

Imagine Boston Waterfront

ASSESSMENT AND VISION – NOVEMBER 2016



CITY OF BOSTON
Martin J. Walsh, Mayor

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2030

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Executive Summary

Introduction

Boston's waterfront has shaped and been shaped by urban development since the city's inception. Seminal events in the history of the founding of the republic occurred in Boston Harbor, and the neighborhoods and wharves built along its shore were the foundations of the region's economy for centuries. The Harbor resonates with that history and its intrinsic majesty. Just as past generations boldly reshaped the waterfront as a resource for maritime trade, then restored the quality of the water itself, today, the city can turn to the waterfront to build a more inclusive, livable, and resilient future. This generation of Bostonians has an extraordinary opportunity to use its expansive waterfront to build a new generation of parklands; create jobs; provide inclusive housing opportunities; and address increasing climate-related risks.

When Boston last developed a comprehensive citywide plan for the waterfront in the 1980s, the greatest challenges to address were daily discharges of raw sewage that fouled the water and the multi-decade decline of the Boston's waterfront industrial economy. Through *Harborpark*, the City and stakeholders crafted a bold plan to preserve important industries for a new generation of workers; create places for new housing; invest in new public spaces that make the majesty of the harbor accessible to all; and expand the Harborwalk. This legacy provides a foundation for the next generation of redevelopment.

Today, Boston has new strengths—a clean harbor, robust economic and population growth, and high levels of civic engagement. This vision seeks to capture the opportunities created by this wind in our sails. At the same time, Boston faces new challenges that come from being a growing waterfront city in the twenty first century: decreasing affordability, persistent inequality, and a growing flood risk from a changing climate. This document, undertaken as part of the City's ongoing citywide comprehensive plan, *Imagine Boston 2030*, summarizes key challenges and opportunities for Boston's waterfront and sets a vision for the future of the waterfront in response to these challenges and opportunities.

How Boston seizes its opportunities and addresses its challenges will shape the future of both our city and its waterfront. As Boston grows, the waterfront must continue to play a critical role in meeting the needs of future generations by providing spaces where new housing can alleviate pressure in existing neighborhoods and where new jobs can locate, while also protecting a historic legacy of maritime and port-dependent industries, from shipping to shipbuilding. Existing community, recreational, and ecological resources can be strengthened and new signature parks can be created to draw Bostonians and visitors to the water. Underpinning Boston's long-term success as a waterfront city will be critical investments in multi-layered flood protection systems that prepare existing and emerging neighborhoods, economic hubs, and infrastructure for our changing climate. By setting a citywide vision and planning comprehensively along the waterfront, Boston can consider how the waterfront as a whole can achieve multiple goals. We can answer questions of citywide and regional importance: how can we preserve and protect port-dependent industries, and what are the best locations for housing, for open space, for continued job growth and for critical flood protection that enables communities to thrive?

Creating a waterfront for coming generations will require Boston to address significant technical, financial and organizational challenges. This document sets a guiding vision for the waterfront and identifies key issues Boston can work to address, and opportunities Boston can act on, both citywide and in specific neighborhoods. Continued waterfront planning, through *Imagine Boston*, will add more detail to the vision, issues and opportunities identified in this document.

The City's work to create a thriving waterfront will be supported by concurrent planning processes within the City, including *Climate Ready Boston*, *Go Boston 2030*, and *100 Resilient Cities*. Together these plans identify important actions for growth, climate preparedness, transportation, and equity, many of which will take place along our waterfront. Just as the Mayor has been a leader in reducing greenhouse gas emissions, drawing representatives from other countries to learn about carbon reduction, the city can be a leader for twenty-first century cities that thrive

on the waterfront as the climate changes. With universities on the cutting edge of research, technical and data-based businesses, creative developers, and strong community organizations that are proactively planning, Boston can come together now to strengthen our waterfront for future generations.

History of Waterfront Planning

Boston's last citywide waterfront plan, called *Harborpark*, was penned in the late 1980s. As part of Imagine Boston 2030, the City's first comprehensive plan in 50 years, this waterfront planning process is an opportunity to look comprehensively and set a vision for how Boston will continue to thrive as a waterfront city moving forward.

Harborpark was written at a time when the waterfront—and the City—faced different challenges. Boston was emerging out of three decades of precipitous population decline and significant industrial job loss, including along the waterfront. Centuries of intense waterfront industrial use, coupled with inadequate sewage management, led to major water quality issues. Guided by community engagement, *Harborpark* commenced planning and analysis of the port economy, identified strategies for how Boston and its assets could support port industries, produced a plan for inner harbor water transportation, and guided the implementation of continuous shoreline public access through the Harborwalk system. The City's *Harborpark* waterfront planning process and outcomes informed concurrent changes to many of the policies encoded into the Commonwealth's regulations, including Chapter 91 and Designated Port Areas.

Harborpark's waterfront-wide focus set the stage for more concentrated neighborhood planning with local plans that defined massing, lot coverage and design. These local plans included references to *Harborpark*'s Harborwalk network and water transportation facilities. Since the completion of *Harborpark*, the city has benefited from significant public realm investments in the waterfront including Piers Park, the Rose Kennedy Greenway, Spectacle Island and the creation of a national recreation area of the Boston Harbor Islands. Harborwalk has expanded to create over 38 miles of public access along Boston's shoreline and the city is working to integrate Harborwalk with ongoing transportation and bike network plans.

Since Boston completed *Harborpark*, the City and its waterfront have undergone dramatic changes. This document — the *Imagine Boston Waterfront Assessment and Vision* — returns Boston to the important work of citywide waterfront planning, and sets the stage for continued community planning and the development of strong partnerships among the City, Boston's residents, workers and institutions and regional partners.

Process

Imagine Boston 2030 waterfront planning is a renewed effort to guide the future of planning, regulation, investment, and implementation along Boston's waterfront. It is a key component of Imagine Boston 2030, the City's comprehensive long-term plan to guide growth and enhancement that improves quality of life, expands access to opportunity and prepares Boston for climate change.

This report sets the stage for continued waterfront planning by identifying issues and opportunities and setting a vision for waterfront planning. The report begins with an assessment of key issues and opportunities along Boston's waterfront, at both the citywide scale and in five planning areas where more detailed area planning may be undertaken in the future: the Dorchester Waterfront, the Downtown Waterfront, Fort Point Channel, the East Boston Waterfront, and Long Island.

Building off the issues and opportunities analysis and with the support of concurrent planning processes, namely Imagine Boston 2030 and Climate Ready Boston, this report also establishes a vision for the future of the waterfront. This vision will guide the next phase of the Imagine Boston waterfront planning process and the City's day-to-day work along the waterfront. This vision was developed with input from City leaders and was informed by

conversations with community members during Imagine Boston 2030, and with the Citywide Waterfront Working Group, a group of waterfront stakeholders convened in summer 2016.

Through the identification of key opportunities and principles for the future of the waterfront, this report sets the stage for subsequent planning and action.

Vision Statement

To respond to waterfront issues and opportunities, the City of Boston engaged the public, non-profit, and private leaders on the Citywide Waterfront Working Group to establish a new vision for the waterfront. This vision will guide future planning, regulation, and implementation.

In the face of growing climate-related risks and changing economic realities, Boston envisions...

A Resilient Waterfront

- A **climate ready** waterfront prepares Boston for climate-related risks, particularly coastal and riverine flooding.
- An **environmentally sound** waterfront improves water quality and strengthens habitats.

A Waterfront for All

- An **inclusive** waterfront provides economic opportunities for people at a variety of income and skill levels.
- An **activated** waterfront is anchored by varied types of open spaces, featuring cultural resources and year-round programming and connecting people with the natural, cultural, and economic history of the region.
- An **accessible** waterfront is a public destination that can be reached and crossed by all residents, and functions as a seamless link in the city's and the region's transportation network.

A Waterfront with Strong Stewardship

- A **financially sustainable** waterfront has adequate funding and operational plans;
- A **collaborative** waterfront is planned with broad and open public discussion and through partnership with relevant jurisdictions.

Citywide Issues & Opportunities

This document identifies key issues & opportunities related to three topics. Citywide findings are summarized below, and findings for five planning areas are described in more detail in the subsequent section.

Context

Economy & Demographics

The Imagine Boston Waterfront economic and demographic analysis is informed by Imagine Boston, the city's comprehensive plan.

Boston's waterfront has been its economic engine for centuries. Maritime trade and industry were major sources of Boston's historic employment and wealth. Today, the harbor hosts important economic activities and significant portions of waterfront land is still designated for such activities. However, Boston has also seen significant declines in industrial jobs since the mid-twentieth century and economic activity has shifted to knowledge sectors of professional services, healthcare, and education. As Boston prepares for the future, significant portions of land for the working port and maritime industry must be protected and strengthened, and some other waterfront lands might be productively used to respond to Boston's pressing twenty-first century needs. Through proactive planning and potential regulatory reforms, new housing can relieve some of the pressure on Boston's constrained housing

market, new job centers can host the innovative firms that will create economic opportunity, and new parks can reconnect residents to the harbor's natural beauty. In some cases, new development has the potential to generate important revenue that can contribute to open space investment, affordable housing provision and climate preparedness.

Open Space & Access

Boston has a rich history of transformative open space investments, including along the waterfront. These open spaces are treasures of the City and the region. As a whole, Boston's waterfront hosts a diversity of types of experiences, from natural landscapes to ballfields, and from brick walkways to active shipyards. However, this diversity is spread out across Boston's long shoreline. For the public visiting a specific stretch of the waterfront, there is often only a single experience to be had, with natural-type areas relegated to the periphery and many public areas in the city's core limited to homogenous, hard-edged walkways.

The waterfront can provide varied, accessible new open spaces that build upon Boston's open space traditions of serving neighborhoods while also functioning as regional destinations. A greater range and improved distribution of landscape types will open up new experiences of the waterfront for more residents and provide a broader range of uses. As the waterfront continues to evolve and host new uses, including open spaces, improving access to the waterfront from neighborhoods citywide, must be prioritized. A new, robust system of waterfront circulation and transportation can connect neighborhoods, connect people to jobs, and provide access to existing and new cultural destinations.

Climate & Environment

Imagine Boston Waterfront climate analysis is informed by Climate Ready Boston, Boston's climate adaptation plan.

Climate change, and increasing coastal and riverine flooding exacerbate existing risks and threaten the safety and economic vitality of the city. Out of all American cities, Boston is fourth in terms of assets exposed to a one percent annual chance flood, and expected annual economic losses due to flooding.¹ With 36 inches of sea level rise, which may be reached as soon as the 2070s, almost one-fifth of the city's land area will have a one percent chance of being inundated in any given year; this inundation would cause over \$14 billion in economic losses.² In addition, five percent of Boston's current land area will be inundated at high tide at least once a month, even without any storm conditions.

There is an urgent need to prepare for future flood risk along Boston's waterfront with district-scale flood protection systems that employ both hard engineered systems and systems that rely on natural ecosystem functions. Given the tremendous future flood risk faced by existing neighborhoods, it is critical that the City pursue both building-level upgrades as well as district-scale interventions that protect the public realm, streets, and infrastructure, and explore citywide protection as needed.

Flood protection strategies can be integrated with the creation of new open spaces and revitalized ecologies that provide habitat, improve water quality and remediate contamination related to former industrial uses. Over 100 years ago, the Emerald Necklace was created as a hybrid open space and water management system largely within filled tidelands; Boston now has an opportunity to continue in this long tradition of planned landscape that improves the urban environment.

¹ Hallegatte, Green, Nicholls & Corfee-Morlot (2013). "Flood Losses in Major Coastal Cities" *Nature Climate Change*

² Includes direct physical damages to building structure and contents; mental stress, anxiety, and lost productivity; displacement costs (the cost to relocate a business or household as a result of flood impacts). Does not include business interruption or other sources of loss, and is based on existing buildings and population, with no projection of future growth. See Climate Ready Boston report (2016) for more information and methodological notes.

Regulatory Framework

Activities along Boston’s waterfront are subject to several local, state, and federal regulations and review processes. Each of these regulations or processes plays a critical role in promoting public interests along Boston’s waterfront and elsewhere. To continue promoting public interests, it is critical that these regulations and processes support effective responses to changing contexts along the waterfront.

There are a number of key challenges that cut across multiple regulations and processes and should be considered when guiding future planning along the waterfront:

- *Jurisdictional Overlap & Entitlement Complexity.* Government entities regulating waterfront uses have the opportunity to streamline permitting requirements, reducing substantial cost and risk.
- *Private Implementation of Public Benefits.* Existing entitlements typically require the private delivery of open space, often times leading to open space of variable quality.
- *Flood Maps that Do Not Consider Future Risk.* Regulations related to flood risk, in particular the Building Code, use FEMA Flood Insurance Rate Maps. These maps rely on historical data, rather than projections of future flood risk, and therefore underestimate the risk a building will face during its lifetime.
- *A Need to Bridge Large-scale Planning and Parcel-scale Implementation.* Parcel-level approvals may take precedent over the large-scale planning that underpins many regulations and processes.

Chapter 91, The Massachusetts Public Waterfront Act, is instrumental in protecting the public interest along the waterfront. In planning the future of the waterfront there are a number of key features to consider:

- *Lot Coverage & Height Limitations.* Standard Chapter 91 regulations require that at least 50% of a parcel’s land area be reserved for publicly accessible open space, and that building heights be limited to 55 feet within 100 feet of the shoreline, increasing one foot for every two feet away from the shoreline. A Municipal Harbor Plan can allow for greater heights and densities within the Chapter 91 jurisdictions perhaps allowing for a larger public footprint.
- *Facilities of Public Accommodation (FPA) Requirements.* Standard Chapter 91 regulations require that ground floor uses within 100 feet of shoreline must be “Facilities of Public Accommodation” (retail, restaurant, and other publicly accessible uses). Municipal Harbor Plans can include substitute provisions for the standard FPA requirements.
- *Fill & Structure Restrictions.* Chapter 91 regulations restrict filling or building structures below the high water mark except for specific water-dependent uses and to address certain particular site conditions. The Chapter 91 restrictions on fill cannot be altered through a Municipal Harbor Plan.

Designated Port Areas (DPAs), in which activities are generally limited to water-dependent industrial uses, contribute to the preservation of certain jobs and businesses that depend on waterfront access and infrastructure. Key considerations for future planning within DPAs include:

- *Boundaries.* DPA boundaries are ultimately determined by the state Office of Coastal Zone Management and can be changed based on recommendations from a DPA Master Plan or DPA boundary review process.
- *Use Restrictions.* Within DPAs, uses that are not water-dependent industrial are generally prohibited.
- *Fill & Structure Restrictions.* DPA regulations restrict filling or building structures below the high water mark except for water-dependent industrial uses and to address certain particular site conditions.

Citywide Opportunities

The Imagine Boston Waterfront process has identified a number of key opportunities for the future of Boston’s waterfront.

In many areas of the waterfront, it may be possible to combine multiple of these opportunities. For example, a signature new open space may be designed to reduce flood risk for inland areas, and may feature improved pedestrian and bike connections to bring people to the waterfront.

- 1. Create new signature open spaces that leverage underutilized waterfront sites.** Exciting new spaces can become destinations for all Bostonians and visitors.
- 2. Form networks of connected open spaces and cultural destinations.** Legible pedestrian connections between existing open spaces and cultural facilities can yield a whole network that is greater than the sum of its parts. This is an especially relevant opportunity in highly-developed areas of the city where space for new open space is extremely limited.
- 3. Expand the diversity of experiences along stretches of the waterfront.** A greater variety of experiences along particular stretches of the waterfront, including natural areas, active and passive recreation, dining, living, and working, can make the waterfront more interesting and attractive to a wide range of people.
- 4. Expand connections between neighborhoods and the waterfront.** Improved pedestrian, bicycle, and ferry connections between neighborhoods and the water's edge can increase the waterfront's value as a public resource for all.
- 5. Strengthen and expand waterfront housing and job centers.** Through the preservation and agglomeration of critical maritime industrial uses, and expansion of jobs and housing in select areas planned for climate adaptation, the waterfront can serve the needs of Boston's growing population and economy.
- 6. Develop local climate resilience plans to prepare existing and expanded job centers and neighborhoods.** Coordinated planning in areas of severe flood risk, including the study of flood protection infrastructure, can ensure that existing job centers and neighborhoods can continue to thrive, and new development can be safely built, in the face of climate change.
- 7. Create flood protection systems that provide multiple benefits.** Integrating nature-based ("green") and hard engineered ("gray") flood protection infrastructure with public access spaces, recreational areas, or ecologically productive wetlands can maximize the benefits of these investments and the funding available to implement them.
- 8. Apply new, sustainable models for the creation and maintenance of public waterfront areas.** Innovative models that, for example, leverage the value generated by private development, or employ public-private partnerships to create, operate, maintain, or program parks can ensure the long-term quality and sustainability of public areas.
- 9. Deploy proactive zoning and create a predictable entitlement process for greater public benefits.** Zoning standards that allow for greater height and density, but reduced lot coverage, may yield development that provides more land and financial support for public benefits such as open spaces; a predictable project entitlement process can enable long-term planning for neighborhood development and the coordinated delivery of benefits.

Planning Area Issues & Opportunities Summary

Dorchester Waterfront

Through transformative infrastructure investments and appropriate planning for new development, the Dorchester Waterfront could become an accessible and appealing destination for visitors from adjacent neighborhoods and throughout the region, with a re-naturalized shoreline landscape as well as flood protection for inland areas. Currently, the Columbia Point waterfront has few inviting access points for pedestrians, lacks variety, and is not conducive to recreation or public gathering. As significant risks associated with flooding continue to rise along the waterfront, Columbia Point – home to major institutions and employers – and Moakley Park may become a key area for interventions that would reduce flood risk for large parts of the city.

Downtown Waterfront

There are opportunities to enrich and diversify the Downtown Waterfront public realm to create a more vibrant, welcoming, and accessible gateway to Boston’s historic core which can be undertaken in concert with interventions to reduce inland flood risk. Although many sections of the Downtown Waterfront are largely built-out, there are several planned developments along the waterfront that could have a significant impact on the area and have the potential to make meaningful contributions to the public realm. These contributions may include the development of new open spaces that draw people to the water’s edge, fostering continuity, connectivity, and experiential diversity along the Downtown Waterfront, and interventions to reduce inland flood risk.

Fort Point Channel

Along Fort Point Channel, there are opportunities to build on momentum from ongoing nearby development for improved public access and circulation, water quality improvements and habitat creation, new signature open space and integrated flood protection that reduce significant flood risks for the South End, Newmarket, and Widett Circle. Public and private redevelopment projects along Fort Point Channel can potentially yield coordinated and major benefits for the immediate area and inland areas as well. However, existing plans, such as the 100 Acres Plan have seen limited realized redevelopment and associated public benefits to date, indicating the limitations of a parcel based master plan that relies on incremental development to achieve public benefits.

East Boston Waterfront

In a time of rapid neighborhood change and increasing flood risk, East Boston’s waterfront may host new housing, job centers, and a meaningful open space system. Significant stretches of the East Boston waterfront are currently underutilized and could potentially host new housing, jobs, open space, or restored habitat, providing vital flood protection for the area. Currently, the Harborwalk in East Boston is generally discontinuous and disconnected from the public realm due to physically or visually segregated public open space affiliated with new development and the challenges associated with much of the waterfront being located within the Designated Port Area. Due to former industrial uses in East Boston, a number of waterfront sites will require investigation and remediation of environmental contaminants before a change of use that allows for coordinated flood protection or improvement public access occurs.

Long Island

To complement Camp Harbor View and add to the diversity of the Harbor Islands, parts of Long Island could support significant open space in the tradition of the region’s great reservations, allowing generations of Bostonians and visitors to experience nature just minutes from Downtown and promote the resiliency of this vital natural barrier for the city. In other areas, existing buildings and infrastructure on Long Island have potential for reuse for a variety of purposes, including some visitor-serving private uses that are complementary to Long Island’s natural landscape and history, or the restoration of some social services.



Citywide Issues & Opportunities

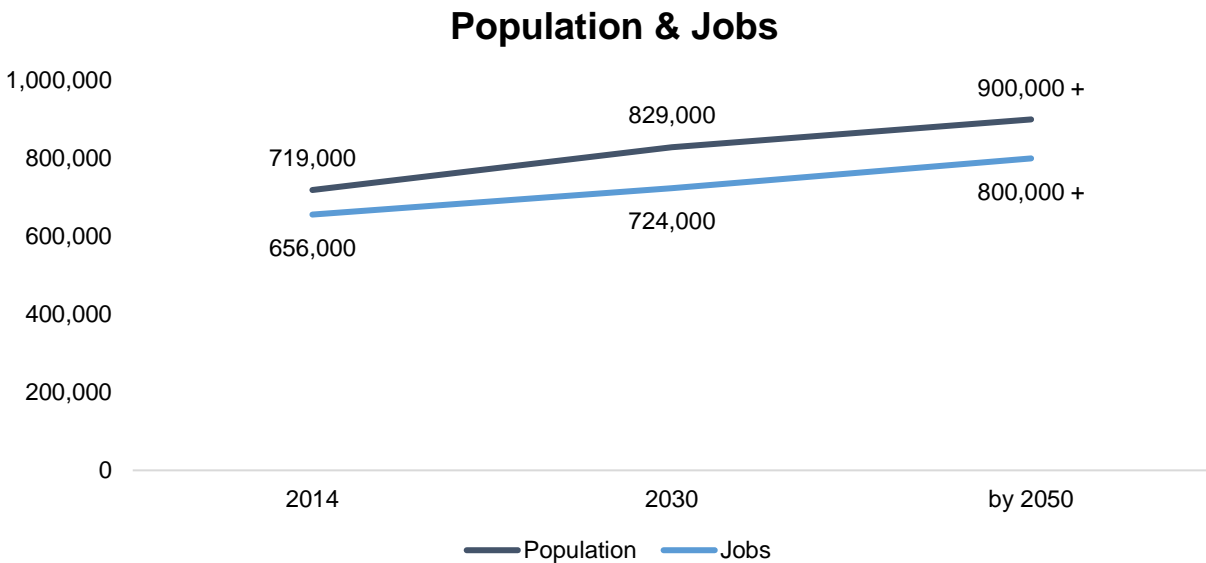
Changing Contexts

Boston's waterfront remains an important source of employment, recreation, and historic pride. For the waterfront to maintain that critical role, it will evolve as the City itself has evolved, while retaining its roots.

Economy & Demographics

This section is primarily based on analysis performed for Imagine Boston 2030, Boston's first comprehensive plan in 50 years, and therefore considers not only the waterfront, but the entire city.

Boston is growing rapidly, necessitating new places to live and work. Between 2010 and 2014, our population grew by six percent to over 656,000, twice the rate of the nation.³ The coming years are expected to bring continued strong growth. By 2030, Boston will be home to at least 724,000 residents, an increase of eight percent from our current population and a number Boston has not seen since before 1960. Continued population growth at the same rate after 2030 would put Boston on pace to return to its 1950 peak population of 801,000 before 2050. Alongside population growth, Boston added nearly 45,000 jobs between 2010 and 2014.⁴ Boston is projected to be home to 829,000 jobs by 2030 and more than 900,000 jobs by 2050.⁵



As Boston has grown, the City's economy has changed dramatically with the decline of industry and the rise of the knowledge economy. The City's economy, once centered on the waterfront, shifted inland as health care and education sectors began to spur Boston's growth beginning in the 1970s and 1980s. Today, the nature of our relationship to the water for employment has changed: many of Boston's highest density job centers are located close to the waterfront in the commercial core, but few have a direct connection to the maritime economy. Boston's post-Recession job growth has been especially rapid, fueled by strong growth in professional services, healthcare and education.

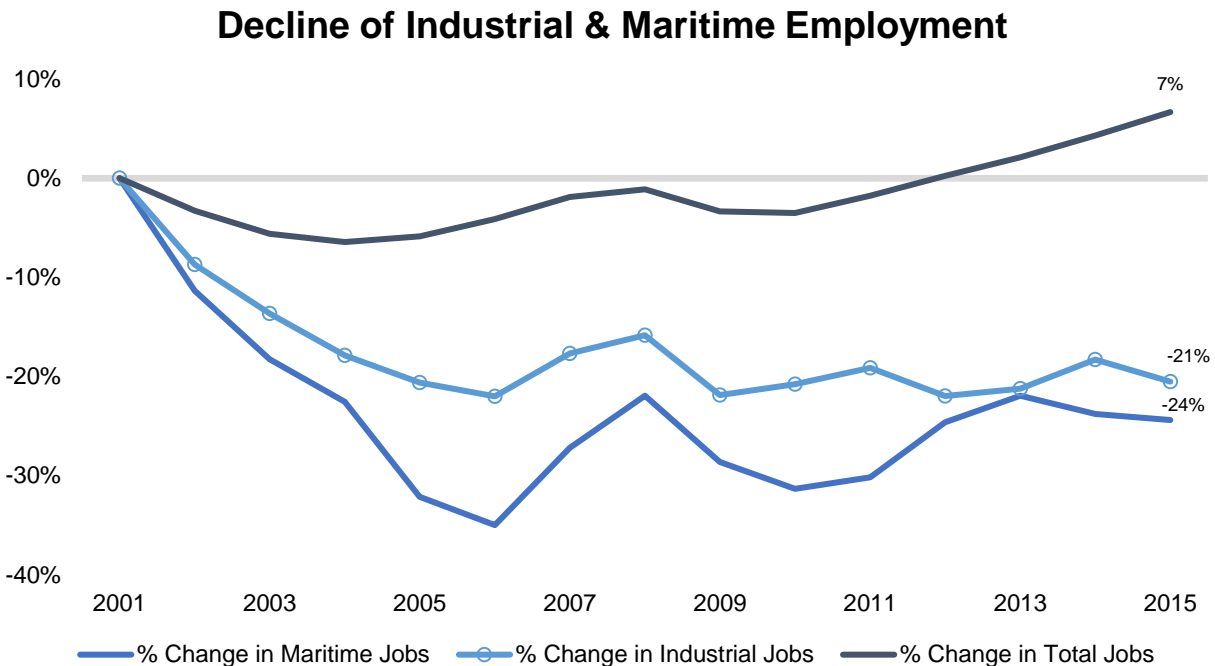
Industry along Boston's waterfront performs critical functions for the regional economy, but its size is diminishing. Activities like cargo transport and ship repair serve the region and provide thousands of jobs, depending directly on

³ ACS 1-Year Estimates (2014), U.S. Census Bureau

⁴ BPDA

⁵ Imagine Boston 2030 Job projections. BPDA Job Projections (2030), HR&A Advisors (2050)

access to Boston Harbor. However, the scale of maritime activities is shrinking: the total weight of goods imported into the Port of Boston decreased by 20% between 2010 and 2014⁶, and maritime employment decreased by 24% from 2001 to 2015, a steeper decline than for overall industrial employment, which has also seen significant and continued declines since the mid-twentieth century.⁷



The Port of Boston

Despite this decline, the Port of Boston remains vital to the city and state’s economy. Combined, it represents the state’s sixth largest employer, creating approximately 7,000 direct and 50,000 total jobs. In addition, more than 1,600 businesses use the port. It has a \$4.6-billion impact and contributes \$203 in federal tax revenues and \$136 million in state and local tax revenues.

However, housing production has not kept pace with growing population. This limited supply of housing has led to rising prices, which coupled with stagnant wages make living in Boston expensive for many households. While Boston’s median household income is on par with that of the nation,⁸ median home value is \$464,450, over 2.5 times greater than the national median of \$177,850.⁹ Today one in five households are severely housing cost burdened, spending 50 percent or more of their income on housing costs.¹⁰

Housing cost increases in many formerly affordable neighborhoods, including along the waterfront, have been particularly acute. For example, while the citywide average growth in home values from 2010 to 2015 was 38%, it

⁶ BPDA (DRAFT IN PROGRESS) “Raymond L. Flynn Marine Park Master Plan Update”

⁷ Economic Modeling Specialists, Inc.

⁸ Boston’s median household income in 2014 was \$56,902, while the national median was \$53,657 (2014 ACS 1-Year Estimates)

⁹ Zillow Housing Value Index, 2015 Median Housing Value

¹⁰ US HUD, CHAS Data (2009-2013)

was almost ten percentage points higher in Dorchester.¹¹ In some waterfront areas, development is occurring rapidly and much of this housing is costlier than the existing housing stock in the surrounding neighborhood. For example, average 2015 rents in East Boston were just under \$2 per square foot, while rents in new waterfront apartments reach over 75% higher.¹²

To address rising prices and enable continued job and population growth, Boston needs to identify areas for new housing units and spaces to work. Through careful management, Imagine Boston is identifying areas where Boston can accommodate over 53,000 total units of housing by 2030 and 99,000 units by 2050, creating a release valve for existing neighborhoods that are seeing immense pressure on housing prices.¹³ Imagine Boston is also identifying areas where Boston will encourage continued job growth by providing 22 million SF of spaces for jobs—the equivalent of over 18 Prudential Towers—by 2030 and over 40 million SF by 2050 that respond to where and how people will want to work in the future.¹⁴

Given Boston’s changing economy and demographics, and the need to preserve and relieve pressure on existing neighborhoods, there may be opportunities for the waterfront to make meaningful contributions to job creation and preservation, housing production, and quality of life improvements. These opportunities are dependent on solving flood risks for existing and future vulnerable areas.

Some key nodes of economic activity, including Conley Terminal, the Raymond L. Flynn Marine Park, and the Autoport in Charlestown must continue to host vital businesses that provide quality industrial jobs and remain critical for the Greater Boston region’s economy. However, even within these key nodes, some employment is not actually water-dependent, and job density is lower than in other parts of the city. Major portions of waterfront land—almost 600 acres¹⁵—remain designated for water-dependent industrial uses, and may have the potential to evolve to serve Boston’s pressing needs for jobs, housing, open space and flood protection.

Planning for Boston’s Future in the Face of Climate Change

Through Imagine Boston 2030, the first citywide plan in 50 years, the City has identified areas that have capacity to accommodate Boston’s growing population and economy. Contextually sensitive growth in existing neighborhoods and the commercial core will provide significant amounts of new housing and spaces to work; however, growth in these areas alone will not accommodate all of Boston’s demand. That means that the City must look outside of existing neighborhoods and the commercial core to identify concentrated areas that can support growth. As Boston is a waterfront city, many of these growth areas, like many existing neighborhoods, are in the future floodplain. To grow in these areas, Boston will need to study and implement multi-layered flood protection and to leverage some of the value of new development to support this protection. Careful planning is critical to ensuring that existing neighborhoods can adapt and that new neighborhoods are ready for the changing climate. Through Climate Ready Boston, a citywide plan for climate change adaptation, the City has already proposed measures to ensure that Boston continues to thrive in the face of climate change.

¹¹ Zillow Housing Value Index, 2010 compared to 2015

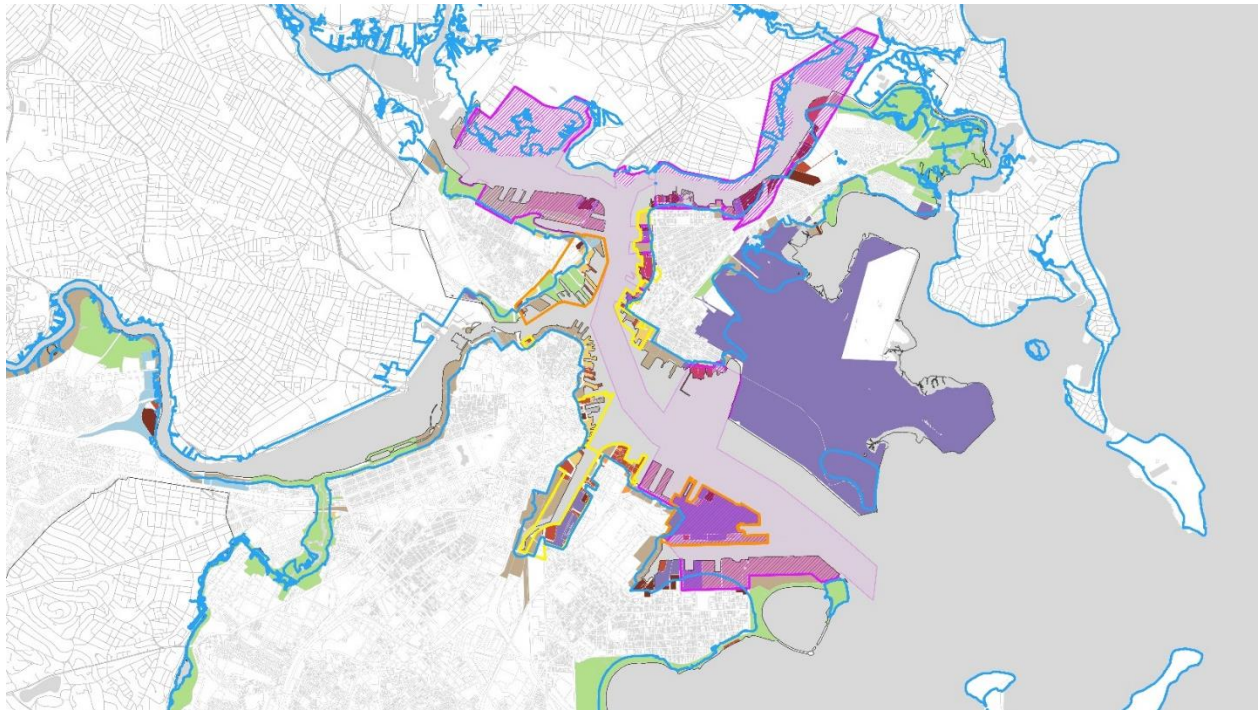
¹² Zillow Average Rent, 2015; Portside at East Pier <http://goeastpier.com/>

¹³ Housing A Changing City: Boston 2030 (2030), BPDA, HR&A Advisors (2050)

¹⁴ BPDA, HR&A Advisors

¹⁵ Area of Boston land within Designated Port Areas

Figure 1: Waterfront Land Uses



Although Boston’s waterfront contains a diversity of uses, a large proportion of the waterfront is currently industrial land. Almost 600 acres of land is within Designated Port Areas, where uses other than water-dependent industrial are generally restricted. With the shift in the maritime economy, some of these lands may be more productively used for housing, offices, or open space.



Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS * Heavy Commercial refers to logistics, warehousing, and auto-oriented commercial.

Open Space & Access

The Boston waterfront has a magnificent natural setting, as well as a history of proactive land forming. At the confluence of multiple rivers, sheltered within a protective harbor, and lined with intertidal wetlands, Boston has a waterfront rife with opportunities for commerce, recreation, and habitat. Upon this natural landscape, Bostonians for centuries expanded their city's land mass for industry, housing, and recreation, as in Downtown, South Boston, Back Bay, and elsewhere.

The region also has a legacy of transformative open space investments, including along the waterfront. Some of this open space, such as the Downtown Harborwalk, is present within the footprint of former port areas. Others, such as the Charles River Esplanade, Moakley Park, and Castle Island, were created on tidelands that were filled expressly for the purpose of fulfilling recreational open space needs in a growing 19th and early 20th-century Boston. Further afield, the reservation landscapes such as Middlesex Fells and Belle Isle Marsh were set aside and carefully managed, providing city-dwellers with access to generous tracts of land that can support regional ecosystems.

The waterfront has the potential to build on this legacy by providing exciting, compelling open spaces that serve neighborhoods while also functioning as regional destinations. These new open spaces should reflect Boston's rich diversity of waterfront landscapes to create a heterogeneous network of urban, recreational, and natural spaces that serve residents and regional visitors year-round. Adjacencies to active industrial activity or to its built legacy, once seen in purely negative terms, can be understood as adding interest and depth to the experience of the waterfront open space. Open space can provide a platform for the public to observe and appreciate working elements of Boston Harbor as well as its industrial legacy.

The waterfront also provides the opportunity for a new, robust system of connections to, along, and across the water, linking people to jobs and provide access to existing and new cultural destinations. The beginnings of this system are already in place, with the existing Harborwalk, ferries, and water taxis. However, there are key corridors leading to the waterfront that can be strengthened, broadening access to this great resource, as well as possibilities for waterborne transit that would stitch parts of the city and the region closer together.

Figure 2: Diversity and Homogeneity Along the Waterfront



Urban Edge



Recreation



Natural



As a whole, Boston's waterfront hosts a diversity of different landscape types, from the Urban Edge type of Rowes Wharf's paved walkways, to the Recreational Type of Carson and other beaches, to the Natural type of the Belle Isle Marsh. However, the Urban Edge type tends to dominate the Inner Harbor, and Natural Lands are relegated to the fringes. A greater diversity of landscape types throughout the waterfront can bring increased interest, greater access, and a broader range of use.

Climate & Environment

This section is primarily based on analysis performed for Climate Ready Boston, Boston's climate adaptation plan.

Climate change, and sea level rise in particular, brings new risks and threatens the safety and economic vitality of the city. Out of all American cities, Boston is fourth in terms of assets exposed to a one percent annual chance flood, and expected annual economic losses due to flooding.¹⁶ As the sea level continues to rise, the number of areas exposed to flooding is increasing. With 36 inches of sea level rise, which may be reached as soon as the 2070s, almost one-fifth of the city's land area will have a one percent chance of being inundated in any given year; this inundation would cause over \$14 billion in economic losses.¹⁷ In addition, five percent of Boston's current land area will be inundated at high tide at least once a month, even without any storm conditions.

What is a "One Percent Annual Chance Flood"?

A "one percent annual chance flood" is a flood event that has a one in one-hundred chance of occurring in any given year. Another name for this flood is the "100-year flood". Experts prefer not to use the "100-year" term, since it gives the impression that a certain level of flooding will only occur once every 100 years. In fact, it has a one percent chance of occurring in any given year, and can even occur multiple times in a single year or decade.

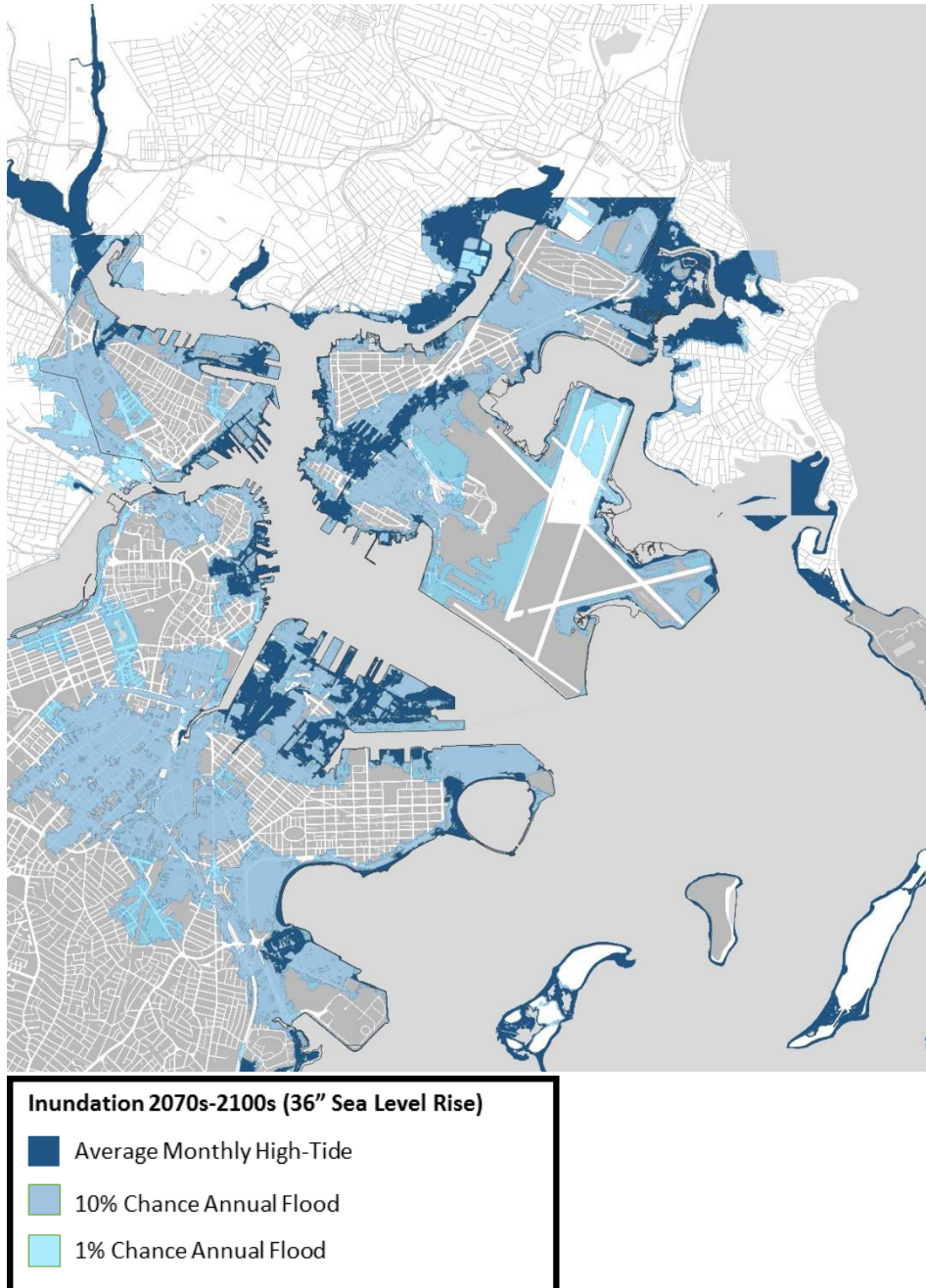
Over a 30-year period, there is almost a one in three chance that a one percent annual chance flood will occur at least once.

Many established neighborhoods and commercial areas, as well as areas in which Boston will need to grow to meet its need for housing and jobs, face increasing and unacceptable flood risk this century. Over the next few decades, flood risk is concentrated in the waterfront neighborhoods of East Boston, Downtown, South Boston, Charlestown, and Dorchester but later in the century, major inland areas, including the South End, Newmarket, and Widett Circle will face significant risk.

¹⁶ Hallegatte, Green, Nicholls & Corfee-Morlot (2013). "Flood Losses in Major Coastal Cities" *Nature Climate Change*

¹⁷ Includes direct physical damages to building structure and contents; mental stress, anxiety, and lost productivity; displacement costs (the cost to relocate a business or household as a result of flood impacts). Does not include business interruption or other sources of loss, and is based on existing buildings and population, with no projection of future growth. See Climate Ready Boston report (2016) for more information and methodological notes.

Figure 3: Flood Risk, 2070s to 2100s



Boston's low-lying edges expose it to coastal and riverine flooding. Given 36 inches of sea level rise, expected between the 2070s and the 2100s, almost 20% of the city's land area would be inundated by the 1% annual chance flood, and economic losses of over \$1.6 billion per year are expected on average due to flooding.

A district-scale approach to flood risk reduction will become increasingly important and cost-effective as the climate changes and district-scale flooding goes from a rare to a frequent occurrence. Building-scale adaptation alone will not suffice if streets, tunnels, transit, and other key infrastructure assets are frequently inundated. Certain district-scale flood protection infrastructure may require in-water construction.

After decades of cleanup, Boston Harbor water quality is generally high, but remains challenged in certain locations. Several remaining combined-sewer-outfalls (CSOs) are not slated for separation of sewage/wastewater and stormwater. Waterfront redevelopment opportunities should explore the potential for capturing stormwater in a quantity and manner that relieves the burden on these remaining CSOs, as well as opportunities to treat water before it enters the harbor.

Some waterfront areas also bear the contamination of former industrial uses. Under current regulations, contamination is typically addressed upon change of use; however, contaminated soil is often remediated and capped on-site. Future sea level rise and flood levels should be taken into consideration to prevent potential disturbance of contaminated soils in these conditions.

There have been ecological restoration efforts at various scales throughout the Harbor, successes that can inspire continued action. From the Belle Isle Marsh Reservation to the pilot Salt Marsh at the Condor Street Wilds, there have been a number of successful efforts at ecological restoration projects in the Boston Harbor. Expanding shellfish habitat, salt marsh and riparian edges can yield benefits to water quality, habitat and the public experience of the waterfront.

Existing Regulatory Framework

Activities along Boston’s waterfront are subject to a number of local, state, and federal regulations and review processes.

Each of these regulations or processes plays a critical role in promoting public interests along Boston’s waterfront and elsewhere. To continue promoting public interests, it is critical that these regulations and processes support effective responses to changing contexts along the waterfront:

- *Economy & Demographics.* Recent economic and population growth demand that Boston protect existing job and housing centers, improve connectivity to the waterfront, and reduce flood risk in exposed areas. Regulations should respond to current, rather than past economic and demographic realities so that Boston can use its waterfront to the fullest.
- *Open Space & Access.* As the major maritime industrial uses of the waterfront have receded, public access has steadily increased. Planning, regulatory, and implementation tools should lead to a varied, active, and continuous waterfront public realm that furthers aspirations for the waterfront as a public resource.
- *Climate & Environment.* The waterfront is the City’s frontline for climate defense. Along the waterfront, the consequences of sea level rise will be felt first and most severely, but there are potential protective interventions that can be implemented to mitigate risks. Tools for planning, regulating, and implementing along the waterfront should appreciate the dynamic character of the natural environment, including sea level rise in particular.

The major regulations and review processes are summarized in the table below.

Regulation/Process	Overseeing Entities	Jurisdiction	Description
<i>Federal</i>			
USACE Permitting	USACE ¹⁸	Activities within navigable waters of the United States.	A process for protecting the navigability and environmental quality of waterways. USACE applies a fee for filling of jurisdictional waterways.
<i>State</i>			
Chapter 91	MassDEP ¹⁹ ; CZM ²⁰	Generally, all activities in Massachusetts seaward of the historic mean high water line. On filled tidelands outside of a Designated Port Area, which includes much of Boston’s waterfront, the boundary is the first public way or 250 feet from mean high water, whichever is farther landward.	The Commonwealth’s primary tool for promoting public use of tidelands and waterways through regulations pertaining to uses, heights, public access, and fill.
Designated Port Area (DPA)	MassDEP ⁷ ; CZM ⁸	Activities within specified waterfront areas. In Boston, there are DPAs for parts of the South Boston, East Boston, and Charlestown waterfronts.	An area in which uses are generally restricted to water-dependent industrial uses.

¹⁸ US Army Corps of Engineers

¹⁹ Massachusetts Department of Environmental Protection

²⁰ Massachusetts Office of Coastal Zone Management

Massachusetts Wetlands Protection Act	Boston Conservation Commission	Any activities within wetlands and 100-foot buffer including FEMA flood hazard areas	
Building Code	BBRS ²¹	Buildings in Massachusetts.	The code requiring that all buildings meet certain safety standards.
<i>State/Local</i>			
Municipal Harbor Plan (MHP)	Municipality; MassDEP ⁷ ; CZM ⁸	Activities within specified areas of the Chapter 91 geographical jurisdiction. In Boston, there approved or in-progress MHP's for parts of the South Boston, East Boston, Fort Point, and Downtown waterfronts.	A state-approved plan, developed by a municipality, that provides an alternative set of regulations for specific areas within Chapter 91 jurisdiction.
DPA Master Plans	Municipality; MassDEP ⁷ ; CZM ⁸	Activities within specified DPAs.	A state-approved plan that provides an alternative set of regulations for specific areas within a DPA.
<i>Local</i>			
City of Boston Zoning Code	Boston Planning & Development Agency, Boston Zoning Commission, Inspectional Services Dept.	Buildings in Boston.	Dictates the appropriate heights, densities, and uses allowed in different areas of the city.
Planned Development Area (PDA)	Boston Planning & Development Agency	Development within a specific area in Boston.	An overlay zoning district to accommodate development that does not comply with underlying area zoning.
Article 80 Review	Boston Planning & Development Agency	Development in Boston, including PDA's, buildings within PDA's, and buildings outside of PDA's. Small Project Review for those 25,000-50,000 square feet; Large Project Review for larger projects.	A process for examining a project's impacts on its surrounding neighborhood and on the city as a whole, including environment, traffic, open space, and urban design, as well as for negotiating public benefits.

There are a number of opportunities to fulfill the vision for the future of Boston's waterfront that cut across multiple regulations and processes.

Cross-Cutting Features of Existing Framework

Large-scale Planning and Parcel-scale Implementation

Parcel-level approvals may take precedent over the large-scale planning that underpins many regulations and processes. Municipal Harbor Plans, DPA Master Plans, and Planned Development Areas can all contain district-scale frameworks for development, but they all must ultimately be implemented at the project or parcel level through Chapter 91 licensing and Article 80 project review. Whether through large-scale plans that are insufficiently robust to guide parcel-scale approvals, or through parcel-scale approvals that are too narrowly focused on a single project

²¹ Board of Building Regulations and Standards

to implement a larger vision, a new framework can create opportunities for regional planning, district-scale public benefits, and consistent or predictable entitlement requirements.

The results of bridging large-scale planning and parcel-scale implementation include:

- *Connected or District-wide Public Realm.* Many standalone public spaces do not compose a greater whole and limit a neighborhood's and the city's ability to attain its aspirations.
- *Improved District-Scale Flood Risk Planning.* Standalone development projects feature measures to reduce their own flood risk but do not advance district-scale flood risk reduction.

Jurisdictional Overlap & Entitlement Complexity

Government entities regulating waterfront uses have the opportunity to streamline permitting requirements, reducing substantial cost and risk. In a study commissioned by the BPDA, developers who had obtained approvals for waterfront projects consistently cited the complexity of dealing with multiple state and local entities, as well as the time and level of specificity required for entitlement negotiations, as key drivers of cost and risk.²² This would also serve to alleviate the burden of significant cost premiums associated with the construction of safe and flood-resistant waterfront development.

Private Implementation of Public Benefits

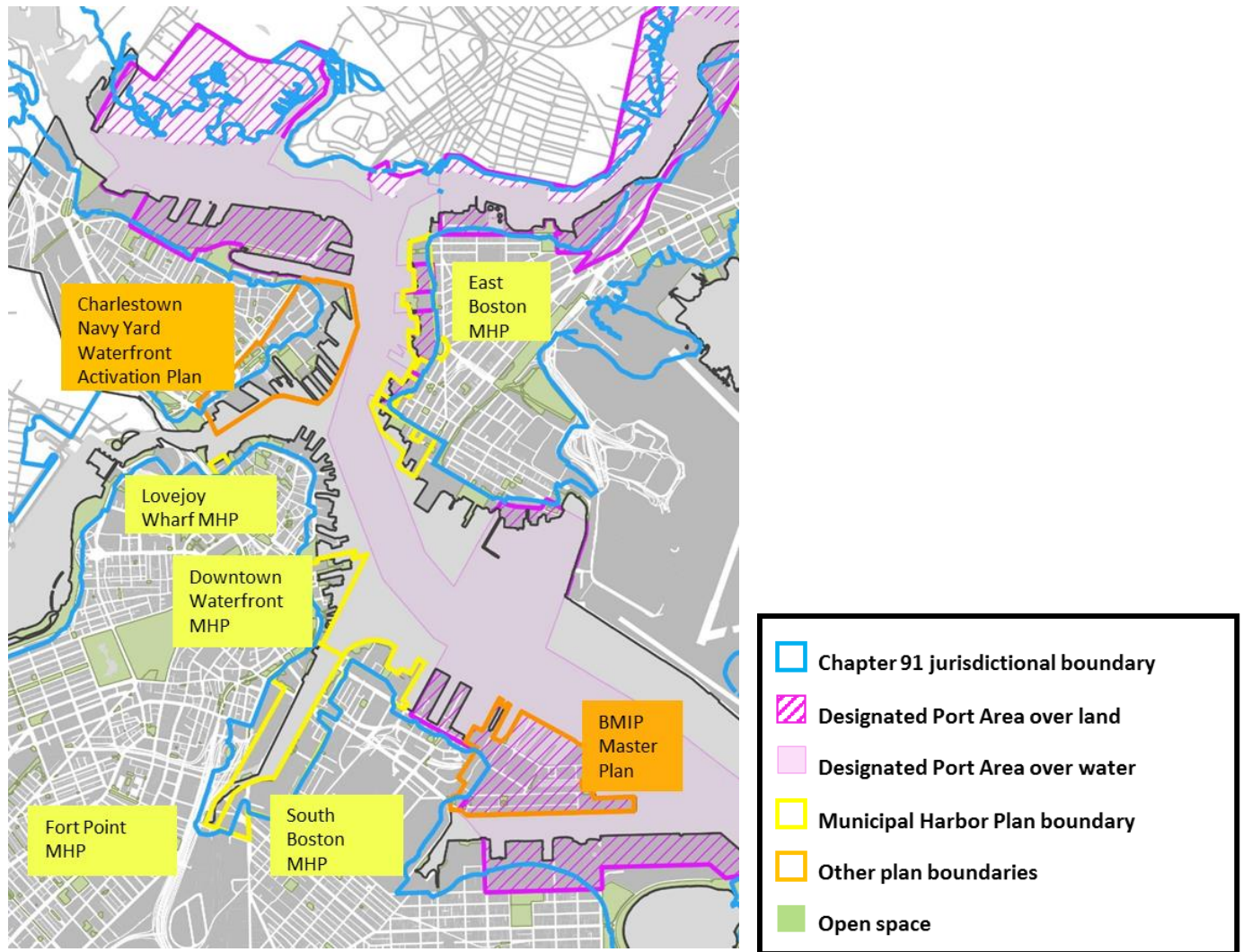
Existing entitlements typically require the private delivery of open space, often times leading to open space of variable quality. These spaces, while open to the public, sometimes feel private in nature or lack the amenities that would draw substantial public use. There is a particular shortage of funding for operations & maintenance for open space. Existing models for operations and maintenance funding, such as memoranda of understanding affiliated with Planned Development Areas, require significant development and buildout of an area before they provide sufficient operations and maintenance funding to sustain active open spaces.

Flood Maps that Do Not Consider Future Risk

Regulations related to flood risk, in particular the Building Code, use FEMA Flood Insurance Rate Maps. These maps rely on historical data, rather than projections of future flood risk, and therefore underestimate the risk a building will face during its lifetime as sea levels rise. This results in newly constructed or renovated buildings that may be prepared for the risks they face today, but not for those of the future.

²² RKG Associates (2016) "Chapter 91 Offsets Analysis"

Figure 4: Multiple Regulatory Jurisdictions



Waterways and lands along Boston's waterfront are subject to multiple regulatory jurisdictions and plans that protect the public interest in many ways but also add cost and complexity to development and, when outdated, prevent the realization of Boston's goals for housing, jobs, open space, and flood defense.

Chapter 91 Considerations

Under Chapter 91, The Massachusetts Public Waterfront Act, activities in waterways and on tidelands throughout the Commonwealth must meet certain regulatory standards including public access, height limitations, and restrictions on fill.²³ Chapter 91 is based on the “public trust doctrine”, a legal principle that holds that waterways and shores belong to the public at large, which remains a primary and important objective of all of Boston’s waterfront planning work. The Massachusetts Department of Environmental Protection’s Chapter 91 regulations are intended to further this principle by enhancing public use and enjoyment of the water and tidelands, promoting tidelands as workplaces for appropriate industries, protecting habitats, and protecting the rights of waterfront property owners to approach their property from the water.

While Chapter 91 regulations and their predecessors have been, and continue to be instrumental in protecting the public interest along the waterfront, they were designed under different social, economic, and environmental contexts. Today, there are elements of these regulations that should be evaluated further to determine how they can best support Boston’s vision for the future of its waterfront.

Any evaluation of regulations should take into account both the regulation and the current mechanisms at the City’s disposal for modifying the regulation. Key areas for further study could include:

- *Lot Coverage & Height Limitations.* Standard Chapter 91 regulations require that at least 50% of a parcel’s land area be reserved for publicly accessible open space, and that building heights be limited to 55 feet within 100 feet of the shoreline, increasing one foot for every two feet away from the shoreline. Loosening these limits could render potential new private development financially feasible in many areas, especially considering Boston’s high construction costs. This could also increase the value of new developments that can be leveraged for public benefits, like open space and affordable housing. One of the key benefits of a Municipal Harbor Plan (see below) is that it can allow for greater heights and densities within the Chapter 91 jurisdictions.
- *Facilities of Public Accommodation (FPA) Requirements.* Standard Chapter 91 regulations require that ground floor uses within 100 feet of shoreline must be “Facilities of Public Accommodation” (retail, restaurant, and other publicly accessible uses). In places where there is little demand for such uses, this requirement could place an additional burden on development without actually providing significant public benefit. Municipal Harbor Plans (see below) can include substitute provisions for the standard FPA requirements.
- *Fill & Structure Restrictions.* Chapter 91 regulations restrict filling or building structures below the high water mark except for specific water-dependent uses and to address certain particular site conditions. Many potential flood protection systems to protect Boston neighborhoods could require adding fill in a Chapter 91 area, and adding fill in certain areas could also potentially offer new space for open space and habitat that would benefit the public. The Chapter 91 restrictions on fill cannot be altered through a Municipal Harbor Plan.

Questions for further study

- Does the City take advantage of the flexibility that exists under the state regulations to create a world-class waterfront?
- Should state and local waterfront regulatory frameworks be revisited as the City conducts more detailed waterfront plans?

²³ See Appendix for a more complete description of Chapter 91 regulations.

Designated Port Areas Considerations

Within the Commonwealth's ten Designated Port Areas (DPAs), activities are generally limited to water-dependent industrial uses. With boundaries overseen by the Massachusetts Office of Coastal Zone Management (CZM) and regulations enforced by the Department of Environmental Protection (MassDEP), the Designated Port Areas are intended to preserve waterfront lands for economically important activities that require access to the water and appropriate infrastructure.

Although Designated Port Areas contribute to the preservation of certain jobs and businesses that depend on waterfront access and infrastructure, in some cases they can be updated to reflect Boston's new economy. Amending DPA boundaries and regulations presents an opportunity to fulfill the vision for the future of Boston's waterfront.

Areas for further consideration could include:

- *Boundaries.* DPA boundaries are ultimately determined by the state Office of Coastal Zone Management and can be changed based on recommendations from a DPA Master Plan or DPA boundary review process. In some areas, the quantity and specific locations of lands within Designated Port Areas may not be justified by the economic realities of water-dependent industry, and changes to select DPAs could support the creation of jobs, housing, and recreation. Furthermore, in some areas DPAs are fragmented, limiting the potential to both agglomerate water-dependent industrial uses and to allow continuous development of non-industrial uses, such as open space and mixed-use development opportunities.
- *Use Restrictions.* Within DPAs, uses that are not water-dependent industrial are generally prohibited. This prohibition has played and will continue to play an important role in preserving certain areas that are vital job centers and serve critical economic functions. However, given the decades-long decline in maritime industrial economic activity, there is shrinking demand for active use of these areas. Loosening restrictions that are not justified by meaningful job creation or preservation may enable important lands to contribute to housing and economic development. By unlocking these areas for more economically valuable uses, new development may also provide a source of value that can be captured to provide or fund flood protection systems that protect assets at the district scale.
- *Fill & Structure Restrictions.* DPA regulations restrict filling or building structures below the high water mark except for water-dependent industrial uses and to address certain particular site conditions. Many potential flood protection systems to protect Boston neighborhoods would require adding fill in a DPA, and adding fill in certain areas could also potentially offer new space for open space and habitat that would benefit the public.

Citywide Opportunities

The Imagine Boston Waterfront process has identified a number of key opportunities for the future of Boston’s waterfront.

In many areas of the waterfront, it may be possible to combine multiple of these opportunities. For example, a signature new open space may be designed to reduce flood risk for inland areas, and may feature improved pedestrian and bike connections to bring people to the waterfront.

1. Create new signature open spaces that leverage underutilized waterfront sites

What: The creation of exciting and inspiring new open spaces that draw people from throughout Boston and the region to experience the unique resources of the Harbor and the rivers. Such spaces would require large sites and world-class design.

Why: As embodied by Chapter 91, the waterfront is a public resource and its natural and recreational potential should be accessible to all. While waterfront open spaces like Castle Island, Christopher Columbus Park and Moakley Park draw visitors from many different places, many existing waterfront open spaces are more narrowly tailored to adjacent neighborhoods without serving the broader public. Further, many of Boston’s signature parks—from the Public Garden to Franklin Park—were created in earlier eras. As a growing, diversifying city, Boston needs new signature open spaces that create destinations where residents and visitors from across the city can convene. Changing uses along Boston’s waterfront present an opportunity to create these vibrant open spaces. In certain waterfront areas that can no longer serve their original maritime purpose, including degraded and dilapidated wharves and piers, there may be opportunities to transform these sites into truly public and civic uses as open space.

Inspiration: Crissy Field, San Francisco

Crissy Field is a former US Army airfield that was transformed in the 1990’s into a 100-acre park with varied landscapes and attractions. It features ecologically restored wetlands, hiking trails, picnic areas, an education center, and cafes, with breathtaking views of the Golden Gate Bridge and the San Francisco Bay.



“What happens with all of this open space during the winter? Open space alone doesn’t bring twelve months of activity by itself. We need active programming and events on the waterfront.”

- Citywide Waterfront Working Group Member

Inspiration: Race Street Pier, Philadelphia

Built on the site of a 19th century shipping pier, the new Race Street Pier opened in 2011 as the first public space in the new Master Plan for the Central Delaware River Waterfront. The one-acre space features lawns and seating areas, and brings visitors to enjoy the formerly neglected riverfront in a dramatic next to the Benjamin Franklin Bridge.



2. Form networks of connected open spaces and cultural destinations

What: The creation of new, and the connection of existing open spaces and cultural destinations to create a larger network or “necklace” of spaces.

Why: Boston’s waterfront has some incomplete or unfulfilled systems of open spaces. There are numerous historical reasons for this: long periods of implementation that did not allow design or programmatic continuity; a strong focus on local neighborhood needs without significant consideration of citywide needs; and privately delivered open spaces that have inward-faced or closed designs. While many existing spaces are on the Harborwalk system, poor wayfinding and sporadic or inconsistent programming undermine connectivity. Also, these networks sometimes lack anchor open space destinations. Especially in built-up neighborhoods like the North End and Downtown, where opportunities for large park spaces are more challenging, a series of smaller parks and cultural destinations can be better connected through a visible and logical pedestrian network, making them attractive to a greater population and active throughout the year. Much like the Freedom Trail provides a literal line connecting the dots of historically significant sites, future networks can create larger wholes from compelling open space and cultural destinations.

“What about a sea green line to connect waterfront open spaces like the Freedom Trail’s red-brick path?”

- *Citywide Waterfront Working Group Member*

Inspiration: South Bank, London

The South Bank of the River Thames in London is a dense former industrial area that now boasts a compelling network of cultural and recreational destinations that are activated through programming and connected through thoughtfully designed walkways. The distance between the London Eye Ferris wheel and the Tate Modern museum is around 1.2 miles, slightly longer than the distance between the North End Coast Guard Base and Hook Lobster in Downtown Boston; though there are many differences between the two stretches of waterfront, the world-class experiences created in the challenging physical environment of South Bank can be an inspiration for long-term planning and investment in Downtown Boston.



Jubilee Gardens



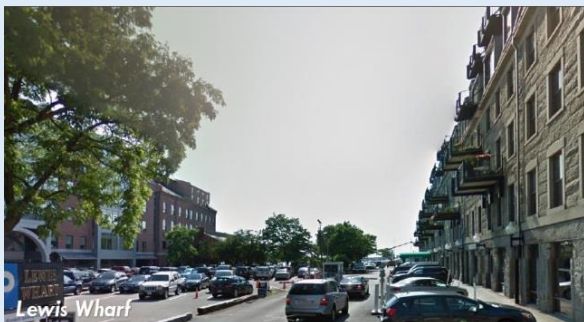
National Theatre



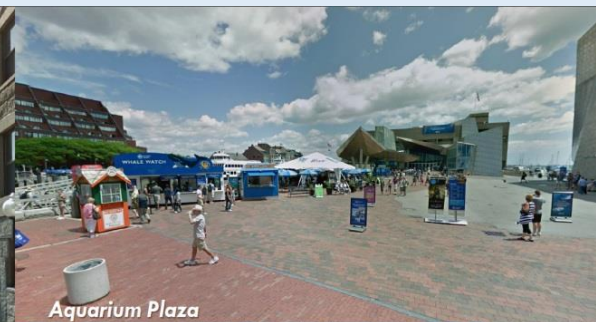
Southbank Centre



Tate Modern



Lewis Wharf



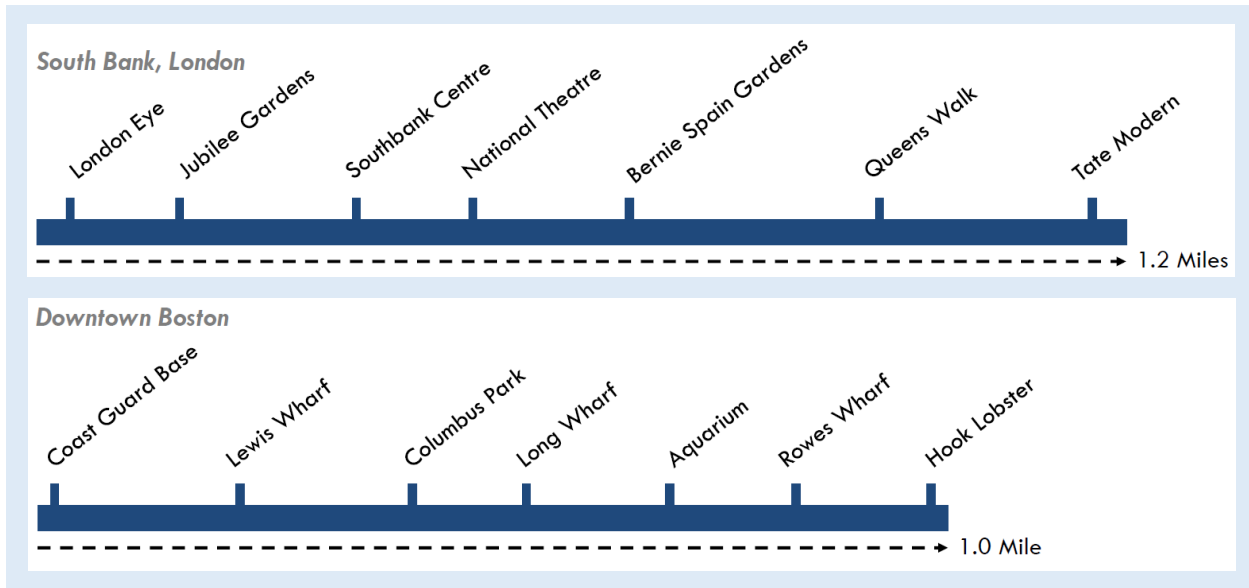
Aquarium Plaza



Columbus Park



Rowes Wharf



3. Grow the diversity of experiences along stretches of the waterfront

Description: Building toward a waterfront that offers users a variety of types of experiences in relatively close proximity, from serene walks in nature to active recreation, and from working to dining.

Why: As a whole, Boston’s waterfront hosts a diversity of types of experiences, ranging from the rich ecosystem of Belle Isle Marsh or the Harbor Islands, to the ballfields of Moakley Park, the brick walkways of Rowe’s Wharf, and the shipyards and marinas of East Boston. However, this diversity is spread out across miles of waterfront; for the public visiting a specific stretch of the waterfront, there is often only a single experience to be had. Through the creation of new public spaces and the reprogramming of existing spaces, there may be opportunities to create areas in which the waterfront lives up to its multi-faceted potential: locals and visitors can sit and enjoy a meal, stroll through a marsh landscape, or play a game of soccer, and encounter others who have come to enjoy the waterfront.

“Private-feeling’ landscapes around buildings should connect to ‘public-feeling’ landscapes. A good example is the Federal Reserve Bank Park.”

- *Citywide Waterfront Working Group Member*

“There’s more to Boston’s waterfront than its role in the American Revolution and it should also be celebrated!”

- *Citywide Waterfront Working Group Member*

Inspiration: Baltimore Inner Harbor

Baltimore's Inner Harbor, once the center of the city's maritime economy, now offers a wide array of experiences for locals and visitors. There are cultural and educational experiences at the Pier 6 Pavilion and the National Aquarium, among other places; passive and active recreation at West Shore Park and Rash Field, respectively; and shopping and dining at Harborplace and elsewhere.



4. Expand connections between neighborhoods and the waterfront

What: Build bike, pedestrian and ferry networks along existing or new green spaces to connect all neighborhoods to the resources and benefits of the harbor and the rivers.

Why: Boston has great examples of open space networks, such as the Emerald Necklace and the Charles River Esplanade, that span multiple neighborhoods and draw people from across the region's diverse communities. There may be opportunities to better connect Boston's waterfront to inland neighborhoods through existing, planned or new networks. The East Boston Greenway is an example of a recently created network that links residents to the waterfront through a green corridor. The Neponset River Greenway is an example of a growing system that will reach from Dorchester through Mattapan and Hyde Park. The South Bay Harbor Trail is an example of a future network that will connect the Southwest Corridor park system and Emerald Necklace through Roxbury to the South Boston Waterfront.

Questions for further study

- Are there roadways, rights of way or other opportunities to expand Boston’s pedestrian and bicycle networks to link our rich inland park systems with the Charles River, Neponset River, Mystic River and Chelsea Creek, Rose Kennedy Greenway and Harborwalk?

“More signage and a unified branding of wayfinding & interpretive signs from landward crossroads to the Harborwalk and Harbor Islands should be used. Many people don’t realize how close the waterfront is!”

- *Citywide Waterfront Working Group Member*

Inspiration: Allegheny Riverfront Park, Pittsburgh

Where the Allegheny River was once cut off from the city of Pittsburgh by a series of highways, it is now connected via a two-level riverfront park, with ramps bringing visitors right down to the water’s edge.



Before



After

Inspiration: East Boston Greenway

The East Boston Greenway, built in an old railroad right-of-way, provides pedestrian and bicycle connections to multiple open spaces in East Boston, forming a network of spaces. With a few gaps, it connects Piers Park, East Boston Memorial Park, Bremen Street Park, Wood Island Bay Edge Park, and the Belle Isle Marsh.



5. Strengthen and expand waterfront housing and job centers

What: Preserve and strengthen the viability of critical water-dependent industrial uses, while also considering opportunities to create new housing and job centers in some formerly industrial waterfront areas.

Why: Boston's waterfront hosts certain critical industrial uses that are dependent on access to the water, and should therefore be preserved in key areas that have appropriate infrastructure. However, the overall volume of marine industrial activity and employment has been declining for decades and Boston's growth in population and economic output have raised land values and put pressures on existing neighborhoods. To accommodate growth in a way that is sensitive to the communities in Boston's existing neighborhoods, some inactive former industrial lands can evolve to enable new housing and job growth. While Imagine Boston is guiding this job and housing growth citywide, some areas with large-scale redevelopment potential are along Boston's waterfront. In these areas, the City is committed to studying climate defenses and protections that enable growth.

"The waterfront should include more market-rate and affordable housing along the waterfront, especially in East and South Boston."

- *Citywide Waterfront Working Group Member*

Questions for further study

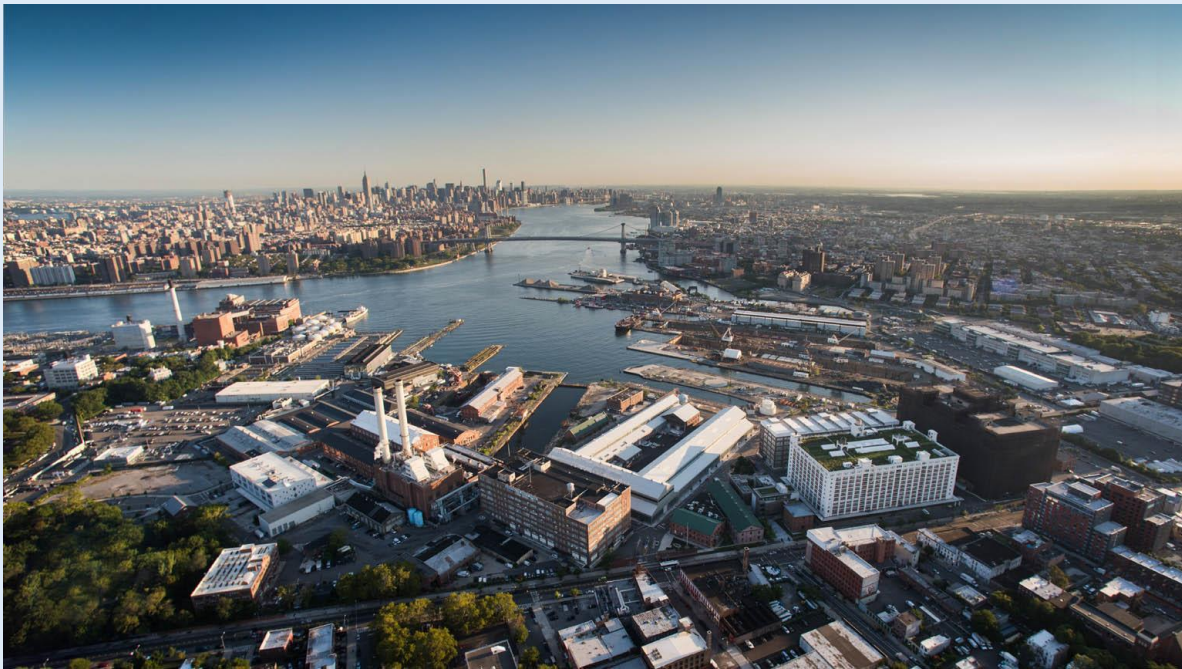
- Are there opportunities for job growth and economic development in certain port-related sectors?
- Are changes in the port economy reflected in the amount of port lands required to serve current or projected populations?
- Are there areas that are currently designated for port activities that can better serve Boston's population and economy by being converted to other uses?

“What does the future working waterfront look like? Boston needs to keep and integrate its industrial waterfront uses and encourage innovation for a working waterfront of the future.”

- *Citywide Waterfront Working Group Member*

Inspiration: The Brooklyn Navy Yard

Established in 1801, the Brooklyn Navy Yard employed 70,000 people at its peak, during World War II. Employment declined drastically in subsequent decades, and continued to decline after the Yard was decommissioned in 1966. In recent decades, the non-profit Brooklyn Navy Yard Development Corporation (BNYDC) has diversified the Yard’s tenant base, which now includes a major film studio and light industrial tenants in growing sectors like food manufacturing. Building off of recent success, BNYDC and its partners are investing \$700 million in new development at the Yards, and expect employment to more than double to 16,000 by 2020.



“The waterfront should also serve as an education tool for Boston public schools and local institutions and universities.”

- *Citywide Waterfront Working Group Member*

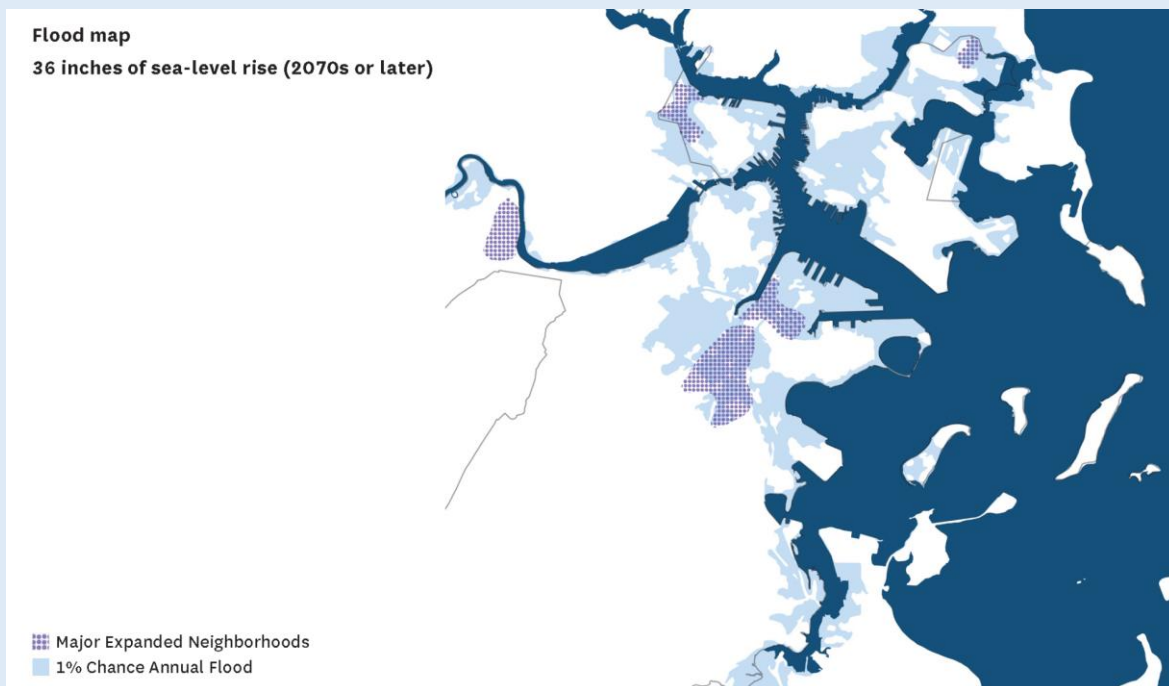
6. Develop local climate resilience plans to prepare existing and expanded neighborhoods for climate change

What: The development of comprehensive local plans for waterfront and inland areas that face severe flood risk. This includes both existing neighborhoods as well as areas in which Boston will expand to meet the needs of its growing population and economy.

Why: The flood risk that faces Boston is not just a challenge for individual buildings and other assets, it is a threat to entire neighborhoods, and to the city's vitality. When streets and other key infrastructure are inundated and out of service, there are wide-ranging impacts. Furthermore, planning for climate adaptation must consider many factors, such as current and future housing, economic development, and open space. Therefore, climate adaptation planning should take place at the district scale, and feature robust community engagement and the coordination of flood protection systems with other infrastructure adaptation efforts.

Imagine Boston and Climate Ready Boston are guiding climate-ready growth

Through Climate Ready Boston, a citywide plan for climate change adaptation, the City has developed policy recommendations to ensure that Boston continues to thrive in the face of climate change. Through Imagine Boston 2030, the first citywide plan in 50 years, the City has identified areas that have capacity to accommodate Boston's growing population and economy. As Boston is a waterfront city, many of these growth areas, like many existing neighborhoods, are in the future floodplain. To grow in these areas, Boston will need to study and implement multi-layered flood protection and to leverage some of the value of new development to support this protection. Carefully managed growth and investment are critical to ensuring that existing neighborhoods can adapt and that new neighborhoods are ready for the changing climate.

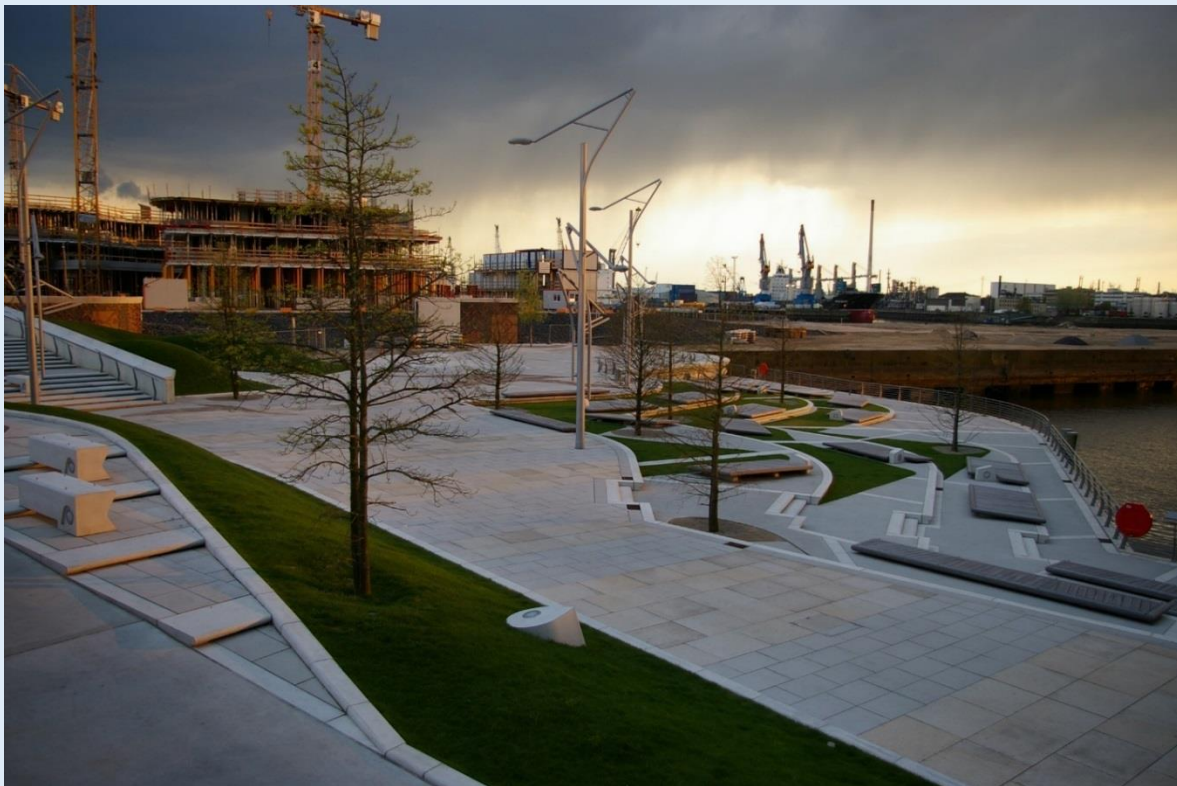


Questions for further study

- Are there opportunities to create new or augmented shoreline and public realm to protect Boston from rising tides and coastal storm surges?
- Can strategically located flood protection systems, both green and gray, protect existing communities and infrastructure from current and future flood events?
- Can the public economic value embedded in inactive Designated Port Areas be redirected toward public climate resiliency value?
- Can well-designed and engineered flood protection systems allow the city to grow in underutilized areas that may be at risk from sea-level rise?

Inspiration: HafenCity, Hamburg

HafenCity is a major new redevelopment of the old Port of Hamburg into a mixed-use community. Outside of the city's dike system, the old port faced severe flood risk. To ensure the safety and long-term resilience of the new community, buildings and roads are elevated above the floodplain, taking sea level rise into account, and waterfront parks are designed to withstand periodic flooding.



7. Create flood protection systems that provide multiple benefits

What: The creation of nature-based (“green”) or hard-engineered (“gray”) flood protection systems, with carefully designed public access, in low-lying waterfront areas that expose inland neighborhoods to current or future flood risk.

Why: Boston faces significant and increasing exposure to coastal and riverine flooding. In addition, Boston’s population and economy are growing, and this growth will require additional development in parts of the city. As with other past engineering and environmental challenges including water quality and transportation infrastructure, Boston has the responsibility to respond. In order for existing residents, businesses, and institutions to be safe and continue to thrive, and in order for Boston to continue to grow and offer economic opportunity for its people, flood risk will need to be addressed through nature-based (“green”) or hard-engineered (“gray”) investments. To maximize the benefits of these investments and the funding available to finance them, they should be integrated wherever possible with public access spaces, recreational areas, ecologically productive wetlands.

“Both green and gray infrastructure are necessary. Boston has existing green assets that can be enhanced to better serve as flood protection infrastructure, such as Belle Isle Marsh and Sales Creek.”

- Citywide Waterfront Working Group Member

“Boston needs comprehensive guidelines to inform the future development of climate-resilient high-rise structures.”

- Citywide Waterfront Working Group Member

“An elevated Harborwalk could be Boston’s ‘Dry Line.’”

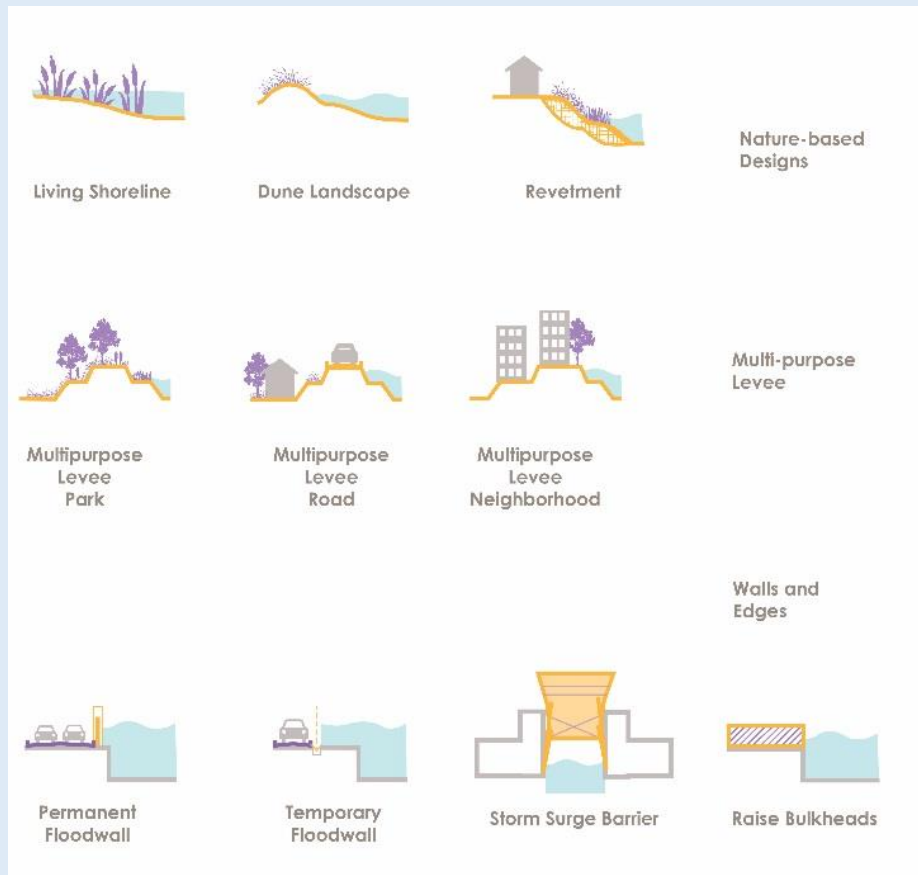
- Citywide Waterfront Working Group Member

“A harbor barrier should be considered as a temporary solution to buy time for inland adaptation.”

- Citywide Waterfront Working Group Member

Examples of Flood Protection Design Types

Flood protection systems can take many different forms. “Gray” or hard-engineered coastal infrastructure, such as levees, floodwalls or gates are typically necessary to protect built-up areas from severe flood events like coastal storms. “Green” or nature-based coastal infrastructure, such as wetlands or living shorelines, can provide environmental benefits and is typically most appropriate for protecting against chronic flooding events like future high tide or minor storms, rather than severe coastal storm events. Hybrid coastal infrastructure incorporates both “gray” and “green” components, combining the best features of each. Examples include reinforced dunes or living shorelines that contain engineered levees.



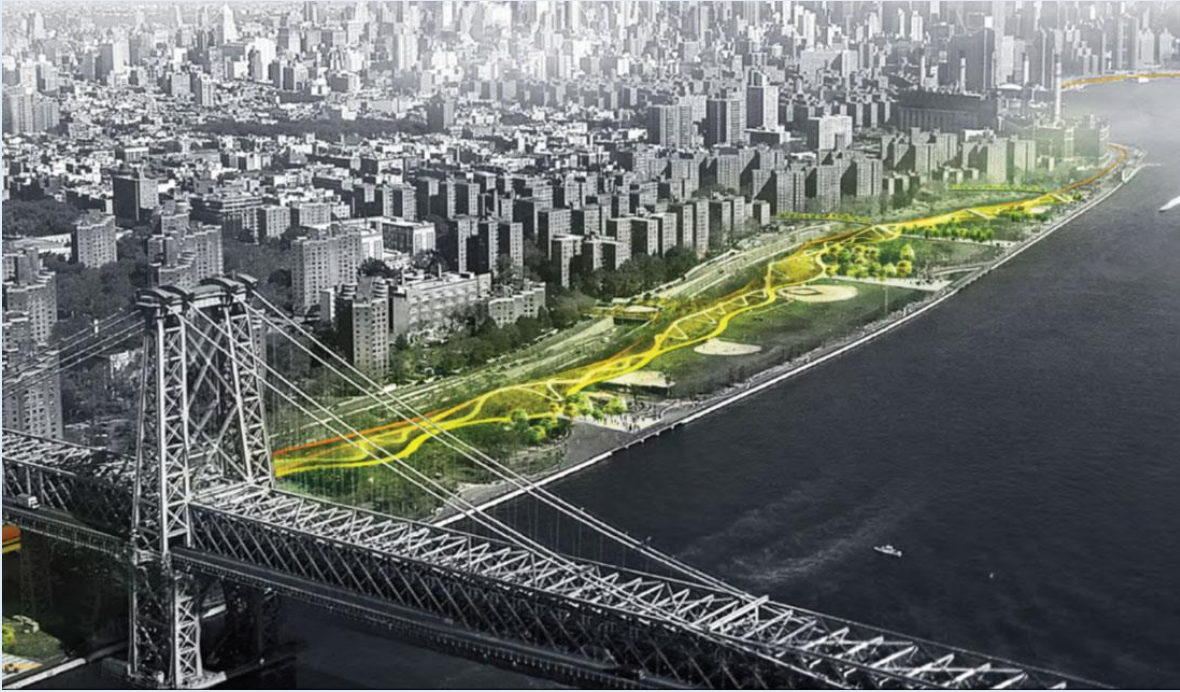
Source: *Climate Ready Boston (2016), City of Boston*

Questions for further study

- Can flood protection systems, particularly green or hybrid coastal infrastructure, provide open space and public access networks to new and expanding neighborhoods?
- Can the learnings from climate adaptation become a basis for new expertise and jobs?

Inspiration: East Side Coastal Resiliency, New York City

The City of New York is designing an integrated flood protection system for the East Side of Manhattan, which experienced extensive flooding from Hurricane Sandy in 2012. Beyond just reducing flood risk, the project will feature improvements to the public realm to support recreation and public gatherings.



8. Apply new, sustainable models for the creation and maintenance of public waterfront areas

What: The creation and utilization of new models that, for example, leverage the value of new development or employ carefully-designed public-private partnerships to ensure sufficient funding and high-quality design, operations, and maintenance of public waterfront areas.

Why: Developing transformative and unique waterfront open spaces requires significant and sustained investments from public and private sources. Following costly capital construction, active waterfront open spaces continue to be expensive and complicated to run well; long-lasting success demands a commitment to significant ongoing operations and maintenance funding and staffing. Given these demands, standard models of public sector delivery and maintenance of open space may not be sufficient for signature open spaces along Boston’s waterfront. Boston can look to private partners, from local friends groups to dedicated special purpose entities, to establish partnerships that support new open spaces. As dedicated stewards, these organizations can produce programming, manage capital improvements, solicit private funding, and oversee routine operations and maintenance. These types of partnerships have the potential to let the City and the private sector focus on the services each does best to deliver great open spaces for Bostonians.

“We should be careful to avoid using regressive taxes to fund public spaces.”

- Citywide Waterfront Working Group Member

Inspiration: Hudson River Park, New York City

Hudson River Park is a four-mile, 150-acre park along the West Side of Manhattan. The design, construction, and operation of the park is managed by the Hudson River Park Trust, a public benefit corporation that is a partnership between New York City and New York State. The City and the State funded the park's construction, while ongoing operations are funded by revenues from commercial activities within the park, such as food vendors and restaurants, and office development on Pier 57. Elsewhere, in over 20 parks around the city, the New York City Department of Parks and Recreation has agreements with nonprofit partners that contribute to programming, operations, maintenance, and capital improvements.



9. Deploy proactive zoning and create a predictable entitlement process for greater public benefits

What: Through planning processes that engage local communities, use the City's Zoning Code and project entitlement process to achieve greater and more predictable public benefits.

Why: Boston's waterfront land is governed by multiple layers of State and City regulation. Past planning efforts to coordinate area-wide waterfront redevelopment have had varied levels of success; implementation of a recent effort, the 2006 100 Acres Master Plan along Fort Point Channel, has generally been slower compared to other districts in South Boston. However, the addition of General Electric (GE) to the district is advancing its implementation.

"A vision is the 'what;' zoning is the 'how.'"

- *Citywide Waterfront Working Group Member*

As Boston works to guide development along the waterfront, there will be multiple areas where the City conducts more detailed planning and revises existing zoning and, in some cases, relevant regulations. In these areas, zoning changes can consider how allowances for greater height and density, but reduced lot coverage, could yield development that provides more land and financial support for public benefits such as open space or flood protection systems. Additionally, a predictable project entitlement process will be critical to enabling long-term planning for neighborhood development and the coordinated delivery of benefits. Through a more predictable entitlement process, Boston can also reduce project costs and risks, supporting continued delivery of needed housing and job space, and more funding for the public benefits that come along with development.

Inspiration: Greenpoint-Williamsburg, New York City

In 2006, the City of New York rezoned nearly 200 blocks of the Brooklyn waterfront neighborhoods of Greenpoint and Williamsburg. In addition to allowing new mixed-use development and providing density bonuses for the creation of affordable housing, the rezoning included requirements for developers to fund and build pieces of a continuous waterfront public area. This was supplemented by an Open Space Master Plan, a framework for the design, development, and maintenance of City and State parks as well as the privately developed public spaces.



Questions for further study

- Would the city benefit from clear and predictable formulas and reasoning for public benefits derived from private development?

Recommended Next Steps

Principles

The following principles are recommendations of how planning, regulation, and implementation can be guided to advance the vision for the future of Boston's waterfront.

These principles must be considered together in order to advance the complete waterfront vision. Given limited public and private resources, there may be short-term competition between the elements of this vision. For example, requirements for district-scale flood protection, public realm improvements, and affordable housing may pose significant burdens on potential developers and thereby investment. Therefore, it is critical that all elements of the vision be considered holistically, and combined whenever possible. For example, in some locations, redevelopment of former industrial areas to increase the city's housing supply and relieve housing cost pressures may create value that can be leveraged to build elevated open spaces that reduce inland flood risk.

Principles for a Resilient Waterfront

Climate ready

- *District-Scale Planning and Flood Risk Reduction.* The City should conduct proactive district-scale planning in vulnerable areas. Infrastructure, open space, and development should provide flood risk reduction for waterfront and inland areas.
- *Plan for Future Climate Conditions.* Rather than relying on historical data, such as backwards-looking flood maps, planning and regulation should consider projected future conditions during a project's reasonable expected lifetime.
- *Public Realm and Climate First Strategy for Area Redevelopment.* The City should employ urban climate adaptation solutions that produce multiple benefits and ensures that new value is captured in part to fund improvements, leaving scarce public funding to close gaps between the cost of adaptation and value captured from other sources.

Environmentally sound

- *Habitat Enhancement.* Waterfront investments should pursue opportunities to enhance habitats that support plants and wildlife and provide valuable local and regional ecological services.
- *Green and Gray Infrastructural Systems.* Functions like stormwater management and flood risk reduction should integrate nature-based systems whenever physically and financially feasible and desirable.

Principles for a Waterfront for All

Inclusive

- *Appropriate Preservation.* Industrial preservation efforts should be focused on critical and expanding water-dependent industrial uses, and agglomerate these uses when possible to maximize their economic viability.
- *Incorporation of New Uses:* In some areas, where the long-term prospect of industrial redevelopment is limited, there may be opportunities to consider how land could be reused for potential housing and job centers, with vibrant open space and public realm and built to thrive in future climate conditions.
- *Accessibility for People of a Variety of Incomes.* Residential development along the waterfront should promote housing affordable to people with a range of incomes, through expanding the supply of both market-rate and assisted housing.

Activated

- *Open Space Quality, Diversity, and Programming.* Plans and regulations should establish area-wide open space design guidelines to ensure both quality and diversity of experience.

- *Open Space Aggregation.* Open space requirements should encourage the aggregation of multiple waterfront sites to create a public realm of critical mass or a network of spaces.
- *Cultural Uses & Activation.* Public realm planning should consider the waterfront as a cultural resource to be enhanced and activated through the development of institutions and programming.
- *Activating the Watersheet for Recreation.* Open space planning should provide robust opportunities for the Watersheet to host recreational activities.

Accessible

- *True Public Access.* The waterfront should be visually and physically accessible from the public right of way, and waterfront open space should require design that engenders a feeling of public space.
- *Connected to Neighborhoods.* Where possible, pedestrian and bicycle connections from neighborhoods to the waterfront should be improved to be safer, more convenient, and more legible.
- *Activating the Watersheet for Transportation.* Provide robust opportunities for the watersheet to connect neighborhoods, cultural institutions, and jobs via waterborne transport.

Principles for a Waterfront with Strong Stewardship

Financially sustainable

- *Organizational mechanisms to support long-term financial sustainability.* The implementation of investments along the waterfront should feature organizational and governance mechanisms that leverage the strengths and missions of public, private, and non-profit entities to ensure financial sustainability in perpetuity.
- *Public Facility Aggregation:* Facilities of Public Accommodation requirements should allow the aggregation of area from multiple sites into viable units to provide better public amenities and reduce the financial risk associated with waterfront development.
- *Public Sector Initiative:* The design and construction of new open spaces should feature robust public partnership to foster more publicly accessible and compelling open spaces.
- *Leveraging of development Value through Predictable Entitlements:* Project public benefit requirements should be predictable and economically sound, as ad hoc entitlements and land speculation present challenges to long-term planning and implementation.
- *Zoning to Create Value and Public Benefit:* Where appropriate, and as determined through area planning processes, real estate development may feature reduced lot coverages but increased height and bulk allowances in order to provide more land and financial contributions for open space.

Collaborative

- *Regional planning and coordination.* Recognizing the many local, regional and national interests in activities along Boston's waterfront, opportunities to streamline and unify the regulatory framework should be pursued where appropriate to reduce the regulatory complexities and costs that hinder development and the accompanying public benefits.

Potential Actions

The City will work with Boston communities to study potential actions that it can take to comprehensively apply the principles outlined above, including regulatory actions, projects, and programs. The City will also explore the potential interventions described in the Citywide and Planning Areas Issues & Opportunities sections of this report.

The lists below include types of actions that the City and communities can explore, as well as specific examples of each.

Projects

- Guide the design and construction of waterfront parklands with integrated flood protection systems.
 - o *Example: Work with non-profit partner(s) to construct signature waterfront parks that advances the waterfront vision, including flood risk reduction.*
- Invest in public realm enhancements along waterfront edge.
 - o *Example: Upgrade key public realm nodes along the waterfront and use design elements to promote continuity along the Harborwalk.*

Programs

- Create vibrant programming that attracts Bostonians and visitors to the waterfront and enlivens public open spaces.
 - o *Example: Run a series of off-season events at multiple nodes along the waterfront to promote year-round use and to create a sense of the waterfront's diversity.*
- Launch a city or regional ferry network.
 - o *Example: Deploy meaningful subsidies to stimulate demand for a ferry service during early years of operation.*

Regulatory Actions

- Create new, amended, or augmented Municipal Harbor Plan.
 - o *Example: Create or amend Municipal Harbor Plans with open space, climate adaptation, funding, and governance plans.*
- Create new DPA Master Plan to study DPA boundaries.
 - o *Example: Undergo a DPA Master Plan process in one or more of the Boston's DPAs.*
- Institute zoning standards throughout future flood zone.
 - o *Example: Per Climate Ready Boston recommendations, institute a "planning flood elevation" based on the latest climate projections and standard planning time periods for new buildings; consider zoning revisions such as measuring maximum building heights from this new datum and requiring extra first-floor height for new buildings to allow future raising of the floor.*
- Advocate to MassDEP and CZM for revisions to Chapter 91 or Designated Port Area regulations.
 - o *Example: Advocate for flood protection and open space to be considered acceptable uses to justify fill in waterways, assuming appropriate mitigation.*
- Create regional waterfront coordination/regulation entity.
 - o *Example: Work with US Army Corps of Engineers, Massachusetts Department of Environmental Protection, and the Massachusetts Office of Coastal Zone Management to create an entity devoted to expediting or facilitating responsible waterfront development particularly flood defense mechanisms.*



Planning Area Issues & Opportunities

Dorchester Waterfront

Aspiration. Through transformative infrastructure investments coordinated with new development, the Dorchester Waterfront could become an accessible and appealing destination for neighboring residents and visitors, with a re-naturalized shoreline landscape as well as flood protection for inland areas.

Major Planning Efforts

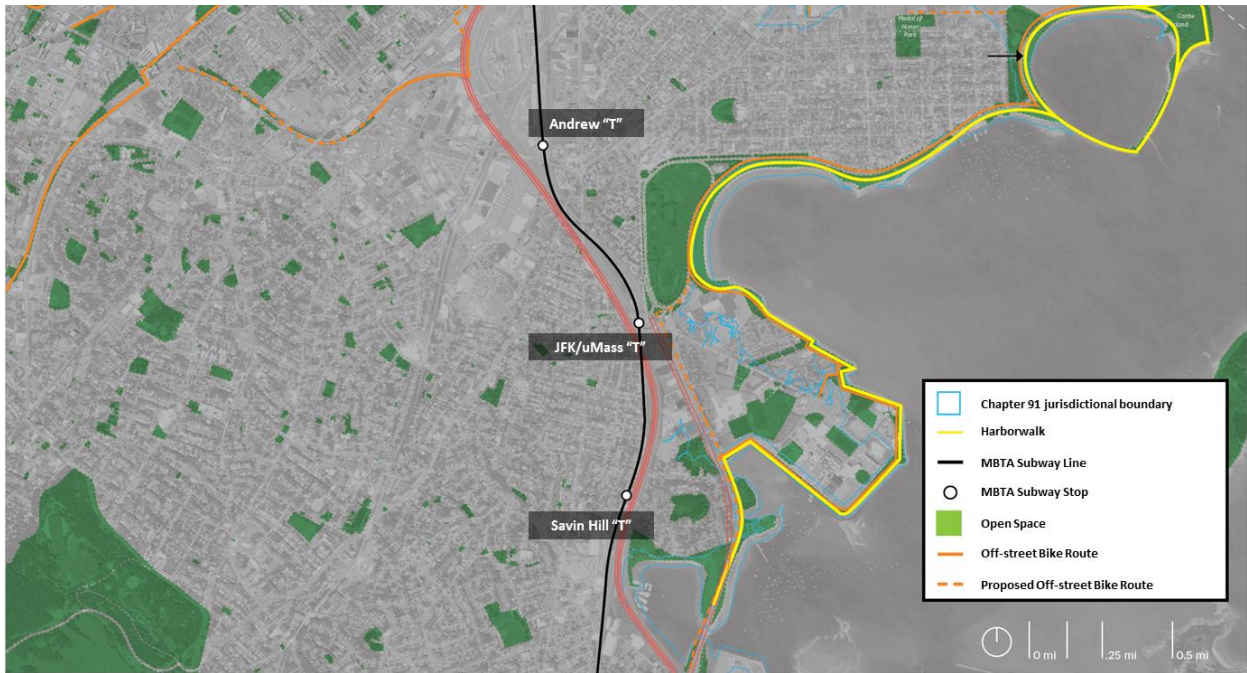
2011 Columbia Point Master Plan

Primary Goals & Initiatives:

- Develop a coordinated vision for a lively, mixed-use district
- Coordinate plans of multiple property owners
- Ensure adequate transportation infrastructure to support existing and future development
- Improve connections within Columbia Point and to adjacent neighborhoods
- Rationalize multiple incongruous street grids
- Enhance the public realm



Figure 5: Dorchester Waterfront Urban Context



Columbia Point is at the heart of the Dorchester Waterfront, surrounded by medium-density residential neighborhoods including South Boston, Savin Hill, and Dorchester.

See appendix for detail on land use ownership, development pipeline, regulatory boundaries, and future flood exposure.

Issues & Opportunities

Economy, Demographics & Development

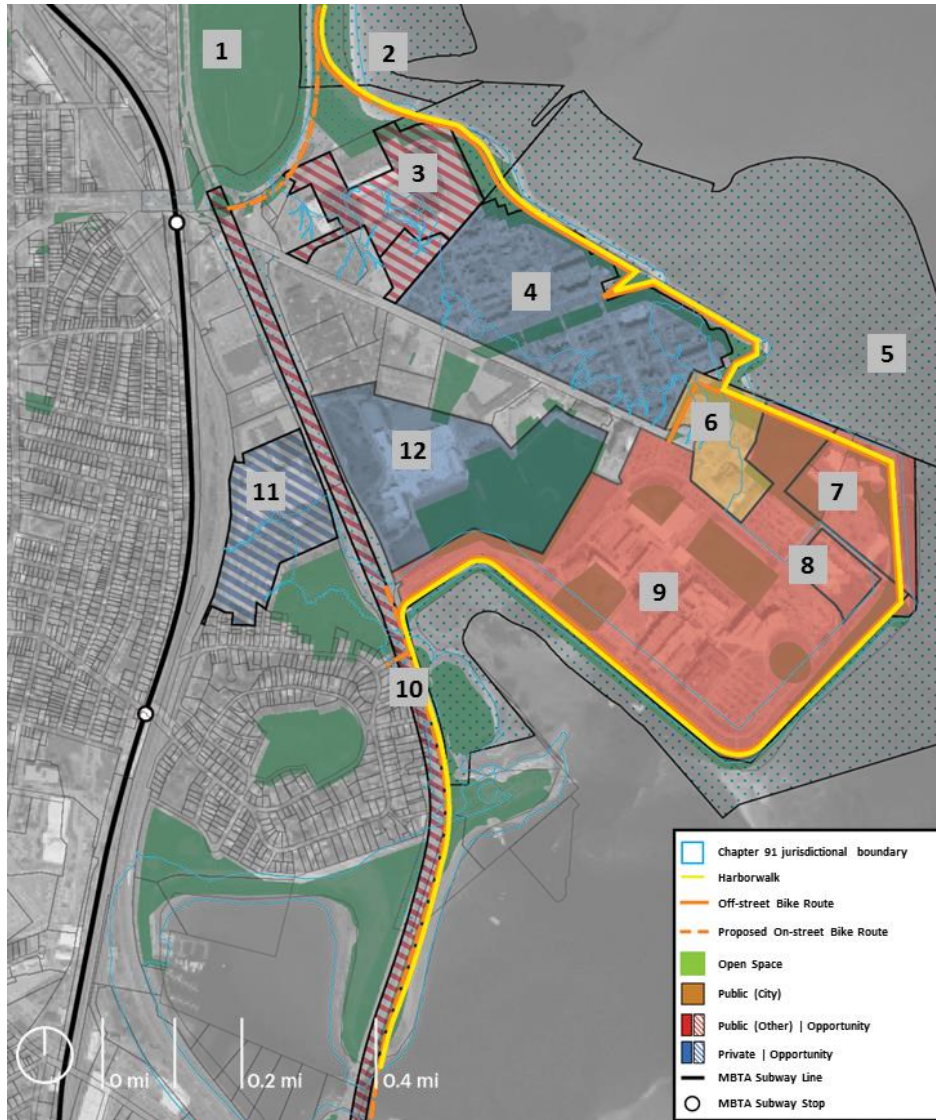
Columbia Point, at the heart of the Dorchester Waterfront, is home to major institutions and employers, as well as a mixed-income community at Harbor Point. UMass Boston has a large footprint on the peninsula, as does Boston College High School, and the Harbor Point Apartments occupy most of the land north of Mount Vernon Street.

Columbia Point is surrounded by medium-density residential neighborhoods including South Boston, Savin Hill, and Dorchester. Many of these areas have sizable low-income populations and have seen significant price increases in recent years.

Columbia Point has several sites owned by single landowners that are in the process of redevelopment. These include the current Boston Globe headquarters on Morrissey Boulevard, as well as the former Bayside Expo Center site on the northwestern edge of Columbia Point, owned by UMass Boston. Pending ongoing redevelopment options pursued here, these large sites have potential to accommodate significant housing or job growth.

Areas near the Dorchester Waterfront are poised for change. Through the South Boston Dorchester Avenue planning initiative, the City is currently working with community members to study the potential rezoning of a low-density industrial areas. The City is also launching a planning initiative for Glovers Corner, in which the BPDA will work with community members to explore opportunities for mixed-use development around Freeport Street and Dorchester Avenue near the Savin Hill Red Line station. Nearby industrial areas like Newmarket and Widett may also be areas for future growth through the Imagine Boston process.

Figure 6: Redevelopment Sites, Consolidated Ownership, and Infrastructure Plans



Columbia Point is home to multiple large institutions, and has several sites owned by single landowners that are in the process of redevelopment. There are also areas near the Dorchester Waterfront that are poised for change.

1. Moakley Park (Boston Parks Department)
2. Shoreline north to Castle Island (DCR)
3. Bayside Expo Site (UMass Boston)
4. Harbor Point residences (City, 99-year lease to developer)
5. Shoreline and mudflats to Savin Hill Cove (DCR)
6. Calf Pasture (Boston Water & Sewer)
7. JFK Presidential Library (Federal)
8. State Archives (Commonwealth)
9. UMass Boston and UMass Harbor Walk (Commonwealth)
10. Morrissey Boulevard (DCR)
11. Boston Globe
12. Boston College High School

Open Space & Access

There are few access points for pedestrians to the Dorchester Waterfront, and those that do exist are physically intimidating. The waterfront is cut off from inland neighborhoods by multiple infrastructural barriers, including I-93, the Red Line tracks, and Morrissey Boulevard. Even Moakley Park, which is dominated by ballfields, is not easy to cross when these fields are in use. This means that even residents who live near the waterfront have a difficult time reaching it.

A diversity of compelling experiences can increase utilization of the Harborwalk.

The Dorchester Waterfront is wrapped with miles of continuous Harborwalk and offers broad vistas of the Harbor. However, the water's edge is largely homogeneous, and offers little variation in experience, including recreational or public gathering opportunities, to draw people towards the water.

The lack of variety is one among many issues. Others include a lack of recreation, programming, and other features that would draw visitation and improve the quality and force of the waterfront experience. This is in contrast with Moakley Park, which strongly draws people to it for recreation.

“A new vision for Moakley Park is needed to better connect it to the water.”

- Citywide Waterfront Working Group Member

Figure 7: Columbia Point from Southeast



Figure 8: Columbia Point Harborwalk at JFK Library



Figure 9: Fragmentation and Infrastructure



In Contrast to the southern edge of South Boston, the Dorchester Waterfront features few access points, and those that do exist are physically intimidating. The waterfront is cut off from inland neighborhoods by multiple infrastructural barriers, including I-93, the Red Line tracks, and Morrissey Boulevard. Even Moakley Park, which is dominated by ballfields, is not easy to cross when these fields are in use.

“Fixing Kosciuszko Circle will improve access to the waterfront for all.”

- Citywide Waterfront Working Group Member

Climate & Environment

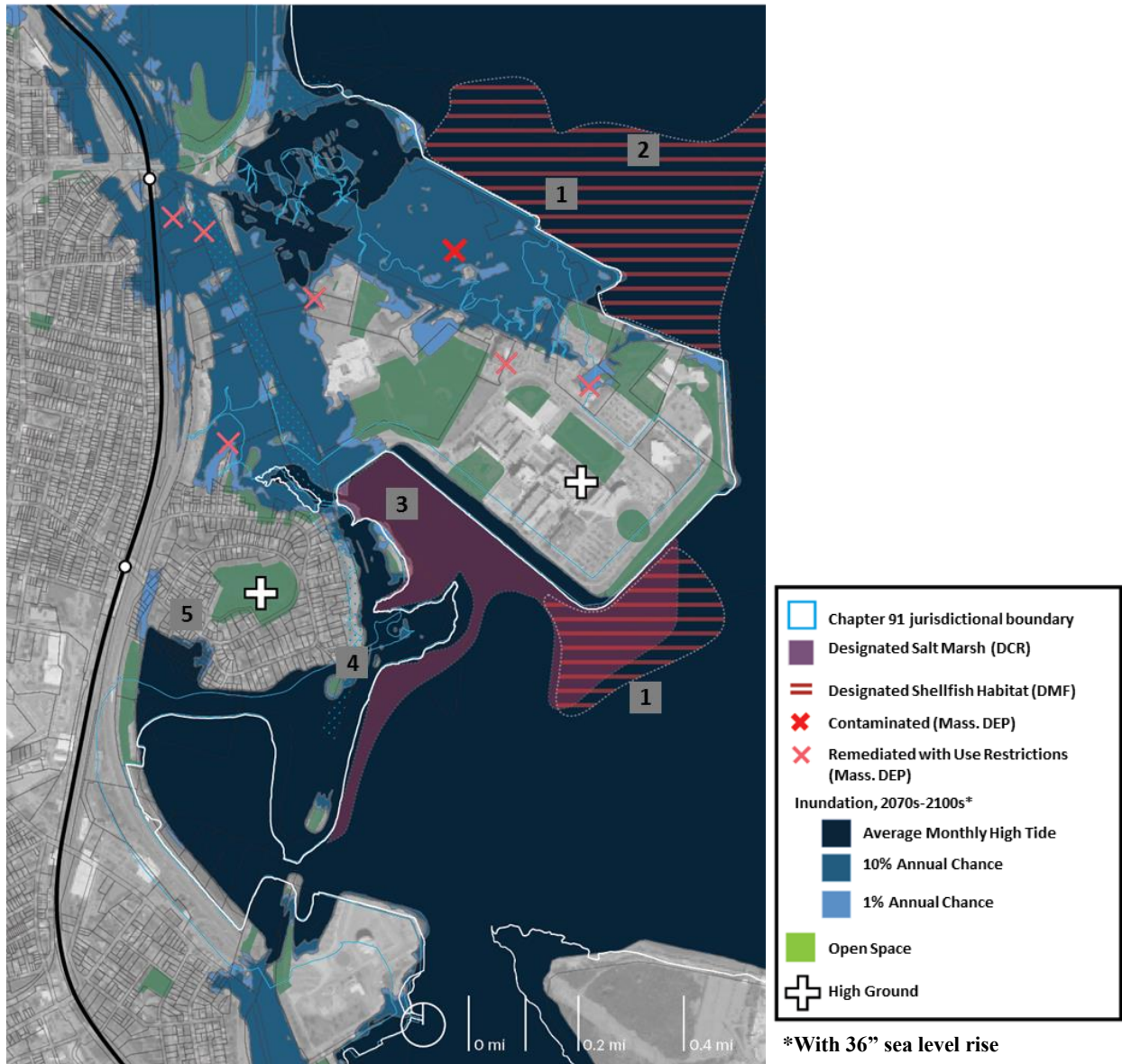
Information regarding future flood risk, and the identification of locations for potential district-scale flood protection systems, is from Climate Ready Boston, Boston's climate adaptation plan.

The areas between I-93 and Morrissey Boulevard, as well as the entire Harbor Point neighborhood and Joe Moakley Park, face significant and increasing flood risk. While Savin Hill, Boston College High School, UMass Boston, and the JFK Presidential Library are on relatively high ground, most of the area east of I-93 is low-lying. Over 6,000 residents and 1,200 buildings are currently in the areas of Dorchester that would be inundated by a one percent annual chance flood given 36 inches of sea level rise, expected as soon as the 2070s. The entire Harbor Point/Carson Beach shoreline is low-lying, so flood exposure is very broad and any flood protection system would likely need to stretch for miles.

As the sea level continues to rise, I-93 may become a conduit, bringing flood waters as far north as Chinatown. Along with major inundation points at Fort Point Channel and the South Boston Waterfront, Columbia Point may become a key area for interventions that would reduce flood risk for large parts of the city.

There are sensitive and regulated habitats just off the shore of Columbia Point. The state Department of Marine Fisheries has designated shellfish habitats off the northern and southern edges of Columbia Point, and the Department of Conservation & Recreation (DCR) has designated a salt marsh area in Savin Hill Cove. In 2006, DCR upgraded Savin Hill Cove infrastructure to divert stormwater (that would otherwise end up in a CSO) from Dorchester Bay, thus improving water quality.

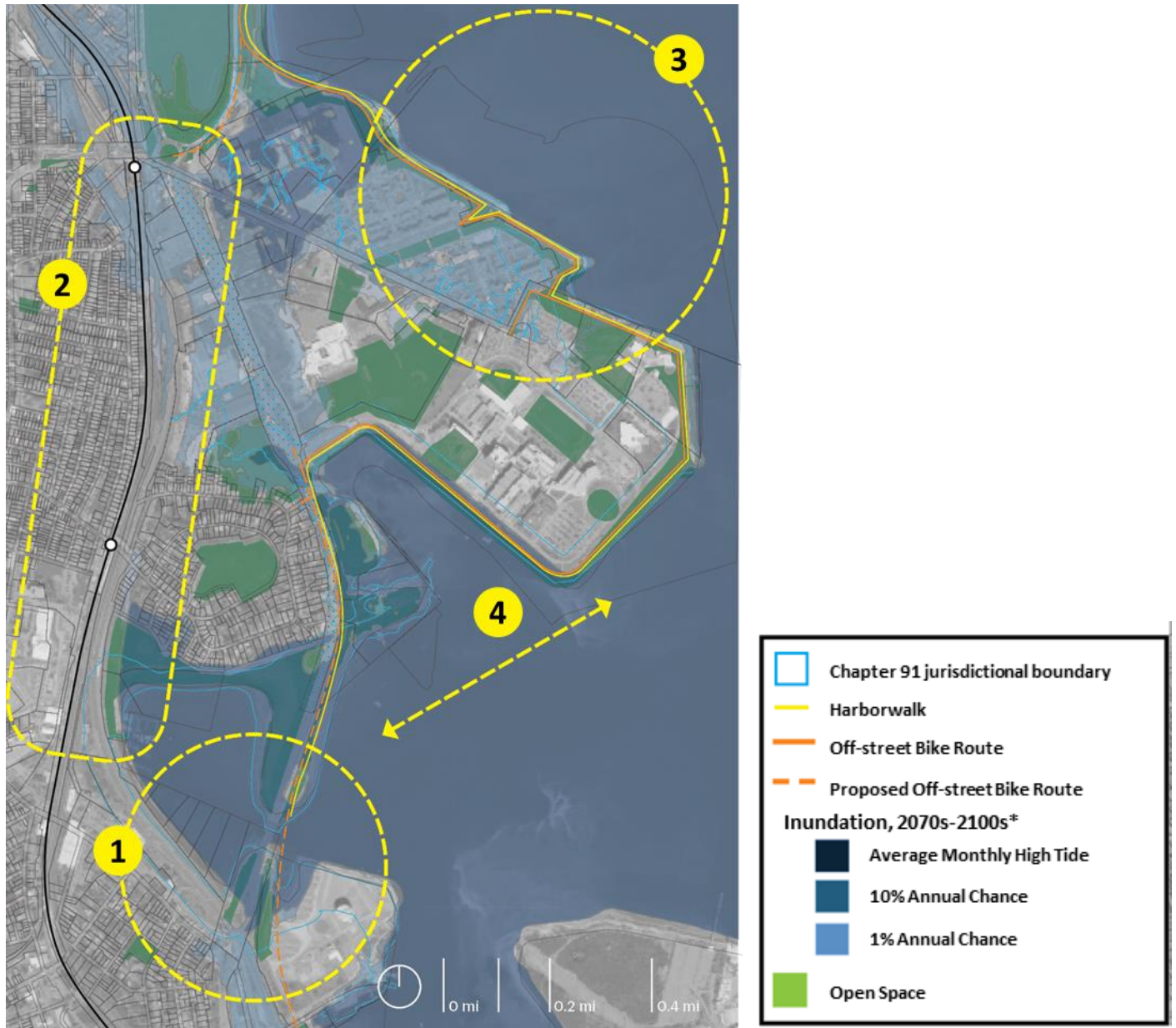
Figure 10: Future Flood Risk & Ecologically Sensitive Areas



1. Department of Marine Fisheries (DMF) designated shellfish habitat
2. Significant wave action
3. Department of Conservation & Recreation (DCR) designated salt marsh in Savin Hill Cove – 2006 infrastructure upgrades improved water quality by diverting stormwater away from Dorchester Bay and into the MWRA CSO Storage Tunnel
4. Morrissey Boulevard floods frequently
5. Inland flood risk north/northwest of relative high points at Savin Hill and UMass Boston

Potential Interventions

Figure 11: Dorchester Waterfront Potential Interventions



1. Explore opportunities to coordinate DCR Morrissey Boulevard redesign with flood mitigation, MWRA water quality improvements, and inland access.
2. Plan to improve the quantity, quality, and safety of inland-to-waterfront connections.
3. Consider increasing defenses against storm surge and erosive forces of wave action at Columbia Point with new resilient landscapes that utilize natural systems
4. Investigate integrating Savin Hill Cove flood protection with improved east-west Harborwalk connection

Key considerations for further investigation detailed on following pages.

1. Explore opportunities to coordinate DCR Morrissey Boulevard redesign with flood mitigation, MWRA water quality improvements, and inland access.

Key considerations for further investigation:

- *Morrissey Boulevard Redesign & Reconstruction.* Redesign to be completed by end of 2016; Construction slated for 2017 or later, but is not yet funded.
- *In-water Construction Regulations.* US Army Corps of Engineers permits are required for any in-water construction.

2. Plan to improve the quantity, quality, and safety of inland-to-waterfront connections.

Key considerations for further investigation:

- *Moakley Park Master Plan.* The Boston Parks & Recreation Department (BPRD) will be commissioning of a new master plan for Moakley Park this fall. Leading up to this plan, the BPRD and the Boston Society of Landscape Architects are currently studying the future of Moakley Park. Any potential access improvements, particularly around Kosciusko Circle and Day Boulevard, can be coordinated with the 2017 Moakley Park master plan.
- *Morrissey Boulevard Redesign & Reconstruction.* Redesign to be completed by end of 2016; Construction slated for 2017 or later, but is not yet funded.
- *Emerald Necklace Connection.* Possible incorporation into open space investment plans through Imagine Boston 2030.
- *Multiple Jurisdictions for Vehicular Infrastructure.* The MBTA, DCR, MassDOT, and FHWA all have jurisdiction over vehicular infrastructure in the area.
- *Planned Developments on either side of Morrissey Boulevard.* Major redevelopments at the Boston Globe and Sovereign Bank sites have potential to support significant public benefits.
- *Potential Reconstruction of JFK/UMass MBTA Station.* This reconstruction was included as a recommendation in the 2011 Columbia Point Master Plan, but is not currently planned or funded.

3. Consider increasing protection against storm surge and wave action at Columbia Point, including new resilient landscapes that utilize natural systems.

Key considerations for further investigation:

- *Seawall Maintenance Responsibility.* DCR currently owns and operates the Harbor Point seawall.
- *Regulations for In-water Work.* USACE permitting processes and Chapter 91 regulations limit what can be done in waterways.
- *Protected Habitat Regulations.* DMF (Department of Marine Fisheries) has designated a shellfish habitat area.
- *New Moakley Park Master Plan.* Any potential shoreline interventions, particularly around Carson Beach, can be coordinated with the 2017 Moakley Park master plan.

4. Investigate integrating Savin Hill Cove flood protection with improved east-west Harborwalk connection

Key considerations for further investigation:

- *Flood Protection Infrastructure Tie-Ins.* Relative high points of Savin Hill and UMass sites offer potential tie-ins for inland flood protection infrastructure.
- *Coordination with UMass Boston*
- *In-water Construction Regulations.* US Army Corps of Engineers permits are required for any in-water construction.
- *Protected Habitat Regulations.* DMF (Department of Marine Fisheries) has designated a shellfish habitat area, and DCR has designated a salt marsh area.
- *Potential Extension of Neponset Greenway.*

Downtown Waterfront

Aspiration. There are opportunities to enrich and diversify the Downtown Waterfront public realm to create a more vibrant, welcoming, and accessible gateway to Boston's historic core which can be undertaken in concert with interventions to reduce inland flood risk.

Major Planning Efforts

Downtown Waterfront Municipal Harbor Plan (2016, in progress)

Goals & Initiatives:

- Improve connectivity to the waterfront from Downtown
- Provide continuous public access along the waterfront and
- Provide meaningful and appropriately scaled open spaces.
- Support the cultural anchors including NEAQ and Boston Harbor Islands Gateway
- Create additional public programming along the waterfront to activate it year-round

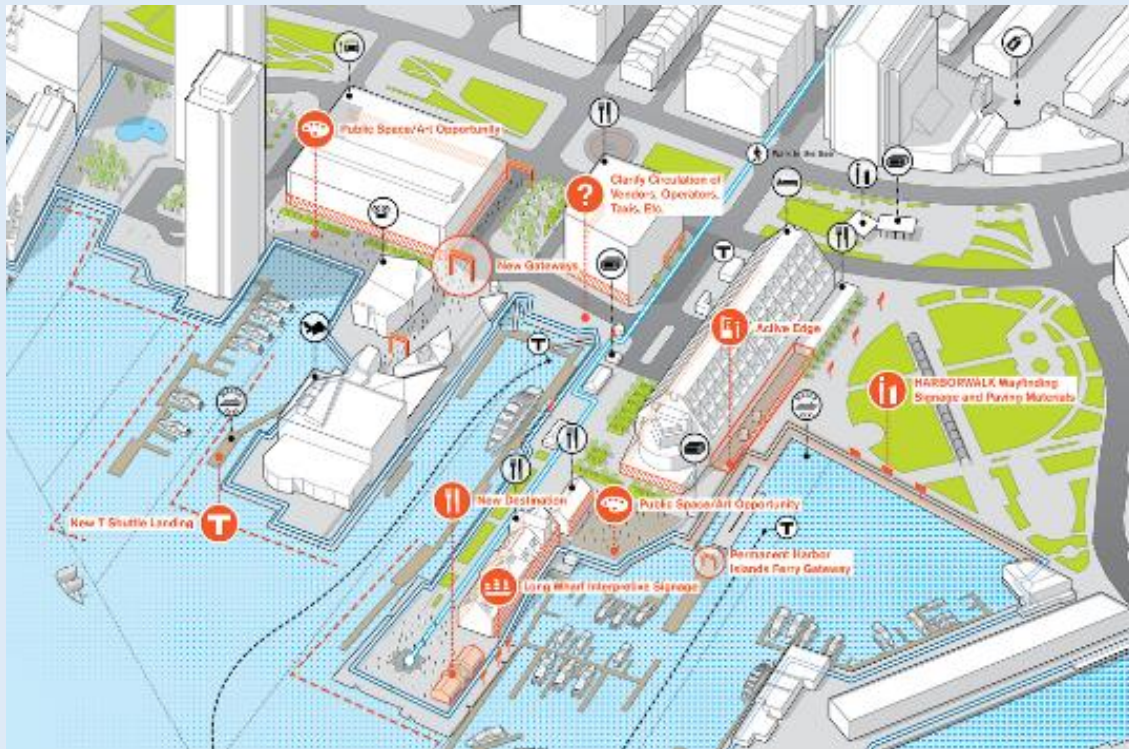


Figure 12: Downtown Waterfront Urban Context



See appendix for detail on land use ownership, development pipeline, regulatory boundaries, and future flood exposure.

Issues & Opportunities

Economy, Demographics & Development

The Downtown Waterfront is at the edge of Boston’s diverse and historic commercial core, the economic driver of the city and the region. It is Boston’s prime district for tourism, a core local industry, a world-class business district with immense economic activity and real estate value, and the city’s most prominent, visited, densely built, and transit-accessible neighborhood.

Complementing the largely residential North End, Downtown is a growing residential area. For example, Downtown saw 3,030 units completed since 2014, growing the area’s housing stock by 25 percent.²⁴ Concurrent planning processes, including Imagine Boston, are supporting a vision for a more mixed-use, mixed-income downtown, creating an opportunity for the Downtown Waterfront to serve as a critical public space for the area’s growing population.

Although the Downtown Waterfront is largely built-out, there are several planned developments along the waterfront that could have a significant impact on the area and has potential to make meaningful contributions to the public realm. Where additional development may be possible, including on BPDA-owned parcels, strong land values could be leveraged to create a network of new public spaces, particularly if there is a consistent mechanism for determining public benefits from new developments or for aggregating those benefits at a district scale.

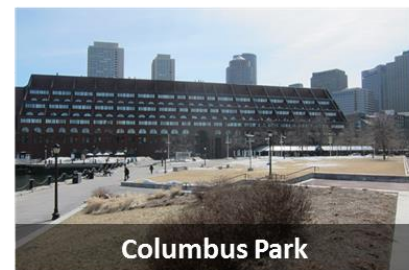
Open Space & Access

Enhanced and new destinations along the Downtown Waterfront, worthy of the neighborhood’s world-class status, can draw people to water’s edge, to linger and enjoy attractions including the spectacular Harbor vista. Even with fragmented ownership and a largely built-out environment, there may be opportunities to create strong nodes for a meaningful open space network. These may include enhancements to existing spaces, new spaces that would accompany new development, and possibly new over-water spaces enabled by Magenta Zone exemptions from certain federal permit requirements.

Existing open spaces lack continuity, connectivity, experiential diversity, and a genuine feeling of a welcoming public realm. In many areas, the Harborwalk is circuitous and private-feeling, offering little to draw the public to it. Despite the Harborwalk’s proximity to the Rose Kennedy Greenway, the two linear public spaces do not share a meaningful physical connection.

Open space and public space can support downtown’s growing residential population, increase Boston’s position as a tourist destination, and provide improved amenities to the office and retail core. Distinctive new open spaces can support, and broaden, the Downtown Waterfront’s appeal to Bostonians and visitors.

A new typology of downtown park or cultural amenity in the North End can be a regional destination, drawing a broad audience to the waterfront. Ongoing improvements to the Harborwalk and nearby

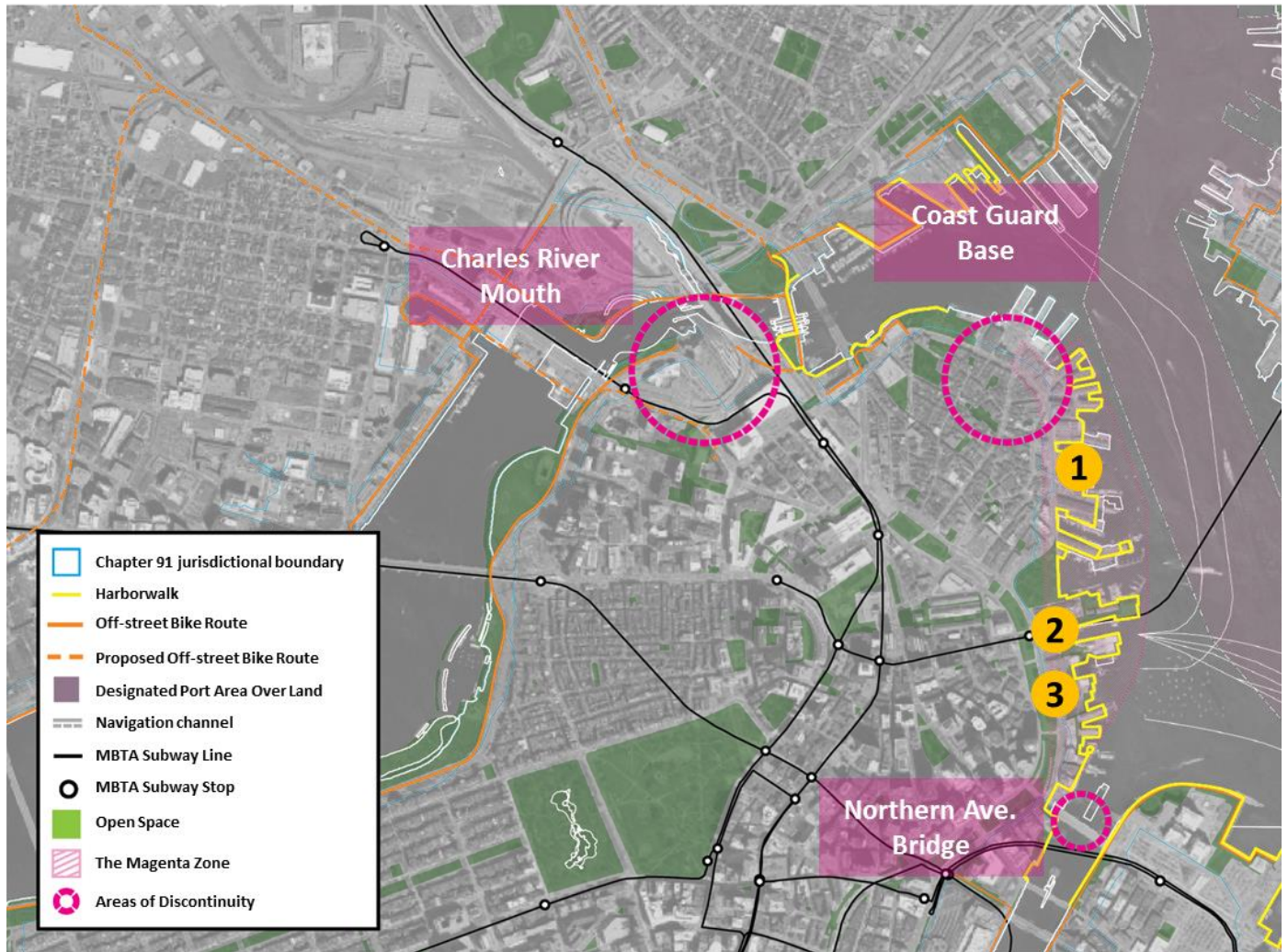


²⁴ City of Boston, “Press Release: City Passes 10,000 Mark for New Housing Units Completed,” September 12, 2016.

waterfront trails have dramatically improved connectivity among Charlestown, East Cambridge, Back Bay, and East Boston.

The Downtown Waterfront should be every neighborhood's waterfront. Many areas of the Downtown Waterfront feature good public transit access, as well as ferry and water taxi infrastructure. This connectivity can be leveraged and expanded in order to bring Bostonians and visitors to the heart of the Inner Harbor, and to improve commuter links between housing and job centers.

Figure 13: Open Space Shortcomings & Harborwalk Continuity Gaps



Existing open spaces lack continuity, connectivity, experiential diversity, and a genuine feeling of a welcoming public realm. In many areas, the Harborwalk is circuitous and private-feeling, offering little to draw the public to it.

Climate & Environment

Information regarding future flood risk, and the identification of locations for potential district-scale flood protection systems, is from Climate Ready Boston, Boston's climate adaptation plan.

Large low-lying areas around the Financial District and North Station, as well as the entire Downtown Waterfront seaward of Atlantic Avenue or Commercial Street, face significant and increasing flood risk. Given 9 inches of sea level rise, which is likely to be reached between the 2030s and the 2050s, almost 15% of Downtown land area is expected to be inundated with a one percent annual chance. Within this area, there are currently over 4,000 residents and 350 buildings. With 36 inches of sea level rise, likely to happen as soon as the 2070s, almost half of Downtown, an area with almost 14,000 residents and 1,200 buildings would be inundated with a one percent annual chance. This inundation would cause over \$3 billion in economic losses,²⁵ and disruptions Downtown would have cascading impacts throughout the region's economy.

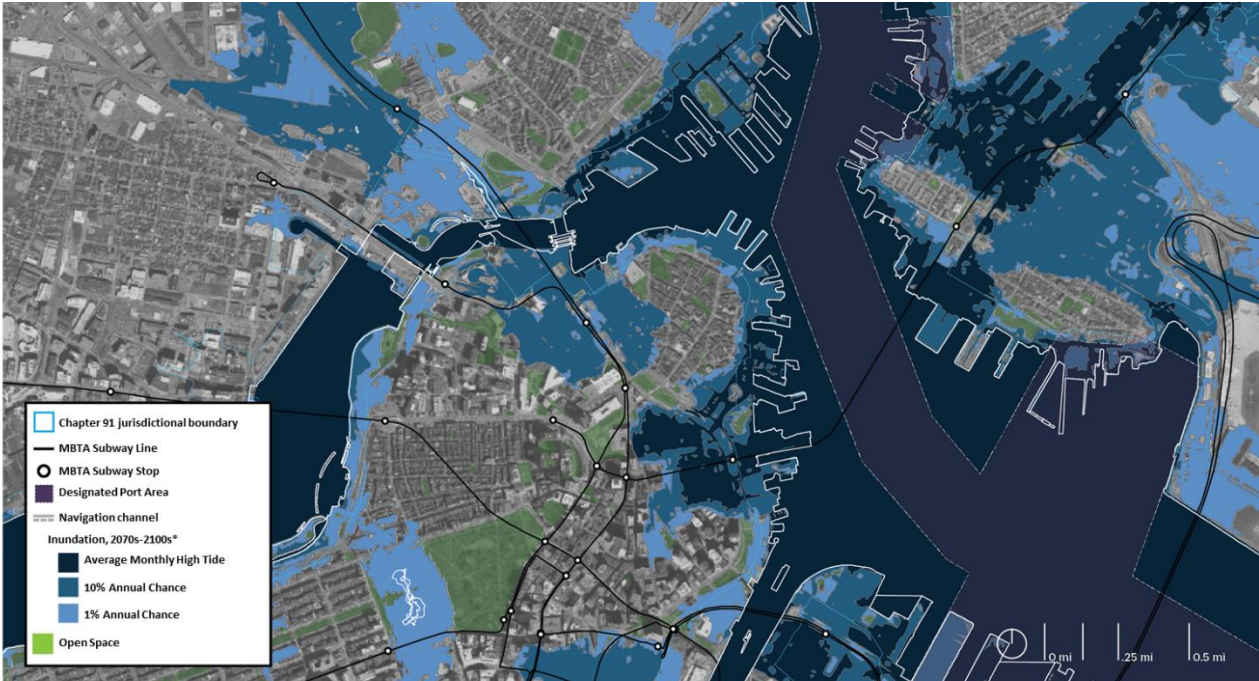
Broad, low-lying areas near the eastern edge of the Downtown Waterfront suggest that any potential flood protection system would need address exposure across a large area. For example, to protect inland areas from one percent annual chance flooding with 36 inches of sea level rise, a theoretical flood protection system near the Rose Kennedy Greenway may need to stretch at least from North Street to High Street, over half a mile. Such a system along this alignment may also need to cross many heavily-trafficked streets, requiring costly temporary flood barriers to be deployed during a flood event. As with all potential flood protection interventions, significant further analysis is necessary to understand feasibility.

Low-lying areas near the New Charles River Dam lead to inland flood risk near North Station, and also allow the dam to be flanked by floodwaters during severe storms, exposing areas along the Charles River to flood risk. In order to defend against major future flooding in Downtown and up the Charles, this vulnerability would need to be addressed. A potential approach is to raise the areas around the dam's footings, but further study is required.

The Magenta Zone, which designated a significant portion of the Downtown Waterfront as "non-navigable" in 1968 by an Act of Congress (PL 90-312) and therefore not subject to the jurisdiction of the U.S. Army Corps of Engineers, provides relief from federal permitting requirements, allowing the City greater responsibility for the management of the waterfront and waterfront and the opportunity to consider new open spaces and infrastructure that can improve the public realm and reduce flood risk.

²⁵ Includes direct physical damages to building structure and contents; mental stress, anxiety, and lost productivity; displacement costs (the cost to relocate a business or household as a result of flood impacts). Does not include business interruption or other sources of loss, and is based on existing buildings and population, with no projection of future growth. See Climate Ready Boston report (2016) for more information and methodological notes.

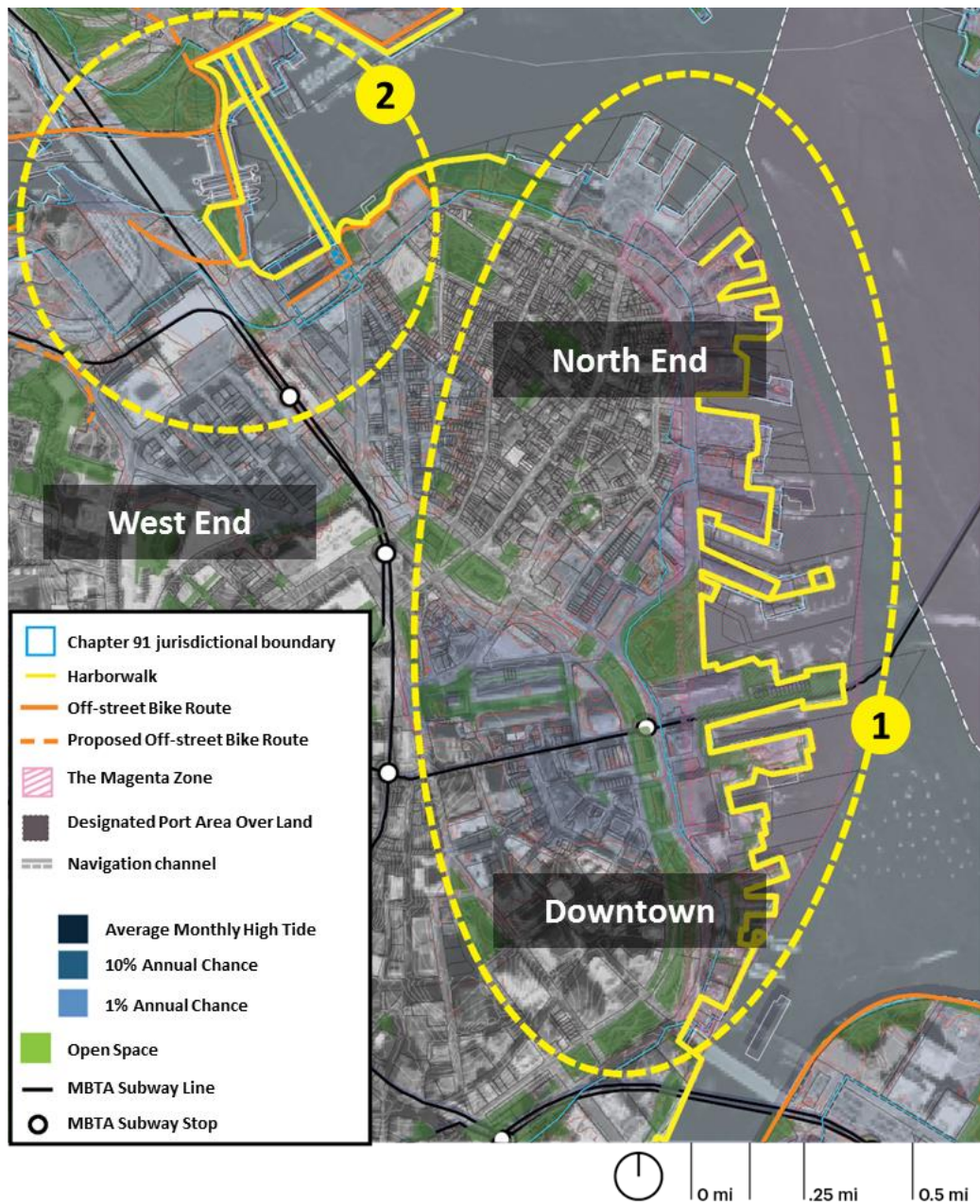
Figure 14: Flood Exposure 2070s-2100s



Large low-lying areas around the Downtown Waterfront face significant and increasing flood risk. Between the 2070s and 2100s, the annualized economic impacts of coastal and riverine flooding in the Downtown area is estimated at over \$280 million a year.

Potential Interventions

Figure 15: Downtown Waterfront Potential Interventions



1. To create a waterfront that is a world-class amenity worthy of Boston's history and stature, explore the feasibility of a suite of actions at key nodes and along key corridors to create a network of waterfront open spaces and public realm from North Station to South Station, while reducing inland flood risk.
2. Explore upgrades to the New Charles River Dam and its footings to reduce flood risk in the Charles River Basin and to strengthen pedestrian and bicycle connections between Downtown and the Charles River Esplanade, Charlestown, and Cambridge.

Key considerations for further investigation detailed on following pages.

1. To create a waterfront that is a world-class amenity worthy of Boston’s history and stature, explore the feasibility of a suite of actions at key nodes and along key corridors to create a network of waterfront open spaces and public realm from North Station to South Station, while reducing inland flood risk.

Key considerations for further investigation:

- *Enhancement of Existing Public Spaces.* The Downtown Waterfront already features multiple public spaces, and there may be opportunities to enhance these to create a more varied and compelling landscape.
 - o *New England Aquarium.* In September 2016, the Aquarium released its plan for a public space (the “Blueway”) that connects the Rose Kennedy Greenway to the waterfront, as well as floating walkways and an artificial island. This plan is not yet funded, and would require collaboration with any improvements to the Aquarium site and the adjacent Harbor Garage site can be part of an overall enhanced Downtown Waterfront public realm.
 - o *Columbus Park and Long Wharf.* Enhancements to these adjacent waterfront public spaces can create a true Harbor-oriented public destination.
- *Fostering Harborwalk Continuity.* As an interim improvement, signage and other design features (paving, plants, lighting) may be utilized to strengthen connections between the existing Harborwalk sections and public spaces; capital investments may be necessary to address Harborwalk gaps.
- *Activation through Programming.* A coordinated, expanded public programming effort could potentially draw more varied users to the waterfront.
- *Connections to the Greenway.* Although the Downtown Waterfront is adjacent to the Rose Kennedy Greenway, there is currently no strong connection between these open space resources.
- *Public Realm Improvements through Development Approval Process.* The 2016 Downtown Municipal Harbor Plan has identified certain desirable investments for the area between Long Wharf and Hook Lobster, which require further study to refine ambitious design goals, as well as funding, implementation, and governance.
- *Opportunities in the Magenta Zone.* Explore the use of the Magenta Zone, which provides relief from federal permitting requirements, to enhance the extent and quality of public open space.
- *Flood Protection Alignments.* The broad, low-lying area between Hanover Street and High Street does not present any obvious alignment for a future flood protection system. However, given the significant and increasing flood risk Downtown, any future planning and investment should consider potential flood protection.

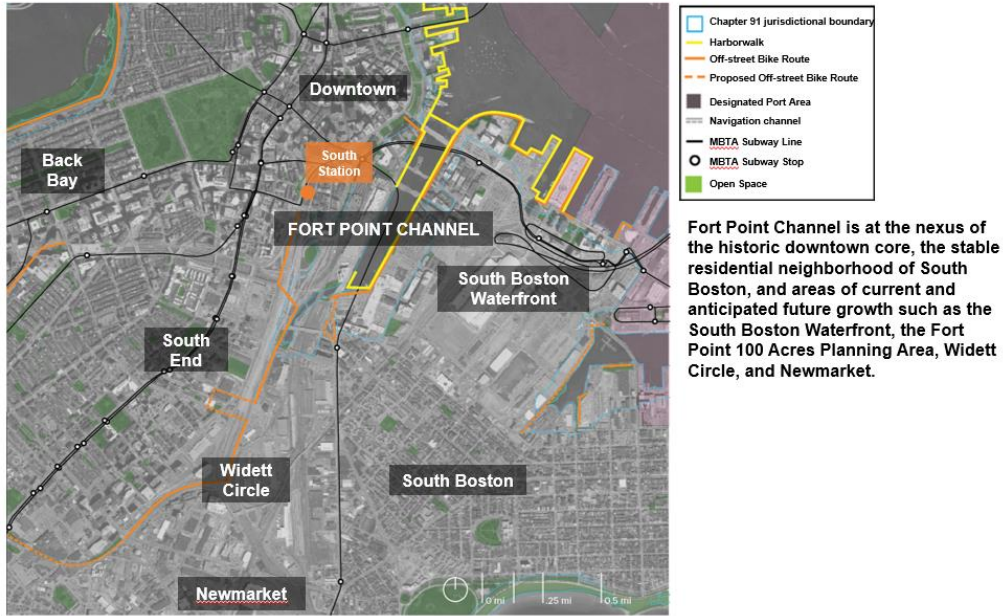
2. Explore upgrades to the New Charles River Dam and its footings to reduce flood risk in the Charles River Basin and to strengthen pedestrian and bicycle connections between Downtown and the Charles River Esplanade, Charlestown, and Cambridge.

Key considerations for further investigation:

- *New Charles River Dam Flood Vulnerability.* Although the dam itself is high enough that it would not be overtopped except under the most extreme flood event, its footings on either side of the river are significantly lower and therefore expose the Charles River Basin to coastal flood risk.
- *North Station Tracks.* The tracks are at grade and present a challenge to east-west connectivity.
- *Existing New Charles River Dam Pedestrian Walkways.* The existing pedestrian walkways across the dam are an important connection, but are narrow and uninviting.
- *Bike and Pedestrian Improvements in Charlestown and Cambridge.* Paul Revere Park and the North Bank Bridge have created a rich bike/pedestrian environment on the north side of the river.

Fort Point Channel

Aspiration. Along Fort Point Channel, there may be opportunities to build on momentum from ongoing nearby development for improved public access and circulation, water quality improvements and habitat creation, new signature open space and integrated flood protection that reduce risk for the South End, Newmarket, and Widett Circle.



“We should think of Fort Point Channel in its totality as open space.”
- Citywide Waterfront Working Group Member

Major Planning Efforts

Downtown Fort Point Municipal Harbor Plan (2004)

- Area comprising of seven parcels of land including the watershed of the Fort Point Channel
- A phased approach for the planning area, with Phase I of the MHP specific to the property at 500 Atlantic Avenue which had an advanced design and public review process due to construction of a Central Artery
- Phase II of the MHP addressed the development program for Atlantic Wharf (formerly Russia Wharf) with a future MHP amendment anticipated for the remainder of the parcels within the planning area.
- Both phases function to implement the Fort Point Channel Watersheet Activation Plan (2002) and accommodate building height, massing and setbacks with significant public amenities including new waterfront plazas, HARBORWALK, docks for vessels, and signature Facilities of Public Accommodation such as the Boston Society of Architects space at Atlantic Wharf.



1999 South Boston Seaport Public Realm Plan



2002 Fort Point Channel Watersheet Activation Plan

100 Acres Master Plan (2007)

- Proposed a mixed-use neighborhood anchored by over 11 acres of new public open space and almost 5.9 million square feet of development.
- Recommended appropriate building heights and density;
- Preserving industrial uses while encouraging an increased mix of uses
- Ensuring that at least one-third of development is housing, including an expansion of artist housing, and aggregating residential elements around open spaces;
- Extending Harborwalk along the entire length of Fort Point Channel;
- Providing an open space connection from the Boston Convention and Exhibition Center to the Fort Point Channel;
- Identifying the P&G/Gillette Plant as a critical water-dependent use on the Fort Point Channel; and;
- Establishing limits on the future build-out of the 100 Acres area, and implementing phasing of this development based on available and projected transit infrastructure capacity.



South Station Expansion (Final Environmental Impact Report submitted 2016)

- The purpose is to expand the capacity of South Station to meet demand for commuter and intercity rail travel.
- The project would also reopen Dorchester Avenue to the public.

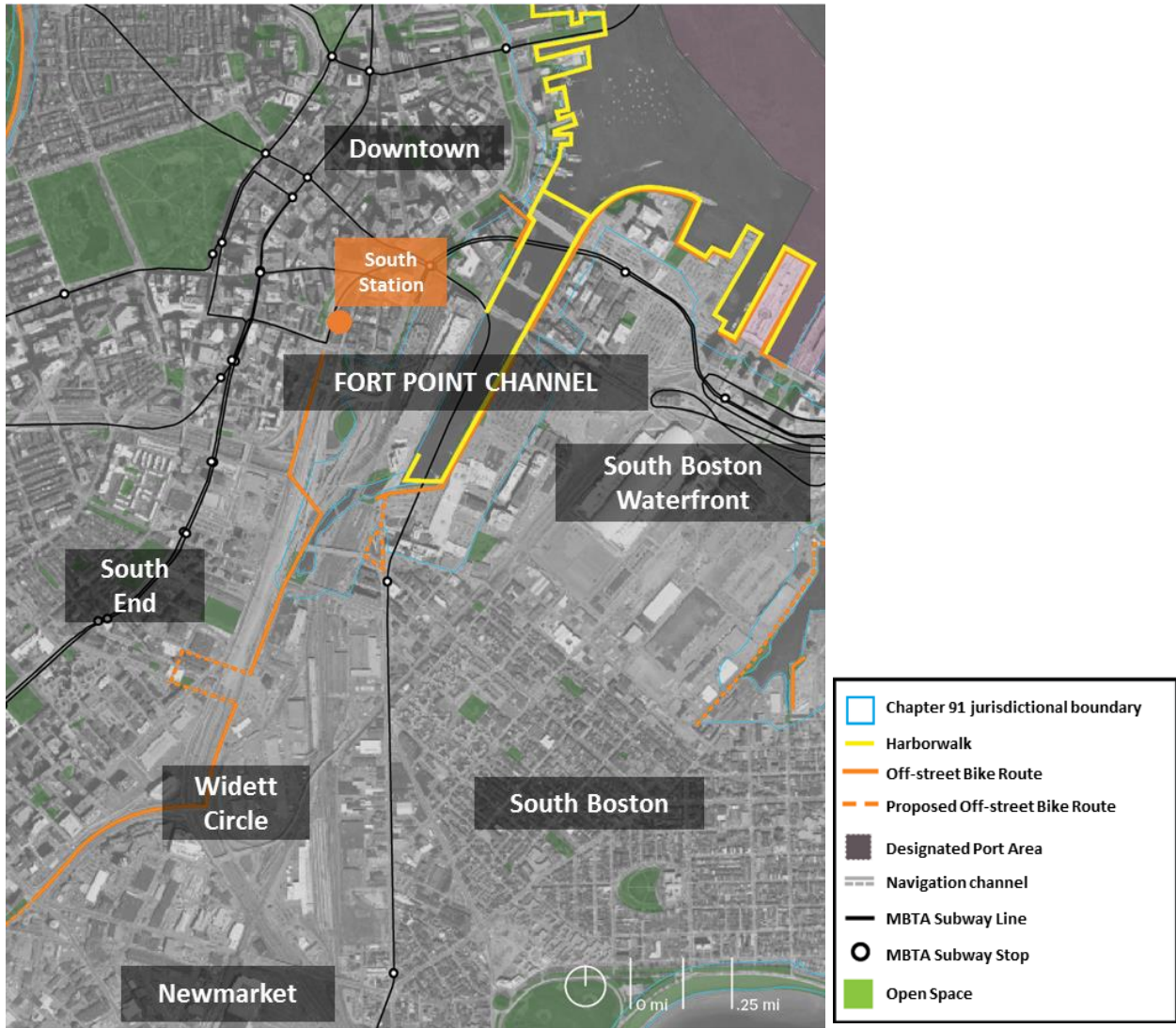
Living with Water Competition (2015)

- The competition, organized by the City of Boston, the Boston Planning and Development Agency, Boston Harbor Now, and the Boston Society of Architects, looked at the area covered under the 100-acres plan. The focus of the plan was to identify how this area might adapt to rising sea levels by 2100.
- Plans showed alternatives for retreating, accommodating and adapting to rising sea levels including elevating the street network and ground floor of buildings, as well as naturalizing the water's edge to allow for regular flooding and sea level rise.



2016 Living with Water Competition

Figure 16: Fort Point Channel Urban Context



Fort Point Channel is at the nexus of the historic downtown core, the stable residential neighborhood of South Boston, and areas of current and anticipated future growth such as the South Boston Waterfront, the Fort Point 100 Acres Planning Area, Widett Circle, and Newmarket.

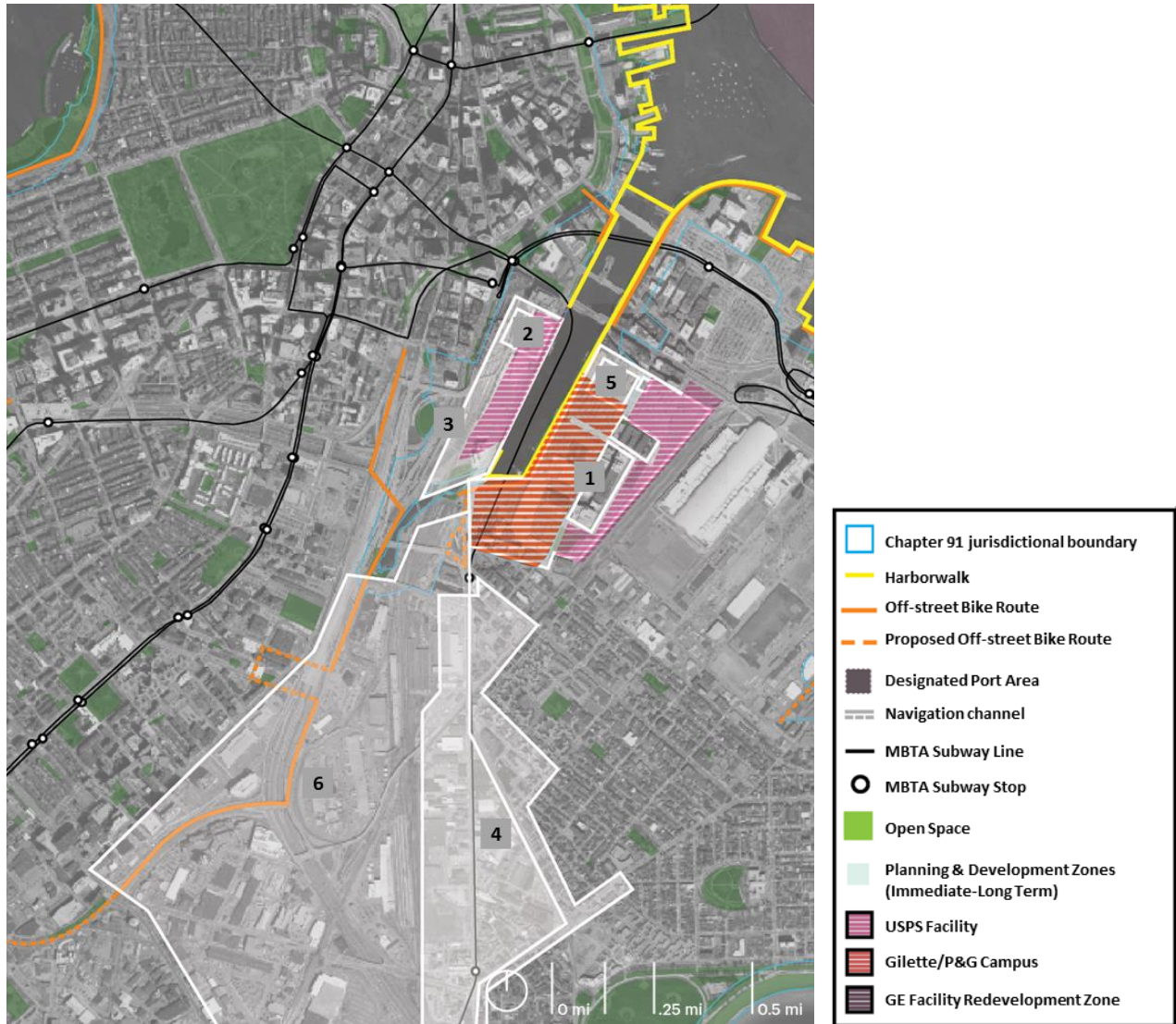
Issues & Opportunities

Economy, Demographics & Development

Fort Point Channel is at the nexus of the historic downtown core, the stable residential neighborhood of South Boston, and areas of current and anticipated future growth such as the South Boston Waterfront, the Fort Point 100 Acres Planning Area, Widett Circle, and Newmarket. The area has potential to host significant new commercial and residential development, which call for new open space, flood protection, connectivity, and water quality investments. Most recently, General Electric has announced plans to move its corporate headquarters to the Channel's edge, in a Gensler-designed complex of two rehabilitated brick buildings and a new glass building.

Public and private redevelopment projects can potentially yield coordinated and major benefits for the immediate area and inland areas as well. However, existing plans, such as the 100 Acres Plan have seen limited realized redevelopment and associated public benefits to date, indicating the limitations of a parcel based master plan that relies on incremental development to achieve public benefits.

Figure 17: Actionable Redevelopment Plans on Different Timelines



- 1. 100-Acres Plan (plan completed 2006)**
 - a. Little realized redevelopment and associated public realm benefits
- 2. South Station Air Rights**
 - a. Initial BRA approval (2006)
 - b. Project amendment (2014)
 - c. Intent to file Notice of Project Change (2016)
- 3. South Station Track Expansion**
 - a. Environmental Impact Review (2016)
 - b. Relies on USPS relocation
- 4. South Boston Dorchester Avenue SPA (2016)**
 - a. Anticipated re-zoning of low-density uses
- 5. GE Headquarters - anticipated completion (2018)**
- 6. Imagine Boston 2030 (2016)**
 - a. Identification of potential growth areas and land use change

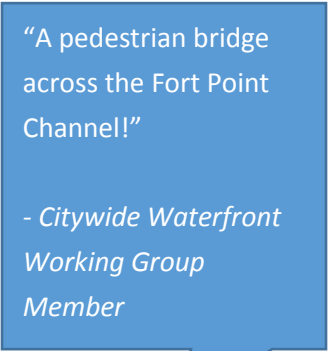
Open Space & Access

The public realm around Fort Point Channel has some excellent examples of public open space, but is largely limited to pocket parks along a 10- to 12-foot wide Harborwalk and offers few opportunities for interaction with the water. The Channel is still subject to tidal influence, so water access via floating gangways requires consideration for safety and accessibility.

The existing Harborwalk and pedestrian/bike network has numerous discontinuities. The Dorchester Avenue right-of-way at the current USPS Facility is the longest discontinuity at Fort Point Channel; at other nodes, stairways and privatized uses create discrete gaps for universal accessibility.

Past planning efforts have yielded a robust set of open space ideas and discrete successes, but complete implementation has lagged due to its reliance on private development. Open Spaces on Atlantic Wharf, the InterContinental Boston site, and Children’s Wharf demonstrate the great potential of effective planning and implementation. However, the regulatory framework and proposed funding mechanism for open space in the 100 Acres area relies private development that has not yet fully materialized, and the public realm has therefore not been substantially built out as envisioned in the plans.

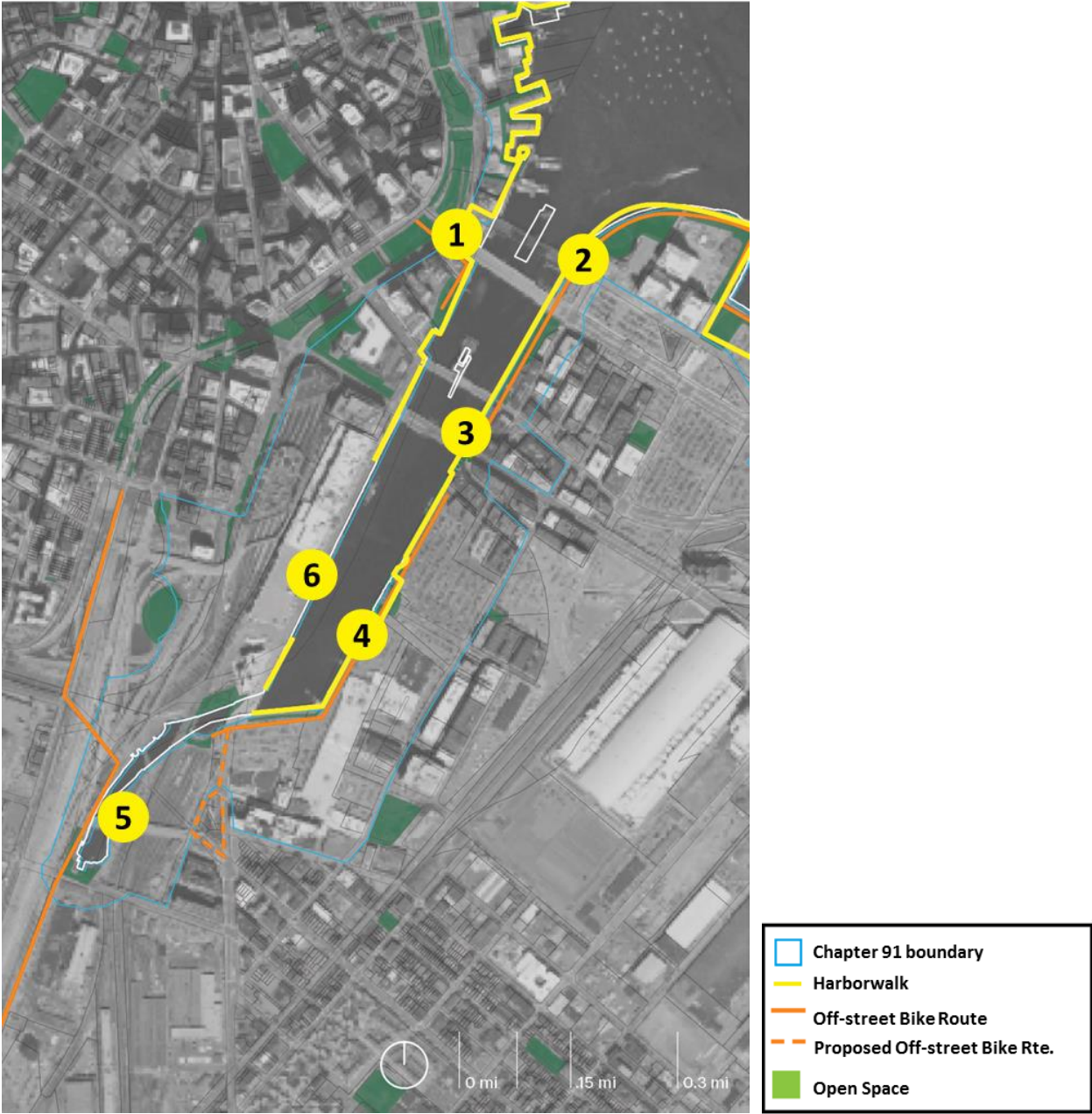
The Northern Avenue Bridge, closed since 2014, has the potential to be redesigned and rebuilt to enhance access, open space opportunities, and perhaps flood risk reduction. Following a public competition for design ideas sponsored by the Public Works Department and the Boston Society of Architects, the Public Works Department has drafted an RFP that is currently pending with an expected issuance in early 2017.



“A pedestrian bridge across the Fort Point Channel!”

- Citywide Waterfront Working Group Member

Figure 18: Existing Harborwalk and Discontinuities



Climate & Environment

Information regarding future flood risk, and the identification of locations for potential district-scale flood protection systems, is from *Climate Ready Boston, Boston's climate adaptation plan*.

The South Boston Waterfront is generally low-lying, and the eastern side of Fort Point Channel faces significant and increasing flood risk from the Harbor and the Channel. Given 9 inches of sea level rise, which is likely to be reached between the 2030s and the 2050s, over 450 acres of South Boston is expected to be inundated with a one percent annual chance. Within this area, there are currently over 2,300 residents and 350 buildings. With 36 inches of sea level rise, likely reached by the 2070s, a similarly sized area is expected to flood at least once a month at high tide, even without a storm. Over 60 percent of South Boston would be flooded by a one percent annual chance flood, and such a flood would cause over \$4.3 billion in economic losses,²⁶ and disruptions in South Boston would have cascading impacts throughout the region's economy.

Low-lying Channel edges expose major inland areas to future flooding. While these inland areas, including the South End, Newmarket, and Widett Circle, likely do not face significant flood risk over the coming two decades, by the time sea level rise reaches 36 inches, likely as soon as the 2070s, flood exposure will become severe. In the South End alone, over 450 acres are expected to be inundated by the one percent annual chance flood. This area currently has over 27,000 residents and 3,400 buildings, and economic losses from such a flood in the South End would be over \$2 billion.²⁶ Flood risk in these inland areas also poses a significant challenge to potential housing and job growth in Newmarket and Widett Circle; however, this can be addressed through a multi-layered approach with both district-scale flood protection around Fort Point Channel, and site-scale flood protection for new development.

Water quality in the Channel is not consistently acceptable. Despite recent infrastructure upgrades, combined wastewater and stormwater occasionally discharge into Fort Point Channel during severe storm events. Floating debris is also frequently present in the channel.

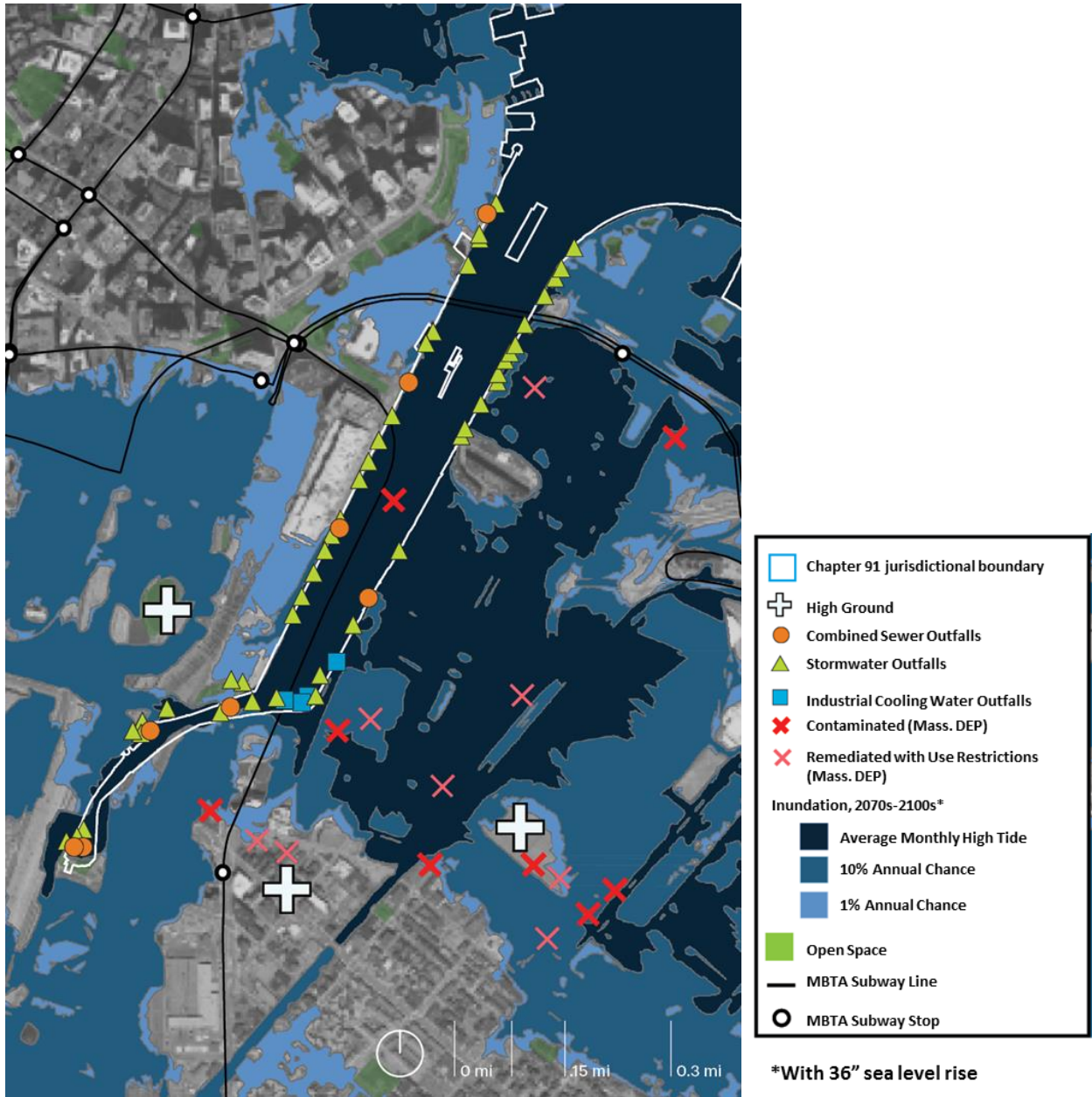
Significant interventions to decrease flood risk, improve the public realm, and improve water quality may rely on major redevelopment efforts around the Channel.

"There should be a greenspace buffer along the Fort Point Channel to function as a flood barrier."

- Citywide Waterfront Working Group Member

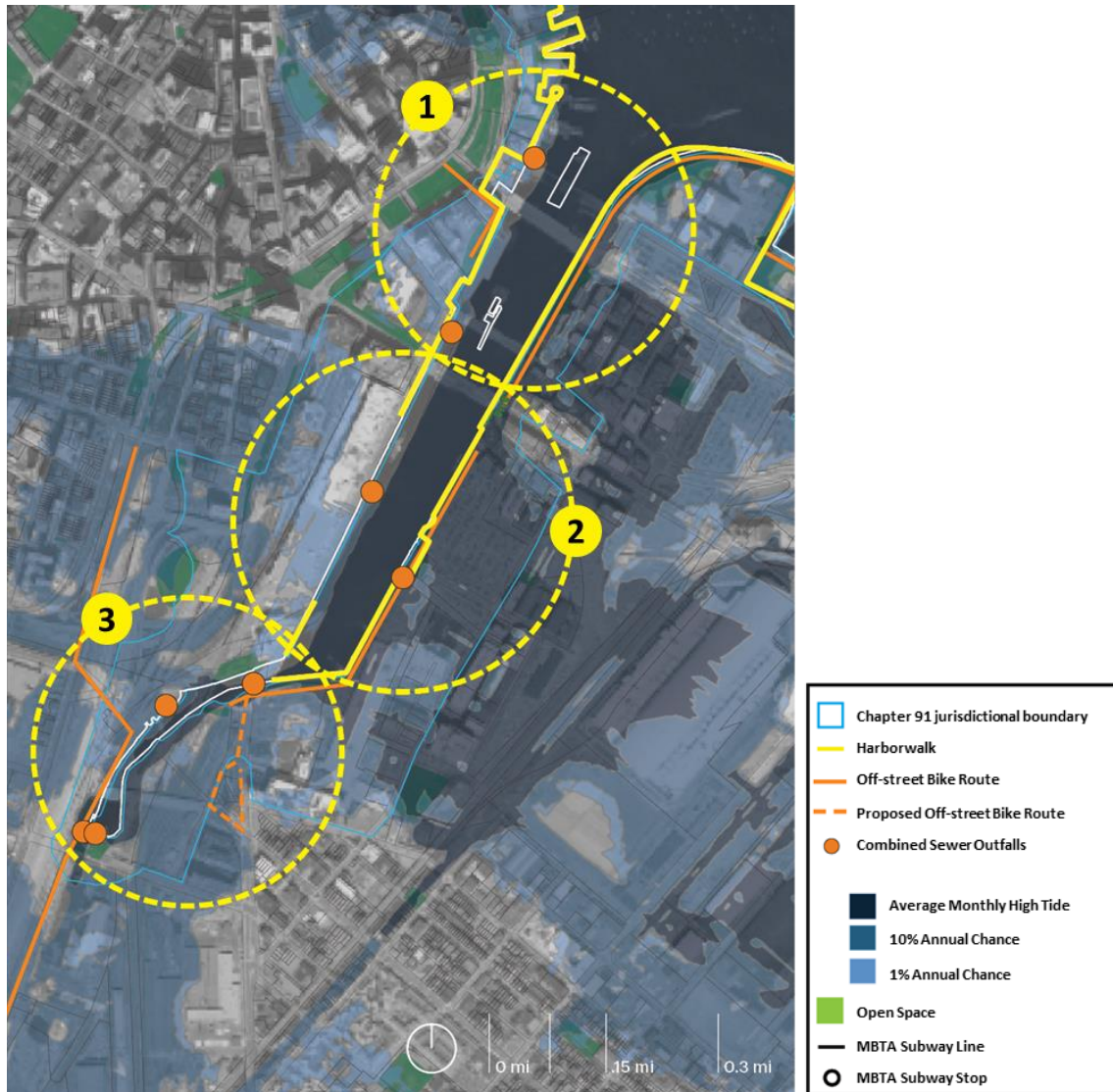
²⁶ Includes direct physical damages to building structure and contents; mental stress, anxiety, and lost productivity; displacement costs (the cost to relocate a business or household as a result of flood impacts). Does not include business interruption or other sources of loss, and is based on existing buildings and population, with no projection of future growth. See *Climate Ready Boston report (2016)* for more information and methodological notes.

Figure 19: Climate & Environment



Potential Interventions

Figure 20: Fort Point Channel Potential Interventions



Study the feasibility of reducing flood risk, improving environmental quality, fostering connectivity, and introducing public realm activation and variation through key interventions at three sections of the channel.

1. Channel Mouth: Explore connecting Harborwalk gaps and integrating public realm improvements and flood defenses with reconstruction of the Northern Avenue Bridge.
2. Middle Channel: Investigate possible near-term public investments to accelerate the realization of the public realm envisioned by the 100 Acres Master Plan and reduce flood risk on either side of the Channel.
3. Upper Channel: Consider the creation of an integrated infrastructural solution to defend against coastal flooding, improve water quality, support habitat, and activate a new water-based public realm that includes a reopened Dorchester Avenue.

Key considerations for further investigation detailed on following pages.

Study the feasibility of reducing flood risk, improving environmental quality, fostering connectivity, and introducing public realm activation and variation through key interventions at three sections of the channel.

1. Channel Mouth: Explore connecting Harborwalk gaps and integrating public realm improvements and flood protection with reconstruction of the Northern Avenue Bridge.

Key considerations for further investigation:

- *New Open Spaces.* Recent investments at Children’s Wharf, 500 Atlantic Avenue, and the Intercontinental Hotel can potentially be stitched together into a robust network.
- *Northern Avenue Bridge Reconstruction.* After a public competition for design ideas sponsored by the Public Works Department and the Boston Society of Architects, the timeline for the bridge’s redesign and reconstruction is uncertain.
- *South Boston Waterfront Flood Risk.* The South Boston Waterfront is almost entirely low-lying, so it has expansive flood exposure, without significant high ground for a potential flood protection to connect. A flood risk management plan for the South Boston Waterfront would likely need to connect to high ground north of Fort Point Channel.
- *Bikeway plans.* There are planned bikeway connections to Downtown and the South Boston Waterfront.
- *Regulations for In-water Work.* USACE permitting processes and Chapter 91 regulations limit what can be done in and over waterways. Structures are prohibited within the Federal Channel (which extends approximately to the Summer Street Bridge) and structures in the state harbor generally require authorization by legislature.

2. Middle Channel: Investigate possible near-term public investments to accelerate the realization of the public realm envisioned by the 100 Acres Master Plan and reduce flood risk on either side of the Channel.

Key considerations for further investigation:

- *Unknown Redevelopment Timelines.* The major potential projects in the area, including South Station Expansion, USPS facility relocation, and Proctor & Gamble lands redevelopment, all face uncertain timelines
- *North and West Flood Risk.* Edge raising along the northern edge, potentially in coordination with the South Station Expansion and USPS facility relocation, could reduce flood risk in areas as far inland as the South End, Newmarket, and Widett Circle.
- *South Boston Waterfront Flood Risk.* The South Boston Waterfront is almost entirely low-lying, so it has expansive flood exposure, without significant high ground for a potential flood protection to connect. A flood risk management plan for the South Boston Waterfront would likely need to connect to high ground north of Fort Point Channel.
- *Regulations for In-water Work.* USACE permitting processes and Chapter 91 regulations limit what can be done in and over waterways; structures within the state harbor generally require authorization by legislature.

3. Upper Channel: Consider the creation of an integrated infrastructural solution to defend against coastal flooding, improve water quality, support habitat, and activate a new water-based public realm that includes a reopened Dorchester Avenue.

Key considerations for further investigation:

- *Regulations for In-water Work.* Chapter 91 regulations limit what can be done in and over waterways.
- *Bridge Clearances.* Clearances are low at Mean High Water (MHW); limited navigability can support a case for in-water intervention.
- *Stormwater Velocity.* Outfalls may bring stormwater into the channel at high velocities that can cause erosion for unreinforced channel edges.
- *Transportation Infrastructure Impacts.* The area is currently impacted by noise from train turnaround area and highway, and in the future there will be impacts from the South Station track expansion.
- *Dorchester Avenue Reopening.* The reopening and reconstruction of portions of Dorchester Avenue as part of the South Station Expansion Project may offer opportunities not only for increased connectivity, but also for integration with inland flood protection and green infrastructure.

- *Raised Edges.* Edge raising along either side of the channel could reduce flood risk; in particular, raised northern and western edges could reduce flood risk in areas far inland. South Station Expansion FEIR suggests elevating southern section of Dorchester Avenue Seawall to protect transit infrastructure from flood events
- *Planned South Bay Harbor Trail.* This planned greenway can be connected to the Fort Point Channel area.
- *Infra-Space Program.* MassDOT is currently upgrading spaces underneath the I-93 overpass to make them more inviting to the public.

East Boston Waterfront

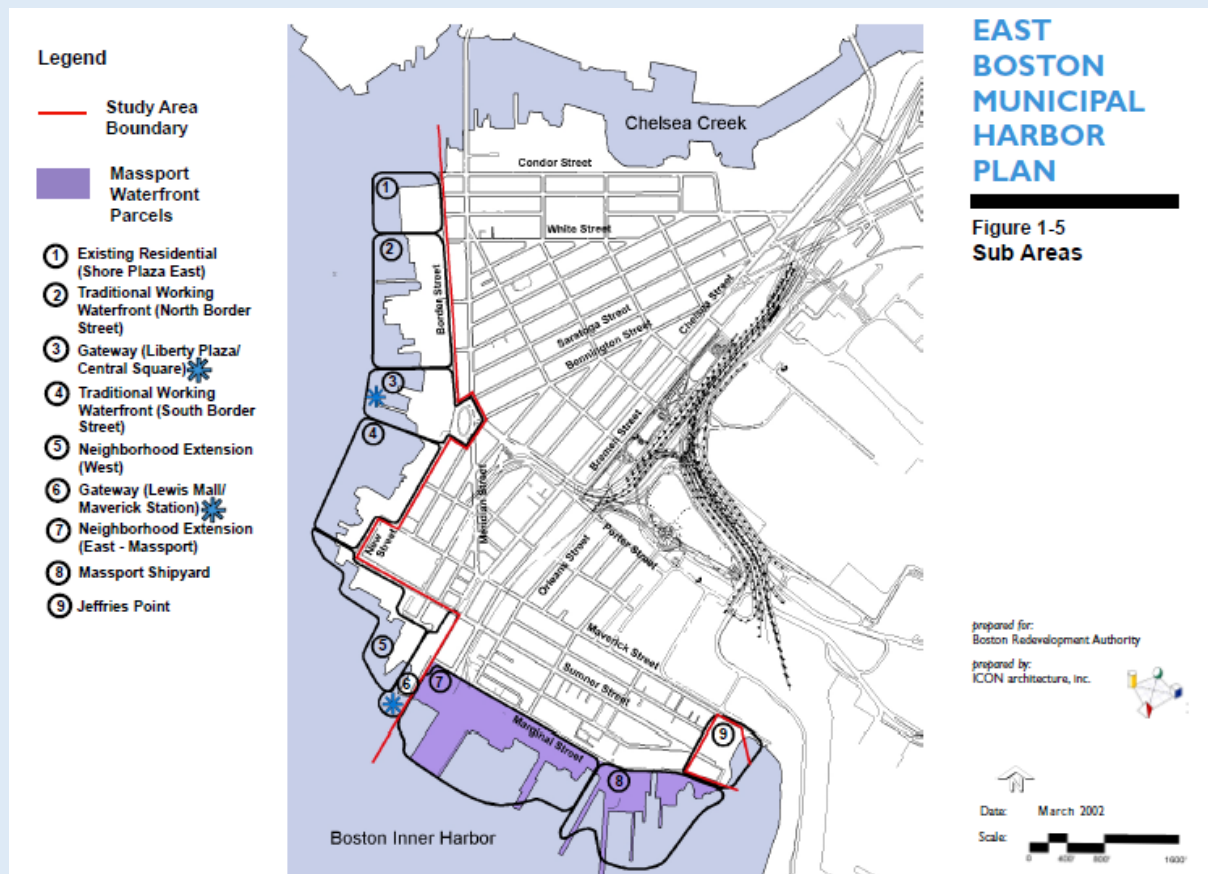
Aspiration. In a time of rapid neighborhood change and increasing flood risk, East Boston’s waterfront must evolve to protect both existing and new housing and jobs, and make meaningful improvements to open space. This may include a signature park or network that would provide flood protection, cultural and recreational opportunities, and habitat restoration.

Major Planning Efforts

2002 East Boston Municipal Harbor Plan (amended 2008)

Primary Goals & Initiatives

- The basic goals, guidance and requirements of the East Boston MHP build and elaborate upon the East Boston Master Plan of 2002, which provided general planning initiatives for the waterfront and the East Boston neighborhood.
- The document specifies urban design guidelines, standards for the shoreline and watershed, establishment of water transit nodes, and a variety of open space improvements,
- Includes expansion of the HARBORWALK, additional waterfront open spaces, streetscape improvements, and other public space improvements
- The primary objectives of the MHP were to provide the public with meaningful access to the waterfront, preserve and strengthen the working port, enhance the East Boston community, and ensure that the waterfront serves as a positive economic force for East Boston’s and the City’s economy
- The MHP also focuses on supporting water-dependent uses and recommends the preservation of East Boston’s historic and cultural fabric



Issues & Opportunities

Economy, Demographics & Development

Historically, the East Boston waterfront has been dominated by maritime industries, which have been in decline for decades. Employment in East Boston is currently centered around Logan Airport and associated businesses, with a significant portion of jobs in the neighborhood related to transportation and warehousing.²⁷

East Boston is a very diverse and historically affordable neighborhood, with over 60% of the neighborhood being people of color compared to about 50% of Boston's population.

East Boston has seen significant residential development since 2000, including many buildings along the waterfront. Almost 300 residential units have been built since 2000, with over 2,000 more either under construction or in the pipeline. The greatest concentration of new development is near the waterfront, south of Central Square. Recently built or approved waterfront development is predominantly medium-density stick construction, with some units renting for over \$4.00 per square foot, compared to the neighborhood average of just under \$2.00.

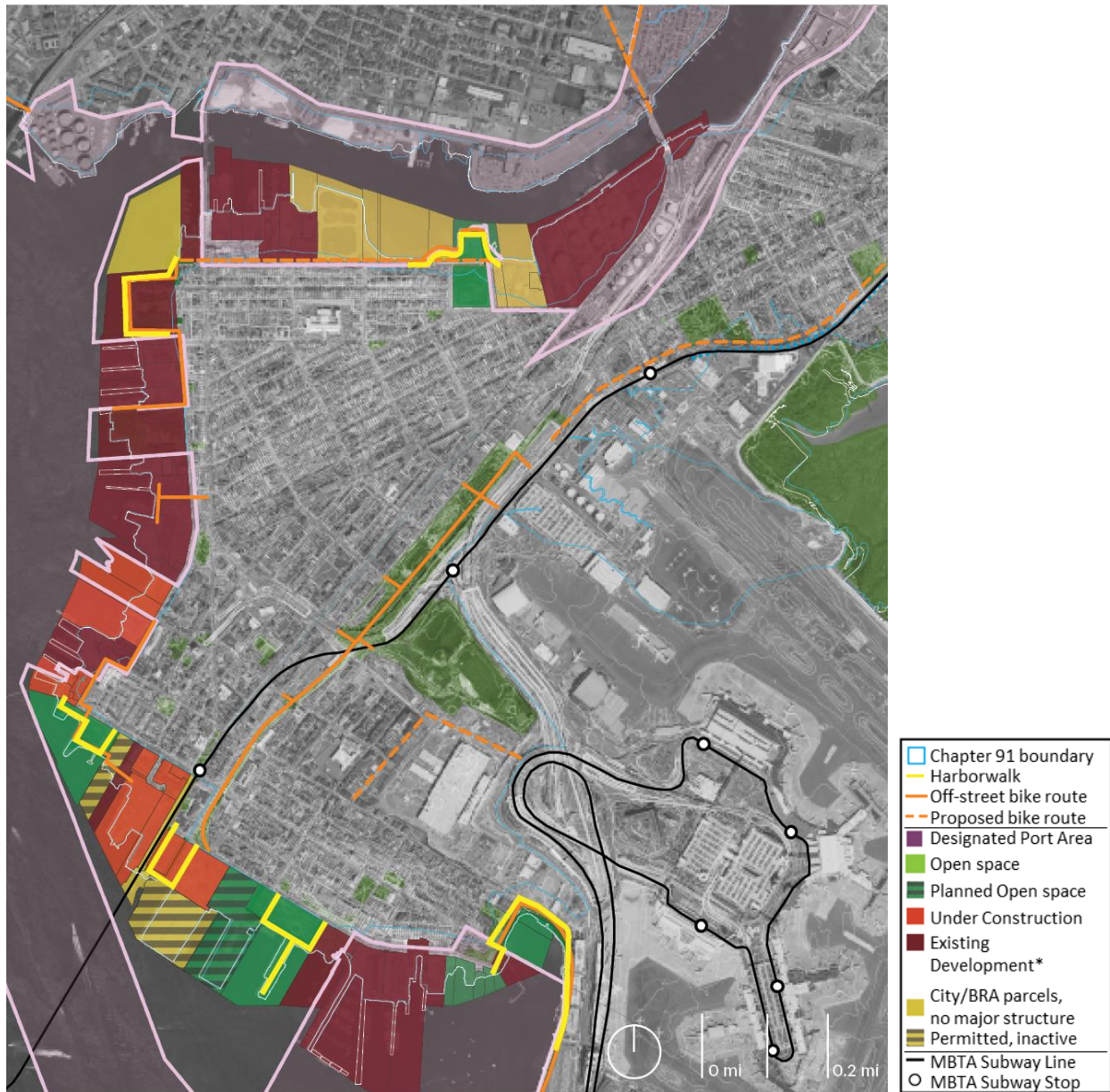
A different construction typology may allow for higher quality public open spaces and greater inland flood risk reduction. An analysis of potential residential developments suggests that, with reduced lot coverage but modestly greater height limits, new development could yield 40% more land for open space and 50% more funding for public benefits.²⁸ Any recommendations for higher allowable densities would require further community conversations and analysis.

Significant stretches of the East Boston waterfront are currently underutilized and could potentially host new housing, jobs, open space, or restored habitat. A number of these sites are in public ownership, such as the land designated for Piers Park Phase II; a parcel next to the Sunoco fuel farm; and the watersheet parcels along Chelsea Creek. Some are within the fragmented Designated Port Area, but are not being used for water-dependent industrial activities.

²⁷ Economic Modeling Specialists, Inc., 2014

²⁸ Assumes that the taller building will have a 5% rent premium for improved quality and quantity of open space; a 10-20% rent premium for upper floor apartments; a cap rate that is 50 basis points lower; a 35% cost premium for steel construction instead of stick construction; and a 25% longer stabilization period. All other assumptions are shared, including compliance with the Inclusionary Development Policy of funding the creation of 18% as many affordable units as market-rate units.

Figure 21: Regulatory, Ownership, and Use Patterns



An analysis of regulatory restrictions, ownership, use, and development status suggests where and how change may occur along the East Boston Waterfront. There are numerous publicly owned sites, discussed later under Potential Interventions.

Open Space & Access

Over the past decades, the first elements of a rich open space system have begun to take root in East Boston. On the Inner Harbor, Piers Park, completed in 1995, offers a traditional urban waterfront park experience, with a promenade, passive use lawns, restroom facilities, and a community sailing center. Along Chelsea Creek, the Condor Street Urban Wild has a naturalized water's edge and viewing points on the generally industrial landscape along Chelsea Creek. Adjacent to the Condor Street Urban Wild is the American Legion Playground, which provides heavily-used recreational fields for the local community. Inland, the Bremen Street Park and the East Boston Greenway opened in 2007 on a former parking lot and railroad alignment.

Despite these elements, the Harborwalk in East Boston is generally discontinuous and disconnected from the public realm. Reasons for this include:

- **Much of the waterfront is within the Designated Port Area, where public access is not required, and prescribed uses are not very compatible with public access.**
- **Public open space affiliated with new development is often physically or visually segregated from adjacent public realm or right of way.** New and proposed open spaces are often not visible to or from adjacent parks or right of way, and many are interior courtyards surrounded on three sides by private residences which, though technically open for public enjoyment, feel private.

Key interventions along each of East Boston's edges can weave a continuous open space system throughout the neighborhood by connecting existing parks to the waterfront and to nodes of activity like Maverick Square Central Square/Liberty Plaza.

"The waterfront at Liberty Plaza in Central Square (East Boston) should be accessible and feature a public dock and expanded Harborwalk."

- *Citywide Waterfront Working Group Member*

Figure 22: Distinct Existing Landscape Characters



East Boston’s waterfront includes multiple distinct landscape types, from the rich salt marsh ecosystem of Belle Isle Marsh to the largely industrial Chelsea Creek that features the open space of Condor Street Urban Wild, to Piers Park on the Inner Harbor across from Downtown.

Climate & Environment

Information regarding future flood risk, and the identification of locations for potential district-scale flood protection systems, is from Climate Ready Boston, Boston's climate adaptation plan.

The entire East Boston Waterfront, and much of the inland neighborhood, face significant and increasing flood risk. The two major inundation points that can lead to vast inland flooding in the near term are along the western edge between Maverick Street and Central Square, and along the southern edge between Bremen and Cottage Streets. Given 9 inches of sea level rise over the 2013, which is likely to be reached between the 2030s and the 2050s, over 15% of East Boston's land area is expected to be inundated by the one percent annual chance flood. Within this area, there are currently over 7,000 residents. With 36 inches of sea level rise, likely as soon as the 2070s, that same area is expected to flood at least once a month at high tide, and almost half the neighborhood, home to over 18,000 current residents, will have a ten percent annual chance of flooding.

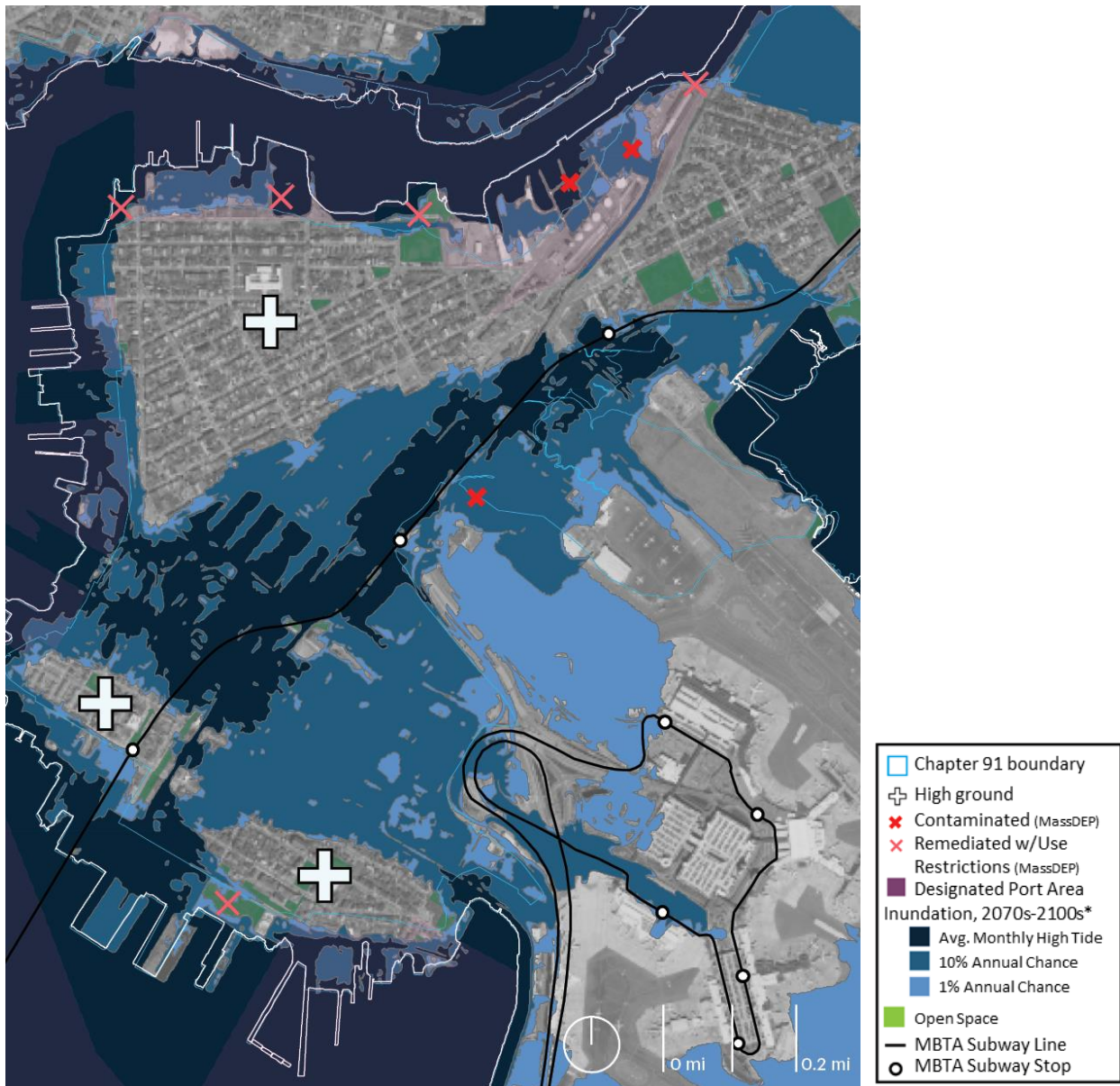
Despite the relatively narrow inundation points in East Boston, where flood protection systems may be beneficial for large inland areas, recently built or approved waterfront development predominantly employs strategies to reduce on-site flood risk and leaves inland areas exposed. In the absence of a comprehensive plan for flood protection in East Boston or elsewhere in the city, development is currently proceeding in areas that may be critical for future flood protection alignments.

Due to former industrial uses in East Boston, a number of sites will require investigation and remediation of environmental contaminants before a change of use occurs. However, there is precedent for this type of transformation. The Condor Street Urban Wild site hosted contaminants that were leaching through a deteriorating bulkhead at the water's edge. This material was excavated and buried on the inland portion of the site, and the water's edge was reconstructed to prevent further deterioration. Future planning and design efforts on comparable sites should consider future flood elevations in relation to the presence of potential site contamination.

Community Climate Adaptation: Climate CARE

The Climate CARE (Community Action for Resilience through Engagement) program in East Boston is being led by the Neighborhood of Affordable Housing (NOAH), with funding from the Kresge Foundation. The program consists of two major components. First, it employs local residents as "Climate Canvassers" to educate East Boston residents about current and future climate risks in a multi-year outreach effort. Second, it brings together local residents, public-sector entities conducting adaptation planning, and planning, design, and engineering experts in formal working groups to ensure that plans reflect community input and priorities, with the goal of developing a set of pilot design projects. Climate CARE is building on earlier work done by NOAH and the University of Massachusetts-Boston and the University of New Hampshire, with funding from the National Oceanic and Atmospheric Administration.

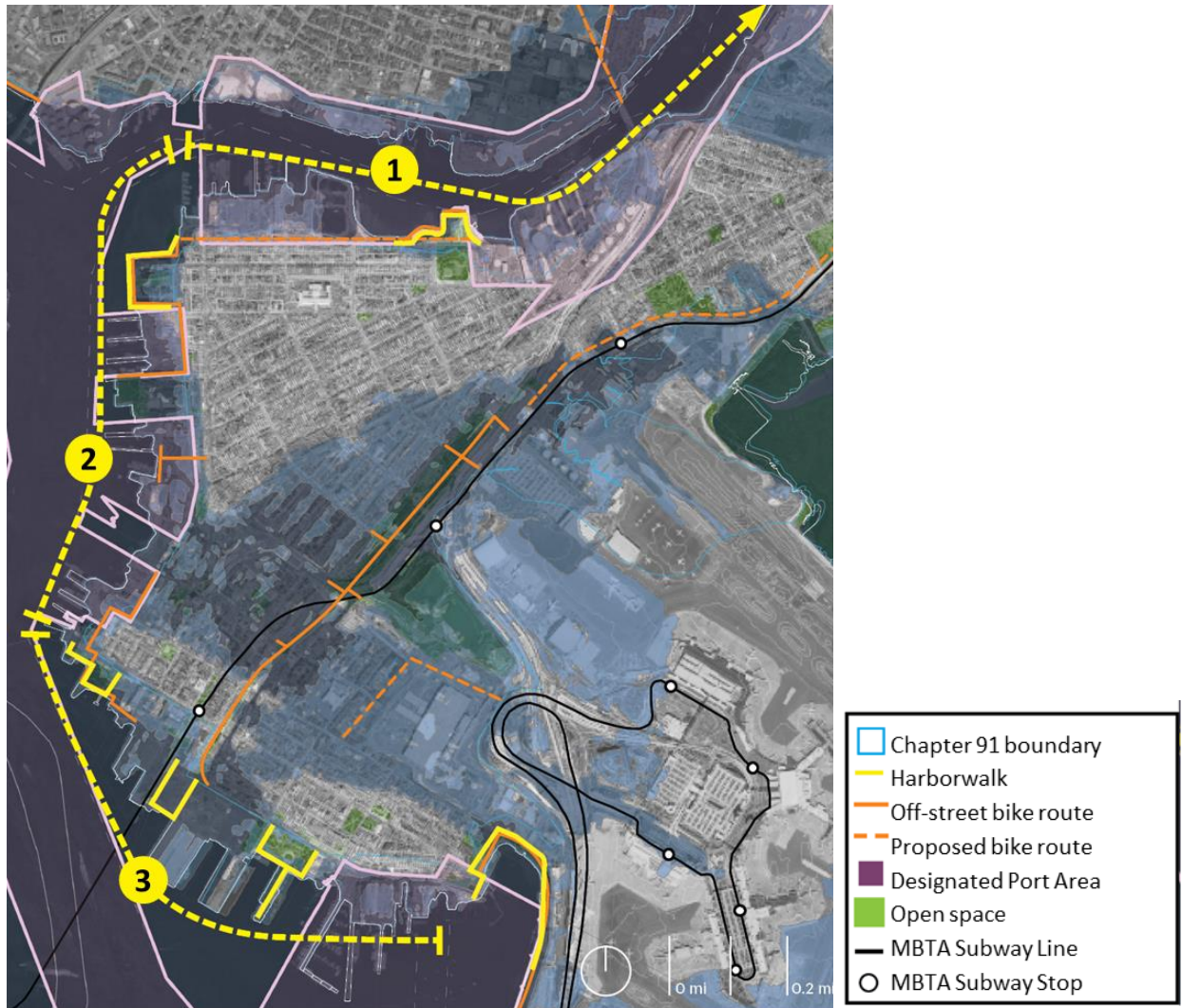
Figure 23: Climate & Environment



*With 36" sea level rise

Potential Interventions

Figure 24: East Boston Potential Interventions



1. Identify opportunities to build a more robust public realm along Chelsea Creek by linking inactive waterfront sites to existing open spaces and neighborhoods and restoring ecology while preserving vital waterfront industry.
2. Explore the creation of new access points to the East Boston's western waterfront that are integrated with inland flood defenses.
3. Evaluate opportunities for new, signature open spaces along the southern edge of East Boston, with flood protection for major inland areas and connections to existing open spaces.

Key considerations for further investigation detailed on following pages.

1. Identify opportunities to build a more robust public realm along Chelsea Creek by linking inactive waterfront sites to existing open spaces and neighborhoods and restoring ecology while preserving vital waterfront industry.

Key considerations for further investigation:

- *Designated Port Area.* Much of the East Boston waterfront is within the DPA, with some sites having active water-dependent industrial uses, and the navigation channel is actively maintained by USACE.
- *Contamination.* Some sites have restrictions on use due to possible contamination.
- *Fragmented Ownership.* The narrow and deep sites at the creek mouth have multiple owners.
- *Public Ownership.* The BPDA owns the former Hess site and is actively seeking redevelopment proposals. The City also owns watersheet sites with Harbor views; these parcels may present opportunities to restore ecology in shallow mudflats.
- *Adjacency to Condor Street Urban Wild and American Legion Playground.* An open space strategy can include connections to these existing resources.
- *Flood Risk.* There may be opportunities for inland flooding mitigation opportunity near Condor Street Urban Wild and Sunoco Terminal.
- *Opportunity for Connective Bikeway.* Opportunity for a path along Chelsea Creek that would link neighborhoods to Belle Isle Marsh Reservation and the Atlantic Ocean and connect with the existing greenway.

2. Explore the creation of new access points and evaluate opportunities for new, signature open spaces to the East Boston's western waterfront that are integrated with inland flood protection.

Key considerations for further investigation:

- *Fragmented Continuity of DPA.* There is a mix of active and inactive water-dependending industrial uses.
- *Liberty Plaza.* This shopping center is within the DPA and is a primary retail destination for the neighborhood.
- *Boston East.* The residential development, currently under construction, features an open space with little apparent connection to the surrounding public real, and floodproofing measures that offer no district-scale flood risk reduction.
- *Mario Umama Middle School Academy.* This waterfront school, with active open space, could potentially be incorporated into future open space network.

3. Evaluate opportunities for new and/or expanded signature open spaces along the southern edge of East Boston, with flood protection for major inland areas and connections to existing open spaces.

- *New Developments.* Six New Street (under construction), Clippership Wharf (under construction), and Portside at East Pier Phase I (partially complete) all have private-feeling open space and no district-scale flood protection. Portside Phase II is currently under construction, while Hodge Boilerworks is approved, but not currently active.
- *LoPresti Park.* The park was recently renovated.
- *Piers Park Phase II.* Massport has designated land for this park, but no funding has been identified.

Long Island

Aspiration. To complement Camp Harbor View and add to the diversity of the Harbor Islands, parts of Long Island could support significant open space in the tradition of the region's great reservations, allowing generations of Bostonians and visitors to experience nature just minutes from Downtown and promote the resiliency of this vital natural barrier for the city. In other areas, existing buildings and infrastructure on Long Island have potential for reuse for a variety of purposes, including some visitor-serving private uses that are complementary to Long Island's natural landscape and history, or the restoration of some social services.

Issues & Opportunities

Economy, Demographics & Development

Long Island has a history of uses including pre-colonial settlements, military fortifications, and social services facilities. In 2014 the Long Island Bridge closed; since then, the island's primary use has been as the home of Camp Harborview, which brings hundreds of Boston youth from economically disadvantaged neighborhoods to the island every summer.

Existing buildings and infrastructure on Long Island have potential for reuse for a variety of purposes, including private uses or the restoration of some social services. Although the bridge closure means that access requires traveling by boat, there may be opportunities for rehabilitation and recovery facilities to be established, taking advantage of the existing built areas of the island.

Long Island may also be attractive for some private uses that are compatible with its natural environment. However, the island's relative isolation would likely define any development's character, and ease of access to the island would be a significant barrier to overcome. Uses such as lodgings or conference facilities could be compatible with the island's secluded environment. To be market viable and to make use of the island's area, permanent development would likely require bridge reconstruction and demolition of some existing structures. Even without a bridge, capital and operating costs, as well as costs for public services on the island, would require substantial premiums.

Open Space & Access

Long Island's central position among the Harbor Islands makes its presence vital in defining the overall character of the Harbor Islands as a public resource for the city and region. Dominating the view from the ferry and many vantage points in and around the islands, the Long Island plays a key role in the Islands experience.

Long Island is at the center of the existing Harbor Island ferry system. Long Island can expand on and tie into existing Harbor Island tourism infrastructure, including the ferry system as well as existing activities and programming. Further direct routes from other points in the city (Dorchester, Charlestown, East Boston?) could be explored to broaden access. However, ferry service tends to be expensive, a potential limit to broad accessibility.

The potential for restored landscapes could enrich the experience of Camp Harbor View campers and the general public, giving them an opportunity to experience robust and varied ecological systems. At over 200 acres, and near the center of the Harbor Islands, Long Island could potentially host a public reservation of great scale, which is only possible with significant and contiguous areas of land and water. This generous scale of Long Island, combined with the possibilities engendered by its city ownership, distinguish it from the state-owned harbor islands.

Long Island has numerous historic sites that could provide interest for the public. Selective portions of Fort Strong, the lighthouse and other abandoned sites could potentially be made accessible and legible to the public.

Figure 25: A Central Position among the Harbor Islands



Long Island’s central position among the Harbor Islands makes its presence vital in defining the overall character of the Harbor Islands as a public resource for the city and region.

“How can all of the Harbor Islands work together to protect Boston from flooding?”
- Citywide Waterfront Working Group Member

Climate & Environment

Long Island's landscape and ecosystem is significantly altered. A significant proportion of vegetation is comprised of invasive species, and the coastline faces major erosion.

With an initial investment in restoration, setting in motion a healthy ecological system, the landscape would not require intensive long-term management. A robust ecology would provide public interest, create habitat and help prevent further erosion.

Long Island, and the Harbor Islands in general, play an important role in reducing flood risk. By working with dynamic ecological, geological, and hydrological processes impacting the island, there may be opportunities to preserve the island's ability to mitigate tidal range and wave action along Boston's shoreline.

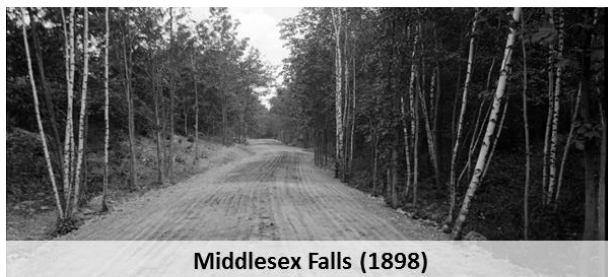


Figure 26: A Legacy of Preservation: Natural Areas Over 200 Acres



The Greater Boston region has a rich legacy of ecological preservation. The foresight of past generations has left Bostonians with opportunities to experience wilderness within reach of the metropolis.

Potential Enrichment and Expansion of Existing Recreational Facilities



Camp Harbor View (2007)

Visual Presence in the Experience of the Harbor



View of Long Island from Spectacle Island

Shoreline Erosion: A Case for Creating Resilient Ecosystems



Long Island Dunes

Prior Use and Ecological Degradation: Opportunity for Restoration



View of Long Island Head and Fort Strong, 1938



Appendix

Regulatory Maps

Figure 27: Waterfront Regulations

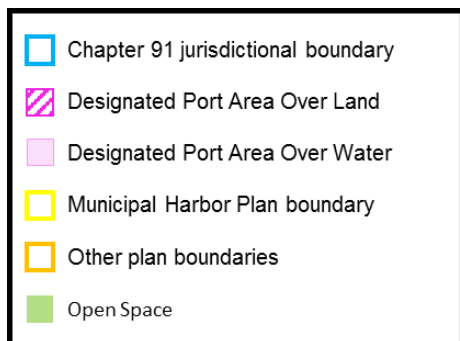
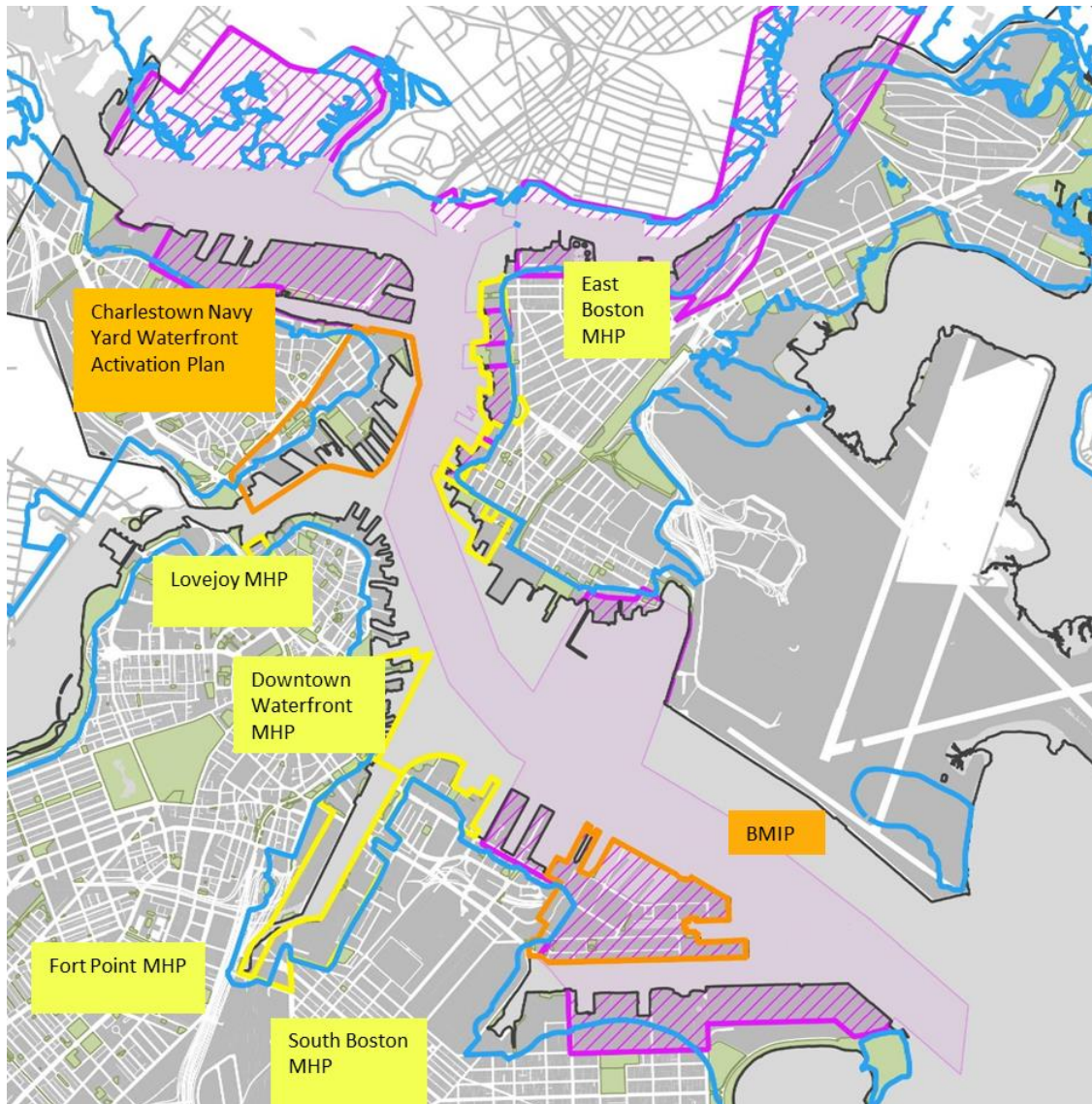
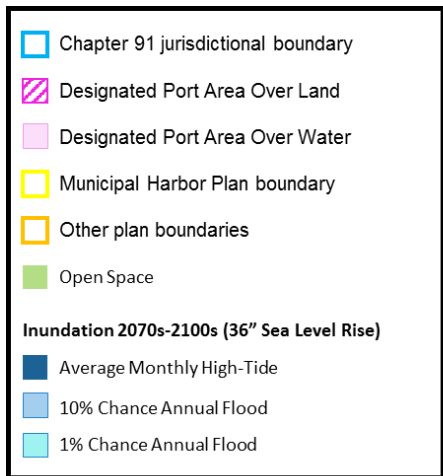
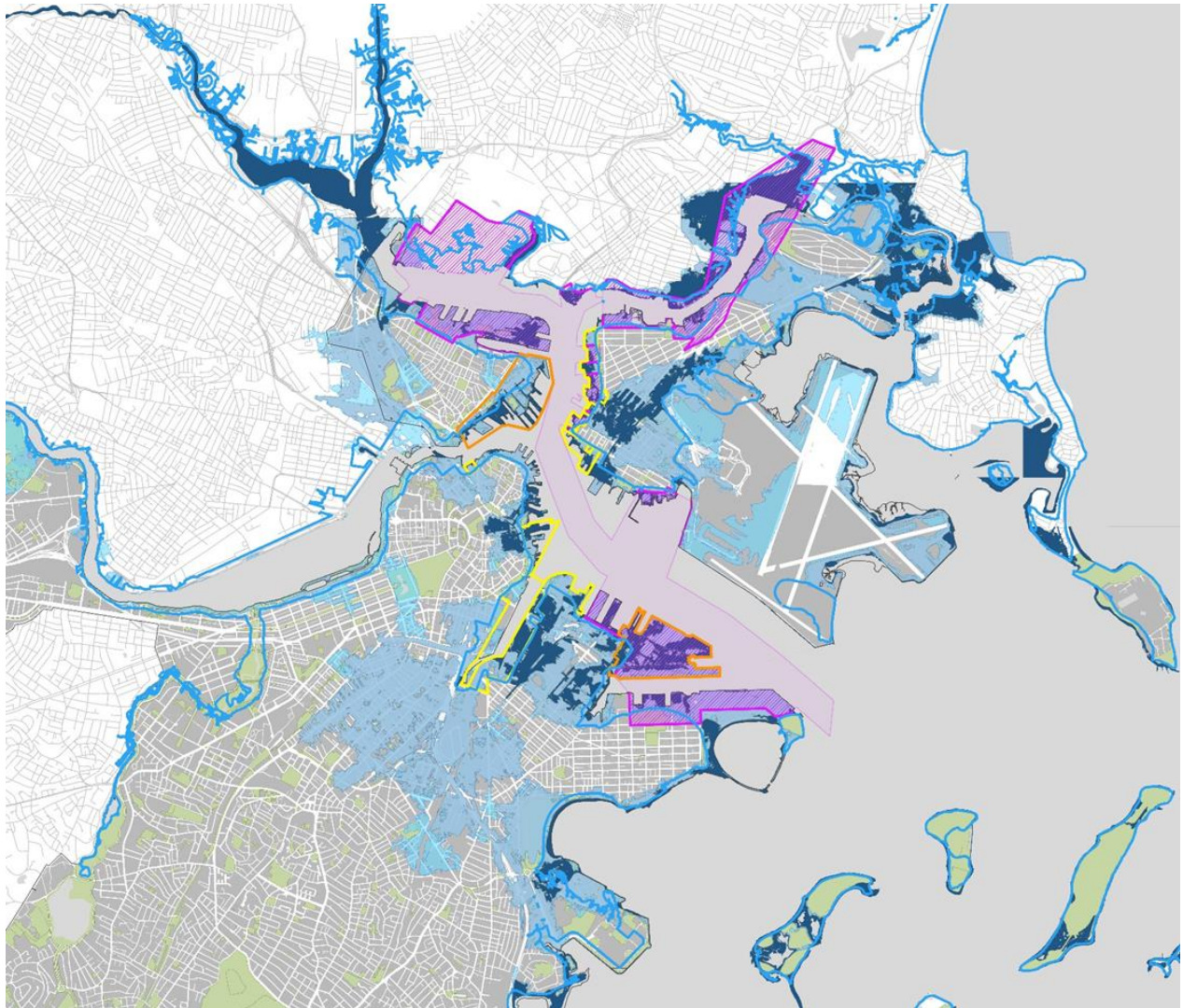


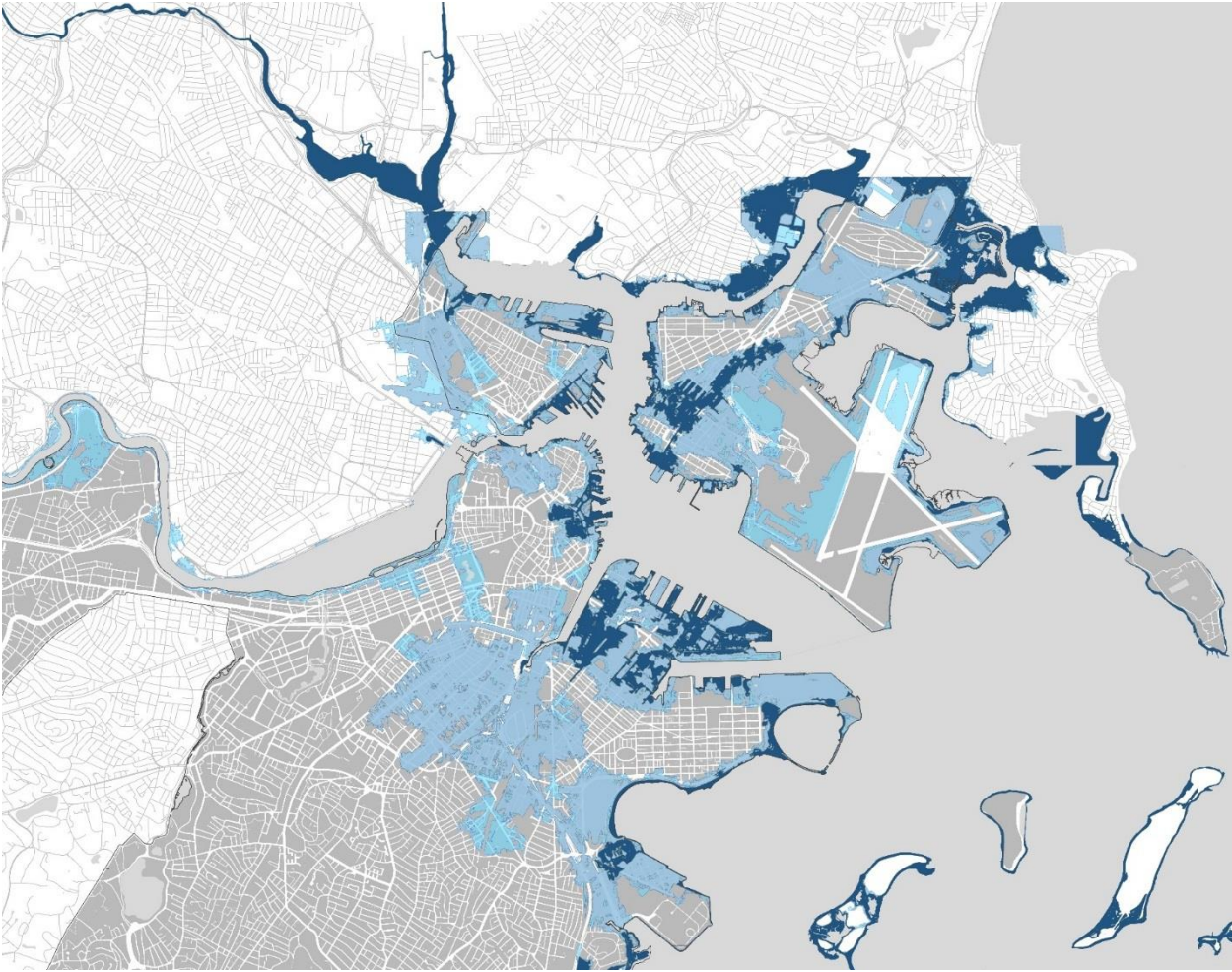
Figure 28: Waterfront Regulations & Future Flood Exposure



Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS

Future Flood Map

Figure 29: Future Flood Exposure

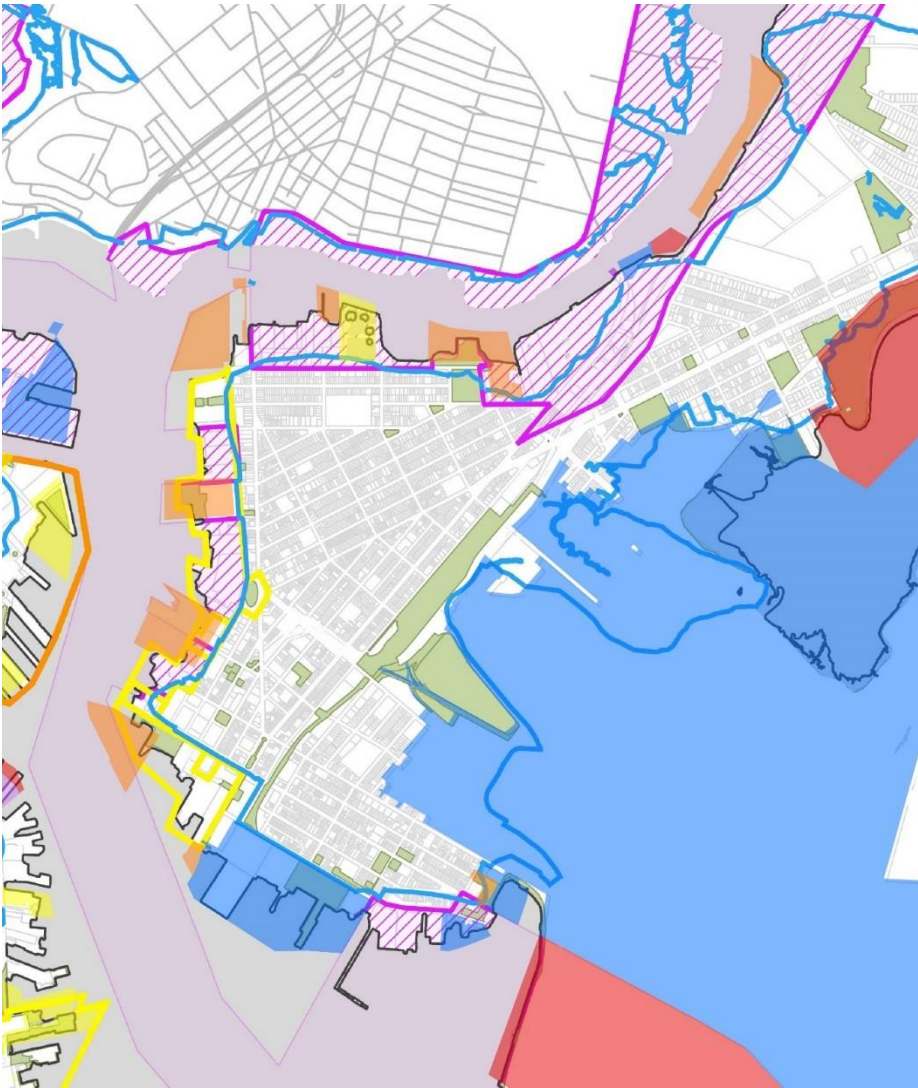


Inundation 2070s-2100s (36" Sea Level Rise)

- Dark Blue: Average Monthly High-Tide
- Medium Blue: 10% Chance Annual Flood
- Light Blue: 1% Chance Annual Flood

Public Ownership Maps

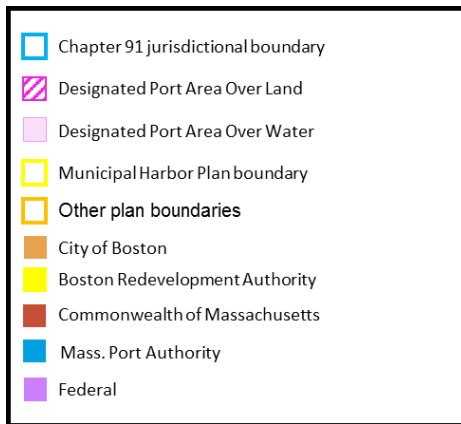
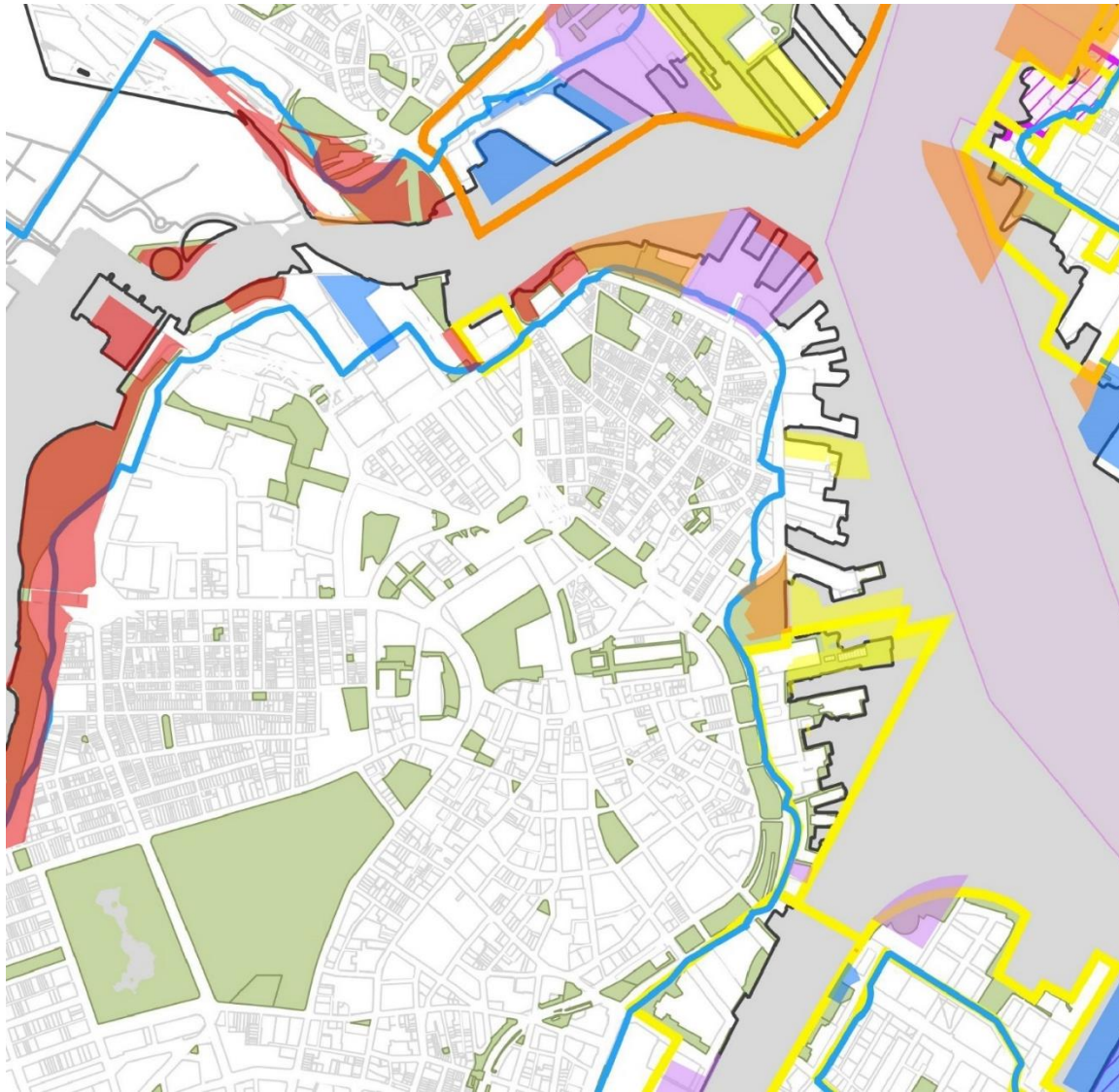
Figure 30: East Boston Waterfront Public Ownership



- Chapter 91 jurisdictional boundary
- Designated Port Area Over Land
- Designated Port Area Over Water
- Municipal Harbor Plan boundary
- Other plan boundaries
- City of Boston
- Boston Redevelopment Authority
- Commonwealth of Massachusetts
- Mass. Port Authority
- Federal

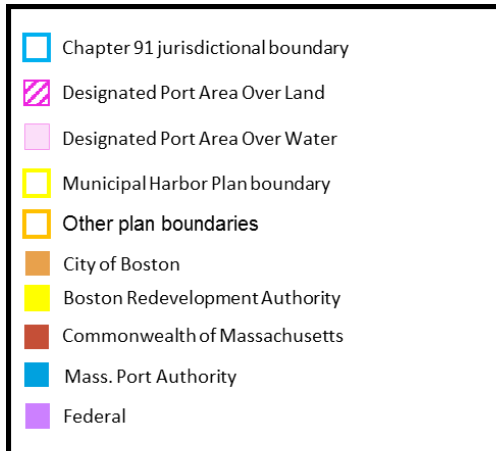
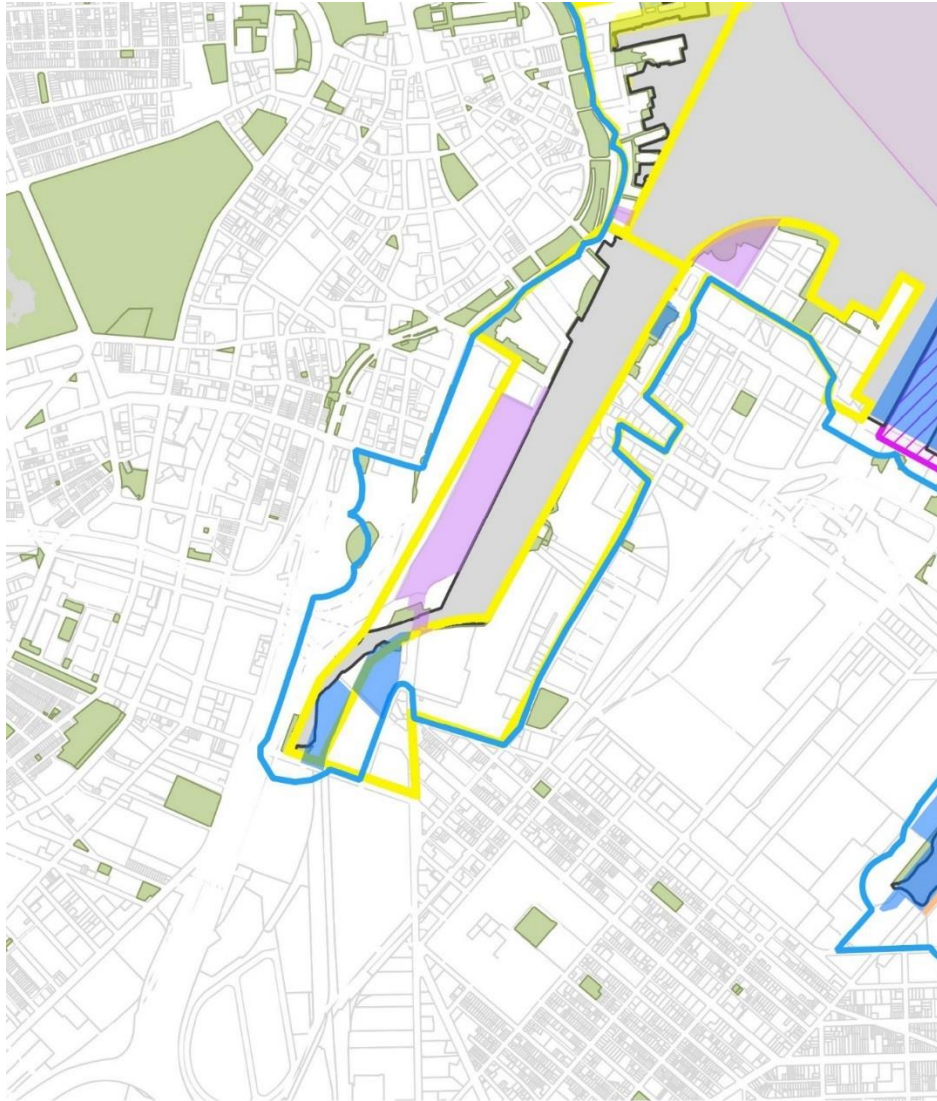
Source: City of Boston 2015 Tax Assessor and Parcel Data

Figure 31: Downtown Waterfront Public Ownership



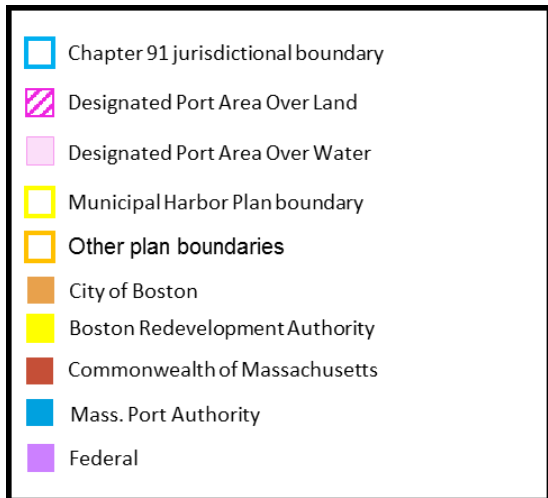
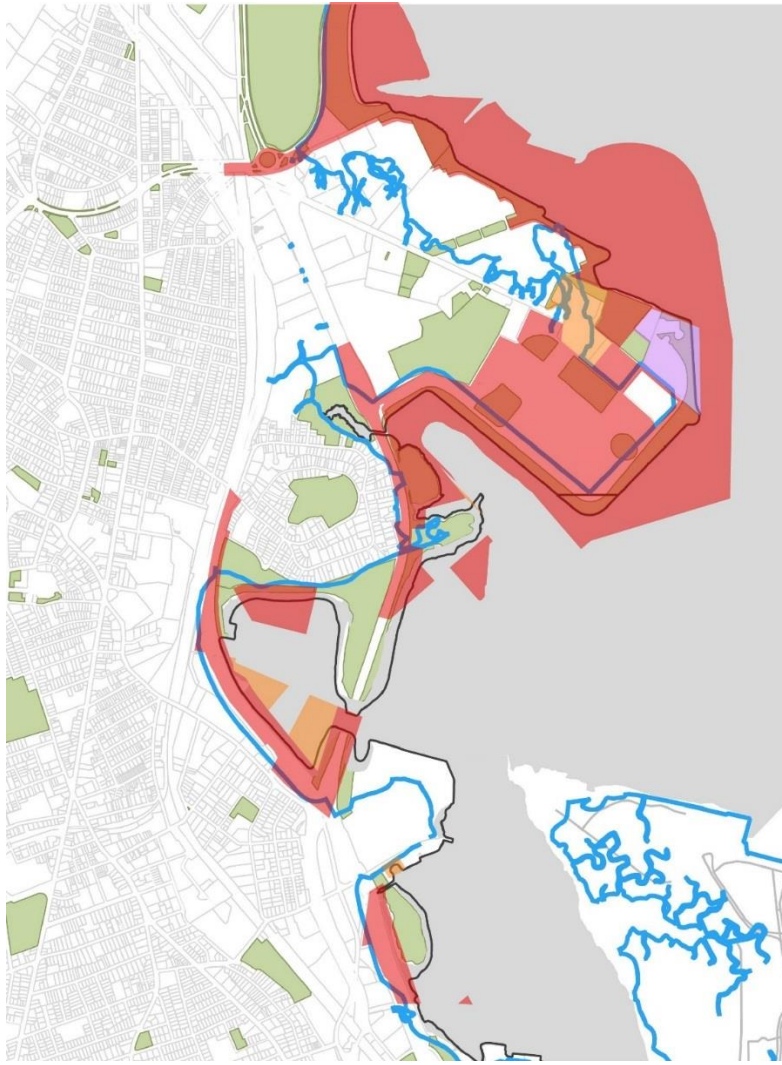
Source: City of Boston 2015 Tax Assessor and Parcel Data

Figure 32: Fort Point Channel Public Ownership



Source: City of Boston 2015 Tax Assessor and Parcel Data

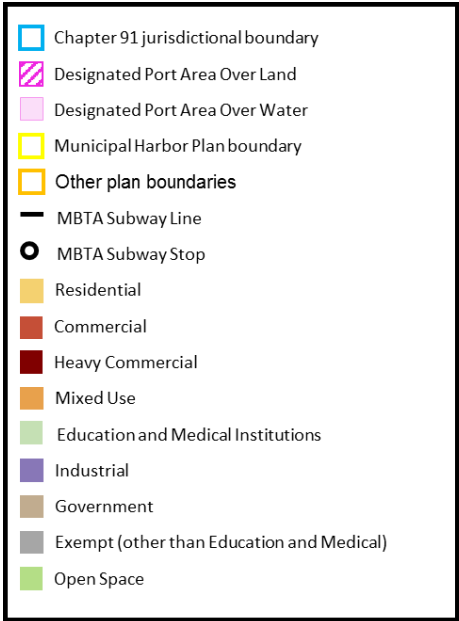
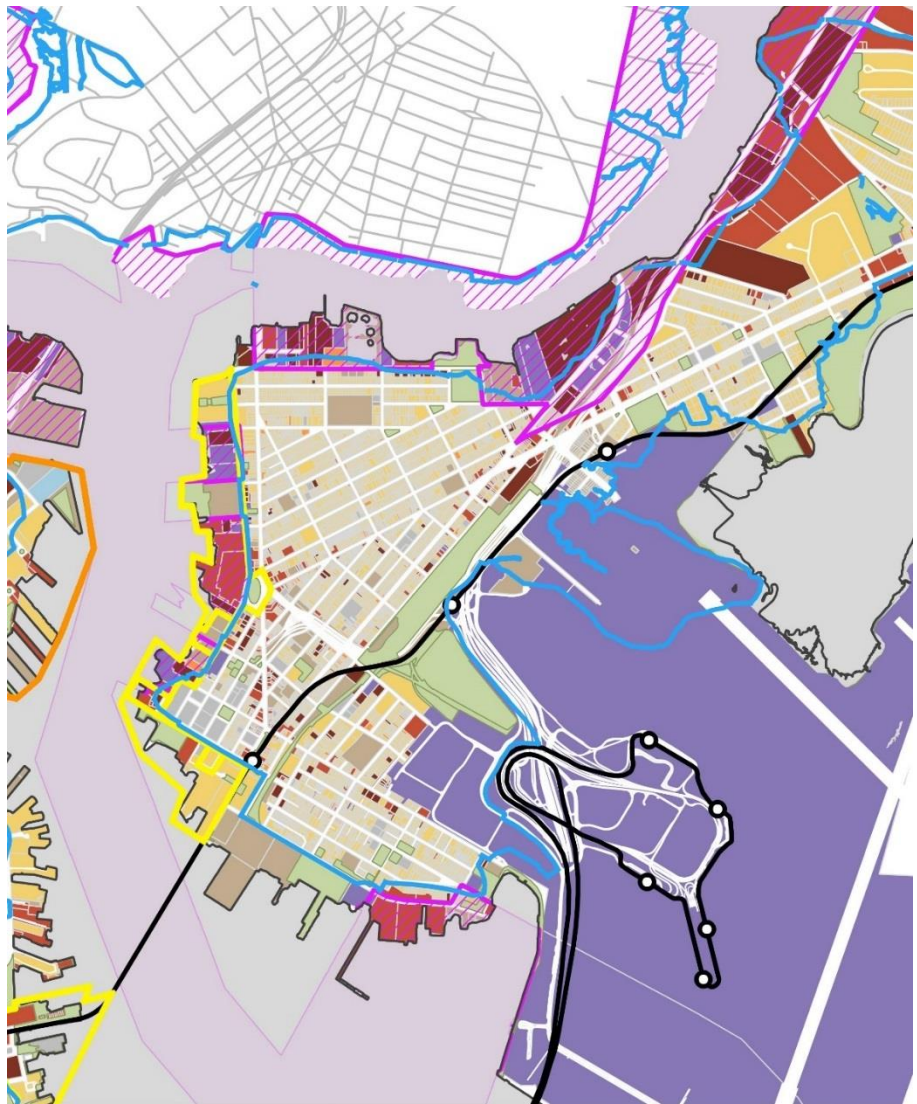
Figure 33: Dorchester Waterfront Public Ownership



Source: City of Boston 2015 Tax Assessor and Parcel Data

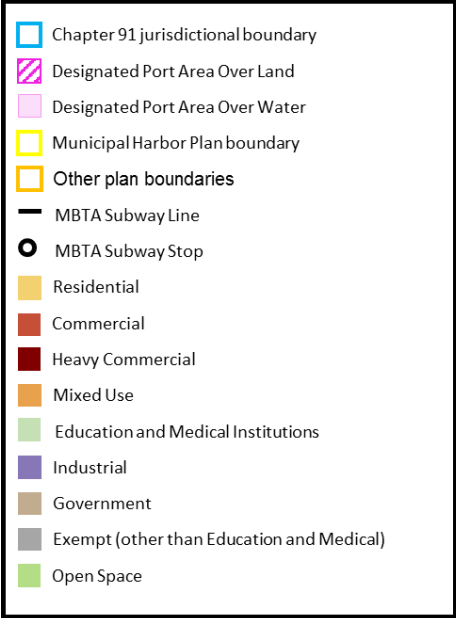
Planning Area Land Use Maps

Figure 34: East Boston Land Use



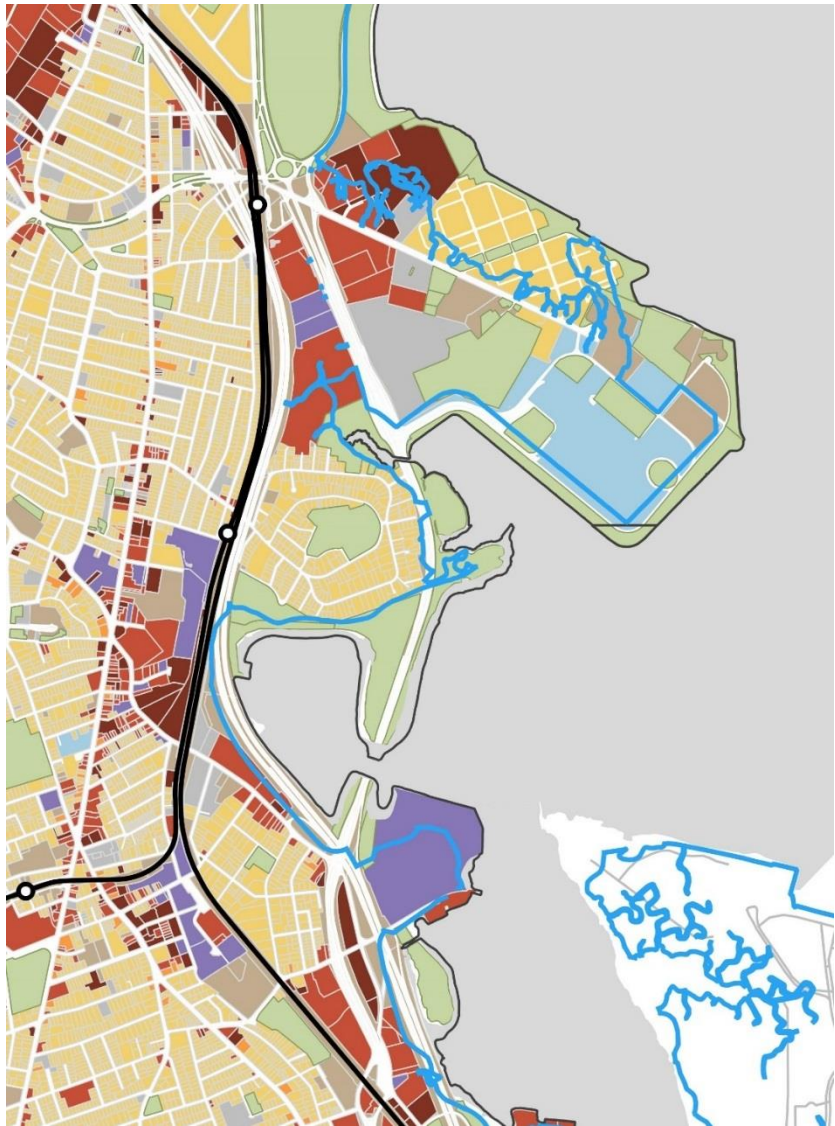
Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS
 * Heavy Commercial refers to logistics, warehousing, and auto-oriented commercial.

Figure 35: Downtown Land Use



Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS
 * Heavy Commercial refers to logistics, warehousing, and auto-oriented commercial.

Figure 36: Dorchester Land Use



- Chapter 91 jurisdictional boundary
- Designated Port Area Over Land
- Designated Port Area Over Water
- Municipal Harbor Plan boundary
- Other plan boundaries
- MBTA Subway Line
- MBTA Subway Stop
- Residential
- Commercial
- Heavy Commercial
- Mixed Use
- Education and Medical Institutions
- Industrial
- Government
- Exempt (other than Education and Medical)
- Open Space

Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS
 * Heavy Commercial refers to logistics, warehousing, and auto-oriented commercial.

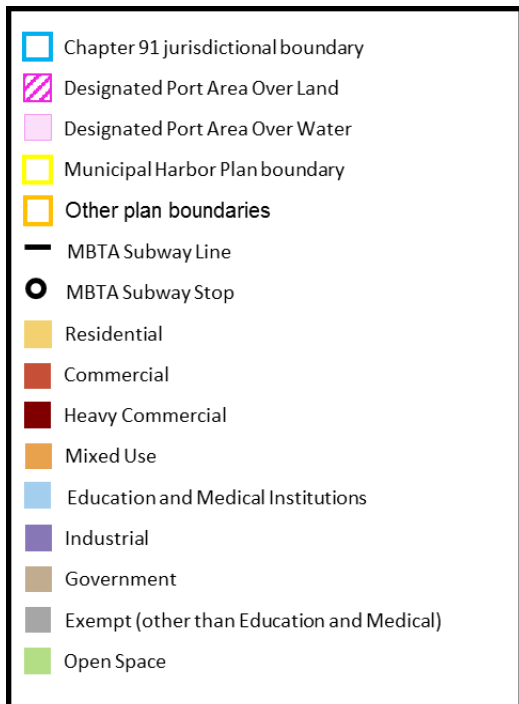
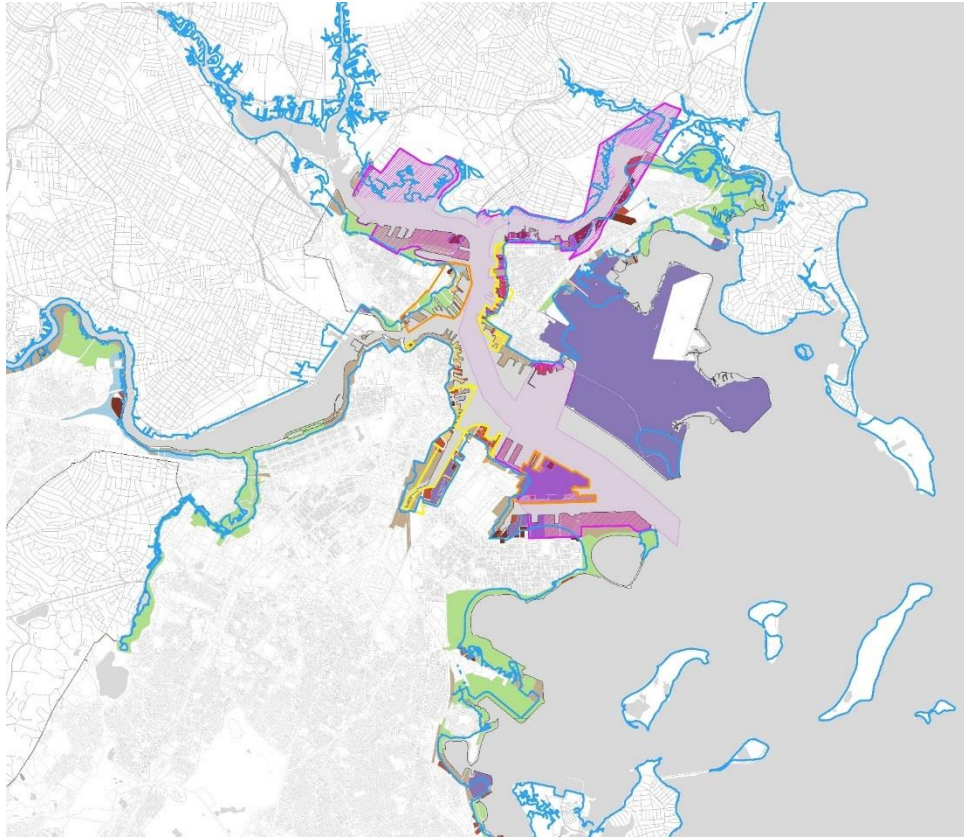
Figure 37: Fort Point Channel Land Use



- Chapter 91 jurisdictional boundary
- ▨ Designated Port Area Over Land
- ▨ Designated Port Area Over Water
- Municipal Harbor Plan boundary
- Other plan boundaries
- MBTA Subway Line
- MBTA Subway Stop
- Residential
- Commercial
- Heavy Commercial
- Mixed Use
- Education and Medical Institutions
- Industrial
- Government
- Exempt (other than Education and Medical)
- Open Space

Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS
 * Heavy Commercial refers to logistics, warehousing, and auto-oriented commercial.

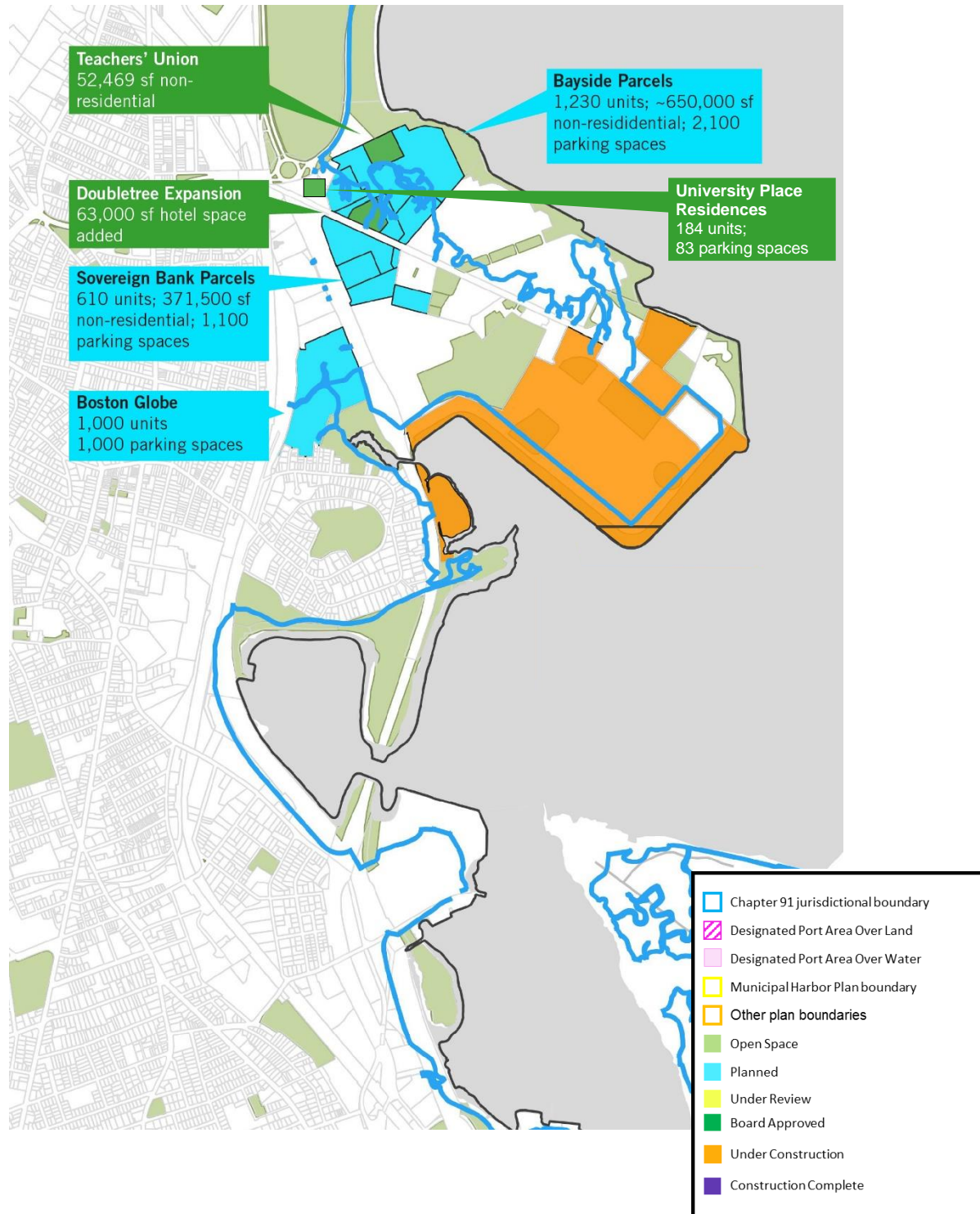
Figure 38: Citywide Waterfront Land Use



Source: City of Boston 2015 Tax Assessor and Parcel Data, Mass GIS
 * Heavy Commercial refers to logistics, warehousing, and auto-oriented commercial.

Planning Area Development Pipeline Maps

Figure 39: Dorchester Waterfront Development Pipeline



Source: BRA Development Pipeline data, BRA website, news articles when other information not available.

Figure 40: East Boston Waterfront Development Pipeline

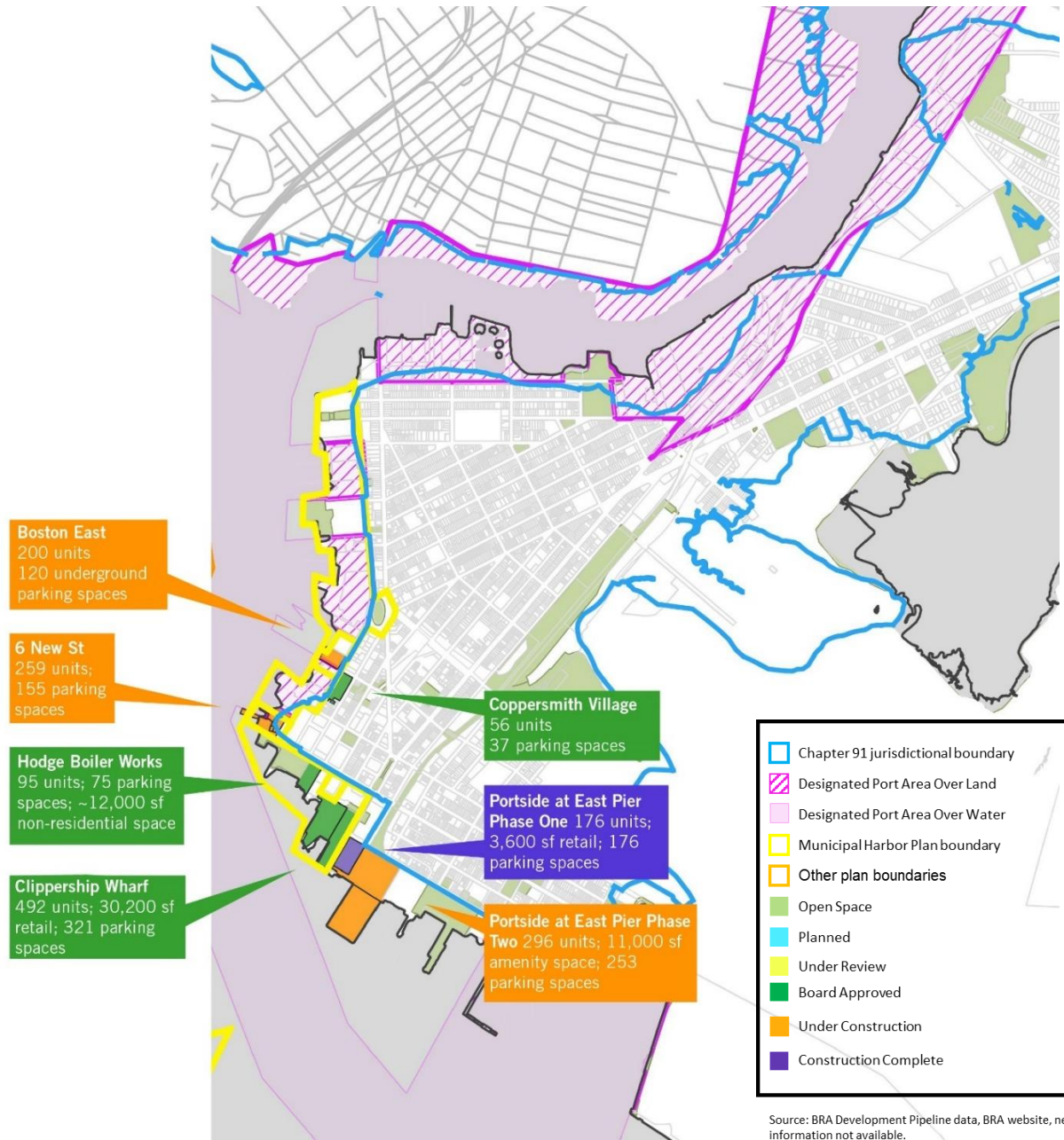


Figure 41: Downtown Waterfront Development Pipeline

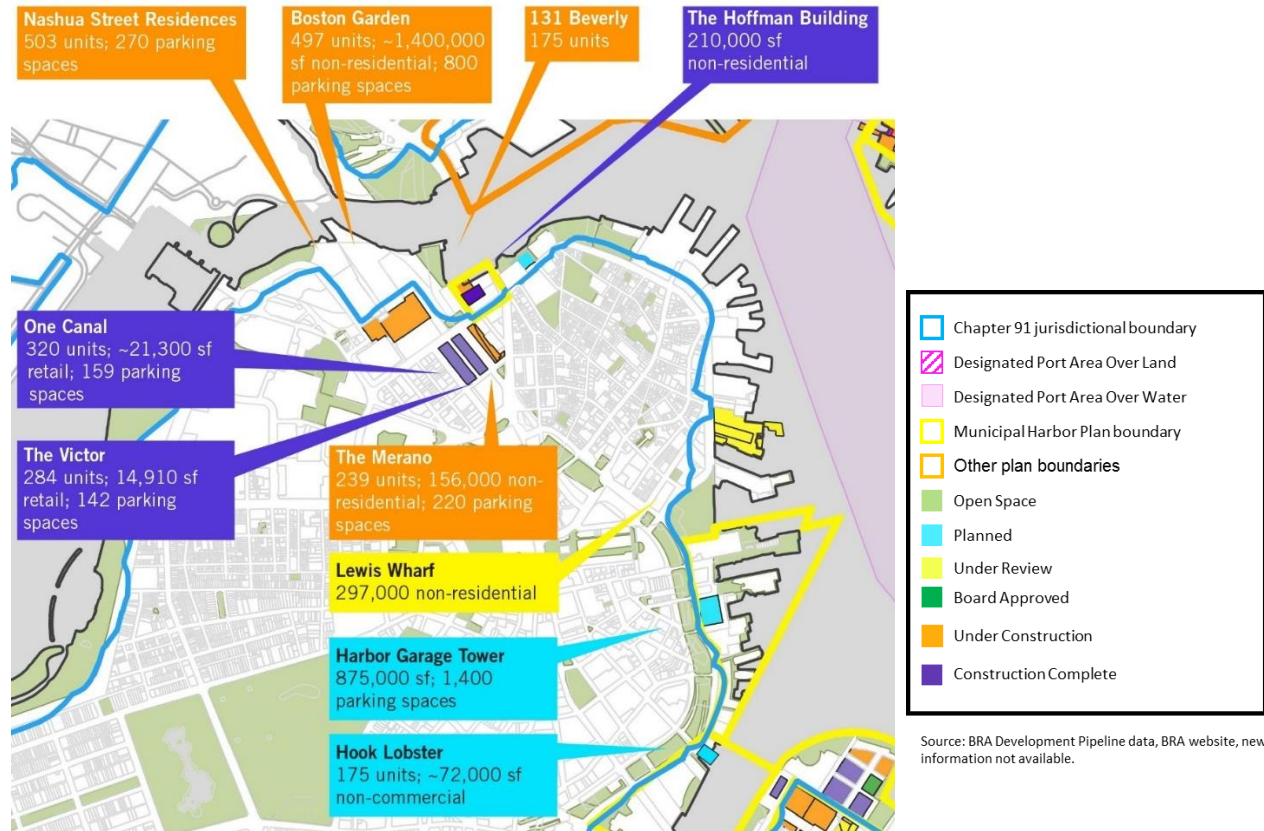
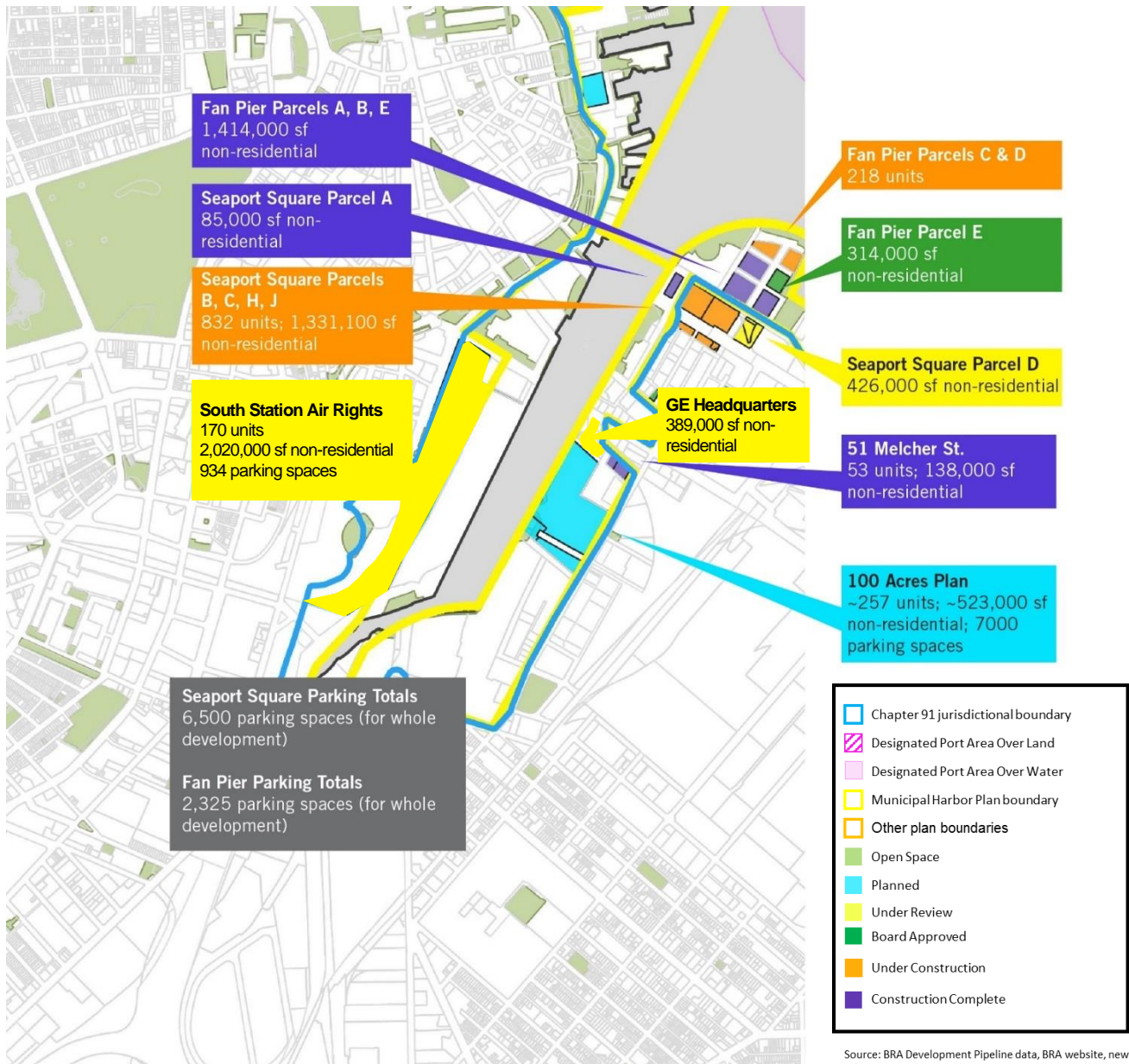


Figure 42: Fort Point Channel Development Pipelines



Summary of Major Waterfront Regulations

Chapter 91, The Massachusetts Public Waterfront Act

Massachusetts General Law Chapter 91 is the Commonwealth's primary tool for promoting public use of tidelands and waterways.

Overseeing Entities. The Massachusetts Department of Environmental Protection (MassDEP) is primarily responsible for implementing the provisions of Chapter 91 through the Waterways Regulations.

Jurisdiction. Generally, all land in Massachusetts seaward of the historic mean high water line is within the Chapter 91 jurisdiction. On filled tidelands outside of a Designated Port Area (see below), which includes much of Boston's waterfront, the boundary is the first public way or 250 feet from mean high water, whichever is farther landward.

Purpose. Chapter 91 is based on the "public trust doctrine", a legal principle that holds that waterways and shores belong to the public at large. Chapter 91 regulations are intended to further this principle by:

- Preserving pedestrian access along the water's edge and providing facilities to enhance public use and enjoyment of the water.
- Protecting and extending public strolling rights along the water's edge, as well as public navigation rights in the water.
- Protecting and promoting tidelands as workplaces for activities for which proximity to the water is either essential or highly advantageous.
- Protecting Areas of Critical Environmental Concern from unnecessary encroachment by fill and structures.
- Protecting the rights of waterfront property owners to approach their property from the water.

Key Regulatory Standards. To advance the public purposes outlined above, Chapter 91 applies the following key regulatory standards to activities within its jurisdiction:

- *Publicly accessible open space:* 50% of a parcel's land area must be reserved for publicly accessible open space.
- *Height limitations:* 55 feet within 100 feet of the shoreline, increasing one foot for every two feet away from the shoreline
- *Facilities of Public Accommodation:* Ground floor uses within 100 feet of shoreline must be "Facilities of Public Accommodation" (retail, restaurant, and other publicly accessible uses). MassDEP and CZM are currently exploring the introduction of "Facilities of Limited Accommodation" – spaces like medical or child care facilities – that provide goods and services to the public by appointment or on enrollment. These could in some cases be substituted for the FPA requirement. FLAs would include spaces.
- *Water Dependent Use Zone:* Area offset from the water's edge that must have a relationship to the water itself whether operationally or for public access. Water dependent use zones are historically preserved for industrial activity that requires ship-to-shore transfer of goods.
- *Facilities of Private Tenancy over Flowed Tidelands:* Residential and commercial uses are typically not permitted over flowed tidelands, e.g., on piers.
- *Restrictions on Fill:* Fill below the high water mark is only allowed for very specific water-dependent uses, which do not include district-scale flood protection.

Relationship to Other Regulations. Through a state-approved Municipal Harbor Plan, municipalities can alter the general Chapter 91 regulations within a defined geographic area. Designated Port Areas, established as a part of

Chapter 91 legislation, and assigned certain use restrictions, may be altered as a result of a Designated Port Area Master Plan.

Municipal Harbor Plans

A state-approved Municipal Harbor Plan (MHP) establishes a community's objectives, standards, and policies for guiding public and private use of land and water within a specific geographic area under Chapter 91 jurisdiction.

State/Local Overseeing Entities. Local municipalities draft MHP's. The Massachusetts Office of Coastal Zone Management (CZM) and Department of Environmental Protection (MassDEP) must approve an MHP, and MassDEP subsequently grants Chapter 91 licenses to projects that comply with MHP standards. MHP standards are also codified in local zoning.

Jurisdiction. Municipal Harbor Plan boundaries are established on a case by case basis and determined by the local municipality in coordination with CZM and MassDEP. There are currently six approved or in-progress Municipal Harbor Plans in Boston:

1. Harborpark Plan (approved 1991; amended 1999 for 226 Causeway and Lovejoy Wharf Hoffman Building; 1999 for Building 114 in Charlestown Navy Yard; 2006 for Lovejoy Wharf)
2. South Boston Waterfront (approved 2000; amended 2003 for the Institute of Contemporary Art; 2009 for the Fort Point 100 Acres Plan; amendment under review for 150 Seaport Boulevard)
3. East Boston (approved 2002; amended 2008 and 2009 for 80 Border Street and 6-26 New Street)
4. Fort Point Downtown (Phase I approved 2002, Phase II approved 2003)
5. Downtown Waterfront (pending)

Purpose. The MHP process recognizes that, in some areas of the Commonwealth, the goals of public use of the waterways and waterfront are better attained through custom-tailored regulations rather than through the general Waterways Regulations that apply throughout the state.

Key Regulatory Standards. The specifics vary in each MHP, but generally there are regulations, memorialized in local zoning, for:

- Height
- Density - Built Floor Area & Built Volume
- Shadow Impacts (in Planning Area)
- Building Footprint / Open Space Percentage
- Setbacks
- Water Dependent Use Zone
- Facilities of Public Accommodation with Ground floor uses
- Facilities of Private Tenancy over tidelands
- Ground Floor Uses (general)

Relationship to Other Regulations. Municipal Harbor Plans provide alternative regulations within specific areas of the Chapter 91 jurisdiction. City zoning regulations, such as height limitations take precedence over Chapter 91, if they are lower than the permissible height of Chapter 91.

Designated Port Areas

Designated Port Areas are established in the event the state determines that the presence of water dependent industrial uses is in the economic interest of the state and its waterfront resources. A Designated Port Area Master Plan is another means by which municipalities may also seek approval for certain alternative provisions in the Chapter 91 standards.

Overseeing Entities. The Massachusetts Office of Coastal Zone Management (CZM) determines the boundaries of DPAs, and the Department of Environmental Protection (MassDEP) enforces the regulations.

Jurisdiction. Designated Port Areas are a state wide jurisdictional boundary for active municipal industrial ports. There are ten DPAs in the Commonwealth. These port areas provide the infrastructure and potential for water dependent industrial uses, those uses reliant on waterfront access or inland for their operations. The jurisdictional boundaries of Designated Port Areas can be changed based on recommendations from a DPA Master Plan or DPA boundary review process. There is one DPA Master Plan in Boston, for the former Boston Marine Industrial Park Master, now the Raymond L. Flynn Marine Park. The DPA Master Plan is currently being updated.

Purpose. Designated Port Areas were established to preserve water dependent industrial uses and to preserve these areas for their potential future.

Key Regulatory Standards. To preserve water-dependent industrial uses, DPA regulations includes:

- *Water-Dependent Industrial Uses.* A majority of the uses within a DPA must be water-dependent industrial uses. Supporting industrial uses and a small amount of commercial use is permitted. CZM is currently exploring broadening the definition of water-dependent industrial uses to potentially include emerging uses like marine technical and scientific research; on-shore support uses related to coastal/off-shore structures; new vessel technology and systems for maritime transport; and facilities for R&D and treatment of marine species.
- *Restrictions on Fill or Structures.* These regulations strictly limit the placement of fill or structures in DPAs to water-dependent industrial, accessory uses and a limited amount of supporting uses on filled tidelands.
- *Open Space.* No requirements for Chapter 91 open space or setback, beyond what is required in Marine Industrial local zoning (10 feet of setback from the front).

Relationship to Other Regulations. MassDEP implements DPA policy at the project level through the Chapter 91 regulations, which govern the licensing of structures and uses in DPAs. Like Municipal Harbor Plans, DPA Master Plans can make recommendations for alterations to Chapter 91 legislation at a local level.