within both Programs A and B) and is described in greater detail in Section 1.4.3 of Chapter 1, Project Description and General Information. In summary, the Phase 1 Project will consist of:

- › Two approximately 260,000-gross square foot office buildings with supporting corporate uses/amenities;
- › Approximately 520 structured parking spaces (520 of the existing surface parking spaces will be taken out of service and no net new parking spaces will result from Phase 1);
- › Approximately 12 acres of existing open space to remain as-is and an additional approximately 1.2 acres of open space to be improved by the Phase 1 Project, including pedestrian access to the Suffolk Downs MBTA station;
- › New internal access driveway that connects the Phase 1 Site to Tomasello Drive (private roadway);
- › Utility improvements/upgrades resulting in improved water quality through an upgraded drainage system;

- › Pedestrian facilities, including an on-site accessible walkway to the MBTA Suffolk Downs station; and
- › Bicycle facilities, including on-site long- and short-term bicycle storage in accordance with the City of Boston Bicycle Guidelines and a new Hubway public bikeshare station.

### 5.1.2 Phase 1 Project Key Findings

The additional traffic generated by the Phase 1 Project will produce limited incremental impacts to the surrounding transportation infrastructure. The Project Site location affords the opportunity for it to operate as a highly-effective transit-oriented development ("TOD") that is well served by public transit via the MBTA Blue Line, which will also foster a reduced share of trips that would be generated by automobile, resulting in reduced impacts on surrounding streets. Additionally, the location of the Phase 1 Project relative to the overall MBTA transit system will foster a high proportion of "reverse commute" trip making, utilizing available Blue Line capacity during peak commuter periods (i.e., carrying capacity that is generally underutilized). The Project is not expected to result in any measurable changes to peak hour operating conditions at study area intersections. In addition, Phase 1 Project will have limited impact to the surrounding neighborhoods given the Project Site's central location to McClellan Highway ("Route 1A"), which will provide the opportunity for vehicles to make use of multiple regional access routes to easily access and exit the Project Site and make direct highway connections to the north, south, and west. Also, new vehicular trips will be either reverse commuting through the tunnels from Boston or getting off Route 1A before East Boston. Figure 5.1 provides an illustrative Project Site plan of the footprint of the Phase 1 Project, indicating its key transportation-oriented provisions. Key findings and actions include the following:

- › The Phase 1 Project Site is currently well served by transportation infrastructure, including nearby public transit (MBTA Blue Line and other local bus routes) and direct access to Route 1A and Winthrop Avenue via Tomasello Drive.
- › The Phase 1 Project is expected to generate approximately 334 entering and 25 exiting vehicle trips during the weekday morning peak hour and approximately 31 entering and 277 exiting vehicle trips during the weekday evening peak hour.
- › The traffic generated by the Phase 1 Project is expected to have minimal impacts on the area's transportation infrastructure with the implementation of the proposed Project Site access plan.
- › The results of the analysis indicate that there will be only minor incremental increases in delay throughout the study area with the Phase 1 Project in place.
- › The Phase 1 Project is expected to generate approximately 263 entering and 20 exiting transit trips during the weekday morning peak hour and approximately 24 entering and 218 exiting transit trips during the weekday evening peak hour.

- › The number of estimated new transit trips from the Phase 1 Project would result in a nominal increase to peak direction passenger loading on the MBTA Blue Line. The Phase 1 Project would not cause the MBTA Blue Line to exceed any capacity thresholds that wouldn't otherwise be exceeded under 2024 No-Build conditions. The analysis of the Blue Line's critical link found that the Blue Line can accommodate the anticipated Phase 1 transit demand during the busiest 30-minute periods of the morning and evening peaks while maintaining acceptable levels of passenger loading per MBTA policy.
- › The Proponent is committed to providing approximately 520 on-site parking spaces (1 space per 1,000 sf). These will be structured parking spaces within the new buildings.
- › New parking that is proposed will be offset by the elimination of other existing surface parking spaces located on-site (resulting in no net-new parking constructed in connection with the Phase 1 Project).
- › There will be dedicated off-street loading docks to ensure that loading and service operations are handled internal to the building site and will not on any public streets or other adjacent private streets (Tomasello Drive). The dock will have enclosed bays in the building for deliveries and trash removal. Access to the loading area will be provided via the new private drive that will connect to Tomasello Drive.
- › The Phase 1 Project will improve pedestrian sidewalks adjacent to the Project Site. New sidewalks will meet Americans with Disabilities Act and Architectural Access Board (ADA/AAB) standards. If feasible, street trees will be provided along this new sidewalk as well.
- › The Proponent will provide covered bicycle storage capacity on-site in accordance with the City of Boston Bicycle Guidelines. The Project will also include public bikes racks to support ground floor retail space and visitors.
- › The Proponent is committed to providing a dedicated Hubway Station for the Phase 1 Project and other nearby East Boston and Revere residents.
- › The Proponent will implement a proactive transportation demand management (TDM) plan to encourage its employees to use transit and other alternative forms of transportation.

## **5.2 Master Plan Project Traffic Impact Assessment (TIA) Methodology**

### **5.2.1 Introduction**

As previously described in Chapter 1, *Project Description and General Information*, the Master Plan Project has been designed to have a strong, but flexible, urban design framework that will function as a highly-effective transit-oriented development (TOD) and has the ability to adapt to different programs. Given its scale, the Master Plan Project is a long-term endeavor that will be developed in



multiple phases over a period of 15 to 20 years, and as such, is conceived with flexibility to balance different residential and commercial uses as development proceeds over time. For planning purposes, the Master Plan Project is being presented in this EENF/EPNF with two program options both having the same total floor area (approximately 16.5 MSF), but different mixes of uses. Table 1-1 (presented previously) provides details on each of these alternative development programs. Figures 1.6a and 1.6b present the two development programs for the Master Plan Project.

The primary purpose of this section is to provide preliminary transportation analyses and initial guidance relative to the preparation and conduct of a comprehensive Transportation Impact Assessment (TIA), as required by MassDOT and MEPA. This section summarizes the proposed methodology for the Master Plan Project TIA and is inclusive of a complete TIA study area that considers roadways under the jurisdiction of MassDOT, Department of Conservation and Recreation (DCR), and the Cities of Boston and Revere. The TIA will be performed in accordance with the MassDOT TIA Guidelines dated March 13, 2014.

Based on preliminary analysis, the following transportation-related information is provided to inform the draft scope of the TIA and to assist in approval of the scope.

### **5.2.2 Study Area**

For the Master Plan Project TIA, the study area will be expanded beyond what was analyzed as part of the Phase 1 Project TIA. In addition to the Project Site's access points, the Master Plan Project TIA covers an expansive study area including 36 locations that fall under MassDOT, DCR, Boston and Revere jurisdiction. Based on preliminary distribution and assignment of Master Plan Project vehicle trips, the following intersections are proposed to be included in the Master Plan Project TIA study area:

1. Neptune Road at Saratoga Street
2. Neptune Road at Bremen Street
3. Bennington at Neptune Road
4. Neptune Road at Route 1A NB off-ramp
5. Route 1A SB at Curtis Street
6. Boardman Street at Route 1A
7. Route 1A NB at Waldemar Avenue
8. Route 1A at Suffolk Downs/Tomasello Drive
9. Route 1A at Jughandle
10. Route 1A at Furlong Drive
11. Winthrop Avenue at Route 1A SB on-ramp
12. Route 60 (American Legion Highway) at Bell Circle – North

13. Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South
14. Route 1A (VFW Parkway) at Bell Circle
15. Beach Street at Bell Circle
16. Revere Street at Route 60
17. Brown Circle (Roundabout)
18. Route 60 (Squire Road) at Charger Street
19. Route 60 (Squire Road) at Sigourney Street/Mall Driveway
20. Copeland Circle (Route 1 at Route 60)
21. Route 16 at Garfield Avenue/Webster Avenue
22. Route 1/Route 16 Interchange
23. Winthrop Avenue at Revere Beach Pkwy/Harris Street
24. Butler Circle
25. Route 1A (North Shore Road) at Wonderland MBTA Station
26. Route 1A (North Shore Road) at Revere Street
27. Winthrop Avenue at North Shore Road
28. Winthrop Avenue at Suffolk Downs/Tomasello Drive
29. Winthrop Avenue at Revere Beach Parkway
30. Ocean Avenue at State Road/Revere Beach Parkway
31. Eliot Circle
32. Bennington Street at Saratoga Street
33. Bennington Street at Saratoga Street
34. Bennington Street at Crescent Avenue
35. Bennington Street/State Road at Winthrop Avenue

The study area intersections are illustrated in Figure 5.2.

### 5.2.3 Safety

Study area intersections located within Highway Safety Improvement Program (HSIP) clusters are subject to a Roadway Safety Audit (RSA) per MassDOT. Preliminary steps have been taken to identify possible intersections that could be determined to be subject to the RSA requirement. The intersections located within a HSIP cluster have been identified as:

- › Winthrop Avenue (Route 145) at Revere Beach Parkway and Harris Street
- › Winthrop Avenue at North Shore Road
- › Bennington Street at Crescent Avenue
- › Bennington Street and State Road at Winthrop Avenue

- › American Legion Highway (Route 60) at Bell Circle – North
- › American Legion Highway (Route 60) at Bell Circle -South
- › Revere Beach Parkway (Route 16) and Route 1A at Bell Circle
- › VFW Parkway (Route 1A) at Bell Circle
- › Beach Street at Bell Circle
- › American Legion Highway (Route 60) at Revere Street
- › Squire Road (Route 60) at Brown Circle
- › Squire Road (Route 60) at Sigourney Street/Mall Driveway
- › Squire Road (Route 60) at Route 1 SB Off-Ramp/Copeland Circle
- › Revere Beach Parkway (Route 16) at Garfield Avenue and Webster Avenue

Many of these locations could be inclusive of the mitigation program for the Master Plan Project. Accordingly, the Proponent will work closely with MassDOT regarding the timing of each potential RSA where appropriate and applicable.

#### **5.2.4 Analysis Periods**

For the Master Plan Project TIA, the analysis periods are anticipated to include both the weekday morning and weekday evening peak hours. While the Master Plan Project does include a retail component, it is a relatively small part of the overall program. It should be reiterated that the proposed retail is not envisioned as large format destination retail. Rather, it would be geared towards street-level, neighborhood-style retail that would be complementary to the other uses on the Project Site. As such, the Master Plan Project TIA will focus on the impacts to the weekday morning and weekday evening peak hours.

#### **5.2.5 Project Phasing Analysis and Horizon Year**

Given the scale of the Master Plan Project and the time it will take to construct it, a 20-year planning horizon is recommended for analysis of full-build conditions. However, it will also be important to identify Master Plan Project impacts and infrastructure needs at key stages of development. This will require detailed traffic monitoring and evaluation of Project Site access operations as the Project Site is developed. It is envisioned that the Master Plan TIA will be analyzed to formulate a development strategy that clearly identifies when appropriate mitigation and improvement actions will need to be put in place to ensure that changing transportation needs are met and impacts are abated. As such, the TIA will likely include the study of multiple intermediate development phases in addition to the assessment of the full build condition. The Proponent will work closely with MassDOT in coordination with the City of Boston, and the City of Revere to determine the appropriate approach to be analyzed in the Master Plan TIA as well as the schedule for the associated traffic monitoring program.

### 5.2.6 Trip Generation

Master Plan Project Trip Generation was calculated using the methodologies outlined in the ITE Trip Generation Manual, 10<sup>th</sup> Edition (September 2017). The methodology utilized to estimate the number of Project-generated trips was determined via the following protocol:

1. Identify Project Land Use Codes and estimate ITE Unadjusted Vehicle Trips
2. Convert ITE Unadjusted Vehicle Trips into Person Trips
  - a. Average Vehicle Occupancy (AVO) Rates
  - b. Estimate Internal Capture Trips
3. Determine Appropriate Mode Shares by Land Use
4. Calculate Daily and Peak Hour Trips by Mode (vehicle, transit, walk, bike)
  - a. Convert Person Trips to Adjusted Vehicle Trips
5. Estimate Pass-by Vehicle Trips
6. Summarize Adjusted Trip Generation

The following sections summarize the analytical details involved in following these steps and supporting calculations used to determine Master Plan Project Trip Generation.

The Master Plan Project includes up to 16,500,000 square feet of floor area, comprised with a mix of commercial (office and R&D), residential, hotel and retail land uses (in two alternative mixes of uses). The ITE Trip Generation Manual categorizes these land uses by Land Use Code (LUC) and provides daily, morning, and evening peak hour unadjusted vehicle trip generation rates for each respective use. Table 5-1 summarizes the land uses and building quantities for each program.

**Table 5-1 Trip Generation Parameters**

Land Use	ITE Code	Program A	Program B
<i>Residential</i>			
Mid-Rise	LUC 221	1,349 units	1,808 units
High-Rise	LUC 222	5,396 units	7,230 units
Senior Housing	LUC 255	755 units	962 units
	Subtotal	7,500 units (7,450,000 sf)	10,000 units (10,400,000 sf)
<i>Hotel</i>	LUC 310	835 keys (500,000 sf)	667 keys (400,000 sf)
<i>Office</i>			
General Office	LUC 710 <sup>a</sup>	7,200,000 sf	4,725,000 sf
R&D	LUC 760	800,000 sf	525,000 sf
<i>Retail</i>	LUC 820	550,000 sf	450,000 sf
	TOTAL	16,500,000 sf	16,500,000 sf

<sup>a</sup> ITE LUC 710 (General Office) filtered to reflect Northeast/Mid-Atlantic Region data



The land use types and associated program quantities summarized in Table 5-1 were used to calculate the unadjusted trip generation for the overall Master Plan Project. To calculate adjusted vehicle trips, the following methodology was used:

#### 5.3.6.1 Calculation of Person Trips

The calculation of person trips from unadjusted trips involves several distinct steps, including the following actions:

- › **Identify Average Vehicle Occupancy Rates by Land Use Type** - The unadjusted vehicle trips are converted into person trips by applying national average vehicle occupancy (AVO) rates as established in the 2009 National Household Travel Survey.
- › **Determine Trip Generation from Existing, Adjacent Land Uses** – Traffic counts were conducted at the Suffolk Downs Off-Track Betting during their typical hours of operation on September 28, 2017 and on October 5, 2017. These counts will be used to quantify existing site traffic conditions in the Master Plan Project TIA.

In addition, there is other nearby retail totaling approximately 200,000 sf along Furlong Drive. The presence of this site will effectively reduce the overall trip generation rate for this specific use, as the overall scale will result in increased internal trip making between those two sites. This existing retail was factored into the retail projections for the Master Plan Project.

- › **Calculate Internal Capture Trips** - As described in the ITE Trip Generation Handbook, because of the complimentary nature of these land uses, some trips are made among the proposed on-site uses. This capture of trips internal to the Project Site has the net effect of reducing vehicle trip generation between the overall Project Site and the external street system. Internal capture rates were calculated based on the methodology outlined in the ITE [Trip Generation Handbook](#) and the respective *Spreadsheet Tool for Estimation of Trip Generation and Internal Trip Capture at a Mixed-Use Development*.

#### 5.3.6.2 Mode Shares

As described in detail in previous chapters of this EENF/EPNF, the Master Plan Project is intended to be a transformative endeavor, resulting in the creation of an active, mixed-use TOD project. Accordingly, the travel behavior of the people who live, work, and gather in this district will evolve and change over time as components of the Master Plan Project come on line. Over the long-term, the resultant mode shares for land uses in the district are anticipated to be representative of an urbanized, highly-effective TOD. An analysis of other comparative development efforts was conducted to support this preliminary assessment. In particular, the mode shares that are anticipated at the nearby North Point development have been identified as an appropriate indicator and target of future travel behavior for the

Master Plan Project over the long-term. Further, there are many emerging factors that continue to influence long-term travel behavior, particularly in urbanized environments:

- › The propensity to own a car and drive to work or other travel choice destinations is trending downward.
- › The temporal work habits of professionals are also changing (i.e.; work from home/remotely – arrive depart in more flexible windows outside of traditional AM/PM peaks, etc.) and is impacting the rate of historical peak hour travel.
- › The increased desirability to work and live within urban environments increasing non-vehicular modes shares including transit, bicycling and walking.

The use of an urban mode share profile that is more indicative of a highly-effective TOD, the acknowledgement that the factors described above will likely continue to result in downward auto trip making rates, coupled with a strong commitment to actively monitor actual trip making by the Master Plan Project is key. This approach will help to ascertain that reasonable and appropriate transportation mitigation and improvements are devised and paired with defined development stages/phases. Annualized monitoring of Master Plan Project traffic generation and related parking needs will serve to confirm and validate these trends over the long-term to help quantify, assess, and understand when it will be appropriate and necessary to implement key transportation improvement actions over the long-term.

The mode shares used for the Master Plan Project trip generation are summarized in Table 5-2.

**Table 5-2 Anticipated Master Plan Project Mode Shares**

Land Use	SOV <sup>a</sup>	HOV <sup>b</sup>	Transit	Walk	Bike	Other
Residential	26.8%	5.2%	45.4%	19.6%	1.9%	1.1%
Hotel	25.6%	4.4%	54.7%	12.7%	1.6%	1.0%
Office/R&D	34.2%	5.8%	46.9%	10.9%	1.3%	0.9%
Retail	26.5%	4.5%	53.9%	12.5%	1.6%	1.0%

Note: Automobile mode shares are based on the mode shares used for North Point. Sources include: (1) Kendall Square K2 City of Cambridge Study, (2) Hotel Parking and Transportation Demand Management Reports – City of Cambridge, and (3) Certified NorthPoint TIS.

a SOV = Single occupancy vehicles

b HOV = High occupancy vehicles

### 5.3.6.3 Adjusted Project Trips

The mode shares discussed above were applied to the person trips to generate the Adjusted Project Trips by mode. A local AVO was applied to the rideshare mode to

more accurately reflect the number of vehicles generated by the Project Site. Detailed trip generation worksheets are provided in Appendix G.

#### **5.3.6.4 Pass-by Trips**

Pass-by vehicle trips were estimated using the guidance in the ITE Trip Generation Handbook, 3rd Edition, which provides data on pass-by trips for various size developments for LUC 820 – Shopping Center. Based on the data available, a reasonable estimate for the pass-by trip percentage for this size retail component is 34 percent for the weekday evening peak period. Data for the weekday morning peak and the daily pass-by trip percentage is not provided in the Handbook. However, given the scale and the nature of the retail being driven by residents, office tenants, and commuters, the average pass-by trip percentage for the weekday evening peak period of 34 percent was also used for the weekday morning peak hour. A rate of 25 percent was assumed for the Weekday Daily condition.

Table 5-3 provides an overall summary of the Master Plan Project vehicle trip generation for both programs. Given the urban nature of the Master Plan Project, the level of density proposed on the Project Site, and the overall size of the development, it is very likely that the ITE data and methodology results in a highly conservative estimate of future traffic. The nature of the Master Plan Project and the way the Project Site has been laid out suggest that certain key factors such as internal capture rates, pass-by rates, and even non-vehicular mode split could be significantly higher than what is shown in Table 5-3. The Proponent looks forward to working with MassDOT in coordination with the City of Boston and City of Revere to establish trip generation projections that most accurately reflect the expected impacts associated with the Master Plan Project.

**Table 5-3 Master Plan Project: Trip Generation Summary**

		Program A			Program B		
		Vehicle	Transit	Other	Vehicle	Transit	Other
<b>Weekday Daily</b>							
Office	In	5,982	7,660	2,139	4,344	5,562	1,554
	Out	<u>5,732</u>	<u>7,339</u>	<u>2,050</u>	<u>4,151</u>	<u>5,315</u>	<u>1,484</u>
	Total	11,741	14,99	4,189	8,495	10,877	3,038
Hotel	In	1,618	3,226	903	1,261	2,513	704
	Out	<u>1,749</u>	<u>3,486</u>	<u>976</u>	<u>1,367</u>	<u>2,726</u>	<u>763</u>
	Total	3,367	6,712	1,879	2,628	5,239	1,467
Res	In	7,001	10,998	5,470	9,538	14,982	7,451
	Out	<u>7,171</u>	<u>11,263</u>	<u>5,602</u>	<u>9,670</u>	<u>15,188</u>	<u>7,554</u>
	Total	14,172	22,261	11,072	19,208	30,170	15,005
Retail	In	2,087	5,250	1,471	1,760	4,429	1,241
	Out	<u>1,980</u>	<u>5,047</u>	<u>1,414</u>	<u>1,671</u>	<u>4,258</u>	<u>1,193</u>
	Total	4,067	10,297	2,885	3,431	8,687	2,434
Total	Total IN	16,688	27,134	9,983	16,903	27,486	10,950
	Total OUT	<u>16,632</u>	<u>27,135</u>	<u>10,042</u>	<u>16,859</u>	<u>27,487</u>	<u>10,994</u>
	TOTAL	33,320	54,269	20,025	33,762	54,973	21,944
<b>Weekday Morning Peak Hour</b>							
Office	In	1,911	2,447	684	1,361	1,743	487
	Out	<u>254</u>	<u>325</u>	<u>91</u>	<u>179</u>	<u>229</u>	<u>64</u>
	Total	2,165	2,772	775	1,540	1,972	551
Hotel	In	111	222	62	89	177	50
	Out	<u>29</u>	<u>57</u>	<u>16</u>	<u>27</u>	<u>53</u>	<u>15</u>
	Total	140	279	78	116	230	65
Res	In	283	445	221	367	576	286
	Out	<u>743</u>	<u>1,168</u>	<u>581</u>	<u>982</u>	<u>1,543</u>	<u>767</u>
	Total	1,026	1,613	802	1,349	2,119	1,053
Retail	In	34	90	25	25	67	19
	Out	<u>18</u>	<u>60</u>	<u>17</u>	<u>15</u>	<u>47</u>	<u>13</u>
	Total	52	150	42	40	114	32
Total	Total IN	2,339	3,204	992	1,842	2,563	842
	Total OUT	<u>1,044</u>	<u>1,610</u>	<u>705</u>	<u>1,203</u>	<u>1,872</u>	<u>859</u>
	TOTAL	3,383	4,814	1,697	3,045	4,435	1,701
<b>Weekday Evening Peak Hour</b>							
Office	In	292	373	104	195	251	70
	Out	<u>1,547</u>	<u>1,981</u>	<u>554</u>	<u>1,120</u>	<u>1,434</u>	<u>400</u>
	Total	1,839	2,354	658	1,315	1,685	470
Hotel	In	106	212	59	82	163	46
	Out	<u>127</u>	<u>254</u>	<u>71</u>	<u>100</u>	<u>200</u>	<u>56</u>
	Total	233	466	130	182	363	102
Res	In	623	979	487	894	1,405	699
	Out	<u>429</u>	<u>672</u>	<u>335</u>	<u>591</u>	<u>929</u>	<u>463</u>
	Total	1,052	1,651	822	1,485	2,334	1,162
Retail	In	197	554	155	166	465	130
	Out	<u>170</u>	<u>503</u>	<u>141</u>	<u>143</u>	<u>423</u>	<u>118</u>
	Total	367	1,057	296	309	888	248
Total	Total IN	1,218	2,118	805	1,337	2,284	945
	Total OUT	<u>2,273</u>	<u>3,410</u>	<u>1,101</u>	<u>1,954</u>	<u>2,986</u>	<u>1,037</u>
	TOTAL	3,491	5,528	1,906	3,291	5,270	1,982



### 5.2.7 Trip Distribution

The directional distribution of traffic approaching and departing the Project Site is a function of several variables: population densities, existing travel patterns, and the efficiency of the roadways leading to/from the Project Site. Trip distribution patterns were developed individually for the office, retail, hotel and residential components of the Master Plan Project. The trip distribution for the office and residential components was generated based on the origin-destination US Census Bureau American Community Survey 2006-2010 Five-year Estimates for the City of Boston and the City of Revere. The office and residential components were assumed to follow the same distribution patterns. A separate trip distribution was created for the retail/hotel components of the Project Site based on existing travel patterns. The assignment of Project Site-generated traffic to specific travel routes was based on the assumption that most motorists will seek the fastest and most direct routes to and from the Project Site.

The anticipated overall trip distribution patterns are summarized in Table 5-4 below. The detailed trip distribution pattern for each component of the Project Site are shown in Figures 5.3 and 5.4.

**Table 5-4 Vehicular Trip Distribution – Master Plan Project**

Direction (To/From)	Travel Route	Office/ Residential Components	Retail/Hotel Component
		Percent to/from Route	Percent to/from Route
North	Route 1A	0%	3%
North	Route 60	15%	26%
North	North Shore Road	9%	2%
South	Route 1A	56%	35%
East	Winthrop Ave (Route 145))	10%	17%
West	Winthrop Ave (Route 145))	4%	3%
West	Route 16	6%	14%
<b>Total</b>	<b>All Routes</b>	<b>100%</b>	<b>100%</b>

### 5.2.8 Site Access and Circulation

While the access for the Phase 1 Project will not involve significant changes to existing transportation infrastructure, the Master Plan Project will be providing significant mitigation and enhancements to the key access points as the overall Master Plan Project is built-out. The following are key access and circulation assumptions that will be considered as part of the Master Plan Project and are illustrated in Figure 5.5:

- › Primary vehicular access to the Project Site will continue to be provided by Tomasello Drive, a privately-owned roadway through the site, with connections to Route 1A and Winthrop Avenue (Route 145/Revere Beach Parkway). Under Existing and Phase 1 Project conditions, Tomasello Drive at Route 1A operations as an unsignalized intersection, and in the past, left-turns exiting the Project Site onto Route 1A southbound were prohibited. To support the future Master Plan Project, significant infrastructure improvements are proposed at this location including implementation of a two-phase traffic signal to support safe and efficient access as well as left-turn egress onto Route 1A southbound. Widening of Tomasello Drive and Route 1A will also be implemented as part of the Master Plan improvements.
- › Tomasello Drive at Route 145 (Revere Beach Pkwy/Winthrop Avenue) is a signalized intersection and functions in coordination with the offset intersection at North Shore Road. Geometric and traffic signal improvements will be recommended at both of these intersections to optimize traffic operations along this corridor.
- › To the east of the Tomasello Drive/Winthrop Avenue access, a right-turn in/right-turn out access driveway is proposed, which will facilitate access to specific buildings at the northern end of the Project Site.
- › To the east of the right-turn in/right-turn out access driveway a full-access signalized access driveway is proposed, which will facilitate access to the retail corridor and the “spine road” that runs north/south on the Project Site.
- › Furlong Drive, a public way from Route 1A to the Shops at Suffolk Downs, provides an additional, secondary access connection opportunity between Route 1A and Tomasello Drive via a publicly-accessible driveway through the shopping plaza. While Furlong Drive connects with Tomasello Drive at a stop-controlled intersection within the Project Site, turning movements to and from Furlong Drive at Route 1A are limited to right-in and right-out on the northbound side of Route 1A (there is no median break at this intersection currently). In connection with the Master Plan Project, a break in the median will be proposed along with the installation of a two-phase traffic signal to allow left-turnings exiting the Project Site to Route 1A southbound. This action will help to alleviate future peak period demands at the other two primary access points and will reduce traffic on Winthrop Avenue by providing an additional means of accessing Route 1A southbound.
- › It has been assumed that the Master Plan Project will continue to have no vehicular access to either Bennington Street or Waldemar Avenue.

### 5.2.9 Parking Strategy

The mixed-use nature of the Master Plan Project, including the Project Site’s proximity to multiple MBTA Blue Line stations (Beachmont and Suffolk Downs), provides the opportunity to support a sustainable, multi-modal environment that is expected to require a lesser amount of off-street parking than those required for

“traditional” quasi-urban/suburban developments. The provision of a reduced parking provision is also representative of an urbanized, highly-effective TOD and aligns with the Master Plan Project’s anticipated future mode share characteristics. Also, car ownership has been in decline, particularly in neighborhoods that are directly served by subway and other transportation modes.

A number of Transit Oriented Development sites were identified and studied to determine both recently constructed and proposed parking supplies for a variety of uses that are situated in urban contexts similar to the Suffolk Downs site in East Boston and Revere. These developments<sup>2</sup> were selected due to their intention to exploit and maximize all reasonable opportunity to share parking between complimentary uses. They are also project types that possess similar scale, land use and geographic characteristics as the Master Plan Project. Based on the parking ratios observed and employed, the following parking ratio ranges should adequately support the Master Plan Project’s parking demand into the future:

- › Residential: 0.5 to 1 spaces per unit
- › Office: 1.0 spaces per 1,000 SF
- › Lab: 1.0 spaces per 1,000 SF
- › Hotel: 0.5 spaces per room
- › Retail: 0.5 spaces per 1,000 SF

The majority of the parking spaces will be provided in structured parking facilities, with only limited on-street parking provided to support street front retail uses.

Shared parking within the commercial parking will be utilized for portions of the residential, retail and hotel uses. These commercial garages are largely vacant in the evenings, night and weekends and can accommodate additional residential, hotel and retail parking as needed. This utilizes parking spaces more efficiently and reduces the parking garage footprint on-site.

A more comprehensive parking analysis that quantifies shared parking will be developed and included in the DEIR/DPIR to clearly demonstrate how the projected parking needs of the Master Plan Project will be met in the future.

### **5.2.10 Transit Analysis**

A comprehensive transit analysis will be conducted to understand the Master Plan Project’s impacts on the public transit system within the area. The analysis will evaluate impacts to MBTA Blue Line service as well as to MBTA bus routes serving the Project Site. Assumptions and inputs for the transit analysis of the Master Plan Project will be developed through close coordination with the MBTA during the

<sup>2</sup> 100, 125, 150 and 160 Cambridgepark Dr. (Cambridge/Alewife), 55 Wheeler St. (Cambridge/Alewife), 175 Orleans St. (E. Boston), 246-248 Dorchester Ave. (S. Boston), AC Hotel (Theater District), Partners (Somerville/Assembly Square),

development of the EIR. The Master Plan Project is expected to generate 4,435-4,814 new transit trips during the morning peak hour and 5,270-5,528 new transit trips during the evening peak hour as shown previously in Table 5-3. A detailed transit analysis that assesses future morning and evening commuter peak conditions, as well as off-peak conditions, will be developed and summarized within the next DEIR/DPIR filing.

#### **5.2.11 Bicycle Analysis**

A comprehensive bicycle analysis will be conducted that conforms to City of Boston and City of Revere Guidelines and requirements. New bicycle parking associated with the Master Plan Project will meet or exceed those requirements. The TIA will provide a description of the future bicycle parking and infrastructure plans for the Master Plan Project.

#### **5.2.12 Transportation Demand Management (TDM)**

The Master Plan Project will benefit from excellent access to MBTA subway (Blue Line) and bus service as well as strong pedestrian and bicycle networks. This will provide a firm foundation for the implementation of TDM strategies to maximize use of non-auto modes and reduce single occupant vehicle (SOV) travel. The TDM Plan for the Master Plan Project will be fully explored and documented in the next DEIR/DPIR filing.

In addition to MassRIDES, it is anticipated that the TDM Plan for the Master Plan Project will take advantage of membership in a local Transportation Management Association (TMA) which already facilitates proactive and comprehensive TDM initiatives in the area.

#### **5.2.13 Preliminary Master Plan Mitigation Recommendations**

While the Master Plan TIA will be completed as part of the DEIR/DPIR, preliminary analyses of the primary roadways serving the Project Site have provided some insight into the potential long-term infrastructure needs in this area. It is important to identify feasible infrastructure improvements that are capable of minimizing the Master Plan Project's potential transportation impacts.



Based on the trip generation and trip distribution outlined in Sections 5.2 and 5.3, it is evident that the primary areas of impact will be the Route 1A corridor and the Winthrop Avenue corridor. Accordingly, it is expected that a significant portion of the mitigation program will be focused on improvements to the roadway geometry, traffic signals, and multimodal mobility along these corridors. Some of the key locations likely to be part of the mitigation program include the Route 1A corridor, Winthrop Avenue (Route 145) corridor, Furlong Drive, the on-site roadway network, and other nearby intersections.

More extensive studies will be conducted as part of the DEIR/DPIR to not only determine the extent and nature of the improvements, but also the timing for their implementation. Because the Master Plan Project is likely to developed over a period of 15 to 20 years, monitoring of traffic volumes will be very important in determining the actual Master Plan Project impacts at different stages of development. The monitoring program will also provide an opportunity to periodically evaluate the assumptions for trip generation and mode share that are outlined in this document and will be carried forward in the DEIR. As mentioned previously, ITE trip generation projections are often highly conservative, so the monitoring program will assist in identifying the true Master Plan Project impacts. The DEIR will contain a more detailed discussion of Master Plan Project mitigation phasing and recommendations for the timing of specific roadway improvement projects within the study area. The Proponent will work closely with MassDOT in coordination with the City of Revere and the City of Boston to more clearly define the thresholds at which certain infrastructure needs will be addressed.

### **5.3 Phase 1 Project Traffic Impact Assessment (TIA)**

Evaluation of the transportation impacts associated with the Phase 1 Project requires a thorough understanding of the existing transportation system in the Project study area. The analysis of existing transportation conditions is based on the existing roadway network, roadway/intersection geometry, traffic control, existing daily and peak hour traffic volumes, traffic safety conditions, and existing public transportation.

#### **5.3.1 Phase 1 TIA Methodology**

The transportation analysis in support of the Phase 1 Project conforms to both the MassDOT TIA Guidelines<sup>3</sup> and the BTD's "Transportation Access Plans Guidelines" and uses standard methodologies, including the Institute of Transportation Engineers' Trip Generation (10<sup>th</sup> Edition) and local travel characteristics as defined in *Access Boston 2000-2010*.

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3 *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

The Phase 1 Project Transportation Study was conducted in two distinct stages. The first stage (Existing Conditions) involved a survey and compilation of existing transportation conditions within the study area (defined below) including:

- › An inventory of the transportation infrastructure within the defined Project study area, including its geometric and operational characteristics;
- › Geometric and operational characteristics of study area roadways and intersections;
- › Existing traffic control at study area intersections (i.e., traffic signalization, stop signs, one-way streets, etc.);
- › Transportation characteristics of current weekday operations at Suffolk Downs, including access, egress, parking for patrons and employees, and loading/service and shuttle bus activities;
- › Area off-street and on-street parking supply;
- › Pedestrian activity along study area roadways, and at study area intersections;
- › Bicycle activity and accommodations; and
- › Public transportation options within the study area, including buses and the Blue Line.

In the second stage of the study (Evaluation of Long-Term Transportation Impacts), future transportation conditions were projected within the study area. The future No-Build condition includes an assessment of future transportation including background growth on area roadways and intersections, planned transportation infrastructure improvements, and growth related to other proposed projects within the study area (without consideration of the Proposed Phase 1 Project). The future No-Build Condition takes into consideration many of the projects that are planned and/or under construction within the East Boston and Revere area including those listed in Section 5.3.3. The future Build Condition assesses the No-Build Condition plus estimated traffic generated by the Proposed Phase 1 Project.

Roadway, pedestrian, and transit capacity for morning and evening peak commuter periods, including traffic counts in May 2017, were studied and are summarized for the following conditions:

- › 2017 Existing Condition;
- › 2024 No-Build Condition; and
- › 2024 Build Condition.

Specific travel demand forecasts for the Phase 1 Project were assessed along with future transportation demands due to background traffic growth and traffic growth from other planned or approved projects within the study area. The year 2024 was selected as the horizon year for the purposes of quantifying and assessing future transportation impacts. The seven-year planning horizon is consistent with

MassDOT Transportation Impact Assessment (TIA) Guidelines<sup>4</sup>. The analysis of future year conditions considered the following:

- › Calculation of vehicular trip generation for the proposed Phase 1 Project and other area planned development identified in the study area.
- › Establishment of trip generation estimates based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10<sup>th</sup> Edition), as well as approved background projects.
- › Distribution and assignment of all development-generated traffic onto study area intersections in accordance with current travel patterns, previous studies of the area, data provided by for other projects, and anticipated travel behavior changes that can be quantified and substantiated.
- › Assessment of 2017 Existing Condition, 2024 No-Build Condition, and 2024 Build Condition traffic based on capacity analyses, reported levels of service, and queuing output derived for the defined study area intersections.
- › Appropriate mitigation and improvement actions to meet or exceed BPDA, BTD, and MassDOT requirements, and will serve as material public benefits.

### 5.3.2 Study Area

Study area intersections are listed below and are illustrated in Figure 5.6. They are reflective of similar past permitting efforts on the Project Site.

1. William F McClellan Highway (Route 1A) at Boardman Street
2. William F McClellan Highway (Route 1A) at Waldemar Avenue
3. William F McClellan Highway (Route 1A) at Tomasello Drive
4. William F McClellan Highway (Route 1A) at Route 1A Southbound Jughandle
5. Bennington Street at Crescent Avenue
6. Bennington Street/State Road at Winthrop Avenue
7. Winthrop Avenue (Route 145) at Revere Beach Parkway
8. Winthrop Avenue (Route 145) at Tomasello Drive
9. Winthrop Avenue (Route 145) at North Shore Road
10. Winthrop Avenue (Route 145) at William F McClellan Highway (Route 1A) southbound On-Ramp
11. Winthrop Avenue (Route 145) at Revere Beach Parkway (Route 16)/Harris Street;
12. Route 60 (American Legion Highway) at Bell Circle – North
13. Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South
14. Route 1A (VFW Parkway) at Bell Circle

<sup>4</sup> *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

#### 15. Beach Street at Bell Circle

These study area intersections were evaluated in detail using standard traffic engineering analysis techniques following both MassDOT and BTD Guidelines to identify incremental impacts of future traffic growth and site-generated traffic.

### Roadway Network

The Project Site is bounded by William F McClellan Highway (Route 1A) to the west and Winthrop Avenue (Route 145) to the north. Figure 5.7 identifies the study area roadway jurisdictions.

- › **William F McClellan Highway (Route 1A)** is generally oriented in the north/south direction, providing a direct connection to/from Boston, along with connections to several state routes (Route 1, Route 16, Route 60, and Route 145) to access surrounding cities and towns (Revere, Malden, Saugus, Lynn, etc.). William F McClellan Highway is classified as an urban principal arterial under MassDOT jurisdiction. Within the vicinity of the Project Site, William F McClellan Highway has two lanes of travel in each direction separated by a median. The posted speed limit is 40 mph within the vicinity of the Project Site and sidewalks are provided along both sides of the roadway. The land use majority is commercial within the vicinity of the Project Site.
- › **Winthrop Avenue (Route 145)** is generally oriented in the east/west direction, providing direct connections to Route 1A or Route 16, along with local connections to Route 1 and Route 60. Winthrop Avenue is classified as an urban principal arterial from William F McClellan Highway (Route 1A) to Revere Beach Parkway (Route 145)-east, the remaining roadway segments are classified as urban minor arterials. Winthrop Avenue from Revere Beach Parkway (Route 16)-west to Revere Beach Parkway (Route 145)-east is under the Department of Conservations and Recreation's (DCR) jurisdiction with remaining roadway segments under local jurisdiction. Within the vicinity of the Project Site, Winthrop Avenue has three lanes of travel in each direction separated by a median. The posted speed limit is 40 mph within the vicinity of the Project Site with sidewalks provided along both sides of the roadway. The land use majority is commercial within the vicinity of the Project Site.
- › **Tomasello Drive** is oriented in the east/west directions at the connection to William F McClellan Highway (Route 1A) and north/south directions at the connection to Winthrop Avenue (Route 145) forming T-intersection at both locations. Tomasello Drive is a private way and under the maintenance of the property owner. The private way is entirely within the overall Project Site and will provide direct access to the Project Site. Tomasello Drive provides two lanes of travel, one in each direction. The posted speed limit is 25mph with sidewalks provided on the west side of the roadway from Winthrop Avenue to the adjacent shopping center.



### **5.3.3 2017 Existing Conditions**

#### **Existing Site Access**

Under existing conditions, the Project Site can be accessed via Tomasello Drive from three locations: (1) Route 1A, (2) Furlong Drive, and (3) Winthrop Avenue. The intersection of Route 1A and Tomasello Drive is currently an unsignalized intersection with a break in the median on Route 1A that allows for full access, including an exclusive left-turn lane into the Project Site on the southbound approach. This intersection will serve as the primary access from the south. While left-turns have been prohibited in the past from Tomasello Drive onto Route 1A southbound, the current signage is faded, non-standard, and vehicles are actively making this maneuver. Furlong Drive, which provides access to The Shops at Suffolk Downs, intersects Tomasello Drive to form a three-way unsignalized intersection. Furlong Drive also intersects Route 1A to form a right-turn in/right-turn out unsignalized intersection. Winthrop Avenue intersects Tomasello Drive to form a three-legged signalized intersection, which will serve as the primary access from the north. The existing Project Site access patterns are illustrated in Figure 5.8

#### **Traffic Volumes**

Daily traffic volumes were collected at six locations over a 7-day period in early May 2017 (Sunday through Saturday) using automatic traffic recorders (ATRs). These dates represent typical days for traffic count purposes (non-holidays) while local schools are in session. The volumes are summarized in Table 5-5 and included in Appendix G.

**Table 5-5 Existing Traffic Volume Summary**

Location	Weekday ADT <sup>a</sup>	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		Volume	K Factor <sup>b</sup>	Dir. Dist. <sup>c</sup>	Volume	K Factor	Dir. Dist.
Route 1A, north of Waldemar Avenue	60,900	3,290	5.4%	63% SB	3,650	6.0%	56% NB
Route 1A, north of Tomasello Drive	57,800	3,035	5.3%	62% SB	3,340	5.8%	52% NB
Route 1A, between Jughandle Entrance and Exit	57,900	2,960	5.1%	63% SB	3,405	5.9%	54% NB
Tomasello Drive, east of Route 1A	3,200	230	7.2%	81% WB	290	9.2%	93% EB
Tomasello Drive, south of Winthrop Avenue	11,600	405	3.5%	76% SB	1,025	8.9%	64% NB
Furlong Drive, west of Tomasello Drive	9,300	190	2.0%	62% WB	785	8.4%	51% EB
Winthrop Avenue, west of Tomasello Drive	31,500	2,135	6.8%	54% WB	2,505	7.9%	56% EB
Winthrop Avenue, east of Tomasello Drive	32,300	2,210	6.8%	58% WB	2,610	8.1%	61% EB
Bennington Street, south of Crescent Avenue	14,200	1,300	9.2%	84% SB	1,035	7.3%	57% NB
North Shore Road, north of Winthrop Avenue	9,700	730	7.5%	56% SB	750	7.7%	57% NB
Route 1, between Squire Rd Ramps	67,600	4,880	7.2%	68% SB	4,245	6.3%	59% NB

Source: VHB based on automatic traffic recorder counts conducted in May 2017

Note: Peak hours do not necessarily coincide with the peak hours of turning movement counts.

a Average Daily Traffic volume expressed in vehicles per day.

b Represents the percent of daily traffic that occurs during the peak hour.

c Directional distribution of peak hour traffic.

As shown in Table 5-5, approximately 57,800-60,900 vehicles travel along William F McClellan Highway (Route 1A), on a typical weekday with the weekday morning peak hour accounting for approximately five percent and the weekday evening peak hour accounting for approximately six percent of the weekday daily traffic flow. Traffic flow along William F McClellan Highway (Route 1A) is greater in the southbound direction for the weekday morning peak hour and approximately even in each direction during weekday evening peak hours, though the peak direction is based on the time of day.

Tomasello Drive, east of William F McClellan Highway (Route 1A) carries approximately 3,200 vehicles on a typical weekday with the weekday morning peak accounting for approximately seven percent and weekday evening peak hour accounting for approximately nine percent of the weekday daily traffic flow.

Tomasello Drive, south of Winthrop Avenue (Route 145) carries approximately 11,600 vehicles on a typical weekday with the weekday morning peak accounting for approximately 3.5 percent and weekday evening peak hour accounting for approximately nine percent of the weekday daily traffic flow. The differences in daily traffic at each location could be attributed to the commercial development along Furlong Drive connecting to Tomasello Drive, approximately 800 feet south of Winthrop Avenue (Route 145). Traffic flow directionality along William F McClellan Highway (Route 1A) is dependent on the time of day. For the weekday morning peak hour, traffic flows mainly in the southbound direction, while for the weekday evening peak hour traffic flow is mainly in the northbound direction.

Winthrop Avenue, (Route 145), east of Tomasello Drive, carries approximately 32,000 vehicles on a typical weekday with the weekday morning peak accounting for approximately seven percent and weekday evening peak hour accounting for approximately eight percent of the weekday daily traffic flow. Traffic flow along Winthrop Avenue (Route 145) is generally evenly distributed in each direction during the weekday morning peak hours and is greater in the eastbound direction during the weekday evening peak hour, though the peak direction is based on time of day.

Concurrent with the ATR counts, turning movement counts (TMCs) were conducted at the study area intersections in May 2017 during the weekday morning peak period from 6:30 AM to 9:30 AM and the weekday evening peak period from 3:30 PM to 6:30 PM. The TMC data indicates that, within the study area, the weekday morning peak hour occurs between 7:15 AM and 8:15 PM and the weekday evening peak hour occurs between 4:45 PM and 5:45 PM.

### ***Seasonal Variation***

MassDOT weekday seasonal factors were reviewed to understand the seasonality of traffic count data collected in the month of May. Data for seasonal variation of traffic volumes on urban arterials and collectors in Boston and Revere, MA indicate that traffic counts in May are generally higher than the average month. Since the May count data were found to be higher than annual average conditions, no further seasonal adjustment factors were applied to the data. The MassDOT weekday seasonal factors are included in Appendix G.

Figures 5.9 and 5.10 illustrate the resulting 2017 Existing Condition weekday morning and weekday evening peak hour traffic volumes, respectively.

### ***Crash History***

To identify motor vehicle crash trends in the Master Plan Project study area, the most current crash data for the study area intersections were obtained from MassDOT for the five-year period from 2011 through 2015. A summary of the vehicular crash data is presented in Table 5-6 and included in Appendix G.

Crash rates are calculated based on the number of crashes at an intersection and the volume of traffic traveling through that intersection on a daily basis. MassDOT average crash rates for District 6 (the MassDOT district designation for Boston) are 0.70 and 0.53 for signalized and unsignalized intersections, respectively, and District 4 (the MassDOT district designation for Revere) are 0.73 and 0.56 for signalized and unsignalized intersections, respectively. In other words, on average, 0.70 crashes occurred per million vehicles entering signalized intersections, and 0.53 crashes occurred per million vehicles entering unsignalized intersections throughout District 6. The same methodology applies to District 4 rates. The crash rate worksheets for the study area intersections are included in Appendix G.

As shown in Table 5-6, the Winthrop Avenue (Route 145) at North Shore Road intersection has a calculated crash rate over the district average. The majority of the crashes are angle collisions with most resulting in property damage only. No fatal crashes were reported for this intersection or any other study area intersection.

### ***Road Safety Audits***

Study area intersections located within Highway Safety Improvement Program (HSIP) clusters are subject to a Roadway Safety Audit (RSA). Preliminary steps have been taken to identify possible intersections subject to the RSA. The Phase 1 study area intersections located within a HSIP cluster have been identified as:

- › Winthrop Avenue (Route 145) at Revere Beach Parkway and Harris Street
- › Winthrop Avenue at North Shore Road
- › Bennington Street at Crescent Avenue
- › Bennington Street and State Road at Winthrop Avenue

It should be noted that all four of these locations will likely be included in the overall mitigation program that will be outlined in the Master Plan TIA in the DEIR/DPIR. In addition, based on initial discussions with MassDOT, an RSA was previously conducted for Bell Circle. The Proponent will work with MassDOT to determine if additional safety review is required at Bell Circle. The Proponent will also work with MassDOT to determine if the other intersections listed above will require RSAs, and if so, establish the appropriate time frame for conducting the RSA.



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Table 5-6 Intersection Vehicular Crash Summary (2011 – 2015)

	Boardman Street at Route 1A	Route 1A NB at Waldemar Avenue	Route 1A at Suffolk Downs/ Tomasello Drive	Route 1A at Jughandle	Bennington Street at Crescent Avenue	Bennington Street/ State Road at Winthrop Avenue	Winthrop Avenue at Revere Beach Parkway	Winthrop Avenue at Suffolk Downs/ Tomasello Drive	Winthrop Avenue at North Shore Road	Winthrop Avenue at Route 1A SB on-ramp	Winthrop Avenue at Revere Beach Pkwy/Harris Street
Signalized?	yes	no	No	yes	no	yes	yes	yes	yes	yes	yes
MassDOT Average Crash Rate	0.70	0.53	0.53	0.70	0.56	0.73	0.73	0.73	0.73	0.73	0.73
Calculated Crash Rate	0.01	n/a	n/a	0.03	0.21	0.63	0.15	0.33	0.76	0.25	0.49
Exceeds Average?	n/a	n/a	n/a	n/a	no	no	no	no	yes	no	no
<b>Year</b>											
2011	1	0	0	1	2	4	1	2	7	6	6
2012	0	0	0	1	1	6	1	1	7	1	8
2013	0	0	0	0	1	6	1	3	13	3	9
2014	0	0	0	0	0	4	1	7	13	5	9
2015	0	0	0	0	1	1	4	8	6	2	11
Total	1	0	0	2	5	21	8	21	46	17	43
Average	0.20	0.00	0.00	0.40	1.00	4.20	1.60	4.20	9.20	3.40	8.60
<b>Collision Type</b>											
Angle	0	0	0	0	3	9	2	13	22	5	15
Head-on	0	0	0	1	1	1	0	1	2	1	2
Rear-end	0	0	0	0	1	3	4	2	10	8	17
Rear-to-Rear	0	0	0	0	0	0	0	0	0	0	0
Sideswipe, opposite direction	0	0	0	0	0	0	0	0	2	0	0
Sideswipe, same direction	0	0	0	1	0	2	0	0	6	1	3
Single vehicle crash	1	0	0	0	0	5	2	5	4	2	6
Unknown	0	0	0	0	0	1	0	0	0	0	
Not reported	0	0	0	0	0	0	0	0	0	0	
<b>Crash Severity</b>											
Fatal injury	0	0	0	0	0	0	0	0	0	0	0
Non-fatal injury	0	0	0	1	3	12	2	10	11	8	19
Property damage only (none injured)	1	0	0	1	1	8	6	10	32	7	22
Not Reported	0	0	0	0	1	1	0	1	2	1	2
Unknown	0	0	0	0	0	0	0	0	1	1	0
<b>Time of Day</b>											
Weekday, 7:00 AM - 9:00 AM	0	0	0	0	1	4	1	1	3	1	2
Weekday, 4:00 PM - 6:00 PM	0	0	0	0	1	2	0	5	4	2	6
Saturday, 11:00 AM - 2:00 PM	0	0	0	0	0	1	0	1	0	1	0
Weekday, other time	0	0	0	1	3	11	6	12	30	9	19
Weekend, other time	1	0	0	1	0	3	1	2	9	4	16
<b>Pavement Conditions</b>											
Dry	1	0	0	2	3	14	6	15	36	15	38
Wet	0	0	0	0	2	6	1	4	9	2	4
Snow	0	0	0	0	0	0	0	1	0	0	1
Ice	0	0	0	0	0	0	0	1	0	0	0
Slush	0	0	0	0	0	1	0	0	0	0	0
Unknown/Not reported	0	0	0	0	0	0	0	0	1	0	0
<b>Non Motorist (Bike, Pedestrian)</b>	0	0	0	0	0	0		0	0	0	0

Source: MassDOT crash portal, accessed October 2017.

Table 5-6 (continued) Intersection Vehicular Crash Summary (2011 – 2015)

	Route 60 (American Legion Highway) at Bell Circle - North	Route 60 (American Legion Highway) at Bell Circle -South	Route 16 and Route 1A at Bell Circle	Route 1A (VFW Pkwy) at Bell Circle	Beach Street at Bell Circle
Signalized?	yes	yes	yes	yes	yes
MassDOT Average Crash Rate	0.73	0.73	0.73	0.73	0.73
Calculated Crash Rate	0.49	0.54	0.27	0.34	0.60
Exceeds Average?	no	no	no	no	no
<b>Year</b>					
2011	8	8	3	2	3
2012	5	5	1	1	4
2013	5	8	2	0	6
2014	13	6	3	4	8
2015	3	6	2	4	1
Total	34	33	11	11	22
Average	6.80	6.60	2.20	2.20	4.40
<b>Collision Type</b>					
Angle	19	17	2	4	14
Head-on	0	0	0	0	0
Rear-end	7	12	5	3	3
Rear-to-Rear	0	0	0	0	0
Sideswipe, opposite direction	0	1	0	0	0
Sideswipe, same direction	5	2	2	1	2
Single vehicle crash	2	1	1	1	2
Unknown	1	0	0	1	0
Not reported	0	0	1	1	1
<b>Crash Severity</b>					
Fatal injury	14	12	6	4	8
Non-fatal injury	18	17	4	6	13
Property damage only (none injured)	1	2	0	1	0
Not Reported	1	2	1	0	1
Unknown	34	33	11	11	22
<b>Time of Day</b>					
Weekday, 7:00 AM - 9:00 AM	2	3	0	1	4
Weekday, 4:00 PM - 6:00 PM	1	2	3	0	1
Saturday, 11:00 AM - 2:00 PM	1	0	0	0	1
Weekday, other time	18	20	4	6	8
Weekend, other time	12	8	4	4	8
<b>Pavement Conditions</b>					
Dry	15	24	26	10	7
Wet	2	8	6	0	3
Snow	0	1	1	0	0
Ice	0	1	0	0	0
Slush	0	0	0	0	0
Unknown/Not reported	0	0	1	1	1
<b>Non Motorist (Bike, Pedestrian)</b>	2	0	0	2	0

Source: MassDOT crash portal, accessed October 2017.

## **Public Transportation**

The Project Site is well served by public transportation and benefits from adjacent MBTA Blue Line service as well as multiple local and commuter bus routes that operate within one-quarter mile of the Project Site. These services are illustrated in Figure 5.11, and their service and operational characteristics are described in further detail below.

### ***MBTA Blue Line Rapid Transit Service***

The MBTA's Blue Line rapid transit service operates between Wonderland Station in Revere and Bowdoin Station in Boston. The Blue Line connects with the Orange Line at State Street, the Green Line at Government Center, and ferry service at Aquarium Station. On weekdays, Blue Line service operates from 5:13 a.m. to 1:21 a.m.<sup>5</sup> During the peak periods, trains operate every 4.5 minutes.<sup>6</sup> During weekday off-peak periods, trains are scheduled to run every nine minutes.<sup>7</sup>

The total Blue Line fleet consists of 94 vehicles, which are proactively maintained by the MBTA's reliability-centered maintenance program. The Blue Line fleet is one of the most reliable among the MBTA's vehicle fleets.<sup>8</sup> During peak service, 72 vehicles (12 six-car trainsets) are utilized, with additional trainsets kept in reserve.<sup>9</sup>

The MBTA's Service Delivery Policy (the Policy)<sup>10</sup> provides that its purpose is to "set how the MBTA evaluates service quality and allocates transit service to meet the needs of the Massachusetts Bay region," which is consistent with the MBTA's enabling legislation and other external mandates. Vehicle load standards, as detailed in the Policy, define the levels of crowding that are acceptable for passenger comfort by mode and time period. The absolute maximum number of passengers that can fit onto a transit vehicle (also referred to by the MBTA as "crush capacity") is greater than the vehicle load standards dictated by the MBTA's Policy.

Blue Line service is operated with six-car trainsets, with each car having a seated capacity of 35 passengers.<sup>11</sup> Utilizing the vehicle load standard dictated by the MBTA's Policy, the policy capacity of each Blue Line train during the peak periods is 516 passengers.<sup>12</sup> Based on the 4.5-minute headways operated during the peak, the Blue Line policy capacity during the busiest 30-minute period of service is approximately 3,440 passengers.

5 MBTA. Blue Line Schedule. Accessed from [www.mbtta.com/schedules/Blue/line](http://www.mbtta.com/schedules/Blue/line).

6 MBTA. DGM Remarks. Presentation to Fiscal & Management Control Board. October 30, 2017.

7 MBTA. Rapid Transit Schedule. Effective September 3, 2017 – December 30, 2017.

8 MBTA. DGM Remarks. Presentation to Fiscal & Management Control Board. October 30, 2017.

9 MBTA. MBTA State of the System: Blue Line Heavy Rail. Presentation to Fiscal & Management Control Board. August 8, 2016.

10 MBTA. *Service Delivery Policy, 2017 Update*. Approved January 23, 2017.

11 MBTA. *Service Delivery Policy, 2017 Update*. Approved January 23, 2017.

12 MBTA. *Service Delivery Policy, 2017 Update*. Approved January 23, 2017.



Ridership demand on the Blue Line is greatest during the weekday rush hours, with the highest Blue Line Inbound demand occurring between 8:00 a.m. and 8:30 a.m. during the AM Peak, and the highest Blue Line Outbound demand occurring between 5:00 p.m. and 5:30 p.m. during the PM Peak. The maximum load point on the Blue Line is located between Maverick and Aquarium Stations in the peak directions during the peak periods, as illustrated in Figure 5.12 and Figure 5.13. These figures illustrate that the Blue Line currently operates within its policy capacity during the weekday peaks.

The temporal distribution of demand at the Blue Line's maximum load point (between Maverick and Aquarium Stations) on an average weekday is illustrated in Figure 5.14 and Figure 5.15, for the Inbound and Outbound directions, respectively. While the Blue Line operates within its policy capacity during the peak periods, existing passenger volumes slightly exceed policy capacity just before and just after the peak periods. This exceedance is due to the reduction in policy capacity provided outside of the peak period, which is a result of MBTA's Policy dictating a reduced acceptable maximum passenger load per vehicle during off-peak times as well as reduced service frequency provided.

The Project Site is served by the Blue Line via two stations: Suffolk Downs Station and Beachmont Station. On a typical weekday in Fall 2016, approximately 75,270 passengers boarded the Blue Line, with approximately 850 passengers boarding at Suffolk Downs and 3,250 passengers boarding at Beachmont.<sup>13</sup> Currently, Suffolk Downs is the least utilized of all the Blue Line stations. Figure 5.16 and Figure 5.17 illustrate Inbound and Outbound platform activity (passenger boardings plus passenger alightings) at Suffolk Downs Station, respectively, for an average weekday.

### **MBTA Bus Services**

The MBTA bus routes operating in the vicinity of the Project Site are described below:

- › **Route 119** provides local bus service between Beachmont Station and the Northgate Shopping Center. The route operates along the northern end of the Project Site, with the nearest stops located on Winthrop Avenue. During peak hours, bus service on this route operates approximately every 30 to 35 minutes.
- › **Route 120** operates on the southern side of the Project Site in the Orient Heights neighborhood. The route provides local bus service between the MBTA Blue Line's Orient Heights Station and Maverick Station. Blue Line ridership from the proposed redevelopment of the Project Site is anticipated to board the Blue Line directly via Suffolk Downs Station or Beachmont Station, and therefore is not anticipated to generate demand for the Route 120.

<sup>13</sup> Based on MBTA Blue Line ridership data from Fall 2016. Results rounded to nearest 10.

- › **Routes 424, 434, 448 and 449** provide commuter bus service between communities in the North Shore to Haymarket Station or Downtown Crossing Station. These routes operate by the Project Site via Route 1A, but there are no stops in the vicinity of the Project Site.
- › **Route 450** provides service between Salem Depot and Haymarket Station. The route stops on Route 1A in the vicinity of the Project Site. During peak hours, bus service on this route operates approximately every 30 minutes.
- › **Route 459** provides service between Salem Depot and Downtown Boston. The route stops on Route 1A in the vicinity of the Project Site. During peak hours, bus service on this route operates approximately every 70 minutes.

The buses operating on the routes serving the Project Site have a seated capacity of 39 passengers.<sup>14</sup> Utilizing the vehicle load standard dictated by MBTA Policy, the policy capacity of each bus during the peak periods is 55 passengers.<sup>15</sup>

### **Pedestrian and Bicycle Accommodations**

Within the vicinity of the Project Site, sidewalks are provided along both sides of Route 1A and Winthrop Avenue. Sidewalks are provided along the west side of Tomasello Drive from Winthrop Avenue until the shopping plaza. Crosswalks are provided at the intersection of Winthrop Avenue and Tomasello Drive. The sidewalk along Winthrop Avenue provides access to the residential area, bus stops, and Beachmont Blue Line transit stop to the north of the Project Site. The Project Site and surrounding areas lack bicycle accommodations.

## **5.3.4 2024 Future Transportation Conditions**

To determine future roadway operations, traffic volumes in the study area were projected to 2024 to reflect a seven-year planning horizon from the 2017 Existing Condition. The seven-year planning horizon is consistent with MassDOT Transportation Impact Assessment (TIA) Guidelines.<sup>16</sup>

Traffic volumes on the roadway network under future conditions without the Project (No-Build) are assumed to include all existing traffic, any new traffic due to regional and area background traffic growth, and traffic related to any specific nearby development projects expected to be completed by the 2024 horizon year. Roadway improvements proposed within the boundaries of the study area by others were also considered and incorporated where appropriate. The anticipated traffic volumes from the Phase 1 Project were added to the No-Build traffic volumes to reflect future conditions with the Phase 1 Project in place (2024 Build Condition).

<sup>14</sup> MBTA. *Ridership and Service Statistics, Fourteenth Edition*. 2014.

<sup>15</sup> MBTA. *Service Delivery Policy, 2017 Update*. Approved January 23, 2017.

<sup>16</sup> *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

**2024 No-Build Conditions**

The 2024 No-Build traffic volumes were determined by considering existing traffic volumes and adding regional traffic growth and traffic from other known nearby developments. Traffic growth is generally a function of expected new development, changes in demographics, and changes in auto usage and ownership in the region. Regional traffic growth is projected by examining historic traffic growth trends.

***Regional Traffic Growth***

Historic count data was reviewed to establish an appropriate rate at which traffic volume can be expected to grow. VHB reviewed data from MassDOT Permanent Count Station #8087 (Route 1A north of Tomasello Drive). VHB also conducted comparisons between the 2012 traffic counts conducted for the Mohegan Sun project and the 2017 traffic counts conducted for the Phase 1 Project. The MassDOT data and the count comparisons showed that overall traffic growth is either level or decreasing in most areas. To account for development growth in this area, a growth rate of 0.5-percent per year was applied to the existing traffic volumes. This growth rate is consistent with the anticipated growth identified in the area and used by other area projects.

***Planned Development Projects***

In addition to regional background growth, the traffic associated with other planned, approved, or under construction developments near the Project Site or within the study area are included in the No-Build traffic volume projections. The cities of Boston and Revere identified the 22 projects listed below, which are included in the analysis.

**Revere Projects:**

- › La Quinta Hotel consisting of 100 rooms
- › Revere Beach Hotel consisting of 175 room and an 80-seat hotel restaurant
- › 205 Revere Beach Parkway (Former Shaw's Plaza) consisting of 310 residential units and 150 hotel rooms with a hotel restaurant
- › 71 Revere Street consisting of 53 residential units
- › 90 Ocean Avenue consisting of 60 residential units

**East Boston Projects:**

- › 75-85 Liverpool Street consisting of 22 residential units and ground floor commercial space, approximately 20,180 square feet
- › 944-946 Saratoga Street consisting of 42 residential units, approximately 43,500 square feet
- › 9 Chelsea Street consisting of funeral home and commercial retail spaces, approximately 25,848 square feet

- › 175 McClellan Highway consisting of approximately 300 residential units, 2,000 square feet of ground floor commercial space, approximately 275,000 feet
- › 135 Bremen Street consisting of 94 residential units and 8,300 square feet of commercial space, approximately 127,770 square feet
- › 175 Orleans Street consisting of 127-room boutique hotel, approximately 71,450 square feet
- › 301-303 Border Street consisting of 64 residential until and ground floor commercial space, approximately 75,160 square feet
- › 125 Sumner Street consisting of 52 residential units, retail space, and community gathering areas, approximately 60,670 square feet
- › 99 Sumner Street consisting of approximately 119 residential units and 7,200 square feet of shared work space, approximately 125,610 square feet
- › 10-16 Everett Street consisting of 19 residential units, approximately 22,540 square feet
- › 187-191, and 211 Condor Street consisting of approximately 23 residential units, approximately 28,357 square feet
- › 1181 Bennington Street consisting of 44 residential units, approximately 49,000 square feet
- › 202 Maverick Street consisting of 23 residential units, approximately 22,700 square feet
- › 319-327 Chelsea Street consisting of 38 residential units and commercial space, approximately 44,550 square feet
- › 917 Bennington Street consisting of 42 residential units, approximately 47,230 square feet
- › 151 Liverpool Street consisting of 36 condominium units, approximately 39,175 square feet
- › 114 Orleans Street consisting of 23 condominium units, approximately 29,385 square feet

Refer to Figure 5.18 for the No-Build background Project trip network.

### **2024 No-Build Traffic Volumes**

2024 No-Build Condition traffic volume networks were developed by applying the 0.5-percent annual growth rate over the seven-year study horizon to the 2017 Existing Condition traffic volume networks and incorporating the traffic volumes associated with the background development described above in one of the following ways:

1. Estimated traffic impacts available from studies or environmental permitting documents;
2. Performed a trip generation, trip distribution and/or trip assignment analysis;



3. Project already included in background regional traffic growth;
4. Project already included in existing traffic counts; or
5. Project is too small or remote from the Project study area to have any meaningful effect.

Figures 5.19 and 5.20 show the resulting 2024 No-Build conditions peak hour traffic volume networks for the weekday morning and weekday evening peak hours, respectively.

### **Future Roadway Conditions**

In assessing future traffic conditions, proposed roadway improvements within the study area that are proposed by others were also considered. Based on information available from MassDOT, no public roadway improvements were identified within the study area. However, there are improvements proposed as part of the 205 Revere Beach Parkway project along Winthrop Avenue. These improvements include:

- › A new signalized driveway to form the southbound leg of the Winthrop Avenue/Revere Beach Parkway intersection.
- › Elimination of the existing right-in/right-out driveway located to the east of Winthrop Avenue.
- › Elimination of the existing entrance-only curb-cut located to the east of Tomasello Drive.
- › Conversion of the exit-only driveway located at the Tomasello Drive signalized intersection to a right-in/right-out driveway.
- › Provision of an exclusive left-turn lane into the Project Site at the signalized intersection with Winthrop Avenue/Revere Beach Parkway.
- › Signal timing and phasing improvements at the signalized intersections
- › Traffic signal coordination.
- › A crosswalk across Revere Beach parkway and providing pedestrian signal actuation.

The improvements listed above have been incorporated into the 2024 No-Build and Build Condition analyses.

### **Future Public Transportation Conditions**

#### ***MBTA Blue Line Rapid Transit Service***

The analysis of 2024 No-Build transit conditions for the Phase 1 Project is focused on the MBTA Blue Line service, as the Phase 1 development is located adjacent to Suffolk Downs Station and therefore transit demand associated with this development is anticipated to almost exclusively use the Blue Line to access and egress the Project Site.

In order to estimate the growth in background ridership between existing conditions and the future 2024 No-Build conditions, an estimated average annual growth rate was applied. The growth rate was based on system-wide MBTA growth projections for rapid transit prepared by the Central Transportation Planning Staff (CTPS) for the Boston Metropolitan Planning Organization's Long-Range Transportation Plan, *Charting Progress to 2040*.<sup>17</sup> Based on the *Charting Progress to 2040* analysis, a 0.89 percent annual increase in rapid transit ridership is projected system wide.

To analyze the Blue Line's demand and capacity for the 2024 No-Build condition, the highest projected passenger loading volumes between Aquarium and Maverick Stations were studied, consistent with the existing conditions maximum load point presented in Section 5.3.3. Under 2024 No-Build conditions, the Blue Line is projected to operate within its policy capacity during the weekday peaks, as illustrated in Figure 5.21 and 5.22 for the Inbound and Outbound directions, respectively. Similar to existing conditions, 2024 No-Build passenger volumes are projected to slightly exceed policy capacity just before and just after the peak periods, when service is less frequent and when the MBTA's Policy dictates reduced maximum passenger loading levels as compared to during the peak.

Figure 5.23 and Figure 5.24 illustrate the projected 2024 No-Build Inbound and Outbound platform activity, respectively, at Suffolk Downs Station during an average weekday. Under 2024 No-Build conditions, daily platform activity is projected to increase by approximately 10 percent as compared to existing conditions. This increase in platform activity is well within the capacity that can be accommodated by the existing Suffolk Downs Station.

### 5.3.5 2024 Build Transportation Conditions

Build traffic volumes were determined by estimating Site-generated traffic volumes and distributing these volumes over the study area roadways. The Phase 1 Project generated traffic volumes include new trips that are likely to be generated by the Phase 1 Project.

#### Site-generated Traffic Volumes

Project Trip Generation was calculated using the methodologies outlined in the ITE Trip Generation Handbook, 10<sup>th</sup> Edition (September 2017). The methodology and assumptions utilized to accurately estimate the number of Project-generated trips is as follows:

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17 Boston Metropolitan Planning Organization. *Charting Progress to 2040*. July 2015.

1. Identify Project Land Use Codes and estimate ITE Unadjusted Vehicle Trips
  - a. Estimate existing Project Site generated trips
2. Convert ITE Unadjusted Vehicle Trips into Person Trips
  - a. Average Vehicle Occupancy (AVO) Rates
  - b. Calculate Internal Capture Trips
3. Determine Appropriate Mode Shares by Land Use
4. Calculate Daily and Peak Hour Trips by Mode (vehicle, transit, walk, bike)
  - a. Convert Person Trips to Adjusted Vehicle Trips
5. Summarize Project Generated Trips

The following sections summarize the analytical details involved in following these steps and supporting calculations used to determine Phase 1 Project Trip Generation.

### **1. Project Land Use Codes and ITE Unadjusted Vehicle Trips**

The ITE Trip Generation Manual categorizes land uses by Land Use Code (LUC) and provides daily, morning, and evening peak hour trip generation rates for each respective use. The rate at which any development generates traffic is dependent upon several factors such as its respective size, location, and concentration of surrounding developments. As previously discussed, the Proponent proposes to redevelop the Phase 1 Site with 520,000 square feet (KSF) of commercial (corporate headquarters) space. Trip generation estimates for the proposed land uses were projected using trip generation rates published by the Institute of Transportation Engineers (ITE) Trip Generation, 10<sup>th</sup> Edition<sup>18</sup> for LUC 714 (Corporate Headquarters). The LUC and respective trip generation rates are shown in Table 5-7.

**Table 5-7 ITE Land Use Code and Trip Generation Rates**

Land Use	ITE LUC	Average Trip Rate Weekday Daily	Average Trip Rate Morning Peak Hour	Average Trip Rate Evening Peak Hour
Office	LUC 714 Corporate Headquarters	5.34	1.28	1.10

Source: ITE Trip Generation Handbook 10th Edition

a Trip generation rates based on ITE LUC 714 (Corporate Headquarters) – (regression rate)

#### **a. Estimate Existing Site Generated Trips**

When estimating trips for a new development on a site with an existing development, trip generation rates do not account for the existing site generated trips therefore the existing site generated trips are subtracted from the new

<sup>18</sup> Trip Generation, 10th Edition, Institute of Transportation Engineers, Washington, D.C., 2017.

development program's total trip generation estimates. To determine the existing site generated trips, traffic counts and observations were conducted on two days (a weekday in September 2017 and a weekday in October 2017) for the facilities' hours of operation plus a half hour prior to opening and after closing (10:30 AM to 6:00 PM and 10:30 AM to 8:30 PM, respectively). Note that care was taken to ensure that only traffic specifically generated by existing OTB operations occurring at Suffolk Downs were included in this assessment. Through traffic along Tomasello Drive as well as any other traffic destined for retail uses along Furlong Drive were excluded from these counts. The two days of counts were averaged to represent a typical weekday condition. The existing site generate trips are shown in Table 5-8.

**Table 5-8 Existing Site Trip Generation Summary**

	<b>Daily</b>	<b>Morning Peak Hour</b>	<b>Evening Peak Hour</b>
Total Suffolk Downs OTB Trips	891	0	107

The trip generation rates and the existing Project Site generated trips, previously presented, were used to calculate the unadjusted vehicle trips for the Phase 1 Project, shown in Table 5-9. The trip generation worksheets are included in Appendix G.

**Table 5-9 Phase 1 Project Unadjusted Trip Generation Summary**

	<b>Daily</b>	<b>Morning Peak Hour</b>	<b>Evening Peak Hour</b>
<b>Corporate Headquarters</b>			
In	1,387	620	57
Out	<u>1,387</u>	<u>47</u>	<u>515</u>
Total	2,775	667	572

Source: ITE Trip Generation Handbook 10th Edition

a Trip generation estimate based on ITE LUC (Corporate Headquarters) – (regression rate)

## **2. Covert ITE Unadjusted Vehicles Trip to Person Trips**

The calculation of person trips from unadjusted vehicle trips involves two distinct steps, including the following actions:

- Identify Average Vehicle Occupancy Rates by Land Use Type
- Calculate Internal Capture Trips



Each of these supporting analyses are described in the following sections.

*a. Average Vehicle Occupancy (AVO) Rates*

The unadjusted vehicle trips are converted into person trips by applying the national average vehicle occupancy (AVO) rates as established in the 2009 National Household Travel Survey. The following AVO rate was used to generate total person trips generated by the Phase 1 Project:

› Office: 1.13

*b. Internal Capture Trips*

For projects with a mix of uses, some of the trips to be generated by the Phase 1 Project will be contained on-site as "internal" or "shared vehicle" trips. For example, patrons of a proposed supermarket may also visit the general retail on a site. While these shared trips represent new traffic to the individual uses, they would not show up as new vehicle trips on the surrounding roadway network. The Phase 1 Project's proposed development is a single land use, and therefore, no internal capture trips would be generated.

**3. Determine Appropriate Mode Shares by Land Use**

The mode shares used to support this effort are derived from the Census Transportation Planning Products (CTPP). The CTPP is based on the 2006-2010 5-year American Community Survey Data. The information provided by this planning tool provides mode-specific origin (work/home)-destination (home/work) information which provides mode share data for the area as well as trip distribution information. The information collected and analyzed are for the City of Boston and the City of Revere.

The mode shares, by land use, for the Phase 1 Project are presented in Table 5-10.

**Table 5-10 Mode Shares**

<b>Mode</b>	<b>Office</b>
Drive Alone	44.4%
Rideshare	7.6%
Transit	37.5%
Other (Walk, Bike, etc.)	10.5%

The mode shares shown in Table 5-10 are driven by the characteristics of the surrounding area, and the context of the land use that is proposed. The higher transit share is driven by the transit oriented City of Boston, and the proximity to the MBTA Blue Line and bus access for the City of Revere. Note that over the long-term, the Master Plan Project is intended to function as an active and successful TOD with a mix of uses that will complement each other and will foster significant reduced trip making and high levels of transit and alternative mode travel choices. While there

will be emphasis to also support a high proportion of alternative trip making by the Phase 1 Project, this more conservative mode share profile has been utilized given the Phase 1 buildings are being analyzed as a standalone project without the benefit of a mixed-use environment. This approach, in connection with the use of ITE rates that are representative of an office/corporate headquarters use, supports a technical analysis that conservatively represents the potential transportation impacts of the Phase 1 Project.

#### **4. Calculate Daily and Peak Hour Trips by Mode (vehicle, transit, walk, bike)**

##### *a. Adjusted Project Trips*

The mode shares discussed above were applied to the person trips to generate the Adjusted Project Trips by mode.

A local AVO was applied to the rideshare mode to more accurately reflect the number of vehicles generated by the Project Site. The local AVO for office was calculated to be 2.39.

Detailed trip generation worksheets are provided in Appendix G.

#### **5. Summarize Adjusted Project Generated Trips**

The above methodology was utilized to calculate the net-new Adjusted Project-generated trips for Phase 1 of the Project. Table 5-11 shows the number of trips generated by Phase 1.

**Table 5-11 Adjusted Project Trips**

		<b>Vehicle</b>	<b>Transit</b>	<b>Other</b>
Daily	In	746	588	165
	<u>Out</u>	<u>746</u>	<u>588</u>	<u>165</u>
	Total	1,492	1,176	330
AM	In	334	263	74
	<u>Out</u>	<u>25</u>	<u>20</u>	<u>6</u>
	Total	359	283	80
PM	In	31	24	7
	<u>Out</u>	<u>277</u>	<u>218</u>	<u>61</u>
	Total	308	242	68

As shown in Table 5-11, the Phase 1 Project is estimated to generate approximately 359 new vehicle trips (334 entering/25 exiting) during the weekday morning peak hour and 308 new trips (31 entering/277 exiting) during the weekday evening peak hour. The Phase 1 Project is estimated to generate slightly lower transit trips than the number of vehicles trips. The Phase 1 Project is expected to generate approximately 283 new transit trips (263 entering/20 exiting) during the weekday morning peak hour and approximately 242 new trips (24 entering/218 exiting) during the weekday evening peak hour.

### Trip Distribution

The directional distribution of traffic approaching and departing the Phase 1 Project is a function of several variables: population densities, existing travel patterns, and the efficiency of the roadways leading to/from the Project Site. The trip distribution for the office use was generated based on the origin-destination US Census Bureau American Community Survey 2006-2010 Five-year Estimates for Boston and Revere. The assignment of site-generated traffic to specific travel routes was based on the assumption that most motorists will seek the fastest and most direct routes to and from the Project Site along with the Project Site's adjacency to the MBTA Blue Line Stations, its proximity to two high-volume commuting corridors, and the location of office uses where they will generate traffic in the non-critical direction (reverse commute). The anticipated office trip distribution patterns are summarized in Table 5-12 and illustrated in Figure 5.25 and Figure 5.26.

**Table 5-12 Vehicular Trip Distribution**

Direction (To/From)	Travel Route	Phase 1 Project Percent to/from
		Route
North	Route 60	10%
North	North Shore Road	9%
South	Route 1A	59%
East	Winthrop Ave (Route 145)	7%
East	Route 16	5%
West	Winthrop Ave (Route 145)	4%
West	Route 16	6%
Total	All Routes	100%

### 2024 Build Condition Traffic Volumes

The Site-generated traffic volumes were assigned to the roadway network according to the distribution and travel patterns described above, and added to the 2024 No-Build conditions traffic volumes. Figures 5.27 and 5.28 show the resulting 2024 Build conditions peak hour traffic volume networks for the weekday morning and weekday evening peak hours, respectively.

### Proposed Site Access and Circulation

The following summarizes key access and circulation considerations that have been incorporated within the Phase 1 Project Site Plan:

- › The Phase 1 Project Site is currently well served by transportation infrastructure, including nearby public transit (MBTA Blue Line and other local bus routes) and direct access to Route 1A and Winthrop Avenue via Tomasello Drive.

- › The Proponent is committed to providing approximately 520 on-site parking spaces (1 space per 1,000 sf). These will be structured parking spaces within the new buildings
- › New parking that is proposed will be offset by the elimination of other existing surface parking spaces located on-site (resulting in no net-new parking constructed in connection with the Phase 1 Project).
- › There will be dedicated off-street loading docks to ensure that loading and service operations are handled internal to the building site and will not occur on any public streets or other adjacent private streets (Tomasello Drive). The dock will have enclosed bays in the building for deliveries and trash removal. Access to the loading area will be provided via the new private drive that will connect to Tomasello Drive.
- › The Phase 1 Project will improve pedestrian sidewalks adjacent to the Project Site. New sidewalks will meet Americans with Disabilities Act and Architectural Access Board (ADA/AAB) standards. If feasible, street trees will be provided along this new sidewalk as well.
- › The Proponent will provide covered bicycle storage capacity on-site in accordance with the City of Boston Bicycle Guidelines. The Phase 1 Project will also include public bikes racks to support ground floor retail space and visitors.
- › The Proponent is committed to providing a Hubway Station as part of the Phase 1 Project and other nearby East Boston and Revere residents.
- › The Proponent will implement a proactive transportation demand management (TDM) plan to encourage its employees to use transit and other alternative forms of transportation. The Proponent will require any future third-party tenants to implement their own proactive TDM plans. 2024 Build Transit Conditions

### ***MBTA Blue Line Rapid Transit Service***

The analysis of 2024 Build transit conditions for the Phase 1 Project compared MBTA Blue Line demand, including projected background ridership growth and estimated Project-generated ridership, against the policy capacity of the line. The analysis considered passenger loading volumes at the critical link between Maverick and Aquarium Stations, consistent with the existing conditions maximum load point presented in Section 5.3.3.

A majority of the Project-generated transit ridership, presented in Table 5-11, is in the non-critical, or reverse commute, direction. Projected peak hour demands and non-peak hour daily demands were distributed to 30-minute time periods and assigned to the Blue Line's Inbound and Outbound directions based on existing ridership trends at Suffolk Downs Station, applied to reflect the anticipated reverse commute nature of the Phase 1 Project. For example, existing temporal and directional trends for Blue Line boardings at Suffolk Downs Station, which primarily occur during the morning, were used to develop estimated distributions for net new Blue Line alightings resulting from the Phase 1 Project, which would also primarily



occur during the morning due to the proposed office uses at the Phase 1 Project Site. For a conservative Phase 1 Project analysis, all demand projected to arrive to the Project Site via the Blue Line Outbound or depart from the Project Site via the Blue Line Inbound was assumed to travel through the maximum load point of the line, between Maverick Station and Aquarium Station. Some of these transit trips, however, will begin or end at locations that will not impact the critical link, such as trips to/from Airport Station. These distribution and assignment assumptions will be further refined for the detailed analysis of the Master Plan Project through close coordination with the MBTA during the development of the DEIR/DPIR. For purposes of the Phase 1 Project analysis, these more conservative assumptions were used to evaluate 2024 Build conditions.

Under the 2024 Build Condition, the Blue Line is projected to operate within its policy capacity during the weekday peak periods, as illustrated in Figure 5.29 and Figure 5.30 for the Inbound and Outbound directions, respectively. Similar to the 2024 No-Build Condition, passenger volumes are projected to slightly exceed policy capacity just before and just after the peak periods, when service is less frequent and when the MBTA's Policy dictates reduced maximum passenger loading levels as compared to during the peak. The Phase 1 Project would result in a nominal increase to passenger loading during these times, but would not result in any new time periods where passenger loads exceed policy capacity. In summary, the Phase 1 Project would not cause the MBTA Blue Line to exceed any capacity threshold that wouldn't otherwise be exceeded under the 2024 No-Build Condition.

Figure 5.31 and Figure 5.32 illustrate the projected 2024 Build Condition platform activity at Suffolk Downs Station for the Inbound and Outbound directions, respectively, during an average weekday. Under the 2024 Build Condition, daily platform activity is projected to increase by approximately 62 percent as compared to the 2024 No-Build Condition. Despite the substantial percentage increase in platform activity due to the Phase 1 Project, the magnitude of platform activity projected is well within the capacity that can be accommodated by Suffolk Downs Station, currently the least utilized station on the Blue Line. A total of approximately 3,070 weekday boardings and alightings are projected at Suffolk Downs Station under the 2024 Build Condition, including approximately 440 boardings and alightings during the morning peak hour and approximately 420 boardings and alightings during the evening peak hour. By comparison, the Blue Line's Wonderland Station currently experiences a total of approximately 13,620 weekday boardings and alightings, including approximately 1,500 boardings and alightings during the morning peak hour and approximately 1,550 during the evening peak hour.<sup>19</sup>

<sup>19</sup> Based on MBTA Blue Line ridership data from Fall 2016. Results rounded to nearest 10.

### 5.3.6 Traffic Operations Analysis

Measuring existing traffic volumes and projecting future traffic volumes quantifies traffic within the study area. To assess quality of flow, roadway capacity analyses were conducted with respect to the 2017 Existing Condition and projected 2024 No-Build and Build Conditions. These analyses are included in Appendix G. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed on them. Calculated levels of service classify roadway operating conditions.

#### Level-of-Service Criteria

Level of service (LOS) is the term used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

For signalized intersections, the evaluation criteria used to analyze study area intersections are based on the 2000 Highway Capacity Manual (HCM).<sup>20</sup>

#### Intersection Capacity Analysis

Intersection capacity analyses were conducted at all intersections in the study area. Analyses were conducted for the 2017 Existing, 2024 No-Build, and 2024 Build conditions. Tables 5-13 and 5-14 summarize the capacity analyses for signalized and unsignalized intersections, respectively.

It should also be noted that as part of the existing and future conditions capacity analysis, additional volume was included along the Route 1A corridor to account for unmet demand associated with queuing in the peak direction. Based on information provided in prior studies of this area, an additional 300 vehicles were added to Route 1A southbound during the morning peak hour and 300 vehicles were added to the Route 1A northbound during the weekday evening peak hour. This approach is consistent with comments made by MassDOT on the prior casino studies prepared for this area.

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20 Transportation Research Board, Highway Capacity Manual, Washington, D.C., 2000.

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**Table 5-13      Unsignalized Intersection Capacity Analysis**

		2017 Existing Conditions					2024 No-Build Conditions					2024 Build Conditions – Phase 1				
Location	Movement	D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	95 Q <sup>e</sup>	D	v/c	Del	LOS	95 Q	D	v/c	Del	LOS	95 Q
Route 1A at Waldemar Avenue																
Weekday Morning	WB R	130	0.25	12	B	24	135	0.21	11	B	19	135	0.19	11	B	17
Weekday Evening	WB R	120	0.31	19	C	33	105	0.29	18	C	30	105	0.29	18	C	30
Route 1A at Tomasello Drive																
Weekday Morning	WB L	205	>1.20	>120	F	865	210	>1.20	>120	F	Err	210	>1.20	>120	F	Err
	WB R	10	0.03	14	B	3	10	0.03	15	C	2	20	0.07	17	C	6
	SB L	0	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	35	0.09	15	B	0
Weekday Evening	WB L	5	>1.20	>120	F	47	5	>1.20	>120	F	Err	5	>1.20	>120	F	Err
	WB R	5	0.04	29	D	3	5	0.04	35	E	3	115	1.03	>120	F	177
	SB L	20	0.03	26	D	2	5	0.04	34	D	3	10	0.09	36	E	7
Bennington Street at Crescent Avenue																
Weekday Morning	WB L	170	0.86	72	F	172	180	0.88	79	F	177	185	0.90	83	F	186
	WB R	280	0.47	14	B	62	290	0.45	14	B	59	305	0.47	15	B	64
Weekday Evening	WB L	50	0.21	21	C	19	60	0.25	24	C	24	60	0.26	24	C	24
	WB R	120	0.22	12	B	20	130	0.22	12	B	21	130	0.22	12	B	21

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95th percentile queue, in feet.

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**Table 5-14 Signalized Intersection Capacity Analysis**

Location	Movement	2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 1A at Boardman Street																			
Weekday Morning	EB L	40	>1.20	>120	F	~74	#176	45	>1.20	>120	F	~90	#195	45	>1.20	>120	F	~89	#195
	EB T/R	130	0.22	76	D	31	113	135	0.27	77	E	46	131	135	0.27	77	E	46	131
	WB L/T	475	>1.20	>120	F	~1324	#1558	525	>1.20	>120	F	~1430	#1682	525	>1.20	>120	F	~1420	#1682
	WB R	100	0.33	62	E	122	180	135	0.39	60	E	158	230	135	0.39	59	E	156	230
	NB L	130	0.81	108	F	176	#264	140	0.84	112	F	196	#311	135	0.83	111	F	187	#294
	NB T	995	0.48	14	B	314	405	1090	0.56	18	B	417	500	1285	0.66	20	C	549	655
	NB R	120	0.09	10	A	0	26	170	0.13	12	B	0	31	170	0.13	12	B	0	31
	SB L	85	0.68	97	F	114	182	125	0.80	108	F	176	260	125	0.80	107	F	175	261
	SB T/R	2355	1.12	93	D	~1952	#2095	2395	1.19	121	F	~2171	#2261	2410	1.19	>120	F	~2172	#2283
	Overall			>120	F					>120	F					>120	F		
Weekday Evening	EB L	75	>1.20	>120	F	~184	#307	80	>1.20	>120	F	~190	#326	80	>1.20	>120	F	~190	#326
	EB T/R	95	0.15	77	E	20	82	100	0.15	78	E	19	88	100	0.15	78	E	19	88
	WB L/T	200	>1.20	>120	F	~472	#649	255	>1.20	>120	F	~610	#820	255	>1.20	>120	F	~610	#820
	WB R	200	0.58	64	E	257	349	240	0.65	67	E	304	419	240	0.65	67	E	304	419
	NB L	85	0.69	101	F	114	179	90	0.72	102	F	127	194	90	0.72	102	F	127	194
	NB T	2245	1.04	63	E	~1716	#1820	2355	1.17	116	F	~2103	#2192	2375	1.18	120	F	~2135	#2221
	NB R	90	0.06	12	B	4	28	140	0.11	13	B	13	43	140	0.11	13	B	14	43
	SB L	170	0.89	118	F	245	#388	205	1.00	>120	F	300	#497	205	1.10	>120	F	300	#497
	SB T/R	1460	0.70	18	B	615	778	1565	0.75	21	C	712	898	1720	0.82	24	C	877	1104
	Overall			88	F					>120	F					>120	F		
Route 1A at the Jughandle																			
Weekday Morning	EB L/T/R	70	0.45	32	C	34	65	75	0.43	32	C	32	71	75	0.43	32	C	32	71
	NB T/R	1105	0.54	6	A	122	202	1240	0.60	7	A	143	235	1250	0.60	7	A	146	240
	SB T	2200	0.98	25	C	~467	#761	2355	1.10	64	E	~704	#906	2400	1.12	72	E	~728	#932
	Overall			19	B					44	D					49	D		
Weekday Evening	EB L/T/R	140	0.53	30	C	73	114	145	0.49	29	C	65	118	145	0.49	29	C	65	118
	NB T/R	2235	1.06	52	D	~622	#838	2355	1.17	94	F	~738	#956	2465	>1.20	118	F	~799	#1020
	SB T	1620	0.79	12	B	254	422	1780	0.88	16	B	322	#617	1940	0.96	24	C	398	#713
	Overall			35	C					60	E					75	E		

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95<sup>th</sup> percentile queue, in feet

**Table 5-14 Signalized Intersection Capacity Analysis (Continued)**

Location	Movement	2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 1A On-Ramp at Winthrop Avenue (Route 145)																			
Weekday Morning	EB T/R	1280	0.58	8	A	65	98	1355	0.63	9	A	72	109	1405	0.66	9	A	78	116
	WB L	310	0.71	17	B	65	#158	325	0.76	20	B	73	#179	330	0.77	20	C	74	#182
	WB T	1385	0.30	0	A	0	0	1460	0.32	0	A	0	0	1465	0.33	0	A	0	0
	Overall			5	A					6	A					6	A		
Weekday Evening	EB T/R	1530	0.71	9	A	95	136	1610	0.76	10	B	104	150	1615	0.76	11	B	105	150
	WB L	265	0.66	16	B	55	#135	280	0.70	17	B	61	#153	360	0.89	34	C	85	#210
	WB T	1385	0.29	0	A	0	0	1460	0.32	0	A	0	0	1495	0.33	0	A	0	0
	Overall			6	A					6	A					8	A		
Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street																			
Weekday Morning	EB L/T	290	0.84	77	E	148	#223	300	0.89	84	F	159	#247	300	0.89	85	F	159	#247
	EB R	25	0.01	56	E	0	0	25	0.02	56	E	0	0	25	0.02	56	E	0	0
	WB L	895	1.13	>120	F	~559	#681	945	1.16	>120	F	~580	#715	950	1.17	>120	F	~586	#721
	WB T/R	490	1.20	>120	F	~625	#841	515	1.23	>120	F	~642	#873	515	1.24	>120	F	~642	#873
	NB T	440	0.40	35	C	180	227	455	0.40	35	C	180	231	455	0.40	35	C	180	231
	NB R	820	0.82	23	C	566	778	875	0.85	25	C	611	871	925	0.90	30	C	703	#1100
	SB T/R	420	0.42	35	C	211	206	435	0.34	34	C	167	215	435	0.34	34	C	167	215
	SEB L /R	215	>1.20	>120	F	~272	#447	225	>1.20	>120	F	~283	#460	225	>1.20	>120	F	~283	#460
	Overall			83	F					92	F					94	F		
	Weekday Evening	EB L/T	245	0.73	68	E	124	175	260	0.77	71	E	135	#191	260	0.77	71	E	135
EB R		10	0.01	57	E	0	0	10	0.01	56	E	0	0	10	0.01	56	E	0	0
WB L		765	0.92	65	E	394	#514	810	0.96	73	E	419	#553	845	1.01	84	F	~448	#592
WB T/R		620	>1.20	>120	F	~867	#1109	650	>1.20	>120	F	~917	#1161	650	>1.20	>120	F	~917	#1161
NB T		1020	0.86	48	D	502	597	1055	0.89	51	D	527	#630	1055	0.89	51	D	527	#630
NB R		1170	1.10	82	F	~1316	#1586	1230	1.15	103	F	~1439	#1708	1235	1.16	105	F	~1449	#1720
SB T/R		445	0.35	33	C	178	224	460	0.35	34	C	178	228	460	0.35	34	C	178	228
SEB R		150	0.92	105	F	171	#276	155	0.87	93	F	157	#288	155	0.87	93	F	157	#288
Overall				94	F					105	F					107	F		

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95th percentile queue, in feet

Table 5-14 Signalized Intersection Capacity Analysis (Continued)

Location	Movement	2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Winthrop Avenue (Route 145) at N. Shore Road																			
Weekday Morning	EB L	280	0.84	68	E	242	#519	295	0.84	42	D	123	#354	295	0.84	42	D	123	#354
	EB T	900	0.89	61	E	291	#515	960	0.30	4	A	23	123	1010	0.31	4	A	25	130
	WB T/R	1190	0.65	5	A	34	m87	1280	0.60	16	B	161	324	1295	0.60	16	C	161	325
	SB L	125	0.42	50	D	111	205	130	0.90	77	E	59	#208	165	1.14	>120	F	~83	#264
	SB R	275	0.22	48	D	0	48	290	0.20	33	C	0	#117	290	0.20	33	C	0	#117
	Overall			35	D					19	B					23	C		
Weekday Evening	EB T	1280	>1.20	>120	F	~668	#766	1370	0.49	12	B	130	290	1375	0.49	12	B	131	292
	WB T/R	1120	0.51	1	A	1	m28	1195	0.58	25	C	210	328	1345	0.67	25	C	212	368
	SB L	100	0.32	56	E	101	165	110	0.30	38	D	60	135	110	0.32	39	D	63	142
	SB R	230	0.16	54	D	0	84	245	0.18	37	D	0	76	245	0.18	37	D	0	76
	Overall			90	F					30	C					28	C		
Winthrop Avenue (Route 145) at Tomasello Drive																			
Weekday Morning	EB T	895	0.65	22	C	68	284	955	0.79	19	B	128	m#408	955	0.79	18	B	125	m#192
	EB R	130	0.22	10	A	6	m32	135	0.29	15	B	33	m59	215	0.46	16	B	54	m81
	WB L	195	0.63	53	D	163	313	200	0.60	29	C	79	#218	225	0.67	32	C	90	#258
	WB T	1145	1.15	>120	F	~443	#727	1225	0.43	7	A	51	114	1230	0.43	7	A	51	115
	NB L	45	0.11	49	D	20	40	50	0.15	30	C	10	32	65	0.20	30	C	13	40
	NB R	40	0.18	50	D	35	73	45	0.25	31	C	19	62	45	0.25	31	C	19	62
	SB R	Not Part of Roadway Network in this Condition						5	0.02	29	C	2	13	10	0.05	30	C	4	22
	Overall			76	E					14	B					15	B		
Weekday Evening	EB T	1380	0.75	35	C	270	m132	1480	0.87	33	C	263	#659	1255	0.87	33	C	265	#663
	EB R							225	0.37	24	C	83	180	230	0.37	24	C	84	184
	WB L	155	0.56	59	E	163	247	160	0.68	50	D	101	#239	160	0.64	48	D	100	#228
	WB T	880	0.92	72	E	379	#480	950	0.34	10	B	76	91	950	0.33	10	A	72	87
	NB L	240	0.33	48	D	120	165	245	0.42	39	D	73	139	395	0.72	46	D	127	#236
	NB R	450	1.27	>120	F	~672	#905	470	1.65	>120	F	~444	#813	490	>1.20	>120	F	~483	#860
	SB R	Not Part of Roadway Network in this Condition						5	0.01	36	D	3	15	5	0.01	36	D	3	15
	Overall			72	E					83	F					83	F		

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95th percentile queue, in feet

Table 5-14 Signalized Intersection Capacity Analysis (Continued)

Location	Movement	2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1						
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q	
Bennington Street and State Road at Winthrop Avenue																				
Weekday Morning	EB L/T	135	0.55	44	D	105	159	145	0.55	44	D	103	169	145	0.55	44	D	103	169	
	EB R	360	0.68	50	D	75	172	375	0.65	49	D	67	196	375	0.65	49	D	67	196	
	NB L	340	>1.20	>120	F	~374	#592	355	>1.20	>120	F	~340	#614	370	>1.20	>120	F	~364	#643	
	NB T/R	210	0.30	16	B	96	172	190	0.30	16	B	92	185	215	0.30	16	B	92	185	
	SB L/T	695	1.37	>120	F	~709	#1085	730	>1.20	>120	F	~743	#1137	730	>1.20	>120	F	~743	#1137	
	SB R	175	0.26	30	C	30	104	180	0.27	30	C	31	108	180	0.27	30	C	31	108	
Weekday Evening	Overall			>120	F					>120	F					>120	F			
	EB L/T	325	0.81	51	D	253	367	440	0.83	52	D	264	382	350	0.84	53	D	275	397	
	EB R	230	0.46	37	D	82	170	245	0.50	37	D	92	183	250	0.51	37	D	97	190	
	NB L	335	0.88	49	D	205	#403	355	0.97	69	E	~253	#475	355	0.98	72	E	~269	#477	
	NB T/R	415	0.61	27	C	259	398	440	0.67	28	C	297	444	440	0.67	29	C	303	444	
	SB L/T	205	0.83	70	E	171	#323	220	0.88	77	E	183	#345	220	0.88	78	E	186	#345	
	SB R	130	0.12	42	D	0	60	135	0.12	43	D	0	61	135	0.12	43	D	0	61	
Revere Beach Parkway at Winthrop Avenue	Overall			44	D					50	D					51	D			
	Weekday Morning	EB L	345	0.17	5.5	A	32	59	370	0.21	14	B	45	72	370	0.22	15	B	48	72
		EB T	595	0.54	8.8	A	148	280	635	0.67	12	B	217	356	635	0.67	13	B	227	356
		WB T/R	470	0.63	28.7	C	116	164	460	0.63	27	C	109	157	475	0.64	27	C	113	162
		SB L/T/R	Not Part of Roadway Network in this Condition						50	0.03	32	C	0	0	50	0.03	33	C	0	0
		SWB R	875	0.33	6.4	A	32	64	965	0.79	24	C	171	242	990	0.80	25	C	180	247
		Overall			11	B					21	C					21	C		
	Weekday Evening	EB L	1000	0.51	9.4	A	141	238	1050	0.70	15	B	~218	#399	1065	0.71	16	B	~227	#407
		EB T	620	0.59	11.1	B	182	351	675	0.81	20	B	253	#457	685	0.82	21	C	258	#469
		WB T/R	595	0.69	29.1	C	153	208	680	0.77	26	C	147	216	680	0.77	26	C	147	#216
		SB L/T/R	Not Part of Roadway Network in this Condition						40	0.03	29	C	0	0	40	0.03	30	C	0	0
		SB R	465	0.17	6.8	A	12	34	460	0.47	23	C	55	92	460	0.47	23	C	55	92
		Overall			14	B					20	B					20	B		

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95th percentile queue, in feet

**Table 5-14 Signalized Intersection Capacity Analysis (Continued)**

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	Movement	D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 60 (American Legion Highway) at Bell Circle - North																			
Weekday Morning	WB T	990	0.88	49	D	386	477	1030	0.94	54	D	421	511	1030	0.94	54	D	421	511
	WB R	275	0.31	41	D	64	m96	285	0.38	39	D	85	m110	285	0.38	39	D	85	m110
	NB T	620	0.40	1	A	0	0	695	0.43	1	A	0	0	695	0.43	1	A	0	0
	SB T	830	0.70	33	C	288	364	900	0.76	35	C	323	404	925	0.78	35	D	336	420
	SB R	335	0.29	25	C	22	92	345	0.31	26	C	29	104	345	0.31	26	C	29	104
	Overall				31	C					33	C					33	C	
Weekday Evening	WB T	1160	0.97	59	E	465	554	1210	1.06	81	F	521	m#613	1210	1.06	81	F	521	m#613
	WB R	345	0.52	39	D	146	m188	355	0.57	37	D	151	m191	355	0.57	37	D	151	m191
	NB T	895	0.54	1	A	2	2	975	0.58	1	A	0	0	1000	0.59	1	A	0	0
	SB T	760	0.61	30	C	242	308	850	0.71	33	C	297	374	850	0.71	33	C	297	374
	SB R	285	0.19	24	C	0	54	295	0.22	24	C	7	65	295	0.22	24	C	7	65
	Overall				32	C					40	D					40	D	
Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South																			
Weekday Morning	EB T	510	0.71	33	C	118	197	535	0.78	36	D	141	228	535	0.78	36	D	141	228
	EB R	875	0.84	28	C	7	#84	905	1.01	55	E	26	#297	905	1.02	58	E	26	#320
	NB T	620	0.57	29	C	213	263	695	0.60	30	C	230	294	695	0.60	30	C	230	294
	NB R	365	1.10	117	F	~358	#507	385	1.07	108	F	~341	#537	385	1.07	108	F	~341	#537
	SB T	830	0.52	1	A	5	6	900	0.55	1	A	0	0	925	0.56	1	A	0	0
	NW R	595	0.68	37	D	198	224	615	0.60	35	C	167	235	615	0.60	35	C	167	235
	Overall				34	C					38	D					39	D	
Weekday Evening	EB T	505	0.69	33	C	118	192	525	0.75	36	D	143	213	525	0.75	36	D	143	213
	EB R	860	0.74	24	C	28	76	900	0.94	44	D	55	#118	900	0.94	44	D	55	#118
	NB T	895	0.73	34	C	317	396	975	0.80	36	D	358	445	1000	0.82	37	D	372	461
	NB R	460	>1.20	>120	F	~574	#657	480	>1.20	>120	F	~483	#693	480	>1.20	>120	F	~483	#693
	SB T	760	0.45	1	A	4	5	850	0.51	1	A	0	0	850	0.51	1	A	0	0
	NW R	1060	1.14	114	F	~491	#640	1100	1.17	>120	F	~519	#667	1100	1.17	>120	F	~519	#667
	Overall				70	E					66	E					67	E	

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95th percentile queue, in feet



**Table 5-14 Signalized Intersection Capacity Analysis (Continued)**

Location	Movement	2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 1A (VFW Parkway)																			
at Bell Circle																			
Weekday Morning	WB R	965	0.52	43	D	31	111	1005	0.59	45	D	47	141	1005	0.59	45	D	47	141
	NB T	350	0.21	11	B	65	m93	370	0.21	10	A	64	m90	370	0.21	10	A	64	m90
	NB R	1120	0.49	>120	F	0	m57	1165	0.47	>120	F	0	m109	1165	0.47	>120	F	0	m109
	Overall			77	E					88	F					88	F		
Weekday Evening	WB R	1035	0.69	48	D	87	196	1080	0.86	59	E	149	#315	1080	0.86	58	E	149	#315
	NB T	425	0.24	15	B	92	m91	440	0.24	16	B	100	m96	440	0.24	16	B	100	m96
	NB R	1600	0.66	61	E	0	m11	1665	0.65	74	E	0	m14	1665	0.65	74	E	0	m14
	Overall			51	D					61	E					61	E		
Beach Street at Bell Circle																			
Weekday Morning	EB R	365	0.29	1	A	0	0	380	0.27	0	A	0	0	380	0.27	0	A	0	0
	SB T	1020	0.44	2	A	15	14	1060	0.47	2	A	15	14	1060	0.47	2	A	15	14
	SB R	305	0.22	0	A	0	m0	315	0.23	0	A	0	m0	315	0.23	0	A	0	m0
	Overall			1	A					1	A					1	A		
Weekday Evening	EB R	360	0.26	0	A	0	0	375	0.26	0	A	0	0	375	0.26	0	A	0	0
	SB T	1005	0.41	2	A	12	m11	1050	0.45	2	A	12	m11	1050	0.45	2	A	12	m11
	SB R	440	0.30	0	A	0	m0	455	0.32	0	A	0	m0	455	0.32	0	A	0	m0
	Overall			1	A					1	A					1	A		

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95<sup>th</sup> percentile queue, in feet

**2017 Existing Conditions**

Intersections in urban areas are typically considered to be operating acceptably if the intersection is LOS D or better. While the majority of the intersections within the study area operate above this threshold, there are seven signalized study intersections currently operating at LOS E or F during the weekday morning and/or weekday evening peak hours, as listed below.

- › Route 1A at Boardman Street
- › Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street
- › Winthrop Avenue (Route 145) at N. Shore Road
- › Winthrop Avenue (Route 145) at Tomasello Drive
- › Winthrop Avenue (Route 145) at Bennington Street and State Road (morning weekday peak only)
- › Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South
- › Route 1A (VFW Highway) at Bell Circle

During the existing weekday morning and weekday evening peak hour conditions, the current left-turn movement from Tomasello Drive onto Route 1A southbound is operating at LOS F. Currently, there is faded, non-standard, improperly-located signage that restricts this left-turn movement. However, vehicles currently make this maneuver. During the existing weekday morning peak hour condition, the westbound left turn at Bennington Street and Crescent Avenue is operating at LOS F.

**2024 No-Build Conditions**

As discussed previously, the 2024 No-Build condition includes seven years of historic growth at 0.5 percent per year as well as 22 background projects planned in the area. With this additional growth, there are seven signalized study intersections currently operating at LOS E or F during the weekday morning and/or weekday evening peak hours, as listed below.

- › Route 1A at Boardman Street
- › Route 1A at the Jughandle
- › Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street
- › Winthrop Avenue (Route 145) at Tomasello Drive
- › Winthrop Avenue (Route 145) at Bennington Street and State Road (morning weekday peak only)
- › Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South
- › Route 1A (VFW Highway) at Bell Circle

Winthrop Avenue (Route 145) at N. Shore Road, during the weekday morning and evening peak hour conditions, and Winthrop Avenue (Route 145) at Tomasello Drive, during the weekday morning peak hour condition, experience improved operations due to the mitigation implemented by the 205 Revere Beach Parkway redevelopment. An operational change also occurs at Route 1A and the Jughandle, during the weekday evening peak hour condition, where operations degrade from LOS C to LOS E. The drop-in operations could be attributed to the increased volume on the roadway from background projects.

The unsignalized analysis results show the westbound right-turn movement from Tomasello Drive to Route 1A northbound degrade from LOS D to LOS E.

### ***2024 Phase 1 Build Conditions***

The 2024 Phase 1 Build condition includes approximately 520,000 sf of development located in the southeast corner of the Project Site. Primary entering access to the Phase 1 development area would be through the intersection of Route 1A and Tomasello Drive while the primary exiting access would be through the intersection of Winthrop Avenue at Tomasello Drive. With this first phase of development, there are seven signalized study intersections that remain operating at LOS E or F during the weekday morning and/or weekday evening peak hours, as listed below.

- › Route 1A at Boardman Street
- › Route 1A at the Jughandle
- › Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street
- › Winthrop Avenue (Route 145) at Tomasello Drive
- › Winthrop Avenue (Route 145) at Bennington Street and State Road (morning weekday peak only)
- › Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South
- › Route 1A (VFW Highway) at Bell Circle

The unsignalized analysis results show the Route 1A and Tomasello Drive westbound approach continues operating at LOS E or F and southbound left-turn movement from Route 1A to Tomasello Drive degrades from LOS D to E.

## **5.3.7 Mitigation**

Based on the results of the capacity analyses summarized in Tables 5-15 and 5-16, this section discusses improvement measures that will be implemented to minimize Phase 1 Project related impacts and facilitate access to and from the Project Site. Based on the safety review and traffic analysis, mitigation measures are proposed at the intersections of Route 1A at Tomasello Drive and Winthrop Avenue at Tomasello Drive to address Phase 1 Project related impacts as well as existing deficiencies.

**Route 1A at Tomasello Drive:** While there is currently no signage prohibiting left turns from Tomasello Drive onto Route 1A southbound, it is important to note that the traffic volumes and speeds on Route 1A create safety concerns for this maneuver. In addition, vehicle queues along Route 1A can impede sight lines for this left turn. To address safety concerns, the existing improperly-located “right-turn only” signage will be replaced and relocated with MUTCD compliant “No Left-Turn” signage to restrict this movement. For analysis purposes, the existing left-turn volumes on Tomasello Drive were redistributed to alternate routes on Bennington Street and Winthrop Avenue based on existing travel patterns. The redistribution resulted in negligible impacts within the study area. The results of the capacity analysis are summarized in Table 5-15.

**Winthrop Avenue at Tomasello Drive:** As shown in Table 5-16, the Phase 1 Project is expected to result in minor increases in delay between 2024 No-Build and 2024 Build conditions. While this is a minor impact, the Proponent proposes to optimize the traffic signal timings at this intersection to facilitate access to and from the Project Site. In addition, these timing adjustments would also serve to optimize the operations for the future volumes that will be present in the 205 Revere Beach Parkway redevelopment.

**Table 5-15 Unsignalized Intersection Mitigation Capacity Analysis**

Location	Movement	2024 No-Build Conditions					2024 Build Conditions – Phase 1					2024 Build with Mitigation – Phase 1				
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	95 Q <sup>e</sup>	D	v/c	Del	LOS	95 Q	D	v/c	Del	LOS	95 Q
Route 1A at Tomasello Drive																
Weekday Morning	WB L	210	>1.20	>120	F	Err	210	>1.20	>120	F	Err					
	WB R	10	0.03	15	C	2	10	0.07	17	C	6	20	0.07	17	C	6
	SB L	0	n/a	n/a	n/a	n/a	35	0.09	15	B	0	35	0.09	15	B	0
Weekday Evening	WB L	5	>1.20	>120	F	Err	5	>1.20	>120	F	Err					
	WB R	5	0.04	35	E	3	115	1.03	>120	F	177	115	1.03	>120	F	177
	SB L	5	0.04	34	D	3	10	0.09	36	E	7	25	0.09	36	E	7

a. Demand of critical movement.

b. Volume to capacity ratio.

c. Average total delay, in seconds per vehicle.

d. Level-of-service.

e. 95<sup>th</sup> percentile queue, in feet.

**Table 5-16 Signalized Intersection Mitigation Capacity Analysis**

		2024 No-Build Conditions						2024 Build Conditions – Phase 1						2024 Build with Mitigation – Phase 1					
Location	Movement	D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	50 Q	95 Q <sup>e</sup>	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Winthrop Avenue (Route 145) at Tomasello Drive																			
Weekday	EB T	955	0.79	19	B	128	m#408	960	0.79	18	B	126	m#209	960	0.79	19	B	126	m#399
Morning	EB R	135	0.29	15	B	33	m59	215	0.46	16	B	54	m82	130	0.28	15	B	30	M54
	WB L	200	0.60	29	C	79	#218	225	0.67	32	C	90	#258	105	0.31	25	C	38	108
	WB T	1225	0.43	7	A	51	114	1230	0.43	7	A	51	115	1310	0.46	8	A	56	124
	NB L	45	0.14	30	C	9	30	65	0.20	30	C	13	40	65	0.20	30	C	13	40
	NB R	45	0.25	31	C	19	62	45	0.25	31	C	19	62	45	0.25	31	C	19	62
	SB R	5	0.02	29	C	2	13	10	0.05	30	C	4	22	10	0.05	30	C	4	22
	Overall			14	B					15	B					14	B		
Weekday	EB T	1255	0.87	33	C	265	#663	1255	0.87	33	C	265	#663	1255	0.87	33	C	265	#663
Evening	EB R	225	0.37	24	C	83	179	230	0.37	24	C	84	184	225	0.37	24	C	83	179
	WB L	160	0.68	50	D	101	#239	160	0.64	48	D	100	#228	160	0.64	48	D	100	#228
	WB T	950	0.34	10	B	76	91	950	0.33	10	A	72	87	950	0.33	10	A	72	87
	NB L	250	0.43	39	D	75	142	390	0.71	46	D	125	#227	390	0.71	46	D	125	#227
	NB R	470	1.65	350	F	~444	#813	490	>1.20	>120	F	~483	#860	490	>1.20	>120	F	~483	#860
	SB R	5	0.01	36	D	3	15	5	0.01	36	D	3	15	5	0.01	36	D	3	15
	Overall			72	E					83	F					83	F		

- a. Demand of critical movement.  
b. Volume to capacity ratio.  
c. Average total delay, in seconds per vehicle.  
d. Level-of-service.  
e. 95<sup>th</sup> percentile queue, in feet.

### Transportation Demand Management Program

Consistent with the City of Boston's goals to reduce auto-dependency, the Proponent will proactively incorporate TDM measures to encourage alternative modes of transportation. TDM measures are most often directed at commuter travel, which is the purpose of the majority of the trips destined to the Project Site.

The following discusses an array of TDM measures that could be implemented. A description of the TDM elements is presented in this section along with information on how those elements aid Phase 1 Project users – notably employees and visitors travelling to and from the Project Site. Measures being considered as part of the Phase 1 Project include:

- › Provide secure bicycle storage for building tenants and their employees and visitors in accordance with the City of Boston Bicycle Guidelines.
- › Bike racks will be provided at select, highly-visible locations within the Project Site. The racks will be securely mounted and feature current designs to properly secure bikes of all kinds.
- › Addition of a new Hubway Station;
- › Multiple parking spaces for a car-sharing service will be provided, such as ZipCar®, within the new garage.



- › Parking spaces on-site will be equipped to support EV charging stations and will be provided within the new garage.
- › Preferential parking for alternative-fueled vehicles will be provided.
- › Office and retail tenants will be encouraged to provide employer subsidies to employees who purchase monthly or multiple trip transit passes.
- › Office and retail tenants will be encouraged to provide a guaranteed ride home program, in conjunction with MassRIDES, to eliminate an often-cited deterrent to carpool and vanpool participation.
- › Potential office and retail tenants will be encouraged to offer direct deposit payment for monthly transit passes to employees.
- › An on-site Transportation Coordinator will be designated to oversee parking and loading operations as well as to promote alternative transportation measures. The person assigned to this role will coordinate with office and retail tenants to help promote a reduced reliance on single-occupant motor-vehicle travel to the Project Site. To that end, the TDM measures identified in the following sections will be implemented under the direction and supervision of this person. The duties of the transportation coordinator may include, but not be limited to:
  - Acting as a liaison with office and retail employers and MassRIDES.
  - Assisting office and retail employees and residents with ride matching and transportation planning.
  - Disseminating information on alternate modes of transportation and developing transportation related marketing and education materials, including a website. This includes posting relevant public transit information potentially at an outdoor kiosk included as part of the Phase 1 Project. This would include, but is not limited to, providing transit information such as maps and schedules to new residents and tenants in an orientation package.
  - Developing and maintaining information pertaining to pedestrian and cycling access to and from the Project Site.
  - Encouraging tenants to provide on-site transit pass sales to employees.

All TDM measures will be formalized in the Phase 1 Project TAPA to be executed with BTM.

### **5.3.8 Phase 1 TIA Findings**

As shown in Tables 5-13 and 5-14, the additional traffic generated by the Phase 1 Project is expected to have only minor incremental increases in delay at the study area intersections. Given the minimal impacts experienced throughout the study area, the Phase 1 improvements are focused on providing safe and efficient access to the Project Site. Accordingly, the Proponent proposes to optimize traffic signal

timings at the intersection of Winthrop Avenue and Tomasello Drive. In addition, to address safety concerns at the intersection of Route 1A at Tomasello Drive, the Proponent proposes to implement MUTCD-compliant “No Left Turn” signage at this intersection. The Proponent is also proposing a robust TDM program consistent with the City of Boston’s goals to reduce auto-dependency. These measures will encourage alternative modes of transportation.

Public transportation is expected to serve a critical role in supporting the Phase 1 Project’s transportation needs. Served by a rapid transit station at the easterly side of the Phase 1 Project Site, there is opportunity to accommodate significant additional ridership on the MBTA Blue Line, the MBTA’s least utilized rapid transit line. A majority of the Phase 1 Project-generated transit ridership is projected in the non-critical, or reverse commute, direction. In the peak directions, the additional transit ridership generated by the Phase 1 Project would have an insignificant impact. Without the Phase 1 Project, under 2024 No-Build conditions, Blue Line passenger volumes are projected to slightly exceed policy capacity just before and just after the peak periods, when service is less frequent and when the MBTA’s Policy dictates reduced maximum passenger loading levels as compared to during the peak. The Phase 1 Project would result in a nominal increase to passenger loading during these times, but would not result in any new time periods where passenger loads exceed policy capacity. In summary, the Phase 1 Project would not cause the MBTA Blue Line to exceed any capacity threshold that wouldn’t otherwise be exceeded under the 2024 No-Build Condition. The analysis of the Blue Line’s critical link found that the Blue Line can accommodate the anticipated Phase 1 transit demand during the busiest 30-minute periods of the morning and evening peaks while maintaining acceptable levels of passenger crowding per the MBTA’s Policy.





Figure 5.1  
Phase 1 Project Access/Circulation Plan



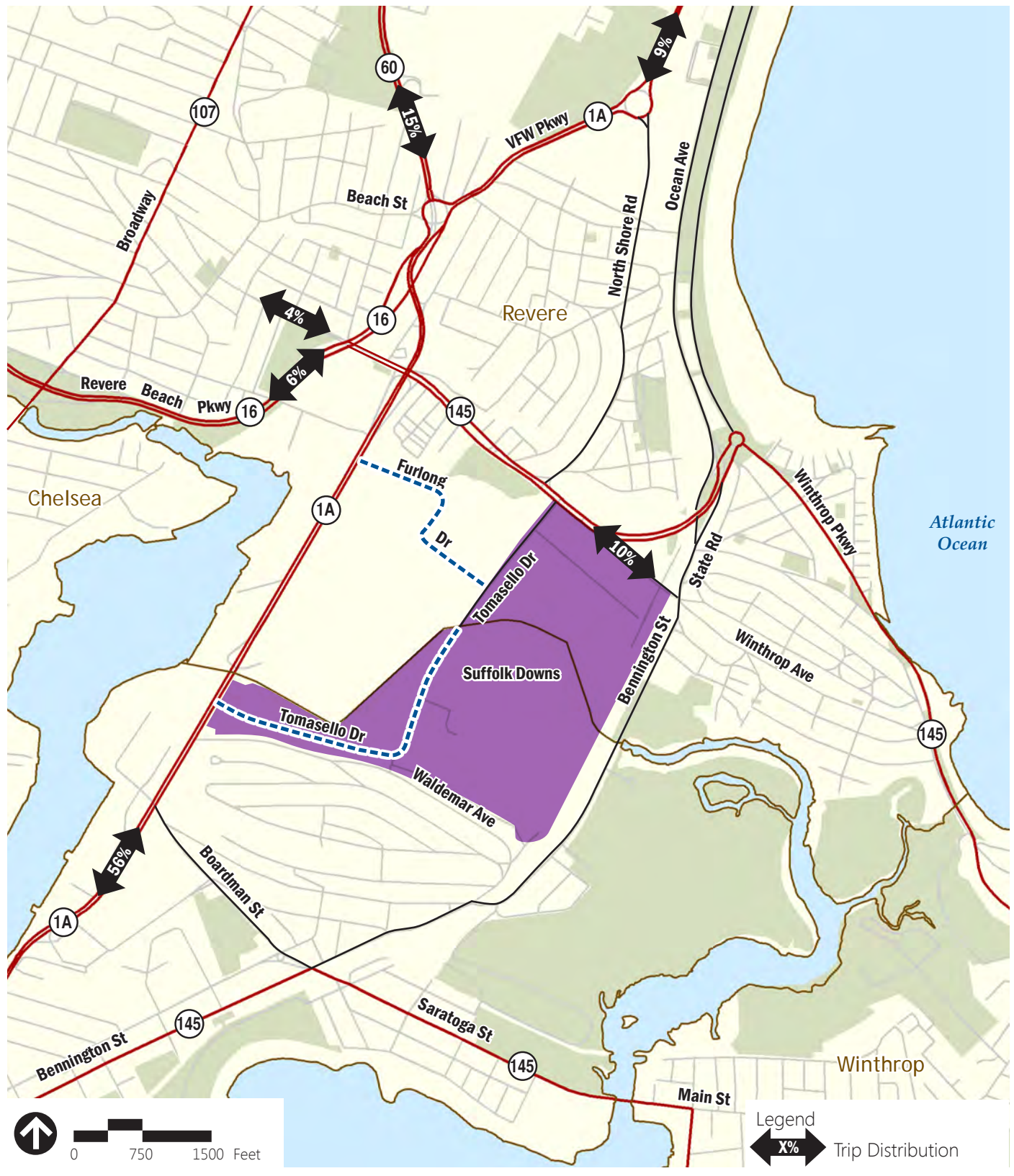


Source:

Figure 5.2  
Master Plan Project  
Study Area Intersections

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





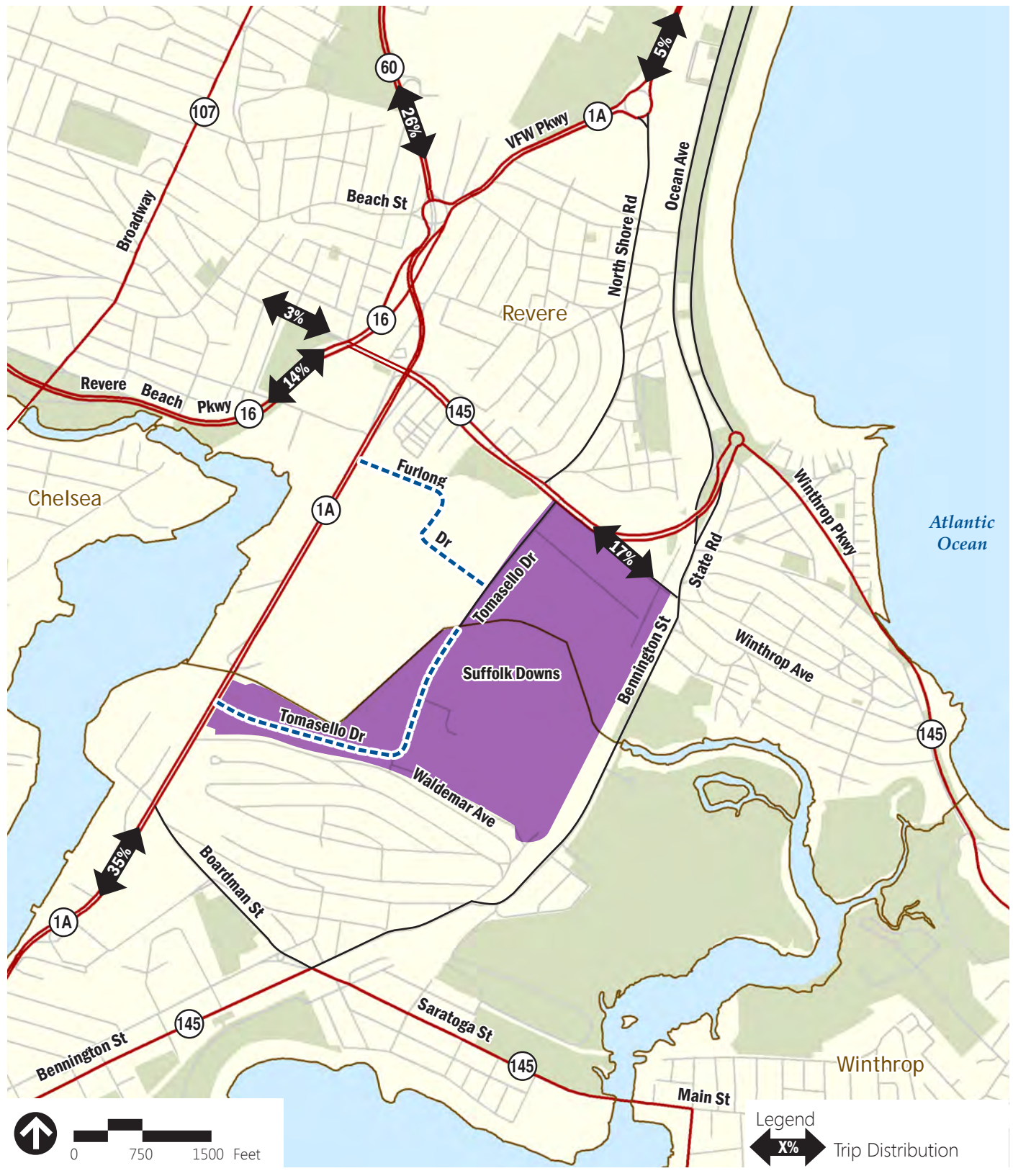
Source:

Figure 5.3

Master Plan Project  
Vehicular Trip Distribution -  
Office and Residential

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



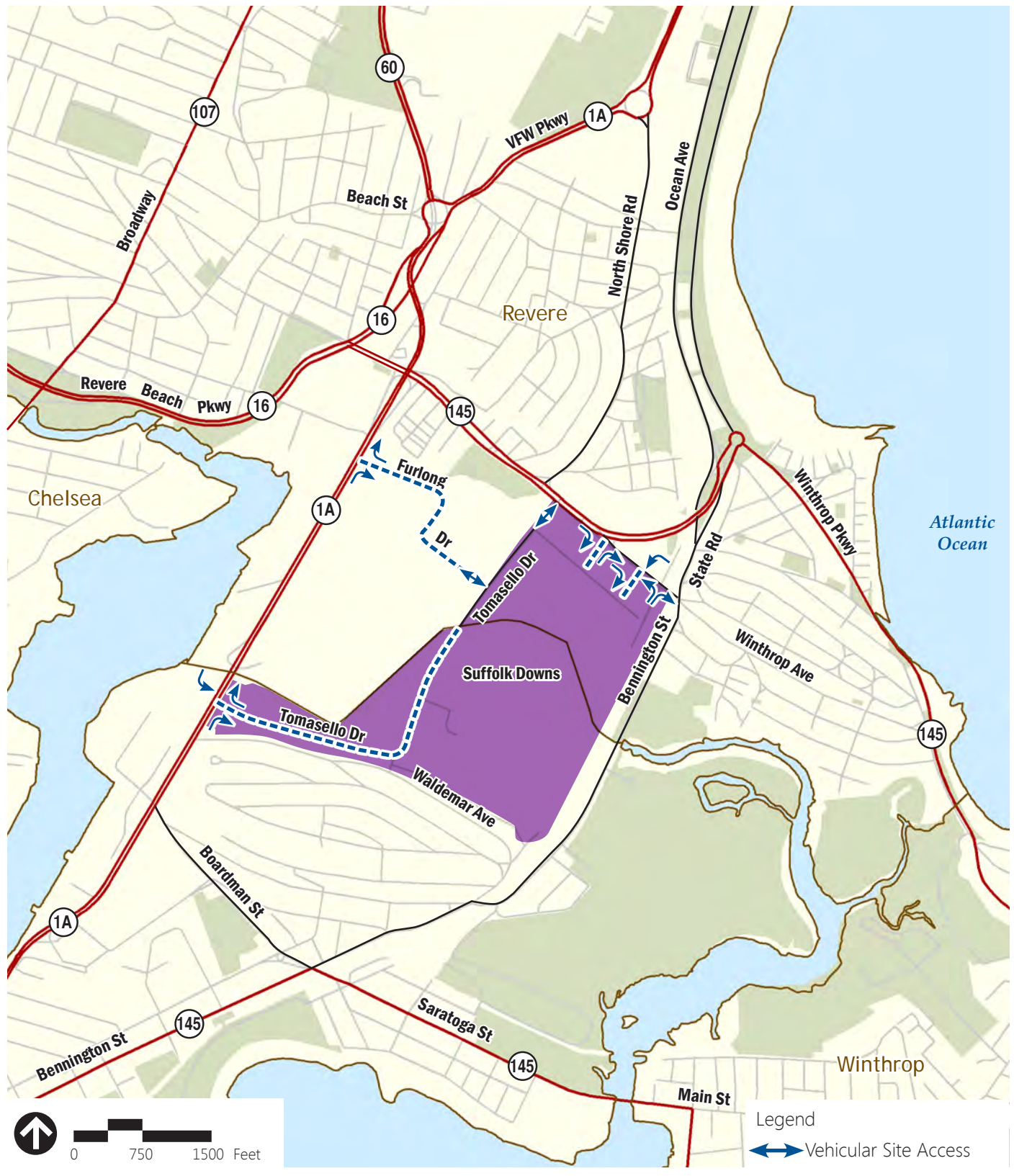


Source:

Figure 5.4

Master Plan Project  
Vehicular Trip Distribution -  
Retail and Hotel

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



Source:

Figure 5.5

Master Plan Project  
Proposed Site Access and Circulation

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

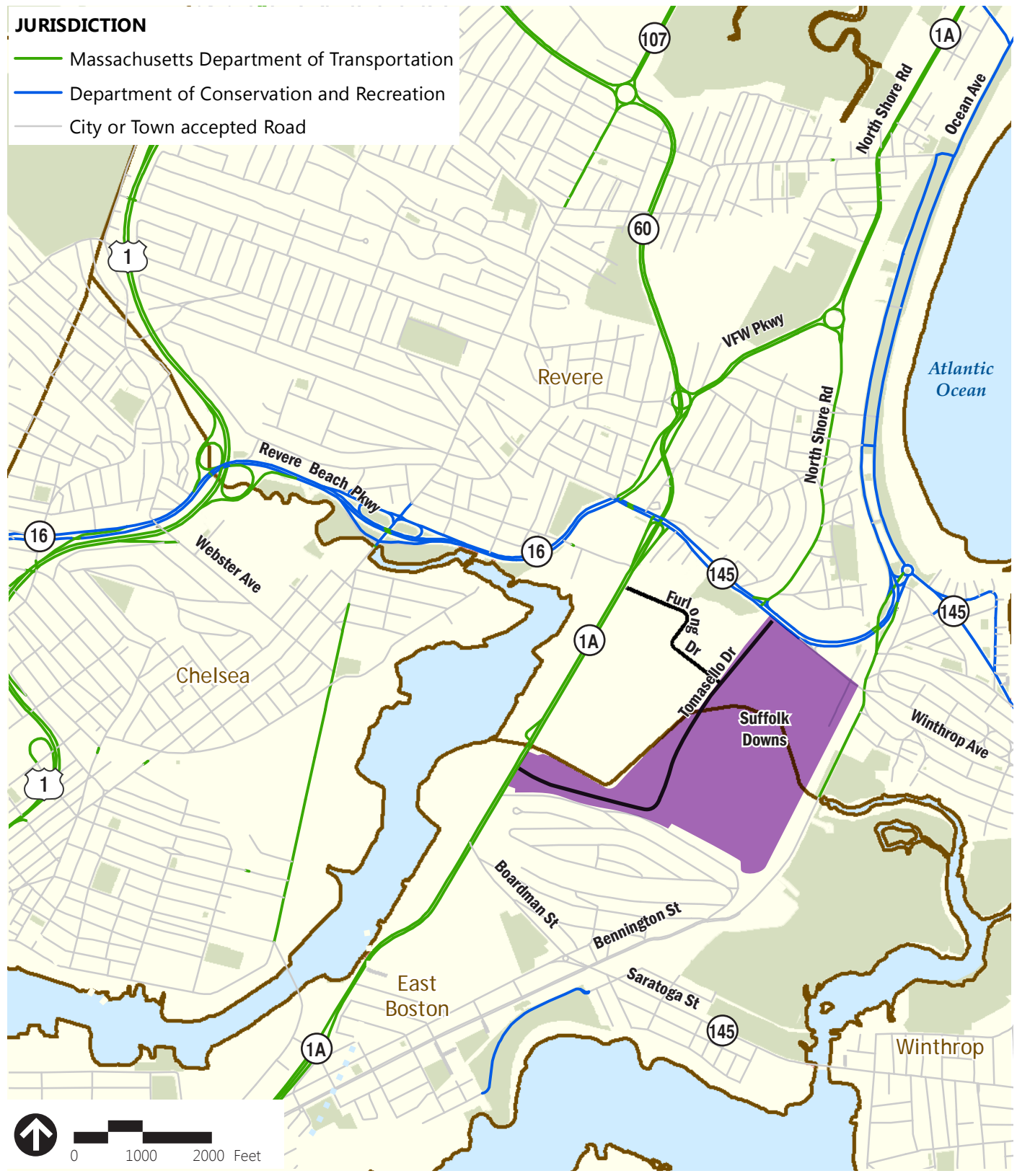




Source:

Figure 5.6  
Phase 1 Project  
Study Area Intersections

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

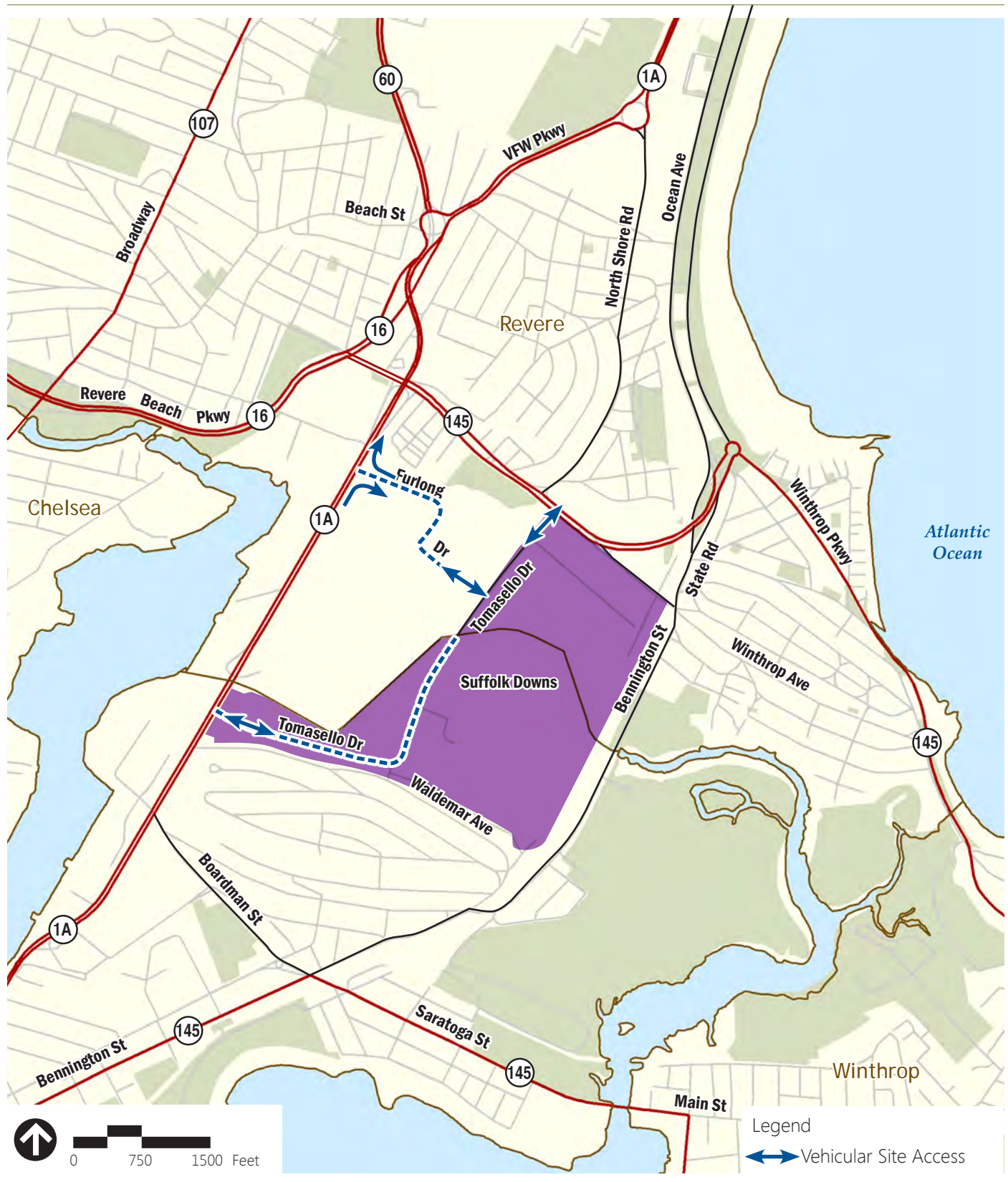


Source:

Figure 5.7  
Roadway Jurisdiction Map

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Source:

Figure 5.8

Existing Conditions  
Site Access and Circulation

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



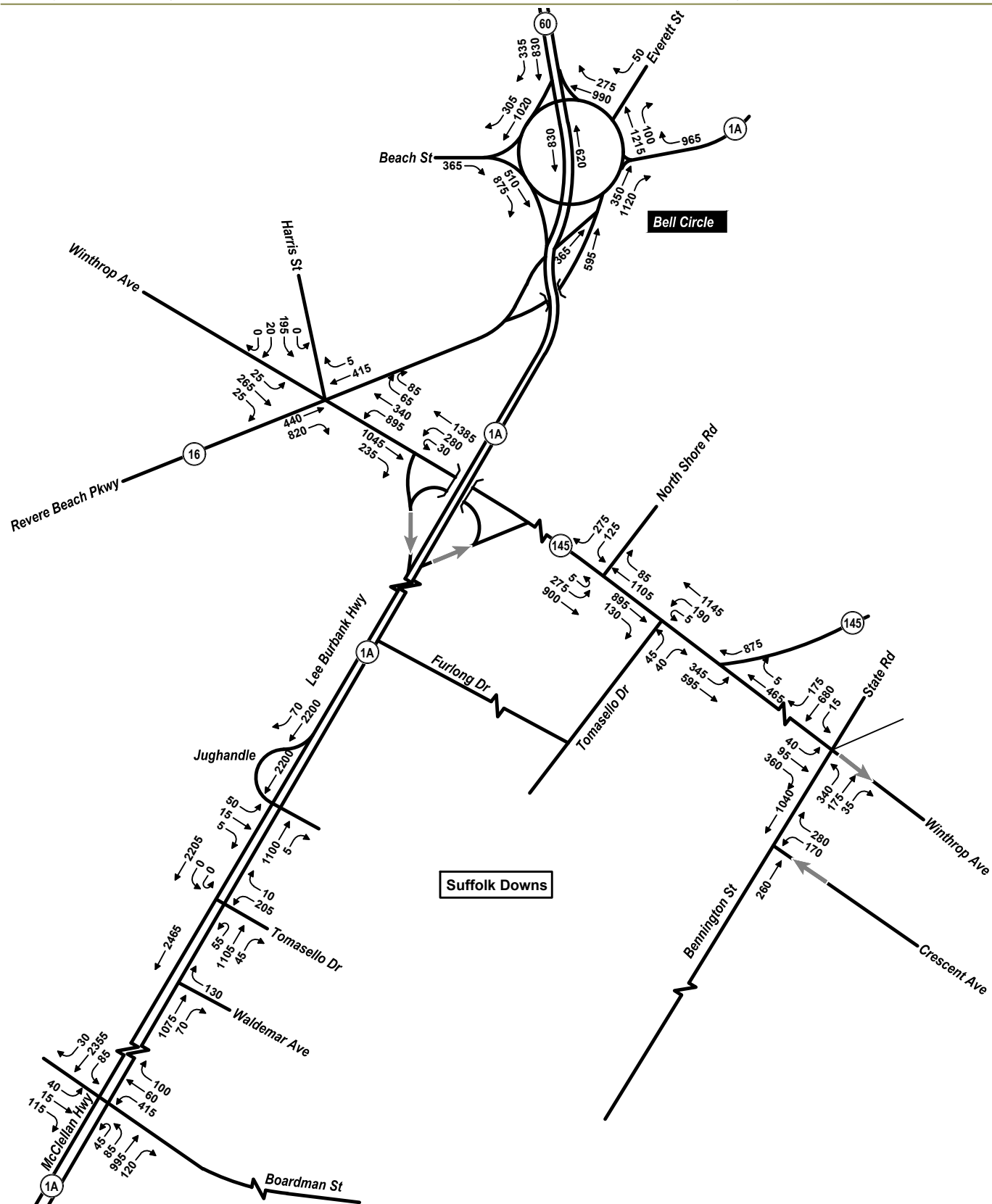


Figure 5.9

Existing Conditions Volume Network  
Weekday Morning Peak Hour

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

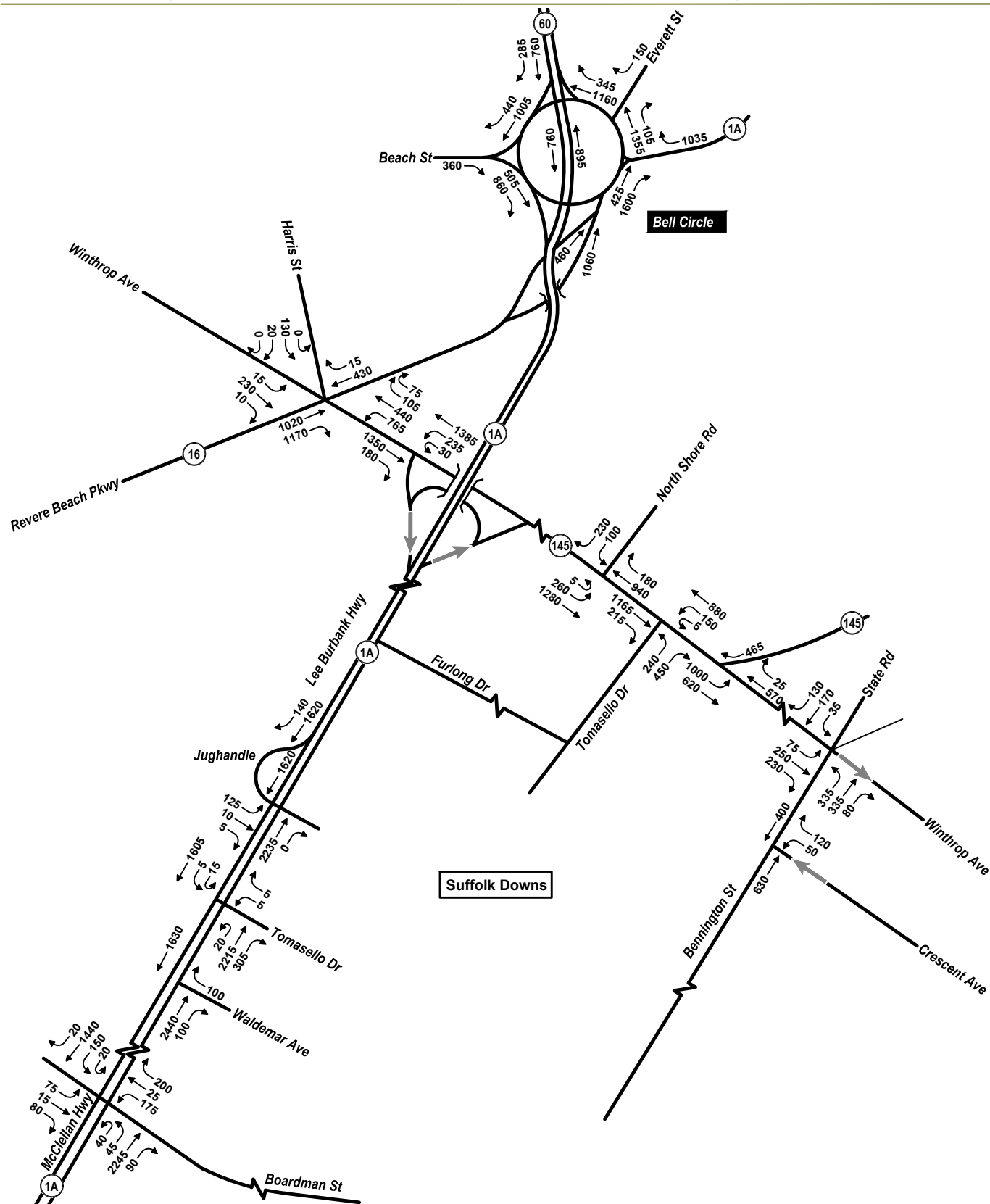


Figure 5.10

Existing Conditions Volume Network  
Weekday Evening Peak Hour

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Source: MassGIS Orthographic Aerial Imagery, Boston, Massachusetts

Figure 5.11  
Existing Public Transportation

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



Source: MBTA, Blue Line Ridership Data, Fall 2016.  
 Note: Results rounded to nearest 10.

Figure 5.12  
 Existing Conditions  
 Blue Line Morning Peak Load Profiles  
**Suffolk Downs Redevelopment  
 Boston & Revere, Massachusetts**

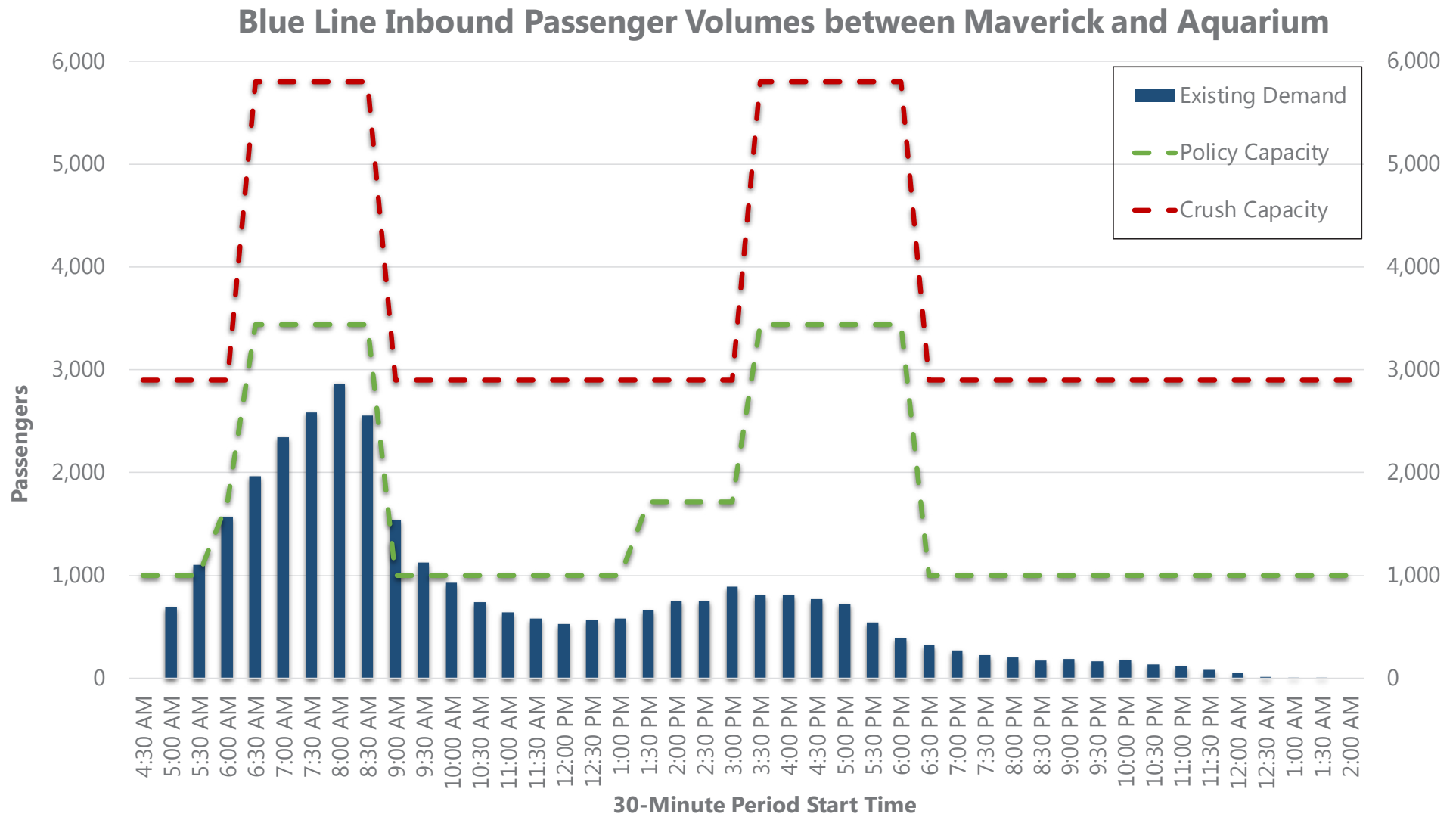




Source: MBTA, Blue Line Ridership Data, Fall 2016.  
Note: Results rounded to nearest 10.

Figure 5.13  
Existing Conditions  
Blue Line Evening Peak Load Profiles  
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



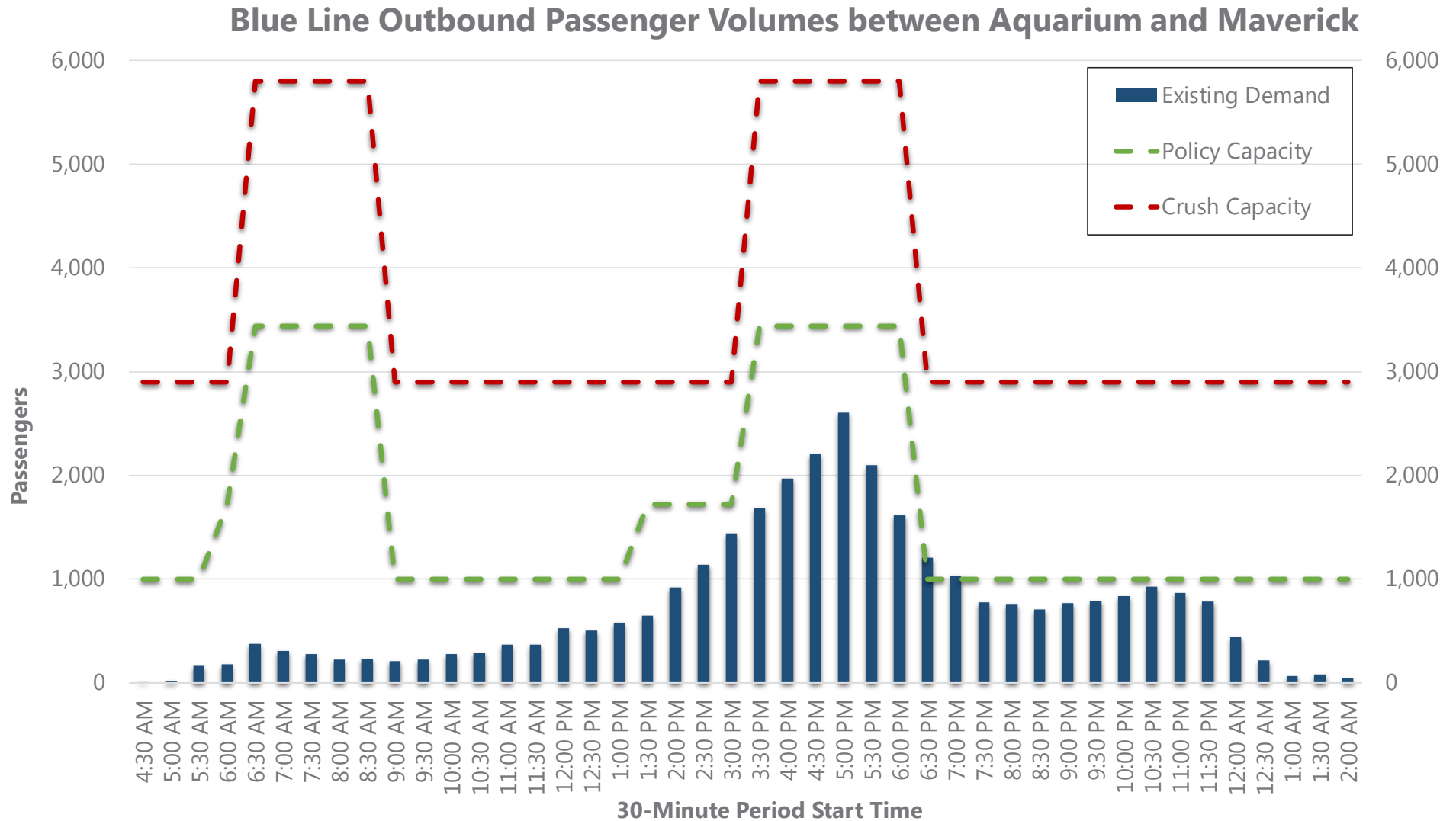


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.14

Existing Conditions  
Blue Line Inbound Passenger Volumes  
Between Maverick and Aquarium Stations

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

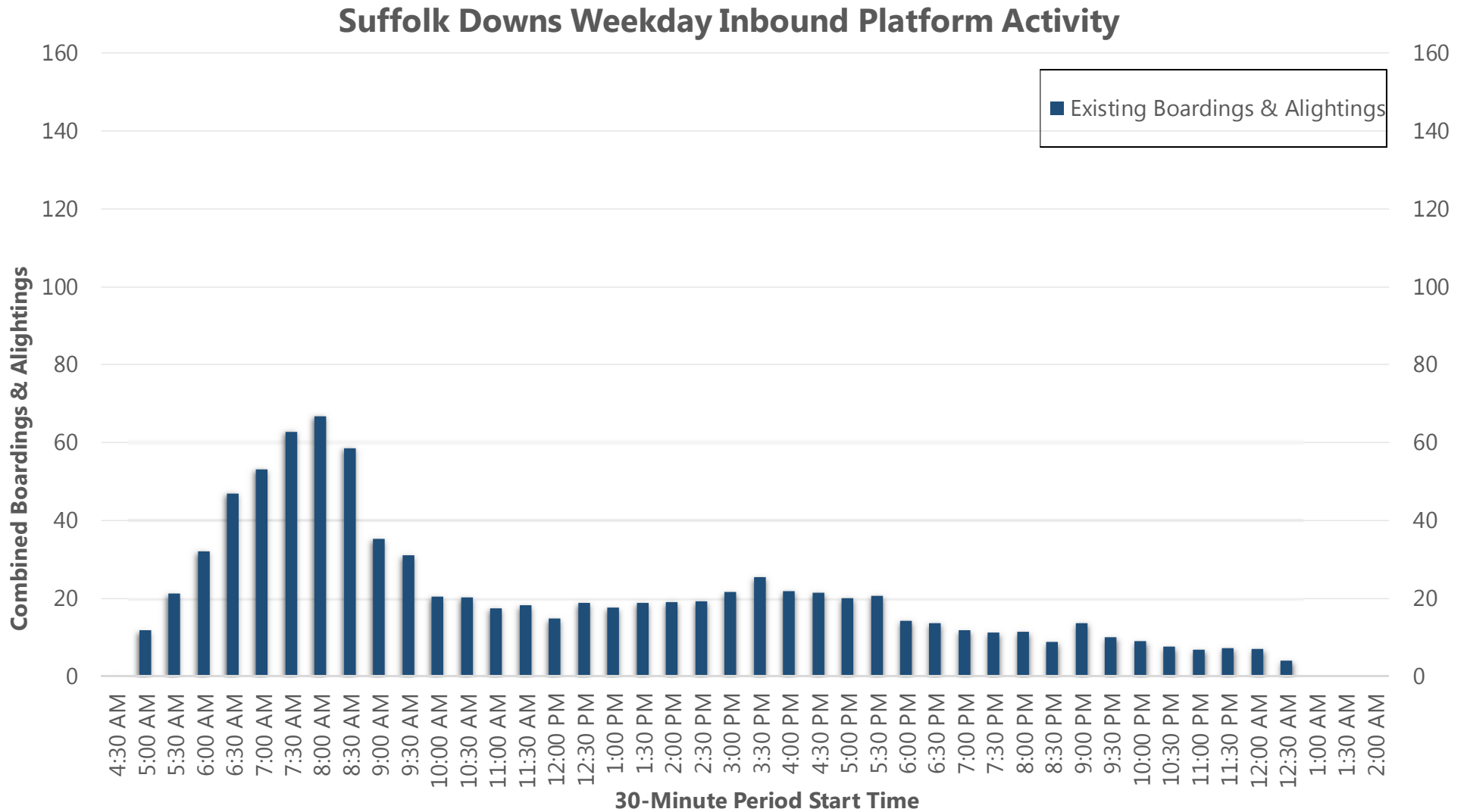


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.15

Existing Conditions  
Blue Line Outbound Passenger Volumes  
Between Aquarium and Maverick Stations

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

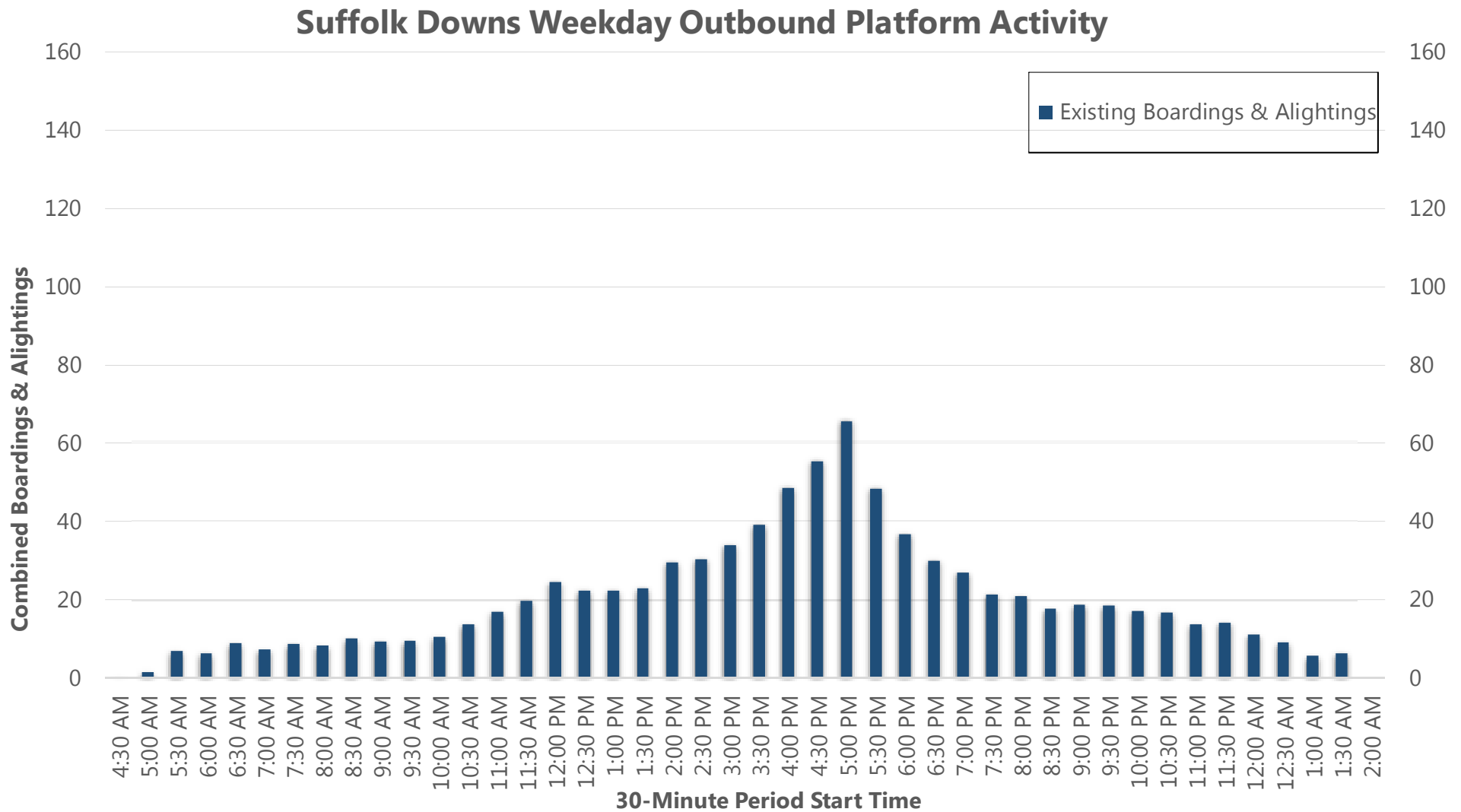


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.16

Existing Conditions  
Suffolk Downs Station  
Inbound Platform Activity

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.17

Existing Conditions  
Suffolk Downs Station  
Outbound Platform Activity

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

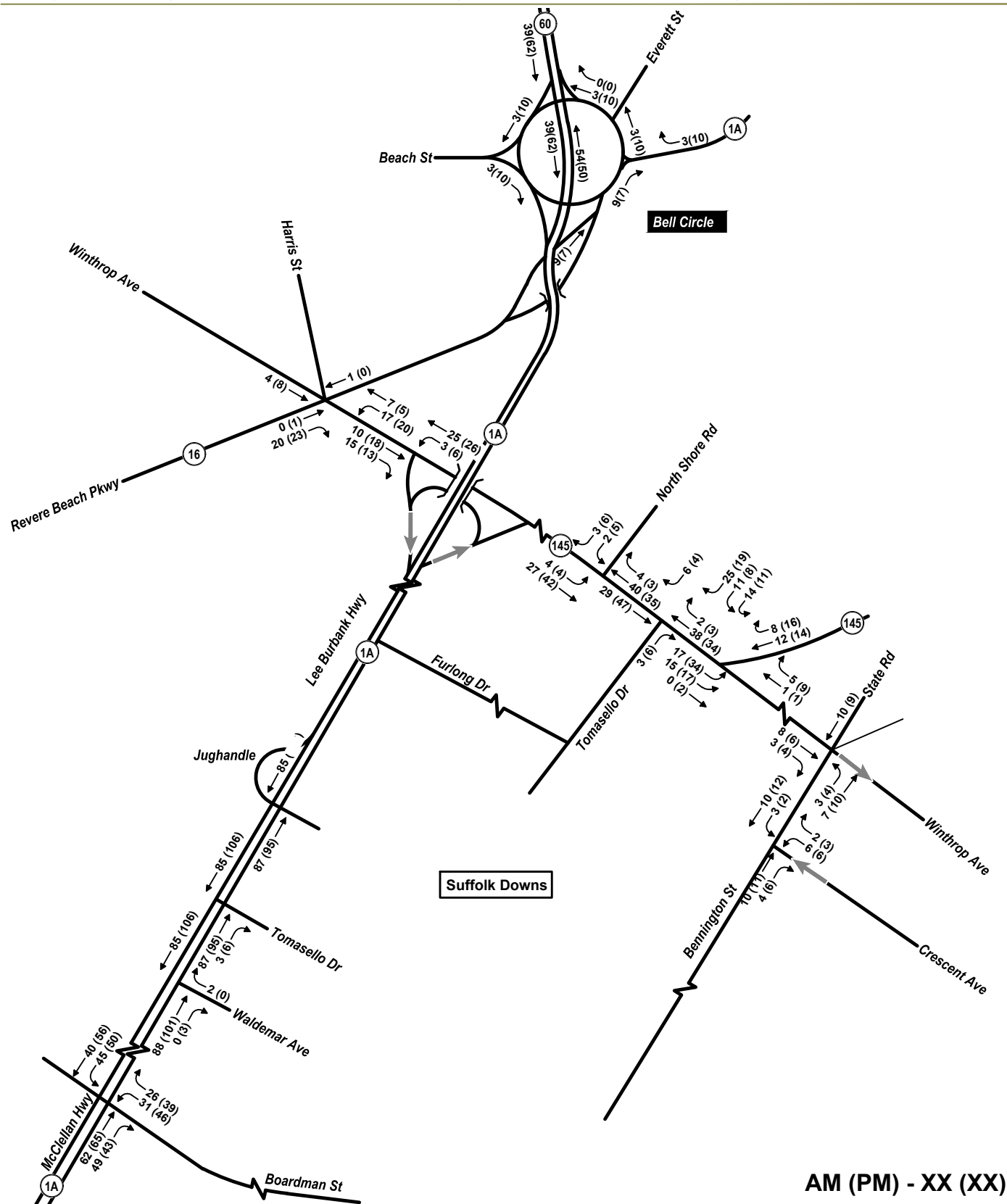


Figure 5.18

2024 No-Build Conditions  
Background Project Trips

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



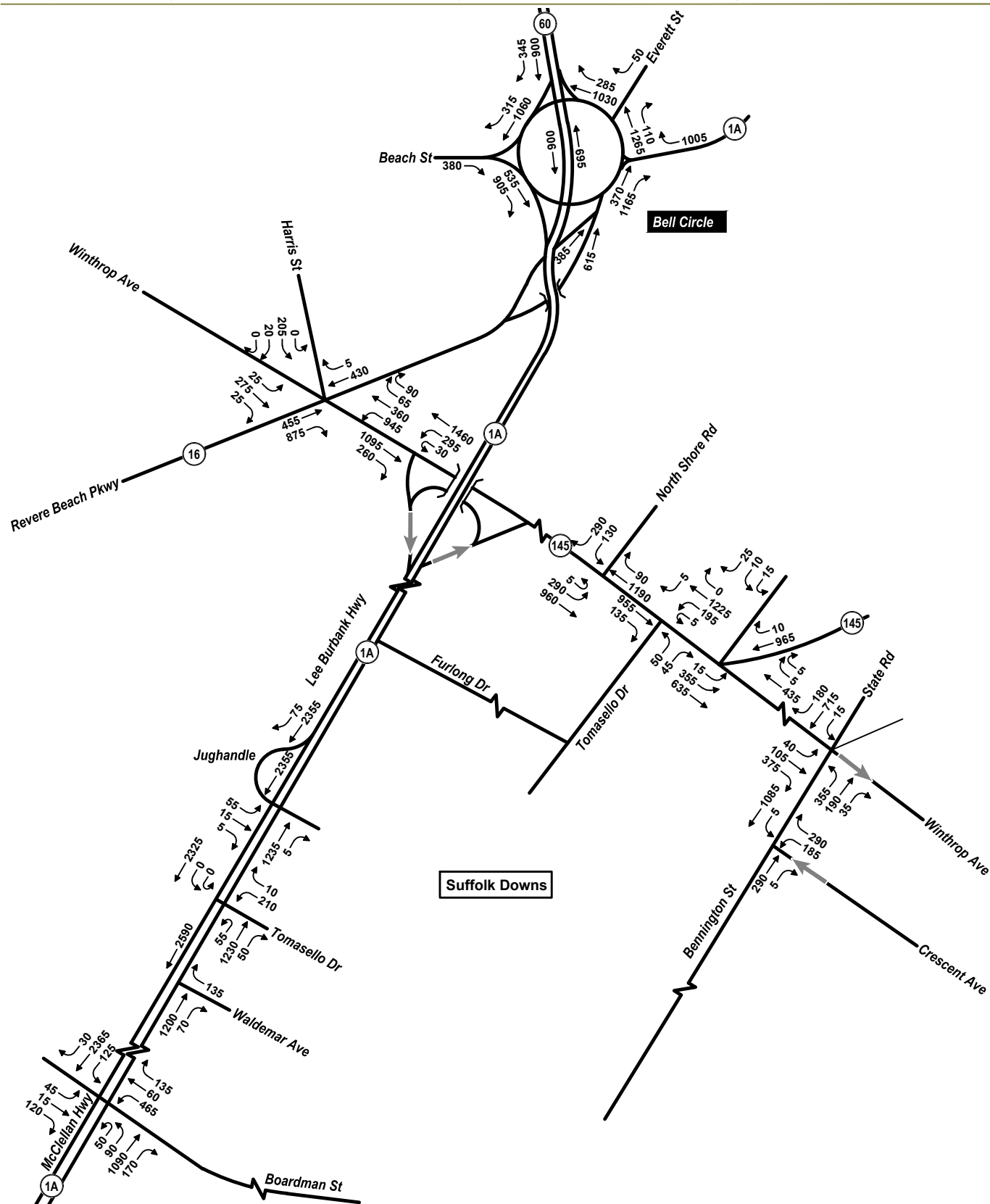


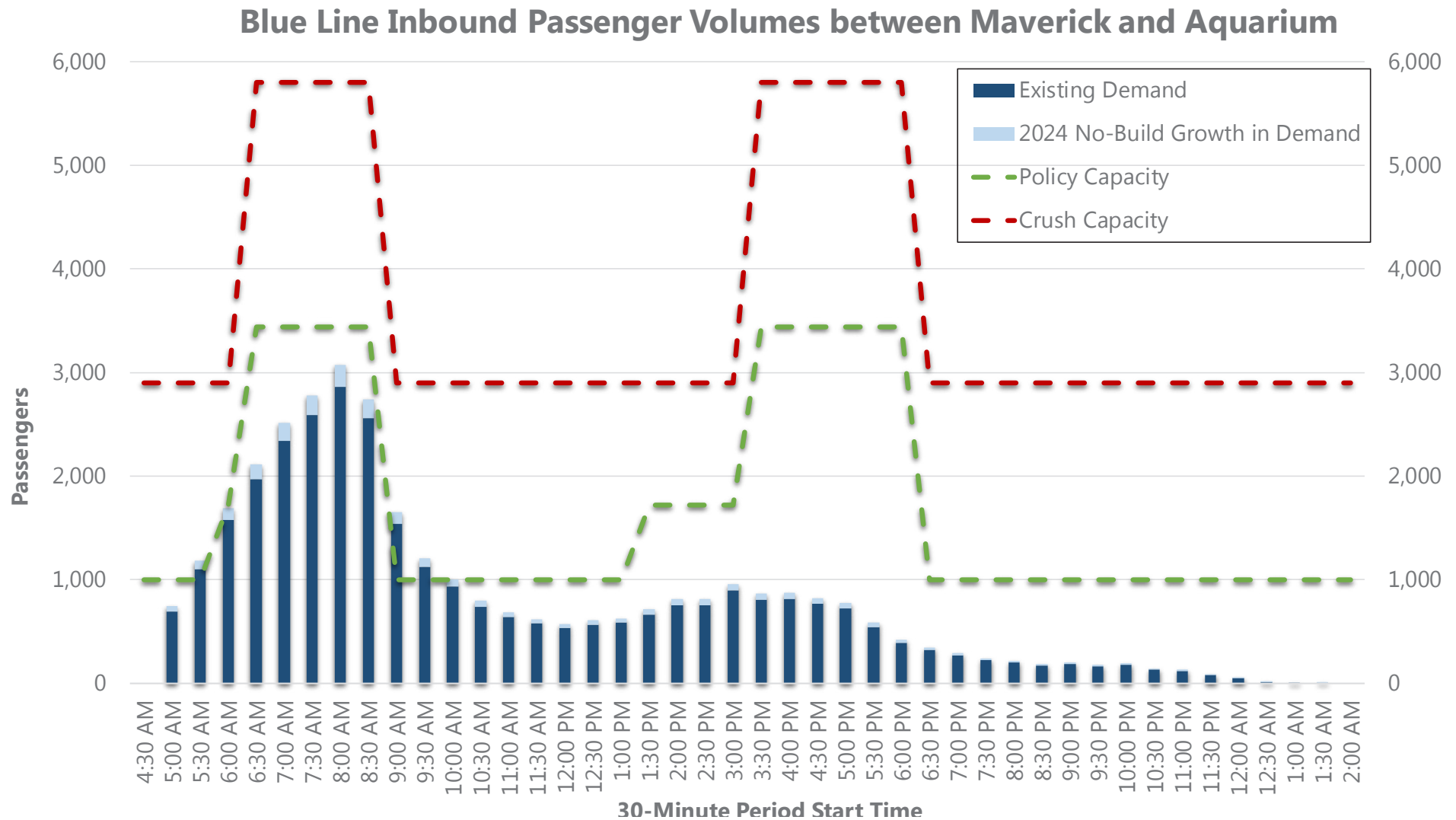
Figure 5.19

2024 No-Build Conditions Volume Network  
Weekday Morning Peak Hour

**Suffolk Downs Redevelopment**  
**Boston & Revere, Massachusetts**

2024 No-Build Conditions Volume Network  
Weekday Evening Peak Hour

## Suffolk Downs Redevelopment Boston & Revere, Massachusetts

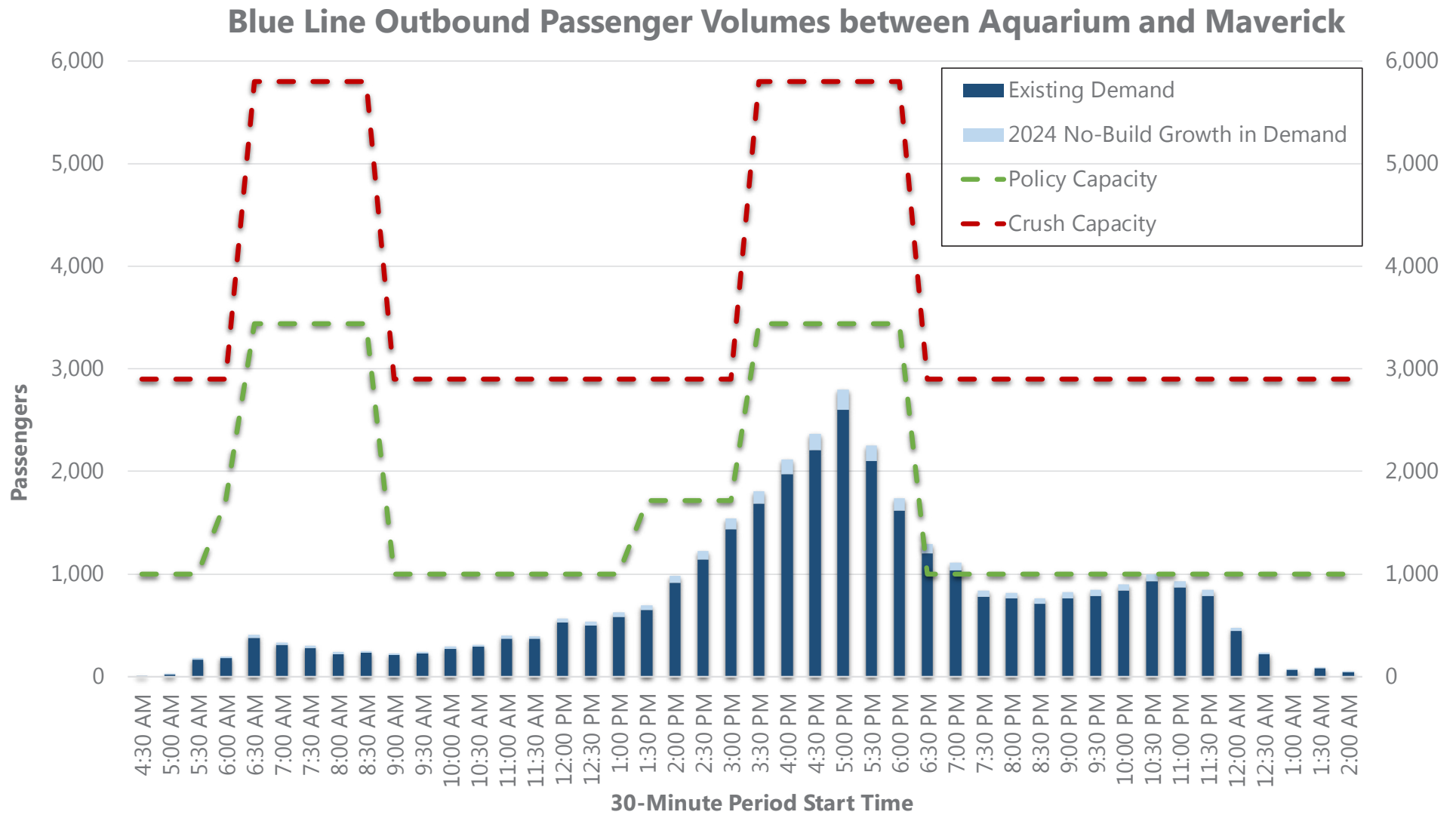


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.21

2024 No-Build Conditions  
Blue Line Inbound Passenger Volumes  
Between Maverick and Aquarium Stations

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

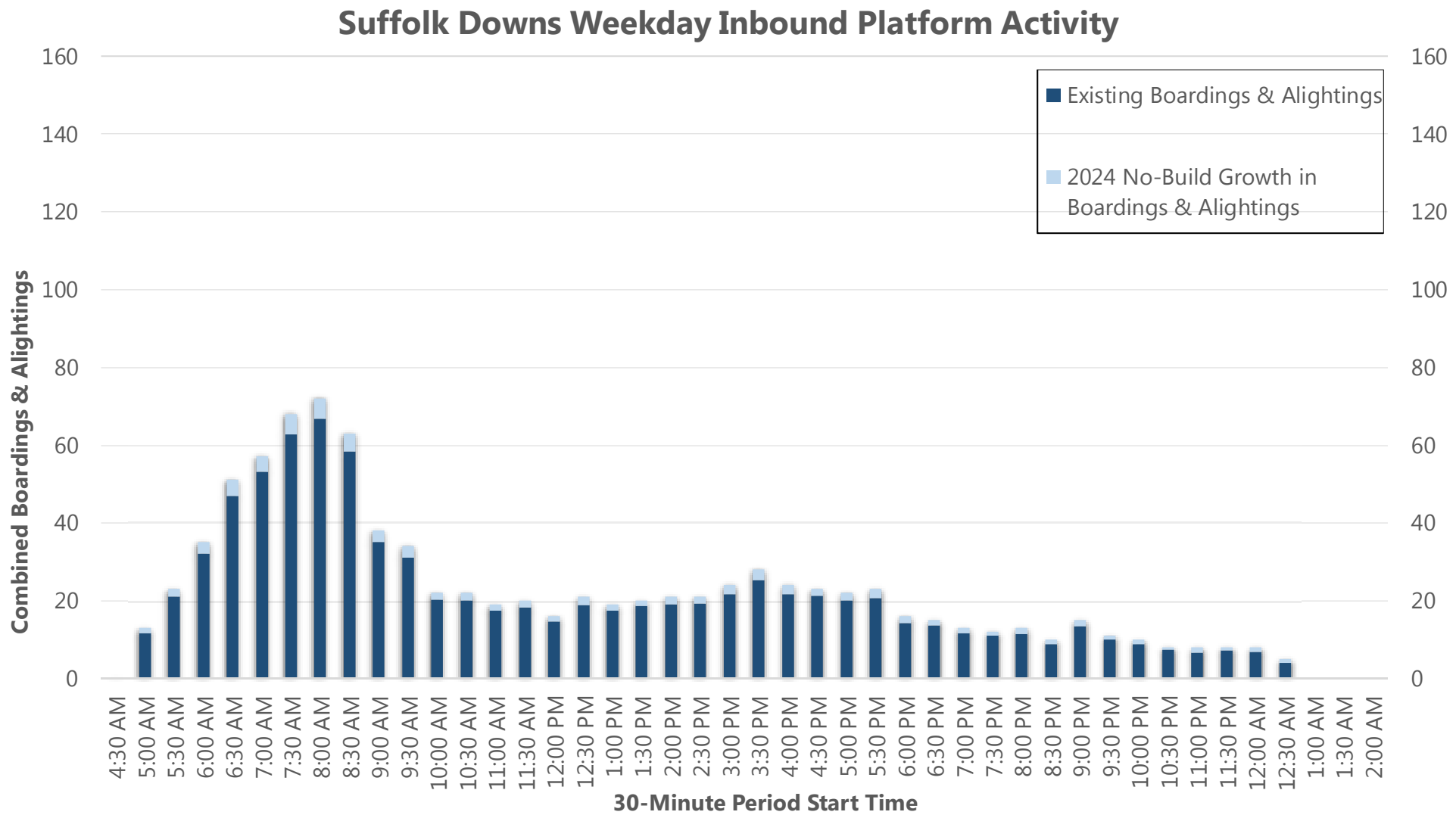


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.22

2024 No-Build Conditions  
Blue Line Outbound Passenger Volumes  
Between Aquarium and Maverick Stations

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

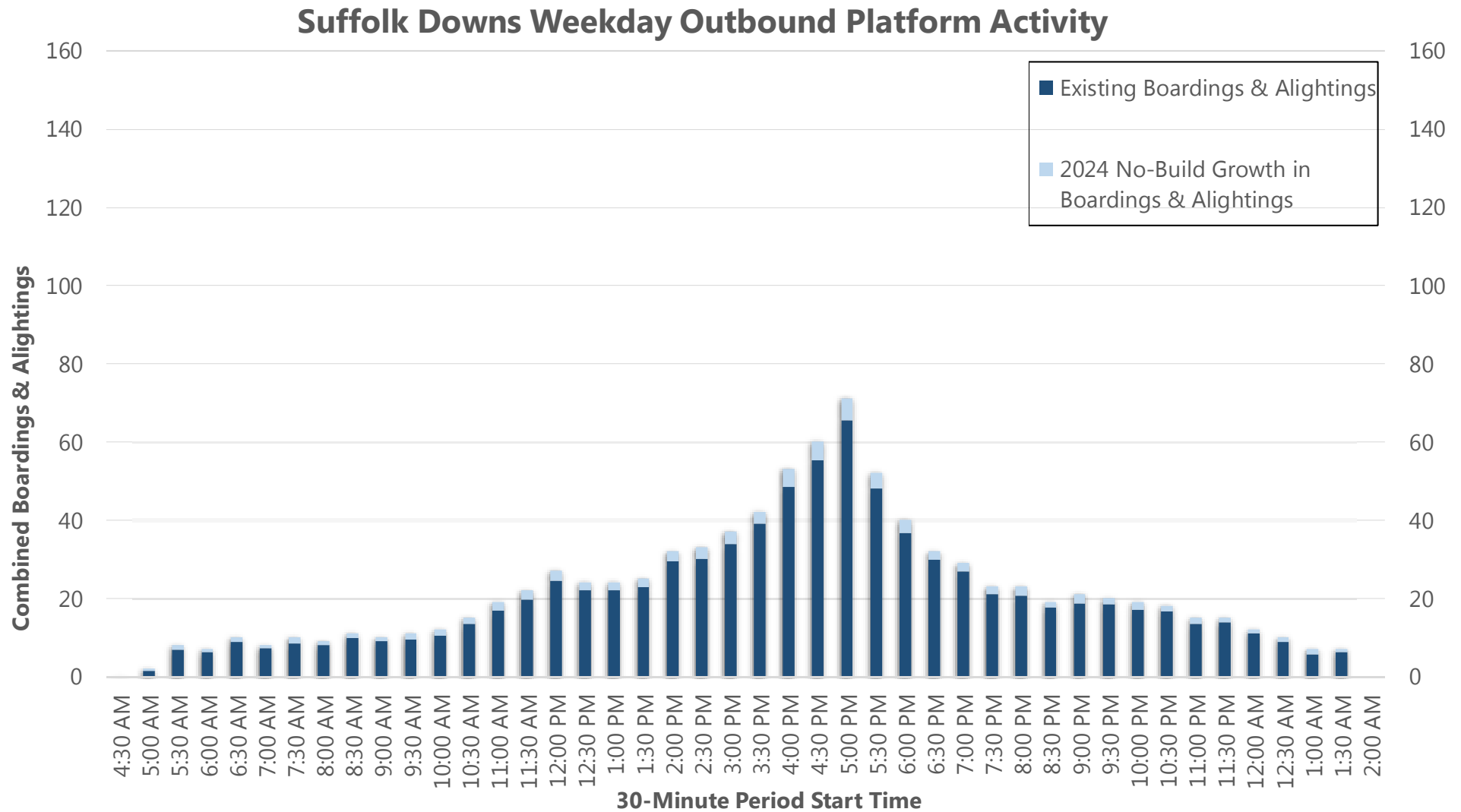


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.23  
2024 No-Build Conditions  
Suffolk Downs Station  
Inbound Platform Activity

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



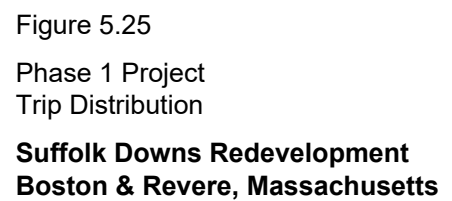


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.24

2024 No-Build Conditions  
Suffolk Downs Station  
Outbound Platform Activity

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



## Phase 1 Project Trip Volume Network

## Suffolk Downs Redevelopment Boston & Revere, Massachusetts

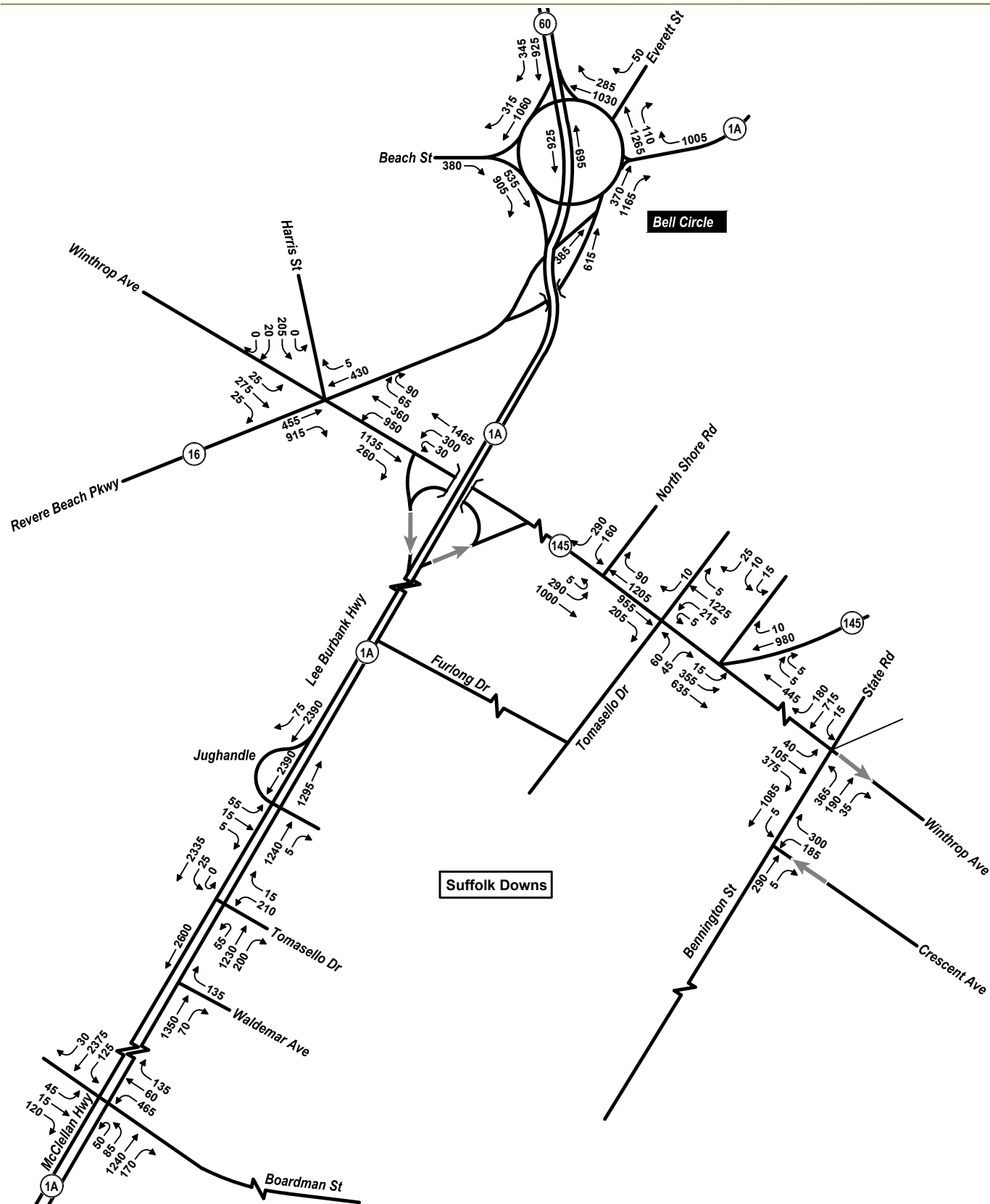


Figure 5.27

2024 Build Conditions Volume Network  
Weekday Morning Peak Hour

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

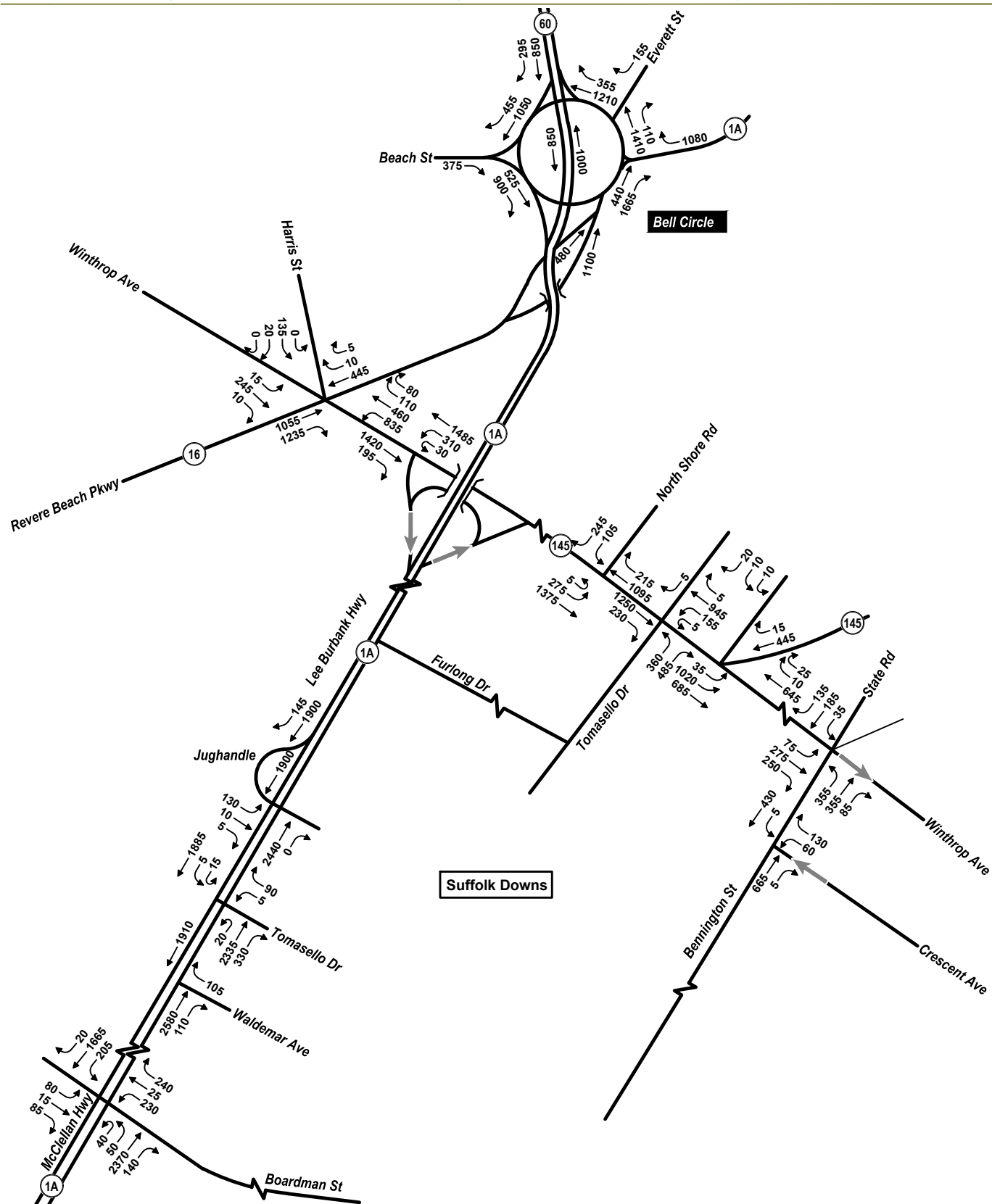
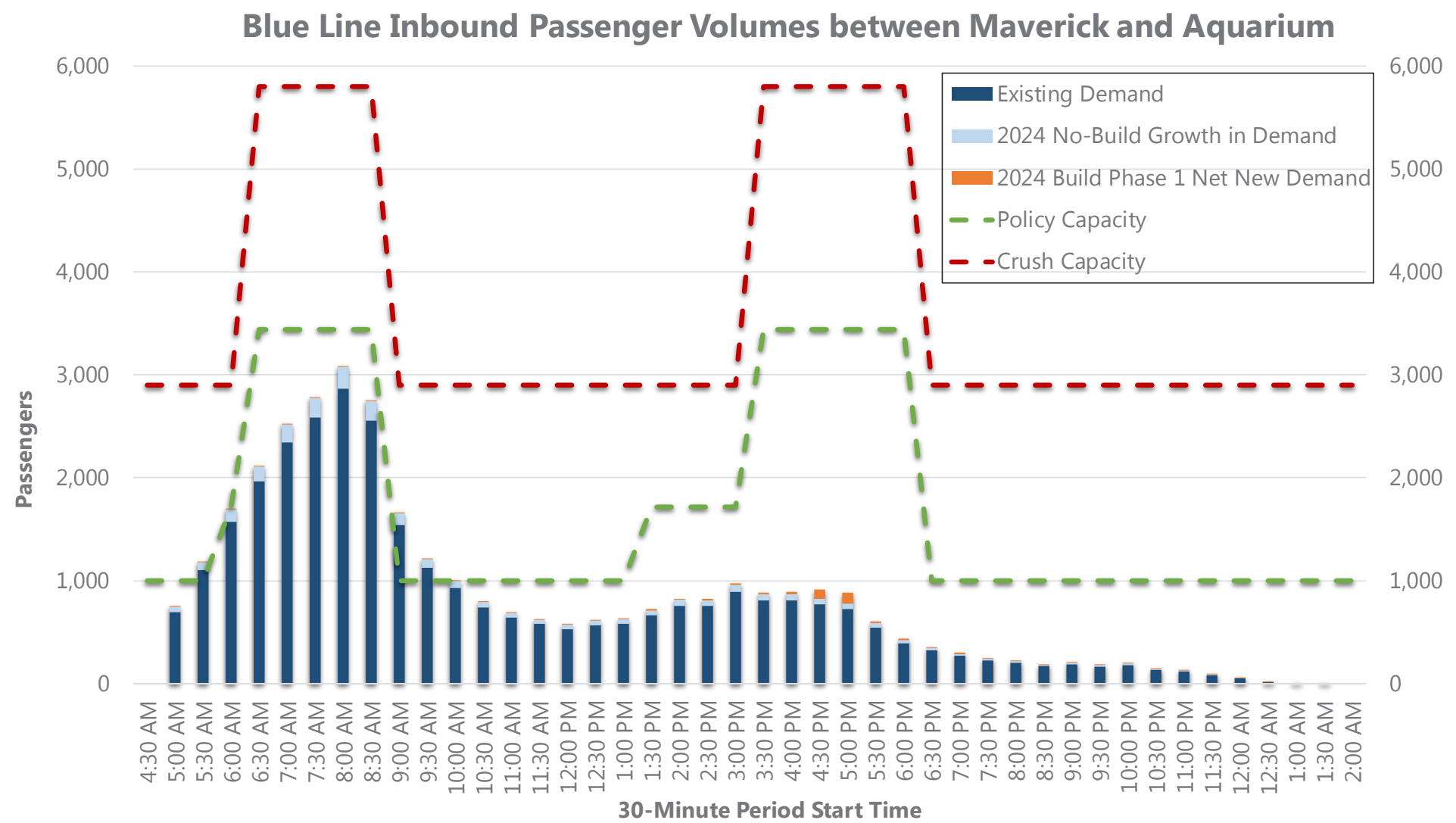


Figure 5.28

2024 Build Conditions Volume Network  
Weekday Evening Peak Hour

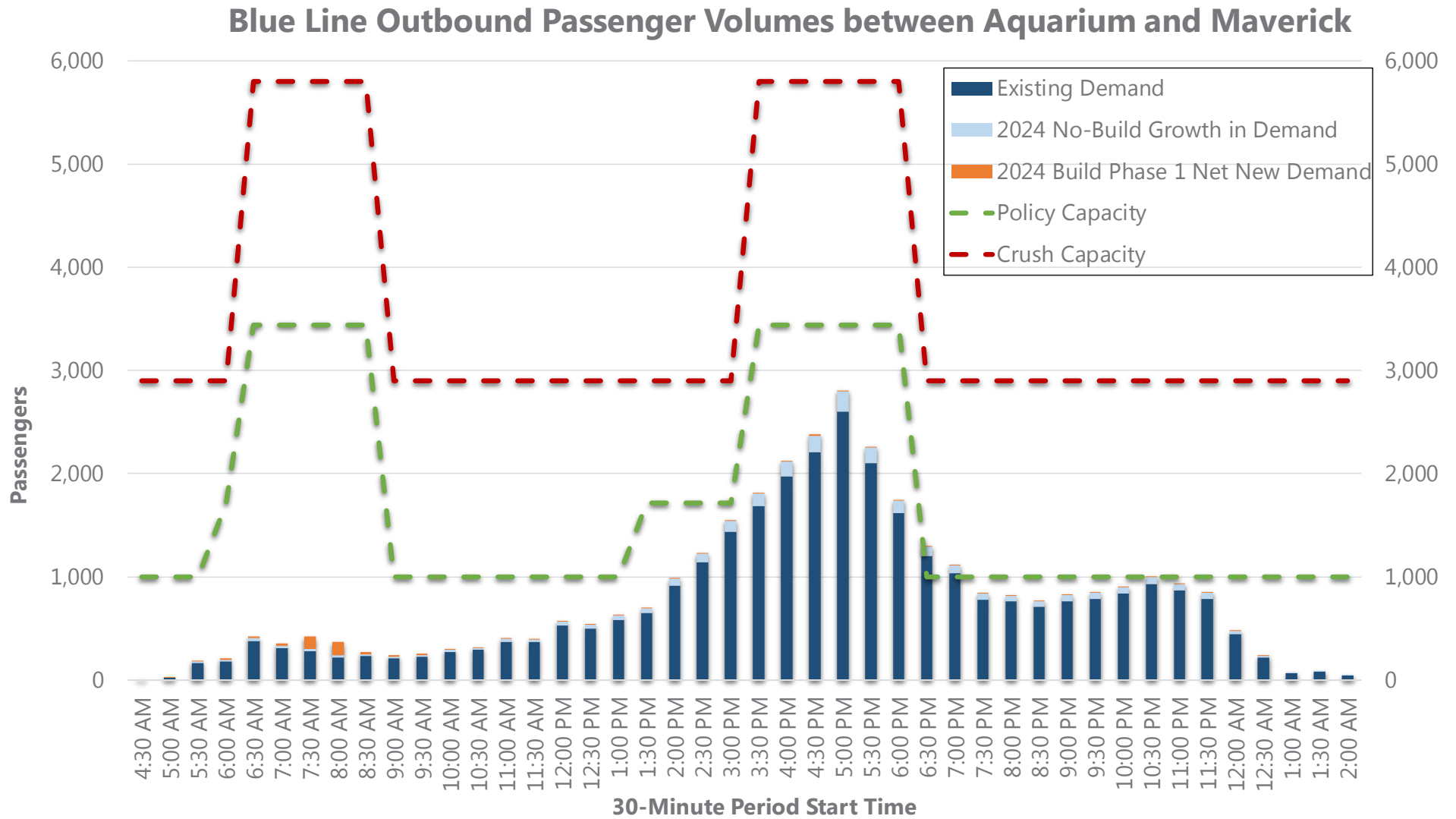
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.29  
2024 Build Conditions  
Blue Line Inbound Passenger Volumes  
Between Maverick and Aquarium Stations  
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

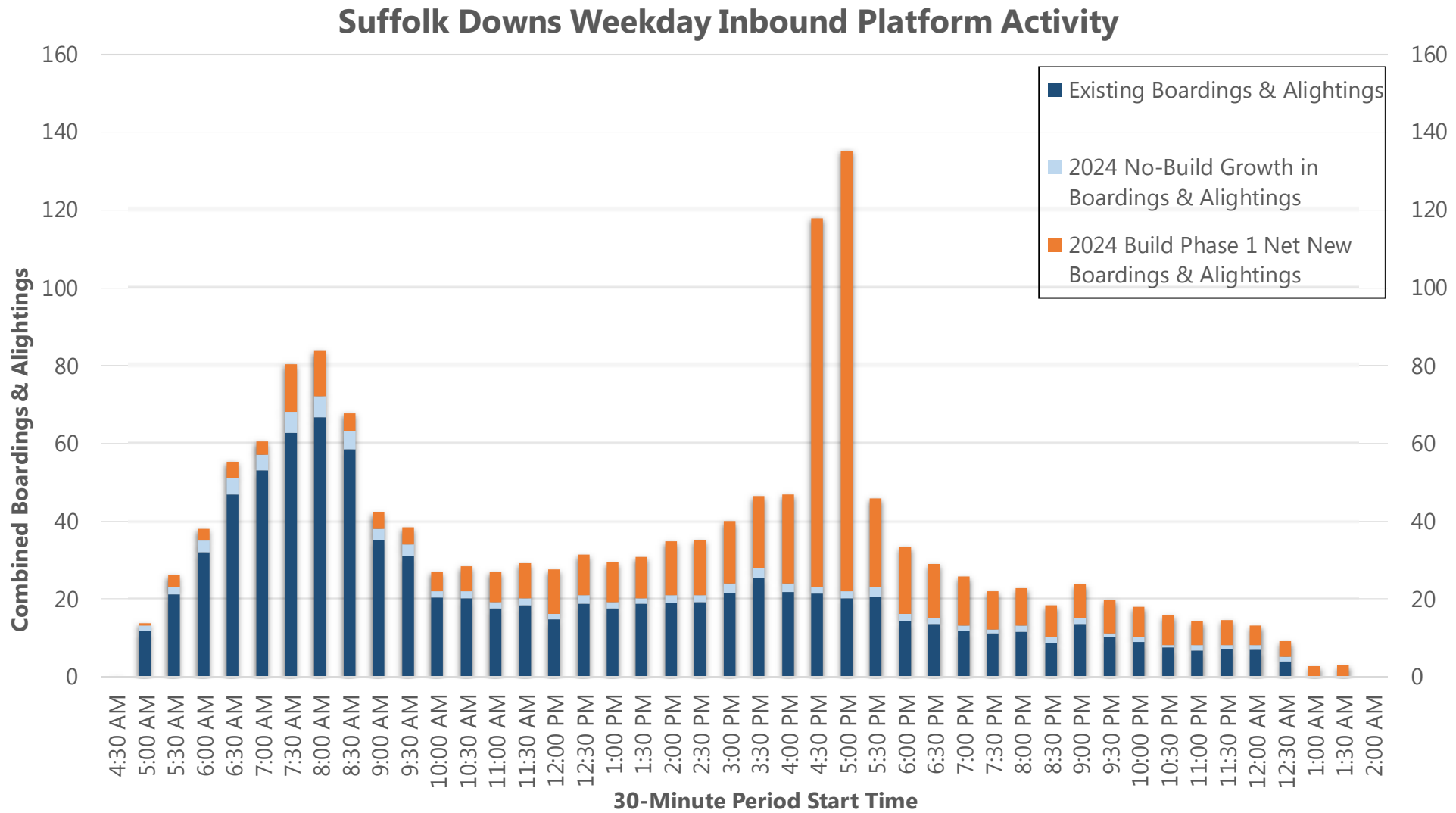


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.30

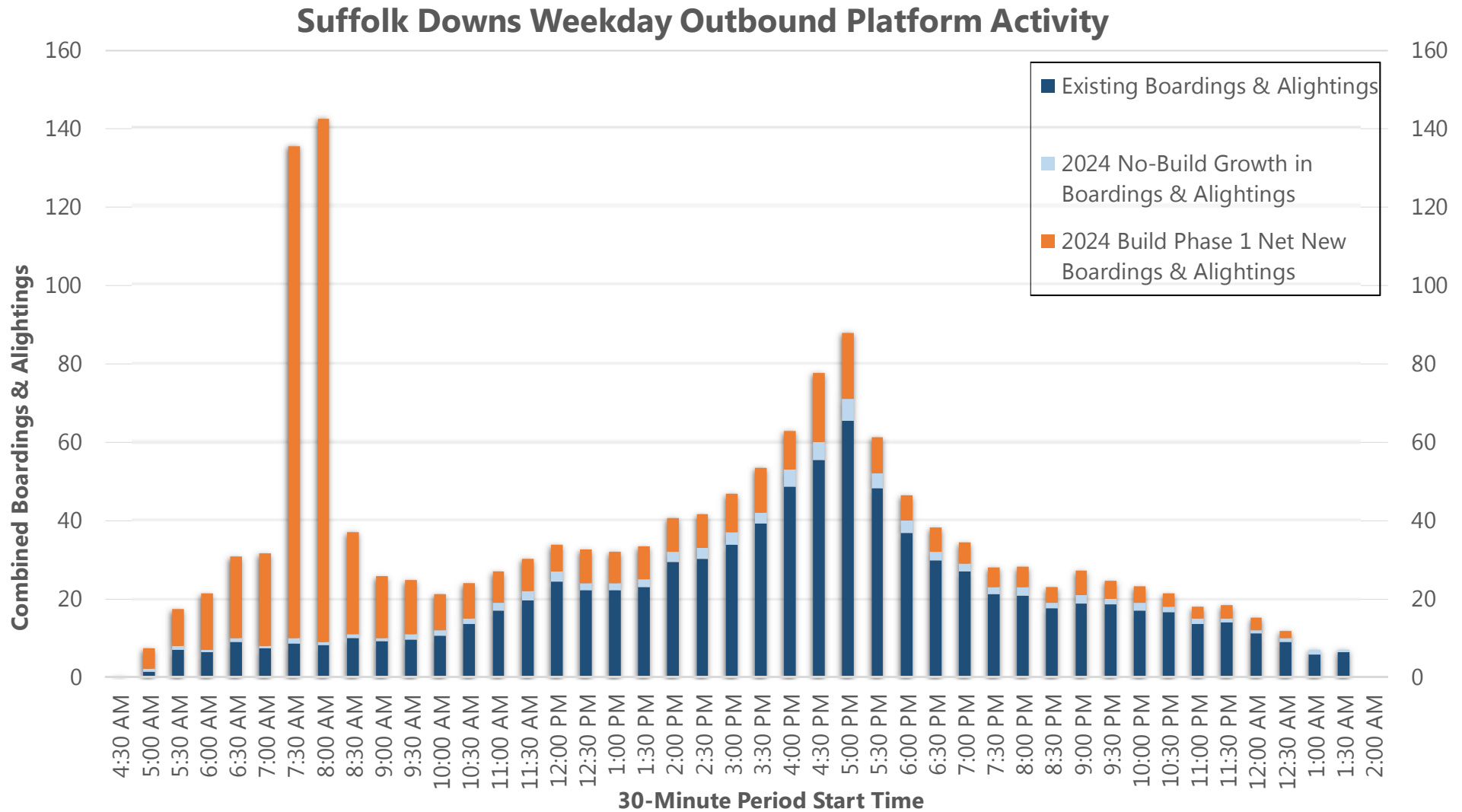
2024 Build Conditions  
Blue Line Outbound Passenger Volumes  
Between Aquarium and Maverick Stations

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.31  
2024 Build Conditions  
Suffolk Downs Station  
Inbound Platform Activity  
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 5.32

2024 Build Conditions  
Suffolk Downs Station  
Outbound Platform Activity

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

# 6

## Environmental Protection

This chapter provides information on existing environmental conditions at the Project Site and the potential changes that may occur as a result of the Phase 1 Project and Master Plan. A key goal of the Master Plan Project is to redevelop the Project Site for more efficient and improved uses, and to build on/complement adjacent uses while avoiding or minimizing potential adverse environmental impacts to the greatest extent feasible.

As discussed in more detail below, the Master Plan Project-related impacts, which are to be expected in any development of this scale, are counterbalanced by the significant benefits for the adjacent neighborhoods and municipalities. The following sections identify impacts and discuss steps that have been or will be taken through design and management to avoid, minimize, and/or mitigate adverse effects. Temporary construction-period impacts will be managed to minimize disruption to the surrounding neighborhoods.

In compliance with City of Boston Article 80 and State MEPA requirements, and in support of the Revere Planning and Zoning process, this chapter will address potential environmental impacts in the following categories:

- |                      |  |                       |
|----------------------|--|-----------------------|
| › <i>Shadow</i>      | › <i>Water Quality</i>                 | › <i>Geotechnical</i> |
| › <i>Daylight</i>    | › <i>Noise</i>                         | › <i>Construction</i> |
| › <i>Solar Glare</i> | › <i>Solid and Hazardous Materials</i> |                       |
| › <i>Air Quality</i> | › <i>Groundwater</i>                   |                       |

This EENF/EPNF provides a full assessment of impacts for the Phase 1 Project. Impacts of the Master Plan Project, including wind, shadow, daylight, air quality, and noise will be assessed in greater detail the DEIR/DPIR as public and agency input is received and design is further developed.

### 6.1 Phase 1 Project

The following sections describe the environmental conditions and potential changes as a result of the Phase 1 Project, including wind, shadow, daylight, solar glare, air quality, water quality, noise, solid and hazardous waste, groundwater, geotechnical, and construction. As demonstrated below, impacts have been avoided, minimized and/or mitigated through design and/or management while addressing local, state and federal requirements.



### 6.1.1 Wind

Pursuant to Section B.1 of the BPDA Development Review Guidelines, a qualitative assessment was conducted to estimate the pedestrian wind conditions around the Phase 1 Project compared to the existing condition, and to provide recommendations for minimizing any potential adverse impacts.

#### Methodology

Wind flows around the Phase 1 Project and its surroundings were simulated using Virtualwind™, which is a proprietary software developed by RWDI for the qualitative assessment of pedestrian wind conditions.

The prevailing winds from the west-northwest, northeast and southwest were simulated for the existing Phase 1 Project Site and with the full build-out of the Phase 1 Project. The architectural model of the Phase 1 Project provided sufficient massing details that would affect wind flows in the area. For a conservative estimate, landscaping was not included in the computer model.

#### Pedestrian Wind Comfort Criteria

The BPDA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BPDA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 miles per hour (mph) should not be exceeded more than one percent of the time. The second set of criteria used by the BPDA to determine the acceptability of specific location is based on the work of Melbourne.<sup>1</sup> This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing or walking. The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded one percent of the time (i.e., the 99th percentile mean wind speed) and are presented in Table 6-1.

**Table 6-1 BPDA Mean Wind Criteria\***

Dangerous	> 27 mph
Uncomfortable for Walking	> 19 and ≤ 27 mph
Comfortable for Walking	> 15 and ≤ 19 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Sitting	< 12 mph

\* Applicable to the hourly mean wind speed exceeded one percent of the time.

The wind climate in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BPDA effective gust velocity criterion. However, without any mitigation measures, this typical

1 Melbourne, W.H., 1978, "Criteria for Environmental Conditions," Journal of Industrial Aerodynamics, 3 (1978) 241-249.

downtown wind climate is likely to be frequently uncomfortable for more passive activities such as sitting.

### **Preliminary Wind Impacts**

Based on the preliminary computer model results, the Phase 1 Project is not anticipated to generate any unsafe wind conditions around the Project Site or nearby public spaces. Although some increased wind speeds may be experienced along the corners of the Phase 1 Project buildings, these impacts will be mitigated by either locating entrances, pick-up/drop-offs, outdoor cafes, etc., away from the building corners, and/or incorporating canopies, recessed entrances, windscreens, planters, etc., as necessary. These mitigation measures will be evaluated as the Phase 1 Project design advances to ensure a comfortable and safe environment surrounding the Phase 1 Project Site.

Refer to Appendix H for additional detail on the pedestrian wind assessment.

## **6.1.2 Shadow**

An analysis of the shading impact under the No-Build and Build Conditions is a requirement of the Article 80, Large Project Review (Section 80B-2(c) of the Boston Code). The shading analysis was prepared in accordance with the requirements of Section B.2. of the BPDA Development Review Guidelines.

### **Methodology**

A shadow impact analysis was conducted at regular time intervals to investigate the effect that the Phase 1 Project will have throughout the year. A computer model of the Phase 1 Project and surrounding urban area was developed. A number of days and times were analyzed, as required under Article 80. The analysis used "clear sky" solar data at Boston's Logan International Airport, meaning the assumption that no cloud cover ever occurs; therefore, providing a "worst case" scenario showing the full extent of when and where shadow could occur.

In order to represent a variety of shadow conditions at various times of the day, and times of the year, three time intervals (9:00 AM, 12:00 PM, 3:00 PM) are represented for the Vernal and Autumnal Equinoxes (March 21<sup>st</sup> and September 21<sup>st</sup>, see Figure 6.1a), Summer Solstice (June 21<sup>st</sup>, see Figure 6.1b), and Winter Solstice (December 21<sup>st</sup>, see Figure 6.1c). Per the BPDA Development Review Guidelines, 6:00 PM has been added to the June 21, September 21 shadow study. This study takes into consideration Daylight Savings Time ("DST"), and therefore times are presented in Eastern Standard Time ("EST") and Eastern Daylight Time ("EDT"). The analysis focuses on the shadow cast onto existing pedestrian areas, open spaces, and sidewalks adjacent to and in the vicinity of the Project Site.

Table 6-2 shows the solar azimuth and altitude data. Times are listed as EST and EDT, as appropriate. The data reflects a latitude of 42.358° and a longitude of -71.06°.

**Table 6-2 Solar Azimuth and Altitude Data**

<b>Date</b>	<b>Time</b>	<b>Azimuth <sup>1</sup></b>	<b>Altitude<sup>2</sup></b>
March 21 EDT	9:00 AM	112.59	23.61
March 21 EDT	12:00 PM	161.17	46.69
March 21 EDT	3:00 PM	223.5	39.26
June 21 EDT	9:00 AM	93.51	39.95
June 21 EDT	12:00 PM	149.52	68.8
June 21 EDT	3:00 PM	246.32	56.48
June 21 EDT	6:00 PM	280.71	23.83
September 21 EDT	9:00 AM	115.54	25.89
September 21 EDT	12:00 PM	166.28	47.2
September 21 EDT	3:00 PM	227.1	37.14
September 21 EDT	6:00 PM	140.54	27.83
December 21 EST	9:00 AM	184.36	24.12
December 21 EST	12:00 PM	224.96	10.1
December 21 EST	3:00 PM	112.59	23.61

1 Azimuth is measured in degrees clockwise from North

2 Altitude is measured in degrees up from the horizon

EST Eastern Standard Time

EDT Eastern Daylight Time

## Results

Given the Phase 1 Project Site location, shadows generated by the Phase 1 Project will not adversely impact existing public open spaces. On-site open spaces are oriented to provide unshaded areas throughout the daytime.

### March 21<sup>st</sup> and September 21<sup>st</sup>

The net new shadows associated with the Phase 1 Project for September 21 and March 21 are illustrated in Figure 6.1a. March 21 is the vernal equinox and September 21 is the autumnal equinox; for both of these dates, the length of daytime and nighttime are equal. The sun rises at 6:31 AM EDT in the southeastern sky and sets at 6:42 PM EDT to the southwest. The shadows cast on these dates are similar for the purposes of this analysis.

At 9:00 AM the morning shadow is generally contained within the Phase 1 Project Site, with shadows falling to the northwest and shading internal streets and sidewalks, as well as a portion of the existing infield pond and race track infield.

At 12:00 PM, shadows are generally contained within the Phase 1 Project Site, with new shadows falling north of the proposed buildings.

At 3:00 PM the Phase 1 Project casts limited new shadow to the northeast onto race track and a portion of the race track infield.

At 6:00 PM, as a result of the low sun angle, shadows are long, and some new shadow falls to the east of the Project Site across the MBTA Blue Line tracks and into a small portion of the Belle Isle Marsh Reservation; however, they do not extend into the pedestrian trails within the Belle Isle Marsh Reservation.

### **June 21<sup>st</sup>**

The new shadows associated with the Phase 1 Project for June 21 are illustrated in Figure 6.1b. June 21 is the summer solstice and the longest day of the year. The sun rises at 5:08 AM EDT in the southeastern sky and sets at 8:25 PM EDT. Shadows during the summer are generally shorter than other seasons as the sun is highest in the sky.

At 9:00 AM the morning shadow is contained within the Phase 1 Project Site, with some new shadow falling westward along the infield pond and portions of the internal pedestrian network. Due to the higher angle of the sun, the shadows quickly shorten and rotate eastward.

At 12:00 PM, shadows are entirely contained within the Phase 1 Project Site, with some incremental new shadow falling onto internal streets and sidewalks to the north of the Phase 1 buildings.

At 3:00 PM shadows extend to the northeast, with limited net new shadow falling within the Phase 1 Project Site.

At 6:00 PM the sun begins to set and the Phase 1 Project casts some incremental new shadow to the east of the Project Site, but short of the MBTA Blue Line tracks.

### **December 21<sup>st</sup>**

The net new shadows associated with the Phase 1 Project on December 21 are depicted on Figure 6.1c. December 21 is the winter solstice and the shortest day of the year. The sun is at its lowest inclination above the horizon at each hour of the day. Even low buildings cast long shadows in northerly latitudes such as Boston. The sun rises at 7:10 AM EST and sets at 4:15 PM EST in December.

At 9:00 AM, due to the low sun angle, morning shadows extend to the northwest shading internal streets, sidewalks and a portion of the existing infield pond and race track infield.

At 12:00 PM, there are new shadows cast north across the eastern corner of the infield pond and onto race track infield.

At 3:00 PM, new shadows cast to the northeast over race track infield and into the wooded area east of the Phase 1 Project Site. New shadows at this time do not extend beyond the MBTA Blue Line Tracks. Although net new shadow is greatest at this period, the days during this time of year are less bright and there is much less contrast between shaded and unshaded areas.

### **6.1.3 Daylight**

The following section describes the anticipated effect on daylight coverage at the Project Site as a result of the Phase 1 Project. An analysis of the percentage of skydome obstructed under the No-Build and Build Conditions is a requirement of Article 80 (Section 80B-2(c)). The daylight analysis was prepared using the BPDA's Daylight Analysis Program ("BRADA") and has been completed in accordance with the requirements of Article 80. The results of the analysis are presented in Figure 6.2.

#### **Methodology**

The daylight analysis was conducted using the BRADA program developed in 1985 by the Massachusetts Institute of Technology to estimate the pedestrian's view of the skydome taking into account building massing and building materials used. The software approximates a pedestrian's view of a site based on input parameters such as: location of viewpoint; length and height of buildings and the relative reflectivity of the building façades. The model typically uses the midpoint of an adjacent right-of-way or sidewalk as the analysis viewpoint. Based on these data, the model calculates the perceived skydome obstruction and provides a graphic depicting the analysis conditions.

The model inputs used for the study presented herein were taken from a combination of the BPDA's City of Boston model data, an existing conditions survey, and schematic design plans prepared by the Project architect. As described above, the BRADA software considers the relative reflectivity of building façades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skydome obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building façades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

#### **Viewpoints**

The following viewpoint was used for this daylight analysis:



- › **Bennington Street** – This viewpoint is located on the centerline of the Phase 1 Project Site. Bennington Street is the only adjacent public way that is anticipated to experience impacts to visible skydome.

This point represents the proposed buildings façades when viewed from the adjacent public way.

#### **Daylight Existing/No-Build Conditions**

Under the existing condition/no build condition, the most significant skydome obstruction is the tree line along the MBTA Blue Line tracks, which run parallel to Bennington Street. Directly to the east of the Phase 1 Project Site is the Suffolk Downs MBTA Blue Line Station and associated surface parking. Since the BRADA program does not account for obstructions from natural features, this analysis compares the proposed buildings' façades to a baseline of zero obstruction, resulting in a conservative estimate of skydome obstruction.

#### **Daylight Build Conditions**

Table 6-3 below presents the percentage of skydome that is expected to be obstructed with and without the Phase 1 Project. Figure 6.2 graphically shows the Phase 1 Project-related daylight impacts from the viewpoint of Bennington Street.

**Table 6-3 Existing/No-Build and Build Daylight Conditions**

<b>Viewpoint</b>	<b>Existing/No-Build Skydome Obstruction</b>	<b>Build Skydome Obstruction</b>
Bennington Street	0%	10.1%

As previously stated, under the Existing/No-Build Condition, the skydome is assumed to be unobstructed, despite the presence of an existing tree line which separates the Phase 1 Project Site from Bennington Street and the Suffolk Downs MBTA Blue Line Station to the east. Therefore, this analysis presents a more conservative estimate of daylight obstruction. Notwithstanding this conservative approach, the obstruction of skydome as a result of the Phase 1 Project is anticipated to be minimal due to the existing setback from Bennington Street. The location and massing of the Phase 1 Project buildings limit visible skydome obstruction along Bennington Street while maximizing the accessibility of the Phase 1 Project Site to the Suffolk Downs MBTA Blue Line Station.

### **6.1.4 Air Quality**

This section presents an overview of and the results for the preliminary mobile source assessment conducted for the Phase 1 Project. The purpose of the air quality

assessment is to demonstrate that the Phase 1 Project satisfies applicable regulatory requirements, and whether it complies with the 1990 Clean Air Act Amendments ("CAAA") following the local and the EPA policies and procedures.

The air quality assessment conducted for this Phase 1 Project includes a qualitative localized (microscale), or "hot spot", analysis of carbon monoxide ("CO") concentrations in accordance with BPDA screening guidance. The microscale analysis evaluated potential CO impacts from vehicles traveling through congested intersections in the Project Site area under the existing conditions, as well as considering site-specific impacts under the future conditions. The results from this evaluation are subject to the National Ambient Air Quality Standards ("NAAQS"). A review of the mesoscale/regional air quality impacts is also qualitatively discussed below.

Also, the future requirements to be analyzed in the DEIR/DPIR filing for the Master Plan Project are detailed in Section 6.2.1 below.

### **Background**

The CAAA resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. Air quality control regions are classified and divided into one of three categories: attainment, non-attainment and maintenance areas depending upon air quality data and ambient concentrations of pollutants. Attainment areas are regions where ambient concentrations of a pollutant are below the respective NAAQS; non-attainment areas are those where concentrations exceed the NAAQS. A maintenance area is an area that used to be non-attainment, but has demonstrated that the air quality has improved to attainment. After 20 years of clean air quality, maintenance areas can be re-designated to attainment.

The Phase 1 Project is located within East Boston which is a CO Maintenance area (although not officially designated on the Greenbook<sup>2</sup>, the area is beyond the 20-year maintenance timeframe and therefore could be designated as attainment). Projects located in a CO maintenance area are required to evaluate their CO concentrations with the NAAQS. As such, CO concentrations need to be considered for this Project. Suffolk County is in attainment for the remainder of the criteria pollutants.

### **Air Quality Standards**

The EPA has established the NAAQS to protect the public health. Massachusetts has adopted similar standards as those set by the EPA for CO. Table 6-4 presents the NAAQS for CO.

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<sup>2</sup> *Nonattainment Areas for Criteria Pollutants*, Greenbook (as of September 30, 2017), <https://www.epa.gov/green-book>. Accessed November 1, 2017.

**Table 6-4 National Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Primary Standards</b>		
	<b>Level</b>	<b>Averaging Time</b>	<b>Form</b>
Carbon Monoxide	9 ppm (10 mg/m <sup>3</sup> )	8-hour	Not to be exceeded more than once per year
	35 ppm (40 mg/m <sup>3</sup> )	1-hour	

DEP maintains a network of air quality monitors to measure background CO concentrations. Background concentrations are ambient pollution levels from all stationary, mobile, and area sources. Background CO concentrations are determined by choosing the maximum of the 2nd-highest annual values from the previous three years. Looking at the air quality monitor closest to and most representative of the Phase 1 Project Site (Von Hillern) for the years 2014-2016, the CO background values are 1.7 ppm for the 1-hour averaging time and 0.9 ppm for the 8-hour averaging time. These values are much less than the 1-hour and 8-hour NAAQS. The background values are presented in Table 6-5.

**Table 6-5 Air Quality Background Concentrations**

<b>Pollutant</b>	<b>Background Concentrations</b>		<b>NAAQS</b>	
	<b>Level</b>	<b>Averaging Time</b>	<b>Level</b>	<b>Averaging Time</b>
Carbon Monoxide	0.9 ppm	8-hour	9 ppm	8-hour
	1.7 ppm	1-hour	35 ppm	1-hour

Monitoring Location: Von Hillern, Boston, MA. Years 2014-2016.

The potential CO concentrations from motor vehicle traffic related to the Phase 1 Project will be considered in conjunction with these background concentrations to demonstrate that the Phase 1 Project will comply with the NAAQS Standards.

### **BPDA Development Review Guidelines**

The BPDA Development Review Guidelines require "a microscale analysis predicting localized carbon monoxide concentrations should be performed, including identification of any locations projected to exceed the National or Massachusetts Ambient Air Quality Standards, for projects in which:

- › Project traffic would impact intersections or roadway links currently operating at Level of Service ("LOS") D, E, or F or would cause LOS to decline to D, E, or F; or
- › Project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is less than 100 vehicles per hour); or
- › The Project will generate 3,000 or more new average daily trips on roadways providing access to a single location."

**Traffic Data**

The air quality study uses traffic data (volumes, delays, and speeds) developed for the analysis conditions based upon the traffic analysis. The traffic study area includes the following intersections:

1. William F McClellan Highway (Route 1A) at Boardman Street
2. William F McClellan Highway (Route 1A) at Waldemar Avenue
3. William F McClellan Highway (Route 1A) at Tomasello Drive
4. William F McClellan Highway (Route 1A) at Jughandle
5. Bennington Street at Crescent Avenue
6. Bennington Street/State Road at Winthrop Avenue
7. Winthrop Avenue (Route 145) at Revere Beach Parkway
8. Winthrop Avenue (Route 145) at Tomasello Drive
9. Winthrop Avenue (Route 145) at North Shore Road
10. Winthrop Avenue (Route 145) at William F McClellan Highway (Route 1A) southbound On-Ramp
11. Winthrop Avenue (Route 145) at Revere Beach Parkway (Route 16)/Harris Street.

Based on the traffic study presented in Chapter 5, *Transportation*, the Phase 1 Project is expected to generate 359 new vehicle trips in the morning peak hour and 308 new vehicle trips in the evening peak hour.

**Microscale Screening Analysis**

An evaluation of the traffic data was conducted under the review guidelines developed by the BPDA for determination of the potential for CO impacts. It was determined that:

- › The Phase 1 Project would not cause a decline in LOS at any intersection in the study area in both the morning and evening peak hours. Additionally, the trips from the Phase 1 Project are expected to impact a limited number of intersections operating at LOS D, E, or F in the No Build condition. Mitigation will be provided at Route 1A at Tomasello Drive and Winthrop Avenue at Tomasello Drive that will improve operating conditions.
- › Phase 1 Project traffic is not expected to increase traffic volumes at nearby intersections by 10 percent or more. The maximum anticipated increase is seven percent at the intersection of McClellan Highway (Route 1A) with Tomasello Drive. Compared to the No Build conditions, the Phase 1 Project is expected to generate 359 vehicle trips in the weekday morning peak hour and 308 vehicle trips in the evening peak hour.

- › The Phase 1 Project will generate less than 3,000 or more new average daily trips on the study area roadways. The Phase 1 Project will generate 1,492 new weekday vehicle trips, less than the 3,000 vehicles per day threshold.

Based on the microscale screening results discussed above, it has been determined that a quantitative CO hotspot analysis is not necessary for the Phase 1 Project, as the BPDA thresholds are not exceeded. It is also understood that a microscale analysis will likely be conducted as part of the Master Plan Project to ensure that none of the air quality standards ("NAAQS") are exceeded. Therefore, a quantitative CO hotspot analysis has not been conducted as part of this EENF/EPNF.

### **Mesoscale Air Quality Analysis**

The purpose of the mesoscale analysis is to estimate the area-wide emissions of VOC and NO<sub>x</sub> during a typical day in the peak ozone season (summer) consistent with the requirements of the State Implementation Plan ("SIP"). The mesoscale analysis evaluates the change in VOC and NO<sub>x</sub> emissions from average daily traffic volumes and vehicle emission rates. To demonstrate compliance with the SIP criteria, the air quality study must show the Project's change in daily (24-hour period) VOC and NO<sub>x</sub> emissions.

The BPDA requires a mesoscale air quality analysis if a project produces 10,000 or more vehicle trips per day. The Phase 1 Project is not anticipated to generate over 10,000 or more vehicle trips per day, therefore this analysis is not required for the BPDA. MEPA requires that all projects filing an EIR assess GHG and Ozone Precursors (for projects in an Ozone non-attainment area) in a mesoscale analysis. As such, a quantitative mesoscale air quality analysis consistent with EPA and DEP guidelines will be conducted for the Master Plan Project in the DEIR/DPIR filing.

## **6.1.5 Water Quality**

The Phase 1 Project will improve the quality of stormwater runoff from the Phase 1 Project Site as compared to existing conditions. The proposed stormwater management system will comply with the 2008 DEP Stormwater Management Handbook, as well as the WPA and City of Boston and Revere Stormwater requirements. Refer to Chapter 8, *Infrastructure*, for additional detail regarding quality of stormwater runoff.

## **6.1.6 Flood Hazard**

The Phase 1 Project has been designed with consideration of its location within LSCSF and incorporates appropriate measures to avoid and minimize potential flood hazard. Such measures include, for example, elevating the access roadway and buildings. Refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, and Chapter 4, *Wetlands and Waterways*, for additional detail regarding flood hazard and resiliency.



### 6.1.7 Noise

The noise assessment evaluated the potential noise impacts associated with the Phase 1 Project, including mechanical equipment and loading activities. This section discusses the fundamentals of noise, City of Boston's noise standards, noise analysis methodology, existing ambient sound levels, and potential future sound levels associated with the Phase 1 Project's operations.

The assessment demonstrates that the Phase 1 Project will comply with City of Boston noise regulations. Based on preliminary design, the Phase 1 Project's operations will have no adverse noise impacts at nearby sensitive receptor locations.

#### Fundamentals of Noise

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, communication, work, or recreation. How people perceive sound depends on several measurable physical characteristics, which include the following:

- › Intensity - Sound intensity is often equated to loudness.
- › Frequency - Sounds are comprised of acoustic energy distributed over a variety of frequencies. Acoustic frequencies, commonly referred to as tone or pitch, are typically measured in Hertz. Pure tones have all their energy concentrated in a narrow frequency range.

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from the threshold of hearing (zero dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two equal sound levels creates a three dB increase in the overall level. Research indicates the following general relationships between sound level and human perception:

- › A 3-dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person.
- › A 10-dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person.

The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A-weighted [dB(A)] is used to evaluate environmental noise levels. Table 6-6 presents a list of common outdoor and indoor sound levels.

**Table 6-6 Common Outdoor and Indoor Sound Levels**

<b>Outdoor Sound Levels</b>	<b>Sound Pressure (<math>\mu</math>Pa)*</b>	<b>Sound Level dB(A)**</b>	<b>Indoor Sound Levels</b>
	6,324,555	- 110	Rock Band at 5 m
Jet Over Flight at 300 m		- 105	
	2,000,000	- 100	Inside New York Subway Train
Gas Lawn Mower at 1 m		- 95	
	632,456	- 90	Food Blender at 1 m
Diesel Truck at 15 m		- 85	
Noisy Urban Area—Daytime	200,000	- 80	Garbage Disposal at 1 m
		- 75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	- 70	Vacuum Cleaner at 3 m
Suburban Commercial Area		- 65	Normal Speech at 1 m
	20,000	- 60	
Quiet Urban Area—Daytime		- 55	Quiet Conversation at 1 m
	6,325	- 50	Dishwasher Next Room
Quiet Urban Area—Nighttime		- 45	
	2,000	- 40	Empty Theater or Library
Quiet Suburb—Nighttime		- 35	
	632	- 30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		- 25	Empty Concert Hall
Rustling Leaves	200	- 20	
		- 15	Broadcast and Recording Studios
	63	- 10	
		- 5	
Reference Pressure Level	20	- 0	Threshold of Hearing

Source: Highway Noise Fundamentals. Federal Highway Administration, September 1980.

\*  $\mu$ PA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.

\*\* dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20  $\mu$ Pa (the reference pressure level).

A variety of sound level indicators can be used for environmental noise analysis. These indicators describe the variations in intensity and temporal pattern of the sound levels. The following is a list of common sound level descriptors used for environmental noise analyses:

- › L90 is the sound level which is exceeded for 90 percent of the time during the time period. L90 is generally considered to be the ambient or background sound level.
- › Leq is the A-weighted sound level, which averages the background sound levels with short-term transient sound levels. The Leq sound level accounts for varying fluctuations of sound energy during an interval and provides a uniform method for comparing sound levels that vary over time.

**Methodology**

The noise study evaluated the potential noise impacts associated with the Phase 1 Project's operations, which include mechanical equipment and loading/service activities. The assessment included measurements of existing ambient background sound levels and a qualitative evaluation of potential noise impacts associated with the proposed mechanical equipment (e.g., HVAC units) and loading/service activities. The study area was evaluated and sensitive receptor locations near the Phase 1 Project Site were identified and examined. The Project Site layout and building design, as they relate to the loading areas and management of deliveries at the Phase 1 Project Site were also considered. The analysis considered sound level reductions due to distance, proposed building design, and obstructions from surrounding structures.

**Receptor Locations**

The noise study included an evaluation of the study area to identify nearby sensitive receptor locations, which typically include areas of sleep and areas of outdoor activities. This assessment identified nine residential areas near the Project Site that would have the most potential for exposure to the Phase 1 Project's activities. As shown on Figure 6.3, the receptor locations include the following:

- › R1 – Residential neighborhood to the southwest on Waldemar Avenue;
- › R2 – Residential neighborhood to the south on Waldemar Avenue;
- › R3 – Residential neighborhood to the southeast on Waldemar Avenue;
- › R4 – Residential neighborhood to the southeast on Swan Avenue/Lawn Avenue;
- › R5 – Residential neighborhood to the northeast on Washburn Avenue;
- › R6 – Residential neighborhood to the northeast, east of the Bennington Street;
- › R7 – Residential neighborhood to the north on Standish Road;
- › R8 – Residential neighborhood to the north on Campbell Avenue/Charles Avenue; and
- › R9 – Residential neighborhood to the northeast on Pratt Court.

These receptor locations, selected based on land use considerations, represent the most sensitive locations near the Phase 1 Project Site.

**City of Boston Noise Impact Criteria**

The City of Boston has developed noise standards that establish noise thresholds deemed to result in adverse impacts. The noise analysis for the Phase 1 Project used these standards to evaluate whether the Phase 1 Project will generate sound levels that result in potential adverse impacts.

Under Chapter 40 Section 21 of the General Laws of the Commonwealth of Massachusetts and Title 7 Section 50 of the Boston Code, the Air Pollution Control Commission of the City of Boston has adopted Regulations for the Control of Noise

in the City of Boston. These regulations establish maximum allowable sound levels based upon the land use affected by the proposed development. Table 6-7 summarizes the allowable sound levels that should not be exceeded.

For a residential zoning district, the maximum noise level affecting residential uses shall not exceed the Residential Noise Standard. The residential land use noise standard is 60 dB(A) for daytime periods (7:00 AM to 6:00 PM) and 50 dB(A) for nighttime conditions (6:00 PM to 7:00 AM).

**Table 6-7 City of Boston Noise Standards by Zoning District, dB(A)**

<b>Land Use Zone District</b>	<b>Daytime</b>	<b>All Other Times</b>
	<b>(7:00 AM – 6:00 PM)</b>	<b>(6:00 PM – 7:00 AM)</b>
Residential	60	50
Residential/Industrial	65	55
Business	65	65
Industrial	70	70

Source: Regulations for the Control of Noise in the City of Boston, Air Pollution Control Commission.

### Existing Noise Conditions

A noise monitoring program was developed to establish existing ambient sound levels in vicinity of the Phase 1 Project Site. The existing sound levels were measured using Type 1 sound analyzers (Larson Davis 831 and SoundExpert LxT). Measurements were conducted between October 31, 2017 and November 2, 2017. Measurements were conducted at five locations, shown in Figure 6.3 for a 24-hr period to capture sound levels representative of typical existing ambient conditions. The existing measured sound level data are summarized in Table 6-8.

**Table 6-8 Existing Ambient Sound Levels, dB(A)**

<b>Monitoring Location</b>	<b>City of Boston Residential District Noise Standard</b>		<b>Measured Leq Sound Levels</b>	
	<b>Daytime</b>	<b>Nighttime</b>	<b>Daytime</b>	<b>Nighttime</b>
M1 – McClellan Highway (Route 1A)	60	50	55-59	49- <b>58</b>
M2 – Waldemar Avenue/Tomasello Drive	60	50	56- <b>61</b>	50- <b>59</b>
M3 – Suffolk Downs MBTA Blue Line Station	60	50	48- <b>62</b>	45- <b>53</b>
M4 – Washburn Avenue	60	50	57- <b>63</b>	45- <b>61</b>
M5 – Revere Beach Parkway/Winthrop Avenue	60	50	55- <b>63</b>	47- <b>59</b>

Source: VHB

Note: Refer to Figure 6.3 for noise monitoring locations.

Measured sound levels represent hourly Leq levels.

The measured Leq sound levels range from approximately 48 dB(A) to approximately 63 dB(A) during the daytime period in the surrounding neighborhoods. During the nighttime period, the neighborhoods experience sound levels ranging from approximately 45 dB(A) to approximately 61 dB(A). The result of the noise monitoring program indicates that the daytime sound levels in the surrounding neighborhoods adjacent to the Project Site are currently exceeding the City of Boston's standards for a Residential District. During the daytime period, the measured sound levels data were composed of noise from aircraft flying overhead, the MBTA's Blue Line, and vehicles traveling on the surrounding roadways, such as McClellan Highway (Route 1A), Tomasello Drive, Bennington Street, and Winthrop Avenue. The measured sound levels during the nighttime also exceeds the City of Boston's nighttime standards. The nighttime period sound levels were generally associated with similar sources until approximately midnight when aircraft and train operations were limited.

### **Future Noise Conditions**

The noise analysis assessed the potential noise impacts associated with the Phase 1 Project's mechanical equipment and loading activities. The analysis evaluated the potential sound level impacts at the nearby areas.

### **Mechanical Equipment**

Specific details related to the final selection of mechanical equipment are not confirmed at the time of this noise assessment. Based on preliminary design plans, the anticipated mechanical equipment associated with the proposed commercial buildings may include the following:

- › Energy recovery air handling units,
- › Exhaust fans, and
- › Emergency generators.

The Phase 1 Project will incorporate noise attenuation measures as necessary to comply with City of Boston's noise criteria at the sensitive receptor locations. During the design and selection process, the mechanical equipment will be strategically located to minimize potential noise impacts, such as setting on the building's rooftop. The appropriate low-noise mechanical equipment will be selected, including potential noise mitigation measures, such as acoustical enclosures and/or acoustical silencers.

The rooftop mechanical equipment would be strategically located on the rooftop to minimize the impacts to the surrounding sensitive receptor locations. Noise attenuation can be achieved by utilizing the building structure. The Phase 1 Project height is approximately 120 feet tall, which is greater than the height of the surrounding sensitive receptors to the north and east of the Phase 1 Project Site. Building rooftops could serve as a barrier by breaking the direct line of exposure



between the potential rooftop noise sources and nearby receptor locations. As such, the sound levels associated with the Phase 1 Project's mechanical equipment are expected to be insignificant at the surrounding sensitive receptor locations. Additionally, acoustical screening walls or penthouse surrounding the mechanical equipment would be considered during the design process to minimize the potential noise impacts at the nearby sensitive areas.

Emergency generators are generally considered for life safety purposes, such as emergency exit lighting. The Phase 1 Project will be required to adhere to DEP's regulations that require such equipment to be certified and registered when installed. As part of the air permitting process, proposed generators will be required to comply with additional noise requirements described in DEP regulations under the Codes of Massachusetts Regulations (310 CMR 7.00). At the proper time during the construction phase, the Proponent will submit the appropriate permit application or certification to DEP, which would include noise mitigation measures, such as acoustic enclosures and exhaust silencers as necessary to meet DEP's noise criteria.

#### **Service and Loading Activities**

Loading activities are expected to occur in designated loading areas at the ground/lower level of the proposed commercial building. The loading area is expected to be located internally within the proposed buildings' structure. The loading activities will be managed so that service and loading operations do not impact traffic on the adjacent roadways. Since loading activities will be enclosed and will be managed, potential noise impacts to nearby sensitive receptor locations are expected to be negligible.

#### **Conclusion of Noise Impact Assessment**

The noise analysis determined that the sensitive receptor locations near the Phase 1 Project Site currently experience sound levels above the City of Boston's noise standards during both the daytime and nighttime periods. Based on preliminary design, the proposed Phase 1 Project's operations will have no adverse noise impacts at nearby sensitive receptor locations. During the design of the proposed buildings, low noise equipment and mechanical penthouse and/or acoustical screening walls along the rooftop would be considered to minimize sound levels at nearby sensitive receptor locations.

### **6.1.8 Solid and Hazardous Wastes**

The Phase 1 Project is not located in an area of current or historical buildings or in an area of current or historical chemical or petroleum storage. The area was filled prior to the original development of the race course in the 1930s. Current structures in the Phase 1 Project Site are limited to fences and wooden rails. Debris from the

demolition of these structures will be managed appropriately in accordance with Massachusetts solid waste regulations.

Environmental investigations conducted in the Phase 1 Project Site identified historical urban fill under topsoil. The historical urban fill contains varying concentrations of petroleum, polycyclic aromatic hydrocarbons ("PAHs"), and metals and is consistent with urban fill identified elsewhere on the Project Site and in the local area. The petroleum, metals, and PAHs detected in the urban fill were previously reported to the DEP in 1997 and were assigned Release Tracking Number ("RTN") 3-14857. Massachusetts Contingency Plan ("MCP") obligations for RTN 3-14857 were addressed in a Class B-1 Response Action Outcome Statement ("RAO") submitted to the DEP in 1998, which concluded the contaminants detected in the urban fill were a background condition and posed a condition of No Significant Risk to human health, public welfare, safety, and the environment, and that no further MCP response actions applied to the urban fill.

Environmental assessment conducted in February 2017 to support real estate due diligence included the sampling and analysis of soil samples for volatile organic compounds ("VOCs"), semi-VOCs, polychlorinated biphenyls ("PCBs"), organochlorine pesticides, extractable petroleum hydrocarbons ("EPH"), volatile petroleum hydrocarbons ("VPH"), and Resource Conservation and Recovery Act Eight metals (RCRA 8 Metals) (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The results of the testing were consistent with the findings of the 1998 RAO and no new conditions for which DEP notification is required were identified.

Hazardous wastes have not been identified in the Phase 1 Project Site. Soils excavated during the Phase 1 Project will be reused at the property, initially for geotechnical surcharge and subsequently as fill material.

#### **6.1.9 Groundwater**

Groundwater quality in the Phase 1 Project Site has been assessed as part of environmental investigations of the larger Project Site. Groundwater quality assessment at the Phase 1 Project Site has included the installation of four monitoring wells and sampling and analysis of groundwater for VOCs, EPH, VPH, and 12 dissolved metals (antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc). No analytes were detected at concentrations exceeding MCP reportable concentrations.

Dewatering may be required during construction and it is anticipated that dewatering effluent will be recharged into the subsurface.

#### **6.1.10 Geotechnical**

Based on available subsurface data, the soil strata present at the Phase 1 Project Site are listed below in Table 6-9 in order of increasing depth below ground surface.

**Table 6-9 Subsurface Conditions**

<b>Generalized Strata</b>	<b>Approx. Range in Thickness (ft.)</b>
Miscellaneous Fill	10-20
Organic Deposits	25-30
Marine Clay	45-55
Glaciofluvial	0-5
Glacial Till	5-10
Bedrock (Depth Below Ground Surface)	95 to 110
Bedrock (Elev., BCB)	El. -80 to El. -85

- › **Miscellaneous Fill.** Fill in the Phase 1 Project Site generally consists of sand and gravel with silt, brick, cinder, ash, porcelain, and sea shells.
- › **Organic Deposits.** Organic deposits generally consisted of very soft to medium stiff, dark olive gray organic soil with peat in certain areas; some samples exhibited an organic odor and contained shell fragments.
- › **Marine Clay.** Marine Clay ranged from very soft to stiff olive lean clay to medium dense gray silt.
- › **Glaciofluvial.** Glaciofluvial soil consisted of a medium dense to very dense poorly grade gravel with sand to a silty sand with gravel.
- › **Glacial Till.** The glacial till consisted of very dense poorly graded gravel with silt and sand to a silty sand with gravel.
- › **Bedrock.** Bedrock underlying the Project Site consists of a fine-grained sedimentary rock known as Cambridge Argillite and was typically described as hard, slightly to moderately weathered, gray, and thinly bedded with joints dipping at low to high angles.

### **Foundation Construction**

Foundations for new buildings planned in the Phase 1 Project Site will consist of end bearing piles driven to glacial till or bedrock with consideration of a partial level of below grade parking.

Because the Phase 1 Project is to be supported on deep foundations with limited below grade excavation, the impacts to adjacent properties due to foundation installation activities will be limited.

### **6.1.11 Construction**

The following section generally describes the potential temporary impacts resulting from construction activities and proposed mitigation measures anticipated to reduce these impacts. As design progresses, construction mitigation will be reviewed and

refined by appropriate regulatory agencies through the development and submission of a Phase 1 Project specific Construction Management Plan ("CMP"). The overall duration of construction for the Phase 1 Project is anticipated to last approximately 18 months.

### **Overview**

Construction activities will be accommodated within current Phase 1 Project Site boundaries. Details of the overall construction schedule, work hours, number of construction workers, worker transportation and parking, number of construction vehicles and routes will be addressed in the CMP to be filed with BTM in accordance with the City's transportation maintenance plan requirements. The CMP would also include more detail on:

### **Air Quality**

No adverse air quality impacts from the construction of the Phase 1 Project are anticipated. Fugitive dust mitigation measures may include, as necessary:

- › Wet suppression to minimize the generation of dust from excavation operations and on-site vehicle traffic, with provisions for any runoff control;
- › Spraying any piles of excavation materials with soil cement or calcium chloride overnight and on weekends, and securely covering long-term material stock piles;
- › Compacting of the soil or the use of gravel to stabilize the Project Site access points;
- › Washing vehicle wheels before leaving the Phase 1 Project Site, as necessary, with provisions for runoff control;
- › Periodic cleaning of paved streets near the entrances to the Phase 1 Project Site to minimize vehicle mud/dirt carryout;
- › Installing fencing around the perimeter of the Phase 1 Project Site to assist in containing wind-blown dust;
- › Requiring that trucks hauling excavated material from the Phase 1 Project Site install secure covers over their loads; and
- › Encouraging the construction contractors for the Phase 1 Project to implement the Massachusetts Diesel Retrofit Program control measures for heavy-duty diesel equipment.

### **Noise**

The construction of the Phase 1 Project will be performed in a manner that complies with the DEP and City of Boston noise regulations. To ensure compliance with these regulations during construction, the Proponent, to the extent practicable, will seek to incorporate into the general construction contract the following mitigation measures:

- › Limited vehicle idling to five minutes;
- › Limited construction vehicle warm-up to ten minutes;
- › Insuring construction vehicles have ambient leveling sensors on the back up alarms; and
- › Limiting construction to the hours allowable by City of Boston regulations.

**Traffic**

To minimize impacts to abutters and the local community, the Proponents will consider all available measures, including information on construction activities, specific construction mitigation measures, and construction materials access and staging area plans. Barricades, walkways, lighting and signage will be used to ensure public safety throughout the construction period.

**Odor**

If large quantities of organic soils are encountered, the Project Team will undertake appropriate mitigation measures to control the odor associated with their removal, such as:

- › Cut and cover utility trenches whenever possible;
- › Protection of excavated materials with plastic sheathing to encapsulate odors; and
- › Removal of excavated materials from the Project Site in a covered vehicle on a frequent basis.

**Rodents**

The City of Boston has declared the infestation of rodents in the City as a serious problem. In order to control this infestation, the City enforces the requirements established under the Massachusetts State Sanitary Code, Chapter 211, 105 CMR 410.550 and the State Building Code, Section 108.6. Policy Number 87-4 (City of Boston) established that preparation of a program for the extermination of rodents shall be required for issuance of permits for demolition, excavation, foundation, and basement rehabilitation. The Proponent will prepare and adhere to a rodent control program prior to demolition and on a regular basis throughout the duration of construction.

**Construction Staging – Public Safety**

Prior to the beginning of construction, the Construction Manager will produce a site-specific safety plan to be reviewed and approved by the City as well as all other agencies impacted in conjunction with the CMP.

The entire perimeter of the Phase 1 Project construction site will be protected with a construction fence with debris net on top of concrete barriers to separate the



construction activities and general public. Vehicular gates will be provided for construction traffic in alignment with the flow of traffic on perimeter roads to allow safe entrance and exiting for construction vehicles. Sidewalks around the Phase 1 Project Site perimeter will be maintained during construction, and overhead protection will be utilized in areas where the new construction is in close proximity to the general public.

## **6.2 Master Plan Project**

The following sections describe the preliminary environmental conditions and potential changes as a result of the Master Plan Project, including air quality, flood hazard, noise, solid and hazardous materials, groundwater, geotechnical and construction. Where applicable, additional analysis will be provided in the Master Plan Project DEIR/DPIR filing.

### **6.2.1 Air Quality**

As discussed in Section 6.1.4 above, the Master Plan Project is located in East Boston and Revere, which are both within Suffolk County. As such, the Master Plan Project is subject to reviewing/conducting mesoscale and microscale air quality analyses under both MEPA/BPDA guidelines. Subject to consultation with Revere City Officials, the same guidelines will be used for the portion of the Master Plan Project located in Revere. The following section outlines the approach to be taken for each of these air quality tasks to fully respond to the guidelines and regulations for the Master Plan Project.

#### **Mesoscale**

A mesoscale air quality analysis will be required for the Master Plan Project, which is expected to be of regional significance. The BPDA requires a mesoscale air quality analysis if a project produces 10,000 or more vehicle trips per day, therefore this analysis will likely be required. MEPA requires that all projects filing an EIR assess GHG and Ozone Precursors (for projects in an Ozone non-attainment area) in a mesoscale analysis. As such, a quantitative mesoscale air quality analysis consistent with EPA and DEP guidelines will be conducted for the Master Plan Project DEIR/DPIR filing.

#### **Microscale**

An evaluation of the traffic data will be conducted under the review guidelines developed by the BPDA for determination of the potential for CO impacts. It is projected that:

- › Master Plan Project traffic is expected to impact a limited number of intersections potentially operating at LOS D, E, or F. With the increased volumes, there is

expected to be an increase in intersection delay in the Full Build Condition and a potential reduction in LOS to LOS D, E, or F.

- › Master Plan Project traffic is expected to increase traffic volumes at some nearby intersections by 10 percent or more. Compared to existing conditions, the Master Plan Project is expected to generate up approximately 3,383 vehicle trips in the weekday morning peak hour and 3,491 vehicle trips in the evening peak hour.
- › The Master Plan Project will generate at least 3,000 or more new average daily trips on the study area roadways. The Master Plan Project is above the 3,000 vehicles per day threshold.

The microscale screening analysis demonstrates the Master Plan Project will exceed the BPDA Review Guidelines for requiring a quantitative CO analysis. Therefore, a quantitative CO hotspot analysis will be conducted as part of the DEIR/DPIR filing for the Master Plan Project in a manner consistent with the methodology prescribed by EPA guidelines for hotspot analysis and by DEP. This analysis will aim to demonstrate that all existing and future carbon monoxide concentrations at nearby receptors will be below the NAAQS.

### **6.2.2 Water Quality**

The Master Plan will improve the quality of stormwater runoff from the Project Site as compared to existing conditions. The proposed stormwater management system will be designed to comply with the 2008 DEP Stormwater Management Handbook, as well as the WPA and City of Boston and Revere Stormwater requirements. Refer to Chapter 8, *Infrastructure*, for additional detail regarding quality of stormwater runoff.

### **6.2.3 Flood Hazard**

The Master Plan Project has been designed with consideration of its location within LSCSF and incorporates appropriate measures to avoid and minimize potential flood hazard. Such measures include, for example, elevating the access roadway network and buildings, and use of open space areas to store floodwaters. Refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, and Chapter 4, *Wetlands and Waterways*, for additional details regarding flood hazard and resiliency.

### **6.2.4 Noise**

The Master Plan Project will be required to meet certain minimum noise standards as well as demonstrate that noise levels have been reduced to the maximum extent practicable. Potential noise impacts associated with the Master Plan Project will need to be analyzed and show compliance with municipal noise regulations and applicable state and federal regulations.

Based upon available relevant design plans and manufacturer's technical data provided by the Project Team, a noise analysis will be conducted to calculate the potential noise impacts associated with the proposed mechanical equipment (i.e. HVAC units, emergency generators, etc.) on the surrounding sensitive receptors. The analysis will utilize ambient background sound level data that was previously conducted for the Phase 1 Project. The calculations of sound levels associated with the proposed equipment will be based upon the design plans of the proposed mechanical equipment. If sound levels are determined to exceed applicable municipal, state or federal noise regulations, potential noise mitigation will be assessed to reduce sound levels below the applicable noise limits.

Additionally, potential impacts to the interior of the proposed Master Plan Project's residential units will be assessed. In the absence of local interior noise standards, this assessment will utilize the sound level goals outlined in The Noise Guidebook developed by the U.S. Department of Housing and Urban Development ("HUD"). If interior sound levels are determined to be unacceptable according to HUD's policy, potential noise mitigation will be assessed to reduce interior sound levels to adhere to HUD's interior noise goal/limit. The noise analysis will determine the level of noise abatement measures that would be necessary to comply with HUD's noise criteria.

A qualitative noise assessment will also be conducted for the construction of the Master Plan Project. The qualitative assessment will include a discussion of potential mitigation measures to minimize the potential noise impacts during construction.

### **6.2.5 Solid and Hazardous Materials**

The Project Site was filled prior to the original development of the race course in the 1930s. The Project Site was marshland prior to filling and has no history of industrial use. Current on-site structures include the grandstand, vacant administration building, numerous stables, and other ancillary buildings which will be demolished during redevelopment. Debris from the demolition of these structures will be managed appropriately in accordance with Massachusetts solid waste regulations. Chemical storage at the Project Site is limited to petroleum and dielectric oils, fertilizers, and limited quantities of cleaning and maintenance supplies.

All demolition debris waste will be separated and legally disposed of in regional landfills. Any material which cannot be separated and recycled (structural steel, electrical, metal plumbing) will be sorted and recycled. Painted concrete from the demolition will be stockpiled on-site and processed under a DEP Beneficial Use Determination for use as fill during construction, or will be legally disposed of in out-of-state landfills. Unpainted concrete will be crushed and reused on-site. DEP and local boards of health will be notified in accordance with 310 CMR 16.03 using the Exempt Recycling and Organics Management Notification Form at least 30 days prior to starting the crushing of concrete and masonry at the Project Site. Any steel located within concrete will be removed and recycled. During construction, wood,

metals, gypsum, cardboard and plastic will be segregated and sent to recycling facilities. All construction debris will be sent to a solid waste sorting facility for separation of any recyclable materials. Overall, the Master Plan Project will seek to divert at least 75 percent of construction debris from landfills.

Surveys for asbestos containing materials have been conducted of the Project Site buildings and have confirmed the presence of asbestos-containing materials. Prior to demolition, a comprehensive asbestos survey will be conducted in accordance with Massachusetts regulations 310 CMR 715 and 453 CMR 6.00 and asbestos containing materials will be properly abated prior to demolition, by a Massachusetts-licensed abatement contractor and will be inspected by a Massachusetts-licensed Project Monitor. Asbestos abatement will be conducted under DEP Bureau of Waste Prevention Asbestos Notification Form AQ004. Prior to demolition a Demolition notification form AQ06 will be submitted.

Horse operation waste residuals including wastewater, manure, waste feed, and waste sludge in wastewater process ponds will be removed and disposed of off-site in accordance with the requirements of EPA NPDES permit No. MA0040282 for the CAFO. This work will be performed by the prior owner of the Project Site pursuant to an agreement with the Proponent.

Waste oils from underground storage tanks ("USTs"), motor vehicle equipment and transformers will be appropriately characterized and disposed of off-site at licensed facilities in accordance with Massachusetts Hazardous Waste Regulations, the United States Resource Conservation and Recovery Act, and the United States Toxic Substances Control Act.

Historical environmental investigations conducted at the Project Site identified a layer of historical urban fill. The historical urban fill contains varying concentrations of petroleum, PAHs, and metals and is consistent with urban fill identified at other properties in the local area. The petroleum, metals, and PAHs detected in the urban fill were reported to the DEP in 1997 and were assigned RTN 3-14857. MCP obligations for RTN 3-14857 were addressed in a Class B-1 RAO submitted to the DEP in 1998, which concluded the contaminants detected in the urban fill were a background condition posed a condition of No Significant Risk to human health, public welfare, safety, and the environment, and that no further MCP response actions applied to the urban fill.

Environmental assessment conducted in February 2017 to support real estate due diligence included the sampling and analysis of soil samples for VOCs, semi-VOCs, PCBs, organochlorine pesticides, VPH, and RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The 2017 environmental assessment included the collection and analysis of 64 soil samples, three samples of soil stockpiled at the Project Site, and two sediment samples. The analytical results identified a small area of elevated arsenic in soil. Potential sources for the arsenic

include pressure-treated wood, coal ash, and horse medicines. The results of the 2017 testing were otherwise consistent with the findings of the 1998 RAO.

RTN 3-34499 was assigned in September 2017 to the detection of arsenic in soil. RTN 3-34499 is in the Initial Site Investigation Phase I of the MCP and has not been Tier Classified. The extent of arsenic in soil is estimated to be less than 100 cubic yards. Prior to or during redevelopment, a Release Abatement Measure ("RAM") Plan will be submitted to the DEP and the arsenic in soil will be excavated and disposed of off-site in accordance with the MCP. A Permanent Solution Statement ("PSS") will be prepared for the arsenic condition and will document that the condition poses No Significant Risk to human health, public safety welfare, or the environment. An Activity and Use Limitation ("AUL") is not anticipated to be needed to address the arsenic in soil. Arsenic remediation will be overseen by a Massachusetts Licensed Site Professional ("LSP").

Hazardous wastes have not been identified in the Project Site soils. Soils excavated during redevelopment will be reused at the Project Site, initially for geotechnical surcharge and subsequently as fill material.

It is anticipated that soils excavated for construction will be reused on-site and that off-site transportation and disposal, recycling, or reuse will not be necessary. Historical urban fill materials emplaced at the Project Site during its original development prior to the 1930s will be isolated with clean soils, hardscape such as pavement and sidewalks, and buildings to prevent exposure to the urban fill after redevelopment.

The redeveloped uses of the Project Site will generate solid wastes from retail, residential, and office operations but these uses will strive to recycle as much waste as practicable to minimize operating costs. Future Project Site uses are not anticipated to generate hazardous waste.

Figure 6.4a shows environmental sampling locations, including groundwater monitoring wells, at the Project Site and Figure 6.4b shows the locations of environmental sampling conducted during the 2017 assessment completed in support of real estate transfer due diligence. Figure 6.4c shows the RTN locations.

### **6.2.6 Groundwater**

Groundwater quality across the Project Site has been assessed as part of multiple environmental investigations. A limited extent of minor petroleum impacts associated with former USTs and dissolved nickel were identified in 1997 and were addressed in a RAO submitted to the DEP in 1998 for RTN 3-14857. The RAO concluded the groundwater impacts posed a condition of No Significant Risk to human health, public welfare, safety, and the environment, and that no further MCP response actions applied to the groundwater.



Groundwater quality assessment conducted in 2017 as part of real estate due diligence did not identify conditions which are reportable to the DEP in accordance with the notification requirements of the MCP. The 2017 assessment included the installation of four monitoring wells and sampling and analysis of groundwater for VOCs, EPH, VPH, and 12 dissolved metals (antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc). No analytes were detected at concentrations exceeding MCP reportable concentrations.

Dewatering may be required during construction and it is anticipated that dewatering effluent will be recharged into the subsurface.

Figure 6.4a shows environmental sampling locations, including groundwater monitoring wells, at the Project Site and Figure 6.4b shows environmental sampling locations during the 2017 assessment completed in support of real estate transfer due diligence.

## 6.2.7 Geotechnical

Based on the available subsurface data, the Project Site was subdivided into five zones of similar idealized subsurface conditions as shown on Figure 6.5. The idealized conditions for each zone are summarized in a table on Figure 6.5 and discussed below in order of increasing depth below ground surface:

- › **Miscellaneous Fill.** Fill was typically described as very loose to medium dense, olive to brown to black, silty sand with gravel. The fill layer has been observed to contain cinders, ash, brick, gravel, shells, glass, wood, porcelain, nails, roots, metal, cobbles, boulders, trash, fabric, bottles and slag.
- › **Organic Deposits.** Organic deposits generally consisted of very soft to medium stiff, dark olive gray organic soil with peat in certain areas; some samples exhibited an organic odor and contained shell fragments.
- › **Estuarine Deposits.** Estuarine Deposits were typically described loose to very dense gray silty sand to well to poorly graded sand with organic fibers, organic fines, and up to 40 percent shell fragments, to very soft gray sandy organic soil with shell fragments, to stiff to very stiff gray lean clay with shell fragments, to loose to very dense poorly to well graded gravel with shell fragments and organic fines.
- › **Marine Sand.** Marine Sand was typically described as loose to very dense olive to gray poorly to well-graded sand with silt and gravel
- › **Marine Clay.** Marine Clay ranged from very soft to stiff olive lean clay to medium dense gray silt.
- › **Glaciofluvial.** Glaciofluvial soil consisted of a medium dense to very dense poorly grade gravel with sand to a silty sand with gravel.
- › **Glacial Till.** The glacial till consisted of very dense poorly graded gravel with silt and sand to a silty sand with gravel.

- › **Bedrock.** Bedrock underlying the Project Site consists of a fine-grained sedimentary rock known as Cambridge Argillite and was typically described as hard, slightly to moderately weathered, gray, and thinly bedded with joints dipping at low to high angles.

To confirm the subsurface conditions for construction, additional explorations are planned across the Project Site.

### **Foundation Construction**

The Master Plan Project includes the construction of several new buildings across the Project Site. The new structures will be supported on end-bearing piles driven to glacial till or bedrock. If below grade space is planned, temporary excavation support consisting of steel sheeting or similar systems may be required. Temporary earth support may also be required to install select deeper utilities.

Temporary dewatering may be required during construction to remove groundwater or stormwater from below grade excavations. Dewatering effluent will be recharged on-site to the greatest extent possible. If on-site recharge is not effective, a temporary construction dewatering permit will be obtained from governing agencies prior to discharge of temporary dewatering effluent from the Project Site. Testing of the effluent will be conducted prior to and during discharge to confirm compliance with all permit requirements.

The foundation construction is not anticipated to cause adverse impacts to adjacent structures or to area groundwater levels.

## **6.2.8 Construction**

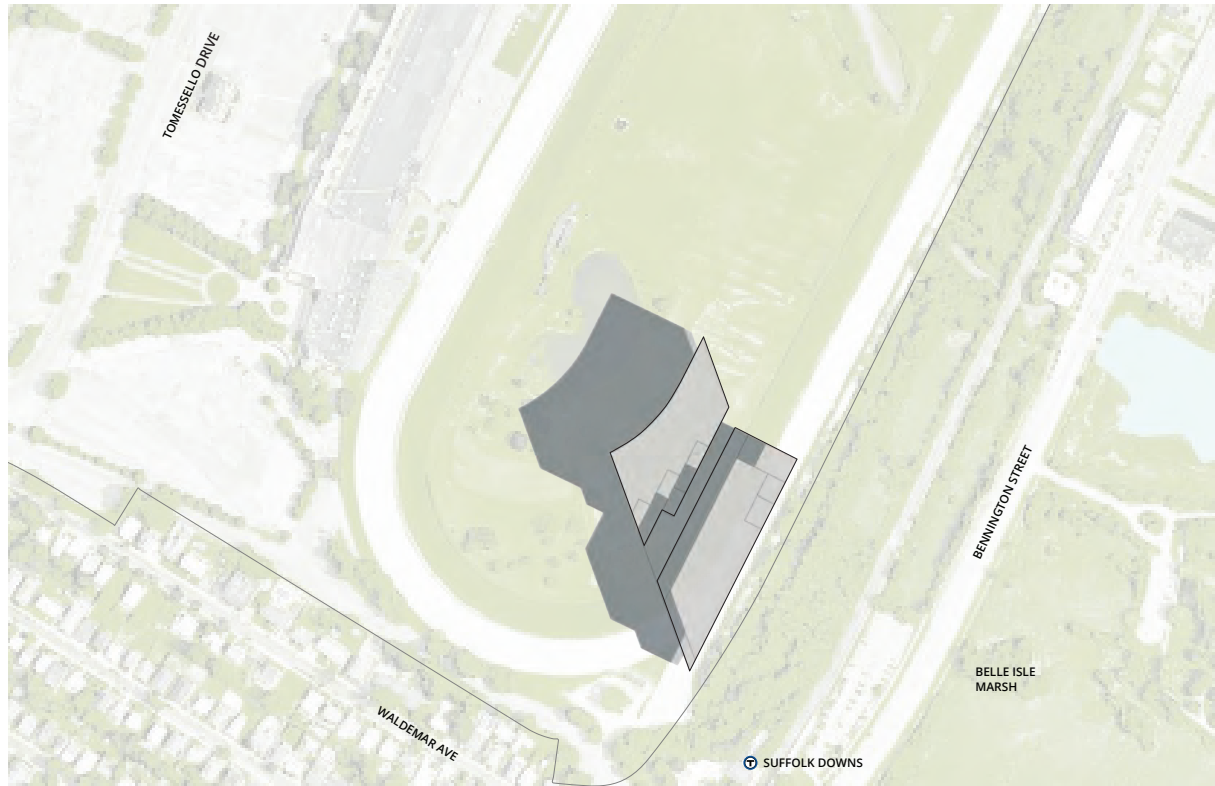
As design progresses, construction mitigation will be reviewed and refined by appropriate regulatory agencies through the development and submission of a CMP, which will be developed in coordination with the Cities of Boston and Revere. The CMP will provide details of the overall construction schedule, work hours, number of construction workers, worker transportation and parking, and number of construction vehicles and routes. The CMP would also include details on:

- › Stormwater Runoff/Erosion Control
- › Air Quality
- › Noise
- › Traffic
- › Rodent Control
- › Construction Staging

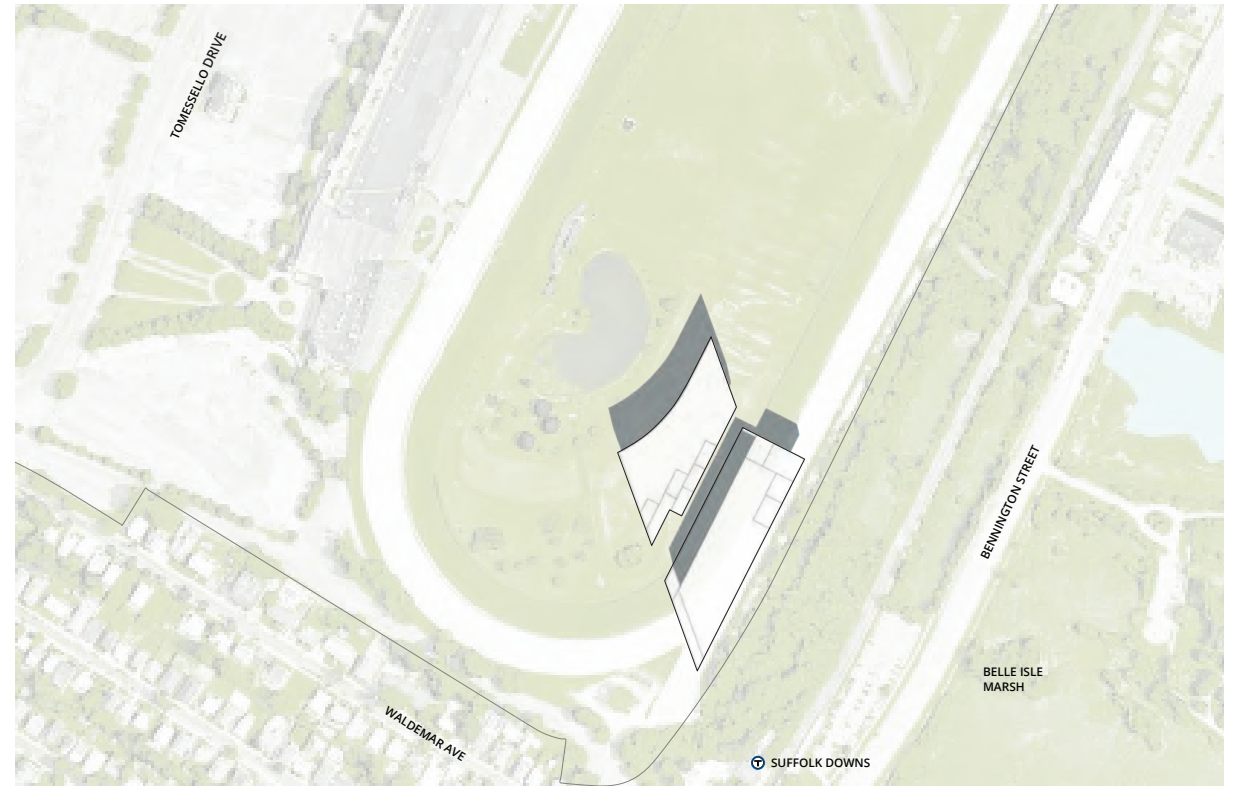
The timeline for construction is not yet fully developed, however the construction period is anticipated to take 15-20 years. Each of the proposed buildings can be developed together with or independently of and in differing sequences with the

others, and the mix of uses presented in Table 1-1 in Chapter 1, *Project Description and General Information*, allows the Master Plan Project to remain responsive to evolving market conditions.

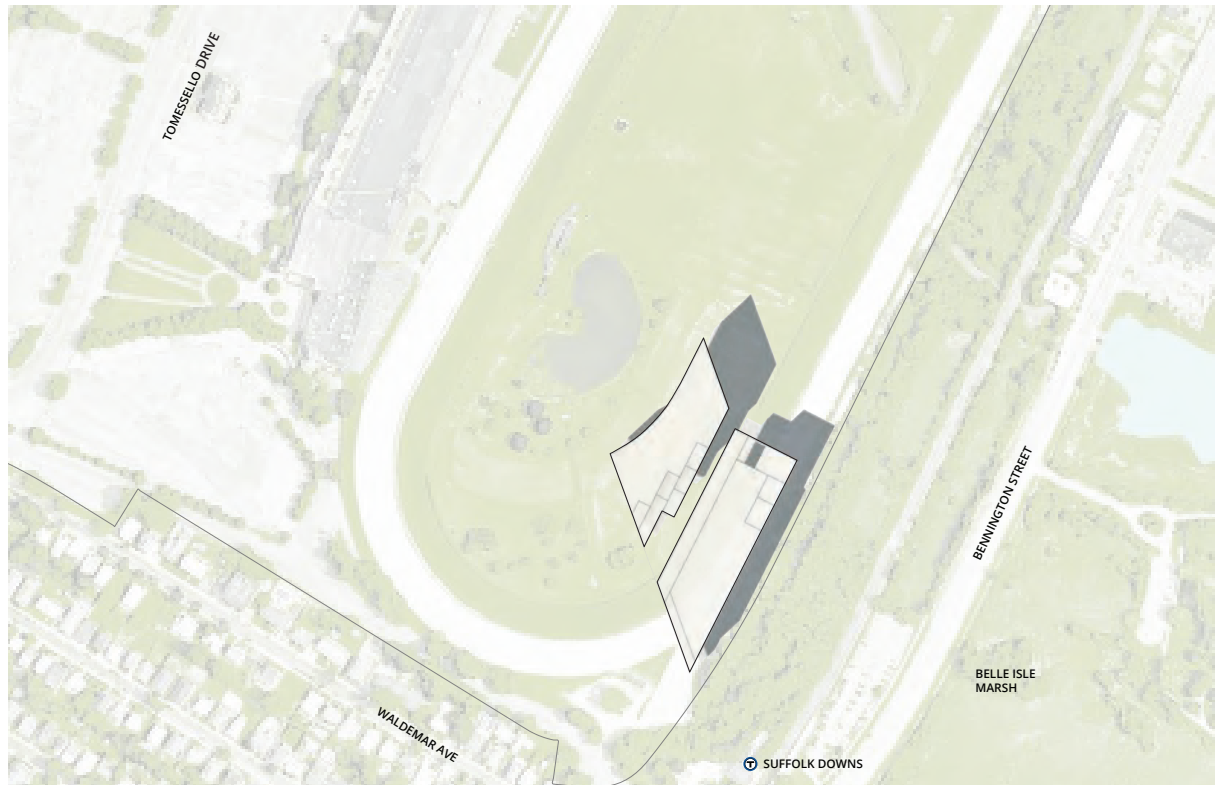
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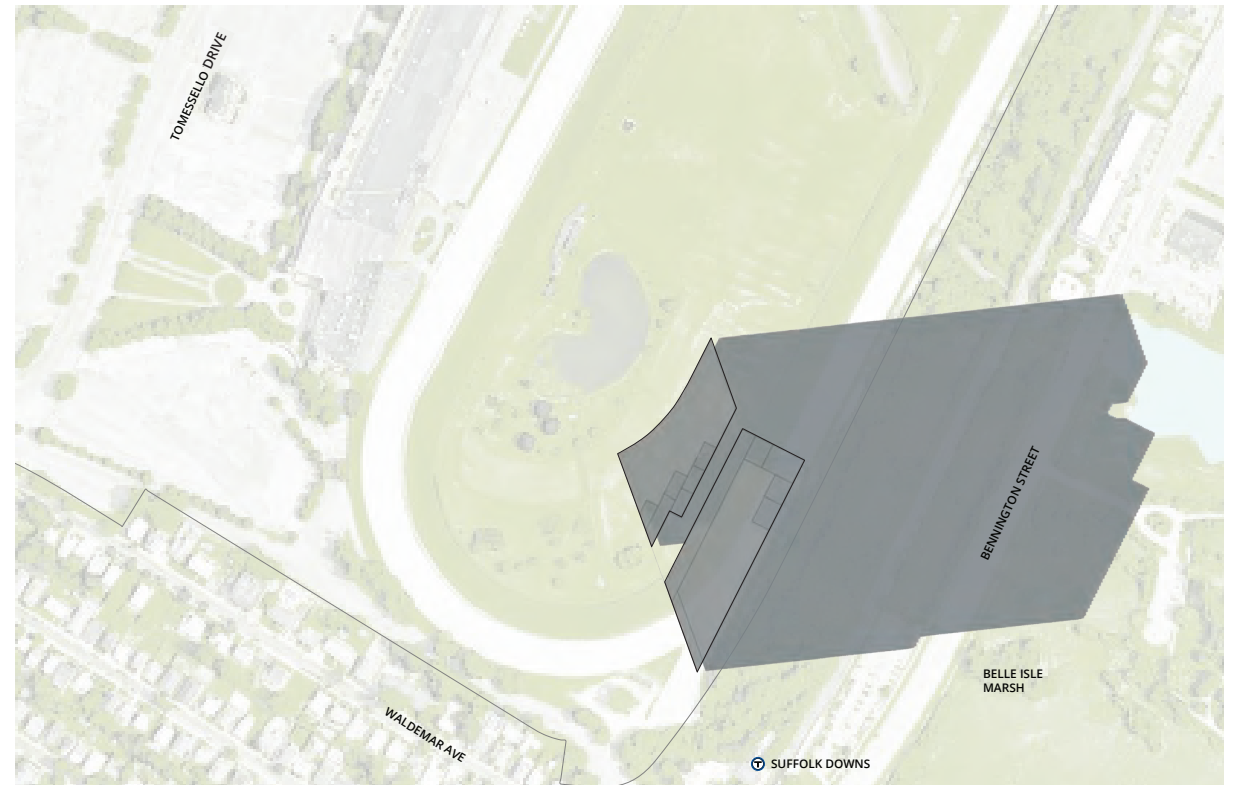
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12:00 PM



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6:00 PM

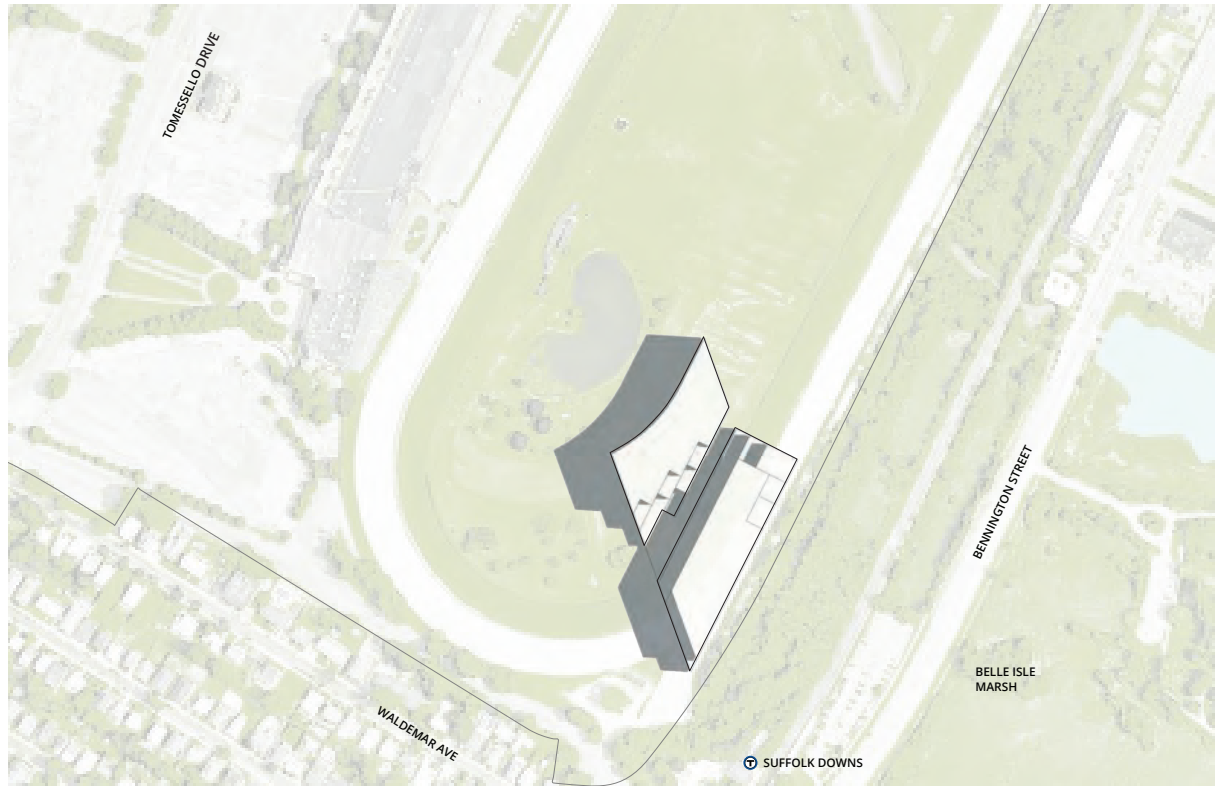
6.1a

Phase 1 Shadow Study  
Vernal/Autumnal Equinox

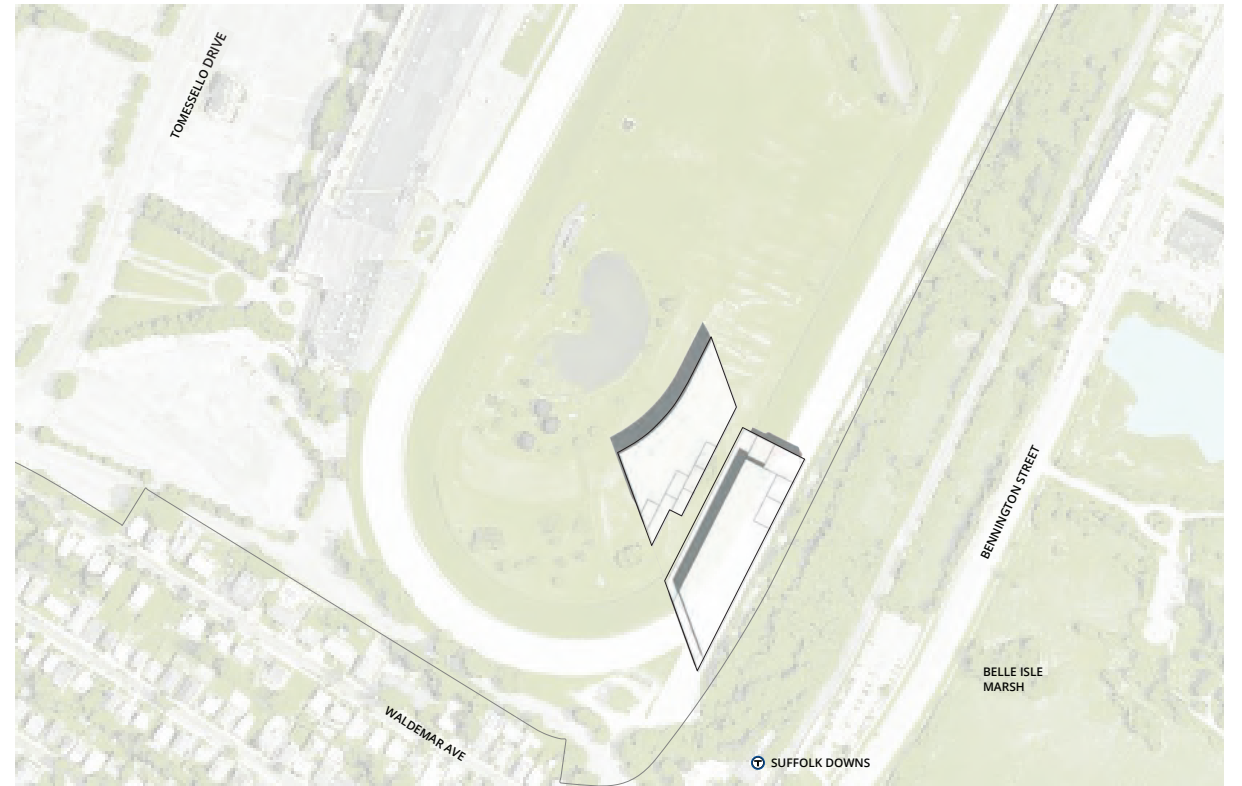
**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



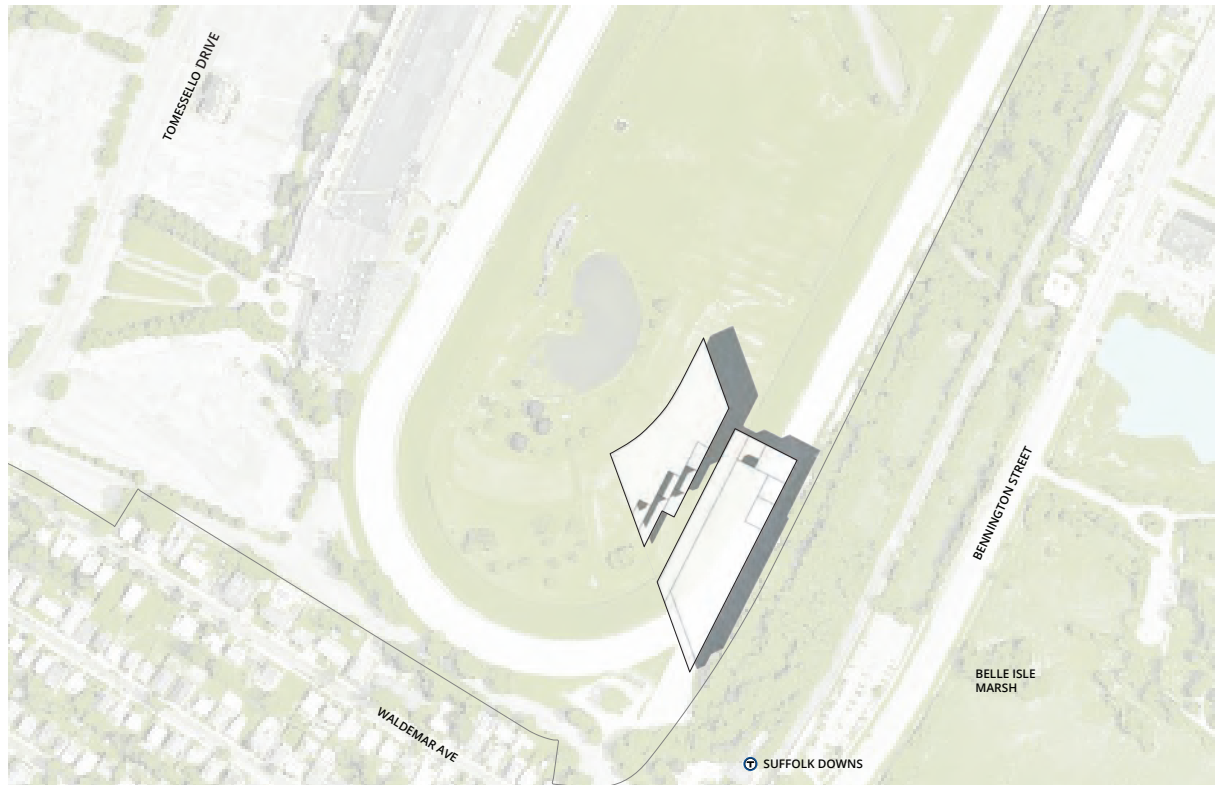




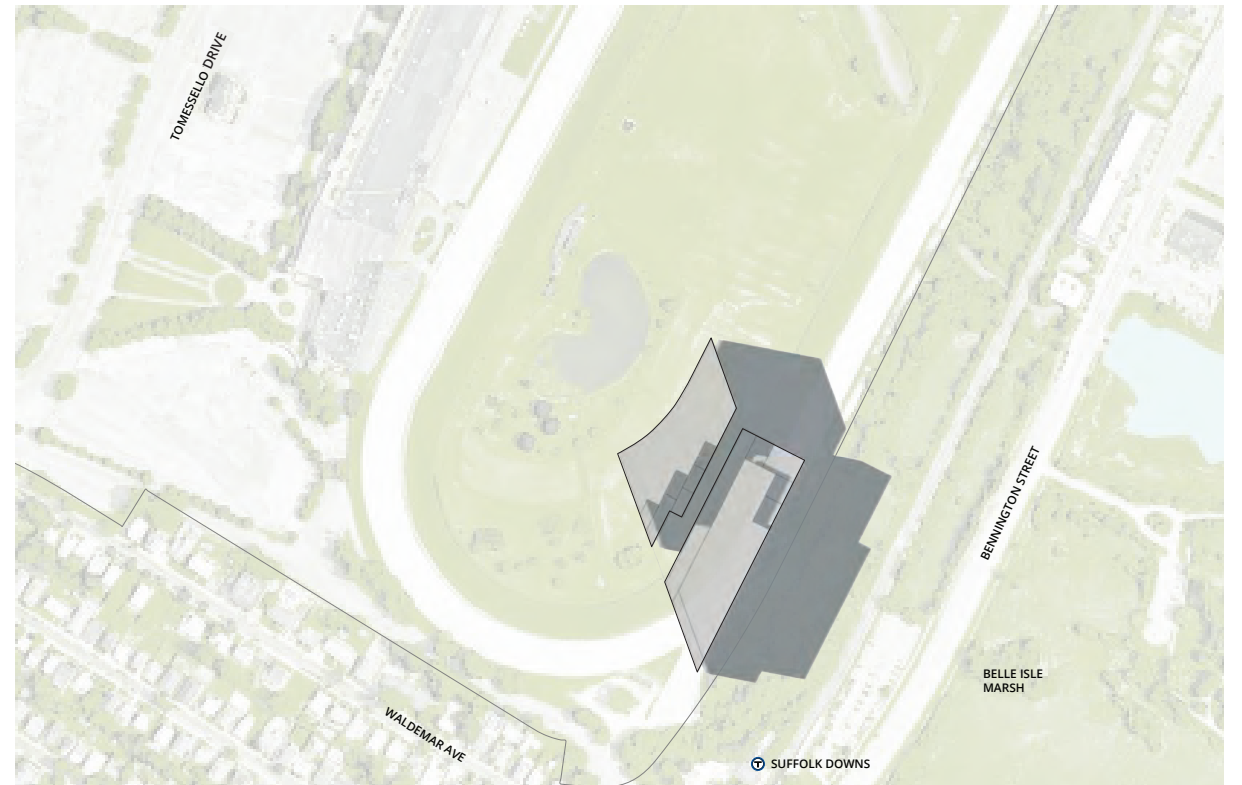
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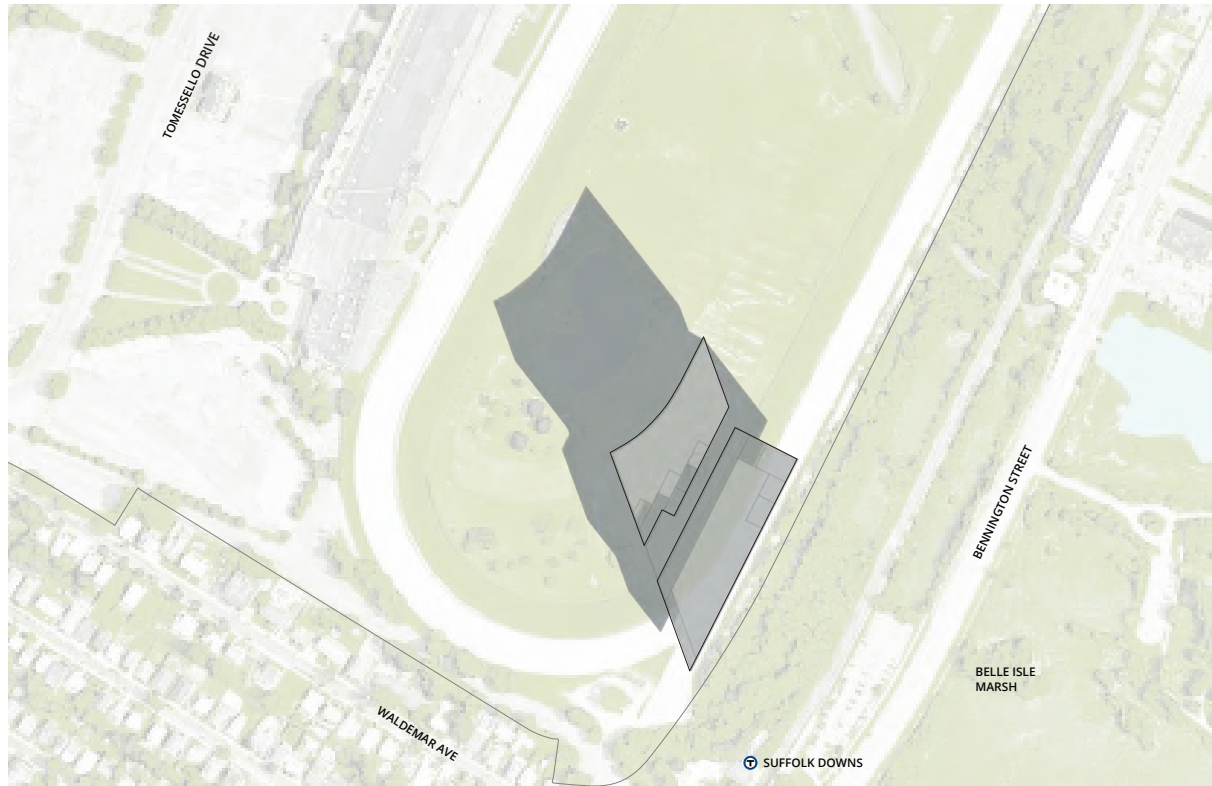
6.1b

Phase 1 Shadow Study

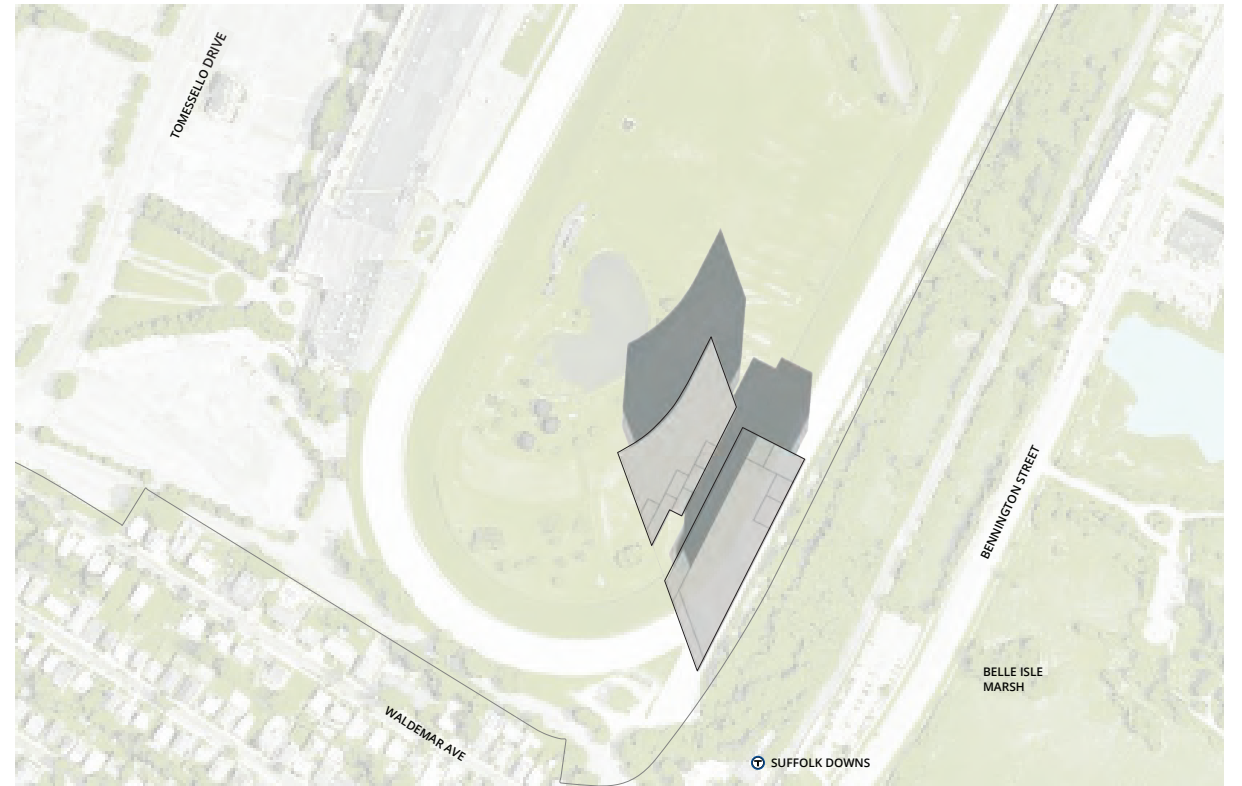
Summer Solstice

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

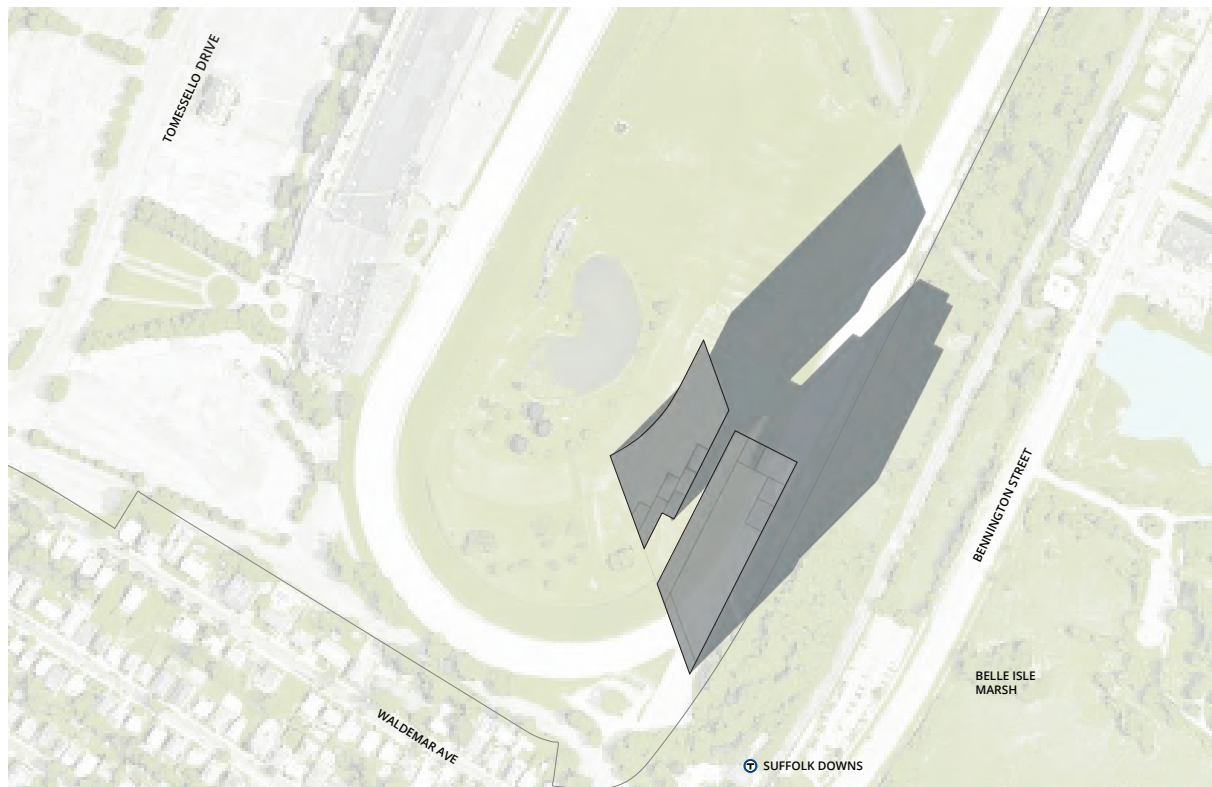




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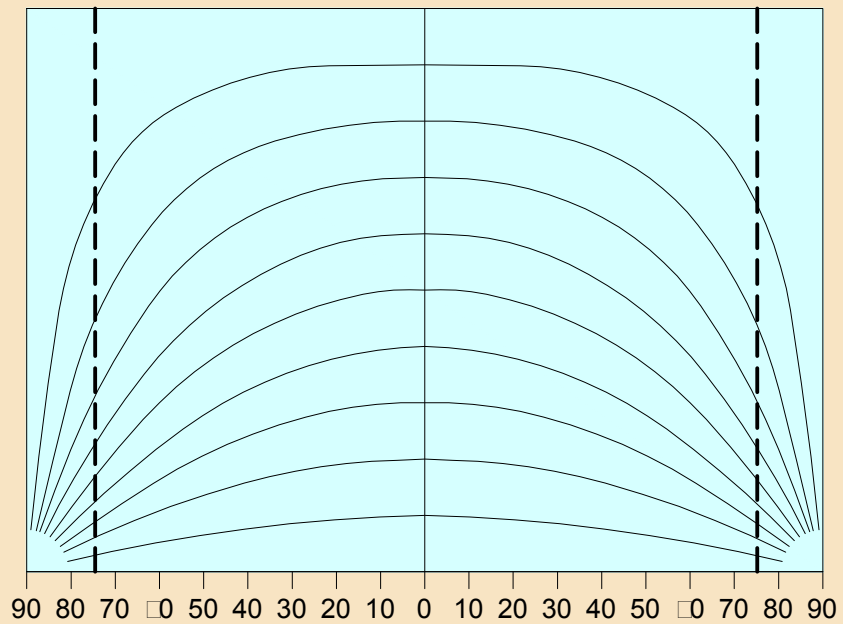
6.1c  
Phase 1 Shadow Study  
Winter Solstice

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



### Existing

Obsrci  
Sapa 0.0



### Proposed

Obsrci  
Sapa 10.1

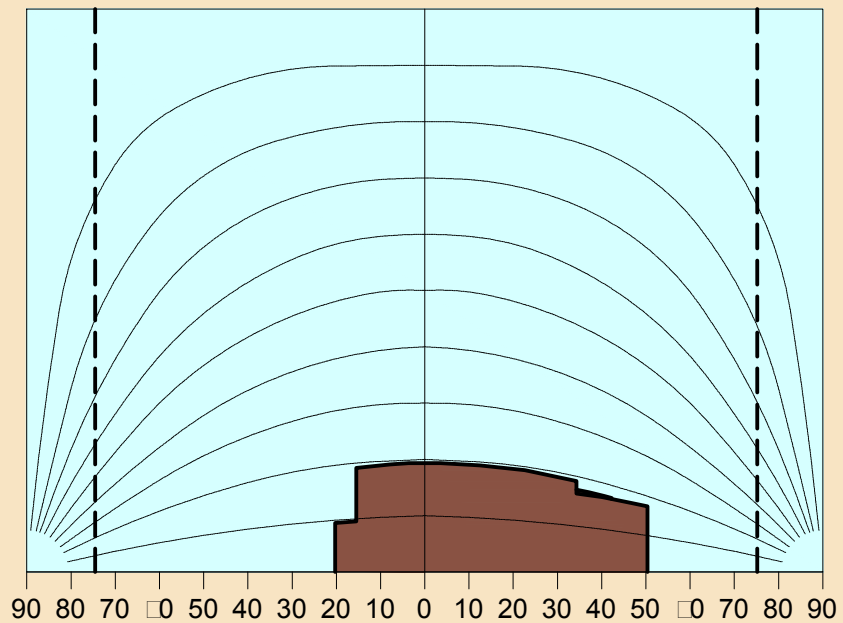
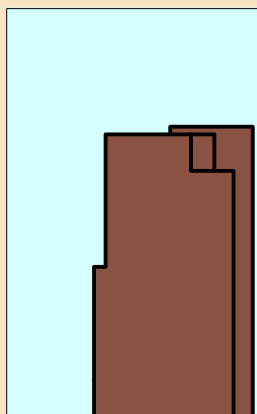
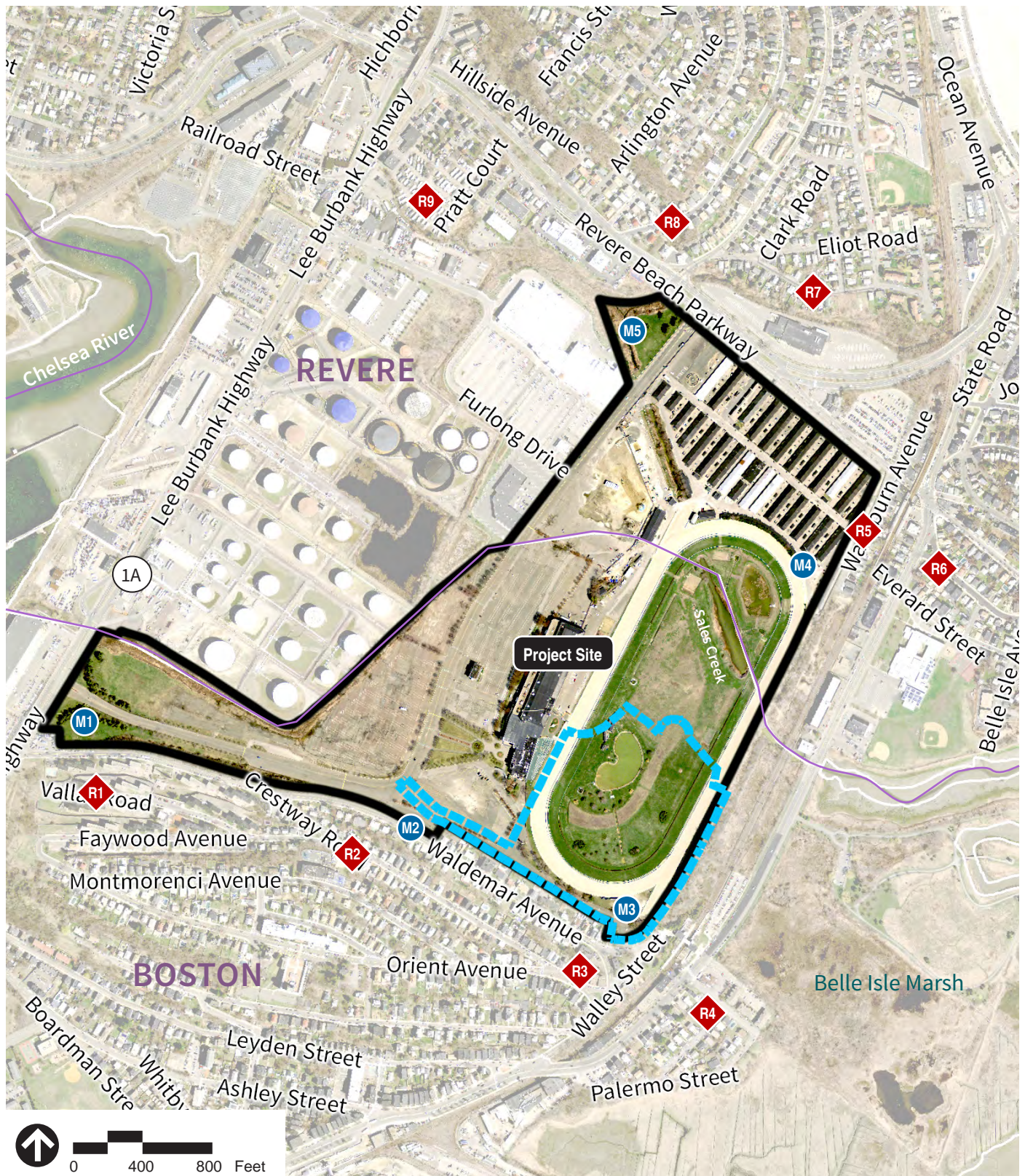


Figure 6.2  
Daylight Analysis

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





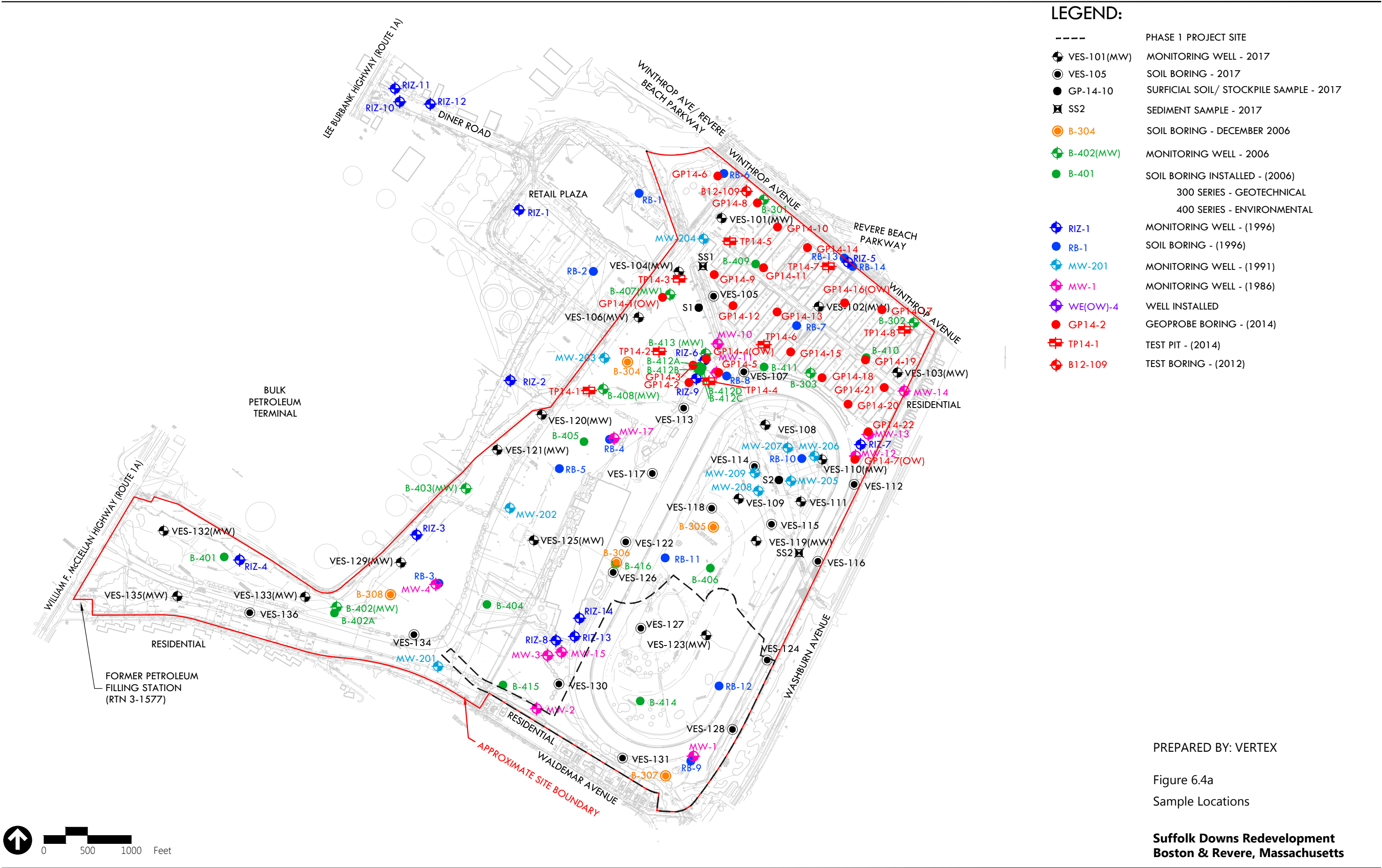
Source: BING

- Project Site
- Phase 1 Project Site
- Town Line
- M# Monitoring Locations
- R# Receptor Locations

Figure 6.3  
Noise Receptor Locations

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**







LEGEND:

- |               |   |
|---------------|---|
| ----          | PHASE 1 PROJECT SITE                    |
| ⊕ VES-101(MW) | MONITORING WELL - 2017                  |
| ⊙ VES-105     | SOIL BORING - 2017                      |
| ● GP-14-10    | SURFICIAL SOIL/ STOCKPILE SAMPLE - 2017 |
| ⊠ SS1         | SEDIMENT SAMPLES                        |



Prepared By: VERTEX

Figure 6.4b

### Recent Sample Locations

## Suffolk Downs Redevelopment Boston & Revere, Massachusetts

LEGEND:

---

PHASE 1 PROJECT SITE

APPROXIMATE AREA FOR RTN 3-14857

APPROXIMATE AREA FOR RTN 3-34499





STRATA	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
	THICKNESS IN FEET				
FILL	5 TO 15	5 TO 10	5 TO 10	10 TO 20	10 TO 20
ORGANICS	10 TO 12	5 TO 10	5 TO 10	0 TO 5	30 TO 50
ESTUARINE	30 TO 50	5 TO 20	10 TO 25	0 TO 10	0 TO 10
MARINE SAND	0 TO 15	10 TO 20	5 TO 10	NE	5 TO 10
MARINE CLAY	0 TO 15	0 TO 10	30 TO 40	30 TO 40	30 TO 50
GLACIOFLUVIAL	0 TO 5	NE	NE	NE	0 TO 15
GLACIAL TILL	0 TO 15	0 TO 15	NE	0 TO 5	0 TO 15
EL. TOP OF BEDROCK (FT)	-40 TO -60	-40 TO -50	-50 TO -70	-40 TO -60	-60 TO -110

- E□
1. BASE PLAN TAKEN FROM A DRAWING TITLED 9180\_TOPO1\_051712.dwg, PREPARED BY NITSCH ENGINEERING OF BOSTON, MASSACHUSETTS.
  2. LIMITS OF PHASE 1 PROJECT AREA TAKEN FROM DRAWING FILE NAMED "2017-11-21-285402D005C.DWG", UNDATED, RECEIVED ON 21 NOVEMBER 2017, FROM VHB OF BOSTON, MASSACHUSETTS.
  3. ALL ELEVATIONS ARE IN BOSTON CITY BASE (BCB) DATUM.



□□□□□□□□□□E□□□P□□□□□  
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Figure 6.5  
Site and Subsurface Conditions Plan  
  
Suffolk Down Redevelopment  
Boston & Revere, Massachusetts

# 7

## Historic Resources

### Introduction

This chapter identifies properties located within and in the vicinity of the Project Site that are listed in the National and State Registers of Historic Places, and/or are included in the Inventory of Historic and Archaeological Assets of the Commonwealth (the "Inventory").

### 7.1 Summary of Key Findings and Benefits

The key findings related to historic resources include:

- › The Project Site includes the Suffolk Downs property, which is included in the Inventory. Suffolk Downs is not listed in the State or National Registers of Historic Places.
- › The Suffolk Downs race track is no longer an economically viable facility and the existing buildings associated with the race track are in poor condition, underutilized, and cannot meet the projected needs of the Master Plan Project.
- › There are six historic resources located within a one-quarter-mile radius of the Project Site.
- › The Phase 1 Project will not adversely affect any previously-recorded resource.

### 7.2 Phase 1 Project Impacts

The Phase 1 Project is located in the southeastern corner of the Project Site, which provides convenient access to the nearby Suffolk Downs MBTA Blue Line Station. A portion of the Suffolk Downs race track is located within the Phase 1 Project Site. This site element is included in the Inventory, but not listed in the State or National Registers of Historic Places. The new office building proposed as part of the Phase 1 Project will be located on this small portion of the race track (Figure 1.7).

The Suffolk Downs race track and associated buildings have been underutilized for over 20 years, due to the public's diminishing interest in horse racing. Retention of the race track is not feasible to meet programmatic requirements of the proposed construction, nor is retention of the race track economically viable. The remaining buildings and structures within Suffolk Downs, including the clubhouse, grandstand, vacant administration building, pump house, barns, and ancillary structures, are not included within the Phase 1 Project Site and will not be impacted.

In addition to Suffolk Downs, three inventoried properties are located within a one-quarter-mile radius of the Phase 1 Project Site; there are no archaeological resources on or within a one-quarter-mile of the Phase 1 Project Site.

Given the distance and intervening structures between the Phase 1 Project Site and the above-mentioned historic resources, construction of the Phase 1 Project will not adversely affect any previously-recorded resource.

The Phase 1 Project is not subject to Article 85 of the Boston Code (Demolition Delay), as no buildings are proposed for demolition. Therefore, the Phase 1 Project will not require the filing of a Demolition Delay application with the Boston Landmarks Commission ("BLC").

## **7.3 Regulatory Context**

### **7.3.1 Massachusetts Historical Commission**

Massachusetts Historical Commission ("MHC") has review authority over projects requiring state or federal funding, licensing, permitting, and/or approvals, in order to evaluate potential direct or indirect impacts to properties listed or eligible for listing in the National and State Registers of Historic Places, in compliance with State Register Review requirements (M.G. L. Chapter 9, Sections 27-27c, as amended by Chapter 254 of the Acts of 1988) and Section 106 of the National Historic Preservation Act of 1966 (if necessary). The filing of this EENF/EPNF will initiate MHC review under MEPA and the MHC's State Register Review process. MHC review will continue through the Master Plan Project.

### **7.3.2 Boston Landmarks Commission**

The submission of this EENF/EPNF initiates BLC's review of the Master Plan Project under the BPDA Article 80B, Large Project Review process, in association with the Boston Environment Department. Buildings on the Project Site (outside of the Phase 1 Project Site) within Boston that are over 50 years old are subject to Demolition Delay. A Demolition Delay application will be submitted to the BLC for the Master Plan Project.

## **7.4 Historic Resources**

A review of the State and National Registers and Inventory was undertaken to identify previously recorded above-ground and archaeological resources on or within a one-quarter-mile radius of the Project Site. The Project Site contains Suffolk Downs, which is included in the Inventory (MHC Area BOS.ABQ). In addition, one National Register District (Revere Beach Parkway), and four inventoried properties are located within a one-quarter-mile radius of the Project Site.



The names and addresses of properties listed in the State and National Registers of Historic Places and included in the Inventory within a one-quarter-mile radius of the Project Site are listed in Table 7-1 and depicted in Figure 7.1. A description of the historic resources in the vicinity of the Project Site follows.

**Table 7-1 Historic Resources within and in the Vicinity of the Project Site**

No.	Resource Name	Location	MHC Inventory	Designation
			No.	
A	Revere Beach Parkway	N/A	REV.H	NRDIS
1	Suffolk Downs	111 Waldemar Avenue, Boston	BOS.ABQ / REV.J	INV
2	Our Lady of Lourdes Catholic Church Complex	1, 2, Endicott Avenue, Revere	REV.G	INV
3	Residence	54-56 Orient Avenue, East Boston	BOS.109	INV
4	Residence	75-79 Orient Avenue, East Boston	BOS.112	INV
5	Don Orione Complex	111, 120-150 Orient Avenue, East Boston	BOS.110, 111, 113, 114, 902	INV

NRDIS National Register of Historic Places, District

INV Listed in the Inventory of Historic and Archaeological Assets of the Commonwealth; no current designation

### 7.4.1 Historic Resources on the Project Site

#### Suffolk Downs (BOS.ABQ / REV.J)

The 161-acre Suffolk Downs property (Project Site) encompasses the one-mile long race track, connected Clubhouse and Grandstand, administration building, pump house, barns, and ancillary structures.

Constructed in 1935 by Joseph A. Tomasello at a cost of two million dollars, the facility served as the first major race track in New England. Originally designed in the Art Deco Style, the property has undergone substantial renovations through the years, including enclosure of the grandstand in 1945, major renovations and modifications in 1962 with a new grand entrance and the joining and complete enclosure of the grandstand and clubhouse, a major renovation in 1992, and a series of updates and improvements over the past 5-10 years. Refer to Figures 7.2 and 7.3a through 7.3f for existing conditions photos of the Project Site.

## **7.4.2 Historic Resources within One-Quarter-Mile Radius of the Project Site**

### **Revere Beach Parkway (REV.H)**

Originally built between 1896 and 1904 to link the interior areas north of Boston with the new Revere Beach Reservation, the Revere Beach Parkway is a 5.3-mile curvilinear boulevard that runs between Wellington Circle in Medford and Eliot Circle in Revere. Designed by Olmsted, Olmsted and Eliot, and its successor firm, Olmsted Brothers for the Metropolitan Park Commission, the Parkway was one of the first suggested by Charles Eliot in his 1893 report to the Temporary Metropolitan Park Commission, and remains emblematic of the firm's principles of parkway creation. The Parkway was listed in the National Register in 2007.

### **Our Lady of Lourdes Roman Catholic Church Complex (REV.G)**

The Our Lady of Lourdes Roman Catholic Church Complex is comprised of the church, rectory, garden with shrine, and garage. Designed by Maginnis, Walsh and Sullivan in 1907, the Neoclassical complex is associated with the development of the Beachmont section of Revere in the early twentieth century.

### **54-56 and 75-79 Orient Avenue (BOS.109 & BOS.112)**

The residential properties at 54-56 and 75-79 Orient Avenue were constructed ca. 1915 and executed in the Colonial Revival Style.

### **Don Orione Complex (BOS.110, BOS.111, BOS.113, BOS.114, BOS.902)**

The Don Orione Complex at the top of Orient Heights in East Boston is the national headquarters for the Don Orione religious order. The Madonna Queen National Shrine (BOS.902) features a full-size replica of the Madonna Queen of the Universe Statue at the Don Orione Center in Rome, Italy, and was executed by Jewish-Italian sculptor Arrigo Minerbi at no cost as a gesture of gratitude to the Don Orione priests for helping him escape the Nazis during World War II. The complex also includes the Mother Queen Shrine Chapel (BOS.114), Italianate style Don Orione Rest Home (BOS.110), Don Orione Nursing Home (BOS.113), and the Franciscan Sisters of Mary Convent (BOS 111).

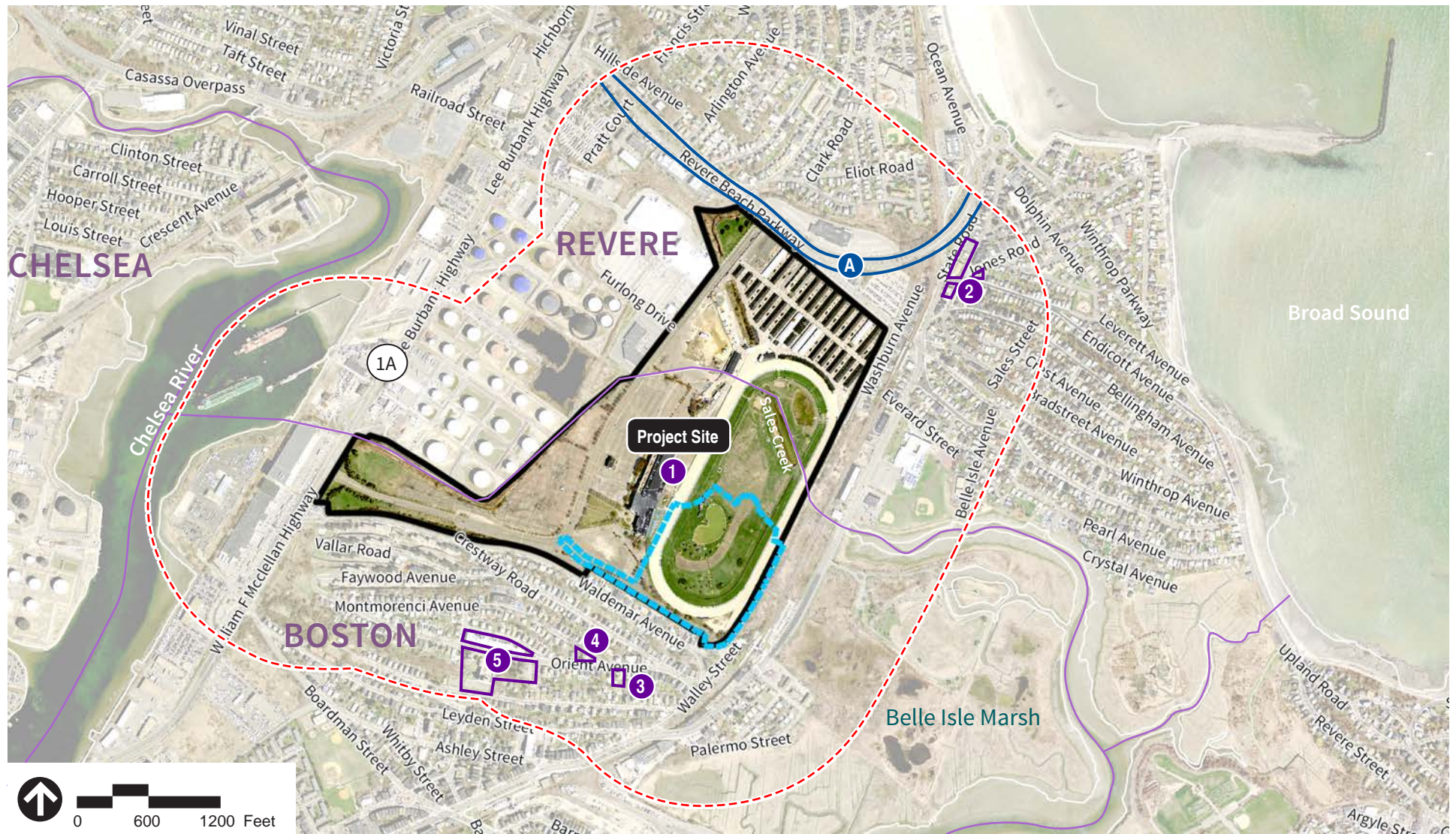
## **7.4.3 Archaeological Resources on the Project Site**

The Project Site is located on former marshland that was filled beginning in the 1890's and completed in the early 20<sup>th</sup> century to accommodate speculative residential development prior to the construction of Suffolk Downs. No previously identified archaeological resources are located within the Project Site or immediate vicinity, and no impacts to archaeological resources are anticipated as a result of the Master Plan Project.

## **7.5 Evaluation of Potential Impacts to Nearby Historic Resources**

The DEIR/DPIR will include an evaluation of any potential impacts the Master Plan Project may have on historic resources located on and within a one-quarter-mile radius of the Project Site, including, as applicable, visual, urban design, and shadow impacts. Potential impacts to historic resources will be limited to Revere Beach Parkway improvements as a result of the Master Plan Project.

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Source: BING

- Project Site
- Phase 1 Project Site
- 1/4-Mile Radius
- Town Line

Properties Included in the Inventory of Historic and Archaeological Assets of the Commonwealth

- 1 Suffolk Downs (INV)
- 2 Our Lady of Lourdes Catholic Church Complex (INV)
- 3 54-56 Orient Avenue (INV)
- 4 75-79 Orient Avenue (INV)
- 5 111, 120-150 Orient Avenue (INV)

Historic Properties Listed in the State and National Registers

- A Revere Beach Parkway (NRDIS)

NRDIS National Register of Historic Places, District  
INV Listed in the Inventory of Historic and Archaeological Assets of the Commonwealth; no current designation

Figure 7.1

Historic Resources within 1/4 Mile of Project Site

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**





Source BING

 Project Site

Figure 7.2  
Site Photos Key

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



1



2



Figure 7.3a  
Site Photos

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

3



4



Figure 7.3b  
Site Photos

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



5



6



Figure 7.3c  
Site Photos

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

7



8



Figure 7.3d  
Site Photos

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



9



10



Figure 7.3e  
Site Photos

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

11



12



Figure 7.3f  
Site Photos

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

# 8

## Infrastructure

This chapter describes existing and proposed infrastructure systems associated with the Phase 1 Project and Master Plan Project; including, stormwater management, sanitary sewage, water, natural gas, electric, and telephone and telecommunications.

### 8.1 Summary of Key Findings and Benefits

The key findings related to infrastructure systems include:

- › Adequate infrastructure facilities and services are available within the Project Site to serve the Phase 1 Project.
- › Construction of the Master Plan Project will include new stormwater management treatment systems on-site, which will significantly improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to the existing conditions.
- › Master Plan Project will include low-flow plumbing fixtures and other water conservation and reuse techniques to reduce overall water usage and wastewater generation.
- › Opportunities to incorporate low impact development (“LID”) techniques, such as biofiltration will be considered as the Master Plan Project design progresses. Additional stormwater quality enhancement features, such as green roofs, will be evaluated as design of the individual future buildings progress, and reuse of stormwater runoff for landscape irrigation will be incorporated into the design, where feasible.
- › The Phase 1 Project is anticipated to generate approximately 39,000 gallons per day (“GPD”) of wastewater and require 43,000 GPD of water. The Master Plan Project will generate approximately 2.48 million gallons per day (“MGPD”) of wastewater and use 2.73 MGPD of water.
- › Potential increased storm intensity due to climate change will be addressed by the Master Plan Project, including the Phase 1 Project, by designing the stormwater management system to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively) as recommended by BWSC.
- › Inflow/Infiltration (“I/I”) mitigation equivalent to a 4:1 in Boston and 10:1 in Revere removal ratio for every gallon of wastewater proposed will mitigate potential capacity issues in the regional wastewater collection system.

## 8.2 Phase 1 Project Impacts

The following section describes the infrastructure needs for the Phase 1 Project, including stormwater management, water and wastewater, and utilities. As demonstrated below, adequate infrastructure facilities and services are available within the area to serve the Phase 1 Project. Figure 8.1 depicts the proposed infrastructure for the Phase 1 Project. Additionally, gas, electric, telephone and telecommunications utilities are also located proximate to the Phase 1 Project Site.

### 8.2.1 Stormwater Management

#### Existing Drainage Conditions

As described previously, Suffolk Downs was constructed in the early 1930s on marshlands and tidal creeks that were originally filled in the early 20<sup>th</sup> century in relation to a then-proposed residential development. At that time, the majority of the existing on-site stormwater management system was built and the portion of Sales Creek that passes through the Project Site was reconstructed as a drainage channel. This occurred prior to the promulgation of DEP Stormwater Management Standards; therefore, the existing stormwater management infrastructure provides minimal stormwater quality treatment.

The Phase 1 Project Site includes two key drainage areas that drain to two distinct locations on-site. The race track and infield areas drain to the infield pond. The infield pond is an approximately one-acre human-made feature, constructed for ornamental purposes prior to 1938. Drainage channels direct runoff from the race track to the infield pond. The level of the pond is regulated by a water control structure at the northern edge of the pond which artificially controls the mean annual flood level of the pond. Overflow from the pond drains to Sales Creek via an 18-inch culvert.

The existing overflow parking area and area outside of the race track drain to the intermittent stream located along the eastern perimeter of the Project Site, which also discharges to Sales Creek. Sales Creek lies within LSCSF as it ultimately discharges into the Atlantic Ocean.<sup>1</sup> Section 8.4.1 below provides further details on the larger drainage system within the Master Plan Project Site and regional watershed.

#### Proposed Stormwater Management System

The Phase 1 Project will include a stormwater management system designed to improve water quality discharged to the watershed from existing developed areas, as well as the newly developed area. Proposed stormwater management measures

<sup>1</sup> As discussed in Chapter 4, *Wetlands and Waterways*, on-site resource areas were confirmed in ORADs issued by the Boston Conservation Commission on September 28, 2017, and by the Revere Conservation Commission on October 4, 2017. LUWW was also identified on-site, but was not requested to be confirmed in the ORAD as it is located entirely within other resource areas.

will control peak runoff rates, provide water quality treatment, promote groundwater recharge, and promote sediment removal. The elements of the Phase 1 Project stormwater management system are depicted on Figure 8.1.

The proposed basins are designed to maintain pre-development runoff rates up to and including the increased 100-year storm event with a total rainfall depth of 8.8 inches. While portions of the Phase 1 Project stormwater system are sited in locations of future planned development associated with the Master Plan Project, the ability for the Phase 1 Project to manage stormwater is not dependent on construction of any future system of the Master Plan Project. The Phase 1 Project drainage features will be accounted for in the future Master Plan Project stormwater management system, but could stand alone indefinitely if future development phases were not constructed.

The stormwater management system has been designed to comply with:

- › The 2008 DEP Stormwater Management Handbook;
- › The Massachusetts WPA Regulations (310 CMR 10.00); and
- › The BWSC Stormwater Requirements.

The Phase 1 Project Site will continue to discharge to LSCSF under proposed conditions. Under this condition, the DEP Stormwater Standards waive the requirement to mitigate peak stormwater discharge rates; however, Sales Creek is isolated from tidal flows by the Bennington Street tide gates and DCR pumping station. Therefore, to demonstrate that the Phase 1 Project will not increase stormwater flows to the pumping station, the pre- and post-development hydrologic conditions were modeled using HydroCAD™ software. The hydrologic model shows that post-development stormwater runoff rates will be less than or equal to the pre-development rates.

To account for increased storm intensity projected to occur due to climate change, the 10-year and 100-year storm events used in the design of the proposed stormwater management system are based on the BWSC increased rainfall recommendations of six inches and 8.8 inches, respectively.

Table 8-1 below summarizes the peak runoff rates for the pre- and post-development conditions for the Phase 1 Project.

**Table 8-1 Phase 1 Project Runoff Rates (cfs)**

<b>Storm Event</b>	<b>2 Year</b>		<b>10 Year</b>		<b>100 Year</b>	
	<i>Pre</i>	<i>Post</i>	<i>Pre</i>	<i>Post</i>	<i>Pre</i>	<i>Post</i>
Design Point 2	7.32	5.60	21.68	16.60	37.03	28.34
Design Point 2A	40.65	35.32	93.12	89.09	144.92	143.74
Design Point 2C	20.44	19.13	57.28	53.63	95.90	89.78



The Phase 1 Project stormwater management system has also been designed to provide treatment of stormwater runoff associated with the proposed impervious surfaces on-site. All stormwater BMPs are designed to treat a minimum of the first inch of runoff generated by the on-site paved impervious areas.

To avoid sedimentation of the basins, sediment forebays have been incorporated into the design. The outlet structures have been designed as multi-stage outlets to provide control for a variety of storm events and will direct stormwater via overland flow towards the intermittent stream along the eastern portion of the Phase 1 Project Site. In the event of overtopping, emergency spillways have been provided to direct the excess flow via overland flow towards the intermittent stream, consistent with the existing drainage pattern. The basins have been designed so that they will fully dewater within 72 hours.

The proposed stormwater management system for the Phase 1 Project has been designed in compliance with the DEP Stormwater Management Standards in the same manner as the overall Master Plan Project, and will greatly improve the treatment of stormwater as compared to the existing condition. A complete Stormwater Management Report for the Phase 1 Project is contained in Appendix I, which details direct compliance with the DEP Stormwater Management Standards.

### **8.2.2 Water and Wastewater**

The projected sanitary sewage generation for the Phase 1 Project is estimated to be approximately 39,000 GPD.<sup>2</sup> The Phase 1 Project's estimated potable water demand of approximately 43,000 GPD was determined by increasing the projected wastewater generation rate by a factor of 10 percent to account for consumptive losses. The existing onsite operations are estimated to generate approximately 27,000 GPD of wastewater flow and 30,000 GDP of water demand.<sup>3</sup> This results in a net increase for Phase 1 of 12,000 GPD of wastewater flow and 13,000 GPD of water demand, respectively.

The existing sewer collection network (described in Section 8.5.1) and water distribution network (described in Section 8.6.1) have sufficient capacity (i.e. volume) to provide both sewer and water service to the Phase 1 Project. The Proponent will work with both cities and the MWRA, as applicable, to evaluate the associated infrastructure systems and identify appropriate mitigation. A water connection to the existing BWSC infrastructure at the intersection of Walley Street and Waldemar Avenue is anticipated for the Phase 1 Project. The Proponent is working with the BWSC to develop the most appropriate and technically feasible wastewater

<sup>2</sup> Volume estimated using the standards included in the Title 5 State Environmental Code Regulations (310 CMP 15.00) of 75 GPD/1,000 SF for commercial space.

<sup>3</sup> Existing water demand calculated based upon BWSC metered flow; excludes Revere flow, which appears to be negligible based on limited available information. Domestic wastewater flow calculated based upon 10 percent reduction in metered flow from BWSC, and excludes CAFO flow.

discharge connection point for the Phase 1 Project. It is anticipated that wastewater flows will be directed to the southeast where an existing 24-inch BWSC sewer exists near the Suffolk Downs MBTA Blue Line Station on Walley Street.

I/I mitigation for the Phase 1 Project is estimated at approximately \$2.41 per gallon at four times the projected sanitary sewage generation.

The Phase 1 Project includes relocation of the existing on-site four-inch force main, which serves the CAFO discharge, as depicted in Figure 8.1. The remainder of the CAFO existing infrastructure will be maintained in its current location until permanently removed in accordance with the existing NPDES permit (refer to Section 8.3.1 below for further details).

### 8.2.3 Utilities

The following public utility companies service the Phase 1 Project Site:

- › Electricity from Eversource in East Boston and National Grid in Revere;
- › Natural Gas from National Grid; and
- › Potable water from the MWRA.

The Phase 1 Project Site is in close proximity to the interstate electric transmission system and the interstate natural gas pipeline ("NGP") system. Both Eversource and National Grid have bulk power sub-stations adjacent to the Phase 1 Project Site. National Grid's Revere City Gate Station connects the area to the Tennessee Gas Pipeline System. Close proximity of these assets assures adequate capacity is available. Typically, the utility connections will be designed based on the overall Master Plan Project build-out schedule and expected load requirements of each building.

The electricity connection(s) at the Phase 1 Project Site may ultimately be supplied by Eversource or National Grid or both, which will be determined through ongoing discussions with the utility providers.

The Phase 1 Project is located in Eversource service territory. Based on the proposed plans for Phase 1, Eversource expects an upgrade of the current system configuration will be required to serve the estimated diversified load of two megawatts ("MW"). The upgrade would increase the available capacity and further improve the reliability in the area. As is typical, Eversource will also design the Phase 1 Project upgrade with the ability to accommodate future expansions.

The natural gas connection(s) at the Phase 1 Project Site will be supplied by National Grid. Based on the proposed use and location of the Phase 1 buildings, National Grid expects system upgrades in the public way to bring the service to the new buildings' location on-site.

The design and installation of the on-site private utility system(s) will be coordinated with the build-out of the larger Master Plan Project.

## 8.3 Regulatory Context

All infrastructure for the Master Plan Project, including the Phase 1 Project, will be designed in accordance with local, state and federal regulations. The following is a summary of key regulations, particularly regarding stormwater, that will influence the design.

### 8.3.1 National Pollutant Discharge Elimination System

The Clean Water Act prohibits discharging pollutants through a point source into Waters of the United States unless a permit is obtained under the EPA NPDES program. A NPDES permit contains limits, monitoring and reporting requirements, and other provisions to ensure that a discharge does not degrade water quality or cause harm to public health. It translates the requirements of the Clean Water Act into specific provisions tailored to the operations of each entity discharging pollutants.

#### **Concentrated Animal Feeding Operation NPDES Permit**

Under the Clean Water Act, CAFOs are classified as a point source and, therefore, require a NPDES permit. The Project Site is classified as a large CAFO since it can stable, confine, feed or maintain 500 horses or more for a total of 45 days or more in any 12-month period. In September of 2015, NPDES Permit No. MA0040228 was issued for Suffolk Downs authorizing discharge to Sales Creek. The NPDES permit includes effluent limitations, monitoring requirements, and other conditions on the discharge.

The conditions of the NPDES permit are required to be adhered to until all horseracing operations cease on the Project Site. At such time, the permit is required to be closed-out in accordance with the conditions outlined. The previous owner of the Project Site has the right to continue horseracing operations until construction commences. The prior owner is responsible for closure of the CAFO in accordance with the conditions outlined in the CAFO's NPDES permit when such operations cease.

#### **NPDES Construction General Permit**

The EPA also requires that all projects that disturb greater than one acre of land obtain a permit for stormwater discharges through the NPDES Construction General Permit ("CGP") for Stormwater Discharges from Construction Activity (2017, EPA). Compliance with the CGP is achieved by the following:

- › Developing and Implementing a Stormwater Pollution Prevention Plan ("SWPPP");
- › Completing, certifying, and submitting a Notice of Intent to the EPA; and
- › Complying with the requirements contained in the CGP and the Order of Conditions.

Compliance with the CGP and its Standard Permit Conditions is the responsibility of the site operator.

### **8.3.2 DEP Stormwater Standards**

In March 1997, DEP adopted a new Stormwater Management Policy to address non-point source pollution. In 1997, DEP published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was revised in February 2008. The Stormwater Management Standards are regulated under the Wetlands Protection Act Regulations 310 CMR 10.05(6)(k) through (q). The Handbook prescribes specific stormwater management standards for redevelopment projects, including urban pollutant removal criteria for projects that may impact environmental resource areas.

### **8.3.3 Easements of Sales Creek**

Several agreements with the Commonwealth of Massachusetts are in place for the maintenance of the portion of Sales Creek located on the Project Site. DCR has an easement for the portion of Sales Creek that traverses the Project Site, and is responsible for its maintenance. DCR also owns and maintains the culverts within Sales Creek on the Project Site, as well as the Belle Isle tide gates and pump station. Discharges from the drainage structures associated with the above infrastructure are regulated under DCR's Municipal Separate Storm Sewer Systems ("MS4") NPDES Permit MARO43001.

### **8.3.4 City of Boston Stormwater Requirements**

BWSC requires that the volume generated by the first one inch of rainfall from the impervious area on-site, be retained on-site for infiltration or reuse. All stormwater management improvements and connections to BWSC infrastructure are reviewed by BWSC as part of the Site Plan Review process. This approval process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts for water, sewer, and stormwater systems.

### **8.3.5 City of Revere Stormwater Requirements**

Section 13.10.020 of the City of Revere Bylaws requires that an Erosion and Sediment Control ("ESC") plan be approved by the Department of Public Works ("DPW") prior to any land-disturbing activities. For significant projects, preparation of a SWPPP would satisfy this requirement.

Section 13.10.030 of the City of Revere Bylaws requires that a Stormwater Management Plan be approved by the DPW prior to land disturbance activities greater than 2,500 square feet or for activities that would alter or modify an existing drainage system. A Stormwater Management Report in compliance with the 2008 DEP Stormwater Management Handbook would satisfy this requirement.

## **8.4 Stormwater Management**

### **8.4.1 Existing Drainage Conditions**

The majority of the existing stormwater infrastructure was constructed prior to the promulgation of the DEP Stormwater Management Standards; therefore, the stormwater infrastructure provides very limited, if any, water quality treatment, peak runoff rate attenuation, or groundwater recharge. The existing on-site drainage system is depicted on Figure 8.2.

The existing system primarily consists of catch basins, drain pipes, stormwater outfalls and conveyance channels. Drainage channels that surround the infield capture runoff from the race track and discharge it to the infield pond. There is also a drainage channel located on the southern side of Tomasello Drive near the main entrance, which receives stormwater from Waldemar Avenue through a culvert on its western side.

Improvements have been made to the system over time. Between 2003 and 2005, in conjunction with the development of the shopping plaza to the west (The Shops at Suffolk Downs), the drainage system from limited portions of Tomasello Drive and select parking lots on the Project Site was redirected to the stormwater basin located off-site to the west of the Project Site. In 2012, further improvements were made to treat runoff from the barn and stable areas, which are classified as a CAFO, pursuant to the Clean Water Act. These improvements ensure that pollutants from the CAFO do not enter Sales Creek. The work included conveying all stormwater runoff from the CAFO to a process water holding pond, where it is then pumped to the BWSC sanitary sewer system during dry weather, installing four sand filters to treat the runoff from the race track, installing a dedicated roof runoff collection system for the stable barns, and installing infiltration islands.

#### **Existing Hydrology**

Currently stormwater on the Project Site drains to three primary locations:

1. Stormwater from the western portion of the Project Site drains to a culvert that crosses under Route 1A. This culvert drains to an open channel that discharges to the Chelsea River.
2. Most of the Project Site drains to Sales Creek, including the race track, infield, main building and some parking areas. Sales Creek flows southeasterly through the Project Site passing through twin 96-inch culverts under the race track to an open channel traversing the infield where it flows under the back straight via twin 96-inch drains and discharges to an open channel between the track and Bennington Street immediately east of the Project Site.
3. The areas to the south and east of the track drain to an intermittent stream (H-series) located along the eastern perimeter of the Project Site, which also discharges into the open channel between the race track and Bennington Street.



Sales Creek discharges to Belle Isle Marsh. Both Belle Isle Marsh and Chelsea Creek ultimately discharge to Boston Harbor and the Atlantic Ocean. Sales Creek is isolated from tidal flows by the Bennington Street tide gates and a stormwater pumping station that is owned and operated by DCR. During lower tides, Sales Creek flows directly by gravity to Belle Isle Inlet through culverts under Bennington Street. During higher tides, when the tide gates are closed, flow in Sales Creek may be pumped to Belle Isle Inlet by the Bennington Street stormwater pumping station to mitigate high water levels in Sales Creek.

### **Critical Areas and Total Maximum Daily Loads**

Critical Areas as defined by Standard 6 of the 2008 DEP Stormwater Handbook are areas where high levels of stormwater treatment is required; typically, the first inch of runoff is treated using specific BMPs and pre-treatment methods. Specific source control and pollution prevention measures are also required.

The Massachusetts Surface Water Quality Standards (314 CMR 4.00) list both Sales Creek and the H-series intermittent stream as Class SA Outstanding Resource Waters ("ORW"). Pursuant to the Surface Water Quality Standards, these waters are designated as an excellent habitat for fish, other aquatic life, and wildlife and shall have an excellent aesthetic value.

Sales Creek ultimately discharges to Belle Isle Marsh, which consists of approximately 241-acres and is part of the larger Rumney Marsh ACEC. Belle Isle Marsh is designated as a shellfish growing area, although shellfishing is prohibited (with the exception of seed gathering for municipal propagation programs pursuant to a Division of Marine Fisheries permit). Both ORWs and shellfish growing areas are classified as critical areas.

DEP has issued a draft Pathogen Total Maximum Daily Load ("TMDL") for the Boston Harbor Watershed (excluding the Neponset River sub-basin). A TMDL is the greatest amount of a pollutant that a waterbody can accept and still meet water quality standards for protecting public health and maintaining the designated beneficial uses of those waters for drinking, swimming, recreation, and fishing. A TMDL is implemented by specifying how much of that pollutant can come from point, nonpoint, and natural sources. Urban runoff, combined sewer overflows, sewer overflows and heavy industrial activity have impaired Boston Harbor. Known pollutants include, but are not limited to, fecal coliform, e. coli, phosphorus, and total suspended solids.

## **8.4.2 Proposed Drainage Approach**

The Master Plan Project will be built-out with new stormwater management infrastructure that will significantly improve stormwater runoff quality compared to existing conditions. A combination of conventional and low impact development BMPs are anticipated to be implemented. The proposed system will be designed to

comply with the 2008 DEP Stormwater Management Handbook, as well as the WPA Regulations, and City of Boston and Revere Stormwater requirements.

Source control and pollution prevention measures will be essential to maintaining the quality of the receiving waters. The Long-Term Pollution Prevention Plan and the SWPPP will address this. The stormwater management system will be designed with the highest and best practicable treatment as it discharges to an ORW. All stormwater BMPs will be designed to treat a minimum of the first inch of runoff generated by the on-site paved impervious areas. LID practices such as biofiltration and stormwater re-use will be incorporated into the design where feasible.

The Master Plan Project will not cause further impairment to Boston Harbor and will ultimately terminate the existing CAFO. In accordance with the recommendations of the document entitled "Mitigation Measures to Address Pathogen Pollution in Surface Water: A TMDL Implementation Guidance Manual for Massachusetts", prepared for US EPA New England Region 1, methods such as stormwater infiltration and reuse for irrigation water will be maximized on-site to reduce the overall stormwater discharge from the Project Site, which in turn will reduce the probability of pathogens discharging from the Project Site.

The proposed stormwater management system will be designed to mitigate potential watershed impacts associated with redeveloping the Project Site. Stormwater management controls will be designed to control peak runoff rates, provide stormwater runoff quality, and promote groundwater recharge and sediment removal. The proposed system will be designed to comply with:

- › The 2008 DEP Stormwater Management Handbook;
- › The Massachusetts WPA Regulations (310 CMR 10.00);
- › City of Boston Stormwater Requirements; and
- › City of Revere Ordinances.

Although the Project Site discharges to LSCSF and, ultimately, the Atlantic Ocean, in order to demonstrate that the Master Plan Project will not impact the Bennington Street stormwater pumping station, pre- and post-development hydrologic conditions will be designed so that post-development stormwater runoff rates will be less than or equal to the pre-development rates.

To account for increased storm intensity projected to occur due to climate change, the 10-year and 100-year storm events used in the design of the proposed stormwater management system will be based on the BWSC increased rainfall recommendations of six inches and 8.8 inches, respectively.

### **Compliance with DEP Stormwater Management Standards**

The proposed stormwater management system for the Master Plan Project will be designed to be in compliance with the ten DEP Stormwater Management Standards.

The following summary provides key information related to the proposed stormwater management system, its design elements, and mitigation measures for potential impacts.

**Standard 1**

*No new stormwater conveyance (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

There will be no direct discharge of untreated stormwater to nearby wetlands or waters of the Commonwealth. Runoff from all impervious areas of the Project Site will be conveyed to stormwater management controls for water quality treatment and runoff rate attenuation prior to discharge to adjacent streams and wetlands.

**Standard 2**

*Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

Standard 2 requires post-development peak runoff rates to be less than or equal to pre-development peak runoff rates; however, this standard can be waived for discharges to LSCSF. The Project Site discharges to LSCSF and ultimately the Atlantic Ocean. However, prior to reaching the ocean, Sales Creek passes through the Belle Isle Stormwater Pump Station. Therefore, to ensure the Master Plan Project will not impact the downstream pump station, the stormwater management system will be designed to control post-development peak discharge rates for the 2-, 10-, and 100-year, 24-hour storms to maintain pre-development peak discharge rates.

**Standard 3**

*Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater management practices and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil types. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

The Master Plan Project will be designed to comply with this standard to the maximum extent practical. DEP recognizes that it may be difficult to recharge the required volume on certain sites because of soil conditions. The Natural Resources Conservation Service ("NRCS") Web Soil Survey indicates that soils within the race track consist of Udorthents soils with wet substratum. These soils are located in areas that were previously tidal marshes, river flood plains, bays, harbors, and swamps. The fill consists of rubble, refuse, and mixed soil material, typically, sand, gravel, and channel dredging. The parking area, stables, and grandstand areas are listed as Urban land with wet substratum. These soils consist of developed areas

within udorthents, wet substratum. No hydrologic soil class is assigned to these soil types, but permeability is typically low.

Test pits performed on the Project Site in 2012 indicated consistent fill material generally throughout the Project Site. The top 24-inches of soil are classified as either poorly graded sand or silty sand. Below 24-inches the soil is mostly unclassified fill, poorly graded sand, silty sand, or clayey sand. Groundwater was found on average two to seven-feet below existing grade.

Due to high groundwater and low permeability, opportunities for infiltration may be limited. However, Sales Creek appears to be the local groundwater discharge point, as well as the hydrogeologic divide on-site, which indicates that sufficient flow will be maintained to this system. The post-development stormwater peak runoff rates will approximate the pre-developed peak runoff rates to ensure adequate stream flow.

#### **Standard 4**

*Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).*

The Master Plan Project will be designed to meet the water quality requirements of Standard 4 using on-site treatment trains that achieve 80 percent TSS removal, as well as 44 percent pretreatment. Structural BMPs designed for water quality treatment, including deep sump hooded catch basins and water quality treatment systems, will be sized to capture and treat the flow rate associated with the first inch of runoff from the proposed impervious surfaces. All proposed stormwater management BMPs will be operated and maintained to ensure continued water quality treatment of runoff. A Site Owner's Manual that complies with the Long-Term Pollution Prevention Plan (Standard 4) and the Long-Term Operation and Maintenance Plan (Standard 9) requirements of the 2008 DEP Stormwater Management Standards will be developed. The Manual will outline the source control and pollution prevention measures and maintenance requirements of the stormwater BMPs associated with the Master Plan Project.

#### **Standard 5**

*For land uses with higher potential pollutant loads (LUHPPLs), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.*

The Master Plan Project is not associated with stormwater discharges from land uses with higher potential pollutant loads, therefore this Standard does not apply.

#### **Standard 6**

*Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas. Critical areas are Outstanding Resource Waters,*

*shellfish beds, swimming beaches, coldwater fisheries and recharge areas for public water supplies.*

The proposed BMPs will be consistent with the Stormwater Management Handbook for discharges within critical areas. The stormwater management system will be designed to capture and treat the first inch of runoff as stipulated in the Stormwater Management Handbook. Deep sump hooded catch basins and water quality treatment systems are proposed to remove pollutants from the first inch of runoff from all new impervious areas. Adequate pretreatment will be provided before discharge.

#### **Standard 7**

*Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.*

Although the Project Site consists of mostly previously developed area, the Master Plan Project will increase impervious area and, therefore, is classified as new development. The stormwater management system will fully comply with the standards of the WPA Regulations and Stormwater Management Handbook.

#### **Standard 8**

*A plan to control construction-related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

A SWPPP will be developed to comply with Section 3 of the NPDES Construction General Permit for Stormwater Discharges; therefore, the requirements of Standard 8 will be fulfilled.

#### **Standard 9**

*A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

The Site Owner's Manual will be developed to comply with the Long-Term Pollution Prevention Plan (Standard 4) and the Long-Term Operation and Maintenance Plan (Standard 9) requirements of the 2008 DEP Stormwater Management Standards. The Manual will outline source control and pollution prevention measures and maintenance requirements of the stormwater BMPs associated with the Master Plan Project.

#### **Standard 10**

*All illicit discharges to the stormwater management system are prohibited.*



There will be no illicit discharges to the proposed stormwater management system associated with the Master Plan Project. An Illicit Discharge Compliance Statement will be provided.

## **8.5 Sanitary Sewage**

### **8.5.1 Existing Wastewater System**

A regional sewer flow map is included as Figure 8.3. All existing wastewater flow from the Project Site currently discharges to the MWRA system and the Caruso Pump Station ("CPS"). From the CPS, flow is pumped to the MWRA North Metropolitan Trunk Sewer, which conveys flows to the MWRA Deer Island Wastewater Treatment plant.

#### **City of Boston Sewer Service**

The BWSC maintains and operates the local wastewater collection system in East Boston. An existing 12-inch gravity sewer in Waldemar Avenue flows to the east where it discharges to an existing 24-inch gravity sewer near the Suffolk Downs MBTA Blue Line Station that is part of the local sewer system zone called the East Boston Low Level Sewer ("EBLLS"). The EBLLS increases to 30-inch gravity sewer near Leverett Avenue before increasing to a 36-inch gravity sewer in Bennington Street. The EBLLS ultimately increases to a 39-inch by 54-inch sewer prior to discharging to the MWRA CPS.

#### **City of Revere Sewer Service**

The Revere DPW maintains and operates the local wastewater collection system near the Project Site. An existing 8-inch gravity sewer in Winthrop Avenue currently serves the Project Site in Revere. As depicted by Revere GIS, the wastewater flows to the east via existing infrastructure in Atlantic Avenue before reversing direction back to the west via Eliot Road through the Beachmont neighborhood. Flow continues to the west behind the Revere Police and Fire Station, through residential properties including a mobile home park, under McClellan Highway (Route 1A), through industrial properties, and ultimately connecting to Revere's main 36-inch wastewater interceptor in Revere Beach Parkway. The 36-inch interceptor extends south to a connection point with the MWRA system near the Chelsea River. The MWRA system continues through the City of Chelsea to the Chelsea Creek Headworks prior to discharging to the MWRA CPS.

### **8.5.2 Proposed Sewage Flow and Connections**

The projected sanitary sewage generation for each development program is summarized in Tables 8-2 and 8-3 below. Estimated flow rates indicated were

developed by application of the design rates included in the Title 5 State Environmental Code Regulations (310 CMR 15.00) to the Master Plan Project program. Note that these numbers are not reduced for existing wastewater generation associated with the current off track betting use as documented elsewhere herein and in the form (approximately 177,000 gpd).<sup>4</sup>

**Table 8-2 Projected Sewage Generation – Program A**

Use	Units/Rooms	Area (SF)	Flow (GPD)
Commercial	NA	8,000,000	±616,000
Residential	7,500	7,450,000	±1,189,000
Retail	NA	550,000	±414,000
Hotel	835	500,000	±92,000
<b>Total</b>	<b>-</b>	<b>16,500,000</b>	<b>±2,311,000</b>

**Table 8-3 Projected Sewage Generation – Program B**

Use	Units	Area (SF)	Flow (GPD)
Commercial	NA	5,250,000	±404,000
Residential	10,000	10,400,000	±1,670,000
Retail	NA	450,000	±329,000
Hotel	667	400,000	±73,000
<b>Total</b>	<b>-</b>	<b>16,500,000</b>	<b>±2,476,000</b>

As illustrated in the above tables, the maximum anticipated wastewater flow associated with the redevelopment of the Project Site is approximately 2.48 MGD under Program B. Program B has a higher generation than Program A, primarily because Program B has a higher amount of residential square footage than Program A.

Sanitary sewerage generated by the Master Plan Project elements will be collected in a network of sanitary sewer lines that will be developed on the Project Site as each element or group of elements are constructed. It is anticipated that this system of sanitary sewer lines will be located within roadways constructed to develop the Master Plan Project.

Based upon an understanding of the existing regional wastewater collection system and the existing Project Site discussed in Section 8.5.1, the Proponent will be coordinating with the cities of Boston and Revere, as well as the MWRA, to develop the most appropriate and technically feasible discharge connection points. It is anticipated that Boston wastewater flows will be directed to the southeast where existing BWSC infrastructure exists near Walley Street and the Suffolk Downs MBTA

<sup>4</sup> Domestic wastewater flow calculated based upon 10 percent reduction in metered water flow from BWSC. CAFO flow based on authorized average flow per MWRA Discharge Permit No. 4940368.

Blue Line Station. It is anticipated that Revere wastewater flow will be directed to the northwest where existing Revere DPW infrastructure exists in the vicinity of the intersection of Winthrop Avenue and North Shore Road. Both Boston and Revere flows discharge to regional MWRA collection and treatment facilities. Refer to Figure 8.4 for the anticipated sanitary sewer connections.

Increases in sanitary flows into these facilities, above those that currently exist, are expected, but it is anticipated that these additional flows will not exceed the capacity of the system. Both Boston and Revere anticipate being able to accept the amount of wastewater proposed given the timeframe of the overall Master Plan Project phasing and construction schedule. The capacity of the existing wastewater collection network and the anticipated increase in domestic or commercial wastewater flow will be studied in conjunction with BWSC, Revere DPW and the MWRA to determine appropriate mitigation as the Master Plan Project is developed. Additionally, an understanding of the capacity and operating conditions of the CPS including identifying upstream constraints will be closely coordinated with the MWRA.

The Proponent will obtain required permits from the respective authorities having jurisdiction. Compliance with the permit conditions will ensure conformance with wastewater management policies.

A conceptual plan of the on-site sewer system required to collect sanitary flows generated by the Master Plan Project and carry them into the regional system is being developed. As the Master Plan Project is further defined and the design of the system proceeds the project team will continue to coordinate its development with Boston, Revere, and MWRA staff. Construction of this system will meet applicable design standards.

### **Inflow/Infiltration Mitigation**

I/I mitigation is intended to identify project-specific measures or support system-wide reduction projects. I/I mitigation payments can be used by the BWSC and City of Revere to contribute to system-wide improvement projects.

#### ***Boston***

To ensure that the flows of sanitary sewage generated by the Master Plan Project do not adversely impact the regional wastewater systems, I/I mitigation equivalent to a 4:1 removal ratio for every gallon of wastewater proposed will mitigate possible capacity issues in the regional wastewater collection system. This requirement will be met with a payment to the BWSC of approximately \$2.41 per gallon at four times the proposed wastewater flow generated.

#### ***Revere***

Revere requires a 10:1 flow offset at a rate of \$1.30 per gallon of wastewater generated. The Proponent will work with the City of Revere to determine the

appropriate level of I/I mitigation whether through payments to Revere or direct undertaking of work.

## **8.6 Domestic Water and Fire Protection**

### **8.6.1 Existing Water Supply System**

Figure 8.5 depicts the existing water supply system that serves the Project Site. The MWRA operates transmission mains near the Project Site in both Boston and Revere. The BWSC and the Revere DPW purchase finished water (fluoridated and disinfected) from the MWRA. The MWRA obtains its water supply primarily from the Quabbin Reservoir, which is approximately 65 miles west of Boston and has an elevation of approximately 530 feet above the mean City elevation. The elevation differential creates a natural gravitational flow and thereby eliminates the need to pump water into the distribution system.

#### **City of Boston Water Supply**

BWSC maintains and operates the water distribution system in Boston. The BWSC distribution system is divided into four service zones. East Boston, Charlestown and Allston are serviced by the Northern Low Service ("NLS") zone. An additional small area of the Orient Heights section of East Boston is served by a single connection to the MWRA Northern High Service ("NHS") zone. Based on information provided by the BWSC, the water distribution network near the Project Site appears to be served by the NHS. Water distribution infrastructure exists in Waldemar Avenue, south of the Project Site. The diameter of the water main in Waldemar Avenue varies from 12 inches, reduces to eight inches, and increases to 10 inches as it traverses from west to east. The existing water service to the Project Site originates from the 10-inch portion of the water main adjacent to 97 Waldemar Avenue. It is anticipated that existing on-site water distribution infrastructure beyond the connection point in Waldemar Avenue will be demolished or abandoned in place as part of the Master Plan Project.

#### **City of Revere Water Supply**

Five water mains exist in Winthrop Avenue north of the Project Site. The MWRA has three transmission mains consisting of 30-inch, 24-inch and 16-inch water mains. The City of Revere owns and operates the remaining two mains consisting of 14-inch and 12-inch water mains. Existing water service to the Project Site originates from the 14-inch water main and serves the stable areas from multiple locations. An existing eight-inch City of Revere water main in Tomasello Drive also exists. It is anticipated that existing on-site water distribution infrastructure beyond the connection points in Winthrop Avenue will be demolished or abandoned in place as part of the proposed redevelopment program.

The condition and reliability of the Revere water mains are poor and the mains are designated to be rehabilitated by the City. Revere DPW is actively designing a new 16-inch main in Winthrop Avenue which will include at least two new 16-inch services into the Project Site.

### 8.6.2 Proposed Water Demand and Connections

The projected water demands for each of the proposed development programs are summarized in Tables 8-4 and 8-5 below. Note that these numbers are not reduced for existing water use associated with the current OTB use as described elsewhere herein and in the form (approximately 30,000 gpd). The Master Plan Project's estimated potable water demand has been determined by increasing the projected wastewater generation rate by a factor of 10 percent to account for consumptive losses. Assumptions relative to the uses (number of bedrooms, etc.) are the same as those used to estimate the wastewater generation in Section 8.5.2.

**Table 8-4 Projected Water Demand – Program A**

Use	Units	Area (SF)	Flow (GPD)
Commercial	-	8,000,000	±678,000
Residential	7,500	7,450,000	±1,307,000
Retail	-	550,000	±455,000
Hotel	835	500,000	±101,000
<b>Total</b>	<b>-</b>	<b>16,500,000</b>	<b>±2,541,000</b>

**Table 8-5 Projected Water Demand – Program B**

Use	Units	Area (SF)	Flow (GPD)
Commercial	-	5,250,000	±445,000
Residential	10,000	10,400,000	±1,837,000
Retail	-	450,000	±362,000
Hotel	667	400,000	±81,000
<b>Total</b>	<b>-</b>	<b>16,500,000</b>	<b>±2,725,000</b>

As illustrated in the above tables, the maximum anticipated water demand associated with the Master Plan Project is approximately 2.73 MGD under Program B.

Water service will be provided to the Master Plan Project elements via a network of water transmission and distribution lines that will be developed on the Project Site as each element or group of elements are constructed. It is anticipated that the system will interconnect transmission lines extended to the Project Site from existing water infrastructure in Boston and Revere. Boston water service will be looped from multiple locations on Waldemar Avenue and Walley Street. Revere water service will be looped from two locations off Winthrop Avenue to provide redundancy to the on-site distribution system.



Flow testing data from 2016 for 160 Waldemar Avenue indicates that adequate pressure in the Boston distribution system exists to support current demands; however, this will be confirmed during the design process.

Recent flow test data for the Winthrop Avenue distribution network in Revere is not readily available and will be confirmed during the design process. Historic test data for the area indicates adequate pressure exists in the service area for the current demands.

Both Boston and Revere anticipate being able to supply the amount of water necessary for the Project's domestic water supply and fire suppression demands. The Proponent will continue to work with both cities and the MWRA as appropriate to evaluate the water infrastructure systems and identify necessary mitigation as the Master Plan Project is developed.

A conceptual water supply system configuration is presented in Figure 8.6. Water infrastructure will be designed to the applicable design standards and standard engineering practice. Fire protection flow testing will be conducted during the design process. The public water supply will be protected by installing backflow protection devices on the fire protection service connections and on the domestic water systems wherever cross-contamination could potentially occur.

The following water conservation techniques will be evaluated and integrated as feasible:

- › Use of low flow plumbing fixtures;
- › Recycling and/or reuse of water;
- › Native, drought tolerant planting species in landscaping design;
- › Rain gauges to determine the volume of natural water provided to landscape areas; and
- › Stormwater storage and reuse for irrigation or other purposes.

## **8.7 Other Utilities**

The following sections describe other utility infrastructure (natural gas, electrical, telephone and telecommunications) around the Project Site and describe how this infrastructure will service the Master Plan Project.

### **8.7.1 Natural Gas Service**

Natural gas service will be provided at the Project Site connection point(s) by National Grid. The entire development is located in National Grid's service territory. The service size and any system upgrades in the public way will be based on the proposed loading data, reliability requirements and construction phasing. The on-site system and metering locations will be determined by the engineer of record,

local jurisdiction, and National Grid. Natural gas loading calculations will include energy conservation measures identified in the Master Plan Project.

### **8.7.2 Electrical Service**

Electric service will be provided at the Project Site connection point(s) by Eversource or National Grid or both, which will be determined through ongoing discussions with the utility providers. The Phase 1 Project Site is located in the Eversource service territory. The service size and any system upgrades in the public way will be based on the proposed loading data, reliability requirements, and construction phasing. The on-site system and metering locations will be determined by the engineer of record, local jurisdiction, and Eversource/National Grid. Electrical loading calculations will include energy conservation measures identified in the Energy Master Plan.

### **8.7.3 Telephone and Telecommunications**

Comcast is the only major communication company that serves the area around the site. Comcast provides high-speed internet, phone and cable TV based on the business need. Verizon is currently expanding into Boston, and may provide service to East Boston in the future. AT&T and other telecom providers' plans for expansion in the area are unknown.

### **8.7.4 Protection of Utilities During Construction**

Existing utility feeds to the Project Site will be disconnected and removed, unless otherwise needed for temporary and/or construction service. The temporary/construction utility connections will be installed per the public utility construction standards and in accordance with the local jurisdiction. These systems will be safe, resilient, and properly labeled and protected to ensure worker safety and minimize any construction delays.

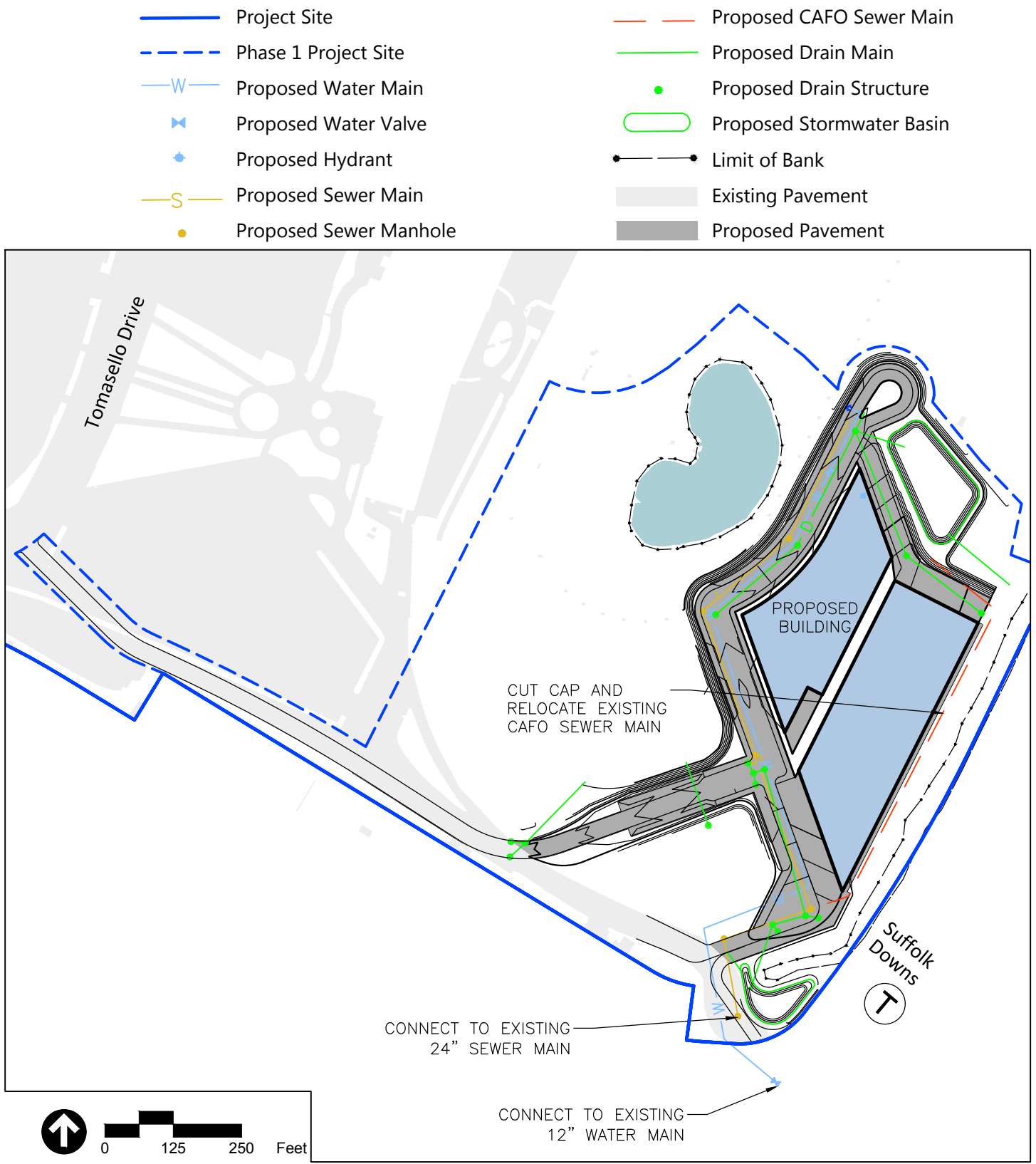
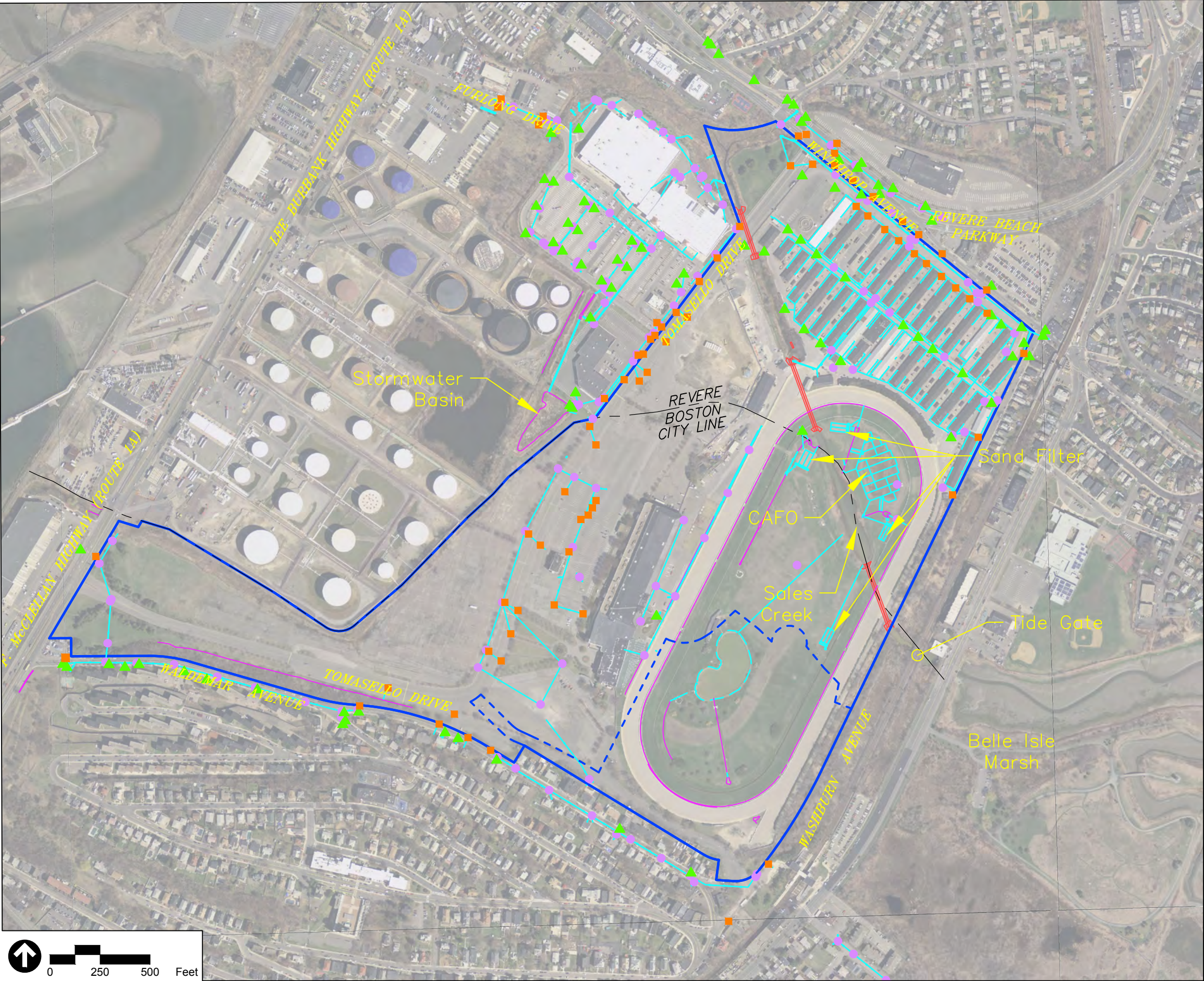


Figure 8.1  
Phase 1 Project Infrastructure

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**



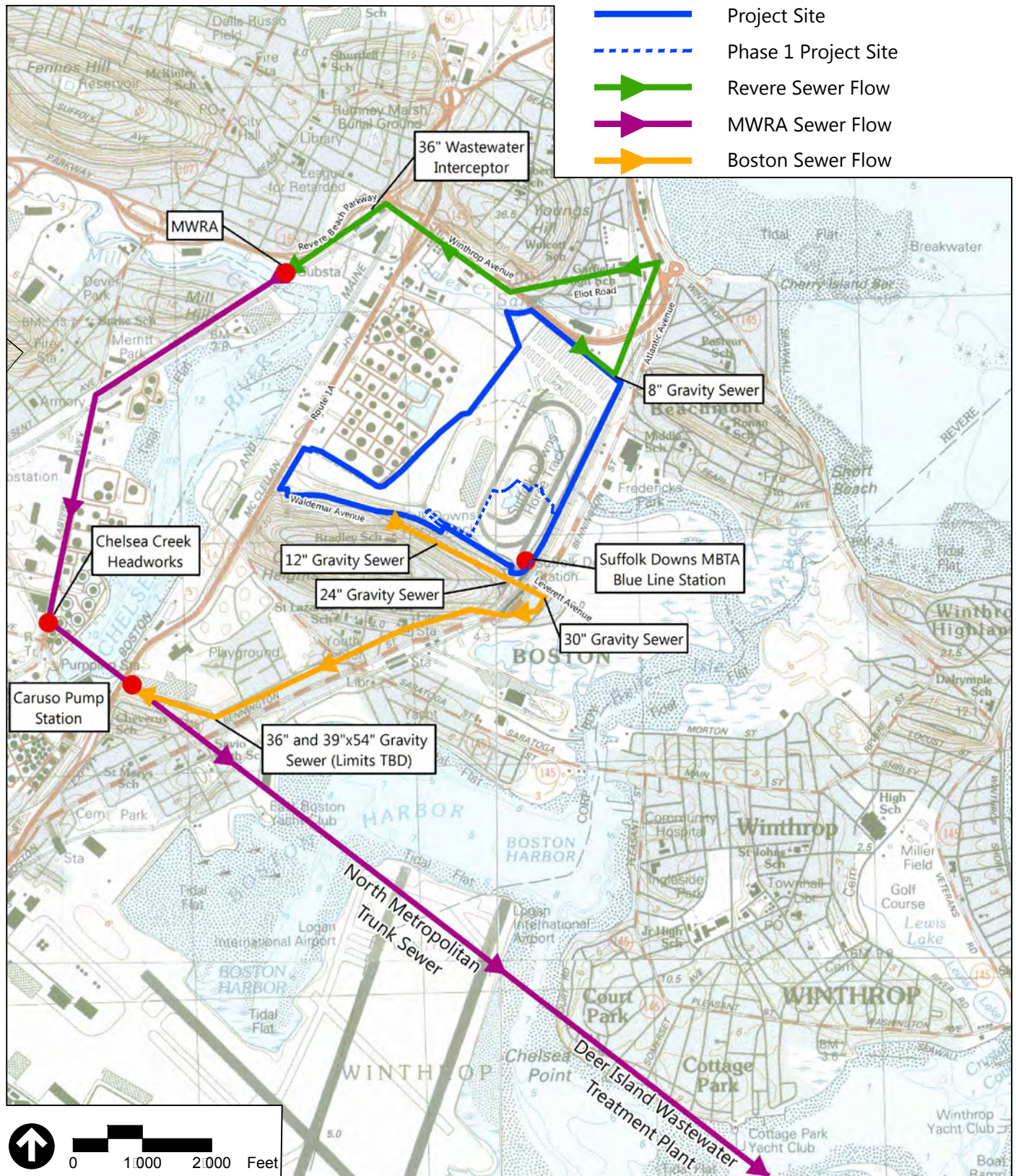


Source:  
Existing drainage infrastructure taken in part from electronic file 9180.1\_TOPO1.dwg prepared by Nitsch Engineering dated February 3, 2014, record plans prepared by municipal and public utility providers, as well as surface evidence.

Digital orthophotograph, MassGIS 2014.

Figure 8.2  
Existing Drainage Infrastructure





Source:  
Sewer lines estimated from Environmental Notification Form "Caesars Resort at Suffolk Downs, Boston and Revere, Massachusetts" dated January 31, 2013, EEA No. 15006. Sewer alignments are illustrative and do not necessarily represent actual locations.

Digital USGS Maps of Boston North and Lynn, MA, dated 1985, provided by MassGIS.

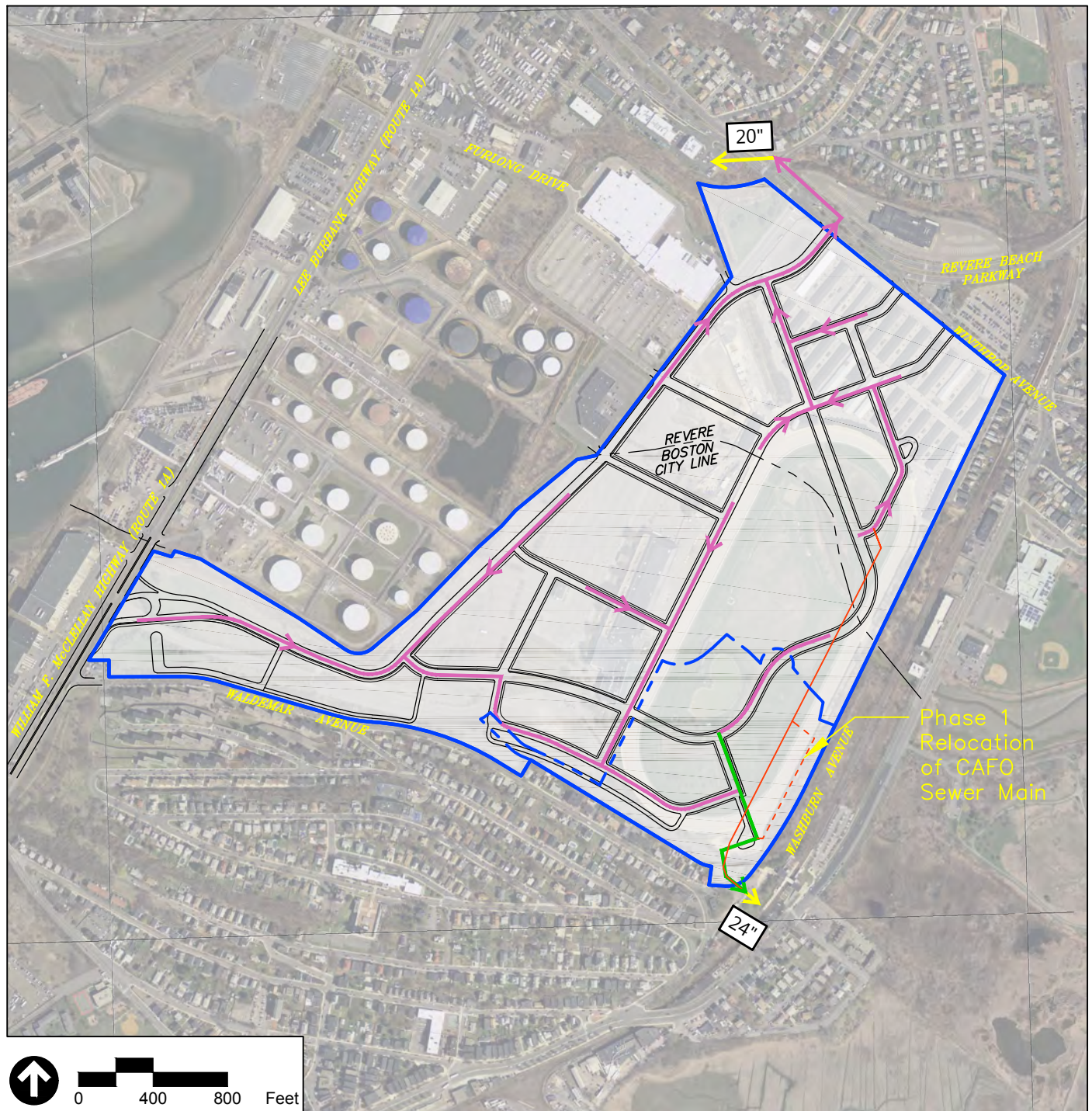
Figure 8.3

Existing Wastewater Infrastructure

### Suffolk Downs Redevelopment Boston & Revere, Massachusetts



- Project Site
- - - Phase 1 Project Site
- - - Municipal Boundary
- ➔ Phase 1 Proposed Sewer
- ➔ Master Plan Proposed Sewer
- ➔ Existing Sewer Mains
- Confined Animal Feeding Operation (CAFO) Sewer Main



Source:

Underground utilities were taken in part from electronic file 9180.1\_TOPO1.dwg prepared by Nitsch Engineering dated February 3, 2014, record plans prepared by municipal and public utility providers, as well as surface evidence.

Digital orthophotograph, MassGIS 2014.

Figure 8.4

Proposed Wastewater Infrastructure

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**









Source:  
Underground utilities were taken in part from electronic file 9180.1\_TOPO1.dwg prepared by Nitsch Engineering dated February 3, 2014, record plans prepared by municipal and public utility providers, as well as surface evidence.

Future water main information taken from "Route 145 (Revere Beach Parkway) Construction Plan" prepared by Howard Stein Hudson and dated August 10, 2017.

Digital orthophotograph, MassGIS 2014.

Figure 8.6

Proposed Water Infrastructure

**Suffolk Downs Redevelopment  
Boston & Revere, Massachusetts**

## **Appendix A: MEPA ENF Distribution List**

## Appendix A: MEPA Distribution List

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### Commonwealth of Massachusetts

Secretary Matthew A. Beaton  
Executive Office of Energy and  
Environmental Affairs  
Attn: MEPA Office  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Commissioner Martin Suuberg  
Department of Environmental Protection,  
One Winter Street  
Boston, MA 02108

DEP/Northeast Regional Office  
Attn: MEPA Coordinator  
205B Lowell Street  
Wilmington, MA 01887

DEP/Northeast Regional Office  
Surface Water Permitting (NPDES)  
Attn: Kevin Brander  
205B Lowell Street  
Wilmington, MA 01887

DEP/Northeast Regional Office  
Wetlands  
Attn: Rachel Freed  
205B Lowell Street  
Wilmington, MA 01887

Massachusetts Department of  
Transportation  
Public/Private Development Unit  
Attn: Lionel Lucien  
10 Park Plaza  
Boston, MA 02116

Massachusetts Department of  
Transportation – District #6  
Attn: MEPA Coordinator  
185 Kneeland Street  
Boston, MA 02111

Massachusetts Historical Commission  
The MA Archives Building  
220 Morrissey Boulevard  
Boston, MA 02125

Metropolitan Area Planning Council  
60 Temple Place, 6th Floor  
Boston, MA 02111

Coastal Zone Management  
Attn: Project Review Coordinator  
251 Causeway Street, Suite 800  
Boston, MA 02114

Division of Marine Fisheries  
251 Causeway Street  
Boston, MA 02114

Department of Conservation and  
Recreation  
Attn: MEPA Coordinator  
251 Causeway St. Suite 600  
Boston MA 02114

Department of Energy Resources  
Attn: MEPA Coordinator  
100 Cambridge Street, 10th floor  
Boston, MA 02114



Massachusetts Water Resource Authority  
Attn: MEPA Coordinator  
100 First Avenue  
Charlestown Navy Yard  
Boston, MA 02129

Massachusetts Bay Transit Authority  
Attn: MEPA Coordinator  
10 Park Plaza, 6th Fl.  
Boston, MA 02116-3966

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**City of Boston**

Boston City Council  
One City Hall Square, 5th Floor  
Boston, MA 02201

Boston Planning & Development Agency  
Attn: Brian P. Golden, Director  
One City Hall Square, 9th Floor  
Boston, MA 02201

Boston Conservation Commission  
One City Hall Square, Room 805  
Boston, MA 02201

Boston Public Health Commission  
Attn: Monica Valdes Lupi  
1010 Massachusetts Avenue  
Boston, MA 02118

Office of Environment, Energy &  
Open Space  
Attn: Austin Blackmon, Chief  
One City Hall Square, Room 709  
Boston, MA 02201

Chief of Economic Development  
Attn: John Barros  
One City Hall Square, 9th Floor  
Boston, MA 02201

Boston Transportation Department  
One City Hall Square, Room 721  
Boston, MA 02201

Boston Department of Public Works  
One City Hall Square, Room 714  
Boston, MA 02201

Boston Landmarks Commission  
One City Hall Square, Room 805  
Boston, MA 02201

Boston Water and Sewer Commission  
Attn: MEPA Reviewer  
980 Harrison Avenue  
Boston, MA 02119

Boston Public Library  
East Boston Branch  
365 Bremen Street  
East Boston, MA 02128

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**City of Revere**

Mayor Brian Arrigo  
City of Revere  
281 Broadway  
Revere, MA 02151

City Council  
City of Revere  
Attn: Ashley E. Melnik  
281 Broadway  
Revere, MA 02151

Revere Economic Development  
Department  
Attn: Robert O'Brien  
281 Broadway  
Revere, MA 02151

Revere Planning Board  
Attn: Frank Stringi, City Planner  
281 Broadway  
Revere, MA 02151

Revere Conservation Commission  
City Hall, Mezzanine Level  
Attn: Andrew B. DeSantis  
281 Broadway  
Revere, MA 02151

Revere Department of Public Works  
Attn: Donald Goodwin  
321 Charger Street Rear  
Revere, MA 02151

Revere Health Department  
281 Broadway  
Revere, MA 02151

Revere Public Library  
179 Beach Street  
Revere, MA 02151

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## **Appendix B: Letter of Intent**



November 8, 2017

BRA

'17 NOV 8 PM4:29:57

**BY HAND DELIVERY**

Mr. Brian Golden, Director  
Boston Planning and Development Agency  
Boston City Hall, 9<sup>th</sup> Floor  
One City Hall Square  
Boston, MA 02201

Re: Letter of Intent to File Project Notification Form  
Suffolk Downs Redevelopment Project

Dear Mr. Golden:

In accordance with the Executive Order Relative to the Provision of Mitigation by Development Projects in Boston issued on October 10, 2000, as amended, and Article 80 of the Boston Zoning Code (the "Code"), in anticipation of the submission of a Project Notification Form to commence the Article 80B Large Project Review process, this Letter of Intent is submitted to the Boston Planning & Development Agency (the "BPDA") by The HYM Investment Group, LLC ("HYM") on behalf of The McClellan Highway Development Company, LLC ("MHDC"), as the redeveloper of the Suffolk Downs Redevelopment Project (the "Project") located at 525 McClellan Highway in East Boston (the "Site").

The Project involves redevelopment of the Site, which is a 161-acre underutilized thoroughbred horse racing facility located within East Boston and Revere, Massachusetts. Approximately 109 acres of the Site is in East Boston, and approximately 52 acres is in Revere. Existing facilities at the Site include a clubhouse, grandstand, thoroughbred racetrack, an administration building, maintenance buildings, horse barns and extensive surface parking areas. The Boston portion of the Site is in the Suffolk Downs Economic Development Area of the East Boston Neighborhood District, which is governed by Article 53 of the Code. The Code identifies the Suffolk Downs Economic Development Area as a Special Study Overlay Area, and establishes the Boston portion of the Site as a potential location for a Planned Development Area ("PDA"). The Project site was also recently identified in the Boston 2030 Plan as a key site for Boston's future growth and targeted for a significant new transit oriented mixed-use development district.

Redevelopment of the Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods. HYM proposes that the Project include various improvements and benefits for the area and City of Boston, as follows:

- Development of a new neighborhood with an active, lively and appropriate mix of uses (including residential, retail, office, lab, hotel, parking and other uses), connected and supported by new open space, neighborhood retail and civic spaces;
- Provision of an extensive 40-acre publicly-accessible open space system which will include existing wetland features and both active and passive recreation areas;



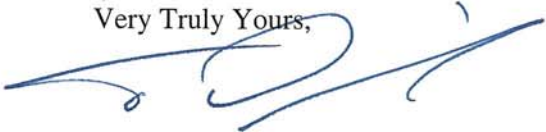
- Incorporation of extensive street-front retail anchored by two new retail squares, Beachmont Square and Belle Isle Square, as well as a new connecting “Main Street” retail district;
- Construction of a new district attractive to employers of growing industries which will enhance and expand job creation and economic opportunity;
- Incorporation of various kinds of housing to meet the needs of surrounding neighborhoods, including townhomes, apartments, condominiums, and senior housing;
- Application of transit-oriented-development principles, through integration of the two existing adjacent MBTA Blue Line Stations and alternative travel modes including new bicycle path connections and Hubway Stations;
- Development of improved connections to adjacent neighborhoods of East Boston and Revere through the Site, including along new open space and pedestrian and bicycle pathways; and
- Incorporation of forward-thinking climate change & resiliency strategies intended to address future sea level rise and other impacts of climate change.

Due to the size and complexity of the Project, we anticipate that the Project will require zoning relief through the creation of a PDA Development Plan under Section 80C of the Code. It is anticipated that the Project will include approximately 11 million square feet of development in Boston (which equates to an approximately 2.3 floor area ratio) in a number of buildings to be constructed in phases over a 15-20 year period. In addition, the Site has been identified by the City of Boston as a suitable potential location for Amazon’s second corporate headquarters. As part of its RFP, Amazon is seeking an approximately 500,000 square foot office building with ground floor retail space, and related infrastructure and open space improvements, to be delivered by the end of 2019. It is possible that, separate from the PDA for the larger master plan, expedited Large Project Review and additional zoning relief, including a zoning amendment or variance, may be required (for this single building only) to meet Amazon’s timetable requirements respecting its initial 500,000 SF building.

We anticipate submitting an Expanded Project Notification Form and look forward to working closely with the BPDA, the community and various city agencies during the review of the Project.

Thank you for your consideration of this letter.

Very Truly Yours,



Thomas N. O'Brien  
The McClellan Highway Development Company, LLC  
c/o The HYM Investment Group, LLC  
One Congress Street, 11<sup>th</sup> Floor  
Boston, MA 02114

cc: Douglas J. Manz – The HYM Investment Group, LLC  
Paul Crisalli – The HYM Investment Group, LLC  
Richard Rudman – DLA Piper

## Appendix C: Metes and Bounds

*Note:* Materials are provided on the enclosed CD-ROM due to large file size. Hard copies are available upon request.

## **Appendix D: Preliminary BPDA Checklists**

# Climate Change Preparedness and Resiliency Checklist for New Construction

In November 2013, in conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the Boston Redevelopment Authority adopted policy for all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding project resiliency, preparedness, and to mitigate any identified adverse impacts that might arise under future climate conditions.

For more information about the City of Boston's climate policies and practices, and the 2011 update of the climate action plan, *A Climate of Progress*, please see the City's climate action web pages at <http://www.cityofboston.gov/climate>

In advance we thank you for your time and assistance in advancing best practices in Boston.

## Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment ([www.climatechoices.org/ne/](http://www.climatechoices.org/ne/))
2. USGCRP 2009 (<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/>)
3. Army Corps of Engineers guidance on sea level rise (<http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf>)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (<http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf>)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr\*, Kara S. Doran and Peter A. Howd, 2012 ([http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf](http://www.bostonredevelopmentauthority.org/planning/Hotspot%20of%20Accelerated%20Sea-level%20Rise%202012.pdf))
6. "Building Resilience in Boston": Best Practices for Climate Change Adaptation and Resilience for Existing Buildings, Linnean Solutions, The Built Environment Coalition, The Resilient Design Institute, 2103 ([http://www.greenribboncommission.org/downloads/Building Resilience in Boston SML.pdf](http://www.greenribboncommission.org/downloads/Building_Resilience_in_Boston_SML.pdf))

## Checklist

Please respond to all of the checklist questions to the fullest extent possible. For projects that respond "Yes" to any of the D.1 – Sea-Level Rise and Storms, Location Description and Classification questions, please respond to all of the remaining Section D questions.

Checklist responses are due at the time of initial project filing or Notice of Project Change and final filings just prior seeking Final BRA Approval. A PDF of your response to the Checklist should be submitted to the Boston Redevelopment Authority via your project manager.

**Please Note:** When initiating a new project, please visit the BRA web site for the most current [Climate Change Preparedness & Resiliency Checklist](#).

## Climate Change Resiliency and Preparedness Checklist

### A.1 - Project Information

Project Name:	Suffolk Downs Redevelopment
Project Address Primary:	525 William F McClellan Highway, Boston, MA 02128
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Doug Manz / Director of Development / The HYM Investment Group, LLC / dmanz@hyminvestments.com / 617.248.2378

### A.2 - Team Description

Owner / Developer:	The McClellan highway Development Company, LLC c/o The HYM Investment Group, LLC
Architect:	CBT Architects
Engineer (building systems):	AKF
Sustainability / LEED:	ARUP
Permitting:	VHB
Construction Management:	TBD
Climate Change Expert:	LimnoTech

### A.3 - Project Permitting and Phase

At what phase is the project – most recent completed submission at the time of this response?

<b>PNF / Expanded PNF Submission</b>	Draft / Final Project Impact Report Submission	BRA Board Approved	Notice of Project Change
Planned Development Area	BRA Final Design Approved	Under Construction	Construction just completed:

### A.4 - Building Classification and Description

List the principal Building Uses:	Residential, Office, Lab, Commercial, Retail, Hotel,						
List the First Floor Uses:	Active Public Uses, Residential, Parking						
What is the principal Construction Type – select most appropriate type?	<table border="1"> <tr> <td>Wood Frame</td><td>Masonry</td><td>Steel Frame</td><td>Concrete</td></tr> </table>			Wood Frame	Masonry	Steel Frame	Concrete
Wood Frame	Masonry	Steel Frame	Concrete				
Describe the building?							
Site Area:	161 Acres (Total) 109 Acres (Boston)	Building Area:	16.5 MSF (Total) 11 MSF (Boston)				
Building Height:	50-220 Ft.	Number of Stories:	Varies.				
First Floor Elevation (reference Boston City Base):	TBD	Are there below grade spaces/levels, if yes how many:	Yes / Number of Levels TBD				



## A.5 - Green Building

Which LEED Rating System(s) and version has or will your project use (by area for multiple rating systems)?

Select by Primary Use:

<b>New Construction</b> Residential buildings	<b>Core &amp; Shell</b> Office	Healthcare	Schools
<b>Retail</b> Retail buildings	Homes Midrise	Homes	<b>Other – Hospitality</b> Hotel buildings
Select LEED Outcome:	<b>Certified</b> Retail	<b>Silver</b> Office, Hotel & Residential	Gold Platinum

Will the project be USGBC Registered and / or USGBC Certified?

Registered:

<b>Yes / No</b> All buildings
----------------------------------

Certified:

<b>Certification will be evaluated on a building by building basis</b>
--

## A.6 - Building Energy

What are the base and peak operating energy loads for the building?

What are the peak energy demands of your critical systems in the event of a service interruption?

What is nature and source of your back-up / emergency generators?

**Estimated peak building energy load and demand, and nature and source of back-up/emergency generators will be evaluated in greater detail in the DEIR/DPIR.**

---

## B - Extreme Weather and Heat Events

Climate change will result in more extreme weather events including higher year round average temperatures, higher peak temperatures, and more periods of extended peak temperatures. The section explores how a project responds to higher temperatures and heat waves.

### B.1 – Analysis

What is the full expected life of the project?

Select most appropriate:

10 Years	25 Years	<b>50 Years – Buildings</b>	<b>75 Years - Infrastructure</b>
----------	----------	---------------------------------	--------------------------------------

What is the full expected operational life of key building systems (e.g. heating, cooling, ventilation)?

Select most appropriate:

10 Years	<b>25 Years</b>	50 Years	75 Years
----------	-----------------	----------	----------

What time span of future Climate Conditions was considered?

Select most appropriate:

10 Years	<b>25 Years</b>	<b>50 Years</b>	<b>75 Years</b>
----------	-----------------	-----------------	-----------------

Analysis Conditions - What range of temperatures will be used for project planning – Low/High?

95 Deg.
---------

In all climate projections for Boston, there is a trend showing an increase in annual temperature, including both increases during the summer and winter months. As such, the coldest temperatures are being experienced in present day. Of these increases, those seen during the summer months will present the greatest challenges in terms of cooling loads and associated energy demands. Therefore, this project will focus on the summer peak temperatures and heat waves.

What Extreme Heat Event characteristics will be used for project planning – Peak High, Duration, and Frequency?

95 Deg.
---------

3 Days
--------

3 Events / yr.
----------------

What Drought characteristics will be used for project planning – Duration and Frequency?

**Drought tolerance will be addressed through a combination of native/adaptive plantings that require less water and maintenance, and a water-efficient irrigation system.**

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

42 Inches / yr.
-----------------

6.0 Inches
------------

0.1 Events / yr.
------------------

For seasonal conditions, a continuous simulation of rainfall for 2005-2015 was used. For peak runoff, 2-year, 10-year and 100-year, 24-hour design storms were used to evaluate pre- and post-construction runoff conditions. To accommodate increased future storm intensity the Boston Water and Sewer Commission recommendations regarding the 10-year and 100-year were used (specifically, 6" and 8.8", respectively).

What Extreme Wind Storm Event characteristics will be used for project planning – Peak Wind Speed, Duration of Storm Event, and Frequency of Events per year?

**Based on the uncertainty of how wind patterns and intensities will change with respect to future climatological conditions, current wind design criteria are adopted for the Master Plan Project**

## B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:

TBD %
-------

See below.

How is performance determined:

<b>Preliminary energy modeling for the Master Plan Project will be carried out in the next submission phase.</b>
--

What specific measures will the project employ to reduce building energy consumption?

Select all appropriate:

High performance building envelope [All typologies]
--

High performance lighting & controls [All Typologies]
--

Building day lighting [All Typologies]
---

EnergyStar equip. / appliances [Residential, Hotel & Retail]
---

High performance HVAC equipment [All typologies]
---

Energy recovery [All typologies]
-------------------------------------

No active cooling
-------------------

No active heating
-------------------

Describe any added measures:

<b>See Chapter 3 of the PNF/ENF for LEED compliance narratives.</b>
---

What are the insulation (R) values for building envelop elements? **TBD**

What specific measures will the project employ to reduce building energy demands on the utilities and infrastructure? **The Master Plan Project will study the feasibility and cost benefit of the following systems in the next submission phase.**

On-site clean
---------------

Building-wide
---------------

Thermal energy
----------------

Ground source
---------------

energy / CHP system(s)	power dimming	storage systems	heat pump
On-site Solar PV	On-site Solar Thermal	Wind power	None
Describe any added measures: <b>Central Plant(s) options</b>			

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:

<b>Connected to local distributed electrical</b>	<b>Building will be Smart Grid ready</b> This will be evaluated as the Master Plan Project develops.	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready
--	---	--	----------------------------------

Will the building remain operable without utility power for an extended period?

**The Master Plan Project is exploring resilience requirements for each typology of building, i.e. Office, Residential, Hotel and Retail during utility power outages.**

Describe any non-mechanical strategies that will support building functionality and use during an extended interruption(s) of utility services and infrastructure:

Select all appropriate:

Solar oriented – longer south walls	Prevailing winds oriented	<b>External shading devices</b>	Tuned glazing,
Building cool zones	<b>Operable windows</b> [Residential and Hotel buildings]	Natural ventilation	<b>Building shading</b>
Potable water for drinking / food preparation	Potable water for sinks / sanitary systems	Waste water storage capacity	<b>High Performance Building Envelope</b> [All typologies]
Describe any added measures: <b>The measures noted above have been and will continue to be evaluated for their feasibility per building typology and on a building by building basis as the Master Plan Project design develops.</b>			

What measures will the project employ to reduce urban heat-island effect?

Select all appropriate:

<b>High reflective paving materials</b>	<b>Shade trees &amp; shrubs</b>	<b>High reflective roof materials</b>	<b>Vegetated roofs</b>
Describe other strategies:			

What measures will the project employ to accommodate rain events and more rain fall?

Select all appropriate:

<b>On-site retention systems &amp; ponds</b>	<b>Infiltration galleries &amp; areas</b>	<b>Vegetated water capture systems</b>	<b>Vegetated roofs</b>
Describe other strategies:			

What measures will the project employ to accommodate extreme storm events and high winds?

Select all appropriate:

<b>Hardened building structure &amp; elements</b>	<b>Buried utilities &amp; hardened infrastructure</b>	<b>Hazard removal &amp; protective landscapes</b>	<b>Soft &amp; permeable surfaces (water infiltration)</b>
Describe other strategies: <ul style="list-style-type: none"> <li>- <b>Flexible areas designated for temporary extreme storm event flooding</b></li> <li>- <b>Site grading plan developed to maintain emergency access/egress to/from Project Site.</b></li> </ul>			

---

## C - Sea-Level Rise and Storms

Rising Sea-Levels and more frequent Extreme Storms increase the probability of coastal and river flooding and enlarging the extent of the 100 Year Flood Plain. This section explores if a project is or might be subject to Sea-Level Rise and Storm impacts.

### C.1 - Location Description and Classification:

Do you believe the building to be susceptible to flooding now or during the full expected life of the building?

Portions of the Project Site are located in Zone AE, (Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood; Base Flood Elevations Determined) as shown on "Flood Insurance Rate Map, Suffolk County, Massachusetts" Panels 19 and 38 of 176, Map Numbers 25025C0019J and 25025C0038J, effective March 16, 2016. The 100-year flood is classified as Land Subject to Coastal Storm Flowage and extends from Broad Sound via Belle Isle Inlet as well as from Boston Inner Harbor via the Chelsea River.

To reduce the risk of future flooding, the site has been designed with approximately 2 to 4 feet of fill to raise site grades from the existing average elevation of about 17.1± (Boston City Base). Proposed roadways and building first floor elevations are proposed to be higher than the 2070 1% probability flood elevation.

Site Elevation – Low/High Points:

Low Point: 14± (in  
Revere) 16± (in  
Boston); High Point  
40'± Boston City  
Base Elev.

Building Proximity to Water:

<65 Ft. +/-

Is the site or building located in any of the following?

Coastal Zone:

Yes

Velocity Zone:

No

Flood Zone:

Yes

Area Prone to Flooding:

Yes

Will the 2013 Preliminary FEMA Flood Insurance Rate Maps or future floodplain delineation updates due to Climate Change result in a change of the classification of the site or building location?

2013 FEMA  
Prelim. FIRMs:

No

Future floodplain delineation  
updates:

Not at this time

What is the project or building proximity to nearest Coastal, Velocity or Flood Zone or Area Prone to Flooding?

Portions of the Project Site are located within the Coastal Zone and Land Subject to Coastal Storm Flowage

---

***If you answered YES to any of the above Location Description and Classification questions, please complete the following questions. Otherwise you have completed the questionnaire; thank you!***

---

## C - Sea-Level Rise and Storms

This section explores how a project responds to Sea-Level Rise and / or increase in storm frequency or severity.

### C.2 – Analysis

How were impacts from higher sea levels and more frequent and extreme storm events analyzed:

Sea Level Rise:

3.3 Ft.

Frequency of storms:

Not analyzed

### C.3 - Building Flood Proofing

Describe any strategies to limit storm and flood damage and to maintain functionality during an extended periods of disruption.

What will be the Building Flood Proof Elevation and First Floor Elevation:

Flood Proof Elevation:

**Varies –  
Specific El. TBD**

First Floor Elevation:

**Varies –  
Specific El. TBD**

Will the project employ temporary measures to prevent building flooding (e.g. barricades, flood gates): **TBD**

What measures will be taken to ensure the integrity of critical building systems during a flood or severe storm event:  
**TBD**

Were the differing effects of fresh water and salt water flooding considered:

**Yes**

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

**Yes, key portions of  
the site will remain  
accessible**

If yes, to what height above 100  
Year Floodplain:

**Specific El. TBD**

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

**Not Anticipated**

If Yes, describe:

Will the building remain occupiable without utility power during an extended period of inundation:

**The Master Plan Project is exploring resilience requirements for each typology of building, i.e. Office, Residential, Hotel and Retail during utility power outages.**

**Yes / No**

If Yes, for how long:

**TBD**

Describe any additional strategies to addressing sea level rise and or sever storm impacts:

**A large portion of the Project Site is anticipated to be designated as temporary storm and sea level rise storage and will remain at the existing grade. Additionally, the Project Site will use low impact development standards designed to infiltrate and detain regular stormwater runoff.**

### C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:

**Yes / No**

**Hardened /  
Resilient  
Ground Floor  
Construction**

**Temporary  
shutters and or  
barricades**

**Resilient site  
design, materials  
and construction**

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:

**Yes / No**

**Surrounding  
site elevation  
can be raised**

**Building ground  
floor can be  
raised**

**Construction been  
engineered**



Describe additional strategies:

**The Master Plan Project is evaluating ground floor elevations on a building by building basis. Refer to Section C for site elevation changes.**

Has the building been planned and designed to accommodate future resiliency enhancements?

**The Master Plan Project is studying the implications of solar ready and will consider this and implementation of Solar PV on a building by building basis. Further enhancements will be studied as part of the central plant feasibility study to be undertaken.**

Select appropriate:

Yes / No	Solar PV	Solar Thermal	Clean Energy / CHP System(s)
	Potable water storage	Wastewater storage	Back up energy systems & fuel

Describe any specific or  
additional strategies:

--

Thank you for completing the Boston Climate Change Resilience and Preparedness Checklist!

For questions or comments about this checklist or Climate Change Resiliency and Preparedness best practices, please contact: [John.Dalzell.BRA@cityofboston.gov](mailto:John.Dalzell.BRA@cityofboston.gov)

## **Accessibility Checklist**

(to be added to the BRA Development Review Guidelines)

In 2009, a nine-member Advisory Board was appointed to the Commission for Persons with Disabilities in an effort to reduce architectural, procedural, attitudinal, and communication barriers affecting persons with disabilities in the City of Boston. These efforts were instituted to work toward creating universal access in the built environment.

In line with these priorities, the Accessibility Checklist aims to support the inclusion of people with disabilities. In order to complete the Checklist, you must provide specific detail, including descriptions, diagrams and data, of the universal access elements that will ensure all individuals have an equal experience that includes full participation in the built environment throughout the proposed buildings and open space.

In conformance with this directive, all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding the following:

- improvements for pedestrian and vehicular circulation and access;
- encourage new buildings and public spaces to be designed to enhance and preserve Boston's system of parks, squares, walkways, and active shopping streets;
- ensure that persons with disabilities have full access to buildings open to the public;
- afford such persons the educational, employment, and recreational opportunities available to all citizens; and
- preserve and increase the supply of living space accessible to persons with disabilities.

We would like to thank you in advance for your time and effort in advancing best practices and progressive approaches to expand accessibility throughout Boston's built environment.

### **Accessibility Analysis Information Sources:**

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
  - a. [http://www.ada.gov/2010ADASTandards\\_index.htm](http://www.ada.gov/2010ADASTandards_index.htm)
2. Massachusetts Architectural Access Board 521 CMR
  - a. <http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html>
3. Boston Complete Street Guidelines
  - a. <http://bostoncompletestreets.org/>
4. City of Boston Mayors Commission for Persons with Disabilities Advisory Board
  - a. <http://www.cityofboston.gov/Disability>
5. City of Boston – Public Works Sidewalk Reconstruction Policy
  - a. [http://www.cityofboston.gov/images\\_documents/sidewalk%20policy%200114\\_tcm3-41668.pdf](http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf)
6. Massachusetts Office On Disability Accessible Parking Requirements
  - a. [www.mass.gov/anf/docs/mod/hp-parking-regulations-mod.doc](http://www.mass.gov/anf/docs/mod/hp-parking-regulations-mod.doc)
7. MBTA Fixed Route Accessible Transit Stations
  - a. [http://www.mbta.com/about\\_the\\_mbta/accessibility/](http://www.mbta.com/about_the_mbta/accessibility/)

## Project Information

Project Name:	Suffolk Downs Redevelopment
Project Address Primary:	525 William F McClellan Highway, Boston, MA 02128
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Doug Manz / Director of Development / The HYM Investment Group, LLC / dmanz@hyminvestments.com / 617.248.2378
Owner / Developer:	The McClellan highway Development Company, LLC c/o The HYM Investment Group, LLC
Architect:	CBT Architects
Engineer (building systems):	AKF
Sustainability / LEED:	ARUP
Permitting:	VHB
Construction Management:	TBD

## Project Permitting and Phase

At what phase is the project – at time of this questionnaire?

PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BRA Board Approved
BRA Design Approved	Under Construction	Construction just completed:

## Building Classification and Description

What are the principal Building Uses - select all appropriate uses?

Residential – One to Three Unit	Residential - Multi-unit, Four +	Institutional	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List)	Varies		

## Article 80 | ACCESSIBILITY CHECKLIST

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	Concrete
------------	---------	-------------	----------

Describe the building?

Site Area:	161 Acres (Total) 109 Acres (Boston)	Building Area:	161 Acres (Total) 109 Acres (Boston)
Building Height:	50-220 Ft.	Number of Stories:	Varies.
First Floor Elevation:	TBD	Are there below grade spaces:	Yes

### Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and proximate institutions such as, but not limited to hospitals, elderly and disabled housing, and general neighborhood information. The proponent should identify how the area surrounding the development is accessible for people with mobility impairments and should analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the development neighborhood and identifying characteristics.

The Project Site is currently home to the Suffolk Downs race track facility. The western side of the Project Site is bordered by land that includes a retail shopping center, properties containing fuel storage tanks owned by Irving Oil Terminals Inc. and Global Petroleum, and McClellan Highway (Route 1A). Winthrop Avenue is located along the northern boundary of the Project Site. The neighborhood north of Winthrop Avenue is Crescent Beach, which in turn borders Revere Beach and the Atlantic Ocean; the Project Site is located less than one mile from the beach and ocean. Washburn Avenue, the MBTA Blue Line, and Bennington Street (which connects East Boston to the City of Revere and is a route for access to the Town of Winthrop (via Saratoga Street, Route 145) lie east of the Project Site. Waldemar Avenue and the Orient Heights residential neighborhood of East Boston are located immediately south of the Project Site.

List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.

One of the Project Site's greatest strengths is its two direct connections to the MBTA Blue Line - Beachmont and Suffolk Downs stations. Using the Blue Line, the Project Site is just five minutes from Logan Airport and 11 minutes from State Street, in the heart of Boston's financial district. The Blue Line also offers connections to South Station and its commuter rail lines via the Silver Line, and to North Station and Back Bay Station and their respective commuter rail lines via the Orange Line.

List the surrounding institutions: hospitals, public housing and elderly and disabled housing

To be determined

## Article 80 | ACCESSIBILITY CHECKLIST

developments, educational facilities, etc.

Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.

To be determined

### Surrounding Site Conditions – Existing:

This section identifies the current condition of the sidewalks and pedestrian ramps around the development site.

Are there sidewalks and pedestrian ramps existing at the development site?

There are no existing sidewalks, however there is one pedestrian ramp.

**If yes above**, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.

The pedestrian ramp leads to the front door of the existing grandstand building from the adjacent parking lot. This is a concrete ramp.

Are the sidewalks and pedestrian ramps existing-to-remain? **If yes**, have the sidewalks and pedestrian ramps been verified as compliant? **If yes**, please provide surveyors report.

No. All existing sidewalks and pedestrian ways are to be removed and replaced. Any non-compliant conditions will be improved and brought into compliance.

Is the development site within a historic district? **If yes**, please identify.

No

### Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps in and around the development site. The width of the sidewalk contributes to the degree of comfort and enjoyment of walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortably pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.



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Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: [www.bostoncompletestreets.org](http://www.bostoncompletestreets.org)

Yes

**If yes above**, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.

Varies

What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.

Varies

List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?

Material selection is to be determined.

If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?

Undetermined at this time.

Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?

Undetermined at this time.

**If yes above**, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?

### Proposed Accessible Parking:

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability Handicap Parking Regulations.

What is the total number of parking spaces provided at the

Undetermined at this time.

## Article 80 | ACCESSIBILITY CHECKLIST

development site parking lot or garage?

What is the total number of accessible spaces provided at the development site?

Will any on street accessible parking spaces be required? **If yes**, has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?

Where is accessible visitor parking located?

Has a drop-off area been identified? **If yes**, will it be accessible?

Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.

The Master Plan Project will comply with City requirements.

Accessible parking spaces will be provided. The Proponent has not yet contacted the CPD or BTB regarding this need, but will do so when details of on street parking are prepared.

Accessible visitor parking locations have not yet been determined.

Undetermined at this time.

### Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to accommodate persons of all abilities that allow for universal access to entryways, common spaces and the visit-ability\* of neighbors.

*\*Visit-ability – Neighbors ability to access and visit with neighbors without architectural barrier limitations*

Provide a diagram of the accessible route connections through the site.

Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.

Are the accessible entrance and the standard entrance integrated?

Refer to Figure 2.12 in Chapter 2, *Urban Design*, for a preliminary Site circulation plan. All pedestrian pathways will be accessible, and all buildings will feature accessible entrances.

Entries will have a combination of flush conditions, stairs, and accessible ramps.

Undetermined at this time.

## Article 80 | ACCESSIBILITY CHECKLIST

If no above, what is the reason?

Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.

Has an accessible routes way-finding and signage package been developed? If yes, please describe.

Undetermined at this time.

No. Such signage will be developed further into the design process.

### Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

What is the total number of proposed units for the development?

7,500-10,000 units

How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?

Undetermined at this time.

How many accessible units are being proposed?

The number of accessible units at the Master Plan Master Plan Project will be determined as the Master Plan Project advances.

Please provide plan and diagram of the accessible units.

Details will be determined as the designed advances.

How many accessible units will also be affordable? If none, please describe reason.

The number of affordable accessible residential units will be determined as the Master Plan Project design advances.

Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. If yes, please provide reason.

The interior building design is early in its development, however, it is not anticipated that either residential units or common spaces will have any architectural barriers.

Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission

The Master Plan Project has not yet been presented to the City of Boston Mayor's Commission for Persons with Disabilities Advisory board. The Project Team will meet with the Board as the Master Plan Project design advances and is fully committed to delivering a Project that is ADA compliant.

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for Persons with Disabilities  
Advisory Board?

Did the Advisory Board vote to  
support this project? **If no**, what  
recommendations did the Advisory  
Board give to make this project  
more accessible?

The Master Plan Project has not yet been reviewed by the Advisory Board.

Thank you for completing the Accessibility Checklist!

For questions or comments about this checklist or accessibility practices, please contact:

[kathryn.quigley@boston.gov](mailto:kathryn.quigley@boston.gov) | Mayors Commission for Persons with Disabilities

## **Appendix E: Greenhouse Gas Emissions Assessment Supporting Documentation**



# ENERGY CONSUMPTION AND GHG EMISSIONS

	Energy Consumption (MMBtu/year)			Energy Use Intensity (kBtu/sf/year)	
	Baseline	Phase 1 Project	% savings	Baseline	Phase 1 Project
Office	30,689	23,072	25%	59	44
Parking Garage	1,512	1,042	31%	7	5
Total Project	32,202	24,114	25%	44	33

**REVISED FOR 520,000 GSF OFFICE 11.27.2017**

ENERGY TOTALS										GHG emissions (tons/yr)		
		Phase 1 Project			Phase 1 Project							
Energy Metric	Unit	Baseline	Phase 1 Project (Proposed)	Savings (%)		Baseline	Phase 1 Project (Proposed)		Savings (%)	Baseline	Phase 1 Project (Proposed)	Savings (%)
Total Electricity Consumption	MMBtu/year	12,060	10,285	-	kBtu/year	12,059,897	10,284,794	1,775,103	15%	1320	1126	15%
Total Natural Gas Consumption	MMBtu/year	18,630	12,787	-	kBtu/year	18,629,579	12,786,808	5,842,771	31%	1090	748	31%
Total Energy Consumption	MMBtu/year	30,689	23,072	25%	kBtu/year	30,689,475	23,071,601	7,617,874	25%	2410	1874	22%
Total Energy Cost	\$/year	760,755	617,463	19%								
Building Site Energy Use Intensity (EUI)	kBtu/sf/year	59	44									

**REVISED FOR 215,000 GSF PARKING GARAGE 11.28.2017**

ENERGY TOTALS										GHG emissions (tons/yr)		
		Phase 1 Project			Phase 1 Project							
Energy Metric	Unit	Baseline	Phase 1 Project (Proposed)	Savings (%)		Baseline	Phase 1 Project (Proposed)		Savings (%)	Baseline	Phase 1 Project (Proposed)	Savings (%)
Total Electricity Consumption	MMBtu/year	1,512	1,042	-	kBtu/year	1,512,200	1,041,914	470,286	31%	165	114	31%
Total Natural Gas Consumption	MMBtu/year	0	0	-	kBtu/year	0	0	0	-	0	0	-
Total Energy Consumption	MMBtu/year	1,512	1,042	31%	kBtu/year	1,512,200	1,041,914	470,286	31%	165	114	31%
Total Energy Cost	\$/year	\$70,909	\$48,857	31%								
Building Site Energy Use Intensity (EUI)	kBtu/sf/year	7	5									

**TOTAL PROJECT (OFFICE & PARKING) 11.28.2017**

ENERGY TOTALS										GHG emissions (tons/yr)		
		Phase 1 Project			Phase 1 Project							
Energy Metric	Unit	Baseline	Phase 1 Project (Proposed)	Savings (%)		Baseline	Phase 1 Project (Proposed)		Savings (%)	Baseline	Phase 1 Project (Proposed)	Savings (%)
Total Electricity Consumption	MMBtu/year	13,572	11,327	-	kBtu/year	13,572,097	11,326,708	2,245,389	17%	1485	1240	17%
Total Natural Gas Consumption	MMBtu/year	18,630	12,787	-	kBtu/year	18,629,579	12,786,808	5,842,771	31%	1090	748	31%
Total Energy Consumption	MMBtu/year	32,202	24,114	25%	kBtu/year	32,201,675	24,113,515	8,088,160	25%	2575	1988	23%
Total Energy Cost	\$/year	\$831,665	\$666,320	20%								
Building Site Energy Use Intensity (EUI)	kBtu/sf/year	44	33	25%								

**CONVERSION TABLE**

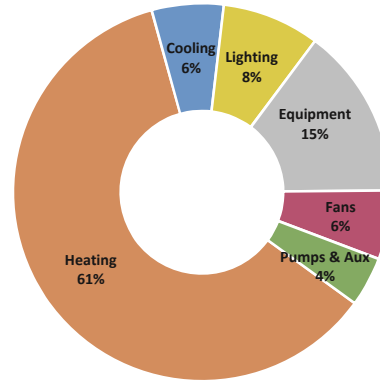
CONVERT	MULTIPLY BY
KWH TO MWH	0.0
MWH TO LBS <sup>2</sup>	747.0
THERMS TO MBTU	0.1
LBS TO SHORT TONS	0.0005
kBTU to KWH	0.293
MMBTU to LBS <sup>3</sup>	117.0

2 mwh to lbs of CO2 conversion factor from 2015 ISO New England Electric Generator Air Emissions Report

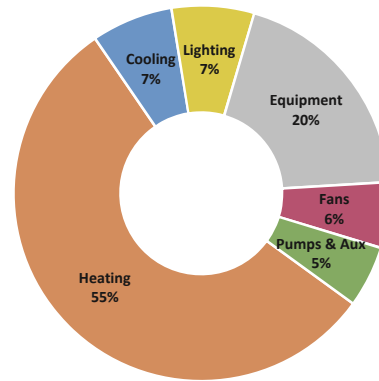
3 [https://www.eia.gov/environment/emissions/co2\\_vol\\_mass.cfm](https://www.eia.gov/environment/emissions/co2_vol_mass.cfm)

**BASELINE - OFFICE ONLY**

End Use	Value (Mbtu)	Percentage
Heating	18,629	58
Cooling	1,887	6
Lighting	2,570	8
Equipment	4,492	14
Fans	1,804	6
Pumps & Aux	1,307	4
	30,689	

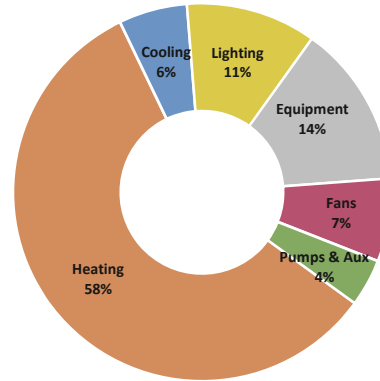
**PROPOSED - OFFICE ONLY**

End Use	Value	Percentage
Heating	12,787	53
Cooling	1,623	7
Lighting	1,640	7
Equipment	4,494	18
Fans	1,306	5
Pumps & Aux	1,223	5
	23,072	

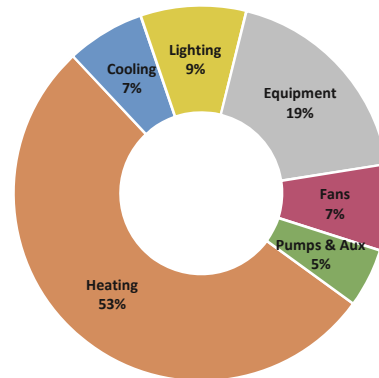


**BASELINE - OFFICE & PARKING**

End Use	Value (Mbtu)	Percentage
Heating	18,629	58
Cooling	1,887	6
Lighting	3,599	11
Equipment	4,492	14
Fans	2,287	7
Pumps & Aux	1,307	4
	32,201	

**PROPOSED - OFFICE & PARKING**

End Use	Value	Percentage
Heating	12,787	53
Cooling	1,623	7
Lighting	2,198	9
Equipment	4,494	18
Fans	1,789	7
Pumps & Aux	1,223	5
	24,114	





# SOLAR PHOTOVOLTAICS ANALYSIS

## Phase 1 Project Solar Photovoltaic (PV) Feasibility Analysis

### Solar Photovoltaic (PV)

Solar PV system feasibility analysis has been undertaken for a roof mounted system across the two (2) buildings in the Phase 1 Project. Only the highest roof areas have been included in the analysis as lower roof areas will be shaded throughout the year and are intended to be occupied as amenity space for occupants. The analysis included 20% of the roof area for solar PV allowing space for mechanical systems, setbacks for safety and maintenance and potential for additional uses on the roof.

The rooftop PV arrays could produce approximately 785 MMBtu/year, 3 percent of the total building energy consumption and offset approximately 60 metric tons of CO<sub>2</sub> per year, a 4 percent reduction.

A simple payback analysis indicates a payback of approximately 12 years which accounts for a continuation of the federal incentive of 30% of the total installed cost as well as an estimation of feed-in tariff rates for the forthcoming Solar Massachusetts Renewable Target "SMART" program in Massachusetts. It is very important to note that the details and rate structure of the SMART program are yet to be finalized. Any proposed system on the Phase 1 Project would also be subject to declining blocks (i.e. rate structures) depending on when the system would be permitted under the SMART program. These blocks are currently estimated to be filled up on a 6 month basis.

Additionally, it is anticipated that a tariff will be implemented in 2018 on the import of foreign PV panels which could significantly impact the pricing of panels and systems throughout the US.

Given the current uncertainty in the solar PV market both federally and at the state level, the project will continue to assess the feasibility of a roof mounted solar PV system as the design develops. This analysis has shown however, that a solar PV system is the best use of available roof area for a renewable energy system for the Phase 1 project.

	EUI (kBtu/sf/yr)	ENERGY (MMBtu/yr)	CO <sub>2</sub> e (tons/yr)	ENERGY SAVINGS (%)	CO <sub>2</sub> e SAVINGS (%)
ROOF PV	44	785	60	3	4

	Construction Cost <sup>1</sup> (\$)	ENERGY COST Savings <sup>2</sup> (\$)	SIMPLE PAYBACK (Years)
ROOF PV	630,000	52,900	11.9

<sup>1</sup> Construction Cost includes federal incentive of 30% of total installed cost.

<sup>2</sup> Energy cost savings include SMART incentives of \$0.21/kWh for a 25-200kW system and an additional incentive of \$0.02/kWh for building mounted systems for a total of \$0.23/kWh.

### Solar Thermal

There is more than enough available roof area for a solar thermal system as domestic hot water demand in an office building is very low. A system that would offset 65% of the heating load associated with

domestic hot water would require approximately 7,000 square feet of roof space and 73 evacuated tube panels. The system was sized to eliminate overproduction of hot water in the summer (i.e. peak).

This translates to approximately 3% percent in energy savings and a 2% percent carbon footprint reduction. A simple payback analysis indicates a payback of 22 years.

Solar thermal has not been recommended as it competes with solar PV for roof area, and solar PV is currently indicated to be a more cost-effective approach to producing renewable energy on-site.

	EUI (kBtu/sf/yr)	ENERGY (MMBtu/yr)	CO2e (tons/yr)	ENERGY SAVINGS (%)	CO2e SAVINGS (%)
ROOF Thermal	44	680	36	3	2

	Construction Cost (\$)	ENERGY COST Savings (\$)	SIMPLE PAYBACK (Years)
ROOF THERMAL	153,245	6,875	22.3

## **Appendix F: Wetlands and Waterways Supporting Documentation**



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI  
Governor

JANE SWIFT  
Lieutenant Governor

BOB DURAND  
Secretary

LAUREN A. LISS  
Commissioner

June 23, 2000

Greg D. Peterson  
Hill & Barlow  
One International Place  
Boston, MA 02110-2600

Dear Mr. Peterson:

In response to your inquiry about the status of Suffolk Downs under Chapter 91, the Department has concluded based upon further review of maps, the licensing history, and a site visit that the Suffolk Downs property is no longer subject to jurisdiction. We summarize here the basis for our opinion.

Much of the property (Bk 21541, Pg 247; Doc.# 553756) was originally salt marsh, elevated above mean high water. Smaller portions of the property were open, tidal channels and upland. The flowed tideland areas were filled pursuant to Chapter 311 of the Acts of 1894 and a series of licenses and state reclamation plans issued in the 1930s. Those licenses also authorized the permanent exclusion of tidal action on the site though the construction of tidegates and other structures and the artificial re-engineering of prior channels (and digging of new channels) as drainage channels. A more recent authorization in 1993 allowed the replacement of these tidegates and the further excavation of drainage channels. The result of these activities is a site consisting predominately of upland fill and some drainage features. The filled tidelands are now landlocked (entirely separated from flowed tidelands by public ways including among others, State Highway Route 1A, Revere Beach Parkway, Saratoga Street and Bennington Street) and greater than 250 feet from the high water mark (see 310 CMR 9.02). According to 310 CMR 9.02, therefore, the Department has determined that the filled tidelands are no longer subject to jurisdiction. The ditches and drainage basin are not flowed tidelands, due to the tidegates, nor are they natural rivers or streams. Instead, the areas containing water appear to be freshwater drainage conduits to prevent flooding of the filled areas.

The situation at Suffolk Downs is distinguishable from the jurisdictional status of areas such as along the Charles River where the Department has extended jurisdiction over filled tidelands. These distinguishable cases involve a natural pond, river, or stream which is clearly

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

DEP on the World Wide Web: <http://www.state.ma.us/dep>

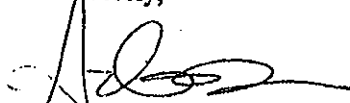
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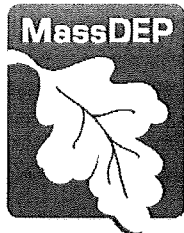
navigable and remains connected to flowed tidelands even if interrupted by a lock, culvert, or other intervening connection structure. On the other hand, the drainage created at this site for flood control does not constitute a natural pond, river, or stream. In addition, the drainage pipes, culverts and channels do not, and were intended not to, preserve tidal flow or navigation. The inundated lands under certain sections of the drainage channels may arguably, as a technical matter, be impressed with some residual public rights, however, the Department has determined that the interest is so minimal, remote, and alienated that we do not believe that remnant interest is germane to c. 91. The Department has therefore decided not to assert jurisdiction under these circumstances.

If requested, the Department will evaluate any new information submitted which supplements the substantial basis developed for this interpretation and finding letter. This letter supersedes any prior communications from the Department on this matter. Please let me know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Arleen O'Donnell', with a stylized flourish at the end.

Arleen O'Donnell  
Assistant Commissioner



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK  
Governor

TIMOTHY P. MURRAY  
Lieutenant Governor

RICHARD K. SULLIVAN JR.  
Secretary

KENNETH L. KIMMELL  
Commissioner

March 26, 2013

Richard K. Sullivan Jr., Secretary  
Executive Office of  
Energy & Environmental Affairs  
100 Cambridge Street  
Boston MA, 02114

RE: Boston/Revere  
Caesars Resort at Suffolk Downs  
Suffolks Downs Racecourse  
Route 1A Tomasello Drive  
EEA # 15006

Attn: MEPA Unit

Dear Secretary Sullivan:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) submitted by Sterling Suffolk Racecourse, LLC to construct a resort casino on the 161 acre, Suffolk Downs Racetrack property in Boston and Revere (EEA #15006). The site is bisected by the Rumney Marshes Area of Critical Environmental Concern (ACEC), which extends along Sales Creek. The casino will comprised of up to 450 hotel rooms in two hotels; multi-purpose meeting space; approximately 16 restaurants; 200,000 square feet (sf) of gaming space; 30,000 sf of retail space; and parking that includes a seven-story parking garage with about 2,600 spaces, valet parking for 450 vehicles, and 2,100 surface parking spaces. The Suffolk Downs Grandstand building will be repurposed to support one of the casino areas. The entire project is estimated at 1,802,363 sf in several linked buildings, and it exceeds several MEPA thresholds, which make the project categorically included for the preparation of an environmental impact report. MassDEP provides the following comments.

### Wastewater

The ENF states that there is sufficient capacity in the existing collection system to accommodate the estimated 307,080 gallons per day (gpd) of new wastewater flow, which will increase the wastewater discharge to 473,100 gpd from the project site. Since new flows from the site will be greater than 50,000 gpd, a sewer extension/connection permit will be required. Additional information on the sewer extension and connection regulations is available on the MassDEP website: <http://www.mass.gov/dep/service/regulations/314cmr07.pdf>. Flows from the entire project must be included in the MassDEP Sewer Connection Permit Application. Wastewater generated by the project will discharge into the City of Boston's sewer system and ultimately flow to the MWRA's Deer Island Wastewater Treatment Facility. The wastewater flow generation estimation should be expanded from the information provided in the

ENF. Wherever possible, the flow generation numbers noted in 314 CMR 7.15 or 310 CMR 15.203(2) – (5) should be used as design flows. In this regard, the estimate for theatre seats should be five gallons per day (gpd)/seat and not three gpd/seat, as noted in the ENF. Flows from existing areas which are to remain may be estimated using existing water meter data. Future flows which are not encompassed in the regulations cited above should be based on best engineering judgment, and typically can be determined utilizing 200 percent of the average daily flows using actual data from similar facilities. The method used to produce flow estimates must be detailed in the DEIR.

MassDEP collaborates with the MWRA and its member communities, (including Boston), in implementing a flow control program in the MWRA regional wastewater system to remove extraneous clean water, which is referred to as infiltration/inflow (I/I) from the sewer system. Proponents adding significant new wastewater flow participate in the I/I reduction effort to ensure that the additional wastewater flows from their projects are offset by the removal of I/I, which is typically at a rate of four gallons of I/I removed for every gallon of wastewater added. In accordance with the provisions of the MassDEP policy on I/I mitigation requirements in MWRA communities, (available at <http://www.mass.gov/dep/water/laws/mwrai09.pdf>), I/I mitigation is a required element of a MassDEP sewer connection permit for projects which generate greater than 15,000 gallons per day of wastewater flow where a project exceeds any MEPA threshold for an DEIR or if the project has a significant risk of creating conditions leading to a sanitary sewer overflow. Given the scope and impacts of the proposed project, and the need for I/I mitigation, the proponent should arrange to meet with MassDEP and the cities of Boston and Revere to develop a plan to meet the mitigation requirements of the MassDEP I/I Policy.

### **Chapter 91, Waterways Licensing**

The ENF suggests that no Chapter 91 license is required for the project because it is not located on jurisdictional tidelands. This view is consistent with a prior opinion from MassDEP in June, 2000, that found the tidelands on the site are non-jurisdictional because they are landlocked tidelands in accordance with the definition of that term in the waterways regulations at 310 CMR 9.02. The Department has confirmed the conclusion of the 2000 correspondence through a careful review of previous Chapter 91 licenses, dating back to the late 1800's, that were issued for the filling of tidelands, installation of tidegates, and creation of drainage features at and adjacent to the project site.

While projects on landlocked tidelands are not subject to licensing, they are required to seek a Public Benefits Determination by the Secretary. According to the ENF, the DEIR will include more information regarding the projects benefits to public trust rights in tidelands. The Department will review and comment upon the DEIR's discussion of the public benefits provided by the project.

### **Wetlands**

MassDEP requests a description of the wetland resources onsite and off-site where project-related work or mitigation is proposed. The DEIR should quantify the extent of unavoidable wetland alteration, including both temporary and permanent impacts. Plans at a readable scale should show the boundaries of all wetland resource areas and areas to be altered.

The proposal also should explain how the project will comply with the applicable performance standards as required in the wetlands regulations and demonstrate that wetland alteration has been avoided and minimized to the extent feasible through preparation of an alternatives analysis (see 310 CMR 10.55(4)). Where opportunities exist, revised site designs should be considered in order to avoid and minimize wetland impacts. The proposal should include plans depicting and quantifying wetlands replication areas and information on how altered wetland functions will be restored.

According to the ENF, the project will fill 480,000 square feet (sf) of Bordering Land Subject to Flooding (BLSF), and this loss will be compensated with 140,000 cubic feet (cf) of compensatory flood storage. The areas of impact and compensation will need to be shown on plans at a readable scale. Compensatory flood storage must be provided at an incremental basis, in accordance with the performance standards under 310 CMR 10.57(4).

In addition, off-site work relating to the project would alter 40,000 sf of Land Subject to Coastal Storm Flowage (LSCSF). This area also needs to be shown on the project plans. MassDEP also requests a full description of this floodplain area and an explanation for classifying this area as LSCSF, rather than BLSF.

### **Stormwater**

A new stormwater drainage system is proposed for the two casino areas, parking garage, and surface parking areas. As explained in the ENF, the stormwater system for the CAFO operations in the northern and northeastern portions of the site is expected to remain as is.

According to the ENF, the Redevelopment Standard 7 in the MassDEP stormwater management regulations (SMR), (310 CMR 10.05(6)(k)), is applicable to the project. This standard allows the proponent to demonstrate that the standards have been met "to the maximum extent practicable," where it is not feasible to comply with the standards fully. However, this is a largely underdeveloped project site that includes the Rumney Marshes ACEC, and the nearby waterbodies are impaired, such that total maximum daily loads (TMDL) are needed and a draft pathogen TMDL has been established. Therefore, MassDEP strongly encourages the proponent to evaluate stormwater management designs in the DEIR that fully comply with the SMR performance standards in order to protect the ACEC and conform to the goals established in the pathogen TMDL. The project has an opportunity and obligation to contribute toward the ongoing revitalization of this significant natural resource, which notably received one million dollars last year from the U.S Fish and Wildlife Service (USFWS) National Coastal Wetland Conservation Grant Program (NCWCG) to restore 33 acres of the 2,000 acre Rumney Marsh, the largest contiguous salt marsh habitat in the Boston metropolitan area.

As specified for redevelopment in the *Stormwater Management Handbook Volume 1*, a demonstration of "to the maximum extent practicable" entails a demonstration that all reasonable efforts have been made to comply with the standards, including considering on and off-site alternatives. "The scope and effort to be undertaken to meet the standards should reflect the scale and impacts of the proposed project and the classification and sensitivity of the affected wetlands and water resources." Conventional best management practices (BMPs) and low impact

development techniques are proposed for compliance with the applicable performance standards. Currently, there are no detailed stormwater management plans in the ENF.

The DEIR should demonstrate that the project's water quality and quantity impacts would be controlled with best management practices (BMPs) to comply with SMR standards and for consistency with the applicable Storm Water Programs under the NPDES Phase I and Phase II Stormwater General Permits for MassDOT and the cities of Boston and Revere. These state and local stormwater management programs have requirements and implementation strategies to control the release of pollutants in stormwater runoff to impaired waterbodies with total maximum daily loads (TMDLs). As there is a *Draft Pathogen TMDL for the Boston Harbor Watershed (excluding the Neponset River sub-basin)* for impaired and non-impaired waterbodies in the vicinity of the project site, the stormwater management study should consider how stormwater controls conform to the TMDL and associated implementation strategies established for pathogens. In general, the MassDEP report, *Mitigation Measures to Address Pathogen Pollution in Surface Water: A TMDL Implementation Guidance Manual for Massachusetts*, recommends the use of infiltration BMPs to control pathogens. "Given the high concentrations of bacteria often found in stormwater and the lack of targeted mitigation measures, perhaps the most effective means of reducing stormwater contributions to pathogen impairment is to reduce the volume of runoff by increasing infiltration to groundwater." The DEIR should present a thoughtful analysis of the effectiveness of the stormwater management system in controlling the recognized water quality impairments, particularly pathogens, taking into consideration pollution prevention, source control, BMPs, and system maintenance. Additional information on pathogen mitigation is available in this report; it is available at the following MassDEP website: <http://www.mass.gov/dep/water/resources/impguide.pdf>.

Stormwater runoff impacts during construction and post-construction will need to be evaluated in the DEIR, including off-site transportation mitigation and sewer-related work. It is anticipated that the stormwater management report will be sufficiently detailed to demonstrate that source controls, pollution prevention measures, erosion and sediment controls, and the post-development drainage system will be designed in compliance with the MassDEP stormwater management regulations, pursuant to 310 CMR 10.05(6)(k) and all applicable performance standards, including Standard 6 for Critical Areas such as ACECs, which are addressed in greater detail in the Stormwater Management Handbooks.

The DEIR also should demonstrate that source controls, pollution prevention measures, erosion and sediment controls during construction, and the post-development drainage system will be designed to comply with the SMR and standards for water quality and quantity impacts and for consistency with the Storm Water Programs identified previously. Calculations, stormwater system design plans at a readable scale, best management practice (BMP) designs, and supporting information should demonstrate that the stormwater system design protects wetland resources in conformance with the stormwater regulations and NPDES permits.

#### *Low Impact Development*

The proponent is considering low impact development (LID) and the use of integrated management practices (IMP) for control of stormwater in combination with conventional drainage control measures, as the SMR requires. The range of LID techniques offers a



stormwater management approach that minimizes runoff impacts by maintaining and mimicking existing hydrologic functions. LID can be less costly than conventional gutter and pipe drainage systems to construct and maintain. LID also can provide redundancy for stormwater control.

The current project layout reduces imperviousness by about nine acres, which downsizes the volume of stormwater that will need to be controlled and may allow infiltration of rainwater to limit the release of contaminants from the site into nearby marshland and waterbodies. Currently 71 acres of the 161 acre site are impervious, with 90 acres considered pervious. This project also is suitable for other low impact development (LID) stormwater control strategies and practices. For example, flat-roof buildings could be vegetated as green roofs, and pervious pavement could be used for low intensity parking areas and sidewalks on site. There also may be an opportunity to add raingardens/bioretention areas and tree box filters for enhanced stormwater infiltration in open space and landscaped strips. Additional information on LID practices with high environmental performance efficiencies is available on the following USEPA website: [www.epa.gov/nps/lid](http://www.epa.gov/nps/lid).

### **Greenhouse Gas Emissions (GHG)**

According to the ENF, the project “will set a new standard of excellence in sustainable design...” for similar facilities. The goal for this project is the US Building Council’s Leadership in Energy and Environmental Design (LEED) Gold rating. The project will need to comply with the City of Boston’s Article 37 Zoning Ordinance and the applicable Stretch Building Code, which is being revised and expected to take effect either this year or 2014. It is anticipated that the DEIR will describe the design measures that will be adopted to achieve at least these standards, in addition to providing a full analysis of mobile and stationary sources of greenhouse gas emissions. The proposed project is subject to the *MEPA Greenhouse Gas Emissions Policy and Protocol (Policy)* as amended on May 5, 2010.

The policy requires energy modeling to quantify projected energy consumption and the related GHG emissions from direct and indirect stationary sources, and to evaluate the energy efficient design alternatives that will be incorporated into the project to reduce greenhouse gas emissions. The policy allows the proponent to select a model; however, MassDEP and DOER recommend using EQUEST for stationary source modeling. The DEIR should include the modeling printout for at least three scenarios: base case, preferred alternative case, and preferred alternative with greater GHG mitigation case. In addition, the DEIR should include emission tables that compare base case emissions in tons with the mitigation alternatives showing the reduction in tons and percentage by emissions source, direct, indirect and transportation. Other tables or graphs that show the tonnage and percentage reduction of major mitigation elements are also very useful in comparing the value added of different measures. The DEIR should explain, in reasonable detail, any measure not selected that has the potential to significantly reduce GHG emissions. At this stage of the MEPA review, the proponent anticipates that the project would include high efficiency chillers, condensing boilers, water and airside economizers, heat recovery, high efficiency lighting, lighting controls, and water conserving plumbing fixtures.

The Massachusetts Clean Energy and Climate Plan 2020 estimates that MEPA project reviews will contribute by reducing approximately 100,000 Metric Tons of CO<sub>2</sub> equivalent by 2020. Significant projects, such as Caesars Resort are integral to the achievement of this goal.

Therefore, MassDEP encourages the proponent to adopt cutting-edge energy efficient designs and equipment wherever feasible, taking into consideration that energy efficient designs yield cost-savings over time.

At this early planning stage, the proponent is evaluating on-site anaerobic digestion (AD) to reduce organic waste from the casino and racetrack, which can generate an alternative fuel source for the project. In addition, photovoltaics (PV), green roofs, and combined heat and power (CHP) will be given consideration. The DEIR should layout information and plans to understand the feasibility of incorporating renewable energy into the project design. Should a renewable energy option be infeasible, it is requested that the DEIR provide an explanation and a thoughtful discussion of the changes that would be needed for reconsideration of that alternative.

MassDEP is very supportive of CHP for this project, in light of the information provided by USEPA on CHP and casinos, such as the USEPA factsheet and market analysis, which are available at the following websites: [http://www.epa.gov/chp/markets/casino\\_fs.html](http://www.epa.gov/chp/markets/casino_fs.html) and [http://www.epa.gov/chp/documents/hotel\\_casino\\_analysis.pdf](http://www.epa.gov/chp/documents/hotel_casino_analysis.pdf), respectively. According to USEPA, CHP is a viable option for a significant number of large hotels and casinos; CHP typically supplies 50 to 70 percent of the electricity needed. As the proponent proceeds with the technical and economic feasibility evaluation, it may be helpful to consult the CHP Partnership, an organization that assists with the design process and to identify financing options and other services that can be accessed through the USEPA website: <http://www.epa.gov/chp/>. In addition, MassDEP has promulgated regulations to encourage the installation of CHP systems. These regulations may be found at 310 CMR 7.26(45) Combined Heat and Power (CHP).

#### Anaerobic Digestion(AD) to Energy

MassDEP supports the proponent's efforts to evaluate AD as an energy source for this project and requests that the DEIR describe and provide plans for an AD system, or alternative AD systems that would utilize available resources to meet the project's energy needs. The potential for GHG emissions reductions from an alternative fuel should be considered in the DEIR.

In terms of air quality permitting, the proponent has the option of either complying in full with the MassDEP regulations for engines and turbines in 310 CMR 7.26(43), or alternatively, complying with the Best Available Control Technology (BACT) requirements in 310 CMR 7.02(5). The engine and turbine regulations apply to engines that have a power output rating equal to or greater than 50kW and turbines with a rated power output less than or equal to ten MW.

If the alternative approach and BACT is selected, the requirements for top-case BACT are explained in the commercial AD BACT Guidance document, entitled *Current Best Available Control Technology (BACT) Requirements*, which is available at the following MassDEP website: <http://www.mass.gov/dep/air/approvals/bactadc.pdf>. In addition, detailed information on the Air Quality (AQ) Plan Approval process, as well as the AQ forms that would be needed in order to obtain a written AQ Plan Approval are available on the following MassDEP website: <http://www.mass.gov/dep/air/approvals/aqforms.htm#airpapp>.

In addition, with respect to any proposed AD component of the project, the DEIR should discuss the applicability of MassDEP's regulations promulgated in November 2012 for the purpose of building capacity for managing organic materials (310 CMR 16.00, 310 CMR 19.00 & 314 CMR 12.00). These regulatory amendments were developed to address barriers to the development of certain types of recycling, composting, and other clean/green cutting edge technologies in the Commonwealth, such as AD. The regulatory changes were created to bring the regulations up-to-date with innovative clean energy technologies by establishing a clear permit pathway for these activities; thereby facilitating siting of these projects and ensuring that high environmental standards are met. Among other things, these regulations exempt certain activities from solid waste site assignment requirements and set forth a straightforward pathway for permitting certain recycling, composting, and conversion (RCC) activities.

MassDEP is available to hold pre-application meetings with the proponent in order to fully answer any technical questions concerning regulatory requirements for AD, and to describe the best path to take to fulfill the regulatory requirements expeditiously. However, in the event that an AD system is found to be infeasible for the project, MassDEP requests that the DEIR provide an organics management plan for the project.

### **Air Quality**

The ENF estimates that the project will generate 24,600 new vehicle trips per day based on a preliminary analysis which will be refined in the Draft Environmental Impact Report (DEIR). Nevertheless, it is anticipated that the final, new vehicle trip projection will exceed MassDEP's review threshold of 3,000 daily trips for mixed use development requiring an air quality mesoscale analysis of project related emissions. The purpose of the mesoscale analysis is to determine to what extent the proposed project trip generation will increase the amount of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the project study area. The proposed project also is subject to the MEPA Greenhouse Gas Emissions Policy and Protocol (Policy) as amended on May 5, 2010. The Policy requires the project proponent to quantify project-related carbon dioxide (CO<sub>2</sub>) emissions and identify measures to avoid, minimize, and mitigate these emissions. The mesoscale analysis also should be used for this purpose. The analysis must compare the indirect emissions from transportation sources under future No Build, Build, and Build with Mitigation conditions. Subsequent environmental filings should include the results of the mesoscale analysis for VOC, NOx, and CO<sub>2</sub> emissions under these conditions.

MassDEP supports the proponent's commitment to collaborate with the MBTA to enhance transit service to the site and to mitigate the impacts of the project-related traffic through a combination of local and regional roadway improvements, transportation demand management (TDM), and parking management.

### **Enhanced Transit Service**

The project site enjoys excellent transit connections with nearly direct access via Suffolk Downs and Beachmont Blue Line Stations, local bus service, and limited express bus service. MassDEP recommends that the proponent exploit the potential of this transit-rich location by promoting transit service to the project site from neighboring communities, Logan Airport, Downtown, and the Seaport District. Accordingly, the DEIR should explore all reasonable opportunities for trip reduction and management tailored to the specific needs of employees and

patrons with particular emphasis on transit connections as well as bicycle and pedestrian infrastructure and amenities. MassDEP recommends that the project proponent consider the following three actions:

- Work closely with the MBTA to consider adding an on-site bus stop for the Express Bus Routes 424, 434, 448, and 449 for increased transit service to the site.
- Maintain the existing Suffolk Downs shuttle service to adjacent Blue Line stations and expand the shuttle service as necessary to accommodate additional Blue Line ridership to the project site.
- Offer active support for any future consideration to expand the Silver Line into East Boston and Chelsea. Should the Hubway bike share program expand into East Boston, MassDEP recommends the proponent support an on-site docking station.

MassDEP encourages the proponent to explore these and other opportunities for trip reduction and management and recommends that the DEIR includes greater emphasis on pedestrian and bicycle measures that take advantage of the project's proximity to several transit options.

#### Recommended Mitigation Measures

In addition to MassDEP's aforementioned recommendations and the transit demand management (TDM) measures presented in the ENF, MassDEP recommends that the DEIR contain a greater emphasis on TDM and mitigation measures to reduce project related emissions, such as the following measures:

- Provide market incentives that encourage patrons to seek travel by charter bus service rather than private automobile.
- Charge market price for parking spaces used by single occupant vehicle (SOV) drivers. Proponents can charge a fee to those who drive alone, while keeping parking free for bus, transit, carpool or vanpool.
- Offer parking cash-out incentives to employees whose parking is provided. This strategy encourages employers/tenants to provide employees with an option for compensation for not utilizing dedicated parking spaces, thus encouraging employees to seek alternative modes of transportation such as walking, biking, carpooling, or taking public transit to work.
- Provide expanded private shuttle service to transit connections for both employees and patrons.
- Improve proposed bicycle parking by providing short and long term accommodations, as appropriate, for project employees and patrons. Bicycle parking should be secure, convenient, weather protected, and sufficient to meet demand.
- Work with Boston officials to support and fund as necessary, off-site, improved bicycle access to the project site, including the use of the most recent MassDOT Design Guidelines or engineering judgment, as appropriate.
- Offer Alternative Work Schedules to all employees as well as staggered work shifts, where appropriate, to reduce peak period traffic volumes.
- Provide Direct Deposit for employees.

- Participate in the USEPA SmartWay Transport Program. SmartWay is a voluntary program that increases energy efficiency and reduces greenhouse gas emissions.
- Provide Guaranteed Ride Home to those employees who regularly commute by transit, bicycle, or vanpool to the site and who have to leave work in the event of a family emergency or leave work late due to unscheduled overtime.
- Establish infrastructure that provides publicly available electric vehicle charging facilities.
- Provide electronic signage displaying shuttle and transit schedule information.
- Dedicate space for Car Sharing/Bike Sharing. The proponent should dedicate a minimum of two car sharing spaces in the proposed garage. MassDEP recommends the proponent provide support and dedicated space for bike sharing on site as this concept expands into the area.
- Hire an Employee Transportation Coordinator to administer the parking management program. A Coordinator can act as a point of contact for the various tenants within a given development, help enforce the parking requirements, and carry out any other day-to-day tasks and strategies from the rest of the list above.
- Unbundle hotel guest parking fees from accommodation rates, thus encouraging alternative travel mode choice.
- Provide preferential and free parking for guests using carpools.
- Explore shared parking opportunities to take advantage of the varying parking demand periods of nearby facilities.

#### Recommended Construction Period Air Quality Mitigation Measures

Diesel emissions contain fine particulates that exacerbate a number of health conditions, such as asthma and respiratory ailments. MassDEP recommends that the proponent work with its staff to implement construction-period diesel emission mitigation, which could include the installation of after-engine emission controls such as oxidation catalysts or diesel particulate filters, or the use of construction equipment that meet Tier 3 or Tier 4 emission standards for non-road construction equipment. Additional information is available on the MassDEP website: <http://www.mass.gov/dep/air/diesel/connetro.pdf>. In addition, project contractor(s) are required to use ultra low diesel fuel (ULSD) in their off-road construction equipment in conjunction with after-engine emission controls.

#### Required Mitigation Measures: Compliance with the Massachusetts Idling Regulation

The ENF acknowledges the Massachusetts Idling regulation (310 CMR 7.11) which prohibits motor vehicles from idling their engines more than five minutes unless the idling is necessary to service the vehicle or to operate engine-assisted power equipment (such as refrigeration units) or other associated power. The DEIR should address how the project will ensure compliance with the regulation. Questions regarding this regulation should be directed to Julie Ross of MassDEP at 617-292-5958.

#### **Recycling Issues**

MassDEP acknowledges the proponent's commitment to recycle and reuse as much of the construction and demolition (C&D) waste as feasible. The proponent also should be aware of



that certain materials are restricted from disposal, pursuant to 310 CMR 19.017 and that demolition activities must comply with both Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54, which provides:

“Every city or town shall require, as a condition of issuing a building permit or license for the demolition, renovation, rehabilitation or other alteration of a building or structure, that the debris resulting from such demolition, renovation, rehabilitation or alteration be disposed of in a properly licensed solid waste disposal facility, as defined by Section one hundred and fifty A of Chapter one hundred and eleven. Any such permit or license shall indicate the location of the facility at which the debris is to be disposed. If for any reason, the debris will not be disposed as indicated, the permittee or licensee shall notify the issuing authority as to the location where the debris will be disposed. The issuing authority shall amend the permit or license to so indicate.”

For the purposes of implementing the requirements of M.G.L. Chapter 40, Section 54, MassDEP considers an asphalt, brick, and concrete (ABC) rubble processing or recycling facility, (pursuant to the provisions of Section (3) under 310 CMR 16.05, the Site Assignment regulations for solid waste management facilities), to be conditionally exempt from the site assignment requirements, if the ABC rubble at such facilities is separated from other solid waste materials at the point of generation. In accordance with 310 CMR 16.05(3), ABC can be crushed on-site with a 30-day notification to MassDEP. However, the asphalt is limited to weathered bituminous concrete, (no roofing asphalt), and the brick and concrete must be uncoated or not impregnated with materials such as roofing epoxy. If the brick and concrete are not clean, the material is defined as construction and demolition (C&D) waste and requires either a Beneficial Use Determination (BUD) or a Site Assignment and permit before it can be crushed.

Pursuant to the requirements of 310 CMR 7.02 of the Air Pollution Control regulations, if the ABC crushing activities are projected to result in the emission of one ton or more of particulate matter to the ambient air per year, and/or if the crushing equipment employs a diesel oil fired engine with an energy input capacity of three million or more British thermal units per hour for either mechanical or electrical power which will remain on-site for twelve or more months, then a plan application must be submitted to MassDEP for written approval prior to installation and operation of the crushing equipment.

In addition, if significant portions of the demolition project contain asbestos, the project proponent is advised that asbestos and asbestos-containing waste material are a special waste as defined in the Solid Waste Management regulations, (310 CMR 19.061). Asbestos removal notification on permit form ANF 001 and building demolition notification on permit form AQ06 must be submitted to MassDEP at least 10 working days prior to initiating work. Except for vinyl asbestos tile (VAT) and asphaltic-asbestos felt and shingles, the disposal of asbestos containing materials within the Commonwealth must be at a facility specifically approved by MassDEP, (310 CMR 19.061). No asbestos containing material including VAT, and/or asphaltic-asbestos felts or shingles may be disposed at a facility operating as a recycling facility, (310 CMR 16.05). The disposal of the asbestos containing materials outside the jurisdictional boundaries of the Commonwealth must comply with all the applicable laws and regulations of the state receiving the material.

The demolition activity also must conform to current Massachusetts Air Pollution Control regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10. As such, the proponent should propose measures to alleviate dust, noise, and odor nuisance conditions, which may occur during the demolition. Again, MassDEP must be notified in writing, at least 10 days in advance of removing any asbestos, and at least 10 days prior to any demolition work. The removal of asbestos from the buildings must adhere to the special safeguards defined in the Air Pollution Control regulations, (310 CMR 7.15 (2)).

The proponent's record for its comprehensive recycling programs should be emulated and expanded in Massachusetts. In addition to paper, glass, plastics, waste oil, and cardboard, MassDEP would appreciate and encourage a commitment to innovative recycling of the waste stream, characteristic of a resort casino, such as is being done with gently-used soap and personal care products. Facilitating future waste reduction and recycling and integrating recycled materials into the project are necessary to minimize or mitigate the long-term solid waste impacts of this type of development. The Commonwealth's waste diversion strategy is part of an integrated solid waste management plan, contained in The Solid Waste Master Plan that places a priority on source reduction and recycling. Efforts to reduce waste generation and promote recycling have yielded significant environmental and economic benefits to Massachusetts' residents, businesses and municipal governments over the last ten years. Waste diversion will become even more important in the future as the key means to conserve the state's declining supply of disposal capacity and stabilize waste disposal costs.

In revising the Solid Waste Master Plan, MassDEP is advancing a goal to divert 450,000 tons of food waste from landfills and incinerators by 2020. In the future, large-scale food waste generators, which may include Caesar's Resort, will be banned from landfilling or incinerating food waste. Therefore, MassDEP strongly encourages the proponent to move forward with plans for anaerobic digestion (AD) on-site. If this is infeasible, an alternative AD facility and/or composting facility should be considered for the project's organic waste.

As the lead state agencies responsible for helping the Commonwealth achieve its waste diversion goals, MassDEP and EEA have strongly supported voluntary initiatives by the private sector to institutionalize source reduction and recycling into their operations. Adapting the design, infrastructure, and contractual requirements necessary to incorporate reduction, recycling and recycled products into existing large-scale developments has presented significant challenges to recycling proponents. Integrating those components into developments such as the Caesars Resort at Suffolk Downs project at the planning and design stage enable the project's management and occupants to establish and maintain effective waste diversion programs. For example, facilities with minimal obstructions to trash receptacles and easy access to main recycling areas and trash chutes allow for implementation of recycling programs and have been proven to reduce cleaning costs by 20 percent to 50 percent. Other designs that provide sufficient space and electrical services will support consolidating and compacting recyclable material and truck access for recycling material collection.

By incorporating recycling and source reduction into the design, the proponent has the opportunity to join a national movement toward sustainable design. Sustainable design was endorsed in 1993 by the American Institute of Architects with the signing of its *Declaration of*

*Interdependence for a Sustainable Future.* The project proponent should be aware there are several organizations that provide additional information and technical assistance, including Recycling Works in Massachusetts, the Chelsea Center for Recycling and Economic Development, and MassRecycle.

#### **Massachusetts Contingency Plan/M.G.L. c.21E**

Contaminated Soil and Groundwater: The ENF has identified 1 contamination sites assigned to release tracking numbers, including: RTN 3-14857 (RAO B-1). The project proponent is advised that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA. If permits and approvals under these provisions are not obtained beforehand, considerable delays in the project can occur. The project proponent cannot manage contaminated media without prior submittal of appropriate plans to MassDEP, which describe the proposed contaminated soil and groundwater handling and disposal approach, and health and safety precautions. Because contamination at the site is known or suspected, the appropriate tests should be conducted well in advance of the start of construction and professional environmental consulting services should be readily available to provide technical guidance to facilitate any necessary permits. If dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. Dust and/or vapor monitoring and controls are often necessary for large-scale projects in contaminated areas. The need to conduct real-time air monitoring for contaminated dust and to implement dust suppression must be determined prior to excavation of soils, especially those contaminated with compounds such as metals and PCBs. An evaluation of contaminant concentrations in soil should be completed to determine the concentration of contaminated dust that could pose a risk to health of on-site workers and nearby human receptors. If this dust concentration, or action level, is reached during excavation, dust suppression should be implemented as needed, or earthwork should be halted.

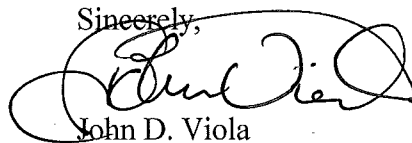
Potential Indoor Air Impacts: Parties constructing and/or renovating buildings in contaminated areas should consider whether chemical or petroleum vapors in subsurface soils and/or groundwater could impact the indoor air quality of the buildings. All relevant site data, such as contaminant concentrations in soil and groundwater, depth to groundwater, and soil gas concentrations should be evaluated to determine the potential for indoor air impacts to existing or proposed building structures. Particular attention should be paid to the vapor intrusion pathway for sites with elevated levels of chlorinated volatile organic compounds such as tetrachloroethylene (PCE) and trichloroethylene (TCE). MassDEP has additional information about the vapor intrusion pathway on its website at <http://www.mass.gov/dep/cleanup/laws/vifs.htm>.

New Structures and Utilities: Construction activities conducted at a disposal site shall not prevent or impede the implementation of likely assessment or remedial response actions at the site. Construction of structures at a contaminated site may be conducted as a Release Abatement Measure if assessment and remedial activities prescribed at 310 CMR 40.0442(3) are completed within and adjacent to the footprint of the proposed structure prior to or concurrent

with the construction activities. Excavation of contaminated soils to construct clean utility corridors should be conducted for all new utility installations.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact [Jerome.Grafe@state.ma.us](mailto:Jerome.Grafe@state.ma.us) at (617) 292-5708 for mobile source air quality impacts, [Rachel.Freed@state.ma.us](mailto:Rachel.Freed@state.ma.us) at (978) 694-3258 [Kevin.Brande@state.ma.us](mailto:Kevin.Brande@state.ma.us) at (978) 694-3236 for further information on the wastewater issues, [James.Belsky@state.ma.us](mailto:James.Belsky@state.ma.us), at (978) 694-3288 for issues relating to air quality plan approval, and [Alex.Strysky@state.ma.us](mailto:Alex.Strysky@state.ma.us) at (617) 292-5616 for issues relating to the Chapter 91, waterways license. If you have any general questions regarding these comments, please contact [Nancy.Baker@state.ma.us](mailto:Nancy.Baker@state.ma.us), MEPA Review Coordinator at (978) 694-3338.

Sincerely,

A handwritten signature in black ink, appearing to read "John D. Viola", written over a horizontal line.

John D. Viola  
Deputy Regional Director

cc: Brana Simon, Massachusetts Historical Commission  
Jerome Grafe, Alex Strysky, MassDEP-Boston  
Eric Worrall, Susan Ruch, Kevin Brander, Rachel Freed, Heidi Davis, Jim Belsky, Jill Provencal, MassDEP-NERO  
City of Boston, Conservation Commission  
City of Revere, Conservation Commission  
Marianne Connolly, MWRA  
John E. Sullivan, P.E. BWSC



# CITY OF BOSTON

## THE ENVIRONMENT DEPARTMENT

Boston City Hall, Room 709 • Boston, MA 02201 • 617/635-3850 • FAX: 617/635-3435

September 28, 2017

Thomas O'Brien  
The McClellan Highway Development Company, LLC  
c/o HYM Investment Group, LLC  
One Congress Street, 11<sup>th</sup> Floor  
Boston, MA 02114

HAND DELIVERED: September 28, 2017

**RE: Order of Resource Area Delineation from Beals and Thomas, Inc. on behalf of the McClellan Highway Development Company, LLC to confirm the limit and regulatory status of the wetland resource areas located at 525 McClellan Highway, East Boston, MA**

Dear Mr. O'Brien,

Pursuant to the Massachusetts Wetlands Protection Act, G.L. c. 131, § 40 (the "Act"), I have enclosed the Order of Resource Area Delineation for the above referenced project, as voted by the Conservation Commission at the September 6, 2017 public hearing. The delineated area of Bordering Vegetated Wetlands, Bank, Riverfront and Land Subject to Coastal Storm Flowage, was deemed accurate by the Commission.

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Conservation Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00).

If you should have any questions regarding the Order I may be contacted at 617-635-4416.

For the Commission,

Amelia Croteau, Executive Secretary  
Boston Conservation Commission

Enclosure: WPA Form 4B

CC: Stacy Minihane, Beals and Thomas





Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area  
Delineation**

Provided by MassDEP:

006-1546  
MassDEP File Number

eDEP Transaction Number

City/Town

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**A. General Information**

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:  
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

- From: Boston  
1. Conservation Commission
2. This Issuance is for (check one):  
a. ☒ Order of Resource Area Delineation  
b. ☐ Amended Order of Resource Area Delineation
3. Applicant:  
a. First Name Thomas  
b. Last Name O'Brien  
c. Organization The McClellan Highway Development Company, LLC  
c/o HYM Investment Group, LLC, One Congress St., 11th Floor  
d. Mailing Address  
e. City/Town Boston f. State MA g. Zip Code 02114
4. Property Owner (if different from applicant):  
a. First Name  
b. Last Name  
c. Organization  
d. Mailing Address  
e. City/Town f. State g. Zip Code
5. Project Location:  
a. Street Address 525 McClellan Highway  
0102524000  
d. Assessors Map/Plat Number  
Latitude and Longitude (in degrees, minutes, seconds):  
b. City/Town East Boston  
c. Zip Code 02128  
e. Parcel/Lot Number NA  
f. Latitude 42° d 23' m 39.042"  
g. Longitude -71° d 0' m 1.026"
6. Dates:  
a. Date ANRAD filed August 23, 2017  
b. Date Public Hearing Closed September 6, 2017  
c. Date of Issuance September 20, 2017
7. Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:  
a. Title ANRAD Plan 525 William F. McClellan Highway, East Boston, MA  
in 7 sheets  
b. Date August 18, 2017  
c. Title  
d. Date



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area  
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

006-1546  
MassDEP File Number

\_\_\_\_\_  
eDEP Transaction Number

\_\_\_\_\_  
City/Town

**B. Order of Delineation**

1. The Conservation Commission has determined the following (check whichever is applicable):

- a. ☒ **Accurate:** The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

1. ☒ **Bordering Vegetated Wetlands**

2. ☐ **Other resource area(s), specifically:**

a. Bank: 3,260 linear feet, Riverfront: 700 linear feet  
Land Subject to Coastal Storm Flowage: 14,680 linear feet

- b. ☐ **Modified:** The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ **Bordering Vegetated Wetlands**

2. ☐ **Other resource area(s), specifically:**

a. \_\_\_\_\_

- c. ☐ **Inaccurate:** The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Resource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ **Bordering Vegetated Wetlands**

2. ☐ **Other resource area(s), specifically:**

a. \_\_\_\_\_

3. ☐ **The boundaries were determined to be inaccurate because:**

a. \_\_\_\_\_



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands

Provided by MassDEP

006-1546  
MassDEP File Number

**WPA Form 4B – Order of Resource Area  
Delineation**

eDEP Transaction Number

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

City/Town

**C. Findings**

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation.

This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate DEP Regional Office (see <http://www.mass.gov/eea/agencies/massdep/about/contacts/find-the-massdep-regional-office-for-your-city-or-town.html>).

**D. Appeals**

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, § 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area  
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

006-1546  
MassDEP File Number

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City/Town

9/20/2017  
Date of Issuance

**E. Signatures**

Please indicate the number of members who will sign this form.

4  
1. Number of Signers

[Signature]  
Signature of Conservation Commission Member

[Signature]  
Signature of Conservation Commission Member

[Signature]  
Signature of Conservation Commission Member

[Signature]  
Signature of Conservation Commission Member

[Signature]  
Signature of Conservation Commission Member

[Signature]  
Signature of Conservation Commission Member

[Signature]  
Signature of Conservation Commission Member

**This Order is valid for three years from the date of issuance.**

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, which expires on \_\_\_\_\_ unless extended in writing by the issuing authority.

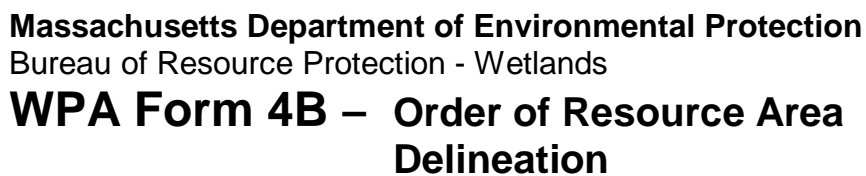
This Order is issued to the applicant and the property owner (if different) as follows:

2. ☐ By hand delivery on \_\_\_\_\_

a. Date

3. ☒ By certified mail, return receipt requested on \_\_\_\_\_

a. Date



City/Town

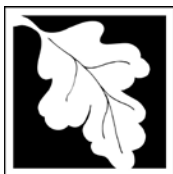
## A. General Information



**Note:**  
Before  
completing this  
form consult  
your local  
Conservation  
Commission  
regarding any  
municipal bylaw  
or ordinance.

d. Date





## WPA Form 4B – Order of Resource Area Delineation

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

061-0705

MassDEP File Number

eDEP Transaction Number

City/Town

### B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable):

- a. ☒ **Accurate:** The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

1. ☒ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically:

a. Bank (Sales Creek- multiple locations, intermittent stream along eastern straightaway of race track), Land Under Water Bodies (Sales Creek and intermittent stream, Riverfront area (Sales Creek) and Land Subject to Coastal Storm Flowage

- b. ☐ **Modified:** The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically:

a.

- c. ☐ **Inaccurate:** The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Resource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically:

3. ☐ The boundaries were determined to be inaccurate because:



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands  
**WPA Form 4B – Order of Resource Area  
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

061-0705

MassDEP File Number

eDEP Transaction Number

City/Town

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## **C. Findings**

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation.

This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate DEP Regional Office (see <http://www.mass.gov/eea/agencies/massdep/about/contacts/find-the-massdep-regional-office-for-your-city-or-town.html>).

---

## **D. Appeals**

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, § 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area  
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

061-0705

MassDEP File Number

eDEP Transaction Number

City/Town

**E. Signatures**

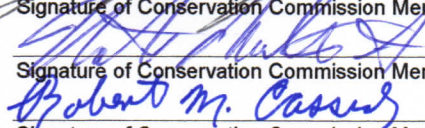
Please indicate the number of members who will sign this form.

Date of Issuance

10/4/2007  
1. Number of Signers - 4

  
Signature of Conservation Commission Member

  
Signature of Conservation Commission Member

  
Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

**This Order is valid for three years from the date of issuance.**

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, which expires on \_\_\_\_\_ unless extended in writing by the issuing authority.

This Order is issued to the applicant and the property owner (if different) as follows:

2. ☐ By hand delivery on \_\_\_\_\_

3. ☐ By certified mail, return receipt requested on \_\_\_\_\_

a. Date

a. Date

## Appendix G: Transportation Supporting Documentation

*Note:* Materials are provided on the enclosed CD-ROM due to large file size. Hard copies are available upon request.

## **Appendix H: Environmental Protection Supporting Documentation**



INITIAL COMMENTS  
**SUFFOLK DOWNS MASTERPLAN**  
BOSTON, MA



**PEDESTRIAN WIND ASSESSMENT**

PROJECT #1801719

NOVEMBER 29, 2017

**SUBMITTED TO**

**Devanshi Purohit**

Associate

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**CBT Architects**

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**SUBMITTED BY**

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**Jordan Gilmour, P.Eng.**

Senior Project Manager / Principal

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**RWDI**

600 Southgate Drive

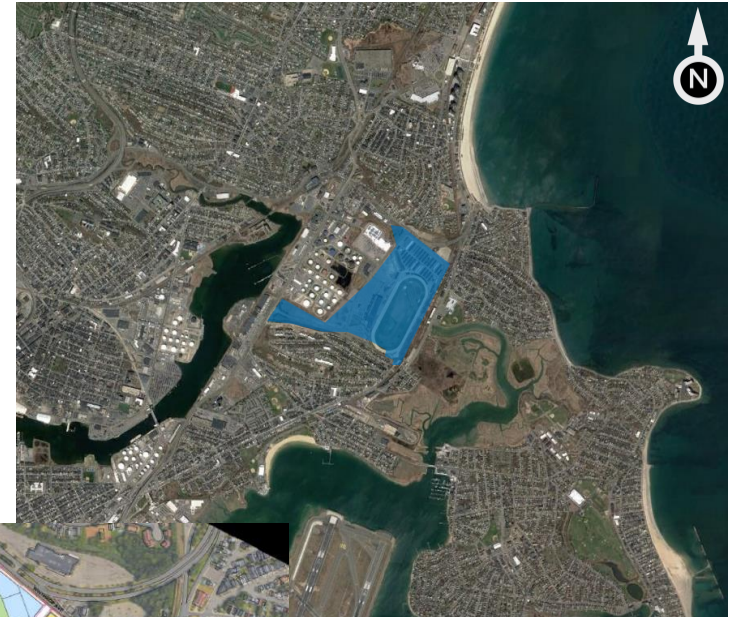
Guelph, Ontario Canada N1G 4P6

T: +1.519.823.1311 x 2343

# SITE AND BUILDING CHARACTERISTICS



- The proposed development is large in plan, including multiple mid- and low-rise buildings with green spaces in between;
- Immediate surroundings consist of dense low buildings in most directions, a conservation area to the southeast, and oil tanks and Chelsea River to the west. Further away are Logan Airport to the south, and the Atlantic Ocean to the northeast through southeast; and,
- The existing conditions on site are likely windy due to the exposure, but not expected to exceed the wind comfort and safety criteria.

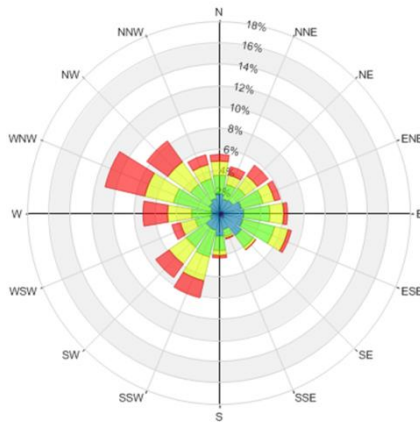
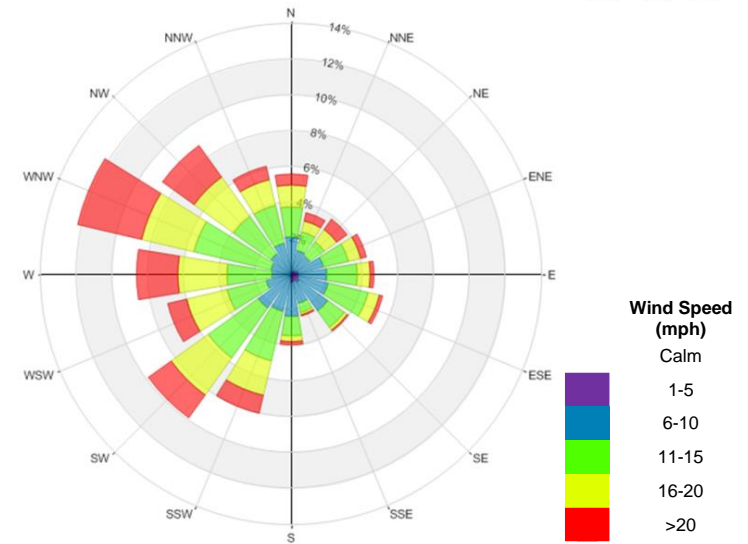


# LOCAL WIND CLIMATE

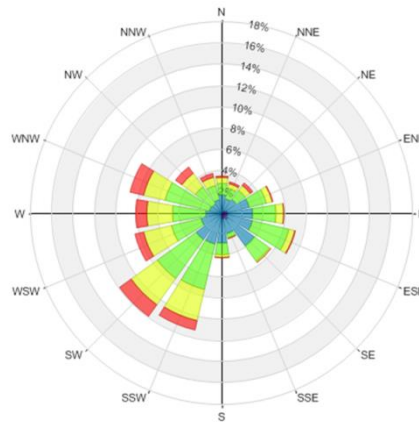


Wind statistics at Boston Logan International Airport between 1990 and 2015 were analyzed for four seasons and on an annual basis. When all winds are considered (regardless of speed), winds from the northwest and southwest quadrants are predominant. Northeasterly winds are also frequent, especially in the spring.

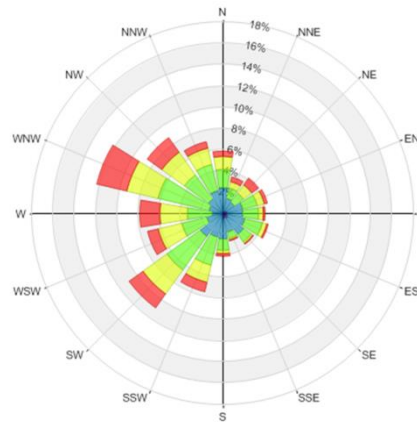
Strong winds with mean speeds greater than 20 mph (red bands in the images) are prevalently from the northwesterly direction throughout the year, while the southwesterly and northeasterly winds are also frequent. These are critical wind directions to be focused on in the following discussions.



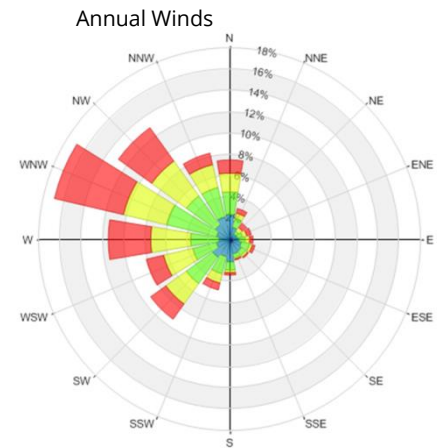
Spring (March to May)



Summer (June to August)



Fall (September to November)



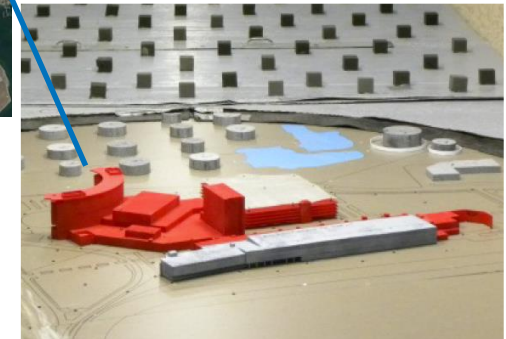
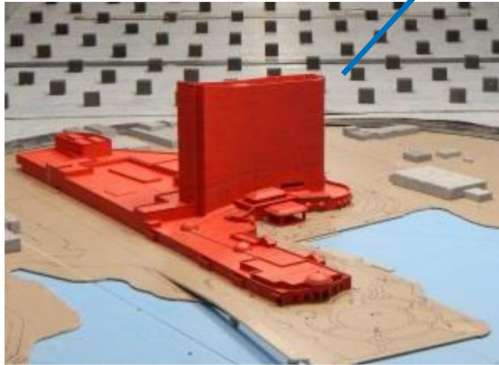
Winter (December to February)

**Directional distribution of winds approaching Boston Logan International Airport (1990 to 2015)**

# REFERENCE WIND TUNNEL PROJECTS



Many wind-tunnel studies have been conducted by RWDI for buildings in the Boston area and the two shown below were selected to be used as a reference to predict the wind conditions around the future development.



- Surroundings were similar to the current development site; and,
- Uncomfortable and unacceptable wind conditions were caused by the 17-story tower at several locations.

- A previous proposal on the same project site;
- Proposed buildings were approximately 10 stories; and,
- Increased wind speeds were detected in the wind tunnel testing, but generally below the wind comfort and safety limits.



# BASIC FLOW PATTERNS

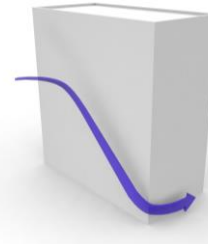


- Tall buildings tend to intercept stronger winds at higher elevations and redirect them to the ground level. Such a Downwashing Flow (a) is the main cause for increased wind activity around buildings at the pedestrian level;



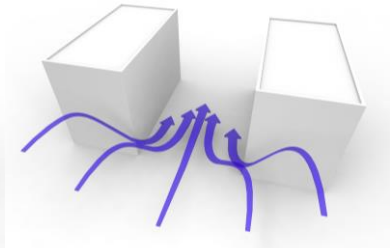
(a)

- Oblique winds also cause wind accelerations around the downwind building corner (b);



(b)

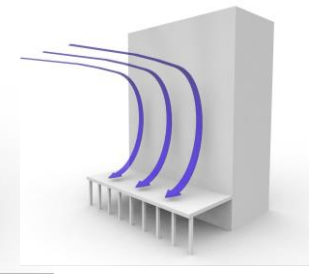
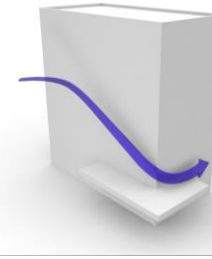
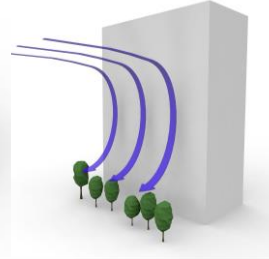
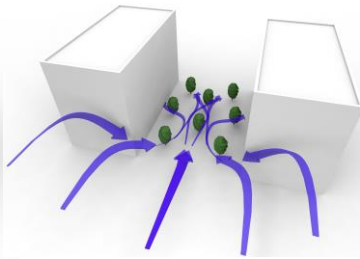
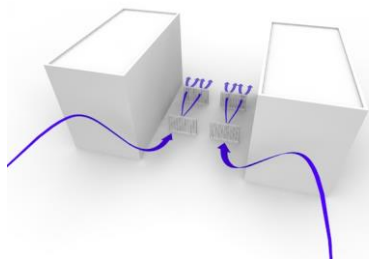
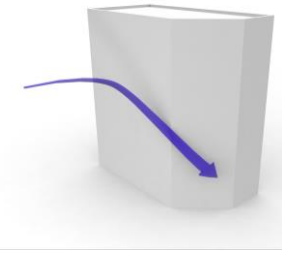
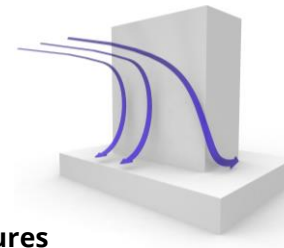
- When two buildings are situated side by side, wind flows tend to accelerate through the space between the buildings due to the so-called Channeling Effect (c);



(c)

- If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity and uncomfortable or unsafe conditions; and,
- Typical wind control measures include podiums/tower setbacks, chamfered corners, canopies, screens, trees, etc.

## Typical Wind Control Measures

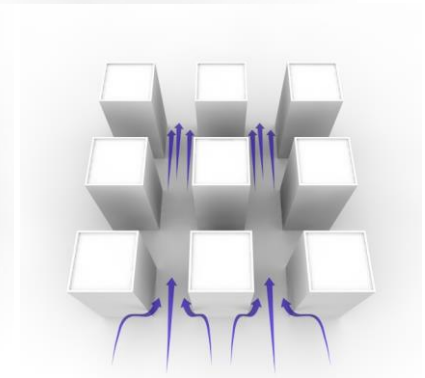
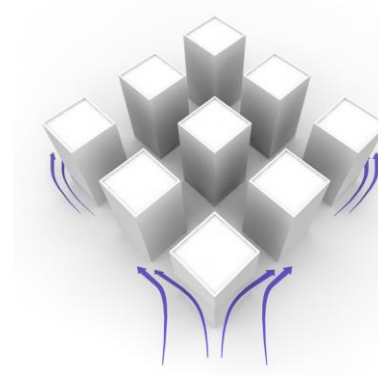
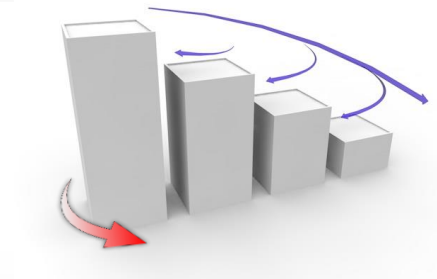
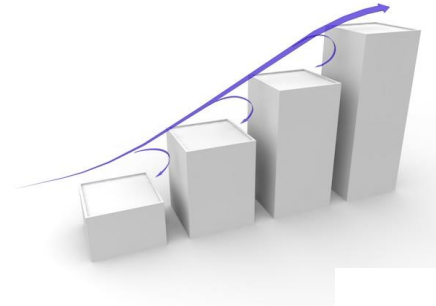




# BUILDING MASSING AND LAYOUT



- For wind control, one desired approach is to have the lowest buildings along the perimeter of the site and the tallest buildings at the center;
- A reversed arrangement of buildings may also work, to a certain extent: tall buildings along the perimeter would provide sheltering for the inner space, but local wind accelerations at the bases of these tall buildings may be problematic, due to the downwashing and channeling effects.
- Main streets, especially those near taller buildings, should not be aligned with the prevailing northwesterly or northeasterly winds, if feasible; and,
- Podiums and tower setbacks would not only reduce the impact of downwashing winds, but also increase the distance between towers (and reduce the potential channeling effect).



# SITE OVERVIEW



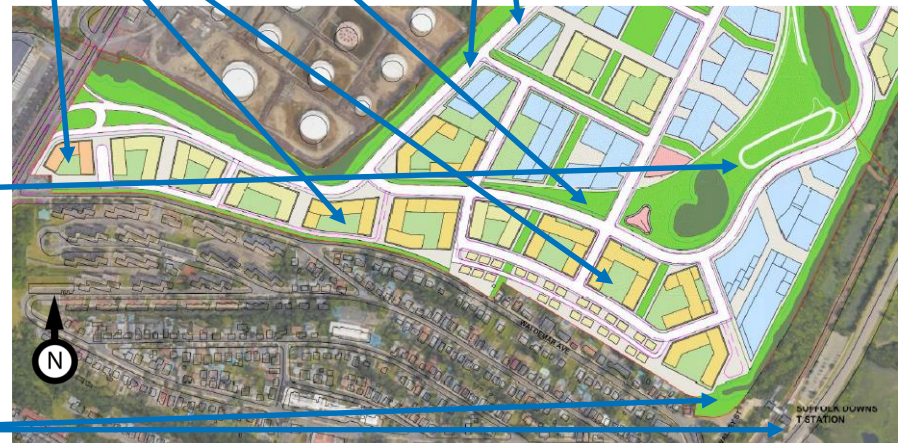
This narrow strip of green area is generally protected by the proposed buildings. The future wind conditions can be further improved by trees through the area and a larger building structure (B30) at the east end.

Buildings that have podium terraces facing south are positive in sheltering the terraces from the strong northwest and northeast winds, while exposing them to the sunlight. However, they are open to the southwesterly winds, which are most frequent in the summer and fall seasons when these areas are typically in use. See Pages 12 and 13 for wind control recommendations.

This large green space is partially sheltered by the proposed buildings, but the resultant wind conditions may be higher than desired for sitting, even in the summer. Localized wind control solutions should be developed for any seating areas (see recommendations on Page 12).

Given the distance and location of the proposed buildings, the existing wind conditions at this T Station are not expected to be negatively affected by the project. Any landscaping in the green area will further improve the wind conditions.

This wall of mid-rise buildings are fully exposed to the west and northwest winds and wind flow accelerations are expected along the gaps between these buildings, resulting in uncomfortable and unacceptable winds. Reduced building heights and a tall coniferous shelter barrier is recommended along the west edge.



# SITE OVERVIEW



The green space is in a NNW-SSE direction, which is not aligned with any prevailing winds. However, the northwest and southwest winds may accelerate around the exposed sharp corners of the proposed buildings, and they may also be deflected down by the taller buildings on the east side of green space.

The winding nature of these streets is positive in reducing flow accelerations of the northeast and southwest winds. Building height reductions and tower setbacks from the north edge of the site are recommended for additional wind control.



On the green spaces at the podium level, suitable wind conditions are expected at the more protected areas on the residential blocks (e.g., R-5 and R-6), while higher wind speeds are likely to occur at the more exposed blocks (e.g., R-7 and R-8).

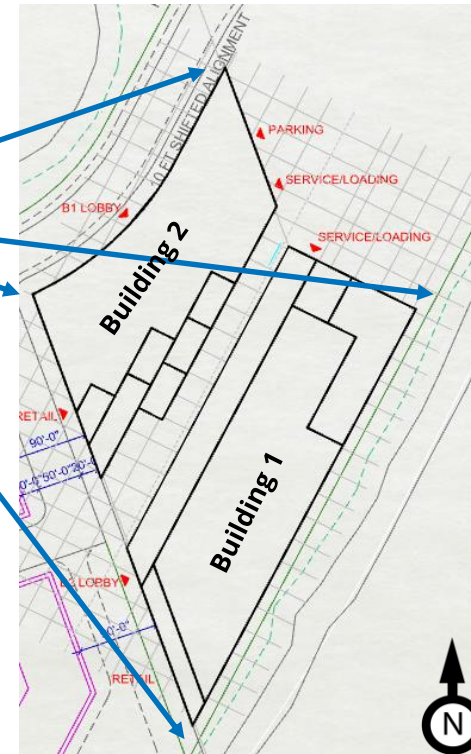
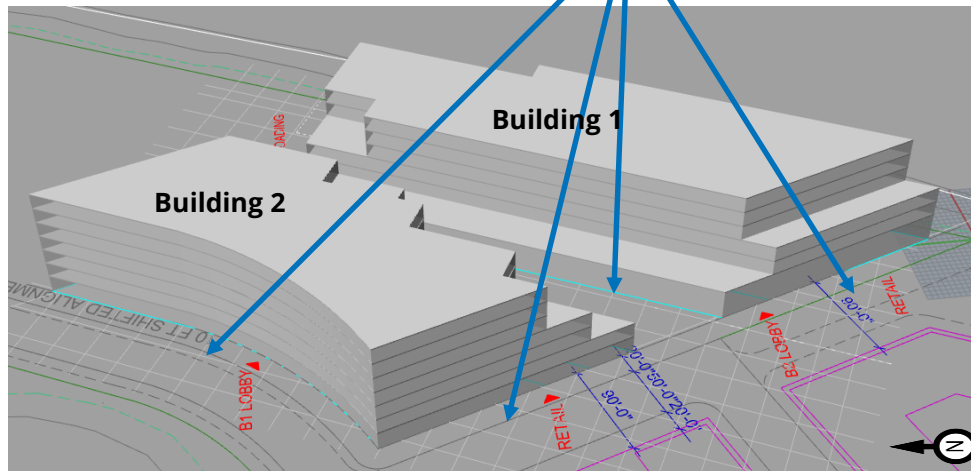
The existing wind conditions at the T Station will not be negatively affected by the proposed development.

It will be windy at this opening due to the exposure. If any pedestrian activity is planned for this area, considerable wind control solutions will need to be developed – the existing shelter belt to the east will provide some protection for the northeasterly winds.

# REVISED B-12



- B-12 will consist of two buildings: Building 1 at 6 stories on the east half and Building 2 at 7 stories on the west half. They will be fully exposed to the prevailing winds before other buildings in the masterplan are constructed;
- Increased wind speeds are anticipated at exposed building corners and facades. Although they are unlikely to exceed the wind safety limit due to the limited building heights, pedestrian areas, such as entrances, pick-up/drop-offs and outdoor cafes, should be placed away from these corners; and,
- Suitable wind conditions are predicted along public sidewalks in general.

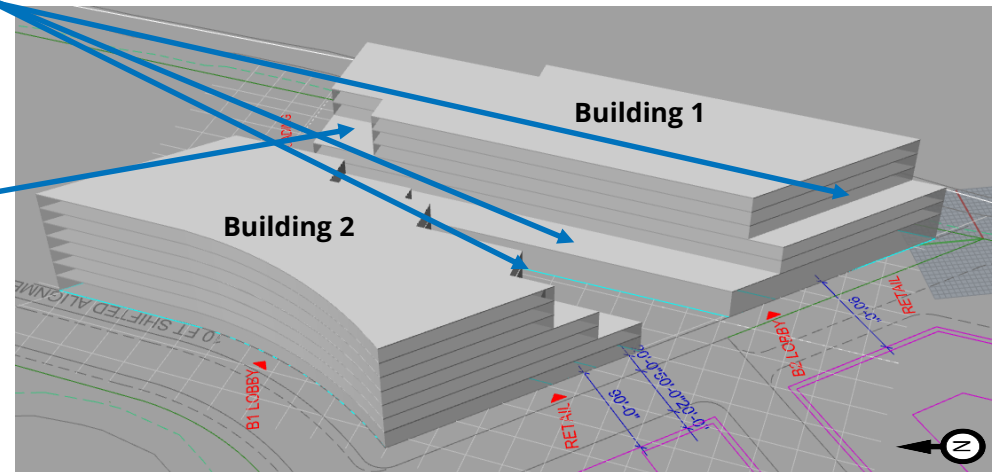
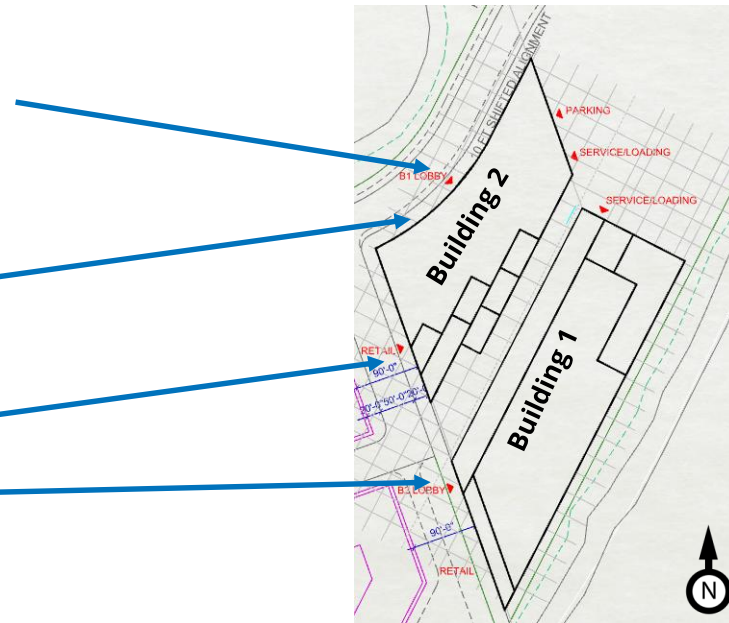




# REVISED B-12



- Building 2 entrance is fully exposed to the northwest winds, which may downwash off the building façade. Wind mitigation may include installing canopies and/or recessing the entrances. Southwest winds may also accelerate along the façade, which can be controlled by wind screens and planters – see examples on the next page;
- The entrances along the southwest street may also be affected by the northwest (horizontal) and southwest (vertical) winds. This Building 1 entrance should be moved away from the corner, if possible;
- Above-grade terraces on Building 2 and the west and south podiums of Building 1 are well protected from the prevailing northwesterly winds; and,
- The roof at the north end of Building 1 is more exposed to the northwest and northeast winds. If frequent use of this area is anticipated, wind mitigation is required – see examples on the next three pages.



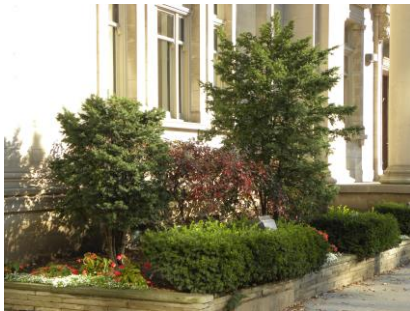


# BUILDING ENTRANCES



Building entrances are not identified in the current masterplan. Low wind speeds are generally desired for the main entrance areas, where pedestrians may linger. As general guidelines,

- Main entrances should be placed away from building corners where high wind activity is typically expected;
- For the entrances directly exposed to the prevailing winds, winds downwashing off the proposed buildings be can be an issue. Canopies should be installed for protection from wind, rain and snow;
- Additional wind control measures may include entrance recessing, arcades as well as wind screens and planters on both sides of the entrances for controlling horizontal winds.



Wind control examples for building entrances

# GREEN SPACE



The large open green park is sheltered by the proposed buildings to some extent, but wind speeds are expected to be higher than desired for passive pedestrian activities.

We recommend additional wind protection be considered along the perimeter and local measures around any seating areas,

including soft and hardscaping (e.g., trees, screens, fences, trellises, etc.).

Another effective wind control strategy is to include under plantings to stop wind accelerations under tree canopies.



Examples of landscaping for wind control

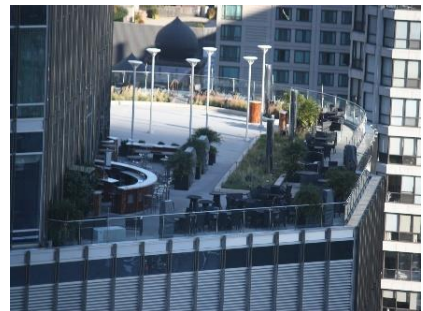
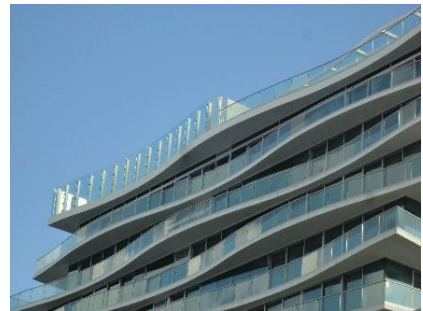
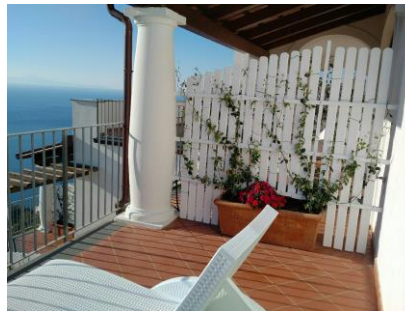


# PODIUM AND ROOF AMENITY



Potentially, there could be many above-grade terraces and green areas for the development. Rooftop areas are typically windy due to their elevation and exposure. The most common wind control measures are tall guardrails and parapets.

While podiums and setbacks are positive measures for reducing the wind impact at ground level, increased wind speeds are expected for podium terraces. The actual speeds vary with the exposure, location, size and elevation of these areas. In the event that undesirable conditions occur, taller guardrails, windscreens, privacy fences and landscaping may be incorporated to provide sheltering for amenity users. Podium terraces may also be affected by vertical winds that are deflected down by the building elements above. Therefore, wind control measures may also include overhead protection provided by trellises and canopies.



Examples of wind control features for above-ground amenity areas

# SUMMARY



- Pedestrian wind conditions are assessed for the proposed Suffolk Downs Masterplan. This qualitative assessment is based on the local wind climate, current master plan, existing surroundings and our knowledge and experience with wind tunnel testing of similar buildings in the Boston area;
- The proposed masterplan includes several positive design features for wind control. As a result, the existing wind conditions in the surrounding areas such as T stations and public sidewalks, will not be altered significantly;
- On the development site, suitable wind conditions are predicted for most sidewalks and the proposed green spaces throughout the year;
- Due to the local wind climate, elevated wind conditions are anticipated around the exposed building corners. Other potential areas with undesirable wind conditions may include exposed building entrances, green spaces and above-ground amenities;
- Wind control concepts are provided to improve these wind conditions, ranging from building massing/layout to small scale mitigation measures such as landscaping, screens and canopies. Photo examples are provided in the report for consideration; and,
- Wind tunnel tests should be conducted at a later design stage to quantify these wind conditions and to develop wind control solutions.

---

# Noise Measurement Data



Date	Time	ML1		ML2		ML3		ML4		ML5	
		Leq	L90	Leq	L90	Leq	L90	Leq	L90	Leq	L90
2017/10/31	10:00:00			57.6	47.7	57.1	48.0				
2017/10/31	11:00:00			56.7	47.4	56.8	45.6	63.0	45.7		
2017/10/31	12:00:00			58.5	49.7	57.5	46.6	62.0	45.8		
2017/10/31	13:00:00			58.6	49.8	55.7	47.6	60.1	46.8		
2017/10/31	14:00:00			60.9	51.5	56.4	48.9	60.2	48.9		
2017/10/31	15:00:00			59.8	51.1	58.5	51.6	62.5	48.6		
2017/10/31	16:00:00			60.0	51.5	55.5	47.7	62.4	47.8		
2017/10/31	17:00:00			59.6	51.4	57.4	46.7	63.1	47.8		
2017/10/31	18:00:00			59.1	49.0	55.8	45.9	62.5	46.5		
2017/10/31	19:00:00			57.2	48.8	56.7	46.1	62.8	46.5		
2017/10/31	20:00:00			57.7	49.2	57.5	46.6	62.6	46.0		
2017/10/31	21:00:00			56.0	48.2	51.7	46.2	58.2	45.7		
2017/10/31	22:00:00			55.3	46.9	52.5	44.9	58.5	44.7		
2017/10/31	23:00:00			54.6	45.3	49.3	42.9	58.4	43.1		
2017/11/01	00:00:00			52.2	44.3	49.7	42.9	58.5	42.9		
2017/11/01	01:00:00			51.6	44.0	46.6	42.6	55.5	42.5		
2017/11/01	02:00:00			51.7	44.9	45.4	43.5	45.4	42.8		
2017/11/01	03:00:00			49.8	45.7	47.1	44.2	46.1	43.2		
2017/11/01	04:00:00			51.5	47.3	47.5	46.0	47.0	44.5		
2017/11/01	05:00:00			54.2	49.4	50.7	48.1	57.5	47.2		
2017/11/01	06:00:00			59.2	50.6	53.0	49.4	60.9	49.0		
2017/11/01	07:00:00			61.4	52.3	53.7	48.8	61.5	48.8		
2017/11/01	08:00:00			60.2	49.5	53.1	45.8	60.8	45.2		
2017/11/01	09:00:00			57.6	46.0	48.4	42.5	60.3	43.4		
2017/11/01	10:00:00			56.2	45.3	61.8	42.6	57.1	41.4		
2017/11/01	11:00:00	56.0	52.0			51.9	46.2	56.6	42.4	57.0	51.2
2017/11/01	12:00:00	55.9	51.4							55.2	51.7
2017/11/01	13:00:00	56.5	52.3							58.2	51.6
2017/11/01	14:00:00	58.5	53.0							57.3	52.8
2017/11/01	15:00:00	57.6	52.5							58.5	53.6
2017/11/01	16:00:00	57.8	53.4							59.9	53.1
2017/11/01	17:00:00	57.6	52.7							59.4	53.4
2017/11/01	18:00:00	59.1	53.1							62.6	54.6
2017/11/01	19:00:00	56.2	51.3							60.0	54.3
2017/11/01	20:00:00	54.6	50.2							58.6	52.9
2017/11/01	21:00:00	55.2	50.0							59.4	52.9
2017/11/01	22:00:00	54.1	49.4							58.0	51.0
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2017/11/02	00:00:00	51.2	45.2							51.5	43.0
2017/11/02	01:00:00	49.6	45.1							48.6	41.0
2017/11/02	02:00:00	49.5	42.7							46.9	40.9
2017/11/02	03:00:00	51.0	42.5							47.8	41.8
2017/11/02	04:00:00	53.7	48.2							49.6	43.2
2017/11/02	05:00:00	55.7	50.7							55.8	48.7
2017/11/02	06:00:00	57.6	52.6							58.5	54.0
2017/11/02	07:00:00	58.9	54.1							60.2	56.0
2017/11/02	08:00:00	57.5	53.6							61.2	56.2
2017/11/02	09:00:00	56.3	52.4							58.7	54.6
2017/11/02	10:00:00	57.1	52.4							58.7	53.6
2017/11/02	11:00:00	58.5	53.2							59.2	54.1

- ML1Route 1A
- ML2Tomesello Way
- ML3Suffolk Downs T Station
- ML4Washburn Ave
- ML5Revere Beach Parkway

Leq						
	Daytime		Nighttime		Overall	
	Min	Max	Min	Max	Min	Max
ML1	55	59	49	58	49	59
ML2	56	61	50	59	50	61
ML3	48	62	45	53	45	62
ML4	57	63	45	61	45	63
ML5	55	63	47	59	47	63

L90						
	Daytime		Nighttime		Overall	
	Min	Max	Min	Max	Min	Max
ML1	50	54	43	53	43	54
ML2	45	52	44	51	44	52
ML3	43	52	43	49	43	52
ML4	41	49	43	49	41	49
ML5	51	56	41	54	41	56

## Summary

Filename	LxT_Data.002
Serial Number	4586
Model	SoundTrack LxT®
Firmware Version	2.301
User	MJA
Location	ML1-Route 1A
Job Description	SuffolkDowns
Note	13796.0
Measurement Description	
Start	2017/11/01 11:02:21
Stop	2017/11/02 11:16:53
Duration	1 Day 00:14:32.9
Run Time	1 Day 00:14:32.9
Pause	0:00:00.0

Pre Calibration	2017/11/01 11:01:30
Post Calibration	None
Calibration Deviation	---

## Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax

## Results

LASeq	56.2 dB
LAS1.00	64.2 dB
LAS10.00	58.6 dB
LAS33.30	55.9 dB
LAS50.00	54.5 dB
LAS90.00	48.2 dB
LAS99.00	42.7 dB

## Summary

Filename	LxT_Data.001
Serial Number	4586
Model	SoundTrack LxT®
Firmware Version	2.301
User	MJA
Location	ML2-Tomesello Way
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/10/31 10:19:46
Stop	2017/11/01 10:40:53
Duration	1 Day 00:21:07.0
Run Time	1 Day 00:21:07.0
Pause	0:00:00.0
Pre Calibration	2017/10/31 10:19:26
Post Calibration	2017/11/01 10:42:03
Calibration Deviation	-0.10 dB

## Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax

## Results

LASeq	57.7 dB
LAS1.00	67.0 dB
LAS10.00	61.8 dB
LAS33.30	55.6 dB
LAS50.00	52.5 dB
LAS90.00	46.3 dB
LAS99.00	44.0 dB

**Summary**

Filename	VHB_Main.026
Serial Number	3502
Model	Model 831
Firmware Version	2.311
User	MJA
Location	ML3-Suffolk Downs T Station
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/10/31 10:42:27
Stop	2017/11/01 11:07:46
Duration	1 Day 00:25:19.8
Run Time	1 Day 00:25:19.8
Pause	0:00:00.0

Pre Calibration	2017/10/31 10:40:40
Post Calibration	2017/11/01 11:08:40
Calibration Deviation	-0.77 dB

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRM831
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Gain	0.0 dB

**Results**

LASeq	55.2 dB
LAS1.00	66.8 dB
LAS10.00	56.8 dB
LAS33.30	51.1 dB
LAS50.00	49.0 dB
LAS90.00	44.4 dB
LAS99.00	42.2 dB

## Summary

Filename	LxT_Data.017
Serial Number	3707
Model	SoundExpert™ LxT
Firmware Version	2.301
User	MJA
Location	M4-Washburn Ave
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/10/31 11:14:53
Stop	2017/11/01 11:44:28
Duration	1 Day 00:29:35.7
Run Time	1 Day 00:29:35.7
Pause	0:00:00.0
Pre Calibration	2017/10/31 11:14:39
Post Calibration	2017/11/01 11:45:25
Calibration Deviation	-0.23 dB

## Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax

## Results

LASeq	60.2 dB
LAS1.00	73.5 dB
LAS10.00	61.1 dB
LAS33.30	50.5 dB
LAS50.00	48.5 dB
LAS90.00	44.0 dB
LAS99.00	41.8 dB



**Summary**

Filename	VHB_Main.027
Serial Number	3502
Model	Model 831
Firmware Version	2.311
User	MJA
Location	ML5-Revere Beach Parkway
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/11/01 11:31:21
Stop	2017/11/02 11:27:50
Duration	23:56:29.4
Run Time	23:56:29.4
Pause	0:00:00.0

Pre Calibration	2017/11/01 11:30:50
Post Calibration	None
Calibration Deviation	---

**Overall Settings**

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRM831
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Gain	0.0 dB

**Results**

LASeq	58.1 dB
LAS1.00	66.7 dB
LAS10.00	60.7 dB
LAS33.30	56.9 dB
LAS50.00	55.3 dB
LAS90.00	45.4 dB
LAS99.00	41.0 dB

# Appendix I: Stormwater Management Supporting Documentation

*Note:* Materials are provided on the enclosed CD-ROM due to large file size. Hard copies are available upon request.