SCITUATE 2040
MASTER PLAN UPDATE

Prepared for the Town of Scituate

Prepared by
Harriman | Innes Associates | FXM | HSH

Draft Report: May 2021

ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

Overview

As directed by Town staff and the Master Plan Advisory Committee (MPAC), this master plan update is a "plan of plans," drawing on the extensive planning processes done to date and on two planning studies whose process paralleled this one. The intent is not to redo the excellent analysis of other planning teams, or restate each recommendation from these previous studies, but to address them into a single document, along with integrating new critical issues such as climate change and limitations on infrastructure. In addition, this planning process incorporated significant public input from community forums, both in person and virtual, and a community-wide survey. This document will serve to guide the Town residents and government in actions over the next ten years that are required to implement long-term process in the next thirty to forty years.

Scituate faces a interdependent crisis: to address the cost of protecting lives and property from the impacts of sea level rise and climate change, the Town needs significant additional monetary resources, both capital and operating. However, the level of development required to raise those funds will put equally significant additional pressure on the infrastructure and natural resources that need to be protected from those impacts.

While grants are available from federal and state resources, and may be specifically available for coastal resiliency, much of the cost over the next few decades will fall to the Town.

The primary source of revenue for the Town is the municipal tax base. The tax rate per thousand of assessed value is $13.33 for fiscal year 2021 (FY2021). The Town's operating budget for FY2021 is $82.9 million; the capital budget included $13.2 million for foreshore protection and close to $3 million for water and sewer capital costs. These budget items are just the beginning of the costs that will be required to address climate change over the next few decades.

The traditional method of increasing the tax base is to grow the assessed value of residential property, commercial property, or both. Proposition 2½ limits the ability of communities to raise tax revenue by raising the tax rate (or the valuation), but new growth from development has a direct initial impact on the budget because of the method of calculating revenue from property tax. However, new growth alone will not be sufficient to pay for the known projected costs of infrastructure needs to address coastal resiliency, the sanitary system, and the water system. In addition, the Town has obligations for ongoing operating costs and current and future capital simply to maintain its mission to provide the services expected by its residents.

Future development is dependent on having the appropriate infrastructure in place to support existing residents and future growth, and Scituate does not.

Both the water and sanitary sewer systems have capacity limitations; in addition, both are significantly impacted by current flooding and projected flooding as a result of sea level rise. Significant components of the sewer system, including several pump stations, shoreline piping, and the Wastewater Treatment Plant are under threat from sea level rise. Many homes rely on septic systems; not all systems may be compliant with Title V. Additional development in North Scituate is dependent on an extension of the sewer.

For the water system, several groundwater wells that provide drinking water are threatened either directly by sea level rise or by associated flooding and salt water intrusion. Climate change, with shifting patterns of precipitation, will affect also surface water (such as the Town's reservoir) in terms of both quality (increased stormwater runoff from more intense precipitation events) and quantity (periods of drought during the summer months when the demand is highest from the influx of summer visitors). The production of drinking water is close to capacity based on year-round usage and not including the influx of summer visitors.

Protecting and expanding these two systems will require significant capital funds from the Town, even with grants and careful planning and control of new development.

As sea levels continue to rise, existing infrastructure – water, sewer, roads, buildings – will be threatened, first by increasing flooding days and, in some cases, by permanent inundation. The shoreline will shift, marshes and other wetlands will increase, and flooding will extend well inland from both sea level rise and precipitation that increases in duration and intensity. The shift in the timing of precipitation will have a negative impact on the Town's forest cover, leading to more drought, a shift in the species of trees and other flora, and an increase in wildfires. The Town needs to recognize these major challenges and address them with changes to land use policies and regulations that alter where people build based on projections for regular flooding, wetland migration, and wildfire to reduce the potential damage to lives and property.

At the same time, wetlands and woodlands help protect people from those impacts of climate change. The Town must balance its critical need for more resources to address its current and future infrastructure investments and the annual maintenance of that infrastructure while protecting the environment that will in turn protect the residents from some of the impacts of climate change.

Scituate has a need for smaller rental homes for a variety of household types. Scituate's villages – North Scituate, Greenbush, Humarock, and the Harbor – are attractive places to live and close to opportunities for recreation on both land and sea. Three of the villages – North Scituate, Greenbush, and the Harbor – are centers of commercial development. The Town should continue its proactive review of zoning and land use policies and responsibly permit residential and commercial buildings to provide choices for its residents and business owners and increase the municipal tax base. This may include saying no to investments, public or private, that will be threatened or obsolete within the period of their useful life. Infrastructure, once installed, cannot simply be abandoned to the rising tides; the owner will need to cap, and the Town may need to monitor, infrastructure that is no longer in service.

This master plan update provides a guide to the Town for future decision-making on actions that will have long-term impacts on the Town's economic, social, and physical resiliency. By working within this framework, Scituate will remain a vibrant community and preserve its unique cultural and natural resources for many decades to come.

Vision

In 2040, Scituate is still known for its coastal charm and natural beauty. Visitors flock to its villages and Scituate Harbor to patronize local eateries and small businesses while taking in the beautiful views. The Town is financially stable and Scituate has become more ecologically, economically, and socially resilient by addressing the need for economic development and affordable housing, providing excellent educational opportunities to its children, expanding the sewer system and the capacity of the water supply, and protecting ecosystems by concentrating development in areas that have the least environmental impact to Scituate's forests, wetlands, and coastline.

In 2040, Scituate is still a small town but is continuing to evolve and strengthen its diverse tax base. Scituate is an inclusive and thriving community known for innovative solutions for improving resilience in the face of significant challenges posed by sea level rise and climate change. Scituate in 2040 is prosperous and thriving, while retaining its coastal identity and heritage valued by residents and visitors alike.

Goals

1-Improve Scituate's ecologic, economic, and social resiliency.

2-Address the challenges presented by the town's physical, environmental, and infrastructural constraints with proactive measures.

3-Retain Scituate's village and coastal identities while managing both projected and unforeseen changes in the community.

4-Improve Scituate's accessibility to all demographics.

Resiliency as used in this Master Plan

Ecological Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's ecological systems.

Physical/Infrastructural Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's physical and infrastructure systems.

Economic Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's economic systems.

Social/Cultural Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's social and cultural systems.

Resilience and this Plan

This table provides an overview of how each topic discussed in this master plan update intersects with the goal of enhancing Scituate's ecological, physical/infrastructural, economic, and social/cultural resilience. Please See **Section III and IV** *for more information.*

Climate Change + Sea Level Rise				
Ecology				
Open Space + Recreation				
Housing				
Land Use				
Zoning				
Historic + Cultural Resources				
Services + Facilities				
Economic Development				
Transportation Infrastructure				
Water Infrastructure				
Sanitary Infrastructure				

Implementation

The most immediate three actions the Town should take are as follows:

→ Incorporate capital costs to address immediate infrastructure needs into the Town's capital budget, including estimates from previous studies, updating older estimates, and gathering costs for recommendations from studies that did not include costs. **Primary infrastructure needs include coastal resiliency, the water system, and the sanitary sewer system.**

→ Begin incorporating changes to land use regulations and policies to address the recommendations of this master plan update. Immediate needs include the rezoning for North Scituate. Mid-term actions include updating the zoning for the Harbor/downtown and providing incentives for the preservation of important ecological assets. Long -term, the Town needs to **address issues of affordability and equity in housing, shifting patterns in employment, and the need for well-paying jobs within the town, and to do this within a development context that is changing in response to economic cycles and the projected impacts of sea level rise on the coast.**

→ Begin regular community conversations – perhaps quarterly – on the need to take action on the recommendations described in this master plan update. None of these problems identified in this master plan update can be solved by individual action; **Scituate's challenge over the next ten years will be to develop the consensus for collective action and to match that consensus with favorable votes by Town Meeting and by elected boards and committees to support the policies, regulations and appropriations that will lead to a more resilient Scituate.**

PART I: INTRODUCTION

This *Scituate 2040 Comprehensive Master Plan* is an update to Scituate's 2004 Scituate Master Plan. This update defines a vision, goals, and implementation actions to support the future of Scituate through the lens of resiliency. For this reason, while most master plans have a life of ten years, this plan has a planning horizon of twenty years that identifies actions that will address needs thirty to forty years from now.

The traditional elements of a master plan under Massachusetts General Laws, Chapter 40, Section 81D are land use, economic development, housing, open space and recreation, natural and cultural resources, services and facilities, and circulation. These elements are accompanied by a goals and policies statement and an implementation plan.

In this plan, these topics are integrated with climate change and sea level rise. These two related topics are among the most serious threats to Scituate's future. Planning for the range of potential impacts of climate change informs the plan's analysis of the existing conditions for each of the traditional elements, and influences the recommendations for future actions to achieve the vision and goals defined in this plan.

As directed by Town staff and the Master Plan Advisory Committee (MPAC), this master plan update is a "plan of plans," drawing on the extensive planning processes done to date and on two planning studies whose process paralleled this one. The intent is not to rewrite past efforts, but to incorporate the unfinished recommendations of earlier and concurrent plans into a single document, along with integrating those new critical issues such as climate change and limitations on infrastructure. This document will serve to guide the Town residents and government in actions over the next ten years that are required to implement long-term process in the next thirty to forty years.

This introductory chapter has four subsections:

- → History: This section highlights how Scituate has evolved over time, particularly emphasizing its relationship to the coastline.
- → Planning Context: This section discusses past and current related planning efforts and highlights key recommendations from those plans.
- → Planning Process: The planning process involved a comprehensive collaborative effort between Town planning staff, the Master Plan Advisory Committee, Harriman, HSH, FXM, and the Scituate community. This section outlines the timeline of the project and the multi-faceted approach taken to gathering and analyzing the data and recommendations presented in this report.
- → Community Engagement: Community was a key component of the planning process. This section describes the innovative approach taken to community engagement and highlights the key results from this effort.

The other chapters of this document provide a summary of the vision and goals of this Plan (Part II); an analysis of existing conditions for the topics discussed in this plan (Part III); the recommendations for creating a Resilient Scituate (Part IV); and a high-level implementation plan to guide the Town over the next ten years (Part V).

The final public workshop for this planning process should have been March 25, 2020. This project was put on hold from March to August 2020 due to the restrictions on public gatherings to reduce the spread of the COVID-19 pandemic. The Town held that final workshop remotely on October 13, 2020 due to the COVID-19 pandemic. The pandemic, and the devastating negative impacts on our society and economy to date, are a significant reminder of the need to focus on making our communities more resilient to change, both gradual and unexpected.

HISTORY

Resilience and Transformation

Scituate's history is linked to its relationship to water. Scituate's economy grew from a maritime center to a picturesque tourist summer area. But its coastal location is also a threat from Nor'easter storms and sea-level rise. The dynamic and rich history of Scituate shows a town and community that has been resilient and adaptive to change.

Before English colonization, the Wampanoags inhabited Scituate and the surrounding coastal areas of Massachusetts. Scituate is derived from 'Satuit' which is the Wampanoag term for "cold brook." After Europeans began arriving, the Wampanoag suffered an epidemic from 1615 to 1619. Inhabitants then used Scituate as a fishing and farming town, and for two centuries, Scituate did not experience much population growth, due to limited transportation. In 1900, the population of Scituate hardly exceeded 2,000.

Scituate's economy initially centered on the harbor and the coastline. Fishing, shipbuilding, and Irish mossing were key industries for the area. Scituate has been home to many working-class Irish immigrants, many of whom came to Scituate for jobs in the coastal industries, such as mossing. The red algae or Irish Moss would be processed and used in numerous applications in beauty and food products, such as chocolate milk stabilizer.

Development was concentrated around the harbor and the villages on the South Shore Railroad, which opened to Cohasset in 1849. Even before WWII, Scituate's waterfront attracted summer visitors, and, increasingly, year-round residents.

With the advent of the private automobile and better roads, Scituate experienced a rapid growth; in 1960, the population of Scituate was 12,000. Except for a few village centers, most of Scituate was developed as an auto-oriented suburb.

When the Southeast Expressway opened, ridership on the rail line decreased, and all passenger service ceased in 1958. This portion of the Old Colony rail system was unused until the Greenbush line reopened in 2007.[1]

Over time, Scituate has transformed from a seaside, fishing, and resort town into a bedroom community/ suburb of Boston. Scituate's demographics have shifted as median incomes and property values increased. The mossing industry declined due to the retirement of a key business owner and cheaper sources of algae production in Southeast Asia, and other maritime and agricultural uses left the area due to rising property values.

Climate Change

Respecting the Town's history is important but climate change will force Scituate to adapt once more. Past weather events have dramatically changed Scituate's landscape, including losing the connection from Humarock to the rest of Scituate in 1898 and the Blizzard of 1978. Climate change and sea level rise will have unprecedented impacts, and addressing those impacts is not entirely within the Town's control. Scituate is at a crossroads, but its history as a close-knit, resilient community shows that Scituate is a town ready for change and adaptation.

1 Service officially reopened on October 31, 2007, after the line was closed in 1959. http://roster.transithistory.org/MBTARouteHistory.pdf, last accessed December 27, 2020.

Image 1: *Peggotty Beach and Kent Street Marsh during high tide (March 4, 2018). Source: Karl Swenson, SKYWARN Spotter.*

Image 2: *Peggotty Beach Postcard, 1930-1945. Source: Boston Public Library.*

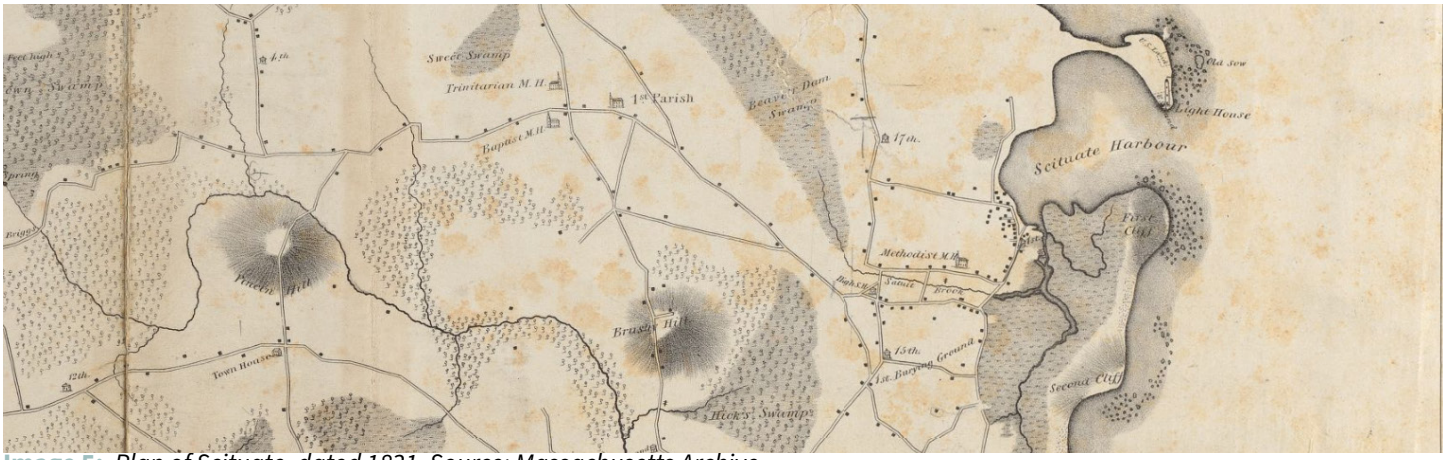


Image 5: *Plan of Scituate, dated 1831. Source: Massachusetts Archive.*

Image 3: *Irish Mossing, 1960. Source: Scituate Historical Society.*

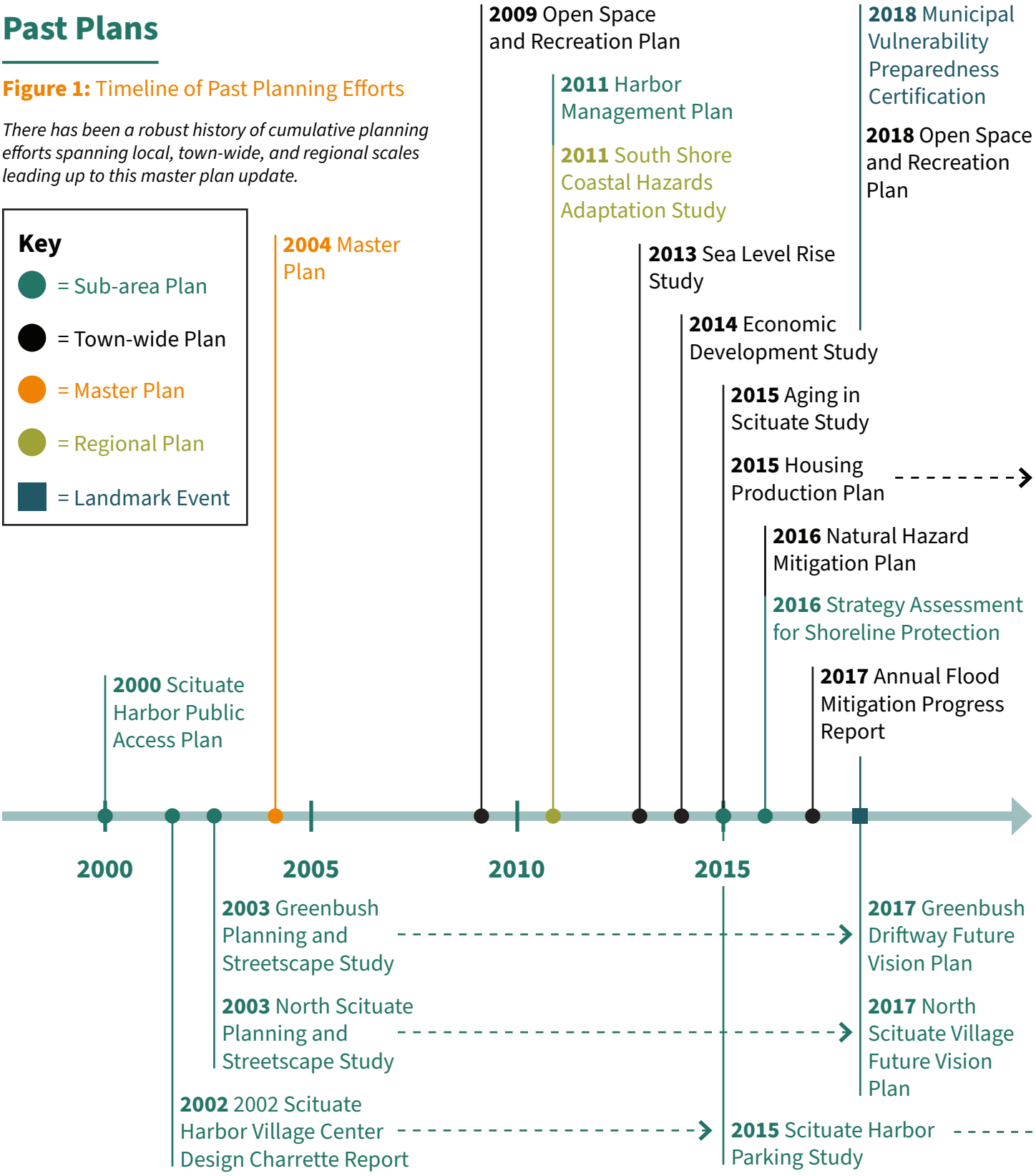
Image 4: *Front Street, Downtown Harbor Post Card, 1930-1945. Source: Boston Public Library.*

PLANNING CONTEXT

Past Plans

Figure 1: Timeline of Past Planning Efforts

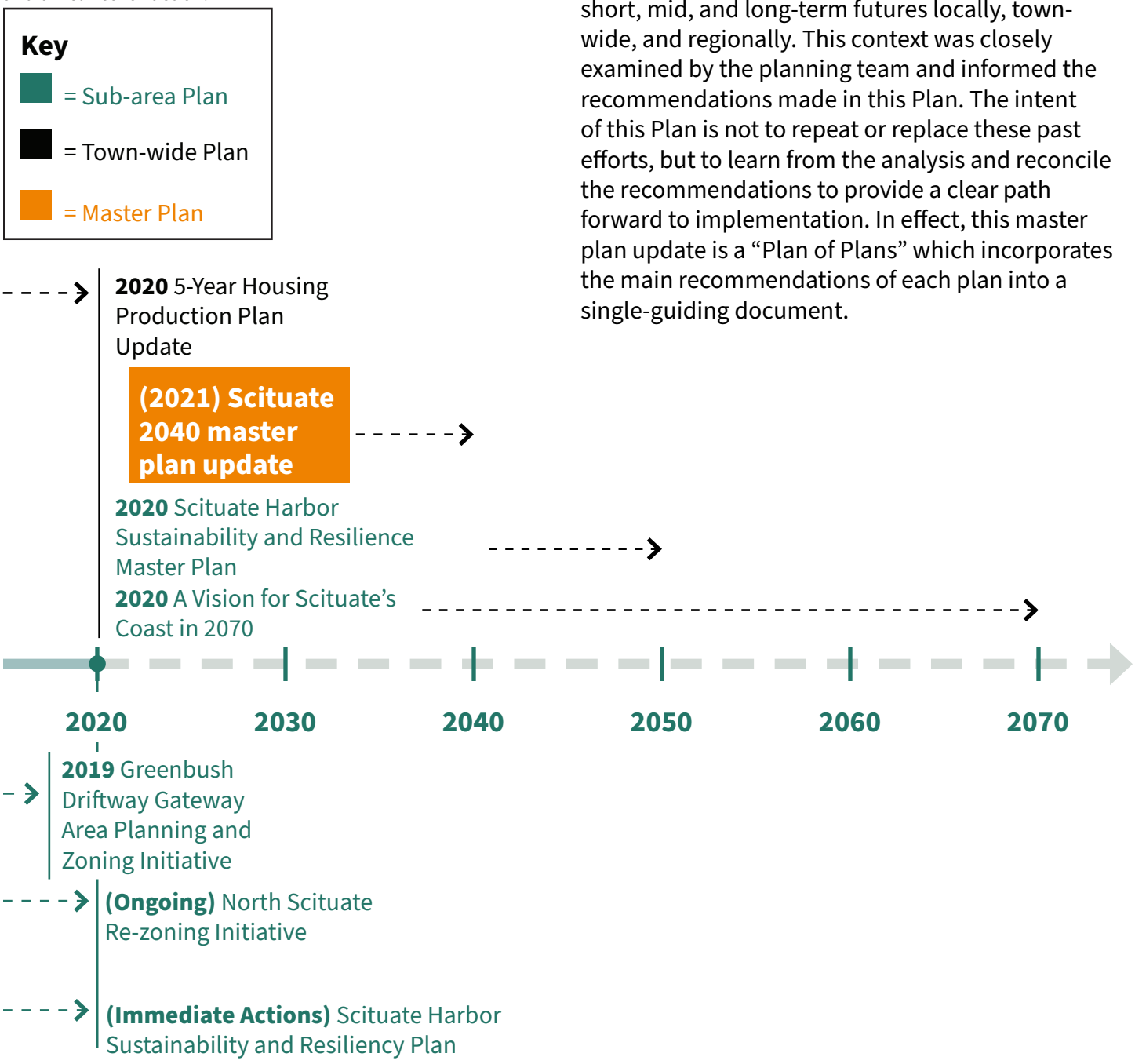
There has been a robust history of cumulative planning efforts spanning local, town-wide, and regional scales leading up to this master plan update.



Current Plans

Figure 2: Timeline of Current Planning Efforts

This master plan update was developed in close coordination with other current planning efforts addressing different areas and timelines for action.



Planning Context Overview

This master plan update follows a robust history of cumulative planning efforts and studies and was developed in close coordination with current planning efforts. These past and current plans provide analyses and recommended actions for short, mid, and long-term futures locally, town-wide, and regionally. This context was closely examined by the planning team and informed the recommendations made in this Plan. The intent of this Plan is not to repeat or replace these past efforts, but to learn from the analysis and reconcile the recommendations to provide a clear path forward to implementation. In effect, this master plan update is a "Plan of Plans" which incorporates the main recommendations of each plan into a single-guiding document.

PLANNING CONTEXT: RECOMMENDATIONS

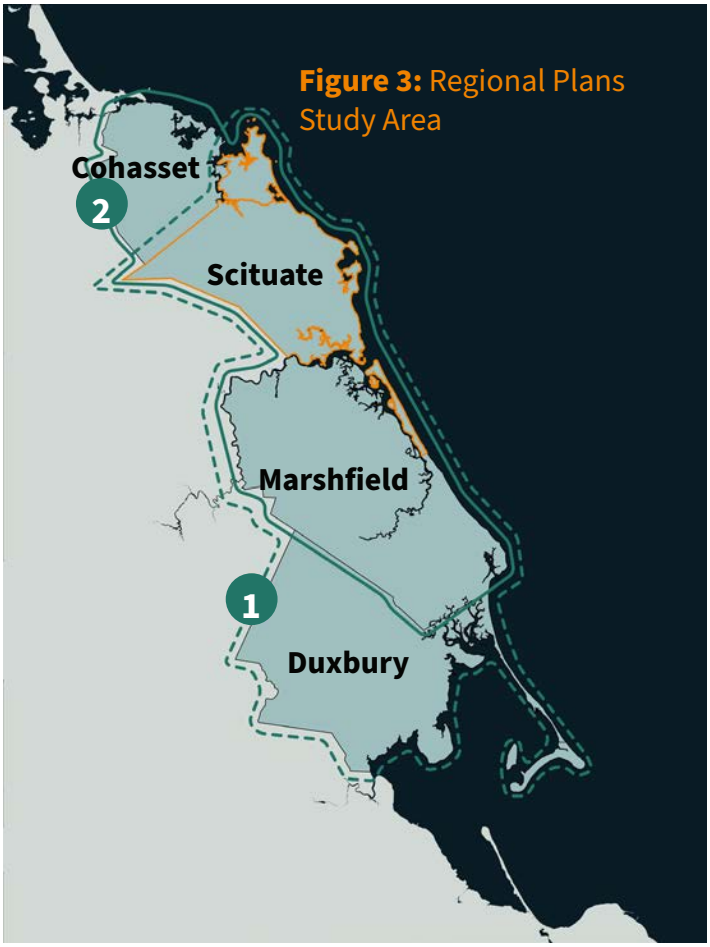


Figure 3: Regional Plans Study Area

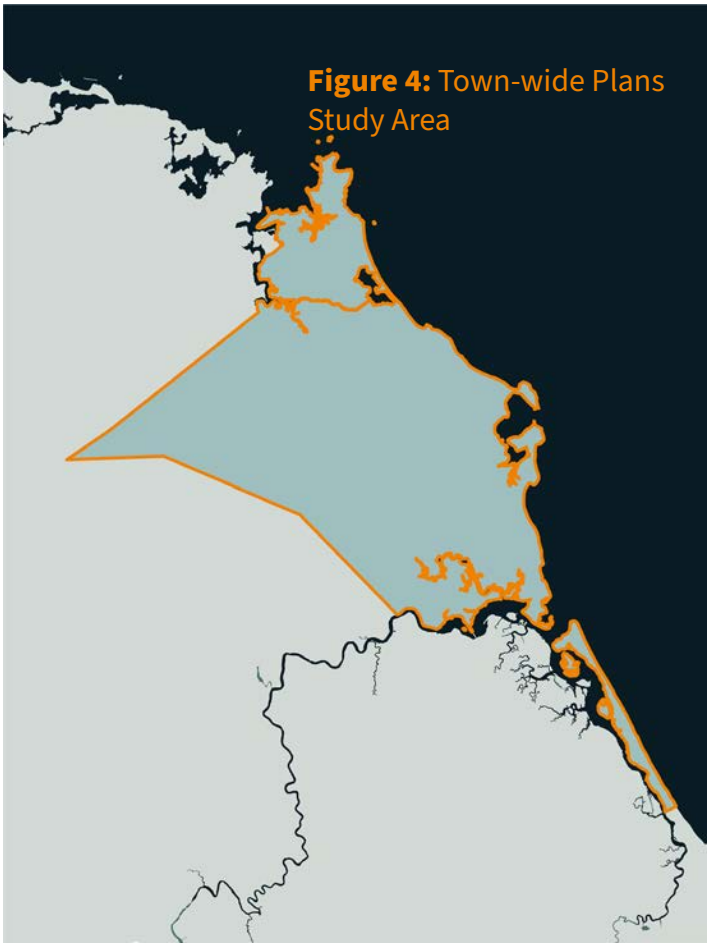


Figure 4: Town-wide Plans Study Area

Plan of Plans

As illustrated by Figure 1 on page 12, this master plan update follows a long history of proactive planning efforts in Scituate. These plans range in scale from localized sub-areas to town-wide to regional. Some address a large number of different topics while others focus on very specific issues. Each of these studies offers detailed analyses and subsequent recommendations. The planning team studied these planning documents from the past twenty years and checked the implementation status of the recommended actions. After culling out those that are either successfully implemented, no longer relevant, or redundant, this section highlights the key recommendations from each of these past reports that are still relevant to this plan. These recommendations should be considered a part of the overall implementation plan which includes the plan-specific recommendations in **Part V: Implementation Plan**.

Regional Plans

(1) 2011 South Shore Coastal Hazards Adaptation Study

- → Protect land uses from the impacts of a rising sea.
- → Accommodate by implementing measures that adjust to the impacts of a rising sea while maintaining existing land uses.
- → Retreat by moving land uses farther inward.

(2) 2011 Harbor Management Plan

- → Prioritize marine-dependent uses.
- → Manage, monitor, and maintain the environmental quality of Scituate Harbor and the North and South Rivers.
- → Protect and enhance public access to the water's edge.

(1) 2013 Sea Level Rise Study[1]

- → Raise streets and utilities (Front Street, Cole Parkway, harbor parking lot, Central Avenue, Edward Foster Road, Jericho Road, Bayberry Road, Turner Road, Egypt Avenue, Surfside Road).
- → Rebuild existing sea walls 2' higher.
- → Further study offshore floating breakwaters, hurricane barrier, "avenues" sewer pumping station, home buy-back plan for Humarock, health of tidal salt marshes, rolling easements in flood-prone sections of town (the town can purchase from a landowner today in exchange for a promise to turn over the property to the town once it is inundated by a storm,) and beach nourishment.
- → Raise or demolish the Scituate Harbor Community Center.

Town-wide Plans

(1) 2004 Master Plan

- → Encourage commercial and mixed use development.
- → Protect community character in village centers by adopting landscaping, pedestrian amenities, and design review regulations in the zoning by-law.
- → Provide financial assistance to renters and first-time home-buyers.
- → Increase affordable housing stock.
- → Develop outdoor recreation as a tourist attraction.
- → Aid North Scituate development.
- → Support in-home offices and non-disruptive home-based business activity.
- → Support a sustainable fishing industry.[2]
- → Protect the public water supply.
- → Implement policies to encourage careful stormwater management.
- → The town should pursue reopening its historically productive shellfish beds.[3]
- → Enhance the pedestrian realm; protect and enhance the Route 3A greenway; improve pedestrian and bicycle network connectivity.
- → Maintain and improve recreation facilities.
- → Investigate the possibility of establishing small neighborhood pocket parks.

(2) 2009 Open Space and Recreation Plan

- → Protect the heritage of the Town through the preservation of scenic and historic structures and areas.
- → Improve ADA accessibility of open space and recreation facilities and parks/trails.

1 Recommendations shown are for Scituate only, the study offers separate recommendations for Marshfield and Duxbury.

2 There is almost no fishing industry left to speak of in Scituate today, but this recommendation could be updated to *study the feasibility and desirability of re-growing Scituate's fishing industry to meet current food production demands and create jobs.*

3 This is currently being studied for Brigg's Harbor (Scituate north coast) but is a controversial issue. In November 2020, the FDA closed the 607 acres of recreational shellfish beds along the North and South River. The cause was insufficient dilution of sewage from the Scituate Wastewater Treatment Plant. https://www.wickedlocal.com/story/marshfield-mariner/2020/11/10/shellfish-beds-between-marshfield-and-scituate-closed-indefinitely-by-fda/114806248/

PLANNING CONTEXT: RECOMMENDATIONS

- → Maintain Scituate's legacy of distinct rural beauty, essential recreation land and vital biological diversity through the acquisition, public awareness and improved management of protected and unprotected open land in Scituate.

(3) 2014 Economic Development Study

- → Develop a comprehensive marketing strategy for the Town of Scituate to attract new visitors, residents and businesses.
- → Continue to focus new development – commercial, multi-family residential, mixed use – in existing village centers where market opportunities are strongest to capture new investment.
- → Ensure infrastructure can support desired development types.

(4) 2015 Aging in Scituate Report

- → Support convenient, affordable, and reliable local public transportation options.
- → Prioritize smaller, accessible housing units for older residents who are interested in down-sizing and provide programming to connect seniors who want to age in place to affordable, reliable home modification services.
- → Expand Council on Aging services and programs.
- → Provide support and educational opportunities for caregivers.
- → Develop a Senior Center facility that reflects the strong support for COA activities and programs within the community as well as throughout Town offices.

(5) 2015 Housing Production Study

- → Create an inventory of properties potentially suitable for affordable housing, including publicly-owned properties.
- → Adopt inclusionary zoning to ensure that any new residential development in Scituate includes a percentage of affordable units.
- → Adopt Affordable Housing Guidelines
- → Ease zoning restrictions to promote housing diversity.
- → Allow accessory dwelling units (ADUs).
- → Promote 40R and 40S smart growth and mixed-use development.

(6) 2016 Natural Hazard Mitigation Plan

- → Work with surrounding communities to ensure regional cooperation and solutions for hazards affecting multiple communities.
- → Maintain and enhance infrastructure to protect residents and businesses from floods and other natural hazards.
- → Elevate repetitive loss structures.
- → Protect key roads, bridges and intersections.
- → Implement foreshore protection actions.
- → Repair, improve, and upgrade drainage systems and culverts.
- → Participate in Community Rating System and implement public information program.
- → Complete Coastal Assessment and implement recommendations.
- → Nourish and replenish beaches and berms.
- → Install strategic power grid shutoffs.
- → Install generators.

(7) 2016 Coastal Erosion, Sediment Transport, and Prioritization Management Strategy Assessment for Shoreline Protection

- → Maintain the revetments for First Cliff, Second Cliff, Third Cliff, and Fourth Cliff.
- → Establish beach nourishment program and improve the seawall at Minot Beach.
- → Establish beach nourishment program for North Scituate Beach and Surfside Road.
- → Create a managed retreat program (move houses landward or buyout) at Mann Hill Beach.
- → Install boulder dike and improve protections for Egypt Beach Pump Station at Egypt Beach.

- → Rehabilitate seawall and revetments, improve drainage of the basins, and improve protections to the Sand Hill Pump station at Oceanside Drive.
- → Rehabilitate existing seawall and revetments, install cobble nourishment, and install a boulder dike for Cedar Point.
- → Rehabilitate seawall and revetment at Edward Foster Road.
- → Create a managed retreat program (move houses landward or buyout) at Peggoty Beach.
- → Install constructed dunes and elevate Central avenue along the north of Humarock and nourish the entire beach.

(8) 2018 Climate Vulnerability Assessment and Action Plan

- → Establish and maintain a Climate Resilience Task Force.
- → Establish Neighborhood Resilience Zones.
- → Explore new drinking water sources both inside and outside of the Town.
- → Advocate for Net Blue Bylaws.
- → Relocate or elevate the well field pump houses that are in the flood zone.
- → Consider establishing a Coastal Business Improvement District (a consistent source of revenue that could fund climate resilience improvement projects, create public programming, and encourage waterfront business patronage.
- → Build soft shoreline protection features such as earthen berms with living shorelines to protect buildings located in low energy flood zones.
- → Strengthen local wetlands bylaw restrictions in buffer zones to original 100'.
- → Restore salt marshes.
- → Invest in infrastructure like sacrificial dunes, sand fences, and seawalls.
- → Create a Heat Emergency Action Plan. Prioritize creating cooling centers for those most vulnerable to heat, systematic communications strategies, and back-up energy plans.
- → Explore implementing Community Shared Solar (CSS) to institute Town-wide renewable energy efforts.

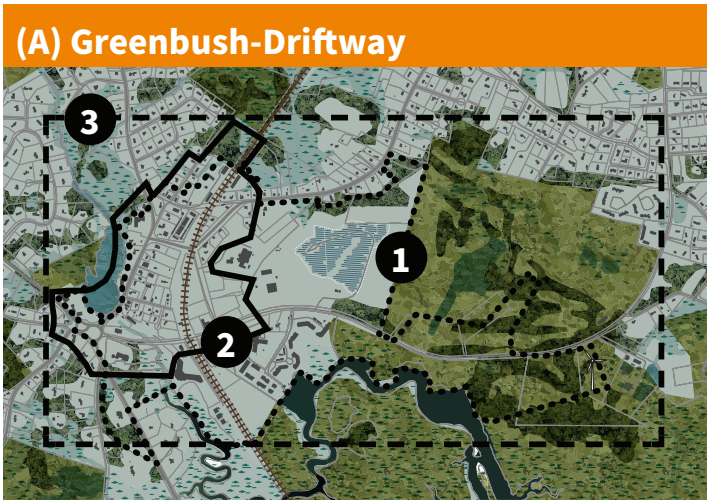
(9) 2020 A Vision for Scituate's Coast in 2070

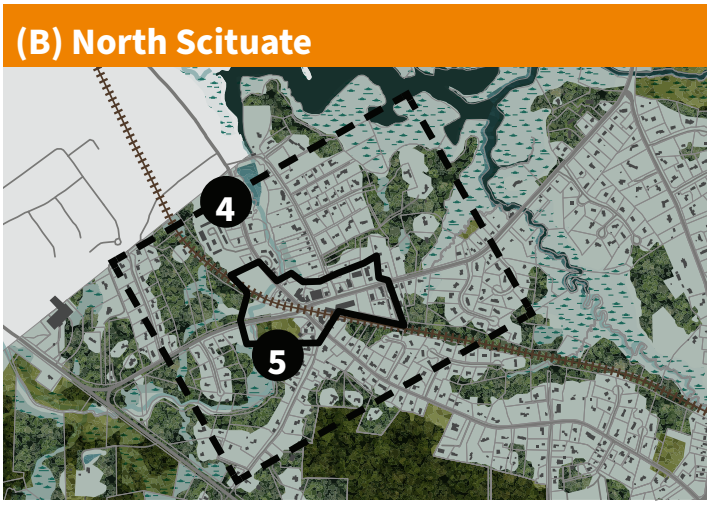
- → Divide interventions into four general categories: accommodate, defend, move, and no intervention.
- → Develop a ten-year action plan with the following considerations: impermanence; coastal connectivity; prioritizing beaches; expanding the Harbor business district, rebuild the working waterfront; change zoning; address vulnerable utilities; consider managed retreat; and establish inclusive decision-making processes.

(10) 2020 Housing Production Plan

- → Adopt new zoning for North Scituate.
- → Adopt town-wide inclusionary zoning.
- → Adopt Affordable Housing Guidelines.
- → Allow residential development under specific conditions.
- → Allow starter housing on nonconforming lots.
- → Pursue tax-foreclosed properties.
- → Explore use of 40R/40S.
- → Make publicly-owned property available for affordable housing.
- → Support private development in line with local guidelines.
- → Support new infill housing.
- → Introduce a Small Repair Grant Program.
- → Explore an Emergency Rental Assistance Program.

PLANNING CONTEXT: RECOMMENDATIONS





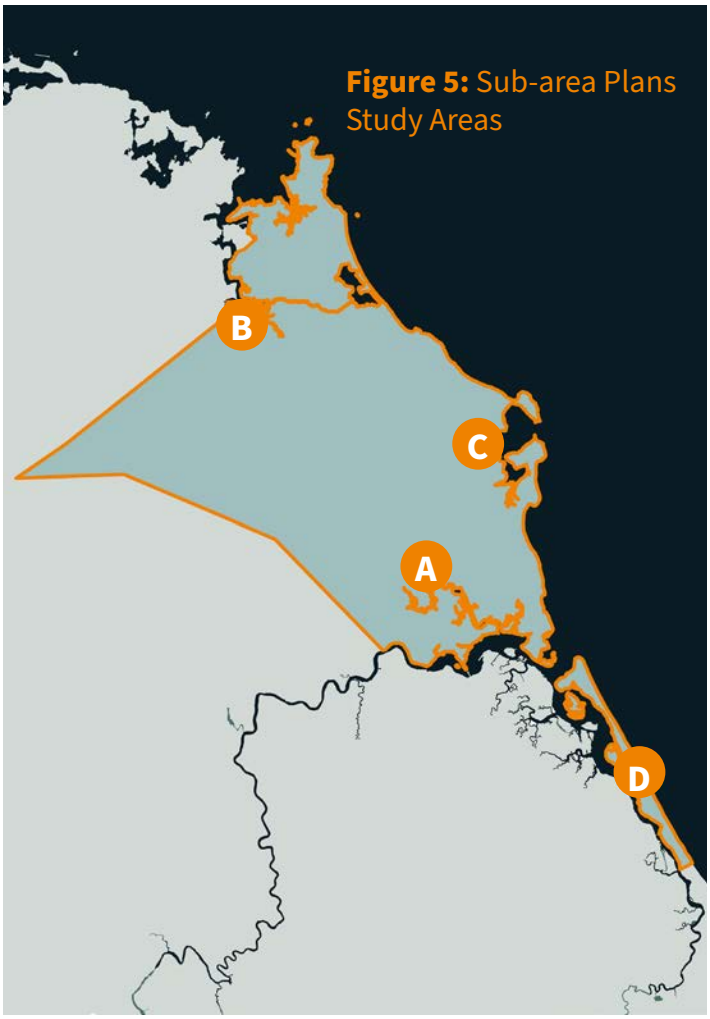
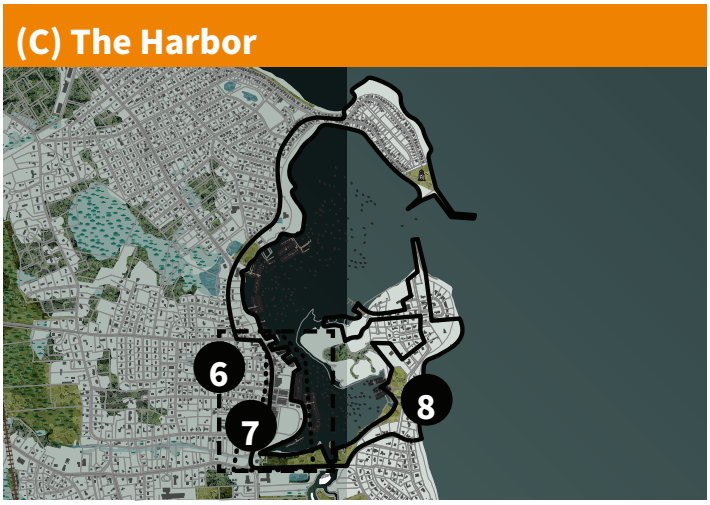
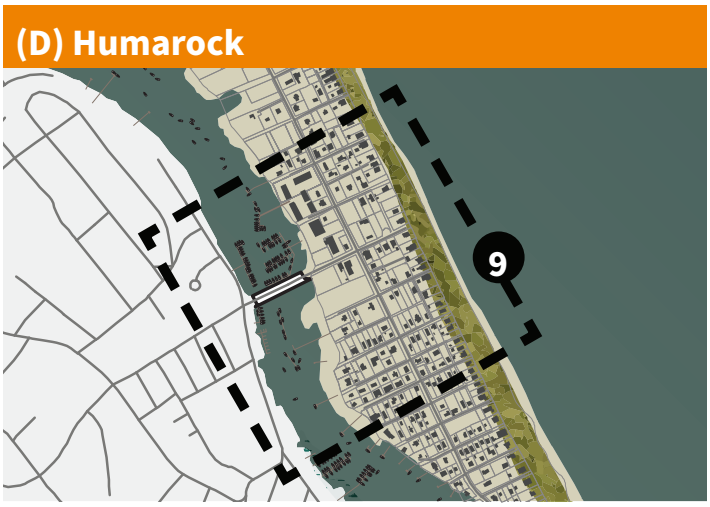


Figure 5: Sub-area Plans Study Areas





Sub-area Plans

(A) Greenbush-Driftway

(1) 2003 Greenbush Planning and Streetscape Study

- → Maintain village character and scale.
- → Improve streetscape quality, design, and image.
- → Protect and enhance historic resources.

(2) 2014 Economic Development Study - Greenbush Village Plan

- → Target different types of development to each sub-area: the Central TOD Village Area, the Neighborhood Village Area, and Multi-family, townhouse, or cottage development.
- → Focus business attraction and marketing on medical and professional services businesses.
- → Note: New zoning for Greenbush/Driftway passed in 2019.

(3) 2017 Greenbush-Driftway Future Vision Plan

- → Market as a center for health care on the South Shore.
- → Plan a strategic amenity development at the Widow's Walk Golf Course.
- → Advocate for the prioritization of sewer service to existing Village centers.

(B) North Scituate

(1) 2003 North Scituate Planning and Streetscape Study

- → Promote pedestrian safety; mitigate railroad and traffic impacts on pedestrians; create safe places for people, kids, and bikes.
- → Manage and control parking.
- → Improve buildings and storefronts.
- → Improve the quality and consistency of signage.

(2) 2016 North Scituate Village Center Vision Plan

- → Advocate for the prioritization of extending sewer service to North Scituate Village Center to improve potential for new development, renovation of existing buildings, and property reinvestment.
- → Form partnerships between the Town, MBTA, Scituate Housing Authority, and private property owners to carry out strategic development.
- → Install gateway treatments and wayfinding signage in North Scituate.

(3) 2014 Economic Development Study - North Scituate Village Plan

- → Target different types of development to the Neighborhood Village Area and Multi-family, townhouse or cottage development north of the train station.
- → Consider 40R Smart Growth Zoning once the sewer has been expanded into this area.

PLANNING CONTEXT: RECOMMENDATIONS

(C) The Harbor

(1) 2000 Scituate Harbor Public Access Plan

- → Create a "Scituate Harbor Walk."
- → Enhance and expand amenities and infrastructure for pedestrians and bicyclists.
- → Provide historical, cultural, and ecological educational signage and wayfinding/directional signage.
- → Provide a small pocket playground.
- → Provide additional harbor taxi stops.[4]
- → Establish a weekly fish market in warmer months.
- → Construct a pier lookout in the conservation area.

(2) 2002 Scituate Harbor Village Center Design Charrette Report

- → Establish an information kiosk or community bulletin board
- → Provide a continuous, handicap-accessible, sidewalk along Front Street.
- → Enhance gateways and "nodes."
- → Bury overhead utilities where possible.
- → Establish public gathering spaces and opportunities for social interaction through street furniture and public facilities.
- → Develop a continuous pedestrian way or promenade along the waterfront; create more green space along harbor's edge.
- → Create a pedestrian mall connecting harbor side storefronts.
- → Reconfigure parking to be safer and more attractive.
- → Develop a storefront association for building improvements.
- → Create more community and special events; promote local events.

(3) 2015 Scituate Harbor Parking Analysis

- → Establish and enforce parking time limits near Cole Parkway.
- → Designate drop-off locations near dock entrances.
- → Improve lighting on Cole Parkway.
- → Reconfigure Cole Parkway to create a one-way loop with loading and handicap parking along the curb on the western edge of the parking lot.
- → Designate the Community Center on Jericho Road as satellite parking, and run a shuttle between the parking area and Scituate Harbor on summer weekends and special events.
- → Explore opening up for public use the private lot adjacent to the TKO Malley's parking lot.
- → Explore purchasing the undeveloped lot on Harbor Heights Road, behind Shell station, to construct a one- or two-level parking area.
- → Reconstruct Cole Parkway using permeable paving materials.

(4) 2014 Economic Development Study - Scituate Harbor Village Plan

- → Support the fishing industry and attract marine research, education, and boat repair businesses.
- → Encourage more programming along the waterfront and Front Street (concerts, festivals, arts).
- → Focus marketing and business attraction efforts to bring full and limited-service restaurants, special retail, establishments catering to recreational boaters, and art galleries.

4 There are currently no ferries or water taxis that stop in Scituate, but this could be revisited as part of the effort to diversify transportation options and reduce car-dependence.

- → Provide more recreation and tourist amenities that take advantage of the waterfront (kayak and paddle board rentals, boat tours/fishing, etc.) and market these.
- → Implement parking strategies identified in the MAPC parking study.
- → Identify redevelopment opportunities for mixed-use buildings.
- → Maximize the use of Pier 44 just north of the area.

(5) 2020 Scituate Harbor Sustainability and Resiliency Master Plan (MAPC)

- → Create a new elevated waterfront park amenity at Cole Parkway that provides flood protection.
- → Provide new seating and coastal amenities along an elevated Scituate Harborwalk from Cole.
- → Create a parkway to the Town Pier.
- → Elevate sea walls and bulkhead edges that already exist in the district.
- → Floodproof the waterside of buildings along Front Street and adding infrastructure for deployable floodgates between gaps in buildings.
- → Explore roadway infrastructure resilience improvements at the Satuit Brook bridge and Edward Foster Road and bridge.

(D) Humarock

(1) 2014 Economic Development Study - Humarock Village Plan

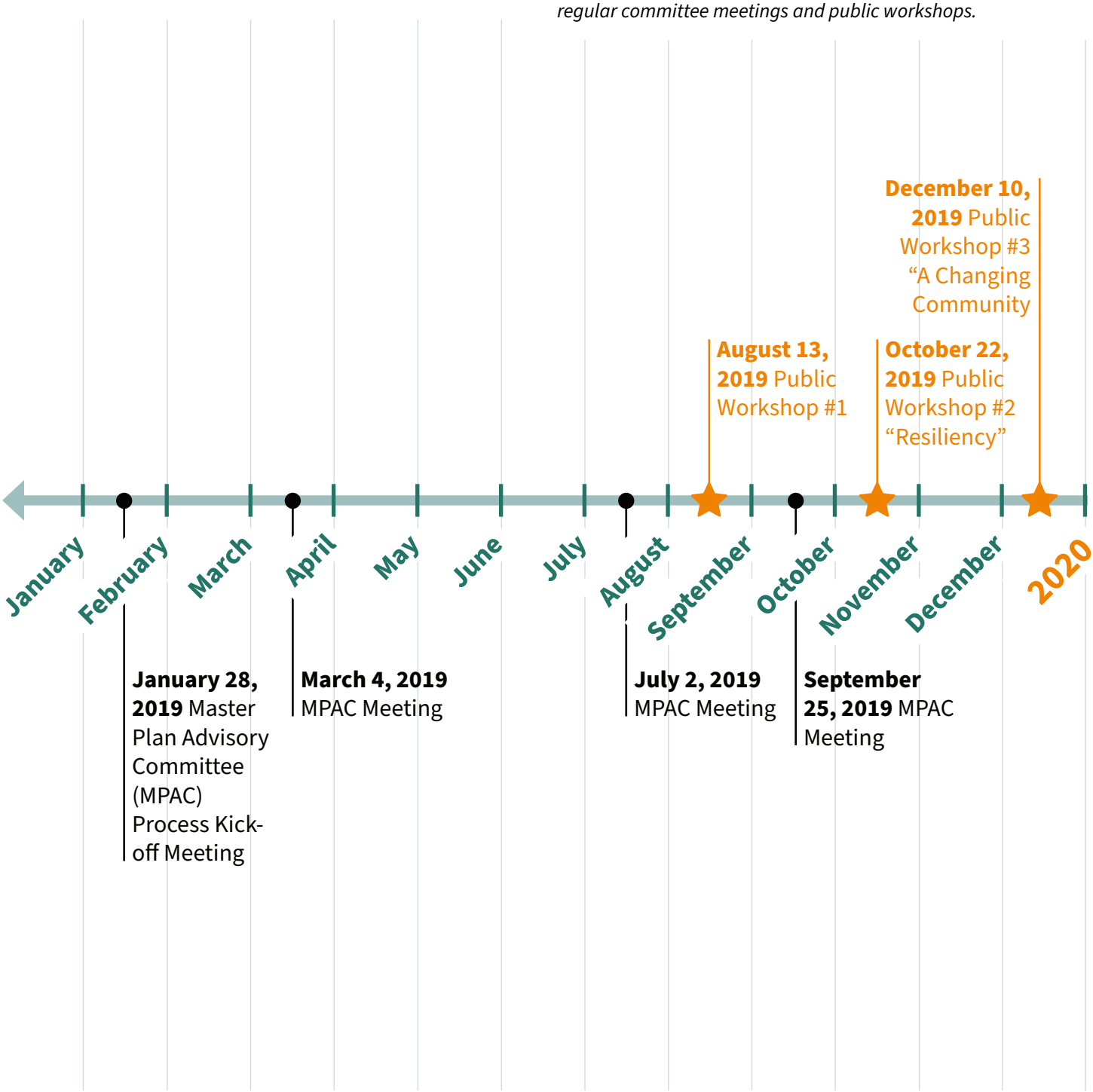
- → Identify parcels appropriate for 2-3 story mixed-use (including a small inn) or multi-family housing,
- → Focus on restaurants with outdoor seating and other tourist-friendly shops as business attractions.
- → Encourage additional recreational activities including expanded non-resident beach access, boating, kayaking, and paddle boarding.
- → Implement more programming such as beach concerts and festivals to attract visitors.

PLANNING PROCESS

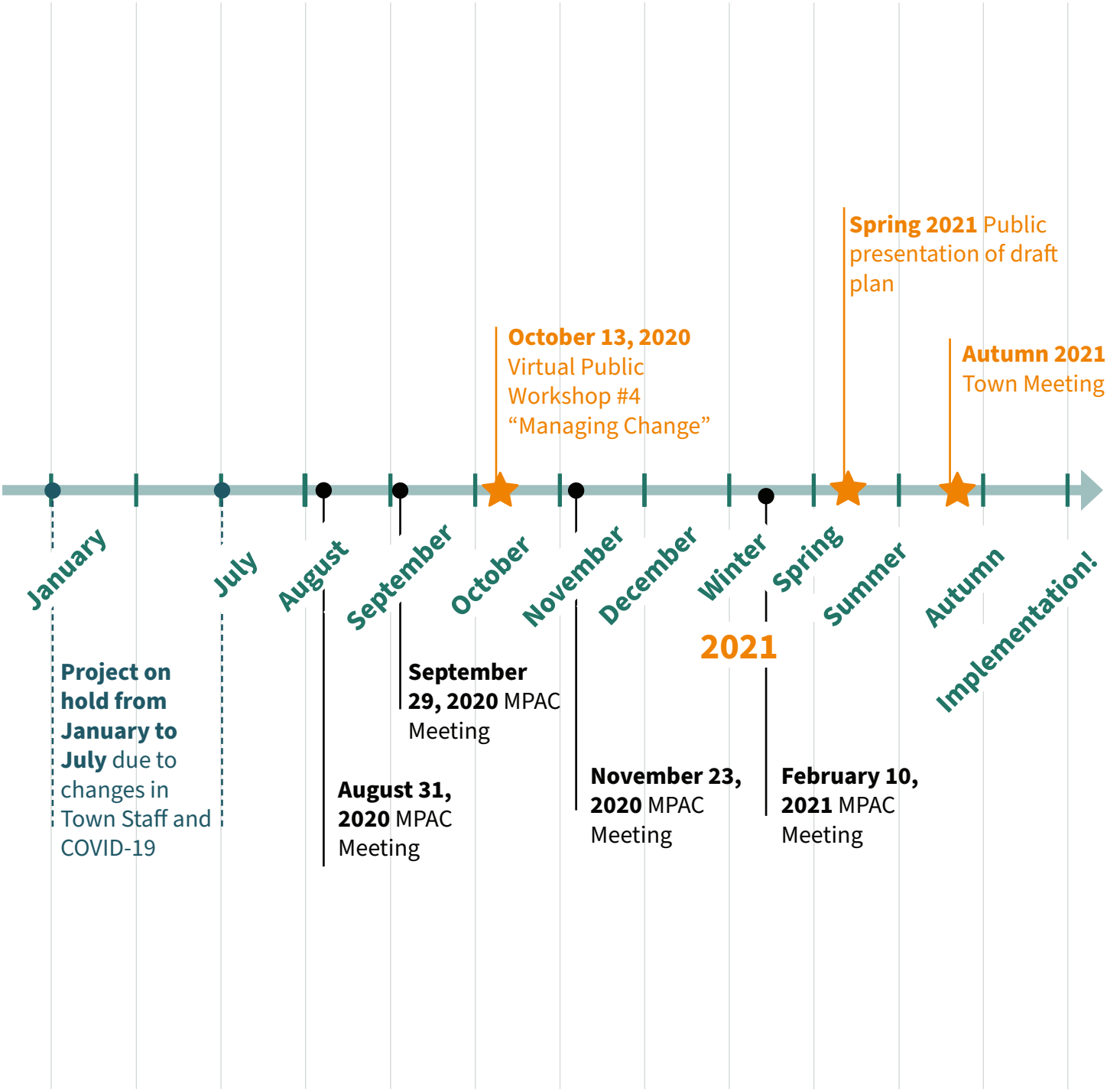
2019

Figure 6: Planning Process Timeline

The master plan update process was organized into 6 tasks with regular committee meetings and public workshops.



2020 - 2021


Spring 2021 Public presentation of draft plan
October 13, 2020 Virtual Public Workshop #4 "Managing Change"
Autumn 2021 Town Meeting
January
July
August
September
October
November
December
Winter
Spring
Summer
Autumn
Implementation!
2021
Project on hold from January to July due to changes in Town Staff and COVID-19
August 31, 2020 MPAC Meeting
September 29, 2020 MPAC Meeting
November 23, 2020 MPAC Meeting
February 10, 2021 MPAC Meeting

PLANNING PROCESS

Planning Process Overview

The planning process for this master plan update spanned 24 months and required close coordination and collaboration among different groups. The planning team consisted of Harriman as the lead consultant, FXM Associates for analysis of market conditions, HSH for analysis of transportation and infrastructure, and staff from the Town Planning and Development department.

A Master Plan Advisory Committee (MPAC) made up of representatives from various relevant boards, commissions, and stakeholder groups guided and provided oversight of the process. The committee met with the planning team eight times throughout the process to provide critical insight and direction.

The research process involved extensive review of previous plans and other relevant documents as well as first-hand interviews with stakeholders and stakeholder groups. Anecdotal information was gathered from members of the public at large throughout the community engagement process. This plan relied on quantitative analysis of hard data alongside qualitative analysis of the lived experiences shared by community members.

The planning team analyzed the information and data gathered through various methods and supplemented that with extensive GIS analysis and mapping. **Part III: Existing Conditions Analysis** of this master plan update outlines these findings. Howard Stein Hudson and FXM Associates provided separate technical memoranda of their methods and findings (attached to this Plan as **Appendices B, C, and D**) which informed and enhanced the content of this Plan.

Community Engagement was an integral part of this process, providing feedback on progress as well as input on next steps, as detailed in the next section.

Image 6: *The audience listens to a presentation, followed by a live polling session.*

Image 7: *Participants at the second public workshop gather around the large map they created during the workshop.*

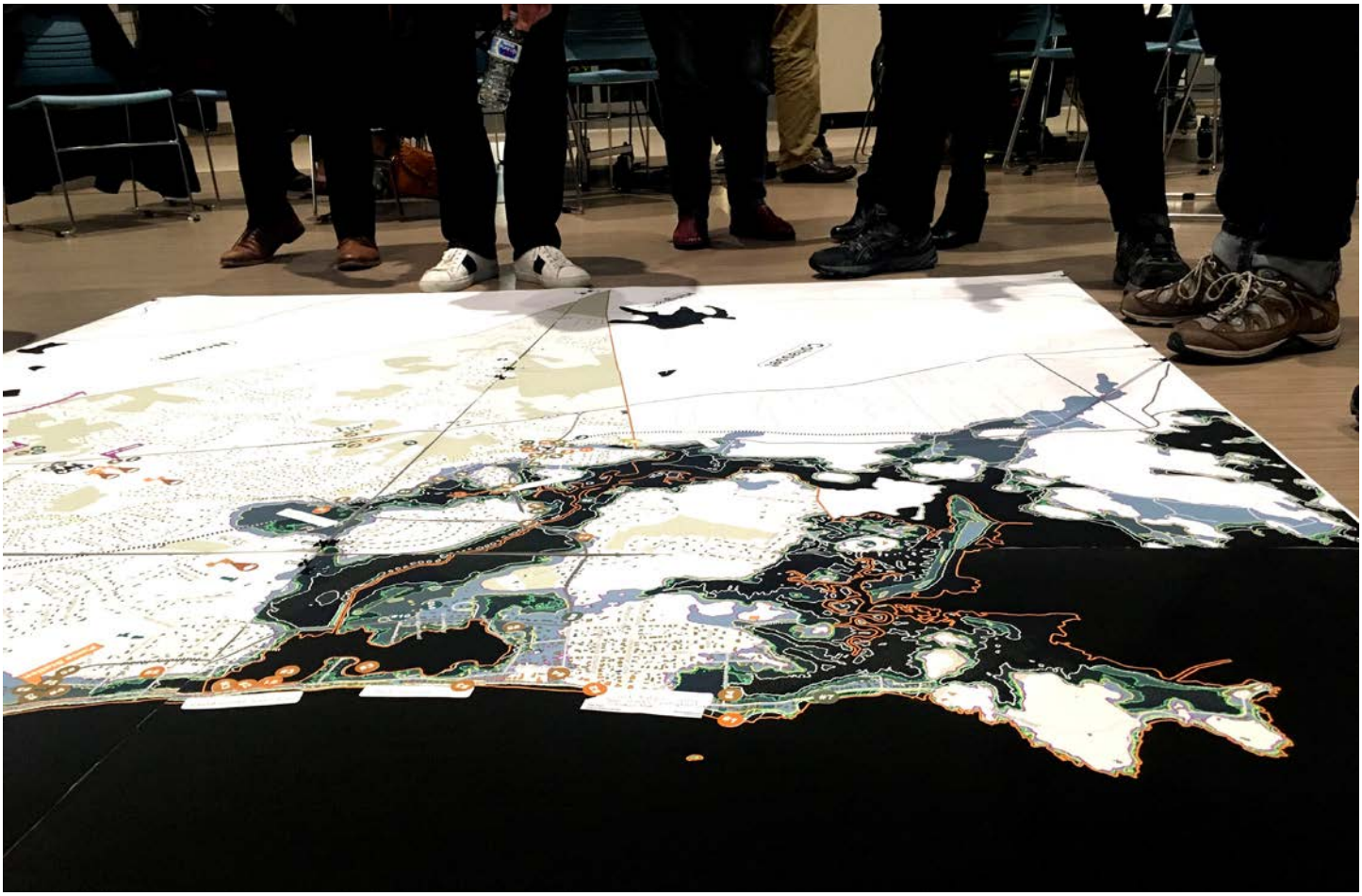


Image 8: *Participants gather at the Second Public Workshop to view the results of the community mapping exercise that prioritized assets and vulnerable areas in Scituate.*

COMMUNITY ENGAGEMENT

Workshops

The community engagement process was designed to be flexible and responsive. A series of iterative workshops built upon each other, providing a broad range of insightful community feedback.

The first workshop, held on August 13, 2019, offered an introduction to the process and served as the basis for the rest of the community engagement process. Workshop attendees participated in live audience polling to respond to a number of demographic questions, prioritize actions identified in the 2004 Master Plan, and prioritize current assets and areas of concern. They also worked in small groups to collaborate on a fill-in-the-blank vision statement, which became the initial inspiration for the vision statement on page 29.

To follow up on the discussions that arose at the first workshop, the second workshop focused on resiliency, particularly the issue of sea level rise and flooding. After a presentation by Harriman and FXM Associates, attendees participated in a large-scale community mapping exercise. A map of Scituate was blown up and divided among nine boards, which were spread out on tables. The map identified 1', 5', and 10' inundation zones to reflect different estimates of sea level rise, sewered areas, and assets identified at the previous workshop. Participants were invited to identify additional assets and vulnerable areas by writing on the maps. This was followed by a round of voting. Each attendee was provided a sheet of stickers numbered 1 through 10 in a gradient from orange to teal. These were used to identify each participant's top 10 priority areas for protection. The result was a heat map of sorts, with clusters of orange dots in areas with the most consensus on that area being the highest priority.

Top 6 Prioritized Areas:

- → Greenbush Station
- → North Scituate Station
- → Scituate Harbor
- → North Coast (used to refer to the area landward of Oceanside Drive)
- → Route 3A
- → Humarock

Following this exercise, the map panels were assembled on the floor revealing the entire town. Participants were able to gather around it and discuss the results. People noticed new opportunities and threats that had been less apparent at the earlier scales, such as road access that was threatened by flooding.

The third workshop, held December 10, 2019 and titled "A Changing Community," used the 6 priority areas identified at the prior workshop to collect more detailed feedback on the opportunities and limitations at these locations. Following an updated presentation, attendees broke into groups of eight to participate in a role-play/scenario-building exercise. This was essentially a brainstorming activity in which each group member was asked to think about the issues and respond through the lens of one of eight characters: the Local Developer, the Commercial Fisherman, the Retired Resident, the Emerging Professional, the Business Executive, the High School Student, the Ecologist, or the Small Business Owner. At the end of the exercise,

participants were provided the chance to respond from their own personal perspectives as well. These public workshops provided an abundance of valuable insight into life in Scituate and the community's concerns and hopes are for the next twenty years. The feedback received was an integral part of the analyses and recommendations put forward in this report.

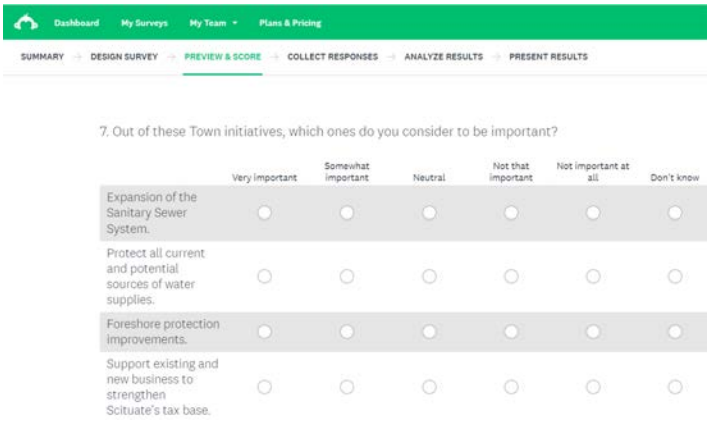
The fourth public workshop was formatted for a virtual platform to comply with COVID-19 health and safety guidelines. The meeting was held over a live Zoom session. Harriman gave a presentation which covered the progress to date and the results of the previous public workshops. Harriman also presented elements of the draft report including the draft vision and goals, and the key findings and data from the existing conditions analysis. The virtual workshop included live polling. This live workshop was followed up with a companion online survey to solicit more in-depth feedback.

Online Surveys

To expand the reach of the workshops, the town hosted two online surveys which reached over 600 community members. The surveys asked many of the same questions that were asked at the public workshops and received similar responses. The amount of consensus among such a broad sector of the Scituate population provided the planning team with clear direction and understanding of the issues that matter most to the Scituate community.

Image 9: *The audience listens to a presentation, followed by a live polling session.*

Image 10: *A screenshot from the first survey that went out.*



PART II:VISION AND GOALS

The vision and goals in this chapter will guide the actions the Town will take over the next ten to twenty years. They also provide framework for the analysis of Existing Conditions in Part III, the recommendations for a Resilient Scituate in Part IV; and the Implementation Plan in Part V.

The basis for the vision statement came from the work in the first workshop on August 13, 2019. The goals were derived from the later workshops and the research and analysis completed by the consultant team. Conversations with the MPAC and further information from the October 13, 2020 virtual workshop and accompanying online survey refined both the vision statement and the four goals.

The four goals are the “50,000-foot” view of what the Town of Scituate needs to do to address it challenges over the next ten years. The recommendations and the implementation plan bring that view down to ground-level and identify specific actions to achieve this vision and the four goals.

VISION

The vision statement, created from community input, describes the future of Scituate and establishes a framework for this master plan update. The goals for this plan provide the building blocks toward achieving this vision.

The goals for this master plan update are based on the public planning process and conversations with the MPAC and Town Staff.

This chapter fulfills the goals and policies statement required by the Massachusetts General Laws, Chapter 41, Section 81D.

Image 11: *A representative from one of the participant focus groups at the first public workshop reads their group's response to the fill-in-the-blank visioning exercise. Photo taken August 13, 2019.*

Vision

In 2040, Scituate is still known for its coastal charm and natural beauty. Visitors flock to its villages and Scituate Harbor to patronize local eateries and small businesses while taking in the beautiful views. The Town is financially stable and Scituate has become more ecologically, economically, and socially resilient by addressing the need for economic development and affordable housing, providing excellent educational opportunities to its children, expanding the sewer system and the capacity of the water supply, and protecting ecosystems by concentrating development in areas that have the least environmental impact to Scituate's forests, wetlands, and coastline.

In 2040, Scituate is still a small town but is continuing to evolve and strengthen its diverse tax base. Scituate is an inclusive and thriving community known for innovative solutions for improving resilience in the face of significant challenges posed by sea level rise and climate change. Scituate in 2040 is prosperous and thriving, while retaining its coastal identity and heritage valued by residents and visitors alike.

GOALS

1 - IMPROVE SCITUATE'S ECOLOGICAL, ECONOMIC, AND SOCIAL RESILIENCY.

2 - ADDRESS THE CHALLENGES PRESENTED BY THE TOWN'S PHYSICAL, ENVIRONMENTAL, AND INFRASTRUCTURE CONSTRAINTS.

3 - RETAIN SCITUATE'S COASTAL IDENTITY WHILE MANAGING BOTH PROJECTED AND UNFORESEEN CHANGES IN THE COMMUNITY.

4 - IMPROVE SCITUATE'S ACCESSIBILITY TO ALL DEMOGRAPHICS FOR HOUSING, JOBS, AND RECREATION.

1-Improve Scituate's ecologic, economic, and social resiliency

Approach all aspects of planning and development in Scituate through the lens of resiliency so that the town is prepared to adapt to chronic stresses, such as increasing heat, economic cycles, and sea level rise; and acute shocks, such as a pandemic or major flood. As a coastal community, Scituate is grappling with the challenges brought on by climate change, and these impacts will only worsen. For Scituate, resiliency must go beyond environmental considerations to holistically address what resilience means to all aspects of life in this coastal community. Scituate must protect its forests and wetlands, and balance that with protecting its financial health and social fabric in order to truly prepare for the many ways in which the Scituate community will continue to feel the burden of climate change.

2-Address the challenges presented by the town's physical, environmental, and infrastructural constraints.

Scituate has limited opportunity for growth. 50% of Scituate is forest cover; a tremendous asset, especially in the face of climate change. It is more important than ever to avoid deforestation and wetland degradation in promoting new development. This includes avoiding development within wetland migration zones (where the wetlands are projected to move as the coastline retreats). Outside of the forests and wetlands, many of the parcels are already developed and well-established. Additionally, the Town's limited sewer capacity and drinking water supply create infrastructural constraints on growth. The Town will need to be targeted and innovative in promoting viable, sustainable growth within the limits of its resources.

3-Retain Scituate's Coastal Identity while managing both projected and unforeseen changes in the community.

Regional and national demographic trends and regional impacts from transportation policy, climate change, and economic factors will have an impact on Scituate, both positive and negative. In order to maintain and enhance the quality of life for the community in the wake of these changes, the Town should protect and enhance the qualities that attracted residents and businesses there in the first place. Scituate is cherished for its natural beauty, coastal charm, and close-knit community. The Town must strive to protect this identity and heritage while adapting to a re-woven social and urban fabric.

4-Improve Scituate's accessibility to all demographics.

Scituate should strive to diversify housing options to meet the needs of all income levels and age groups so that it becomes accessible to all who wish to call Scituate home. As age demographics shift, the Town will need to provide adequate opportunities to age in place, as well as create new opportunities for the new arrivals to establish roots in Scituate and contribute to the vibrancy of the community. Ensuring that people of all races, ethnicities, and cultural backgrounds feel welcome while living, working in, or visiting Scituate is equally important.

PART III: EXISTING CONDITIONS ANALYSIS

This chapter fulfills the goals and policies statement required by the Massachusetts General Laws, Chapter 41, Section 81D. This is the enabling legislation for comprehensive planning in Massachusetts. The planning elements of Section 81D are as follows:

- → Goals and policies statement which identifies the goals and policies of the municipality for its future growth and development. Each community shall conduct an interactive public process, to determine community values, goals and to identify patterns of development that will be consistent with these goals. (See Chapter 3.)
- → Land use plan element which identifies present land use and designates the proposed distribution, location and inter-relationship of public and private land uses. This element shall relate the proposed standards of population density and building intensity to the capacity of land available for planned facilities and services. A land use plan map illustrating the land use policies of the municipality shall be included. (See Chapter 4.)
- → Housing element which identifies and analyzes existing and forecasted housing needs and objectives including programs for the preservation, improvement and development of housing. This element shall identify policies and strategies to provide a balance of local housing opportunities for all citizens.
- → Economic development element which identifies policies and strategies for the expansion or stabilization of the local economic base and the promotion of employment opportunities.
- → Natural and cultural resources element which provides an inventory of the significant natural, cultural and historic resource areas of the municipality, and policies and strategies for the protection and management of such areas.
- → Open space and recreation element which provides an inventory of recreational resources and open space areas of the municipality, and policies and strategies for the management and protection of such resources and areas.
- → Services and facilities element which identifies and analyzes existing and forecasted needs for facilities and services used by the public.
- → Circulation element which provides an inventory of existing and proposed circulation and transportation systems.
- → Implementation program element which defines and schedules the specific municipal actions necessary to achieve the objectives of each element of the master or study plan.

The sections in this chapter incorporate all the elements above, and include additional topics, such as climate change, sea level rise, and the ecology of the town, that are related to the elements in Section 81D, but not specifically identified in that legislation.

The information provided is at a summary level and primarily drawn from the previous planning studies listed in the Introduction with some supplementary work by the planning team. **Appendix A** provides a more in-depth summary of the community engagement process. **Appendices B, C, and D** provide technical information on economic development, infrastructure, and transportation.

The purpose of this summary is to bring together information that has been scattered across multiple reports into a single document that can guide interested readers to the more in-depth information provided in previous planning studies and reports.

Image 12: *Scituate, MA October 31, 2012; Marie Caliendo, FEMA*

CLIMATE CHANGE + SEA LEVEL RISE

Introduction

*To review the **recommended actions** related to Climate Change and Sea Level Rise, go to **page 84.***

The impacts of climate change are intertwined with every aspect of life in Scituate, making this the most significant challenge facing Scituate over the next decade and beyond. Scituate is home to some of Massachusetts most vulnerable and critical ecosystems and is at significant risk from the impacts of Sea Level Rise and flooding. Scituate has the highest reimbursements in the state for claims paid by the National Flood Insurance Program: over $70 million for 4,061 claims from 1978 to 2020.[1] The next three communities on the list (Marshfield, Hull, and Nantucket) together total $59.2 million over the same period.

The very ecosystems that are under threat by the impacts of climate change are also Scituate's best source of protection. An investment in environmental protection is an investment in all Town assets. Scituate fits into a complex web of political, economic, social, and ecological networks that reach well beyond the Town boundary. What Scituate does locally has regional impacts and decisions that are made at regional/state, federal, and even globally in turn have impacts on Scituate. The current and projected impacts of sea level rise and climate change are a multi-decade problem that is not under the Town's control. The severity of these impacts will be highly dependent on the world's ability to respond to the climate change crisis and prevent higher levels of carbon emissions.

Global Impacts

As this report is being written, communities world-wide are grappling with the worst global health crisis in living history. New diseases and an increase in disease outbreaks such as COVID-19 are one of the predicted side effects of climate change; a wealth of research and data backed by scientists pointing to this eventual outcome was available well before the threat reached pandemic levels.[2] Not only has this pandemic resulted in over 332,000[3] deaths in the US so far and unprecedented job losses, it has shed light on the disproportionate inequalities built into our societal foundations. The pandemic has pushed social and economic resilience to the breaking point. With hurricane season battering the south and warm temperatures and droughts igniting devastating wildfires in the west, ecological disasters are compounding the complications of life during a pandemic.

In September 2020, the giant 15-digit digital clock that has told time in Manhattan's Union Square for more than twenty years stopped counting its 24-hour cycle and started counting down the time until

1 CBI, *A Vision for Scituate's Coast in 2070*, 2020. Page 13.

2 Sonia Altizer, Richard S. Ostfeld, Pieter T. J. Johnson, Susan Kutz, C. Drew Harvel. 2013. "Climate Change and Infectious Diseases: From Evidence to a Predictive Framework." Science (Science Magazine) 341 (3145): 514-519. Accessed 09 25, 2020. doi:https://science.sciencemag.org/content/341/6145/514.abstract.

3 As of December 28, 2020. This number will be updated again for the final print version of this master plan.

CONTINUING THE CONVERSATION...

The issues related to climate change are too intertwined to address in a single section. Throughout this existing conditions section, each topic will be discussed within the context of how it relates to climate change and resilience.

Image 13: *Hurricane Sandy Storm Surge (2012). Image Source: https://i.pinimg.com/originals/a7/de/6d/a7de6dd72a34936fb5e5fe8ba7cf994f.jpg*

the world's CO2 budget will be depleted.[4] According to the Mercator Research Institute on Global Commons and Climate Change, this threshold will be reached in only 9 years if global society doesn't drastically change its ways of life before then.[5]

The challenges of this year make clear that municipalities need to be prepared for multiple simultaneous crises. Climate change is an existential problem, in need of bold, innovative, and timely solutions.

Local Impacts

Since March 2020, communities around the world have had to grapple with travel and gathering restrictions, business closures, job losses, remote work and learning, and shortages of common supplies. Before COVID-19 became everyone's main concern, flooding and sea level rise was at the forefront of many conversations in the Scituate community. Drone footage from a 2018 storm shows massive waves crashing down on homes along

4 Moynihan, Colin. 2020. "A New York Clock That Told Time Now Tells the Time Remaining." The New York Times. Accessed September 25, 2020. https://www.nytimes.com/2020/09/20/arts/design/climate-clock-metronome-nyc.html?auth=link-dismiss-google1tap.

5 n.d. Mercator Research Institute on Global Commons and Climate Change. Accessed September 25, 2020. https://www.mcc-berlin.net/en/research/co2-budget.html.

CLIMATE CHANGE + SEA LEVEL RISE

Lighthouse Road. The footage cuts to the aftermath and shows the archipelago of islands that was once intact coastline, with homes entirely surrounded by water and no yards or roads in site.[6]

Over the decades, Scituate has implemented several "hard engineering" approaches to combat storm surges, including jetties and a long seawall in need of significant repairs. Efforts to repair and raise the seawall have already had heavy consequences for tax-payers:

> *In Scituate alone, engineers estimated in 2013 that it could cost nearly $71.5 million just to get all the town's sea walls, jetties and other coastal structures back to the same condition as when they were built, in some cases decades ago, according to an inventory commissioned by the state. To update them for today's wave conditions, the engineers said it would cost more than $280 million.*[7]

Beyond the obvious physical and financial damage to residential and commercial properties along the coast (see Figure 8 for repetitive loss damage from 1978-2015), increased flooding poses a real risk to the health and safety of the public drinking water supply and wastewater treatment systems. These impacts will be discussed further in the sections on **Water Infrastructure** and **Sanitary Infrastructure**. The delicate balance of ecosystems, Town development patterns, and limited and deteriorating infrastructural capacity all compound these challenges and require cautious planning and design for future development.

Projections for Sea Level Rise

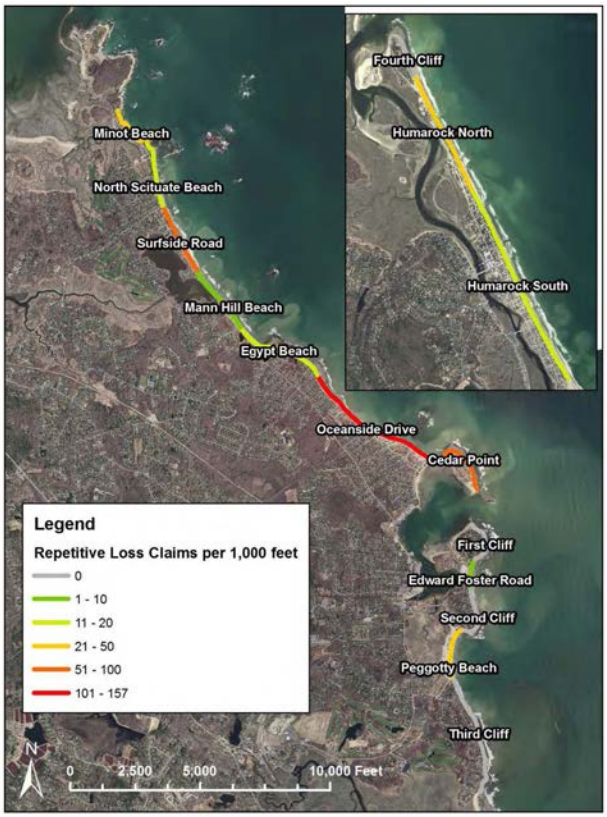
Figure 9 on page 39 illustrates projections for 1 foot, 5 feet, and 10 feet of Sea Level Rise according to the National Oceanic and Atmospheric Administration (NOAA). While it may be a few hundred years before the Town experiences daily inundation levels of 5 feet, the likelihood of at least one storm causing a 5-foot flood by 2040 is 54% and those odds go up to 100% by 2060. [8]

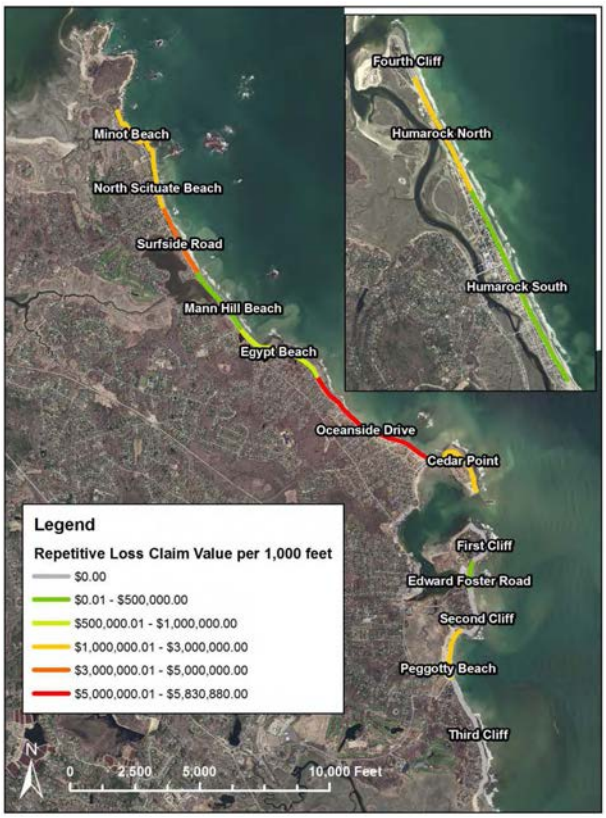
While it is easy to map the inundation areas given the various sea level rise projections, understanding the timeline of how often flooding will occur and what year we will reach daily inundation of a certain level depends on how successfully and how quickly local, state, national, and global communities are able to take actions toward a common goal of carbon reduction and resilience. NOAA offers three different timelines based on three different scenarios: Scenario 1: unchecked pollution; Scenario 2: Moderate Carbon Cuts; and Scenario 3: Extreme Carbon Cuts. In Scenario 1, 1 foot of sea level rise has already occurred, daily inundation levels of 5 feet will be achieved by 2060, and 10 feet of daily

6 Live Storms Media. 2018. 3-3-2018 Scituate, MA Incredible drone footage of waves crashing over homes, extensive coastal flood. March 3. Accessed September 2020. https://www.youtube.com/watch?v=JLOSBJlREVg.

7 Simpson, N. (2018, April 1). Wicked Local - Scituate. Retrieved from scituate.wickedlocal.com: https://scituate.wickedlocal.com/news/20180330/crumbling-south-shore-sea-walls-no-match-for-sea

8 National Oceanic and Atmospheric Administration; Climate Central. n.d. Surgin Seas Risk Zone Map. Accessed September 25, 2020. https://ss2.climatecentral.org/#11/42.2300/-70.8247?show=satellite&projections=1-K14_RCP85-SLR&level=5&unit=feet&pois=hide





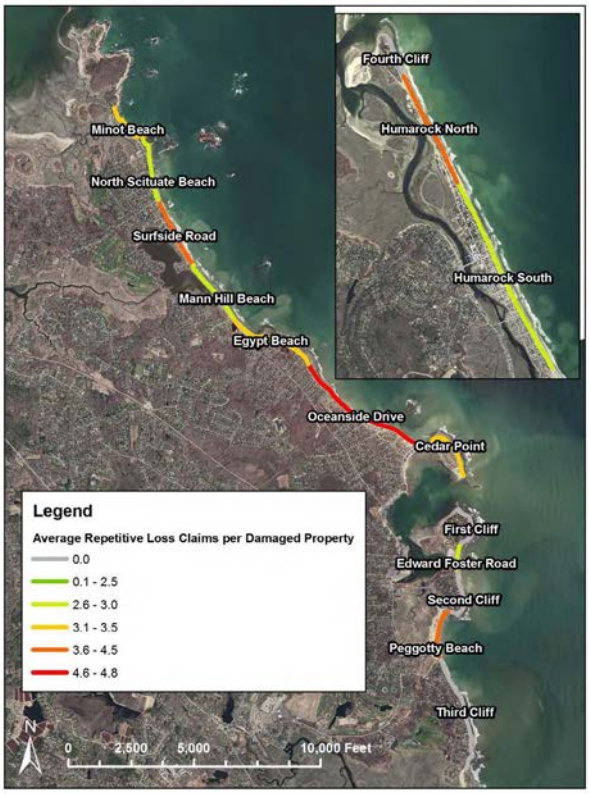


Figure 8: Repetitive Losses along Scituate's Shoreline

Three maps from the Coastal Erosion, Sediment Transport, and Prioritization Management Strategy Assessment for Shoreline Protection *(Applied Coastal Research and Engineering, Inc., 2016)*

Top left: FEMA repetitive loss claims per 1,000 feet of study shoreline form 1978 to 2015. (*Figure 5.2, page 68*)

Top right: Value of FEMA repetitive loss claims per 1,000 feet of study shoreline from 1978 to 2015. (*Figure 5.3, page 69*)

Left: Average number of FEMA repetitive loss claims per damaged property for each study area form 1978 to 2015. (*Figure 5.4, page 70*)

inundation will occur by 2090. In Scenario 2, 1 foot, 5 feet, and 10 feet will be the daily norm by 2030, 2080, and 2140 respectively. If society is able to make drastic changes, Scenario 3 suggests we can extend that timeline to 2050, 2120, and 2200.

Parallel Processes for the Coast

During the planning process for this master plan update, the Town also undertook planning processes for the *A Vision for Scituate's Coast in 2070* (the 2070 Vision Plan) prepared by the Consensus Building institute (CBI) and the Massachusetts Office of Coastal Zone Management (CZM) and the *Scituate Harbor Sustainability and Resilience Master Plan* (the Harbor Master Plan) prepared by the Metropolitan Area Planning Council (MAPC). The 2070 Vision Plan includes two parts: a 50-year community-led coastal vision and goals, and a 10-year action plan for implementation. The Harbor Master Plan focused on the harbor over the next 25 years. This town-wide master plan update addresses a 10-20-year time span. By addressing these different scales and scopes, the Town will be better prepared to begin to implement changes suggested by these two plans to mitigate future risks beyond the life of this master plan update.

Recommendations for these two plans are included in the **Planning Context: Recommendations** section of this update.

Climate Change and Inland Areas

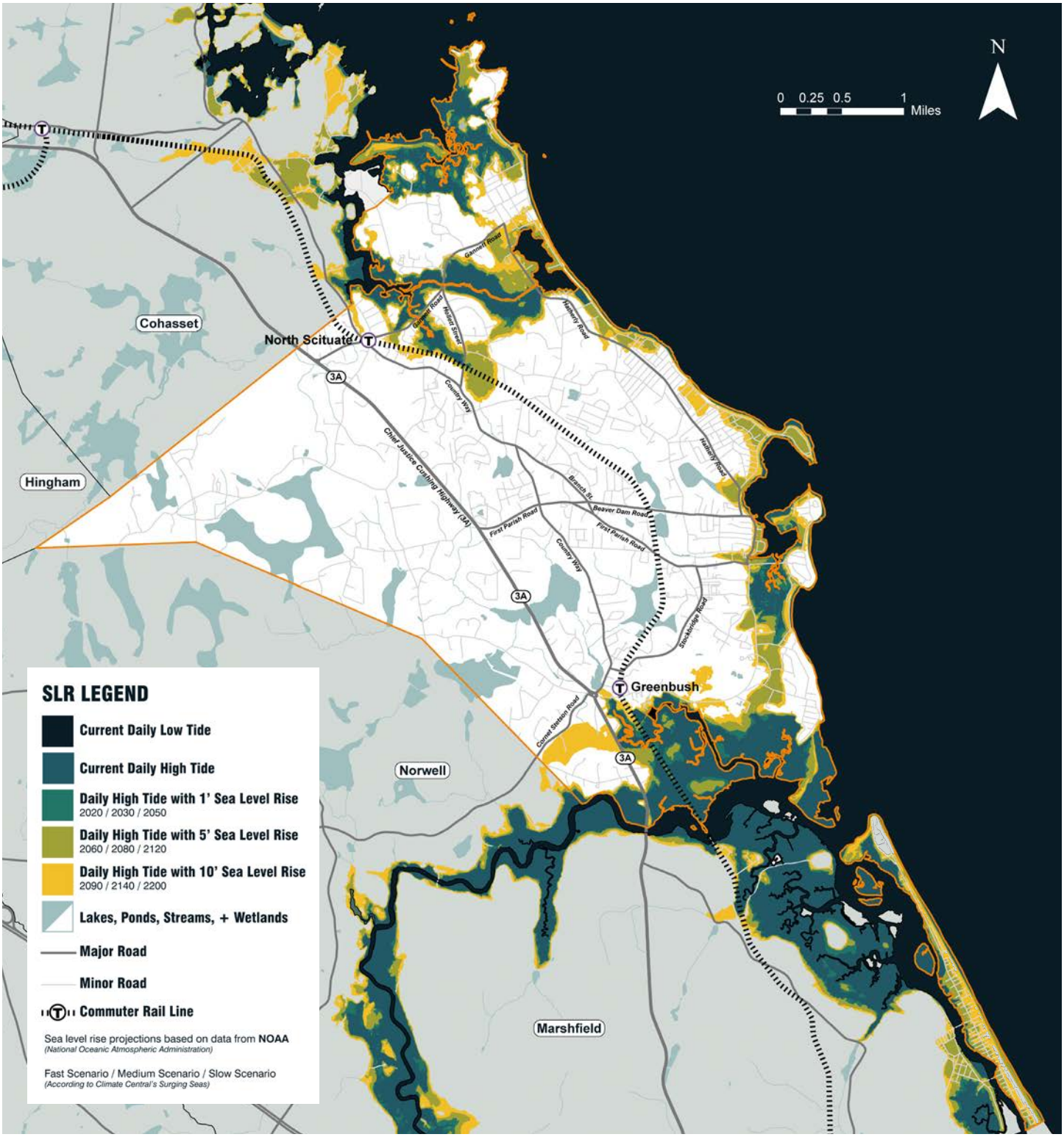
The coast is not the only part of the town to be impacted by climate change. The next, section, **Ecology**, discusses the impacts to the ecological systems of the town. *Building a Resilient Scituate: Climate Vulnerability and Action Plan* (MAPC, 2018) identifies town-wide impacts and Scituate's vulnerability to such impacts. The *Climate Vulnerability and Action Plan* draws on the work of the *Natural Hazard Mitigation Plan* (VHB, 2016) which evaluates threat from existing natural hazards. The action plan includes a series of recommendations to address existing vulnerabilities based on the projections of future conditions. Those recommendations are summarized in the **Planning Context: Recommendations** section of this master plan update.

The report identified flooding from sea level rise and increased precipitation events as the primary risks. The projected increase in temperature is also a threat with negative impacts on the health of vulnerable populations and the supply of drinking water. The plan identified four heat islands (areas vulnerable to extreme heat): Humarock, the Town Center including Town Hall and Scituate High School, the retail/commercial area on Front Street, and the Greenbush Commuter Rail station, with Humarock and the high school of greatest concern.[9]

9 MAPC, *Building a Resilient Scituate: Climate Vulnerability and Action Plan* (2018), p. 18.

Figure 9: NOAA Sea Level Rise Projections

The areas that would experience daily high tide inundation if 1', 5', or 10' of sea level rise occurs. Projected timelines of these scenarios vary. The higher sea level rise scenarios overlap the lower ones; for example, the yellow for the 10' scenario overlaps the green, teal, and blue of the 5' scenario, 1' scenario, and current daily high tide, respectively.



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ECOLOGY

One of Scituate's greatest assets is its diverse network of ecosystems and habitats. The Town's ecology is also an integral component of recreation, tourism, and culture. This section will discuss the vital roles and interrelationships of some of Scituate's key ecosystem types and the way in which they both impact and are impacted by climate change.

*To review the **recommended actions** related to Ecology, go to **page 86.***

Salt Marshes

Salt Marshes exist as a buffer between open water and inland. This critical ecosystem is not only an important habitat teaming with biodiversity, these living shorelines act as giant sponges, absorbing water as the tides come in. This spongy barrier protects other inland areas from daily floods. At the same time salt marshes are helping to protect the Scituate community from the impacts of climate change, it is those very impacts that threaten the marshes. As sea level rises and causes the shoreline to recede inland, marshes adapt and migrate, but development limits the opportunities for marsh migration. While many marshes and wetlands are currently protected, their projected future locations are not. If marsh migration zones are not protected, salt marshes are at risk of diminishing or disappearing all together. If Scituate's marshes and wetlands were to be significantly reduced, the impacts of climate change would be further exacerbated.

Bays

Scituate is one of many communities located on the coast of Massachusetts Bay.[1] The Bay is a vital habitat to marine species and plays an important role regionally in the fishing and tourism industries. It is what makes South Shore communities unique and sought after as places to explore, live, and work.

The Bay includes tidal flats which are home to young shellfish, sea grasses, anadromous fish species (such as herring), and resident as well as migratory bird species. Beyond the tidal flats, Scituate has roughly 12 acres of eelgrass meadows. These meadows capture sediment and take up nutrients which improves the water quality. It also provides protection and shelter for many fish species who live among the grasses. The eelgrass meadows also dissipate wave energy and height which helps to reduce shoreline erosion.

This highly advantageous ecosystem faces a number of climate-related threats including increased runoff from extreme precipitation, warming ocean temperatures, sea level rise, introduction of pathogens, and nutrient-loading from stormwater runoff, sewer systems, and fertilizers. This combination results in excessive amounts of carbon dioxide in the water which raises the pH, a process known as ocean acidification. This results in changes to health of the coastal ecosystem, including stunted fish and shellfish growth, species migration, algal blooms, and potential disease.

1 For more information about work in the bays, check out the Massachusetts Bays National Estuary Partnership: https://www.mass.gov/orgs/massachusetts-bays-national-estuary-partnership

Forests and Trees

SCITUATE'S LAND COVER IS 48.8% FOREST CANOPY AND 20.7%[2] OPEN SPACE.[3]

As seasonal weather patterns become more erratic and extreme, the likelihood of regular flooding, severe droughts, and wildfires will increase exponentially. The forested tree canopy is one of the strongest assets in Scituate's arsenal for fighting the impacts of climate change. Each year the forest intercepts 525 million gallons of rainfall and absorbs 71.3 million gallons of run-off.[4] The carbon sequestration benefits of Scituate's tree canopy is valued at $31 million per year.[5] The forested areas of Scituate help to reduce stormwater runoff and prevent flooding by taking water up through their roots as well as intercepting rainfall with their leaves, which store and evaporate the rainfall back into the atmosphere.

Other benefits of the forest cover include alleviation of stress on stormwater systems, recharging and cleaning the aquifer/ground water, the mitigation of air pollutants, and the cooling effects created through evapotranspiration and the provision of shade. The cooling effects of the forest reduces the need for asphalt maintenance due to sun deterioration and it also reduces energy demand for air conditioning in the hot summers.

The forest faces many threats including warmer winters, extreme precipitation, increased ice storms, and flooding. Gaps in the tree canopy create opportunities for changes to forested areas. Wildfire, high winds, and changed cycles of precipitation and drought may create more of these gaps and trees weakened by storms and drought are more susceptible to insects and disease.

Climate change in New England will likely lead to a shift in forest type from Maple/Birch/Beech to Oak/Hickory.[6]

Barrier Beaches

While Scituate Harbor provides a protected place to moor boats, much of the coast is vulnerable to wave action and storm surge. Barrier Beaches create pockets of protected shoreline by reducing the impact of waves on the shoreline or hard coastal infrastructure such as seawalls. Barrier Beaches have less impact on sediment migration than an engineered seawall.

Freshwater Resources, Rivers, and Inland Wetlands

In addition to its unique coastal ecosystems, Scituate also benefits from many freshwater ponds, streams, and wetlands which contribute to habitat diversity and recreational opportunities. With increased

2 Metropolitan Area Planning Council. 2018. "Building a Resilient Scituate: Climate Vulnerability Assessment and Action Plan." Plan, page 35.

3 MassGIS Data: Protected and Recreational Open Space. August 2020.

4 Metropolitan Area Planning Council. 2018. "Building a Resilient Scituate: Climate Vulnerability Assessment and Action Plan." Plan, page 36.

5 Metropolitan Area Planning Council. 2018. "Building a Resilient Scituate: Climate Vulnerability Assessment and Action Plan." Plan, page 37.

6 Ibid.

stormwater runoff and extreme precipitation, these areas are increasingly prone to flooding. Another potential risk is associated with flooding is the contamination of drinking water. As water moves with increased capacity and speed, it picks up pollutants such as lawn fertilizer, pet waste and contaminants from landfills and carries them to water ways and potentially the drinking water supply. The velocity of water in streams also leads to scoured riverbed vegetation, eroded banks, and degraded ecosystem function. The more flooding occurs, the more maintenance will be required to repair over-flowing storm culverts and damage to roads and bridges.

BioMap2

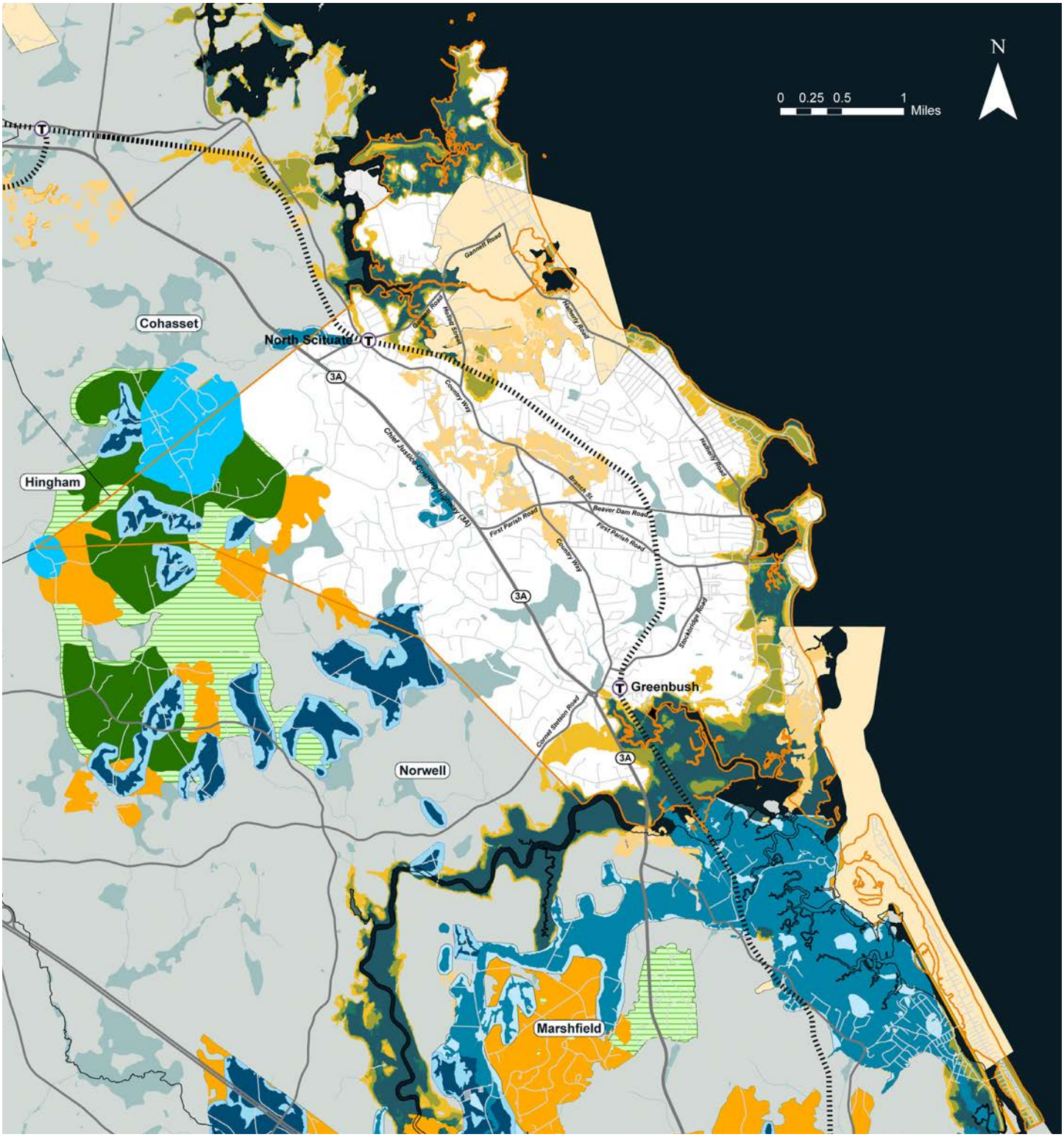
In 2012 the Massachusetts Department of Fish and Game through the Division of Fisheries and Wildlife's Natural Heritage and Endangered Species Program (NHESP), and the Nature Conservancy's Massachusetts Program conducted a state-wide study to map areas of important biodiversity, critical ecological function, and endangered species habitat.

> *BioMap2 combines NHESP's 30 years of rigorously documented rare species and natural community data with spatial data identifying wildlife species and habitats that were the focus of the Division of Fisheries and Wildlife's 2005 State Wildlife Action Plan (SWAP). BioMap2 also integrates The Nature Conservancy's assessment of large, well-connected, and intact ecosystems and landscapes across the Commonwealth, incorporating concepts of ecosystem resilience to address anticipated climate change impacts.*[7]

7 Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program. 2012. "BioMap2: Conserving the Biodiversity of Massachusetts in a Changing World." Scituate, MA.

Figure 10: BioMap II Habitat

A 2012 State study mapped critical habitat areas. Legend on previous page.



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ECOLOGY

Figure 10 on page 43 reveals several large areas of designated critical landscapes and habitats that contribute to regional ecosystem functioning. Notably, large portions of Scituate's North and South coastlines as well as all of Humarock are designated Tern Foraging habitat. The full BioMap2 report for Scituate and the definitions of each designated area is provided here: http://maps.massgis.state.ma.us/dfg/biomap/pdf/town_core/Scituate.pdf.

The following lists identify the plant and animal species of conservation concern in Scituate identified by the BioMap2 study:

Threatened

Piping Plover *(Charadrius melodus)*

Seabeech Needlegrass *(aristida tuberculosa)*

Swamp Dock *(Rumex verticillatus)*

Special Concern

Mocha Emerald Dragonfly *(Somatochlora linearis)*

Common Tern *(Sterna hirundo)*

Least Tern *(Sternula antillarum)*

American Sea-blite *(Suaeda calceoliformis)*

Non-listed State Wildlife Action Plan (SWAP)

New England Bluet Damselfly *(Enallagma laterale)*

Four-toed Salamander *(Hemidactylium scutatum)*

Red Knot *(Calidris canutus)*

Ruddy Turnstone *(Arenaria interpres)*

Sanderling *(Calidris alba)*


Piping Plover


Seabeech Needlegrass


Swamp Dock


Mocha Emerald Dragonfly


Common Tern


Least Tern


American Sea-blite


NE Bluet Damselfly


Four-toed Salamander


Red Knot


Ruddy Turnstone


Sanderling

OPEN SPACE + RECREATION

One of Scituate's most important assets is its robust network of open spaces and recreational amenities. These include beaches, conservation lands, parks, athletic fields, and historic landscapes such as the Scituate Harbor Lighthouse.

*To review the **recommended actions** related to Open Space, go to **page 87.***

In addition to federal, state, and Town-owned lands and land trusts, private land owners also contribute significantly to this network through the provision of both protected and unprotected open spaces. According to the *Open Space and Recreation Plan* (OSRP) (VHB, 2018), there are more than 217 acres of Chapter 61 lands in Scituate under the Forest Taxation Law. This means that owners of Chapter 61 lands receive tax advantages in exchange for managing the land as stipulated (either forestry, pasture, haying, horse farm, agricultural, cranberry bog, or golf course). This regulation also stipulates that the Town has first right of refusal to purchase the property if the owner chooses to sell.

Unprotected Land

Over 381 acres of private properties are protected through deed restrictions. Scituate Rod and Gun Club, Scituate Country Club, Hatherly Club, and The Glades are all important privately-owned commercial recreation facilities and account for 350 acres of open space, but are not protected in perpetuity and could be developed in the future.

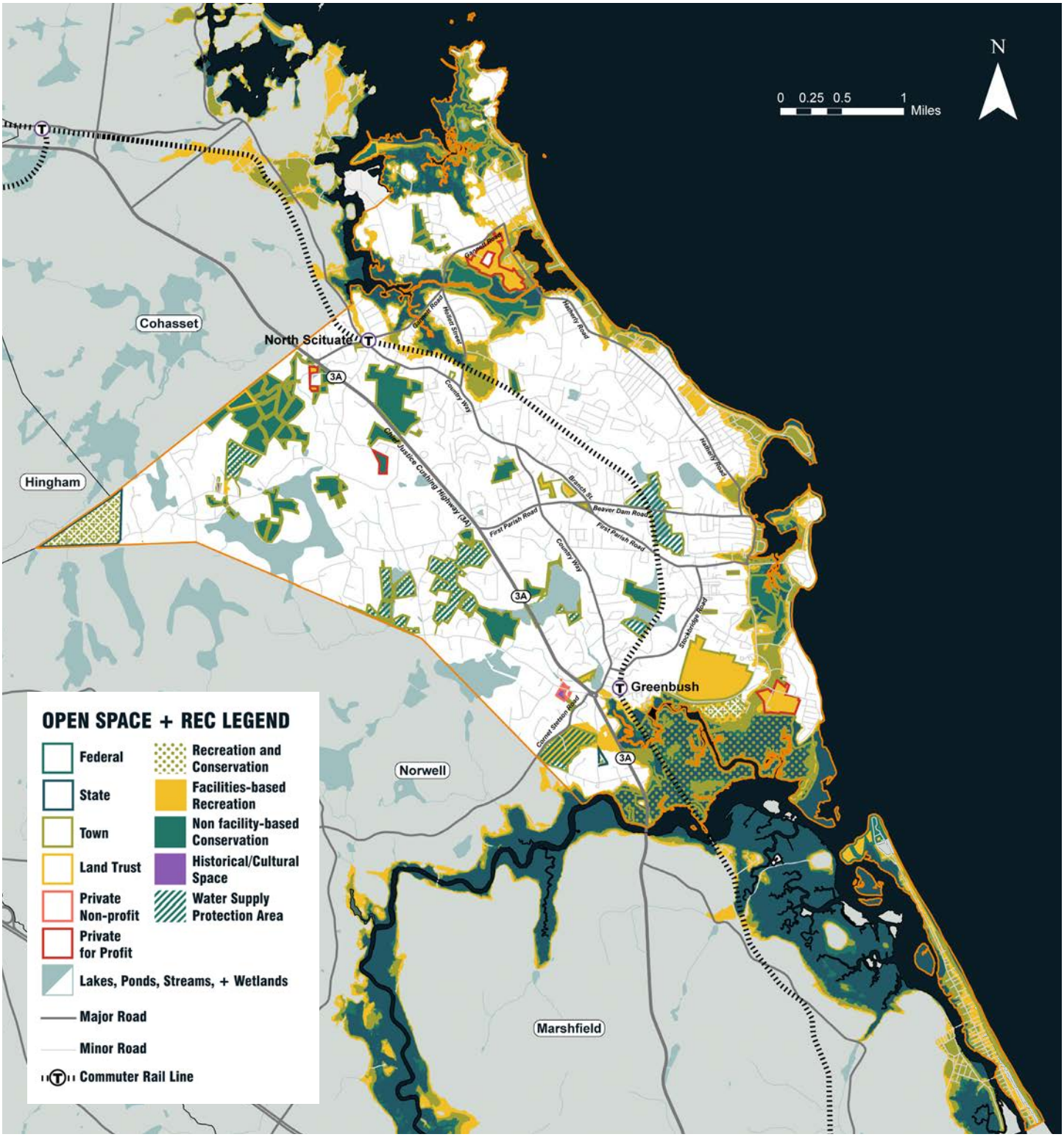
Protected Land

In addition to these designated open spaces, Scituate also enforces Water Resource Protection Areas. Zone A is the area within 400 lateral feet of a reservoir's bank, and within 200 feet of its tributaries. Zone B is the area within a half-mile of the reservoir and the remainder of the watershed is designated as Zone C. Zoning provides limited protection of the Town's drinking water, so to further protect Scituate's drinking water supply, the Town has also acquired 490 acres of land surrounding well sites and another 258 acres surrounding Tack Factory Pond Reservoir and the First Herring Brook watershed for preservation.

Open and Recreation Space (in acres)	2009 OSRP	2018 OSRP
Town-owned Recreation Lands	**1,010**	**~1,010**
Town-owned Open Space (Conservation Commission/DPW)	**1,173**	**1,344.48**
Unprotected Private Recreation Lands	**350**	**350+**
Protected Private Lands	**143+**	**381.32**
Chapter 61 Lands	**315**	**217.562**

Figure 11: Existing Open Space and Recreation

Scituate has a robust network of open spaces for both conservation and recreation.



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OPEN SPACE + RECREATION

Chart 12: Open Space Public Access

60% of Scituate's open space is accessible to the public in some capacity.

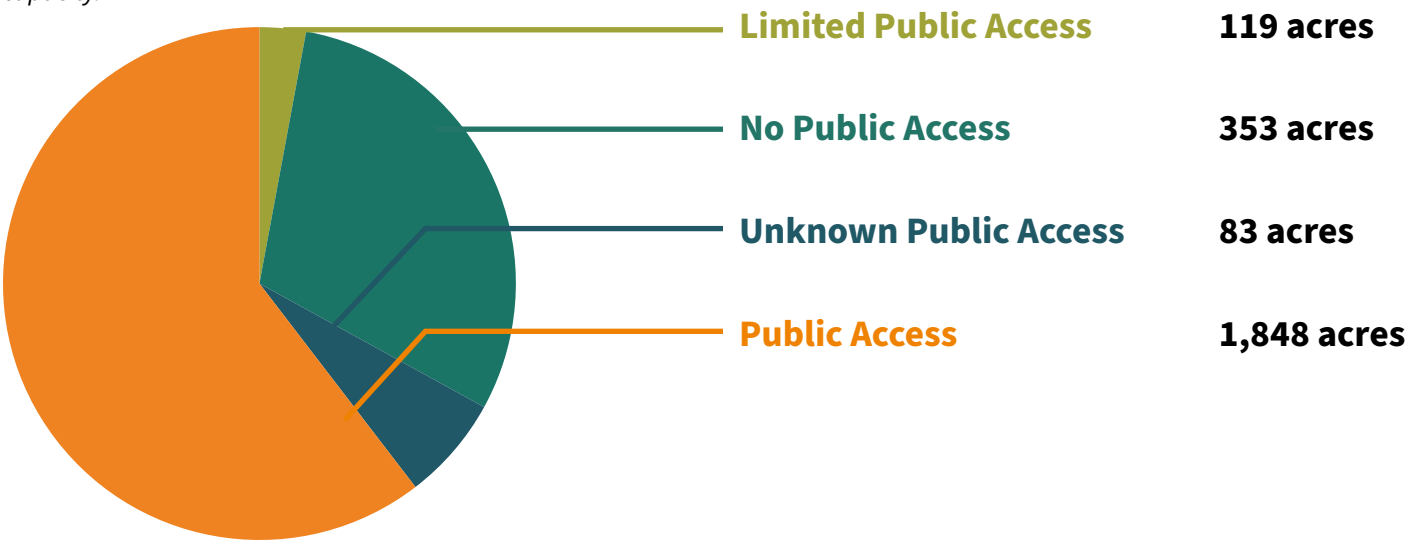


Chart 13: Open Space Purpose

60% of Scituate's open space is dedicated to facilities-based recreational activities, including walking trails.

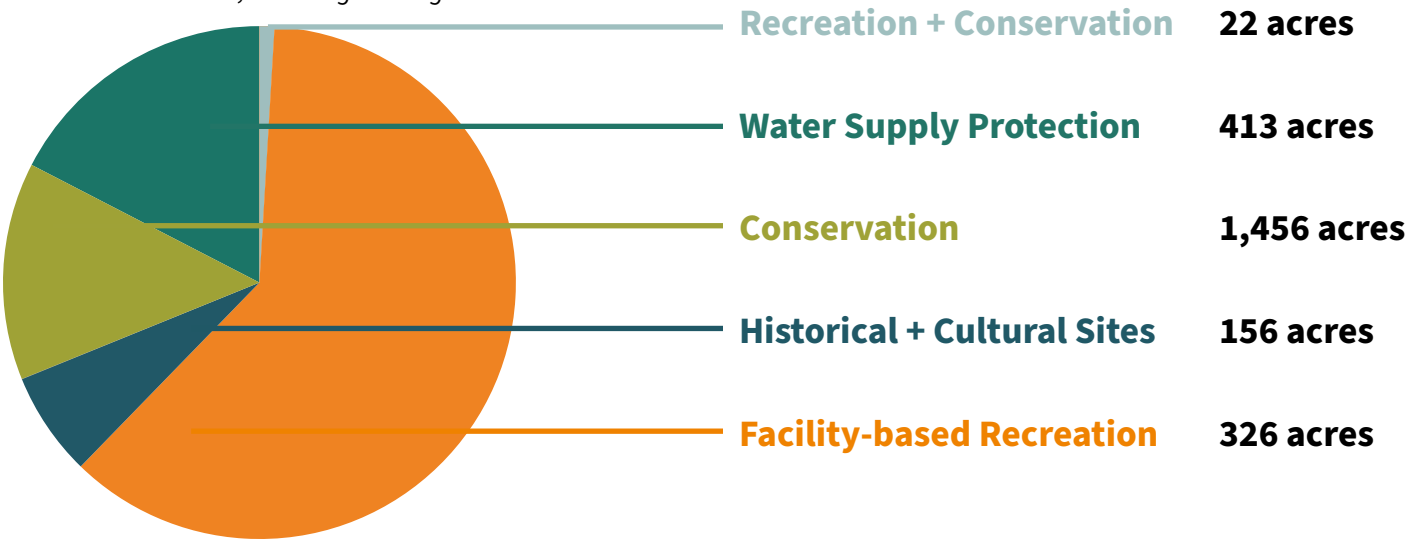


Chart 14: Open Space Ownership

86% of the open space in Scituate is owned by the Town.

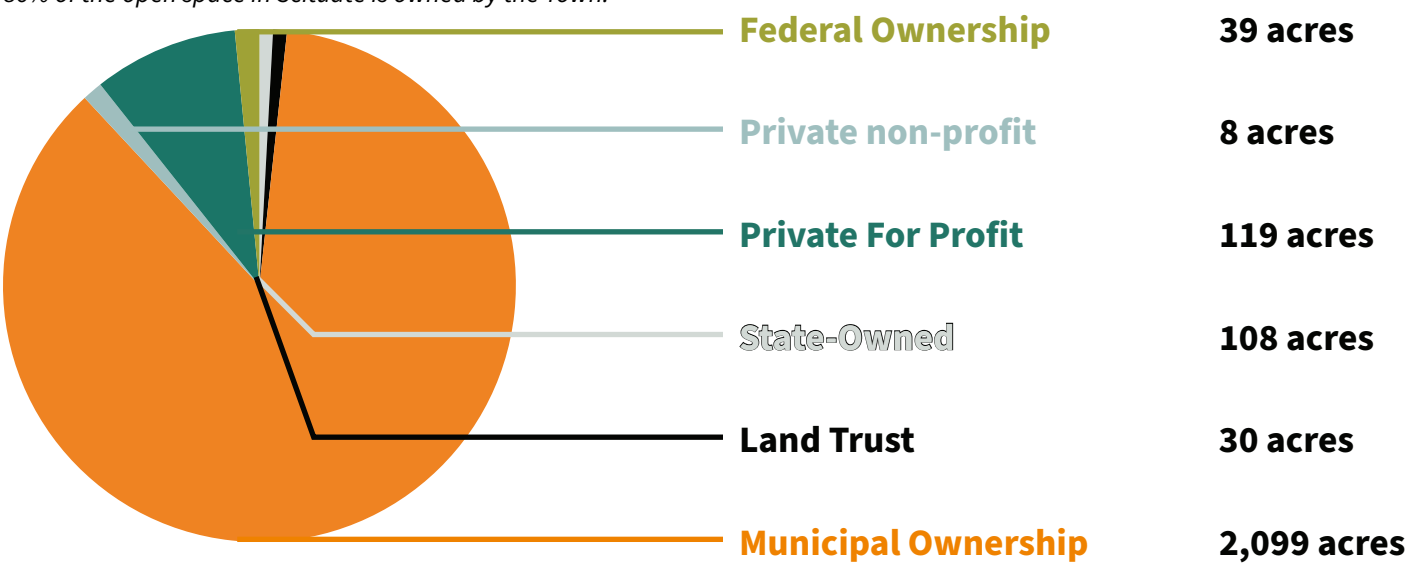


Image 15: *View from Humarock toward Marshfield across Broad Creek. Photo taken 8/1/2019.*

HOUSING DIVERSITY

*To review the **recommended actions** related to Housing, go to **page 88.***

Housing diversity refers to the variety of housing options available at different price points and to meet different needs, including those of young professionals, young families, people with disabilities, and the aging population. Housing affordability can be expressed of in terms of lot sizes, unit sizes, and building forms.

Scituate's greatest problem in providing housing diversity is the existing water and sewer infrastructure, which cannot support the level of development required to meet both its current needs and the projected number of affordable units calculated by the Town's recent *Housing Production Plan* (Karen Sunnarborg Consulting, 2020). In addition, most studies focus on year-round housing, but the increased summer population brings added stress to the systems that must be included in any discussion of upgrading infrastructure to meet housing needs.

The Boston Metropolitan area has a housing affordability problem that has spread throughout surrounding towns, including Scituate. Metropolitan Boston ranked fourth in the most expensive largest metropolitan areas in the United States; its median rents are higher than Metro New York. Nearly half of the renters in Essex, Plymouth, and Norfolk counties are cost burdened by housing.[1]

Today, Scituate's owner-occupied housing ranges at about 84%, which is higher than Plymouth County at 76% and the Commonwealth at 62% (**Appendix B**). The town also has limited housing diversity with 83% of units as single-family detached homes.[2] This means that the supply of smaller, rental, affordable units is limited in the town as demand increases (the average household size in town is decreasing).

The median value of owner-occupied housing in Scituate, estimated at $634,000 in 2019 also higher than Plymouth County and Massachusetts overall (**Appendix B**), making the cost of ownership high relative to nearby communities.

Based on census data, in 2020 the estimated total amount of dwelling units was 8,251 (an increase of 35 units or 0.4% from 2018); 7,163 are year-round units. Out of the 7,163 only 358 are affordable, representing only 5% of affordable units, below the 10% required by the State. By 2030, the anticipated number of dwelling units is 8,410 (estimated increase of 159 or 1.93% from 2020).[3]

Building data from the Town indicates both a larger increase in the number of units (319 units between 2010 and 2018) and a distribution skewed towards single-family homes (269 vs. 50 multi-family units).[4] The Town also has applications for several multi-family developments that, if built, would exceed the census-based projections. This has implications for both the population projections noted below and the water and sanitary sewer capacity discussed elsewhere in this plan.

Population projections, which help to estimate future housing demands, are varied, depending on the source: MAPC expects an increase to 19,348 residents by 2040 while FXM's assessment (in **Appendix B** and based on the Donahue Institute at the University of Massachusetts) projects a decrease

1 The Boston Foundation, *Greater Boston Housing Report Card,* 2019. Page 6.

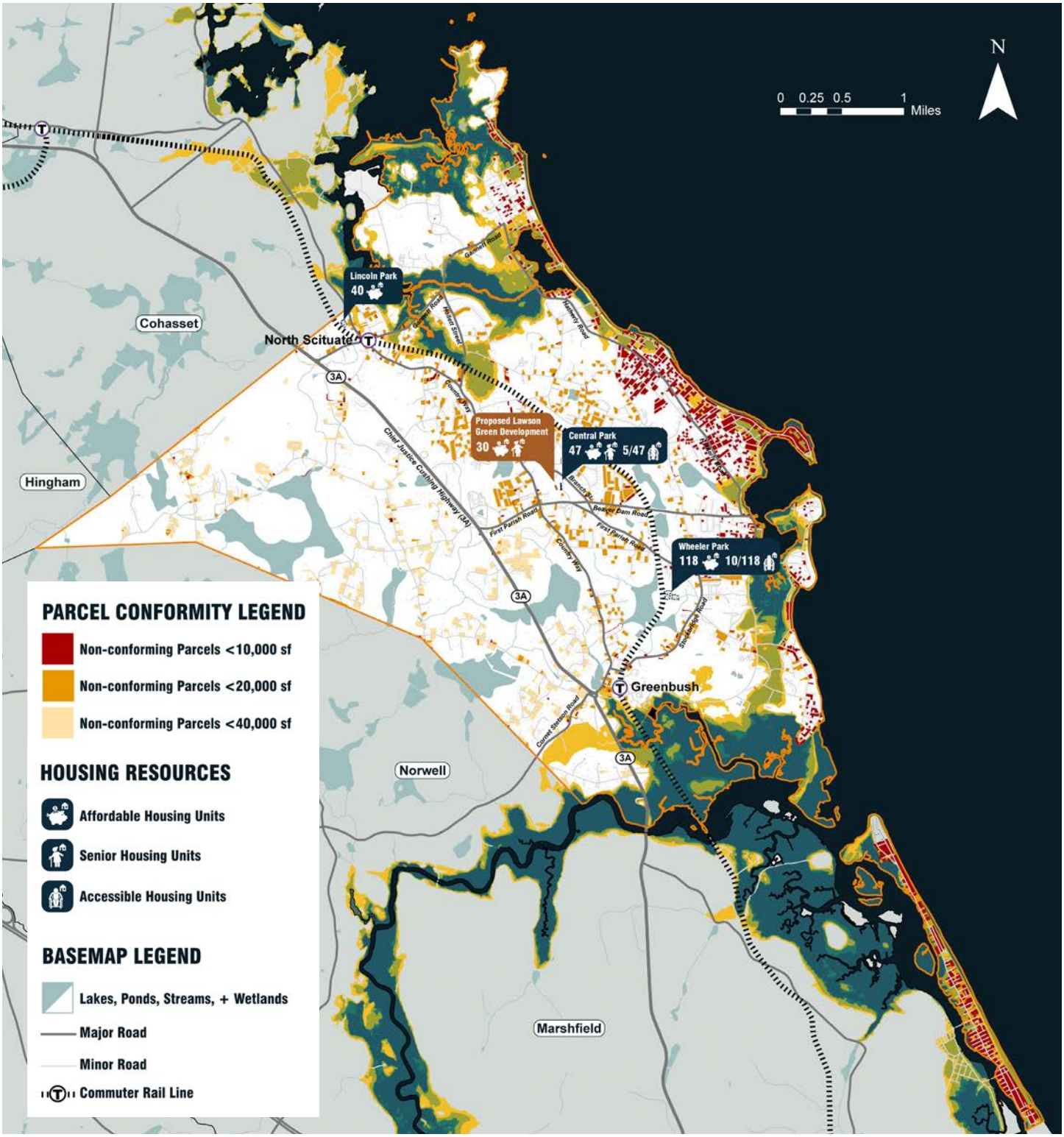
2 Karen Sunnarborg Consulting, *Town of Scituate Housing Production Plan*, 2020. Page 5.

3 Karen Sunnarborg Consulting, *Town of Scituate Housing Production Plan*, 2020. Page 4.

4 Karen Sunnarborg Consulting, *Town of Scituate Housing Production Plan*, 2020. Page 5.

Figure 15: Existing Housing Resources

Location of affordable, senior, and accessible housing units in Scituate and parcels that do not conform to the existing zoning.



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to 16,347 by 2040. Both sources indicate a slower rate of growth for the population, but the declining household size noted earlier suggests that the demographics of housing demand are changing.

The current population is 18,729.[5] Scituate is showing declining numbers for children and young adult age groups; a significant growth in the middle age group; and growth in the older adult group.[6] The aging of Scituate's population presents two challenges in terms of housing in the future of Scituate:

- → This aging population need smaller housing to accommodate their needs, including less maintenance and accessible facilities.
- → In order to attract a younger population needed for economic development, housing needs to be smaller, rental rather than ownership, and more affordable.

According to the economic development assessment by FXM Associates, there is demand for rental housing throughout the local market area. Based on projected 5-year average annual demand, Scituate could absorb at least 80 rental units per year over the next 5-years priced at or above current market average rents (**Appendix B**).

The town's infrastructure limits the amount of development, particularly the capacity and coverage of water and sewage services throughout the town, including areas suitable for development, such as North Scituate. The amount of water the Town is permitted to draw is limited to its capacity of mitigation as discussed in the later sections on **Water Infrastructure** and **Sanitary Infrastructure** in this master plan update. Residents have expressed concerns about the current quality of water and the impact of future development and the capacity of the town to supply clean water to more residents.

Plans for several phases of sewage expansion are still in progress and the Town is considering a regional approach in conjunction with the Towns of Hull and Cohasset.[7] Opportunities for additional housing in non-sewered areas area are limited to individual septic systems.

Access to other utilities, such as broadband and electrical services, are also required for new development. Both are vulnerable to winter storms because of New England's older telecom structure.

Scituate has few greenfield areas suitable for development so additional housing will be either redevelopment of existing sites, reuse of existing buildings, or the inclusion of Accessory Dwelling Units (ADUs) in existing single-family homes.

New development, including the practice of tear-downs, raises questions of both infrastructure capacity and environmental resiliency; in certain areas, additional development could threaten Scituate's natural resources. The current and future systems of wetlands, wetland buffers, marshes, and coastal land should be protected by conservation easements or protection, buffer from development, construction management techniques, on-site stormwater management, and other protective measures.

The current development patterns of single-family homes have, in many areas of the town, promoted the use of the car as the main mode of mobility. This is an inefficient use of land and infrastructure and increases the negative impact to both the environment and public health. However, other forms of transportation are limited and the

5 2Karen Sunnarborg Consulting, *Town of Scituate Housing Production Plan*, 2020. Tables 3-2 and 3-3.

6 Karen Sunnarborg Consulting, *Town of Scituate Housing Production Plan*, 2020. Page 3.

7 GZA GeoEnvironmental, Inc., *Comprehensive Wastewater Feasibility Study*, 2019. Page 30..

geography of the town does not make walking a viable alternative for everyone, except in the four village areas.

The availability of different housing types at different levels of affordability is also linked to economic, environmental, and social justice. During the recent pandemic, issues of density and quality of housing surfaced, revealing the need for housing and development that supplies quality open spaces that provide healthy areas for recreation, rest, and socializing.

Both ownership and rental housing are relatively high and vacancies are low. Single-family homes have been increasing in assessed value: 21% of structures were valued above $700,000 and 7% of those values above $1M vs. 11% and 2.5%, respectively in 2014.[8]

The lack of housing diversity also compromises social resiliency. When long-term residents have to leave the community to find housing that is affordable or housing types that better meet their needs (particularly for seniors who cannot manage a single-family home), the social fabric of Scituate may be jeopardized as social ties that have been present for years are disrupted.

Recent development around the Greenbush area is providing more diverse housing types, including multi-family rental development. Lawson Green Apartments, located at 99 Central Park Drive, has 30 units for people who are income-restricted and 62 years old or older. The Village at Greenbush at 50 Country Way offers four affordable units.

New housing does not have to be on the state's Subsidized Housing Inventory to be affordable. Figure 15 on page 51 shows that many of the parcels along the coast do not conform with the existing zoning in terms of required lot size. This is often true of older neighborhoods, built prior to zoning regulations. While each area of Scituate has its own development history, in general, encouraging smaller houses on smaller lots between a half-mile and a quarter-mile of North Scituate and Greenbush would encourage the walkable neighborhoods many people desire, reduce the impact of development on the remaining greenfields, and concentrate new development where infrastructure exists or is planned. These units would be affordable by their size, and could be designed to support aging-in-place. Within a quarter-mile of both stations, multi-family should be encouraged to take advantage of the proximity of transit and the presence of commercial development. The zoning for this is in place in Greenbush, but not yet in North Scituate.

Housing and Zoning

A large portion of the Town is zoned for single-family residential development; Accessory Dwelling Units are allowable with a few limitations. The Business District and two of the subdistricts in the Greenbush-Driftway Gateway (GDG) District (part of the Village Center & Neighborhood District) allow multi-family by right. Two-families are allowed in all districts except six of the GDG subdistricts. The Town has a progressive regulation on accessory dwelling units, adding flexibility for additional housing development.

The Town is reviewing a new North Scituate Village District under the Village Center & Neighborhood District. North Scituate is currently zoned Business and Village Business Overlay District, which would allow multi-family development if the infrastructure were in place.

8 Karen Sunnarborg Consulting, *Town of Scituate Housing Production Plan*, 2020. Page 5.

LAND USE

*To review the **recommended actions** related to Land Use, go to **page 89.***

Scituate is proud of the open spaces and recreational spaces that the community is determined to maintain and preserve. According to the *Climate Vulnerability Assessment and Action Plan*(MAPC, 2018), Scituate's land use contains over 48.8% forest and 20.7% open space and recreation land.[1] These areas are critical for the environmental resilience of the Town as they help maintain stable temperatures and collect rain fall that avoids millions of gallons of runoff.

A large portion of the Town's surface is dedicated to single-family residential development with small pockets of commercial development found around the North Scituate and Greenbush MBTA stations that take advantage of their proximity to a major transportation line. Commercial development has also occurred throughout Scituate's Harbor which is an important economic center in the Town but that area is under threat due to climate change and sea level rise. The same is true for some residential development along the coast which has been hit by storms that have caused economic losses.

The relatively homogeneous land use character reduces the connectivity between the residential uses and areas that provide services to the community. Residents that live west of Route 3A have little to no alternative to access the Harbor without the use of private vehicles. The physical connectivity for most of the Town is limited without safe walkable pathways or bicycle lanes to connect to the waterfront amenities or to the train stations.

Climate change and sea level rise do and will continue to have negative impacts on the Town's operations, including critical infrastructure such as utilities, roads, railroads, municipally-owned buildings, or buildings used as shelters. In the past years, flooding has put a burden on the sewage system's flow capacity (**Appendix C**).

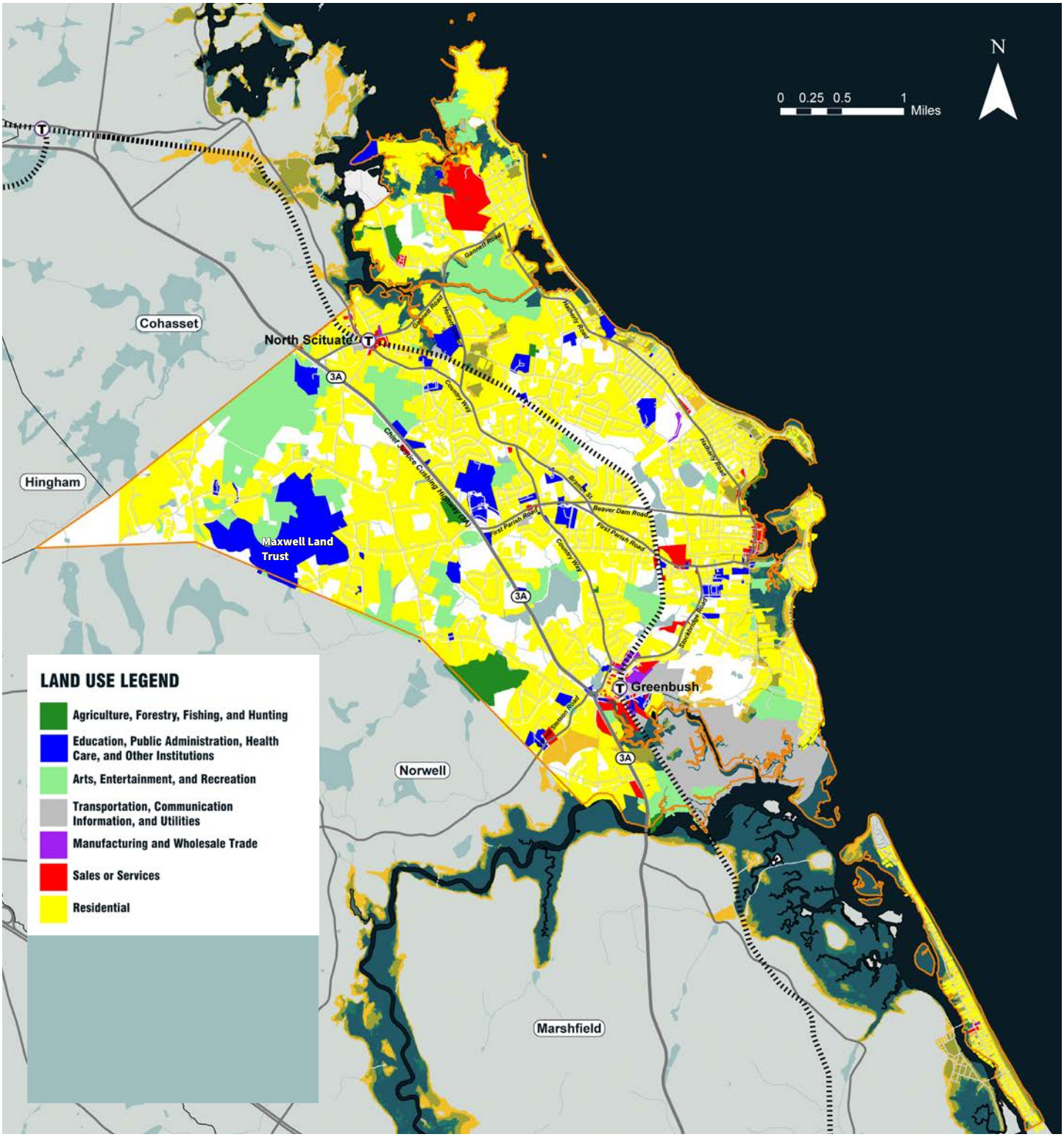
How Scituate uses its land has three major implications.

- → Environmental: Development that is spread throughout the town and connected only with vehicular connections decreases air quality; increases the amount of infrastructure required to serve the development; and puts pressure on natural resource by impairing their quality and limiting their migration over time.
- → Social: The lack of non-vehicular connections discourages social cohesion and a more dynamic interaction between residents and Town assets and services, which becomes a threat of isolation if the existing roads that connect them become blocked or out of service due to any unforeseen climate event. Child-care or essential services for the elderly population may be severed leaving these residents to rely on the community to help. The community has shown that it is a close-knit group of residents that look after each other, as in the case of the public health challenges during the worldwide pandemic in 2020.
- → Economic: The tax base needed for operations and reinvestment in the community is a threat to the economic resiliency of Scituate. The lack of tax revenue from a significant commercial base places more pressure on residents to fund operations and capital infrastructure. Scituate will need to invest significantly in capital projects over the next decade to address its infrastructure needs. The COVID-19 pandemic has underlined the importance of certain Town services and the capacity to deliver them. A variety of housing types and the ability to grow jobs within the

1 MAPC, *Building a Resilient Scituate, Climate Vulnerability Assessment and Action Plan*, 2018. Page 35.

Figure 16: Existing Land Use

Scituate parcels are primarily residential land uses with nodes of commercial and institutional activity.



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Town is critical to the economic health of the community. The concentration of commercial uses in the Downtown/Harbor will need to be evaluated given th threat of sea level rise; North Scituate and Greenbush also have climate- and infrastructure-related challenges.

The COVID-19 pandemic revealed characteristics of the Town that were not evident before. As mentioned earlier, this close-knit community stepped up to support other residents in need and demonstrated their involvement in and commitment to Scituate. At the same time, the pandemic brought an immediate reordering of people's priorities and the recognition of the need for access to open space for recreation and leisure. Residents also showed an increased desire to walk to smaller stores and smaller events to reduce the risk of contagion. The pandemic also shifted the perspective of commuters to their relationship to their proximity to the City of Boston. The shift to working from home for many offered the ability to reinvent the commute and consider a work week balanced between home and work.

Although it is far too early to project the impacts of the pandemic onto the housing or commercial markets, Scituate is an attractive community because of its assets: open space and recreation on land and sea, easy access to Boston and neighboring communities, and a development pattern rooted in traditional New England architecture and landscape. People in the workforce who can choose the location at which they do their work may choose to work part- or full-time in the communities in which they live, reducing their weekly commute. This provides an opportunity for Scituate to take advantage of a new demand for different types of housing and office and supporting businesses, such as lunch-oriented restaurants, business services, and co-working spaces, and accessible sidewalks, paths, and trails closer to homes for quick lunch-time walks. Such diversification could benefit businesses that cater to tourism and residents alike.

During the process of public engagement, the community identified three major areas to consider for future development in the Town. These were Greenbush, North Scituate, and the Harbor/ Downtown.

Greenbush and North Scituate have commuter rail stations that serve the Greenbush line that connects Scituate with Cohasset, Hingham, Weymouth, Braintree, Quincy, and Boston. These stations should be centers for village-scaled transit-oriented development that can support residential and commercial development.

The recent zoning changes for the Greenbush-Drfitway area will contribute to building compact communities that take advantage of major public transportation infrastructure thus reducing negative impacts on the environment.

North Scituate's current designation as General Business and its location close to the North Scituate train station allows this area to contribute to economic development and the Town's housing production goals. The Town is considering a zoning change for North Scituate so its zoning would be consistent with the zoning for Greenbush. However, the lack of town sewer limits commercial development as well as new housing.

The Harbor/Downtown represents not only the economic center of town but a significant cultural asset for the community. It is partly served by public parking and has a network of sidewalks, which allows the businesses to benefit from and contribute to the waterfront activity.

This same proximity to the water represents a challenge for the future of the Harbor because of sea level rise and more frequent coastal flooding and storm-related damage. Boston Harbor has seen a total of 0.94 feet of sea level rise in the last century, with an additional eight inches of sea level rise projected by 2030.[2] This projection is consistent with the South Shore model for sea level rise.[3]

Due to the concentration of development on Scituate's coast and the recent damages and losses due to storms, coastal erosion, and flooding, the community "recognizes the reality that the risks over the next 50 years are not the same as they were in the last 50."[4] Local residents understand the need for zoning strategies that redefine developing, building, or rebuilding in high risk areas.

The area available for new development in town is limited by environmental challenges and a zoning structure focused on single-family homes. These limitations increase the difficulty of addressing the high projected costs of critical infrastructure and the provision of expected municipal services by simply increasing the tax base through new growth.

Image 18: *Downtown Scituate. Photos taken 08/16/2018.*

2 MAPC, *Scituate Harbor Sustainability and Resilience Master Plan*, 2020. Pages 23-24.

3 MAPC, *Scituate Harbor Sustainability and Resilience Master Plan*, 2020. Pages 24.

4 Consensus Building Institute (CBI), *A Vision for Scituate's Coast in 2070*, 2020. Page 5.

LAND USE: ZONING

Zoning is a regulatory tool that controls the type and extent of uses that can be undertaken in different areas of a municipality. Zoning can also help control the environmental impact of development and address social and economic resiliency by prescribing building size, footprint, open space, height, use, and development standards that are aligned with Scituate's vision and values.

*To review the **recommended actions** related to Zoning, go to **page 90.***

Zoning Districts

The Town has four residential districts: R-1, which allows one dwelling unit on a minimum lot size of 40,000 SF; R-2, which allows one dwelling unit on a minimum lot size of 20,000 SF; and R-3, which allows one dwelling unit on a minimum lot size of 10,000 SF. This means that R-2 allows twice as many units per acre as R-1 and R-3 allows four times as many units per acre as R-1. R-1 is primarily to the west of Town, including all of the land west of 3A. R-2 is primarily the center of Town and R-3 is along the coast. None of the three districts allow multi-family, although Accessory Dwelling Units are allowed. Residential Multi-family (RM) allows multi-family development and some commercial uses as of right, however, there is no land assigned to this district and the bylaw will be updated as noted below.

Very little area in Scituate zoned for mixed use, business, or commercial development. The Town's zoning bylaws describe three business districts: General Business (GB), Harbor Business (HB), and Commercial (C), and the relatively new Village Center & Neighborhood District (VCN). HB and GB are replaced by the Business District on the zoning map in Figure 17; C was incorporated into the VCN. The Town plans to update the zoning bylaws to be consistent with the map at the April 2021 Annual Town Meeting.

The VCN Zoning District currently consists of the Greenbush-Driftway Gateway District (GDG) which has a series of subdistricts that control specific elements of building and site development. The GDG allows moderate density mixed-use and residential uses.

Allowable uses include multi-family dwelling, mixed use buildings, libraries, museums, art galleries or civic centers, hotels, retail, restaurant, and office. This intent of the zoning is to promote development that will create a diverse, vibrant, and resilient places for the community while preserving the design character of the area. Other components of the zoning include streetscapes that encourage walkability; a higher quality of public spaces; and diverse, affordable housing.

The Saltmarsh and Tideland Conservation District (D) identifies and protects saltmarsh and tidelands. Structures other than non-commercial docks, catwalks, wharves, or floats are not allowed.

Overlay Districts

Flood Plain and Watershed Protection (F)

Similar to the D District, the F District restricts structures to certain limited uses, primarily related to conservation, certain recreational uses, agriculture, and accessory uses under specific conditions.

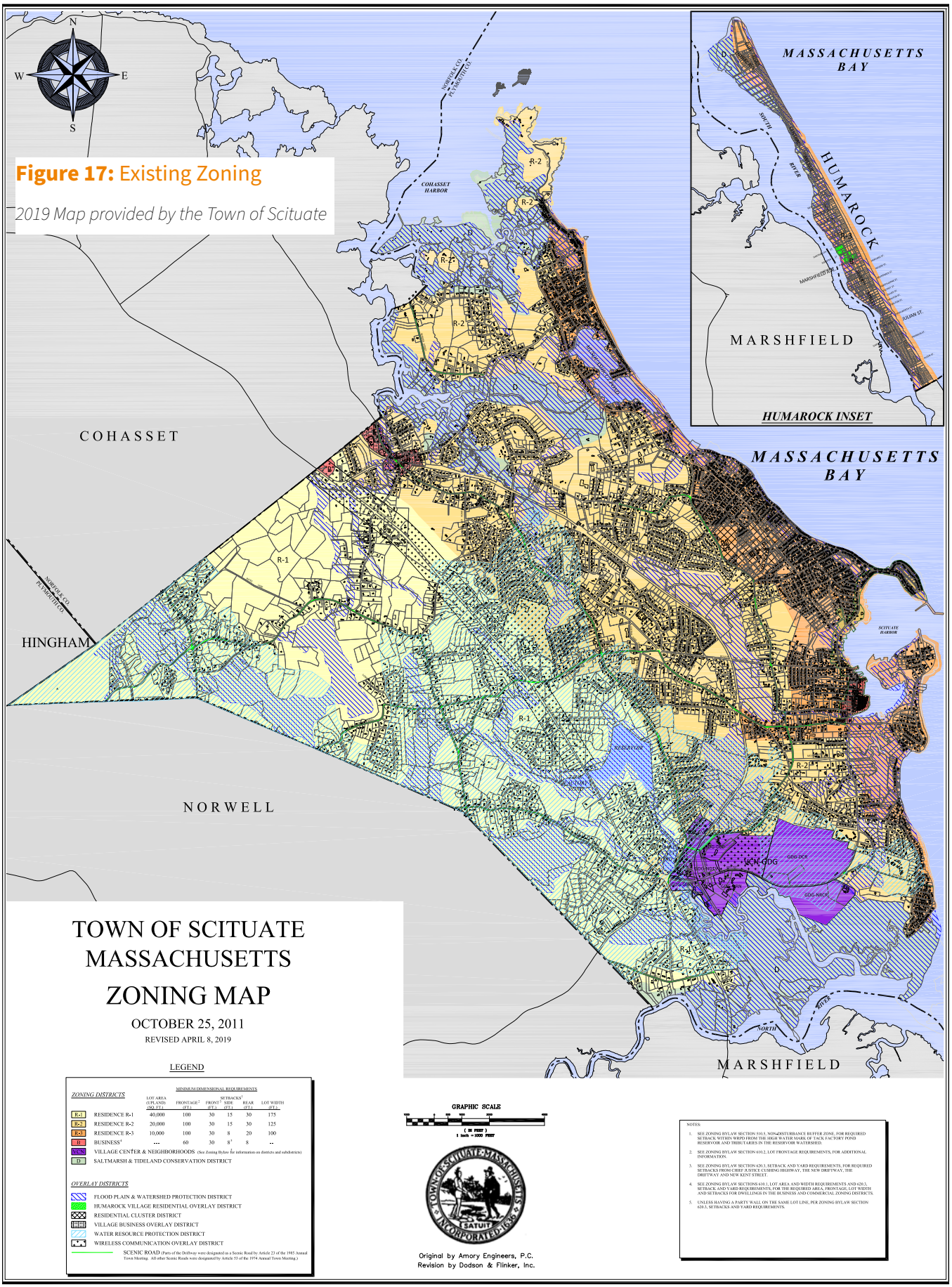


Figure 17: Existing Zoning

2019 Map provided by the Town of Scituate

LAND USE: ZONING

Water Resources Protection District (WRPD)

The purpose of this district is to protect the Town's water supply, primarily its supply of drinking water. The zoning establishes a buffer zone which prohibits certain activities within 150 feet of Tack Factory Pond and the tributaries in the reservoir watershed. In addition, the district regulates operations around the use, storage, and disposal of toxic and hazardous wastes. Runoff is required to be recharged on the site or diverted to surface filtration areas. Certain specific uses are prohibited.

Residential Cluster District (RC)

This district has already been developed into Seaside at Scituate, a Toll Brothers development. The Residential Cluster District allows, by special permit, detached single-family units and/or attached town house units and associated recreational uses, including land donated for municipal recreational use. It also allows all uses permissible as of right in the R-3 district. The lot must be a minimum of twenty acres with a maximum of one dwelling per 10,000 SF of area. The current RC district does have some undeveloped land within it, but the land is less than the required twenty acres.

Wireless Communication District (WCD)

This district controls the construction and installation of wireless towers and associated facilities.

Village Business Overlay District (VBOD)

The VBOD supports mixed-use and multi-family development in walkable environment. It allows for a mixed-use development in areas where the underlying zoning would not allow such a development and has additional development standards.

Humarock Village & Residential Overlay District (HVROD)

The Humarock Village Residential Overlay District allows for multi-family development, for up to seven units per 40,000 SF of lot area, under a special permit. Humarock is under significant threat of sea level rise which makes long-term development unlikely.

Other Provisions

The Town also has a **Planned Development District** which allows a golf course to be combined with residential and recreational uses. This land assigned to this overlay was incorporated into the GDG.

Accessory Dwellings are allowed in any residential or business district by special permit. Only one is allowed per single-family house and the zoning has some limitation on design and placement.

Affordable Accessory Dwellings are allowed in the R-1, R-2, R-3 and business districts. These units would qualify as low- to moderate-income units under the Massachusetts Subsidized Housing Inventory. This zoning has only been used once.

Among its General Standards, the Town has established **Fair Housing and Affordability Standards** for the provision of affordable units in exchange for density bonuses. These standards apply to the RC, VBOD, HVROD, VCN Districts and to Accessory Dwellings and Flexible Open Space Developments. The VBOD and the VCN districts require that a minimum of 15% of units be affordable; density bonuses require a minimum of 20% of dwelling units to be affordable.

Flexible Open Space Developments (FOSD) are allowed by special permit in R-1 for lots of 160,000 SF or more and in R-2 for lots of 80,000 SF or more (exclusive of wetlands). The number of lots allowed remains the same as a conventional subdivision, but a minimum of 30% of the area must be permanently protected as open space. Both single-family and two-family houses are allowed (one per lot).

Zoning Evaluation

The Town's zoning is already progressive in terms of affordable housing and environmental protections. Accessory Dwellings and Affordable Accessory Dwelling address one type of housing need and zoning that concentrates multi-family development in Greenbush and North Scituate addresses another.

The overlay districts either prohibit structures outright (F, WRPD) or encourage clustered development and preservation of open space (RC, Flexible Open Space Developments). However, the RC District is fully built out, and anecdotal information suggests that the use of the FOSD is not as effective as it could be.

The limitations on development are more about the capacity of existing infrastructure and less about the regulatory structure. Still, there are some changes the Town should consider to increase its future resiliency which will be addressed in **Section IV**.

LAND USE: BUILD-OUT

Traditional build-out analyses use the current zoning to determine how much can be built in the future by estimating how many acres of land are undeveloped in each zoning district and multiplying the number of acres by the allowable dwelling units or commercial/industrial square footage per acre. This methodology projects the maximum development under the existing zoning. The *Scituate Economic Development Study* (MAPC, 2014) estimated that the Town had only about 255 acres of potentially developable vacant land.[1] Significant new development is likely to be by the redevelopment of existing buildings, whether through a building addition or by demolition for new development. The Village Business Overlay District (VBOD) and the Village Center & Neighborhood District (VCN) would allow this type of redevelopment. While accessory dwelling units are allowed in the residential district, they are unlikely to be a major source of new units.

Build-out scenarios based on existing requirements project existing conditions into the future; in other words, the model takes existing undeveloped land and assumes that it will be built out under the existing regulations, and then uses those numbers to inform decisions about policies related to land use and town services and investments in infrastructure for water, sewer, roads, and sidewalks.

However, Scituate is facing a series of decisions that may require it to address the question of build-out from the opposite direction. In other words, the Town may need to first make decisions about land use and the level of investment it is able to make in infrastructure and then decide on how much growth in residential and commercial uses are appropriate in which areas of Town.

Some of the future conditions that may impact the location and amount of build-out are as follows:

- → The significant limitation of the water and sewer capacity and the investments required to bring additional capacity on-line.
- → The significant risk of flooding over the next thirty to fifty years that is projected to inundate certain areas of Humarock and impact the coast.
- → The need to allow wetland and forest migration as the climate changes over time and to protect those resources as they shift.

To address this, the planning team took a multi-layered approach to a build-out analysis to help highlight some of the choices the Town will need to make regarding land use and development.

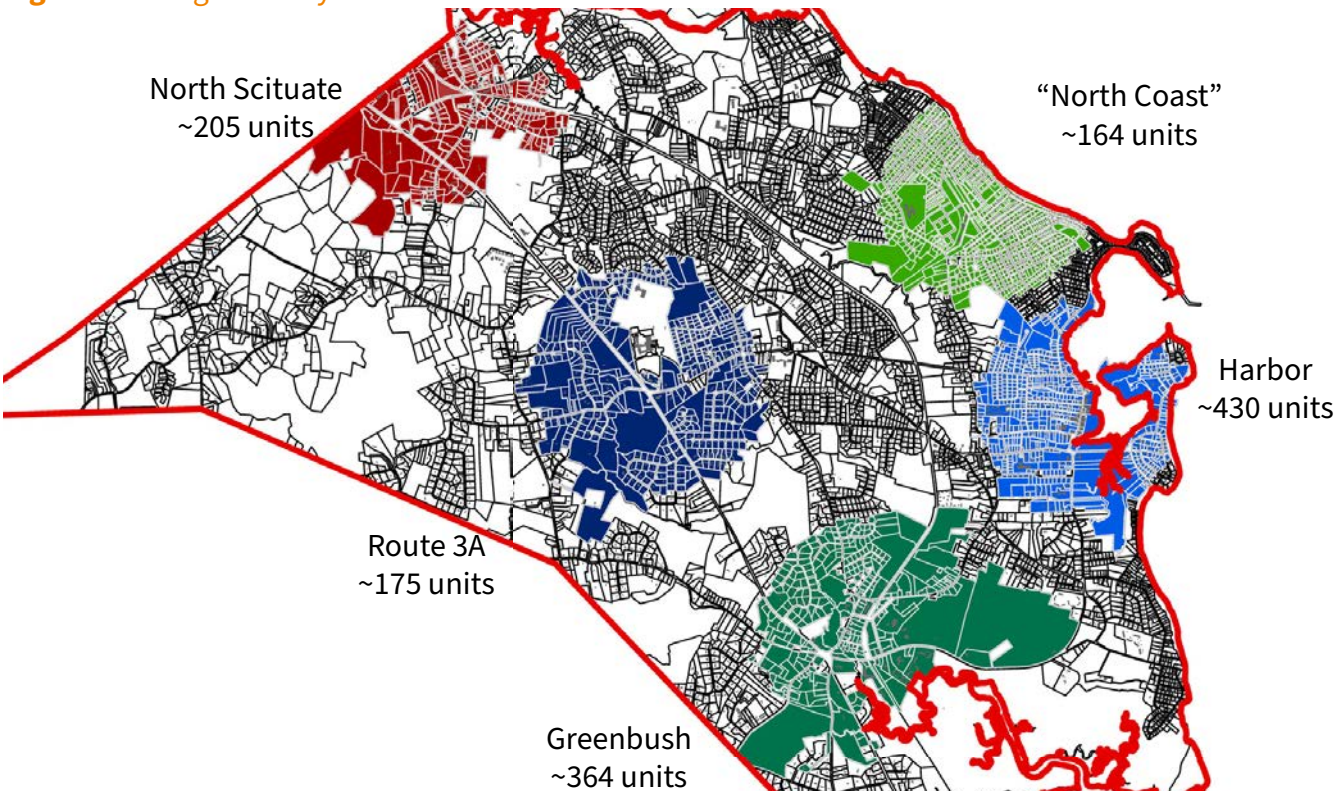
Single-Family Build-Out

A very simple analysis focused on a half-mile radius of five of the six areas discussed at the December 2019 public forum: the Harbor, North Scituate, Greenbush, Route 3A, and the "North Coast" (shorthand at the forum for the area from the coastal side of Hatherly Road to Scituate Center). Humarock was excluded because of the projected impacts of sea level rise on this area.

The analysis looked only at the underlying zoning and only at single-family (because of the concerns about sewer capacity). Parcels owned by the Town and State were removed from the calculations. The

1 MAPC, *Scituate Economic Development Study* , 2014, page 18.

Figure 18: Single-Family Build-Out



analysis ignores protected land and assumes that all lots will be subdivided into buildable lots, according to the minimum lot size with a single-family house on each new lot. Both of these assumptions will overstate the number of single-family units that can be built in these areas. The results are shown in Figure 18, above. Note that the data on which parcels have been built or remain unbuilt is based on 2019 parcel data provided by the Town.

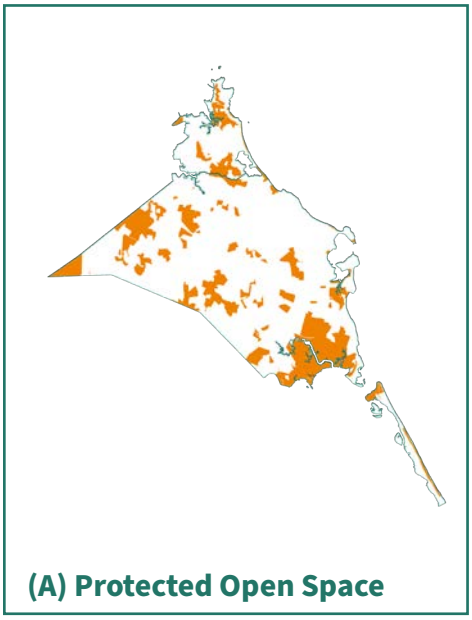
The second analysis does not provide specific projections, but does provide a model of how Scituate could consider restricted development. This model (shown in Figure 19) was used for the December 2019 public workshop and focused on how many buildable parcels remained after certain land uses or conditions were removed. At each stage, parcels already protected, developed, or with desirable environmental characteristics are identified in orange and then, in Figure G, overlaid. The inverse identifies parcels that can be developed in each area. As with the single-family build-out, this method does not consider redevelopment of already developed parcels. Nor does it consider specific uses: the undeveloped parcels could become housing, mixed-use, or commercial, according tot the combinations of underlying zoning and applicable overlays.

This second analysis is not a measure of how many units or how much square footage could be built; rather, it identifies areas of land that is available

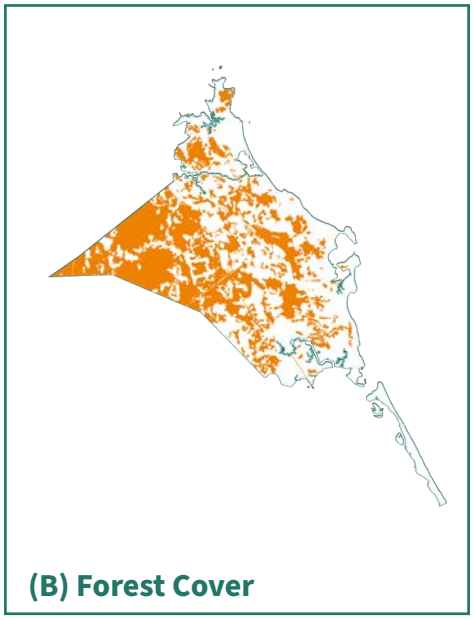
for building after taking into consideration the ecological conditions.

A third analysis could evaluate current and planned water and sewer infrastructure and consider capacity, rather than ecology, as the limiting factor. The *Water System Master Plan, Final Report* (Tighe & Bond, January 2021) describes the current and future capacity of the Town's drinking water system, while the C*omprehensive Wastewater Resilience Feasibility Study* (GZA, 2019) discusses threats to the wastewater treatment system. Both systems are discussed later in this master plan update.

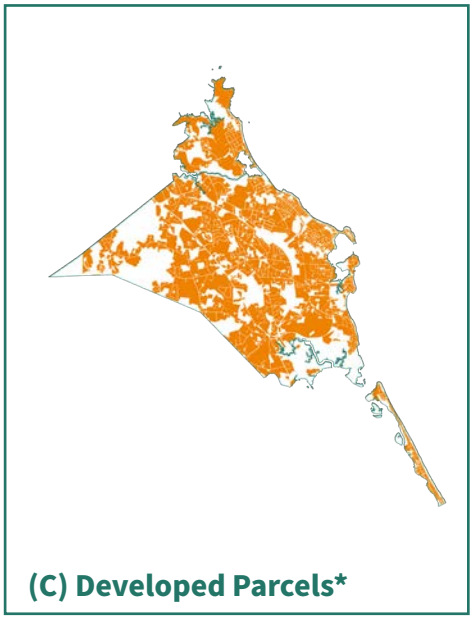
Finally, addressing coastal resiliency may mean, over a time, a retreat from some parts of Scituate's shoreline. This will affect the build-out of specific areas as density become more concentrated inland to allow residents to remain within their community as they migrate from the coast.



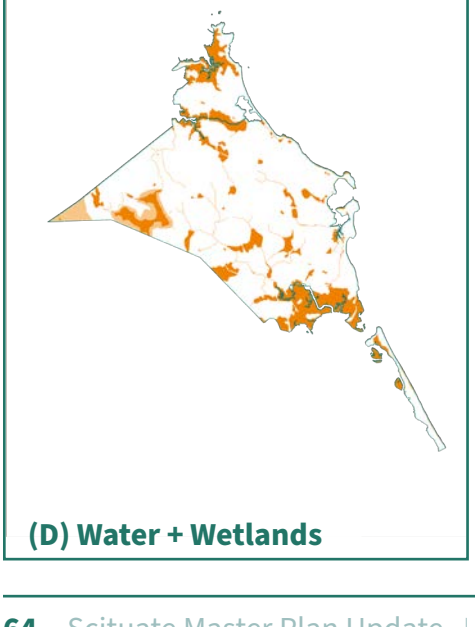
(A) Protected Open Space



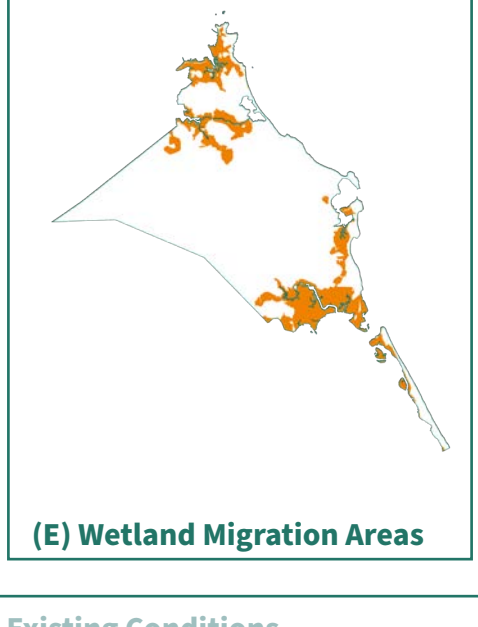
(B) Forest Cover



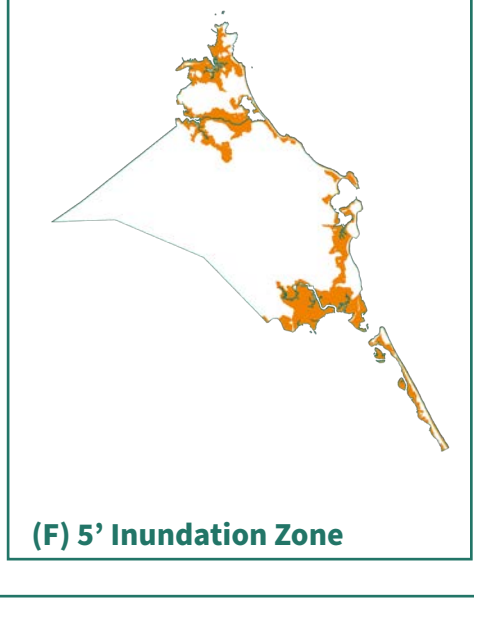
(C) Developed Parcels*



(D) Water + Wetlands



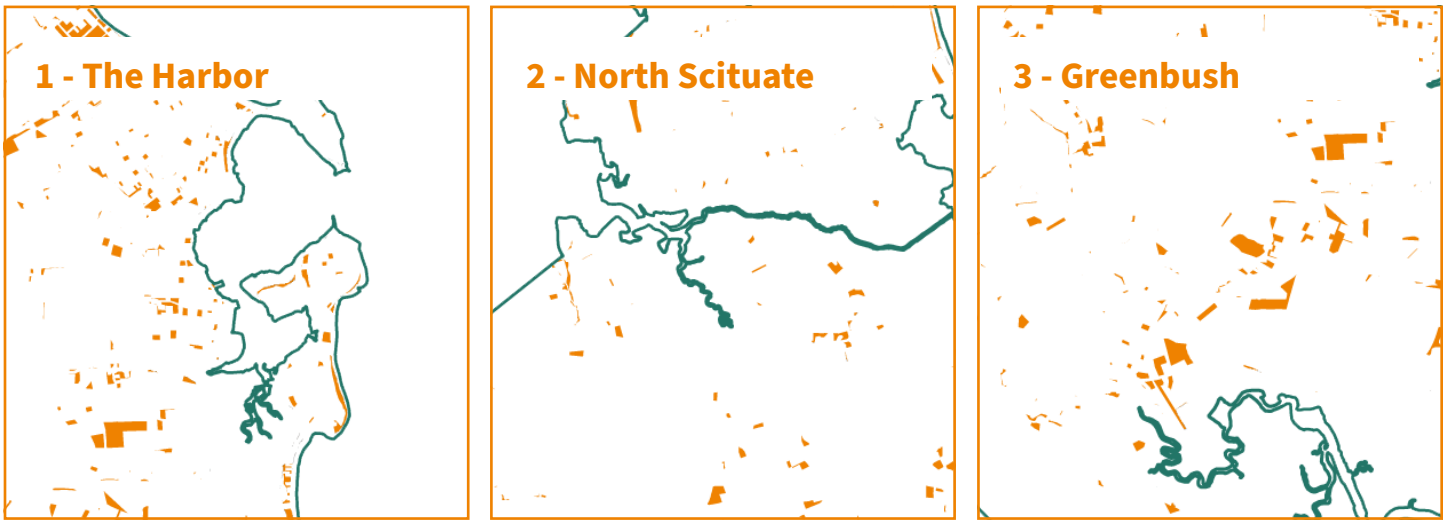
(E) Wetland Migration Areas

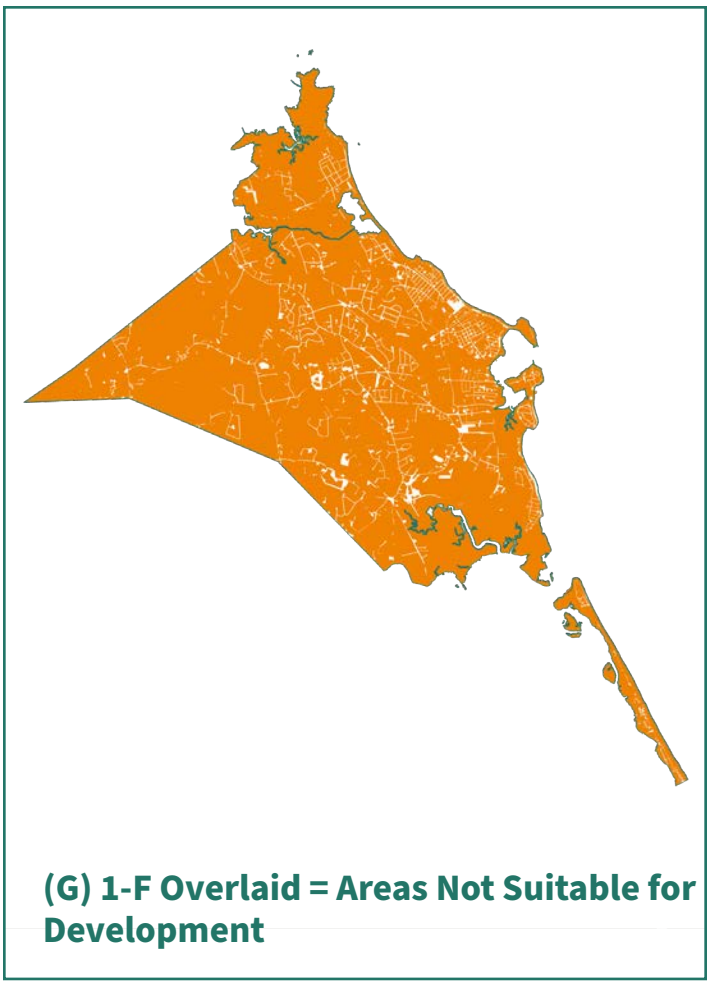


(F) 5' Inundation Zone

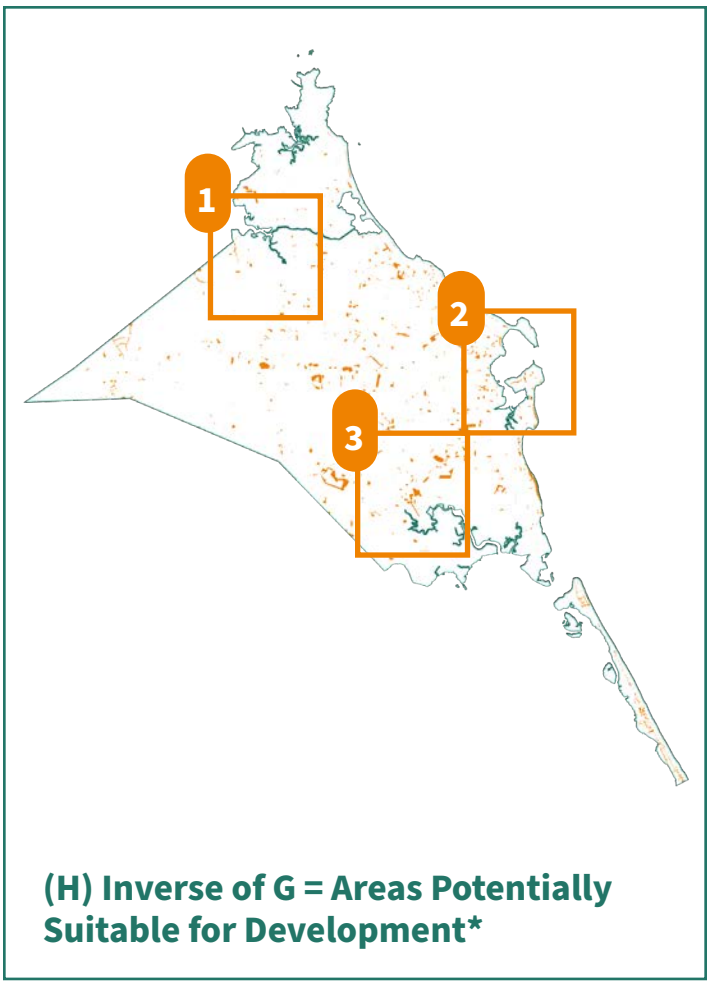
Figure 19: Build-Out: Development Suitability Analysis: Understated

This overlay analysis helped the planning team identify parcels that could potentially be developed without having a negative ecological impact.





(G) 1-F Overlaid = Areas Not Suitable for Development



(H) Inverse of G = Areas Potentially Suitable for Development*

CULTURAL + HISTORIC RESOURCES

*To review the **recommended actions** related to Cultural Resources, go to **page 92.***

Scituate is home to a diverse range of cultural and historical landmarks and institutions that contribute to the Town's social fabric and identity. According to the Massachusetts Cultural Resource Information System (MACRIS), this network includes:

- → 31 Historic Areas
- → 1,038 Historic Buildings
- → 14 Historic Burial Grounds
- → 40 Historic Objects
- → 18 Historic Structures

Each of the historic features acknowledged by MACRIS is represented in Figure 20 on page 67 as a red dot. The areas that are hatched in orange are considered to be historic areas. The numbered landmarks on this map, listed below, are significant cultural landmarks and resources.

1. The Kathleen Laidlaw Center
2. The Lawson Tower
3. The Scituate Light House
4. The Bates House
5. The Maritime and Irish Mossing Museum
6. The Stockbridge Grist Mill
7. The Mann House
8. The Humane Society Boathouse
9. The Cudworth House and Barn
10. The Grand Army of the Republic (GAR) Hall
11. The Old Oaken Bucket House
12. Etrusco

In addition to the locations recognized by MACRIS, Scituate offers an abundance of social institutions, societies, clubs, and places of worship. This rich network offers something for everyone in the Scituate community.

Social Resilience

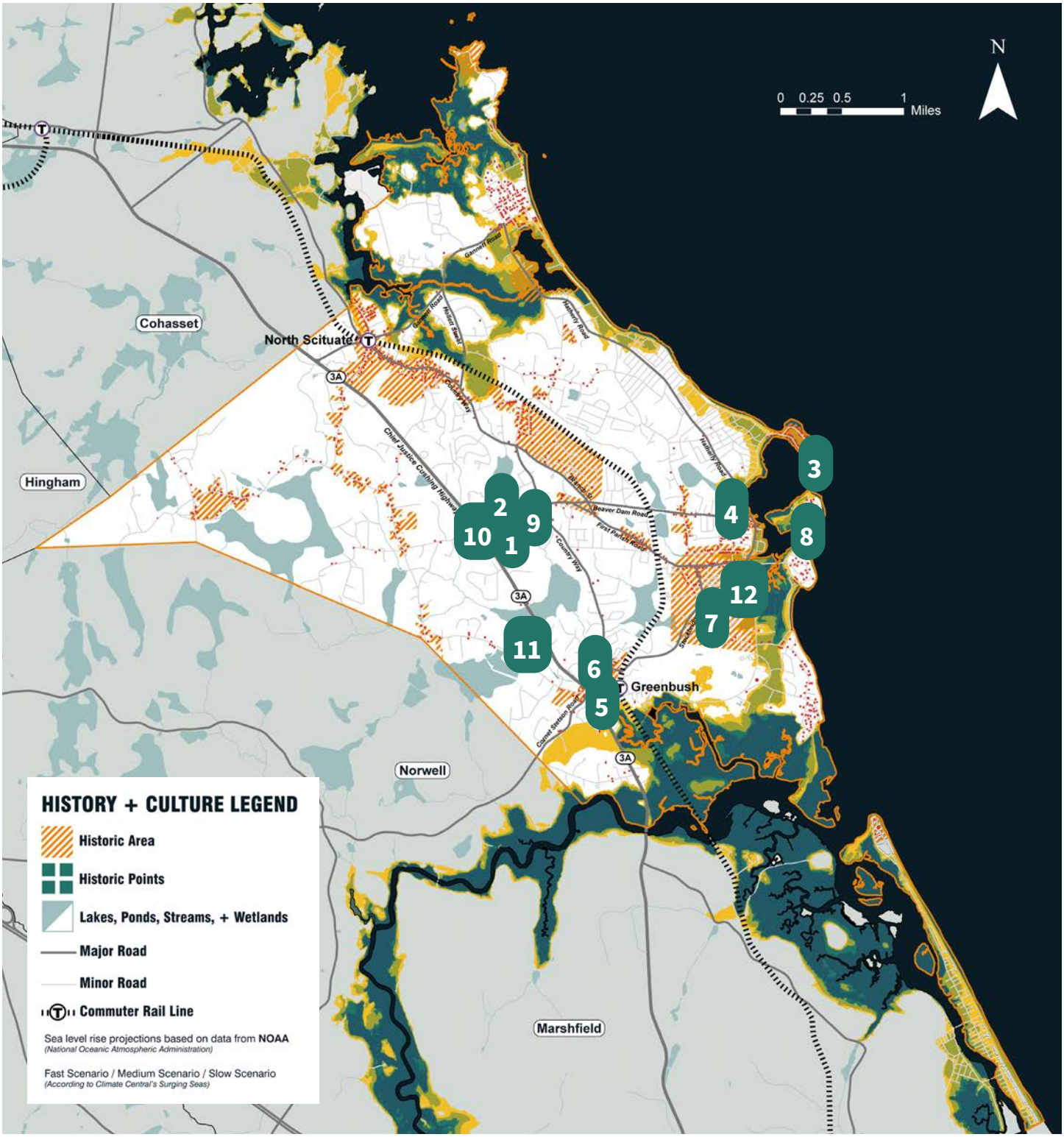
Historical and cultural landmarks are integral to the Town's social resilience. In order to combat the challenges that come with climate change, Scituate community members will need to have consensus on some difficult decisions. Strengthening the social fabric of the community through historic and cultural spaces and programs builds a sense of "home" for residents. People who experience this type of place attachment are more likely to advocate for and protect that place.

Threats

As shown in Figure 20, many of these significant cultural and historic resources are within flood risk zones. Historic preservation will become increasingly difficult as environmental factors degrade conditions, and may destroy historically significant landmarks and landscapes on the coast all together.

Figure 20: Existing Cultural and Historic Resources

Historic areas and points as identified by the Massachusetts Cultural Resource Information System (MACRIS) maintained by the Massachusetts Historical Commission (MHS). Numbered landmarks are listed on the previous page



Unless noted otherwise in the legend, all data layers are courtesy of the data layers provided by MassGIS, downloaded into ESRI's ArcGIS. Labels and additional analysis provided by the consultant team.

COMMUNITY SERVICES + FACILITIES

*To review the **recommended actions** related to Services and Facilities, go to **page 93.***

Scituate has invested much of its capital funds in updating its educational facilities. Scituate Public Schools consists of four elementary schools, one middle school, and one high school. In 2017, the new Gates Middle School opened, replacing an older building which is now used partially by the Recreation Department; the future of some wings of the former school is still under discussion, although a portion of the site has been re-purposed as a new community senior center and recreation center; construction began in January 2020 and occupancy began in March 2021.

A significant new addition to the Scituate Town Library, which cost $12 million, opened in June 2017. The Massachusetts Board of Library Commissioners provided a grant for about 50% of the cost and private donations paid for about $1.4 million.

Both the Fire and Police Departments are headquartered in a recently built public safety complex, located on Route 3A. The Fire Department also uses two additional facilities. Humarock Station 4 is the smallest station. Since 2017, the Town has allocated just under $1.3 million for the replacement of the apparatus bay and residential areas to address flooding.

Scituate Town Hall is located on Route 3A at First Parish Road. Scituate also owns and maintains numerous historic structures and facilities such as Lawson Tower and the Maritime Museum.

Assets managed by DPW are described in the sections on **Water Infrastructure**, **Transportation Infrastructure**, and **Sanitary Infrastructure**.

SCHOOLS

A: Scituate High School

B: Gates Middle School

C: Cushing Elementary School

D: Hatherly Elementary School

E: Wampatuck Elementary School

F: Jenkins Elementary School

POLICE AND FIRE

G: Scituate Police Station

H: Scituate Fire Station

I: Scituate Fire Department

J: Humarock Fire Station

INSTITUTIONS

K: Scituate Town Hall

L: Scituate Library

OPEN SPACES

M: Rivermoor Habitat Park

DOWNTOWN/HARBOR

O: Downtown

N: Old Scituate Light House

P: US Coast Guard

WATER TREATMENT FACILITIES

Q: Wastewater Treatment Plant

R: Water Treatment Plant

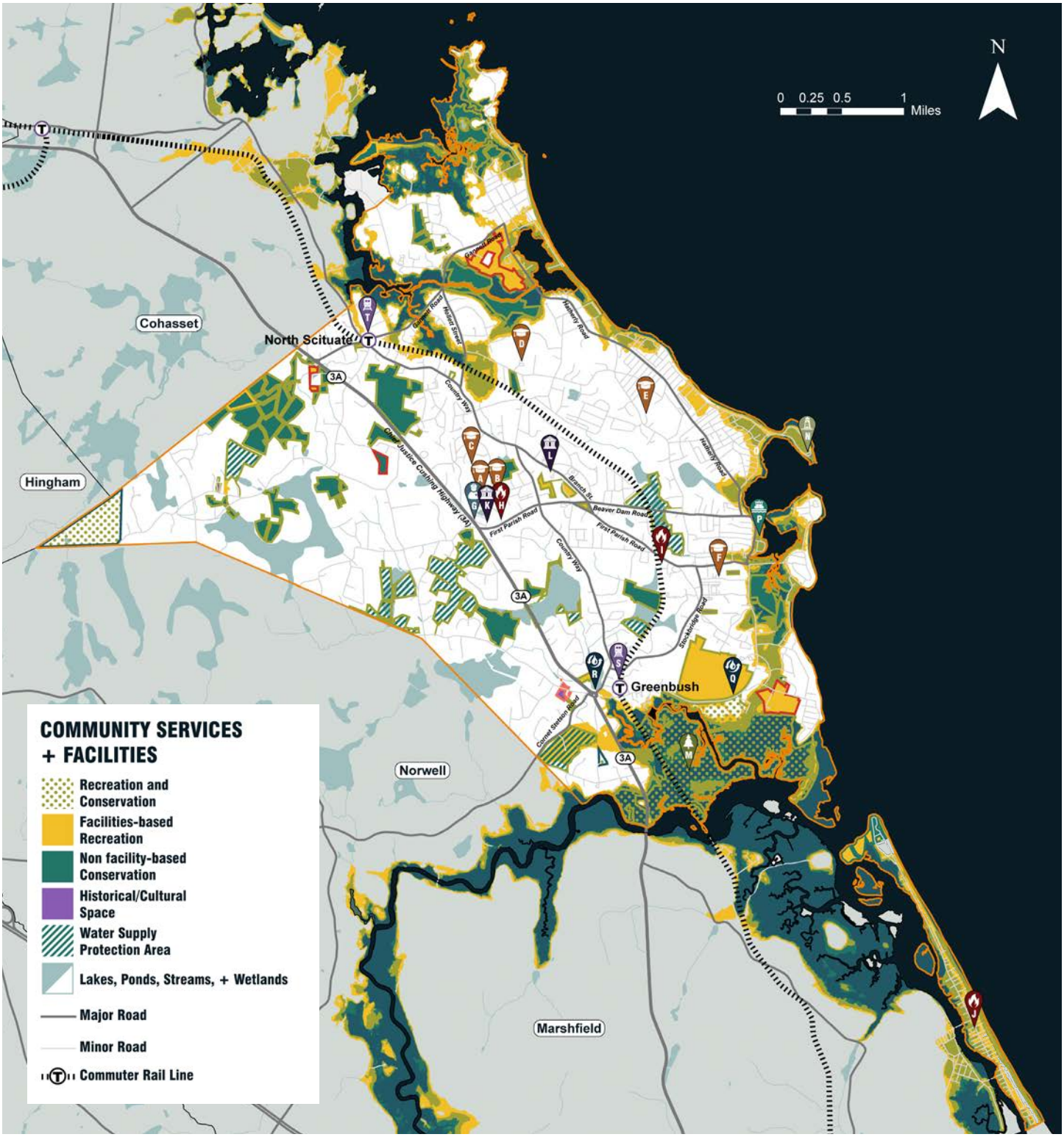
TRAIN STATIONS

S: Greenbush MBTA Stop

T: North Scituate MBTA Stop

Figure 21: Existing Community Services and Facilities

A map of Town recreational facilities and other significant municipal buildings and services. Marked location are listed on the previous page.



Unless noted otherwise in the legend, all data layers are courtesy of the data layers provided by MassGIS, downloaded into ESRI's ArcGIS. Labels and additional analysis provided by the consultant team.

ECONOMIC DEVELOPMENT

*To review the **recommended actions** related to Economic Development, go to **page 94.***

Scituate's economy has evolved over time, from a hub of maritime businesses on its working waterfront to a largely service-based economy. Today, Scituate's economy consists largely of a small tourism sector, service and hospitality industries, small professional offices, healthcare, and other businesses that support the local residential population. In 2019, there were an estimated 700+ business establishments, 4,600 jobs, and $1 billion in business sales. Between 2007 and 2017, there was an estimated 11% increase in net new jobs, mostly in the hospitality sector, health care, and professional and technical services.

Workforce

Scituate's economic strengths include its high quality of life and high proportion of working-age residents with a college degree (58% holding Bachelor's degrees or higher). While wages for jobs in Scituate are lower on average, due to the large proportion of hospitality businesses, the occupations of Scituate's resident worker are skewed to relatively high paying management occupations. 23% of employed residents work in town, while 21% of Scituate's employed residents commute to Boston. Non-resident commuters who work in Scituate generally come from neighboring communities such as Marshfield and Weymouth. 13.7% of residents also work at home, a relatively high proportion compared to other communities. The median annual household income is $134,000, which is $40,000 higher than Plymouth County's median household income. Scituate's population is also older on average and aging; by 2040, the over 65 population is projected to increase from 21% to 28% of the population. Scituate's housing prices are also becoming increasingly expensive; the median value of housing in Scituate is estimated at $634,000, which is roughly 4.7 times the median household income. This may present a barrier for new, younger families who are considering living in Scituate and for new businesses looking to locate in Scituate.

Wages for jobs located in Scituate are lower, on average, than for jobs in Plymouth County and Massachusetts overall (the average for all industries is pulled down by the relatively high proportion of restaurant jobs). The occupations of Scituate's resident workers, by contrast, are skewed to relatively high paying management occupations. About 23% of employed residents work in town, while 21% commute to Boston, the second largest destination of Scituate's resident workforce.

Based on historical trends, overall employment is projected to grow in Scituate over the next 3-5 years, specifically in Accommodation & Food Services; Healthcare; Arts, Entertainment & Recreation; and Professional & Technical Services.

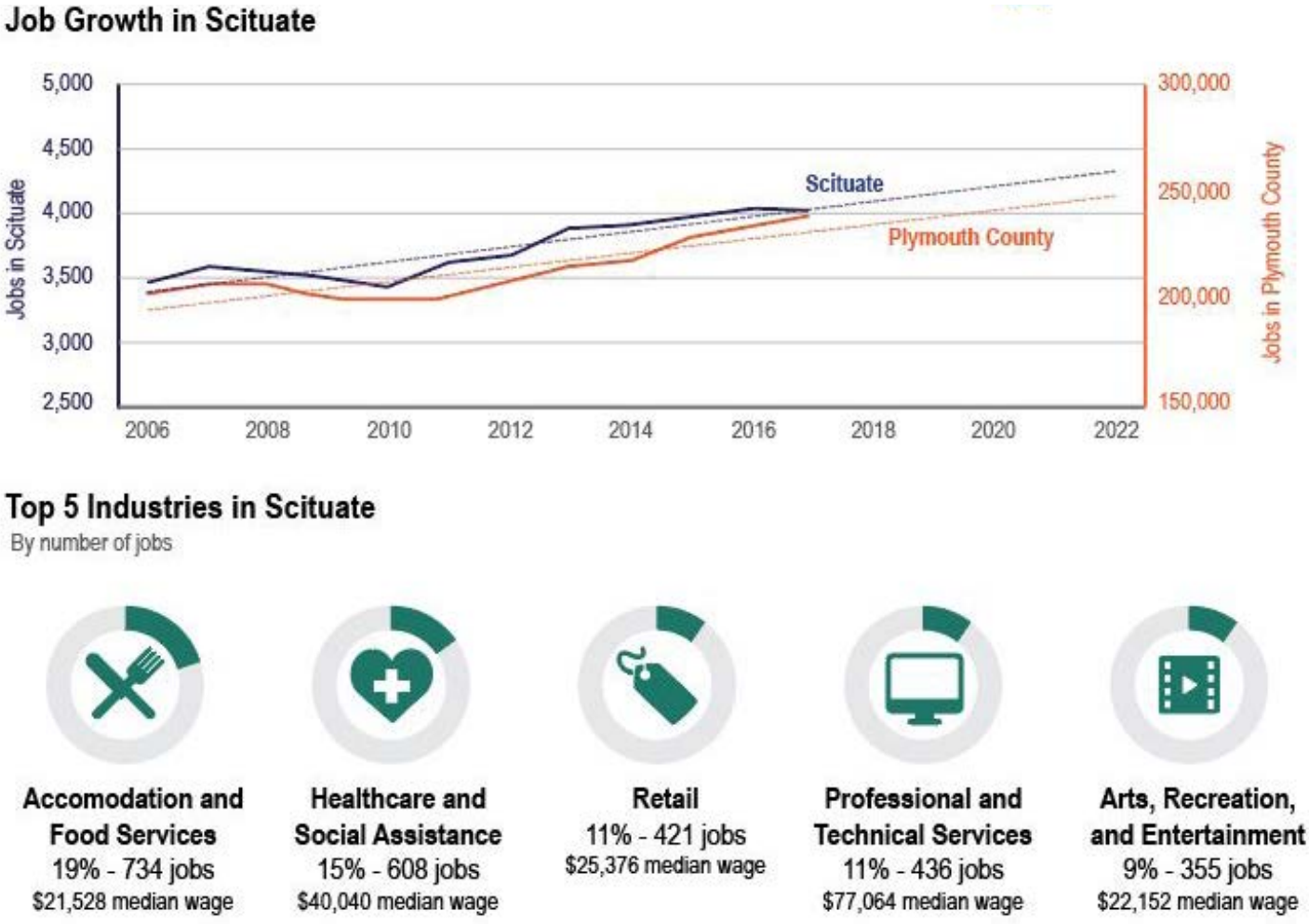
Economic Development Potential

Most businesses are currently located in three business areas: North Scituate, the Harbor, and Greenbush. Scituate's economic development is constricted by a lack of available land and its limited infrastructure in some areas:

- → North Scituate development is hindered by the area's current lack of sewer service and poor pedestrian network.
- → Scituate Harbor is already mostly built out and its economic activity relies on seasonal visitors; it is also most vulnerable to coastal storms and the effects of climate change.
- → Greenbush has available land but its pedestrian network is incomplete and it lacks a cohesive village identity. Areas near the wetlands are somewhat at risk of flooding and sea level rise.

Figure 22: Economic Development Trends

Scituate has some potential to expand its commercial base, but land constraints are an obstacle to growth. Most current jobs in Scituate are low-paying (healthcare, accommodation and food service, and retail); these wages are not sufficient for the cost of housing in Scituate. These numbers are pre-pandemic; retail and restaurant have been hard-hit by the social distancing requirements.



Overall, there is demand for new commercial and office space in Scituate, concentrated in the existing commercial centers. Based on historical trends, overall employment and demand for commercial space is projected to grow in Scituate by around 100,000 sf. A retail opportunity gap analysis indicates significant sales leakage within the North Scituate and Greenbush areas. Demand is not the only factor in addressing vacancies; the type and layout of space available, the price per square foot to buy or lease, other landlord requirements, and municipal policies and regulations all play a part in whether the demand for space is met by the appropriate supply.

Over time, healthcare could make up over half of the office space demand, catering to an aging population in the region. Additional residential density and mixed-use development in these areas will help provide enough customer base to support new businesses.

Snapshot of Pre-COVID Demand

7,500 SF office annually over next 3-5 years
66,00 sf retail and restaurant in North Scituate
71,00 sf retail and restaurant in Greenbush

*(See **Appendix B** for more information.)*

TRANSPORTATION INFRASTRUCTURE

Road Network and Parking

*To review the **recommended actions** related to Transportation Infrastructure, go to **page 95.***

Most people in Scituate drive. 71.1% of Scituate residents travel between work and home using a car. 11.2% of residents travel using public transportation, most of which is on the commuter rail. A significant number of residents, 13.7%, work at home.

Scituate Harbor and beaches are an attraction for visitors and residents. The parking lots at Mill Wharf (private) and Cole Parkway (public) have 603 spaces. Peak demand in the summer is significant; in 2015 parking occupancy at Mill Wharf peaked at 99%.[1] During weekdays in the summer and fall, parking occupancy was lower at 53%. Scituate's two MBTA commuter rail stations also have park-and-ride parking facilities.

Alternative Transportation

Scituate has several alternative transportation options that are existing or proposed for the future. Improving local conditions for walking, biking, and transit will reduce the number of needed trips by car, reducing traffic congestion and the amount of parking needed. Scituate has a significant sidewalk network, specifically in the Town center. (Note, however, that the latest data from MassGIS in the map is from 2007). Both Greenbush and North Scituate MBTA Stations have bicycle racks for commuters. Some trailheads also include bicycle racks.

A number of Complete Streets projects were approved in December 2018, including Gannet Road Bike Lanes, Front Street Bicycle Racks, and Cole Parkway Bike Lanes and Bicycle Parking.

The Greater Attleboro Taunton Regional Transit Authority (GATRA) operates a fixed route local shuttle bus service with regional connections in Scituate. The SLOOP-Scituate Loop provides hourly weekday and weekend service between Scituate Library Community Center, Harbor CVS, Village Market, the Senior Center, Wheeler Park, Widows Walk Golf Course, Greenbush MBTA, Town Hall, North Scituate Plaza, and Lincoln Park. Some stops are flag stops.

Resilience

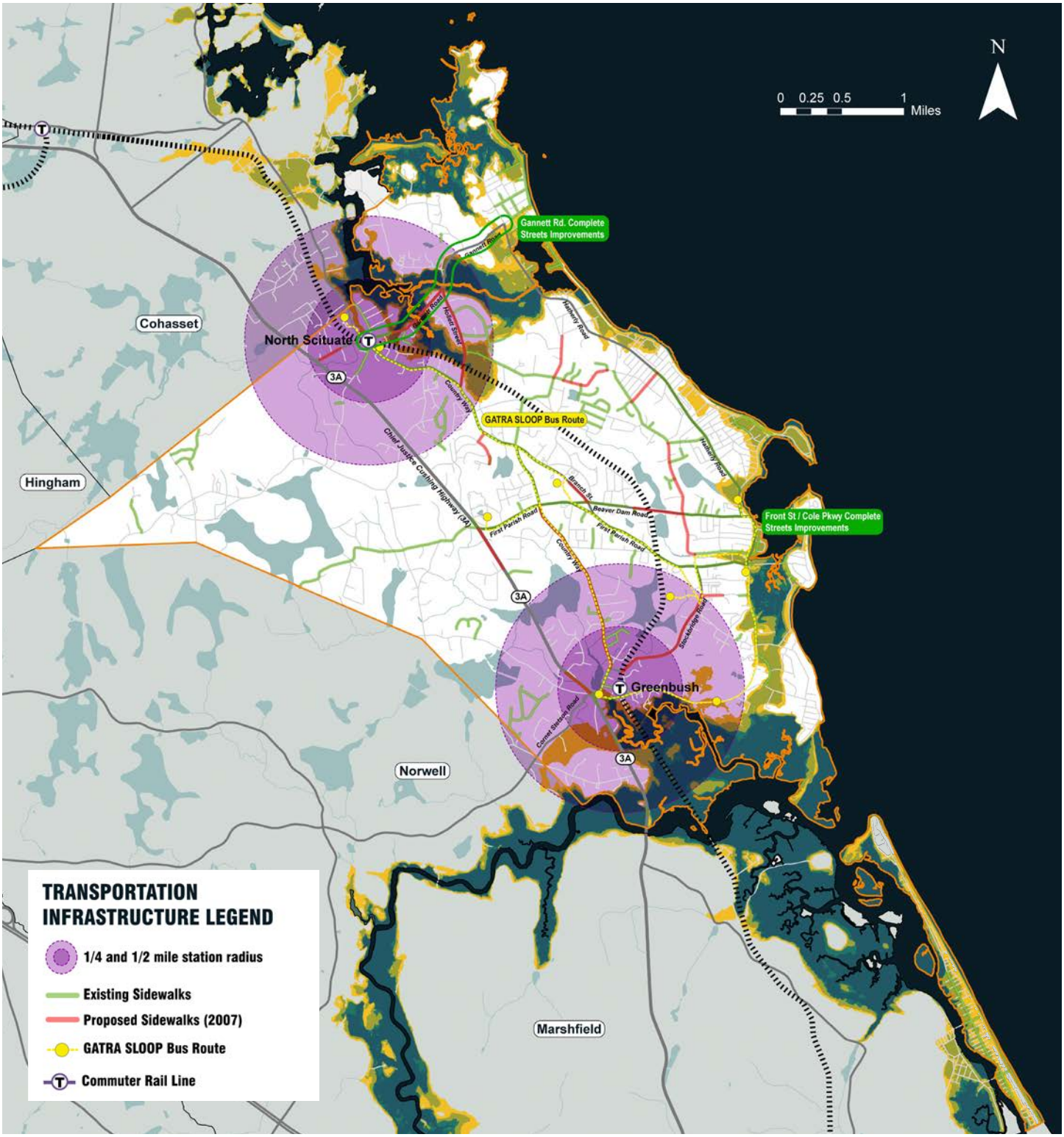
Climate change will worsen local flooding and impact Scituate's road network. There are 16 roads that are prone to flooding in a 1% Flood Zone. Flooding damages roads and threatens infrastructure beneath or on either side of the road. A concern for public safety is the ability to provide emergency support to residents in low-lying and critically affected areas. See **Appendix D** for more detailed information and a list of roads vulnerable to flooding.

Many roads will also be subject to heat damage from heat island effect. Thermal expansion of metal structures will stress bridge infrastructures. Extreme temperatures also affect roadways through softening and expanding, leading to rutting and potholes.

1 MAPC, *Scituate Harbor Parking Study*, 2015. Page 11.

Figure 23: Existing Transportation Infrastructure

Road network and alternative transportation networks.



Unless noted otherwise in the legend, all data layers are courtesy of the data layers provided by MassGIS, downloaded into ESRI's ArcGIS. Labels and additional analysis provided by the consultant team.

WATER INFRASTRUCTURE

Water System

*To review the **recommended actions** related to Sewer Infrastructure, go to **page 96.***

Scituate's growth will be constrained by its infrastructure, including the capacity of its water system to support the summer/fall peak usage in the face of longer extended droughts.

The Town of Scituate has two sources of drinking water: groundwater wells and the reservoir. Approximately 32% of water comes from surface resources, 59% of water comes from groundwater, and the remaining 9% is purchased from the Town of Marshfield to supply the Humarock area.[1]

Scituate's surface water supply was created by damming First Herring Brook; the impoundment forms Tack Factory Pond which is divided by Chief Justice Cushing Highway. From the reservoir, flow continues down First Herring Brook to Old Oaken Bucked Pond where the intake for the Old Oaken Bucket treatment plant (OOB-WTP) is located.

These water sources are protected by Water Resource Protection Districts and Surface Water Protection Areas. These restrict certain types of uses associated with potential contaminants.

Water Production

Scituate is authorized by its Water Management Act Permit to withdraw enough water to cover anticipated average day water demands in 2030. However, at the current production capacities of the available water sources (i.e., with Wells 17A and 18B offline due to manganese, restricted capacity from the OOB-WTP due to its condition, and reduced production rates from other wells due to seasonal (drought-related) impacts), the Town's sources cannot meet projected maximum day demands in 2030. Increasing the treatment capacity of the OOB-WTP and increasing reliable production from the wells (i.e., returning Wells 17A and 18B to service once treatment upgrades are complete) will enable the system to meet projected demands.

Average daily water use has been declining by an average of 2.4% per year; in 1999 and 2002, average annual water demands were 1.73 and 1.72 million gallons per day (mgd). Scituate's average total water demand in 2018 was below 1.4 mgd. A portion of this decline in recent years may be attributed to outdoor water bans.

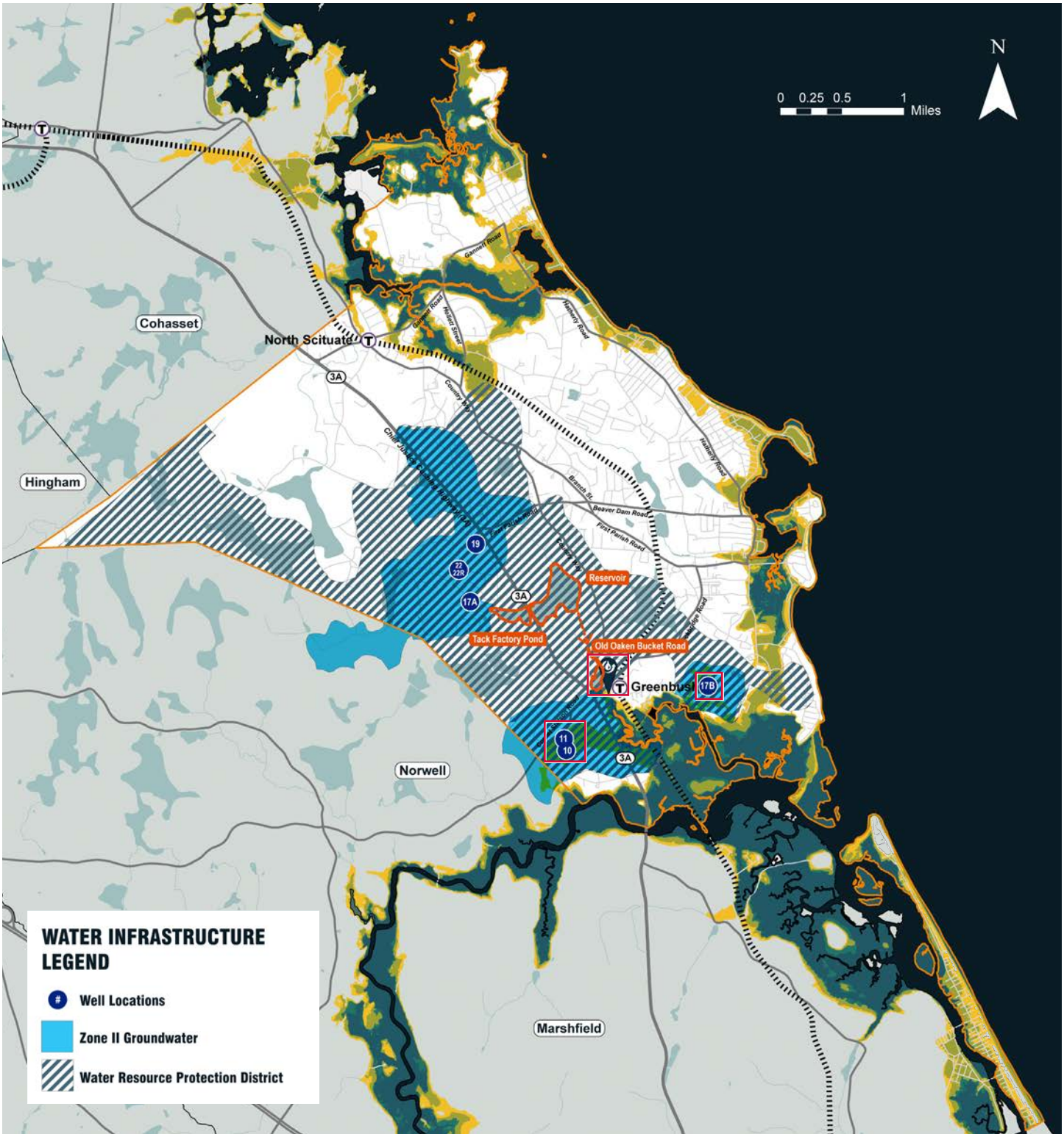
In the Town's Water Master Plan, average annual water demand is projected to increase to around 1.55 mgd by 2050 on average and maximum day demand is projected to increase to around 3.03 mgd. Based on previous reports, this projected water demand accounts for new commercial and residential growth, based on allowable growth from existing zoning and population growth projections. **However, these annual demands do not take into account seasonal shifts: the increase in demand during the summer coincides with the greatest risk of drought.**

Scituate's total cumulative production capacity is 2.40 mgd. The reservoir system and the water treatment plant have a total capacity of 1.65 mgd, and the 4 wells currently on-line have a total capacity of 0.74 mgd. With treatment upgrades, the OOB-WTP can be operated at a capacity of 3.0 mgd

1 The Water Division of the Town of Scituate provided all statistics and additional clarifications for this section. See Appendix C for additional information.

Figure 24: Existing Water Infrastructure

The water treatment plant and three wells are vulnerable to flooding and potential salt-water corrosion (identified by red boxes). Conservation Districts help to protect surface water sources.



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per its permitted maximum daily withdrawal.

With treatment upgrades, Well 17A can be operated at a capacity of 0.39 mgd and Well 18B can be operated at a capacity of 0.22 mgd, per their permitted maximum daily withdrawals.

Under the Water Management Act, the Town is only permitted to draw 1.80 mgd without mitigation (and without the Humarock Region on the supply system); with mitigation, the daily average permitted withdrawal can increase to 1.85 mgd. These permitted amounts are greater than the projected average day demands.

With all sources operating at their maximum daily permitted withdrawals, the max day permitted withdrawal is 4.84 mgd, which is also greater than the projected max day demands. However, as noted, production capacity from the wells varies seasonally due to drought-related impacts that are more likely to occur in the summer during peak demands. Upgrades to the Town's sources will be critical for enabling the system to meet peak demands.

Furthermore, Scituate must prepare for capital expenses to maintain and replace different aspects of the water system. As noted in the Water Master Plan update, the OOB-WTP is in critical need of repairs and replacement. In 2019, the OOB-WTP shut down temporarily and underwent more than $1 million in emergency repairs. The wells also need treatment upgrades to allow the full use of the production capacity. Storage systems and distribution pipes will also need to be replaced.

Resilience

Some points of Scituate's water infrastructure are located in current or future flood zones, including two well heads and some pump stations. Water conservation and growth management will continue to be critical, in the case of extended droughts and a decrease in ground water supplies.

Table ES-1[1]

Maximum Authorized Annual Average Withdrawal – Total Raw Water Withdrawal Volumes

Without Humarock:

Permit Periods	Daily Average (mgd)	Total Annual (MGY)
9/16/2016-8/31/2020	**1.75**	**638.75**
9/1/2020-8/31/2025	**1.77**	**646.05**
9/1/2025-8/31/2030 (without mitigation)	**1.80**	**657.00**
Prior to making withdrawals greater than the baseline of 1.80 mgd, a mitigation plan must be incorporated into the permit and required mitigation activities must be implemented.		
9/1/2025-8/31/2030 (with mitigation)	**1.85**	**675.25**

With Humarock:

Permit Periods	Daily Average (mgd)	Total Annual (MGY)
9/16/2016-8/31/2020	**1.80**	**657.00**
Prior to making withdrawals greater than the baseline of 1.80 mgd, a mitigation plan must be incorporated into the permit and required mitigation activities must be implemented.		
9/1/2020-8/31/2025	**1.85**	**675.25**
9/1/2025-8/31/2030 (without mitigation)	**1.87**	**682.55**
9/1/2025-8/31/2030 (with mitigation)	**1.97**	**719.05**

1 Town of Scituate/Tighe & Bond, *Water System Master Plan, Final Report*, Revised January 2021, p. E-2

SANITARY INFRASTRUCTURE

Scituate's growth will be constrained by its infrastructure, including the limits posed by the sewer system's reach and capacity. The status of Scituate's sewer system is consistently rated as one of the top two concerns of residents in the near future – the other is the status of the drinking water system.

*To review the **recommended actions** related to Stormwater Infrastructure go to **page 97.***

The rolling sewer demand, as of 2019, was 1.3 mgd and the permitted limit is 1.6 mgd. Many parts of Scituate, such as North Scituate, are not connected to the sewer network and cannot support new development without expansion of the system.

Existing Sewer Network

Wastewater from the sewer system is treated by a Wastewater Treatment Plant (WWTP). The current WWTP is an advanced treatment facility. In 2000, the Town completed an upgrade to the WWTP, resulting in an increase of 0.6 mgd. Today, the WWTP is permitted for 1.6 mgd. When the WWTP receives peak flows, which it often does due to storms and coastal flooding, the additional wastewater is stored in tanks and basins which is fed through the treatment plant when the flow returns to the normal low.

Future Expansions

The Town has completed Phase III of six planned phases to extend sewers to priority areas, based on environmental conditions as of 2014. An extension to North Scituate, a high priority area, is planned for Phase V, where work is set to begin in 2023.[1] The three phases remaining in the sewer expansion plan will add 0.42 mgd to the Town's sewer demands.

- → Phase IV: 0.14 mgd (properties between Hatherly Road and Tilden Road, and other areas near Scituate Harbor).
- → Phase V: 0.15 mgd (North Scituate, Captain Pierce Road, west of Country Way, and Bulrush Farm Road).
- → Phase VI: 0.13 mgd (coastal areas of Minot Beach and the Glades).

Extending to sewers to North Scituate will be necessary for new commercial development. Moving up the timeline from 2023 for Phase V would require MassDEP approval, although the Scituate DPW has confirmed that the plant's capacity is adequate for the expansion (See **Appendix C**).

Resilience

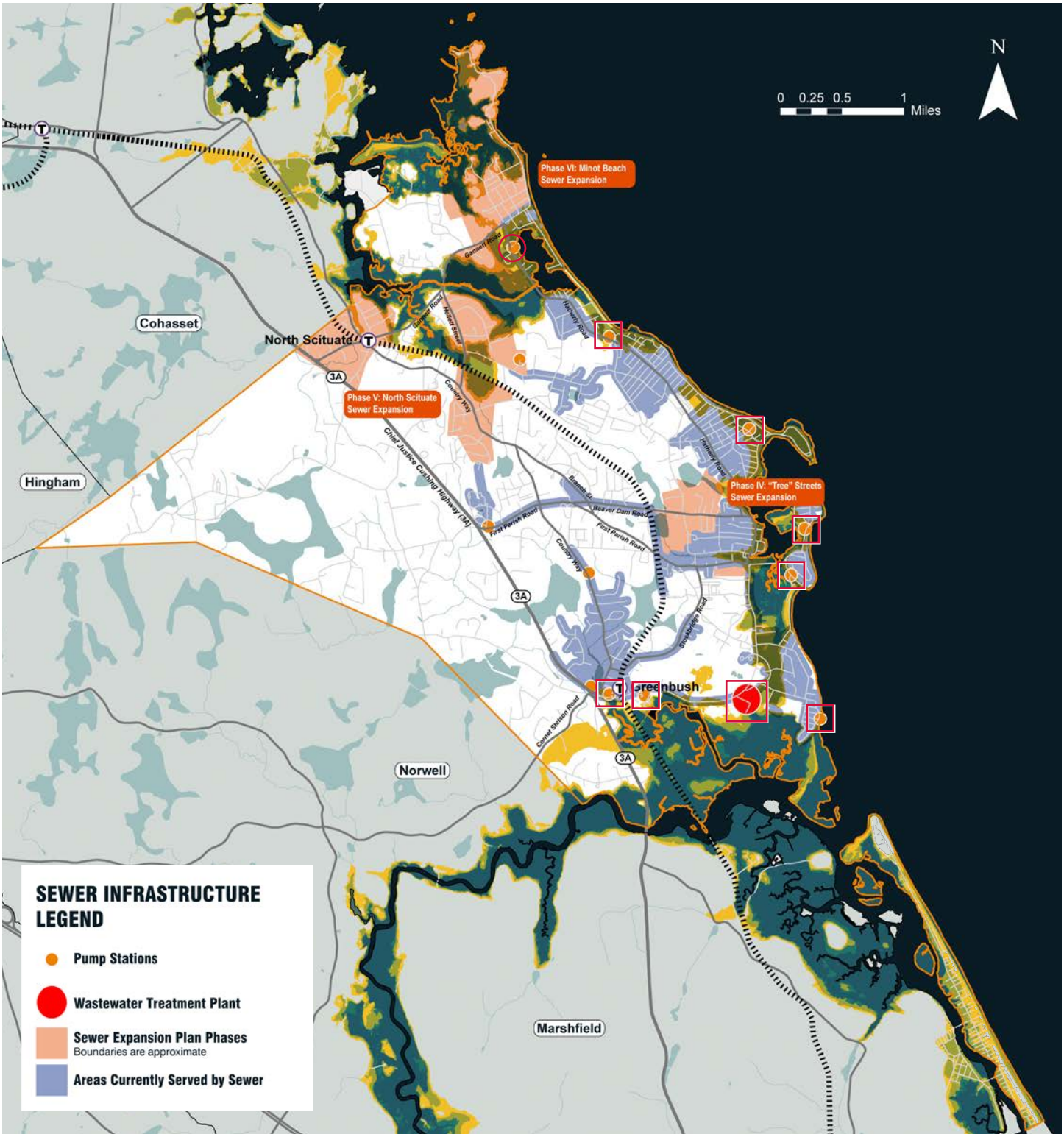
Critical sewer infrastructure is located in current or future flood zones, including the WWTP. Components may be corroded from saltwater infiltration as a result of coastal flooding.

During storm events, the capacity of the WWTP will potentially be strained from stormwater overruns into the system. Many portions of the sewer system rely on gravity sewer service; if these areas flood, then floodwaters will directly impact the plant flows.

1 Appendix C, page 7.

Figure 25: Existing Sewer Infrastructure

Expansion of the sewer system is needed to allow for development near North Scituate Station. The Wastewater Treatment Plant and many pumps (identified by red boxes) are vulnerable to flooding, now or based on future projections.



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PART IV: RECOMMENDATIONS FOR A RESILIENT SCITUATE

This chapter bring together the recommendations to address the challenges and opportunities identified for each of the topics in **Part III: Existing Conditions Analysis**. The Section 81D elements are interwoven with the areas of resiliency defined in Figure 26 on page 83.

The recommendations are drawn from the previous and concurrent planning studies described earlier, the research and analysis completed by the consultant team, input from the public workshops, and comments and advice from the MPAC.

Key findings from Part III that are addressed in this section include the following:

- → Climate Change + Sea Level Rise: The impacts of climate change and sea level rise affects all aspects of life in Scituate. All other topics discussed throughout this chapter will circle back to the issue of climate change as all of these topics are closely inter-related.
- → Ecology: Scituate's diverse range of ecosystems are one of its greatest assets. Flora and fauna are vulnerable to both climate change and sea level rise; changing patterns of precipitation and temperature will have different impacts on different species. Longer periods of drought will increase the risk of wildfire. Sea level rise and precipitation duration and intensity will cause wetlands to migrate.
- → Open Space + Recreation: As a major component of lifestyle for residents and tourism for visitors, open space and recreation are vital to Scituate's ecological, social, and economic resiliency.
- → Housing Diversity: Affordability and diversity of housing types is a critical component of this master plan update but certain actions are limited by the current capacity of the water and sanitary sewer systems.
- → Land Use: Land use incorporates many of the other topics, connecting areas for housing and economic development with those that must be protected as open space or available for recreation. Those connections provide links for pedestrians, bicyclists, drivers, and the animals that use some of the same transportation corridors that humans do. Town facilities and areas of historic and cultural value add to both the physical and the social network of the town.
- → Zoning: The structure of regulations and the associated policies and processes controls and modifies, over time, land use, allowing the Town of Scituate to codify its priorities first in regulatory and then in physical form. Over time, zoning regulations should be modified to ensure that new development or rehabilitation is consistent with the Town's goals for resiliency.
- → Cultural + Historic Resources: Scituate is home to hundreds of historical structures and institutions that help bind the social and cultural fabric of the town. Historic preservation is a key component of Scituate's characteristic coastal New England village environment but many structures are under threat from sea level rise.

- → Community Services+ Facilities: Scituate is served by many facilities, such as schools, public safety buildings, and other Town services. However, some of these facilities are at risk of flooding or negative impacts from heat island effect.
- → Economic Development: While Scituate is considered a bedroom community, the Town is home to many businesses, particularly in healthcare, restaurants, local services, and some professional offices. Most of these businesses are concentrated in Scituate's commercial areas: Downtown Harbor, Greenbush, and North Scituate. Economic development contributes to the tax base and provides jobs, services, goods, and social benefits to the community. The current pandemic has put many businesses at risk and certain the commercial areas of the Harbor and Humarock are at risk from sea level rise. Many jobs in Scituate do not pay a wage that would allow the employees of those businesses to live in town.
- → Transportation Infrastructure: Scituate is served by two commuter rail stations but most trips rely on cars due to Scituate's low density. Roads are vulnerable to flooding and the heat island effect.
- → Water Infrastructure: Scituate relies on groundwater and treated surface water for its water supply. Its water infrastructure is in critical need of repair or replacement and its current capacity is not enough to support future development. Water quality and quantity is negatively impacted by changes in precipitation and temperature patterns due to climate change.
- → Sanitary Sewer Infrastructure: Only parts of Scituate are connected to the sewer system which will neither support development at critical areas in town nor address negative environmental impacts from individual septic systems. The Wastewater Treatment Plant, many pumps, and connecting infrastructure are vulnerable to flooding and corrosion from saltwater infiltration.

From this base of findings, this chapter defines higher-level recommendations to help Scituate achieve its goal of becoming a resilient community. Part V: Implementation Plan address the integration of cost estimates for needed infrastructure in the municipal budget process.

In many cases, these recommendations support and incorporate recommendations from previous planning efforts, outlined in **Planning Context: Recommendations**.

ABOUT THIS SECTION

re•sil•ience

The capacity of individuals, communities, institutions, businesses, and systems within a [community] to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.[1]

1 The Rockefeller Foundation. n.d. 100 Resilient Cities. Accessed June 12, 2020. https://www.100resilientcities.org/resources/#section-2.

The concept of **resilience** intersects with every aspect of life. For decades, conversations around community planning and development have centered on the topic of **sustainability**, meaning the ability to sustain/maintain functioning ecological and urban systems as they are, even through the face of adversity. As scientists further studied these human-environment inter-relationships, the conversation shifted from this static definition of sustainability to a more dynamic definition of resiliency. Ecologists used to believe that ecosystems have a "peak" functioning capacity when there is the "correct" balance of various systems such as the food chain, hydrology, and seasonal weather patterns. Many people believe the same is true of communities – when there is the right balance of economic growth, social/cultural activity, convenient but unobtrusive transportation options, and equitable access to housing and resources, then the community is functioning at its peak. For a long time, the goal of both ecologists and community planners was to achieve this peak balance and then sustain it there without disruption.

Ecosystems and communities alike experience natural ebbs and flows. Both are constantly in flux and the composition, whether you are talking about biodiversity or demographics, never looks the same at any two points in time. The definition of resiliency provides the framework for a more achievable goal built on the premise of flexibility and change, rather than one that is rigid and uncompromising.

A resilient community is one that can adapt to, mitigate, or recover from **chronic stressors** (issues or burdens that are on-going, such as a housing shortage, economic recession, or the impacts of sea level rise,) and **acute shocks** (problems that arise suddenly and have far-reaching impacts like a natural disaster or a pandemic.)

In order to prepare for both projected and unforeseen changes, Scituate must address resiliency from all vantage points. This plan recognizes the complexities of planning for resilience by looking at each topic through four categories: **ecological resilience**, **physical/infrastructural resilience**, **economic resilience,** and **social/cultural resilience.**

Many of the topics in this section relate to all four categories. For example: climate change impacts the functioning of ecological systems, (by causing floods, droughts, and other irregular and severe weather patterns); causes deterioration to the built environment (wave action and frequent inundation erode built structures); and has massive economic consequences (mitigation costs, insurance, and stifled tourism) all of which disrupt the social and cultural fabric of Scituate which has long been anchored on a close relationship to the Town's natural beauty and coastal heritage.

Look for these Icons!

At the start of each topic in this section, you will see some combination of the icons below. This tells you which aspects of resiliency the topic and related recommendations relate to. Figure 26 provides an overview of the intersections between these four categories of resilience and the different aspects of life in Scituate.

Ecological Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's ecological systems.

Physical/Infrastructural Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's physical and infrastructure systems.

Economic Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's economic systems.

Social/Cultural Resiliency: Addressing the recommended actions will improve the resiliency of Scituate's social and cultural systems.

Figure 26: The Intersections of Resilience

This table provides an overview of how each topic discussed in this section intersects with the goal of enhancing Scituate's ecological, physical/infrastructural, economic, and social/cultural resilience.

Climate Change + Sea Level Rise	●	●	●	●
Ecology	●			●
Open Space + Recreation	●			●
Housing	●	●	●	●
Land Use	●	●	●	
Zoning	●	●	●	
Historic + Cultural Resources	●			●
Services + Facilities	●	●	●	●
Economic Development		●	●	●
Transportation Infrastructure	●	●	●	●
Water Infrastructure	●	●	●	
Sanitary Infrastructure	●	●	●	

CLIMATE CHANGE + SEA LEVEL RISE

The recommendations listed in this section are a summary of the range of strategies identified by other planning processes and from supplementary research by the planning team.

*To review the **existing conditions analysis** for Climate Change and Sea Level Rise, go to **page 34.***

It is not possible for Scituate to protect every part of the Town. The Town should prioritize measures that protect critical transportation, water, and sanitary infrastructure. Ensuring the sustainability of the Town's infrastructure is vital to maintaining vehicular accessibility, safe drinking water, and clean sanitary systems.

Next in priority should be areas that contribute to the economic strength of the Town, including commercial areas and those with a higher density of housing. The cost of the infrastructure should have a reasonable relationship to the value of the land and buildings protected. Impacts on water-dependent activities, such as commercial fishing, should be addressed by the chosen solution. Finally, a solution for one area may have a negative impact on another; for example, seawalls can have a detrimental impact on nearby beaches. These impacts should be taken into account as part of the engineering process.

In some cases, the option that may make the most sense may be no intervention at all. Ecosystems are dynamic processes that are resilient and adaptable in their own ways. As human society learns about and adapts to the shifting climate, the rest of nature is doing the same. While our shorelines may look different in the future, maintaining the status quo may not always be in the best interest of ecological functioning.

Previous planning studies have specific recommendations for specific areas of town. This section describes the more general strategies. For specific strategies, see the recommendations from previous planning efforts, outlined in **Planning Context: Recommendations**.

Elevate Structures within flood risk zones.

Many Scituate property owners have already chosen this option. While costly, it is an effective solution to protecting from inundation that allows tidal flows and ecological processes to function with minimal interruption. The Town should study incentive programs to encourage property owners to make this investment.

Enhance and raise seawalls and revetments.

Scituate has already invested an enormous amount of funding toward repairing its deteriorating seawall. While a challenge to maintain, it is one of many key strategies that work in unison to help strengthen the Town's resiliency. In order to continue to benefit from its protection, the Town will need to invest in repairing and raising it to meet the rising sea levels and storm surges.

Enhance and reinforce "hard-engineered" infrastructure such as breakwaters, jetties, and groins.

While a soft-engineered approach is preferred the severity of the challenges that Scituate faces warrants the implementation of a wide range of techniques. In some areas, investing in new breakwaters, jetties, and groins may be the best solution to provide the needed level of protection.

Provide beach nourishment to maintain ecological function.

Scituate's beaches are critical to life in the Town. Not only do they perform critical ecological functions that help protect against the impacts of sea level rise, they are integral to the Town's cultural identity, social fabric, recreation network, and contribute significantly to the Town's economy by attracting tourists. Nourishing the beaches by replenishing soils and plant materials lost to erosion will help ensure the longevity of all of these systems.

Invest in "soft-engineered" infrastructure such as artificial dunes and berms.

Scituate, like many coastal New England communities, has taken a hard-engineering approach to coastal management historically by implementing structures such as seawalls and jetties. Soft-engineered structures, while still artificial and highly designed, are based on natural ecological systems and functions. These types of measures can be just as effective as a more hard-engineered approach, with a result that is integrated into the overall environment.

Implement boulder dykes.

Boulder dykes help stabilize raised land to protect from flooding and storm surge.

In low-lying areas susceptible to flooding, convert roads to bridges.

In addition to elevating buildings, it will be critical to elevate parts of certain coastal roads as well to maintain access.

CLIMATE CHANGE + ECOLOGY

*To review the **existing conditions analysis** for Ecology, go to **page 40.***

The impacts of climate change are not limited to sea level rise. Changing patterns of precipitation and temperature will change the flora and fauna in Scituate. Stormwater runoff will increase from storms of longer duration and higher density, impairing water quality and wetlands. Longer periods of drought in the summer will increase the risk of wildfires. The Town can take measures to mitigate risk, including adopting the following policy changes and regulatory actions:

Establish restrictions on the use of fertilizers.

Fertilizer run-off impairs water quality. A public education campaign and, if necessary, increased restrictions on fertilizer use, should focus on reducing run-off into wetlands, surface water, and the stormwater collection system. Encouraging low-impact development techniques can help stormwater infiltrate on-site.

Expand wetland protections to include projected wetland migration areas.

While the Watershed Protection Overlay District provides a protective buffer around the Town's existing wetlands, it does not account for where the wetlands are projected to migrate as sea level pushes them further inland or as inland wetlands expand and contract as a result of changing precipitation patterns. The *2012 BioMap2 Study* mapped these areas, which should be added to the protection district.

Establish programs and policies to maintain a balance of ecosystems; i.e. replanting trees that need to be removed.

When new development occurs, the Town should take steps to ensure that any ecosystem which is disturbed, whether it's forested area or salt marsh, is restored in another viable environment. Since these ecosystems are one of the best protective measures that Scituate has against the impacts of climate change, maintaining a minimum land coverage and balance will be critically important.

Seek opportunities to better leverage the Chapter 61 land management program.

The Commonwealth's regulations for Chapter 61 lands help responsibly manage and conserve some open spaces. The Town should seek opportunities to better leverage the right of first refusal allowed under Chapters 61, 61A, and 61B of the Massachusetts General Laws. The Town should work with property owners to donate conservation easements and with local land trusts or other conservation organizations to buy or accept the deed restriction.

Reduce clear-cutting.

Property owners should be encouraged, or required, to cut the minimum amount of new trees when developing their property. Clear cutting should be restricted and violators penalized.

OPEN SPACE + RECREATION

Access to open space and options for recreation is an important part of Scituate's high quality of life. Improving access so that people of all ages and abilities can take advantage of these resources is important, but must be balanced with the impact to natural spaces and the cost of both installation and ongoing maintenance.

*To review the **existing conditions analysis** for Open Space and Recreation, go to **page 46.***

Improve ADA accessibility of open space and recreation facilities and parks/trails.

Scituate community members enjoy a wide range of open spaces from trails through conservation lands to beaches. To strengthen the Town's social resiliency and uphold Scituate as an inclusive community, it is important to make continuous efforts to maintain existing accessibility infrastructure and expand it to currently inaccessible areas.

Maintain Scituate's legacy of distinct rural beauty, essential recreation land and vital biological diversity through the acquisition, public awareness, and improved management of protected and unprotected open land in Scituate.

The Town already owns a vast wealth of open space lands for various purposes. Many of these contain ecosystems that provide essential protections against the impacts of climate change. Investing in low touch, low impact protection of these open spaces is an investment in Scituate's long-term resilience.

Develop recreation-based tourism.

In order to grow the tax base needed to fund expensive infrastructure projects, the Town will need to devise a strategy for sustainable economic development. One way to do this is to better leverage Scituate's attractive resources to enhance the tourism industry and capture more revenue. Scituate has a unique opportunity to combine coastal and inland tourism by leveraging access to Scituate Harbor with access to trails and conservation land. The Town should consider a marketing program that incorporates both and ties access from the commuter rail to access by bike or shuttle so that visitors do not have to drive.

HOUSING DIVERSITY

Housing diversity and density will continue to be important issues for many years because of the need to address shifting demographic trends in Scituate and the limited areas for development in the Town.

*To review the **existing conditions analysis** for Housing, go to **page 50.***

The Town needs to promote a higher level of residential density which helps preserve untouched land and maximize areas with existing infrastructure to avoid unnecessary economic and environmental costs.

Build a diverse range of housing types.

Increased density does not have to mean buildings that are too tall or that have too much mass for their surroundings. Scituate's accessory dwelling units are one solution; smaller houses on smaller lots within walking distance of the commuter rail stations are another; and multi-building mixed-use developments sensitive to the architectural context are another.

Build housing that addresses a range of affordability levels.

The *Housing Production Plan* (Karen Sunnarborg Consulting, 2020) identifies the number of units Scituate needs to produce to meet its obligations for the level of affordability defined by the state. The Plan also notes that this does not address all the need for affordable housing in the Town. A variety of housing types, including ownership and rental, can address needs by age, level of ability, and lifestyle. For example, rental housing that is not limited by age restrictions will be needed to accommodate younger households who rent and move more frequently than do older households. Older households and people with physical disabilities need housing that is designed for low maintenance and high accessibility.

Address equity in the supply of housing.

The community also should advocate for building a diverse and affordable Scituate that enables just living conditions for all. Housing diversity also promotes age, racial, and income diversity that provide the Town with a rich and resilient future. Affordable housing should be available throughout the town, with equal access to high quality and accessible public open spaces, and compact neighborhoods where people have the ability to access services easily without relying on a car or crowded transportation. Affordable housing should not be immediately identifiable by location, style, size, or quality of materials.

Affordable housing means financial stability for many households that are currently cost-burdened or severely cost burdened. Such housing can also attract a younger population that can contribute to the economic vitality of the Town and allow long-time residents to remain in their community. A diverse housing supply can lessen the impact on future economic crisis since a monolithic housing market can succumb to a larger shock, for example, a downturn in the market for single-family homes.

LAND USE

As noted in **Part III: Existing Conditions Analysis**, Scituate's land use policies and regulations have environmental, social, and economic implications. This master plan update recommends actions and strategies to address some of the significant pressures that will impact the use of land: climate change, sea level rise, and pressures on water and sewer infrastructure. The significant costs to address these pressures, discussed in **Part V: Implementation**, will require the Scituate continue to grow its tax base to maintain fiscal stability for both operating and capital costs.

*To review the **existing conditions analysis** for Land Use, go to **page 54.***

Scituate's challenge will be to concentrate future development in appropriate areas and restrict building in areas that are subject to current or future flooding patterns or that threaten environmental resources, such as wetlands and forest, that could help mitigate many of the impacts of climate change.

Zoning, discussed next, can help with some of these challenges. Creation of the Village Center & Neighborhood District for Greenbush-Driftway and its expansion to North Scituate provides a model for considering the establishment of future village areas.

Changes to land use policies and regulations will require active monitoring to measure whether the changes have, in fact, produced the desired effect. Land use policies and regulations are not precise tools that can be left in place for decades without review. Scituate should continue to be proactive.

Establish programs and policies for buy-outs, land swaps, relocations, and transfers of development rights to allow for relocation.

Some property owners may choose to retreat from the coast. The Town should study programs that will facilitate such transitions and plan for different climate migration scenarios. The town may need to establish a budget and funding source for buy-outs.

Consider establishing a third inland village, between North Scituate and Greenbush-Driftway.

The recommendation in Zoning, next, to consider a combination of Down-Zoning and Transfer of Development Rights will require an area for those rights to be transferred to. Both North Scituate and Greenbush-Driftway could serve as landing place, but, over time, the Town may wish to add a third village that could also act as a connecting destination between the two existing ones. Development and design standards would need to be carefully considered to integrate a new mixed-use village into the existing context so that it becomes an integral part of Scituate. Once option could be the stretch of First Parish Road between 3A and Country Way; this road already acts as a gateway to the downtown and harbor. A second option would be to establish a new village center on the west side of 3A; residents expressed a need for neighborhood scale services and goods within walking distance of the homes.

LAND USE: ZONING

Zoning should be used to protect the physical assets of Scituate, establishing land uses that help manage and protect natural resources and the built environment by adapting to natural, social, and economic changes that are necessary for the resiliency of the town.

*To review the **existing conditions analysis** for Zoning, go to **page 58.***

Scituate has already established many progressive zoning regulations and, as noted earlier, the primary restriction on development is infrastructure rather than regulatory.

The two build-out analyses in the **Land Use: Build-out** section use give some clues to how zoning could change over the next decade. To address both the projected cost of infrastructure and its need for housing and economic development, the Town should consider the following options related to zoning:

Pass the Proposed North Scituate Village District.

The Town has already passed the Village Center & Neighborhood (VCN) District with Greenbush-Driftway Gateway District. In April 2021, the Town will consider adding the North Scituate Village District. This has similar goals of concentrating new development around the North Scituate commuter rail station and establishes design and infrastructure standards that will govern the visual character of new development. The proposed zoning is consistent with goals expressed during this planning process.

Allow commercial uses in the Harbor to move uphill.

This suggestion was made in the *Scituate Harbor Sustainability and Resiliency Master Plan* (MAPC, 2020) and would allow commercial uses, over time, to move away from areas subject to flooding. The challenge will be to balance this move with the existing residential uses. The VCN District could be a model for such an expansion.

Consider standards for the use of the Flexible Open Space Development (FOSD).

The FOSD District could be a tool for encouraging efficient use of open space for development and conservation. However, some feel that the application of the current bylaw has not been as effective at meeting its goals for protecting open space. The current regulation restricts the development to the allowable number of lots under a conventional subdivision. In order to encourage a more appropriate clustering of buildings, the Town could encourage tying additional dwelling units to development standards for buildings and the site, and criteria for the quality of the open space preserved and its benefit to the Town.

In February 2021, the Planning Board adopted a standard policy for review of an application that proposes a public benefit tied to historic preservation; this would include the preservation or restoration of a structure for that purpose. This policy includes the Historical Commission as a participant in the review process, third-party determination of the historical significance of the property, standards for the preservation/ renovation of the property, and a requirement for review and cash surety to ensure compliance prior to the

issuance of a building permit.[1] In addition, the Town has existing criteria for the acceptance of donated land[2] that could provide a model

A similar set of policies could be developed to evaluate the quality of the open space (30% of the area in the FOSD) that is permanently protected and ensure that the land meets criteria for habitat protections, wetlands protection, wildlife corridor, floodwater or stormwater storage, or other criteria for preservation that provides a true public benefit.

Smart Growth[3] Options

As noted earlier, Scituate has already passed or is considering zoning bylaws to manage growth by promoting specific areas, such as Greenbush and North Scituate, for future development or by allowing Accessory Dwellings that address community needs for flexible family arrangements, affordable housing and income-generating options.

Consider Establishing a Net Blue Bylaw.

The *Climate Vulnerability and Action Plan* (MAPC, 2018) recommended establishing this bylaw which would achieve no net increase in water use from future development.[4] The Alliance for Water Efficiency provides more information presents Sharon, Abington-Rockland, and Weymouth as case studies in its report.[5]

Consider Reducing Development in Flood Hazard Areas.

While the town could establish buy-out programs for properties that have significant repetitive loss incidents, there are also a few zoning options that, over time, could reduce development along the coast and in other areas prone to flooding. One option could be a paired combination of Down-zoning and Transfer of Development Rights.[6] Down-zoning reduces the density of buildings in an area (for example, increasing the minimum lot size). Pairing the down-zoning with a transfer of the right to develop additional density elsewhere could provide an incentive for property owners to shift their building plans away from hazard-prone areas. The down-zoning must be carefully controlled to prevent additional sprawl.

This technique could also work to reduce future development in non-sewered areas or to address the potential migration of wetlands.

Consider Additional Incentives for Energy- and Water-Efficient Development

Zoning can provide development incentives in exchange for public benefits such as historic preservation, the preservation of open space, or design. The Town should also consider incentives for net zero energy and water usage for new or rehabilitated buildings.

1 Letter from Ann Burbine, Chairman of the Planning Board to Kathleen Grander, Town Clerk, RE: Historic Preservation Policy, dated February 16, 2021.

2 Board of Selectmen & Departmental Guidelines for Consideration of Donations of Town Land, Adopted December 17, 2013.

3 Those who are interested can find more information here: https://www.mass.gov/smart-growth-smart-energy-toolkit-information-and-resources

4 MAPC, *Climate Vulnerability and Action Plan,* 2018, page 1.

5 Alliance for Water Efficiency, Water Offset Policies for Water-Neutral Community Growth:a Literature Review & Case Study Compilation, 2015, https://www.allianceforwaterefficiency.org, last accessed March 12, 2021.

6 Lacy, Jeffry R., *Growth Management Tools: A Summary for Planning Boards in Massachusetts*, 2002, page 3.

CULTURAL + HISTORIC RESOURCES

*To review the **existing conditions analysis** for Cultural and Historic Resources, go to **page 66.***

Part of Scituate's charm is a result of the development patterns – the relationship of buildings, streets, and open spaces – established over centuries. Each village has its own identity and assets, but responds to the larger architectural and landscape traditions of coastal New England. The challenge for Scituate will be to retain this charm while addressing climate change and the need for more housing and economic development in specific areas of town.

Focus development in the village areas on Greenbush and North Scituate.

This recommendation requires that the infrastructure for water and sanitary sewer be addressed first. However, new development in these two areas will address demand for housing and economic development while relieving development pressures on other areas of Scituate.

Include cultural and historic resources into the tourism plan.

A recommendation for Open Space and Recreation suggested a marketing strategy that combined coastal and inland attractions. This strategy should include Scituate's historic sites – perhaps a bicycle route or architectural guide – and cultural attractions, such as the Scituate Arts Association or the River Club Music Hall.

Support and enhance the cultural institutions and networks to strengthen social resilience.

The Scituate Cultural Council should lead efforts to partner with the many cultural and social clubs and organizations in the Town that help strengthen the social fabric. An early project could be a community-wide event calendar to publicize the activities and welcome those who may have an interest in joining. The partnership could also include the marketing document described earlier.

Protect the heritage of the Town through the preservation of scenic and historic structures and areas.

Scituate should protect its many historic structures and areas and prioritize those along the coast that are under threat of sea level rise. In some cases, depending on the significance of the structure, it may be necessary to relocate the building. If relocation is not possible, the building's exterior, interior, and site should be well-documented for future reference. The cluster of historic buildings in the Downtown Harbor area will require additional strategies - while some may be movable to sites elsewhere in Scituate, community conversations about whether there is a loss of meaning when the context of the built environment changes will be important for future efforts to protect, preserve, move, or abandon these buildings.

COMMUNITY SERVICES + FACILITIES

The Town's physical facilities are a symbol of its responsibility to the residents to provide certain services. As noted earlier, many of these buildings are threatened by flooding or within current and projected heat islands. These facilities contribute to the community fabric by supporting community events, including recreation, and by safeguarding the community through public safety or social services. New housing and an increase in economic development will have an impact on public safety and other services, complicated by the need to provide both land and maritime services.

*To review the **existing conditions analysis** for Services and Facilities, go to **page 68.***

Continue evaluating community needs for and connections to services and facilities.

The Town has recently invested in many new building and facilities to serve the town, such as the Public Safety Complex and Library. The Town is also building a new senior center and renovated the Veterans Memorial Gym at the Old Gates School. These facilities, particularly schools and community uses, should be pedestrian and bike accessible. New technologies, such as 5G and other future networking capabilities can be used to support public safety (e.g. vehicle location(AVL/GPS), automatic license readers (ALPR), body and in-car cameras) and other municipal services (technology-based social services outreach).

Be creative about reuse.

Reuse of surplus Town facilities can provide options for addressing other needs: for example, municipal buildings can become housing or business incubators. Such adaptive reuse should be based on the proximity of the facility to transportation and water/sewer infrastructure.

Evaluate existing community facilities for problems and as assets for impacts related to climate change.

The Humarock fire station is one example of a building that has undergone some flood-proof improvements. The Town is moving forward with a new facility in 2021 that will meet the FEMA flood requirements, significantly upgrading its flood resiliency and improving its ability to serve residents of Humarock.

Other facilities in the flood zone should be evaluated for possible flood-proofing options (barriers, elevate, move). Shade trees should be added to the sites of buildings in high heat island areas and large surfaces such as roofs and parking areas should be covered with a light surface when repaired or replaced.

Scituate High School is the emergency shelter. The new senior center will be both a shelter for major storm events and a cooling center. The Town is evaluating the expansion of its shelter capabilities at the New Gates School and at the Library as a warming and cooling center with the addition of a back-up generator.

Access to a shelter should not be blocked by a flooded road or downed power lines. The Town has coordinated with local utility companies to improve their access to power shutoffs during major storms, making affected areas safer and minimizing the potential power impacts to Scituate's coastal neighborhoods. This strategy could reduce the demand for shelters.

ECONOMIC DEVELOPMENT

*To review the **existing conditions analysis** for Economic Development, go to **page 70.***

Economic diversity has two benefits: an increase in the tax base will help generate local tax revenue to pay for Town services and a variety of business types will create local jobs for residents, reducing commute time. Many of Scituate's current businesses have been negatively impacted by the COVID-19 pandemic; a greater variety will help with changes in the business cycle.

Upgrade infrastructure to spur more commercial space development.

Scituate's office vacancy rate was 4.0% in 2019, lower than the regional average of 7.8%. Barriers to commercial development include limited land and limited infrastructure capacity (sewer, water, and transportation). With the appropriate infrastructure, North Scituate has the potential to accommodate more commercial space.

Preserving existing "legacy businesses," such as maritime businesses.

Scituate has always had an active maritime business sector, but its significance has greatly diminished over time. Both San Francisco and Seattle have studied how such a program could recognize and support "Legacy Businesses" which are a type of small business that supports community identity and stability through its long tenure.[1] Continued efforts to secure grants (such as $618,000 to rehabilitate the Town Pier for fishing boats) and provide technical assistance will help these businesses adapt to changing conditions.

Attract new business types.

Attracting new types of businesses will also be crucial to ensure Scituate's economy is diversified and well-balanced. For maritime uses, expanding recreation, research, and tourism can supplement fishing activities. Waterfront recreation and tourism should be linked to inland recreation and Scituate's history and cultural offerings. Links for bicyclists and pedestrians, and from the waterfront to the rail stations, will be critical to this expansion. Small-scale light industrial, co-working, and incubator spaces in North Scituate and Greenbush could help support a local entrepreneurial economy and, in the Harbor, reduce some of the vacancies.

Support more work-from-home or local, remote-working options.

Workplaces are continuously evolving, and even before the COVID-19 pandemic, 13.7% of employed residents in Scituate worked from home. Co-working allow residents to rent meeting rooms and share office facilities, such as printing services. Improved broadband availability in Town-owned spaces will ensure equitable internet access. New technologies such as 5G may make community Wi-Fi obsolete; projects should be evaluated on how "future-proof" they are, given evolving technologies.

1 "Legacy Business Study." 2017. Seattle. http://www.seattle.gov/documents/Departments/economicDevelopment/22820_Legacy_Report_2017-09-25.pdf

TRANSPORTATION INFRASTRUCTURE

Most residents and commuters rely on their cars to get around. Focused safety improvements for pedestrians and bikers near commercial villages will reduce the number of car trips needed for commuting and errands. Other interventions will be needed to ensure Scituate's transportation infrastructure is resilient to problems caused by flooding and heat island effect.

*To review the **existing conditions analysis** for Transportation Infrastructure, go to **page 72.***

Require Complete Streets near Village Centers.

Complete streets are for everyone; they are designed to be usable and safe for all users – drivers, bikers, and pedestrians. Not every street in Scituate needs to have a sidewalk and bike lane. Improvements to key routes that act as the backbone of Scituate, such as Route 3A, will encourage more people to consider walking and biking to run errands or commute. Key routes within a ½ mile or 15-minute walk of a village center should also have sidewalks. When any road or intersection near village centers goes through a redesign process, the plans should include sidewalks and bike accommodations, preferably dedicated bike lanes or protected cycle tracks (separated path, generally protected by a raised buffer). "Sharrows" or shared lane between bikes and cars should be considered only when the width of the right-of-way does not allow for dedicated bike infrastructure.

Low-cost traffic-calming interventions can be a cheaper and space-saving alternative for smaller, low-traffic residential streets near village centers. Interventions such as narrowing lanes force drivers to drive more slowly and carefully, making it safer for pedestrians and bikers. Scituate's emergency services departments should vet any traffic-calming interventions to ensure fire trucks still can pass through.

Flood-proof key transportation routes.

Climate change will increase the risk of flooded streets. Elevating key routes will ensure emergency access to vulnerable parts of town while adapting smaller residential roads to be more resilient to saltwater intrusion will reduce maintenance costs in the long-term. Egress for existing buildings must be considered when raising roads. In addition, some property owners will be concerned that elevated roads will flood their properties. Road elevation is also costly.

Anticipate heat damage to roads.

Some roads and bridges will be vulnerable to buckling due to increased temperatures, so additional maintenance will be needed to fix roads. Buckling is caused by the expansion of the asphalt and concrete. Citizen-based reporting can help ensure that the Town patches cracks and potholes quickly.

For all road infrastructure, the cost of installation, maintenance, and repair should be evaluated in terms of its vulnerability to persistent flooding.

WATER INFRASTRUCTURE

While Scituate has enough capacity on paper to currently meet its water needs, seasonal fluctuations and periods of drought (which is existing and likely to increase) will require ongoing evaluations. In addition, the Town has current repair and replacement needs to address capacity and quality concerns.

*To review the **existing conditions analysis** for Water Infrastructure, go to **page 74**.*

Invest in critical water infrastructure repairs.

The OOB Water Treatment Plant lacks redundancy in the system; shutting down the plant for maintenance and repairs is difficult. A new water plant will increase the capacity and reliability of Scituate's water system. The cost of designing and replacing the plant is around $40M[1].

Wells also need to be updated. Currently, wells 17A and 18 have high levels of manganese which is the prime culprit in ongoing brown water issues. Green sand filters will improve the water quality. Construction on a new green sand filter for Well 17A began in June 2020. The *Water System Master Plan* recommends upgrades to Wells 10, 11, and 18B for a cost of $1.3 million and a new well at Dolan Field for $2.5 million, construction to begin in 2023.[2]

The Town's two water tanks need repairs, but maintenance is difficult since the Town has been unable to shut down a storage tank to do necessary repairs. Two new storage tanks will coast about $2.5 million. Water pipes need continuous maintenance. Each year, the Town spends $1-2M to replace pipes.

Prepare for droughts and the effects of sea level rise on groundwater and salt water intrusion.

Some waster supply infrastructure will need additional investment to protect it from sea level rise as salt water will corrode pumps and wells inundated from a storm surge. Flood-activated barriers and gates would erect a wall around the well. Another option is to relocate the well and pumps.

Sea level rise will cause salt water to infiltrate freshwater aquifers. The Town should conduct a hydrologic study to evaluate the potential risk of saltwater intrusion and monitor aquifers adjacent to the coast.

Droughts will require addressing storage to address existing demand and annual limitations during the summer months. Source water must be replenished.

Consider additional protective regulations.

Regulation will also help protect Scituate's water supply. Both the stormwater by-law and Water Resource Protection District ensure new development will not negatively impact water supplies. Additional regulations, such as a net-blue by-law (see Zoning) or water-recycling efforts, will reduce future demand from new development. A water emergency plan as a component of a natural hazard mitigation plan would also be useful in drought or water contamination situations, such as the 2016-2017 drought and the drought of summer 2020, when the Water Department imposed a water ban on all non-essential outdoor watering uses.

1 Tighe & Bond, *Water System Master Plan Final Report*, 2021, page 5-2.

2 Tighe & Bond, *Water System Master Plan Final Report*, 2021, page 5-1.

SANITARY INFRASTRUCTURE

The lack of sanitary sewer coverage in Scituate is a significant obstacle to economic development and growth. The Town does not plan to expand the sanitary sewer system throughout town; new development should be concentrated where sewer is or will be provided. Public and private systems need upgrades to address capacity and climate change.

*To review the **existing conditions analysis** for Sewer Infrastructure, go to **page 78**.*

Invest in sewer expansion to unlock development potential in North Scituate and address future needs.

Sewer expansion to North Scituate is planned for Phase V and set to begin in 2023.

As the population grows and the typical daily flow gets closer to the permit limits, the Town will also need to consider a few options, including the following: reducing inflow/infiltration problems, increasing WWTP storage capacity, retrofitting the WTTP with newer technology to increase processing capacity, expanding additional WWTP treatment capacity, or building a new WWTP.

Recent discussions have opened the possibility of building a regional, shared sewer system between Scituate, Hull, and Cohasset. State funding support would be needed, and Scituate could save at least $5 million; without the regionalization plan, Scituate may need to spend $64.5 million to update its sewer system.[1] Costs to address resiliency would be $9.8M to $12.2M in the near term and $13.6 to $19.7M in the long term.[2]

Develop a long-range plan for Water and Wastewater Management.

Because the WWTP is in a 1% annual flood zone, Scituate will either need to retrofit the existing WWTP to address projections for sea level rise or invest in the regionalization plan with Hull and Cohasset.

The WWTP will need to be elevated or protected with flood-activated barriers or critical machinery can be elevated. Relocation of the entire WWTP may impact the gravity-based system which flows to the current plant.

Sewer lines at Cedar Point and Oceanside Drive have been inundated before; flooding impacts the ability for sewer to properly move through the gravity system. The replacement of the Cedar Point sewer line is under construction; service laterals are complete and the main line is about 40% complete. Seven of the nine sewer pumps are also in the flood zone. The Town will either need to relocate the pumps or protect the pumps through elevation or flood-activated barriers.

Phase IV and VI of the sewer expansion plan will add sewer connections to properties between Hatherly Road and Tilden Road and coastal areas of Minot Beach; both climate-vulnerable neighborhoods. This expansion poses risks for the proposed new infrastructure. However, if private septic tanks are flooded, they can potentially leak and contaminate Scituate's water resources. The Town will need to balance vulnerability to flooding with the environmental benefits of a centralized system as it evaluates further expansion.

1 https://scituate.wickedlocal.com/news/20200226/regional-sewer-plan-moves-forward-in-scituate, last accessed 01/04/2021.

2 GZA GeoEnvironmental, Inc., *Comprehensive Wastewater Feasibility Study*, 2019. Page 30.

PART V: IMPLEMENTATION

The Town of Scituate will need to make significant investment in infrastructure over the next few decades and those investments will need to start in the next few years. The Select Board and the Planning Board will need to coordinate the engineering studies required to put hard costs to the recommendations of this and preceding plans in order to make decisions about which investments to make when and where.

Capital Plan

The Town needs a resilience-based **consolidated long-range funding and privatization plan** that addresses the significant infrastructure needs for the water system, the wastewater system, and coastal resiliency in terms of **hard costs, available funding sources, and an integrated timeline of investments that ties directly to the Town's municipal budget and capital plan**. The Town's FY2022-2026 capital plan is well-presented, with clear explanations of the components and rating criteria for the different requests. The Town should add Resilience as one of the criteria and identify those requests for appropriation that address the measures of resiliency discussed in this plan.

The Town should consider consolidating the capital-based recommendations from the planning and feasibility studies reviewed in this master plan update into a resilience-based capital plan. Although not every plan has integrated costs, the Town should incorporate the actions from all and then work to add costs for those actions without them. This addendum to the capital plan would allow the Town to track the resilience-based costs as more information becomes available and integrate planning for the appropriations into the Town's overall capital and debt management plan.

While Town Meeting cannot be bound to a multi-year plan in its appropriations, community education will be critical to helping residents understand the importance of regular appropriations to address critical needs sooner rather than later; costs are likely to increase over time. In some cases, smaller, more targeted strategies now will save time and money over the long term. Once Town Meeting has consented to a plan to address the infrastructure improvements in a consolidated fashion, it should expect to fund the appropriation according to an approved timeline and should require justifications for changes in the timing or prioritization of the coordinated investments.

Land Use Policies and Regulation

Town Meeting approval will also be necessary to implement bylaws, including zoning bylaws, to limit growth to appropriate areas. Over time, new development should shift away from areas subject to flooding. The community should also become more aware of the critical importance of wetlands and forested areas in managing the impacts of climate change and should prioritize policies and regulations that support the protection of those areas. The Town needs to address issues of affordability and equity in housing, shifting patterns in employment and the need for well-paying jobs within the town, and do this within a development context that is changing in response to economic cycles and the projected impacts of sea level rise on the coast.

The Town should continue to support the Village Center & Neighborhood District, using Greenbush-Driftway and North Scituate in the short-term to address housing and economic development and considering how to support long-term moves away from the coast by establishing other village centers. Allowing commercial development in the Downtown Harbor area to expand away from the coast is critical to the survival of the harbor, but must be balanced with sensitivity to existing uses.

The expected impacts of sea level rise on the coast, shifting patterns of flooding and drought (including the migrations of wetlands), and potential changing trends in housing, jobs, and commutes based on the after-effects of the pandemic will require Scituate to evaluate its zoning on a regular basis to meet the land use goals for the next few decades.

Community Education and Support

Community education will also be critical for residents to understand the implications for not following a recommended path of improvements. For example, the *Coastal Erosion, Sediment Transport, and Prioritization Management Strategy Assessment for Shoreline Protection* (Applied Coastal Research, 2016) recommended the nourishment of the Humarock beach as the best strategy to address coastal resilience. The initial cost was estimated at $25.5 million with a 50-year life-cycle cost of $152.6 million. Simply maintaining the status quo had a 50-year life-cycle cost of $103.6 million. However, beach nourishment had additional benefits over the status quo, including increasing storm connection, reducing or eliminating costs to clear Central Avenue after each storm, and preventing a breach between Humarock and Fourth Cliff.[1] In 2017, the Town began the first steps on this project, seeking to acquire the easements that would allow the beach nourishment to proceed. Resistance to the project was reported by InsideClimate News,[2] among other sources.

Legitimate concerns about property rights must be balanced with equally legitimate concerns about the public good: this will require continuing the conversations begun during the planning process for *A Vision for Scituate's Coast in 2070* (CBI, 2020) and expanding them to include land use policies and community needs for additional development. Such in-depth conversations should become a regular feature of discussions around policy and regulatory changes and capital expenditures to meet current needs for the water and wastewater systems and future needs for climate resiliency. None of these problems can be solved by individual action; Scituate's challenge over the next ten years will be to develop the consensus for collective action and to match that consensus with favorable votes by Town Meeting and by elected boards and committees to support the policies, regulations and appropriations that will lead to a more resilient Scituate.

1 Applied Coastal Research, *Coastal Erosion, Sediment Transport, and Prioritization Management Strategy Assessment for Shoreline Protection*, 2016, page 179.

2 Kusnetz, Nicholas, InsideClimate News, "An American Beach Story: When Property Rights Clash with the Rising Sea," December 16, 2017, https://insideclimatenews.org/news/16122017/beach-erosion-sea-level-rise-property-rights-massachusetts-government-storm-nourishment-project/, last accessed March 12, 2021.

IMPLEMENTATION PLAN

Scituate's significant infrastructure needs place the Town in a Catch-22: it must respond to climate change, which will require new or updated infrastructure; some of this infrastructure will be paid for (over time) by increased development; that increased development will put pressure on the Town's ecosystems; the loss of those ecosystems will require more infrastructure to protect the new development.

Criteria for Evaluating Actions

Each planning study referred to in this master plan update has its own recommended actions and strategies. As a plan of plans, this master plan update provides a guide to evaluating each recommendation for future action. The eleven criteria are as follows:

1. Is the action critical? (Critical means that the action addresses a clearly defined threat to health or safety of the population.)
2. Does the action strengthen the environmental, economic, or social resiliency of this Town as defined in this master plan update ?
3. Is the cost of the action reasonable given its impact?
4. Is the action necessary to complete another action? (For example, expansion of the sewer system to North Scituate is required before additional development in that area.)
5. Does the action satisfy the recommendations of more than one of the prior planning studies? (See summaries in **Part I: Introduction**)
6. Is the proposed action in conflict with recommendations from other plans or studies and should it be reconciled with such plans/studies?
7. Does the Town have full control over implementation of the action?
8. If the Town does not have full control, has it established relationships with the appropriate partners?
9. Is the Town responsible for the full cost of the action?
10. If grants are available, does the funding cycle meet the Town's needs and is the Town competitive for that process?
11. Does the Town have sufficient resources (money and time) and sufficient support from residents to take this action?

The final question is critical in terms of implementation: creating a space in which the Town government (official and staff) and town members (residents, business, and property owners) can become committed to the changes necessary to support a resilient Scituate. As noted in the introduction to this section, there must be broad agreement about the steps needed to address the significant needs identified in this and previous studies. This space needs to be an ongoing communication process that allows people to integrate the conversation into their daily lives and in the public spaces that require debate, deliberation, and votes.

Immediate Next Steps

Infrastructure Costs and Capital Budget

The town needs to gather some additional information as part of early implementation. Four reports have information about costs of infrastructure improvements:

- → Water System Master Plan Final Report (Tighe & Bond)
- → Comprehensive Wastewater Feasibility Study, (GZA GeoEnvironmental, Inc., 2019)
- → *Coastal Erosion, Sediment Transport, and Prioritization Management Strategy Assessment for Shoreline Protection (*Applied Coastal Research, 2016). These numbers should be updated.
- → *Natural Hazard Mitigation Plan* (VHB, 2016) This study provides some order-of-magnitude costs which should be updated.

The amounts for the recommended strategies in each plan should be incorporated into the Town's capital budget (some already are) and into a separate resiliency section or chapter. The 2016 numbers may need to be updated given increases in the cost of construction since 2016.

Five recent reports related to resiliency do not have costs associated with their recommendations. For these studies, the costs for those recommendations should be determined and the recommendations and costs should be added to the resiliency section of the capital budget and to the capital budget itself.

The plans are as follows:

- → Scituate Harbor Sustainability and Resilience Master Plan (MAPC, 2020)
- → Building a Resilient Scituate, Climate Vulnerability Assessment and Action Plan (MAPC, 2018)
- → A Vision for Scituate's Coast in 2070 (Consensus Building Institute (CBI), 2020)
- → Open Space and Recreation Plan (VHB, 2018)

Placing the actions items that require capital costs into a single document will help identify areas of overlap as some of the later studies build on the work of earlier ones. A single resiliency-based capital budget will allow for regular updates to the costs and the ability to prioritize actions based on the criteria in this section and the Town's established criteria for funding capital projects.

Land Use

After the task of gathering costs, the next most important action is to begin establishing the policies and regulations that will govern land use over the next two-three decade. As with infrastructure improvements, the earlier the Town can implement the proposed policies and regulations, the sooner they will begin to see the benefits. Changes in land use are subject to development trends and market cycles; it is rare to see immediate results from new zoning changes or development policies.

Community Conversations

As noted above, regular community conversations about the topics in this master plan update will be critical to the success of this plan and are important components of building social resiliency. An important first step is to designate the department, committee, or subcommittee who will be responsible for leading this community outreach program and the people who will implement, measure, and maintain the program. Community conversation could be quarterly, based on specific topics, but should not revolve solely around Town Meeting or the budget cycle. A website listing actions taken and measures of process would help people remain informed about the steps the Town is taking to implement the recommendations of this and other plans.

List of Recommendations

A complete list of recommendations includes the unaddressed recommendations from the previous plans and reports, summarized in **Part I: Introduction**. The list is this section is a summary of the recommendations in **Part IV: Recommendations for a Resilient Scituate**. Some of these recommendations are drawn from and support the recommendations of earlier studies; others are new to this master plan update. The key to these recommendations is that they are focused on resiliency – ecological, physical/infrastructural, economic, and social/cultural – that informs this entire master plan update.

Progress on all these recommendation is achievable between now and 2020. As noted above, critical infrastructure improvements, changes to land use policies and regulations, and continuing regular community conversations are immediate priorities.

Climate Change and Sea Level Rise

- → Elevate Structures within flood risk zones.
- → Enhance and raise seawalls and revetments.
- → Enhance and reinforce "hard-engineered" infrastructure such as breakwaters, jetties, and groins.
- → Provide beach nourishment to maintain ecological function.
- → Invest in "soft-engineered" infrastructure such as artificial dunes and berms.
- → Implement boulder dykes.
- → In low-lying areas susceptible to flooding, convert roads to bridges.

Climate Change and Ecology

- → Establish restrictions on the use of fertilizers.
- → Expand wetland protections to include projected wetland migration areas.
- → Establish programs and policies to maintain a balance of ecosystems; i.e. replanting trees that need to be removed.
- → Seek opportunities to better leverage the Chapter 61 land management program.
- → Reduce clear-cutting.

Open Space and Recreation

- → Improve ADA accessibility of open space and recreation facilities and parks/trails.
- → Maintain Scituate's legacy of distinct rural beauty, essential recreation land and vital biological diversity through the acquisition, public awareness, and improved management of protected and unprotected open land in Scituate.
- → Develop recreation-based tourism.

Housing Diversity

- → Build a diverse range of housing types.
- → Build housing that addresses a range of affordability levels.
- → Address equity in the supply of housing.

Land Use

- → Establish programs and policies for buy-outs, land swaps, relocations, and transfers of development rights to allow for relocation.
- → Consider establishing a third inland village, between North Scituate and Greenbush-Driftway.

Zoning

- → Pass the Proposed North Scituate Village District.
- → Consider standards for the use of the Flexible Open Space Development (FOSD).
- → Consider Establishing a Net Blue Bylaw.
- → Consider Reducing Development in Flood Hazard Areas.

Cultural and Historic Resources

- → Focus development in the village areas on Greenbush and North Scituate.
- → Include cultural and historic resources into the tourism plan.
- → Support and enhance the cultural institutions and networks to strengthen social resilience.
- → Protect the heritage of the Town through the preservation of scenic and historic structures and areas.

Community Services and Facilities

- → Continue evaluating community needs for and connections to services and facilities.
- → Be creative about reuse.
- → Evaluate existing community facilities for problems and as assets for impacts related to climate change.

Economic Development

- → Upgrade infrastructure to spur more commercial space development.
- → Preserving existing “legacy businesses,” such as maritime businesses.
- → Attract new business types.
- → Support more work-from-home or local, remote-working options.

Transportation Infrastructure

- → Require Complete Streets near Village Centers.
- → Flood-proof key transportation routes.
- → Anticipate heat damage to roads.

Water Infrastructure

- → Invest in critical water infrastructure repairs.
- → Prepare for droughts and the effects of sea level rise on groundwater and salt water intrusion.
- → Consider additional protective regulations.

Sanitary Infrastructure

- → Invest in sewer expansion to unlock development potential in North Scituate and address future needs.
- → Develop a long-range plan for Water and Wastewater Management.