South Hingham Study Group

Final Report

November 2017

Executive Summary

The Board of Selectmen created the South Hingham Study Group in late 2013 in order to identify the key opportunities and challenges related to future economic development in South Hingham. The initiative is an outgrowth of a number of legislative actions and planning efforts indicating that the community as a whole desired high-quality, low-impact economic growth in the area that has the potential to yield significant, long-term tax revenue for the Town.

The Study Area is located in the southern portion of Hingham and includes all Office Park and Industrial Park-zoned areas south of Whiting Street (Route 53) between the intersection of Derby Street/Gardner Street and the municipal boundary between Hingham and Weymouth. The area includes approximately 900 acres overall, with significant tracts presently available for commercial and industrial development or redevelopment.

The seven member Group appointed by the Selectmen to undertake the endeavor consists of representatives from local permitting boards and other interested stakeholder groups. The Group was joined in its efforts by area landowners and nearby residents, as well as representatives of local businesses, community organizations, utility providers, and both municipal and state agencies. The Group's work was conducted through a series of participatory dialogues during more than thirty public meetings held between December 2013 and October 2017.

This report is the result of their multiyear examination of the existing and projected conditions across a wide range of environmental and structural focus areas, including demographic, workforce, and housing characteristics, public services, and water, wastewater, and transportation infrastructure. The Study Group reviewed more comprehensive works prepared on behalf of either the Town or a broader regional agency such as the South Shore Chamber of Commerce or the Metropolitan Area Planning Council. This report summarizes these more detailed studies and is intended to serve as a repository of sorts for information relevant to the Study Area. The Group hopes its report may prove helpful to policy makers and permitting authorities presented with development plans for South Hingham in the future.

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Acknowledgements

Many contributed to this report by sharing institutional memories, information, time, and effort. The Group is grateful for the consistent participation throughout the process by representatives of the following organizations, agencies, and other stakeholders:

Utility Providers and Municipal Departments

Aquarion Water Company
Board of Health
Conservation Officer/GIS Manager
Fire Department
Hingham Development and Industry Council
Hingham Municipal Light Plant
Planning Board
Police Department
Sewer Commission
Engineering Department
Water Supply Committee

Neighborhood Organizations

Farm Hills Neighborhood Association
Upper and Lower Gardner Street Neighborhoods
Linden Ponds Residents

Regional Business and Planning Organizations and State Agencies

South Shore Chamber of Commerce
Metropolitan Area Planning Council
MassDevelopment
Massachusetts Office of Business Development

Professional Support

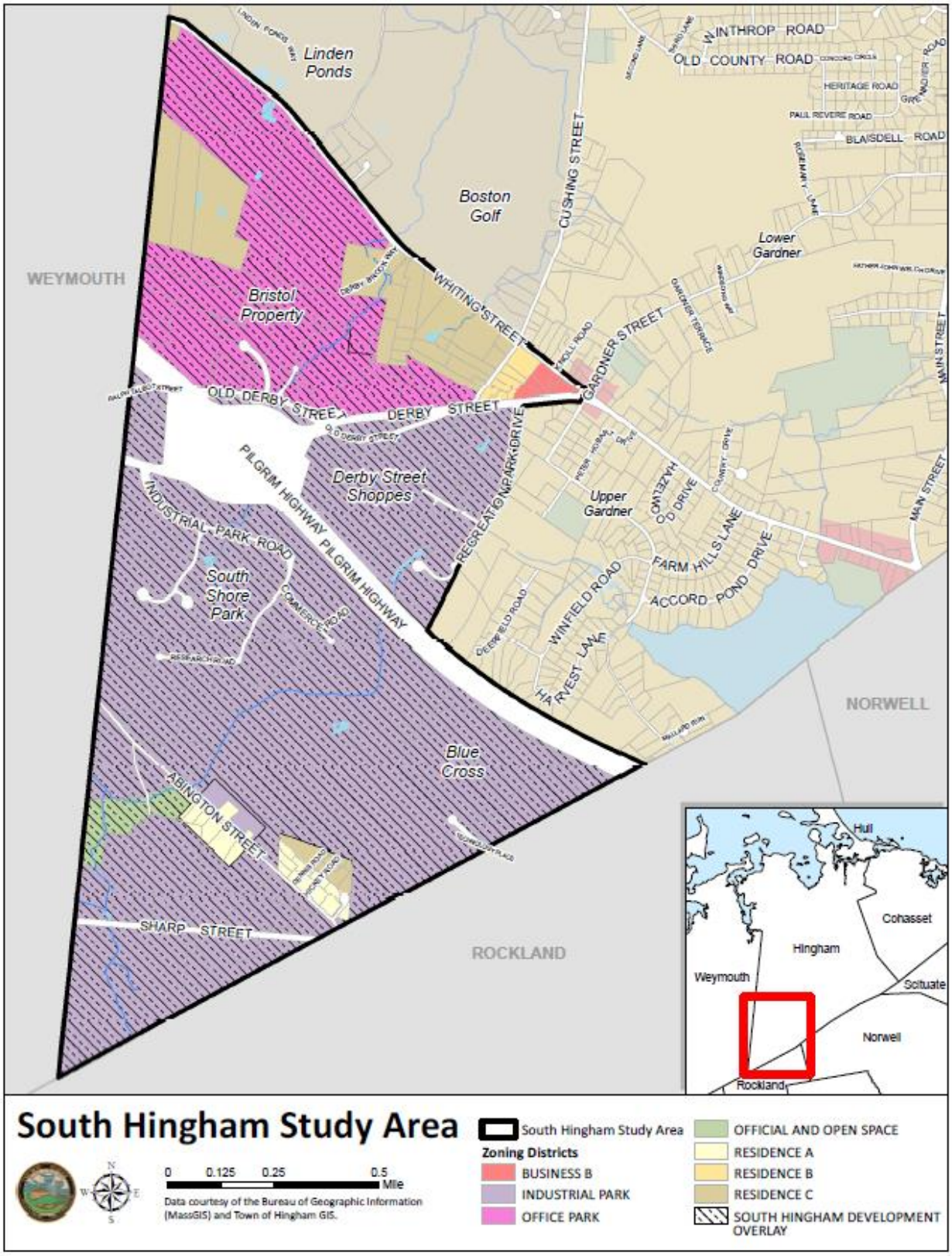
CHA Consulting
Metropolitan Area Planning Council
Vanasse & Associates, Inc.

Property Owners

A.W. Perry
Bristol Brothers
Derby Street Shoppes/WS Development

The Group additionally wishes to acknowledge the above-referenced property owners, as well as the Board of Selectmen, for generous financial contributions, which supported completion of the *South Hingham Transportation Assessment* by Vanasse & Associates, Inc.

Study Area Location



Opportunities and Challenges

Economic Development

Opportunities	Challenges
Highly Educated, Quality Workforce	Aging Population
Desirable community that draws in migration, attracting both businesses and residents	Regional Competition for Economic Development and Funding Programs
High median income community with disposable income	High Housing Costs
Significant vacant and underdeveloped land available	Recent Job Growth in Lower-Wage Industries
Single tax rate for residential and nonresidential property	Finding projects significant enough in scale to support costs of required infrastructure improvements
Business-friendly climate	

Public Services

Opportunities	Challenges
South Shore Regional Emergency Dispatch Center enables dispatchers to handle multiple calls at the same time.	The South Fire Station has reached the end of its useful life expectancy. This satellite fire station is not centrally located to the current South Hingham development.
The Hobart Street electric substation has substantial excess capacity to accommodate additional development in town, including South Hingham.	Certain types of uses, specifically age-restricted or assisted living development, place disproportionately high demands on medical responders.
Potential exists to identify better locations in South Hingham for provision of public safety services as the area grows.	As development increases, additional police presence via patrols and communications equipment will be required.
	Large scale development tends to place greater demands on public safety officials.

Transportation

Opportunities	Challenges
State-funded Derby Street Reconstruction Project and Whiting Street (Route 53) and Derby Street Intersection Improvements will be completed in 2018, alleviating existing LOS and safety issues	Development generating in excess of 13,000 vpd would result in vehicle queuing at the Derby Street/Old Derby Street intersection that would necessitate the addition of travel lanes to Derby Street west of the intersection and replacement of the Route 3 bridge
Completion of programmed Derby Street Corridor improvements will accommodate future development resulting in up to 13,000 additional vehicle trips per day	Physical and property right constraints could limit ability to make necessary roadway improvements, such as widenings and on-ramp construction
Development of a southern connection through the South Shore Park could divert up to 35% of traffic generated by new development on the Derby Street corridor	Additional traffic and/or required traffic improvements could impact residential character of collector streets (Cushing and Gardner Streets)
	Public transportation options not immediately available in South Hingham
	Sidewalks and bicycle accommodations limited in South Hingham

Water Capacity and Infrastructure

Opportunities	Challenges
Secure a long-term solution for obtaining an additional water supply for Hingham	Current state WMA constraints limit available water for future development
Modernize & expand the infrastructure in the study area	Lack of any Town control over all water supply decisions
Bring information and fuller perspective about water supply permitting to the community	Costs associated with identified infrastructure improvements
Improving recharge through discussion on whether to construct a decentralized sewer treatment facility for So. Hingham	Future water needs undefined

Wastewater Alternatives

Wastewater Alternative	Opportunities	Challenges
On-site Septic Systems	Most cost-effective alternative	Ongoing maintenance requirements
	No water supply interbasin transfer concern	Adequate on-site land area needed for construction
	Private ownership; no municipal costs	Certain on-site soil conditions required to treat wastewater
	Minimal regulatory oversight	Potential impediment to significant redevelopment and development
De-centralized Sewer System	Support existing business and encourage appropriate commercial development	Relatively high long term operation and maintenance costs
	Groundwater quality improvements due to elimination of poorly performing on-site systems	Direct cost of purchasing land for effluent infiltration/re-charge
	Eliminates mitigation and connection costs to the MWRA system	Opportunity costs associated with location of facility on developable land
	Eliminates water supply interbasin transfer concern	Finite capacity based on land area and soil characteristics of re-charge facility
	Recharges water supply watershed	Increasingly stringent EPA regulations for de-centralized systems
Centralized Sewer System	Support existing business and encourage appropriate commercial development	Entrances fees, I/I reduction, and connection fees
	Groundwater quality improvements due to elimination of poorly performing on-site systems	Further depletes water from stressed water supply watershed*
	Relatively high potential treatment capacity	Extremely onerous water supply interbasin transfer requirement *
	Relatively low long-term operation & maintenance costs	**Unless MWRA water connection is provided, requires legislative action*
	No need to purchase valuable uplands for effluent infiltration/re-charge	

Economic Development

Economic development is generally understood as sustained community effort through regulatory change and/or structural improvements intended to support the local economy with the goal of benefitting area residents. Benefits could include the creation of well-paying jobs, increased municipal tax revenues, and/or reduced tax burden for residents.

This section provides a profile of the economic characteristics of Hingham, including population and labor force, employers, and industries. The following also reviews the regulatory framework created by the Town to encourage economic growth.

Existing Conditions

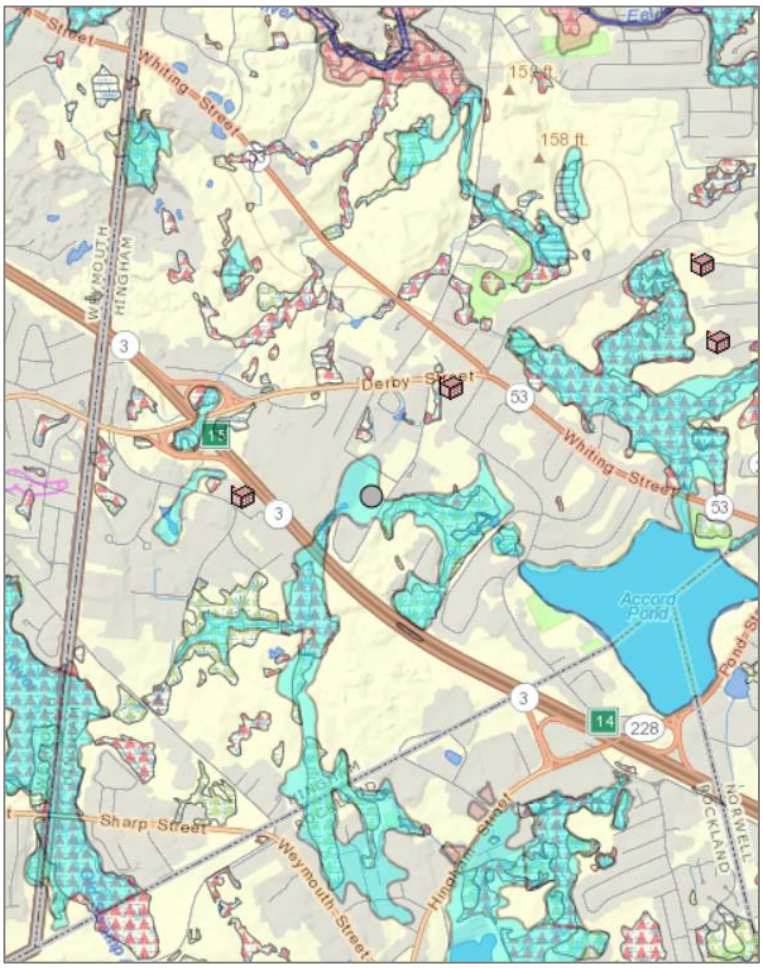
The Town of Hingham, with professional support from the Metropolitan Area Planning Council (MAPC) provided through a U.S. Department of Housing and Urban Development Sustainable Communities Grant, recently completed a planning effort to update the 2001 Hingham Master Plan. The following information is based largely on the resulting work completed in 2014, which in turn relied on data from the 2010 US Census. More recent estimates are provided when available from the American Community Survey for 2011-2015 as an indicator of demographic trends.

Land Use and Physical Characteristics

Hingham is a suburban community located approximately 15 miles south of Boston. The Town contains approximately 22.5 square miles, or 14,092 acres. The Town is bound to the north by Hingham Harbor. The communities of Hull, Cohasset, and Scituate are located to the east, Norwell and Rockland to the south, and Weymouth to the west of Hingham. The principal developed land use category in Hingham as a whole is residential (approximately 60%) and close to 30% of the Town consists of protected open space.

The Study Area is located in the southern portion of Hingham and includes all Office Park and Industrial Park-zoned areas south of Whiting Street (Route 53) between the intersection of Derby Street/Gardner Street and the municipal boundary between Hingham and Weymouth. The area includes approximately 900 acres. The principal land uses within the Study Area consist primarily of commercial and industrial development.

A considerable amount of land in the South Hingham area is affected by wetlands or floodplain, as shown in the image to the right. Approximately 14 acres within the Study Area consists of protected open space. No active outdoor recreation opportunities are located in the Study Area; however, there a number of private indoor recreational opportunities, including the Pilgrim Skating Arena and South Shore Sports Center on Recreation Park Drive, as well as several health clubs in the area. Kress Field is located a short distance outside of the Study Area, off of Upper Gardner Street. This public park offers a baseball field and basketball court, and new playground equipment installed in 2016. Informal walking paths connect the properties along Recreation Park Drive to this resource.



Demographic and Employment Characteristics

Population - According to the 2010 Census, the total population in Hingham was 22,157, making the town the fourth most populated community in the South Shore. Population grew 11.4% between the 2000 and 2010 Censuses. The American Community Survey 5-Year Estimates indicate that the population continues to grow, with a 2015 estimated population of 22,733. However, the rate of growth appears lower, with just a 2.6% increase over the 2010 population.

Household Size - As is the trend across the region, average household size declined by 5%, from 2.72 in 2000 to 2.59 in 2010.

Age - Hingham has the highest percentage of people over the age of 65 in the South Shore at 34%. Between 2000 and 2010 the number of Hingham residents aged 65 and over increased by 55% compared to a statewide increase of 16%. Linden Ponds, a continuing care retirement community consisting of approximately 1,000 residential units at the time of this Report, and other age-restricted developments in Hingham built during this interval, which attracted new seniors to the town, may partially explain this population trend. The trend is expected to continue with an estimated 47% of householders over the age of 65 by 2020.

Income - Hingham is a community with relatively high levels of income. Half of Hingham households make more than $100,000 per year but one in five Hingham households makes less

than $40,000 per year. An estimated 2.3% of Hingham households have incomes below the poverty line, the lowest poverty rate on the South Shore. In contrast, the poverty rate in the MAPC region was 10.3% in 2010.

Education – Hingham is also a community with a relatively high level of educational attainment. Over 60% of people 25 years and older have a bachelor's degree or higher, which represents the third highest share of college educated residents among South Shore communities.

Employment - Nearly one in four employed Hingham residents works in the Education/Health Care/Social Assistance industries. One in three employed Hingham residents works in finance or management-related industries. Between 4.5% and 7.7% of Hingham residents over the age of 16 are unemployed, a rate similar to other South Shore communities.

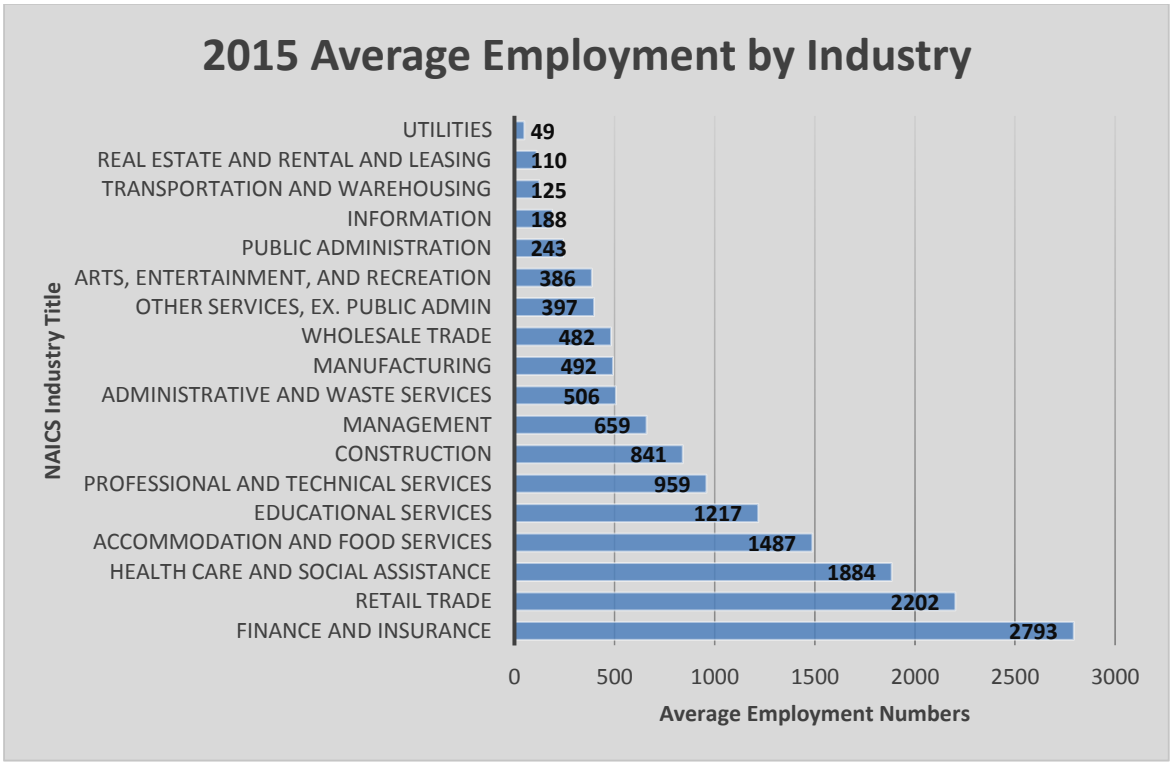
Table 1: Top Employers by Business

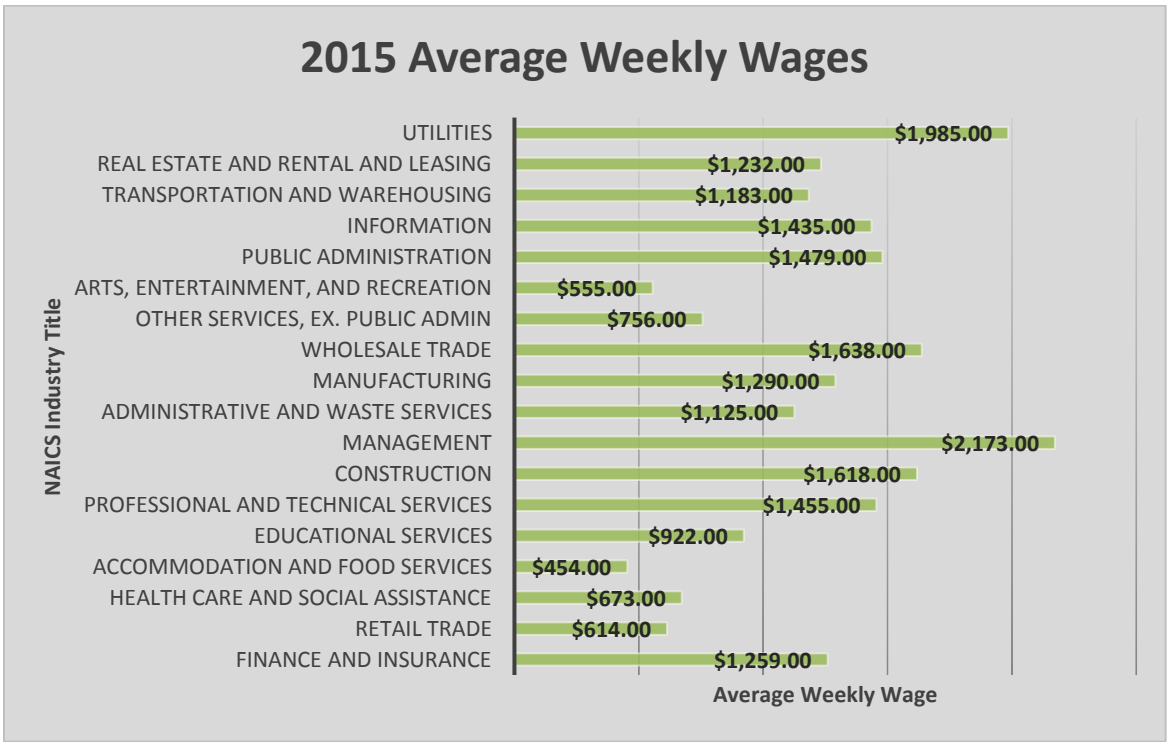
2016 Top Employers				
Employer	**Business**	**No. of Employees**	**% of Total Employment**	
Blue Cross/Blue Shield	Health Care	1,448	13.14	%
Town of Hingham	Government	991	8.99	%
Linden Ponds	Health Care	775	7.03	%
Talbots	Retail Clothing	472	4.28	%
Serono Laboratories	Bio-Technology	450	4.08	%
Whole Foods	Retail	216	1.96	%
Russ Electric	Manufacturing	212	1.92	%
Stop & Shop	Retail	187	1.70	%
Harbor House	Health Care	179	1.62	%
Eat Well	Restaurant	171	1.55	%
		5,101	**46.30**	**%**

2007 Top Employers				
Employer	**Business**	**# of Employees**	**% of Total Employment**	
Talbots	Retail Clothing	1,200	9.99	%
Town of Hingham	Government	876	7.30	%
Serono Laboratories	Bio-Technology	485	4.04	%
Linden Ponds	Health Care	433	3.61	%
Russ Electric	Manufacturing	300	2.50	%
Stop & Shop	Retail	210	1.75	%
Harbor House	Health Care	200	1.67	%
Eat Well	Restaurant	170	1.42	%
Whole Foods	Retail	165	1.37	%
Black Rock Country Club	Golf	160	1.33	%
		4,199	**34.97**	**%**

Note: Businesses located in the South Hingham Study Area are shaded
Source: Town of Hingham Comprehensive Annual Financial Report

MAPC indicated that Hingham is a growing job center, but notes that much of the recent job growth has been in lower-wage categories such as retail, arts and entertainment, and accommodations and food services. Total annual average employment number and wages by industry for the Town of Hingham in the most recent available year is graphically represented below.





Source: Massachusetts Department of Labor and Workforce Development

Housing Characteristics

According to the 2010 Census, there are 8,841 year round housing units in the Town of Hingham. Eighty percent (80%) of these households are owner-occupied and twenty-percent (20%) consist of renters. The Town experienced a 74% increase in renter households between 2000 and 2010. This is a considerable growth rate when compared to the 5.4% countywide growth and 5.4% statewide growth experienced during that time period. The Group speculates that the development of the Linden Ponds continuing care retirement community may account for much of the local increase in renters. Nevertheless, Hingham's share of renter households remains smaller overall when compared to both Plymouth County (25%) and the Commonwealth (38%) as a whole.

The Group also reviewed housing costs. Based on a recent review of listings[1] in the Town of Hingham, median monthly rent for a 1-bedroom unit is $2,545 and median monthly rent for a 2-bedroom is $2,800. There was a single listing for a 3-bedroom unit available for a monthly rent of $2,800 at the time of review.

Town-wide median sales prices for single family and condominiums are reported below:

Table 2: Hingham Median Sales Prices

Year	Single Family	Condo	All	% Change
2015	$729,000	$655,000	$715,000	20.6%
2010	$631,000	$548,500	$592,800	-8.8%
2005	$665,000	$399,950	$650,000	86.8%
2000	$381,950	$180,000	$348,000	-

Source: The Warren Group, publisher of Banker & Tradesman (thewarrengroup.com)

The public participation and outreach program conducted in association with the 2014 Master Plan Update identified the high cost of housing as the top challenge facing the community.
The Plan also examined local housing data in order to quantify needs, finding that more than 55% of Hingham renters are cost-burdened, meaning that these households spend more than 30% of their gross monthly income on housing. This rate is higher than most South Shore communities. More than one in three Hingham renters qualifies as severely cost-burdened, with housing costs exceeding 50% gross monthly income, which represents the second-highest rate among South Shore communities. Conversely, there are fewer cost-burdened homeowners in Hingham than there are in most other communities in the region.

[1] Source: Craigslist and Zillow search conducted in March 2017

While most of the Study Area consists of commercial and industrial uses, some scattered residential development remains in South Hingham, particularly along Old Derby Street, Whiting Street, and Abington Street. Though there is relatively little housing in the immediate area, the high cost of housing town-wide is seen as a double edged sword for future economic development in South Hingham. Rising costs are reflective of the desirability of the community. High quality of life in Hingham may attract both employers and a talented workforce; however, high sales prices may also be cost prohibitive for many, particularly those younger professionals and families that would help balance the Town's aging population and related decreasing labor pool. A question remains about the impact of housing costs on sustained economic growth in Hingham.

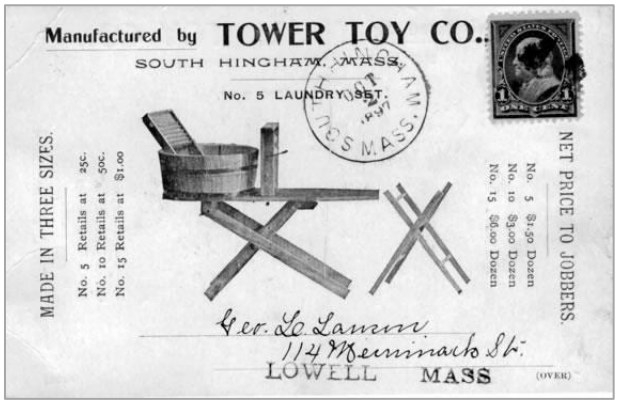
Background

The Town has initiated a number of regulatory changes intended to foster economic growth and development in the South Hingham region. Many of these regulations are embodied in the Hingham Zoning By-Law.

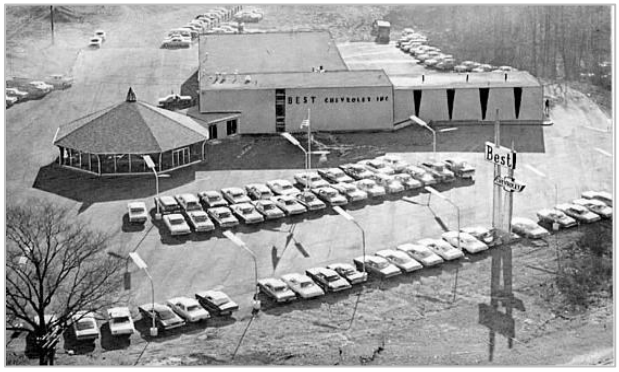
Zoning

The study area consists primarily of land located within the Industrial Park and Office Park zoning districts. The Industrial Park zoning designation was created in 1958. It originally encompassed all land between the Weymouth Town line on the west to a line 300' east of Gardner Street and extending from Derby Street south to a line 300' north of Abington Street. All industrial, trade, manufacturing, and commercial uses were allowed under the newly created zoning, including "Retail Groups" or shopping centers. A zoning map amendment was adopted in 1962, moving all land east of Recreation Park Drive and north of the Southeast Expressway from the Industrial Park to a residential zoning district. At the same time, the Industrial Park was expanded, with the exception of small pockets of land on Abington Street, into the southernmost tip of Hingham.

The Office Park District north of Derby Street was initially created in 1983. In its comments to Town Meeting, the Advisory Committee expressed the opinion that the area would be "beneficial to the Town in terms of increased tax revenue that, if properly developed, would not be detrimental to living conditions in the town in general or in the area." In 2012, Town Meeting added approximately 200 acres north of Route 3 (the "Bristol Property") to the Office Park zoning district.



The study area also largely falls within the South Hingham Development Overlay District. The overlay district was created in 1991 "to assist the Town of Hingham in providing safe and efficient public infrastructure consistent with future growth potential…" Objectives identified in the Zoning By-Law include the following:



- Encourage planning and development which will maintain the economic viability of businesses within the Overlay District.
- Encourage future development that links major non-residential roadways in the Overlay District.
- Minimize commercial and industrial related traffic impacts on surrounding residential neighborhoods.
- Support future development that balances the needs of abutting neighborhoods and environmental protection with the long-term fiscal needs of the community.

The Overlay District allows by special permit more intensive development than the underlying zoning districts both in terms of height and floor-to-area ratios. Property owners seeking a special permit for an increase in the intensity of use under these regulations are required to make a monetary contribution to a "Traffic, Safety and Infrastructure Improvement Fund." Monies deposited into the fund could be used by the Town to mitigate development related impacts within the District. Allowable expenditures include traffic-related studies, land takings for right-of-way improvements, drainage and sewer projects. However, the Study Group learned that little to no projects have triggered the requirement to make a contribution to the Improvement Fund. The Town may wish to study the program and adjust the currently specified thresholds in order to make the tool more effective.

Priority Development Designation

At Town Meetings in 2010 and 2014, Hingham also approved the designation of the South Shore Park as a Priority Development Site pursuant to MGL c. 43D. The optional designation gives the town priority consideration for certain resources, including the MassWorks Infrastructure Program grants, brownfields remediation assistance, and other financial or technical resources through state organizations. Additionally, the state provides online marketing of priority development sites and promotion of the town's expedited permitting process.

These legislative actions, in addition to several articles related to creation of the South Hingham Sewer District that are more fully discussed in a subsequent section of this Report, expressed voter interest in pursuing commercial, largely non-residential development in South Hingham. In many instances, the Town Meeting warrant article referenced the goal of encouraging low-impact, high-value economic development in South Hingham in order to yield significant, long-term tax revenue for the Town, and to reduce the tax burden placed on Hingham's residential properties.

Other Regulatory Considerations

The Town of Hingham received AAA bond ratings from all three major rating agencies – Fitch, Moody's Investor Services, and Standard and Poor's. The high rating recognizes the community's favorable tax base, which is supported by strong property values and residential wealth. The rating also reflects a well-managed municipality with a stable financial outlook.

In order to capitalize on this position, professional municipal staff, representing all local regulatory departments, maintain regular, informal meetings with landowners, businesses, and prospective developers of potential projects. This pre-permitting support is intended to foster a business-friendly climate. Following issuance of permits for the South Shore Hospital Bone and Muscle Center, the South Shore Chamber of Commerce honored the Town of Hingham, and specifically the Selectmen, Zoning Board, and Planning Board, with an award for efforts to promote regional growth and the economy. However, a report prepared by the Chamber of Commerce that same year, which is described below, suggests that Hingham may have a reputation for lengthy or unpredictable permitting processes.

Finally, while state law allows communities to shift tax burden from residential to nonresidential property owners, Hingham maintains the same tax rate for residential and commercial properties. This is generally viewed as a business-friendly approach. The 2017 single tax rate is 12.25 per $1,000 or 1.225%.

Past Planning Efforts

Several planning studies have also been completed in recent years that analyze various aspects of economic growth in Hingham generally and/or South Hingham specifically.

2001 Master Plan

The *Hingham Master Plan*, completed in December 2001, recommended that all office, high tech and light industrial uses be located in South Hingham near Route 3. The Plan offered several strategies intended to influence positive market trends, including the following economic development-related goals, which remain generally relevant to potential future growth in South Hingham:

- Reduce the potential for commercial sprawl and strip development.
- Encourage high quality nonresidential development in appropriate areas to reduce dependence upon the homeowner for tax revenues.
- Pay special attention to the entrances to the town on major roadways (gateways) since they represent a visitor's first impression of the town.
- Keep the tax base stable by encouraging further commercial and industrial activity in the presently zoned areas rather than designating new areas.

- Coordinate vehicular traffic, pedestrian traffic and parking in commercial areas so that they function in an optimal manner.
- Proactively seek to attract desirable land uses (e.g. high tech, office, senior assisted living, etc.) rather than passively wait for development proposals.
- Work with owners of key properties to assure development or redevelopment will benefit both the town and property owners.

In terms of South Hingham, the *Master Plan* acknowledged the substantial potential for redevelopment in the area. The guide plan for future development included within the *Master Plan* recommended specific implementation measures for South Hingham, including:

- Rezone area along Abington Street to Residence A
- Create an Office and Multifamily overlay district along the westerly portion of Whiting Street
- Add newly acquired open space to the Official and Open Space District
- Adopt zoning that limits the amount of retail allowed in the Industrial Park District

2010 Outlook for Economic Development in South Hingham

The Hingham Business Council and the South Shore Chamber of Commerce (SSCC) explored the competitive advantages of doing business in Hingham, as well as some of its challenges. In its *2010 Outlook for Economic Development in South Hingham*, the SSCC noted that the regulatory climate in Hingham could discourage some businesses from relocating or expanding in town. In addition to a number of structural improvements, the report recommended that the town adopt flexible zoning to encourage a mix of commercial, medical, light industrial and limited retail uses, potentially at a greater density and height than presently allowed.

2014 Draft Master Plan Update

As noted above, the Town of Hingham, with professional support from MAPC, recently completed a planning effort to update the *2001 Hingham Master Plan*. The public participation and outreach program conducted in association with the update identified office development as the preferred use for the South Hingham area. However, the MAPC highlighted a number of demographic trends and market forces that could negatively impact the potential for significant office and other business development in South Hingham.

The MAPC report also suggests that major economic development in South Hingham may negatively impact achievement of many local and regional goals. According to the authors, development would entail the loss of substantial amounts of open space, a 50% increase in traffic on Derby Street, and major sewer investments that could require taxpayer funding if the desired economic development does not materialize.

2014 MAPC Presentation to the SHSG

Following completion of the *Draft Master Plan Update*, representatives of the MAPC presented more detailed findings to the South Hingham Study Group in June 2014. During the presentation, Timothy Reardon, MAPC Assistant Director of Data Services, elaborated on the potential, region-wide constraints to significant economic development in South Hingham. He explained that Baby Boomers comprised closer to half (49%) of the greater Boston workforce as of the 2010 Census. Available labor in greater Metro Boston is projected to stagnate as this generation retires. The MAPC projected that the working-age population within the South Hingham commuter shed specifically will decline 5% by 2030. In-migrants, or workers relocating to the area, could potentially sustain the projected labor demand, but only if significant housing is produced to accommodate these new households. The MAPC presentation also indicated that 435,000 new housing units would be required by 2040 to meet demand and it is unclear whether the region could meet these demands given the current regulatory climate.

Moreover, the MAPC noted that there is significant competition in the region to attract businesses, including planned developments at the nearby SouthField/Union Point Corporate Center in South Weymouth, the Seaport Innovation District in Boston, and redevelopment of Quincy Center. With ready access to public transportation options and other infrastructure advantages, these locations may be more attractive to businesses than South Hingham.

South Shore 2030: Choosing Our Future

The South Shore Chamber of Commerce also completed a comprehensive review of economic dynamics within the greater region in January 2016. A Competitive Assessment, completed by the SSCC with support from its consultant, Market Street, identified several trends that could present challenges to sustained economic growth in the region. According to the Assessment, younger professionals appear to be moving away from suburban communities to more urban centers. Combined with an aging population, this lifestyle preference for shorter commutes to well-paying jobs exhibited by young professionals is viewed by the SSCC as a potential threat to the region's future economic growth. The Assessment also revealed that the region's economic base is too "internally focused," serving primarily local markets as opposed to exporting goods to outside markets. The base was also found to lean toward sectors that are contracting nationally, such as retail and financial services.

South Shore 2030: Choosing Our Future identified the following goals and strategies intended to combat these trends and foster greater economic competitiveness in the region:

- Attract a younger workforce and be more welcoming to families
- Strengthen public and private sector collaboration to build stronger communities
- Strengthen and retain existing businesses in key target sectors
- Promote new business start-ups and entrepreneurship on the South Shore
- Recruit new businesses to the region
- Improve our infrastructure capacity

Though the resulting plan has a broader geographic focus than this Report, the Group found the work telling of the larger market forces that may influence South Hingham.

South Shore 2030: Choosing Our Future – Housing Report

Following on the work described above, the Chamber released a *Housing Report* in September 2017. The report mapped out an agenda through which the Chamber might promote housing as part of its overall economic development strategy. The Chamber also recommends that South Shore communities create opportunities to build more compact housing forms, including multifamily buildings and single-family dwellings on smaller lots, which appeal to a broader range of households. The Report suggests that communities first look to encourage residential development near public transit, but also on other previously developed sites within, for instance, retail centers or underutilized office and retail centers.

2017 Updated Master Plan Goals

On March 20, 2017, the Planning Board, building on the *2014 Draft Master Plan Update*, adopted the following economic development related goals and objectives that may influence future growth in South Hingham:

- Facilitate and sustain the development of local businesses: Businesses that are owned and operated locally are an important component of the local economy; studies show that more of the money spent in a local business stays in the community. Local businesses also provide a unique destination for visitors and area shoppers. (B.1)
- Review zoning, permitting, and licensing regulations and policies to ensure that they encourage rather than hinder local business creation, siting, and activity. (B.1.a)
- Involve business owners and the Chamber of Commerce in a town-led review of current zoning, permitting, and licensing practices. (B.1.b)
- Enhance the tax base by encouraging a continued balance of commercial, industrial and residential development in South Hingham and the Hingham Shipyard to take advantage of their respective key locations and existing amenities and infrastructure. (B.2.a)
- Undertake a market analysis to inform future economic development initiatives. (B.2.c)
- Develop a master plan to articulate the strengths, constraints and opportunities in each proposed commercial and industrial district. (B.2.e)

Public Services

Public or municipal services are those basic services that members of a community expect a local government to provide. These services include, but are not limited to, the following: public safety services, such as fire, police and emergency management services; human services, such as schools, libraries, recreation, and elder services; utilities, such as water, sewer, and power; and other vital services such as roadway maintenance and trash collection.

Local regulations currently prohibit residential development in the majority of the identified study area. Since residential uses have the most direct impact on demand for human services, the Study Group did not closely examine these municipal services. Other public services, such as transportation, water, and sewer, are discussed in detail in other sections of this report. This section primarily focuses on the opportunities and challenges facing South Hingham with respect to public safety services. Additionally, electrical power is discussed since Hingham has a municipal lighting plant.

Existing Conditions

Police

The Police Department Headquarters are located at 212 Central Street, adjacent to Town Hall. The Department receives approximately 20,000 calls for service per year. A significant number of calls are generated by existing South Hingham developments, including the Derby Street Shoppes and Linden Ponds. Additionally, the Derby Street corridor experiences the highest number of motor vehicle incidents. This factor also influences the required number of police responses.

Fire and Emergency Management

Fire and Emergency Management Services are housed in the Central Fire Station, located at 339 Main Street, as well as two satellite fire stations located at 230 North Street (North Fire Station) and 847 Main Street (South Fire Station). While a significant renovation of the Central Fire Station was completed in 2008, the satellite fire stations remain in need of major renovation or replacement. The town appointed Fire Station Building Committee is currently addressing this concern.

The Fire Department also maintains an office in Town Hall for the Fire Prevention Officer. This position is responsible for plan review of proposed development for compliance with the National Fire Protection Association (NFPA) and other safety regulations and standards. Fire Department representatives are also available to meet with property owners, developers, and designers to ensure that proposed project plans adequately consider fire safety and incorporate safe access for first responders in the event of an emergency.

South Shore Regional Emergency Communications Center

The South Shore Regional Emergency Communications Center (SSRECC) provides the communities of Hingham, Cohasset, Hull, and Norwell with consolidated 911 dispatch services. The SSRECC, which operates from a state-of-the-art facility in Hingham Town Hall, replaced each individual community's dispatch services in 2011. When multiple incidents occur there are now several dispatchers available to answers 911 phone calls, provide medical advice and direction over the phone prior to arrival of EMS personnel (EMD), and meet the needs of various field units. In addition, through the cooperation of the SSRECC towns, a shared response plan is available for the calls on the town borders that is both more efficient and better utilizes existing manpower.

Hingham Municipal Lighting Plant

The Hingham Municipal Lighting Plant (HMLP) provides power to approximately 10,000 customers in the town of Hingham. The HMLP recently completed construction of a new Operations and Administration Facility located on Bare Cove Park Drive. The facility, which is approximately 24,000 SF in size, includes garaging, storage, administrative offices and customer service areas, related directly to the public utility function of HMLP. The project consolidated uses previously undertaken at several locations throughout town.

The HMLP also recently expanded its Hobart Street substation in 2006 to accommodate new growth, including the Linden Ponds development and Blue Cross/Blue Shield building in the Industrial Park. The expansion, which involved installation of a third transformer and a second switchgear building, more than doubled the then-available circuits in Hingham. Capacity remains in the substation to serve future customers; however, projects would need to be reviewed on a case-per-case basis to review expected demand from the proposed use and determine whether additional infrastructure improvements would be required to distribute power to the project site.

Founded in 1894, the Hingham Municipal Lighting Plant is today one of over 2,000 public power utilities in the country. Professional management, overseen by a three-member elected Board, coordinates the buying, selling, and delivery of energy services to local customers.

Call Volume Comparisons and Public Safety Standards

The Police and Fire Departments presented call volume data to the Study Group that were collected over the past five years for significant individual developments as well as Town-wide. The information was offered to assist the Group in comparing impacts on their respective departments arising from certain forms of development, including large-scale retail, mixed-use, and age-restricted residential, as a share of the community's overall public safety responses. It is worth noting that the information presented by the Police and Fire Departments is not necessarily comparable to one another. While many of the calls generate a response from both

departments, the Police Department data also report multiple calls related to a single incident, routine building checks, noise complaints, etc., whereas the Fire Department numbers report only responses to 911 generated calls.

Table 3: Emergency Response Comparisons

Police Department Call Volume Comparison							
Location	**Year**						
	2005	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Derby Shoppes	620	672	626	797	809	936	850
Hingham Shipyard*	60	374	627	829	1023	1118	867
Linden Ponds	86	433	606	453	536	505	446
MBTA	0	47	39	77	89	122	97
Industrial Park	272	264	321	362	376	496	422
Total calls Above	1038	1790	2219	2518	2833	3177	2682
Total Calls for Year	17513	18117	18927	20854	20527	24374	21074
Percent of Total Calls	5.9%	9.9%	11.7%	12.1%	13.8%	13.0%	12.7%

*Shipyard (business vs. residential)					
Use	**2012**	**2013**	**2014**	**2015**	**2016**
Business	495	614	794	931	745
Residential	132	215	229	187	122
TOTALS	**627**	**829**	**1023**	**1118**	**867**

Fire Department Response Volume Comparisons				
Location	**2012**	**2013**	**2014**	**2015**
Derby Shoppes	95	98	109	115
Linden Ponds	250	103	171	172
All Other South Station Responses	898	941	843	943
Town wide Fire Department Responses	3786	3985	3936	4333
South Station % of Total	32.8%	28.7%	28.5%	28.4%

An acceptable response time for a fire or medical emergencies should be no longer than seven minutes from time of call to units on scene. A maximum of five to six minutes is the ideal standard applied by the NFPA in cases of emergency.

Recent Background and Planning Efforts

While some public service infrastructure has been modernized in the recent past, including the Police Department, SSRECC, Central Fire Station, and HMLP, other public service buildings, particularly the satellite fire stations, remain in their original form. This section focuses on recent planning efforts to update the North and South Fire Stations.

Fire

In 2013, the Board of Selectmen created the Fire Department Asset Review Committee ("Asset Review Committee") to evaluate the condition and adequacy of the current fire stations and the need for future stations. The Committee focused its evaluation in large part on the satellite fire stations. Both the North and South Fire Stations were constructed in 1942. Since that time each station's work load has grown from approximately 150 fire-related calls per year to over 2,000 annual calls that include fire, medical aid emergencies, technical rescues, weather events, hazardous materials calls, aid to the public and even terrorism threats. In addition, the engines in those stations also perform the Smoke Detector Inspections for the single family homes in their fire district.

The Asset Review Committee recommended a three part modernization plan in 2014. The first priority consists of the replacement of the North Fire Station. The second and third parts both relate to the availability and adequacy of Fire and Emergency Management Services in South Hingham. The Asset Committee reaffirmed the need for a fourth fire station in South Hingham, and potentially within the vicinity of larger development around Cushing, Whiting, and Derby Streets - a need that was first recognized by a committee which reported its findings to the town in the 1968 Annual Town Report. This project would then be followed by renovation of the existing South Station. The Fire Station Building Committee is presently looking at a three station solution to the Fire response issue as the better plan for the town to pursue. They are holding open the idea that a sub-station off the main South Hingham station may be needed based on the possible future development of South Hingham.

Water

The availability of a high quality water supply is an essential consideration for development, both to support the intended domestic/commercial uses and to provide adequate fire protection. The public water supply in Hingham comes from two sources, groundwater wells and surface water supplies located almost entirely within Hingham. Currently, a private water company (Aquarion Water Company of Massachusetts, Inc.) holds all distribution rights within Hingham, Hull and a portion of North Cohasset and makes all local water supply decisions.

In 1987, the Massachusetts Water Management Act (WMA) was enacted to regulate withdrawal of water from the state's watershed basins. Under this Act, all existing water suppliers withdrawing more than 100,000 gallons per day were assigned a registration limit and any new withdrawal sources required to obtain a withdrawal permit. The Aquarion Water Company (the Water Company) has a WMA registration to withdraw water from the Weir River watershed sub-basin within the larger Boston Harbor watershed basin to service customers in their Hingham/Hull/Cohasset service area. In accordance with the WMA registration, the Water Company is authorized to withdraw no more than an average daily volume of 3.51 million gallons per day (mgd) or an annual volume of 1,281.15 million gallons per year from the Weir River watershed. While the local water supply system has not exceeded its registered withdrawal volume since 2001, withdrawals have approximated this limit in recent years. In fact, withdrawals reached 97% and 99% of the registered limit in 2014 and 2015 respectively. Following recalibration of its meters and imposition of water restrictions during drought conditions, 2016 actual withdrawals improved to 91% of the registered limit or 3.18 mgd. Nonetheless, these withdrawals suggest that even average projected development anywhere in the Hingham/Hull/Cohasset service area, including South Hingham, would cause the Water Company to exceed its authorized registration limit.

This report reviews existing and projected future water supplies and demands, as well as the infrastructure necessary to adequately convey this water to the South Hingham region.

Water Demand

The following section will review both existing water demand and projected future demand for additional water needs largely summarized from a report entitled, "South Shore Industrial Park Demand and Supply Evaluation," prepared by Tata & Howard on behalf of the Aquarion Water Company, dated June 10, 2013.

Existing Demand

Average day demand (ADD) is the total water supplied to a community in one year divided by 365 days. This demand includes all water used for residential, commercial, industrial, agricultural, and municipal purposes such as fire flow testing, and street-sweeping. In addition, the ADD

includes unaccounted-for-water, which is water lost to unmetered water uses such as hydrant flushing, firefighting and system leakage.

The ADD for Hingham, Hull, and northern Cohasset ranged between 3.08 and 3.48 mgd between 2007 and 2011. The unaccounted-for-water percentage has ranged between the low teens for a brief period to the lower twenties in recent years. The ADD does not include the interconnection with the Town of Cohasset and the approximate 0.2 mgd that serves the Linden Ponds development.

Maximum day demand (MDD) is the maximum one-day (24-hour) total quantity of water supplied during a calendar year. It represents the highest amount of volume a water supply system withdrew from its sources and delivered to its customers. In Hingham, the MDD occurs during the summer, when the seasonal population is at its peak and hot, dry, weather conditions result in greater outdoor water use including the use of irrigation systems. Outdoor summertime irrigation can often double the amount of water a public water supplier must convey through its system. MDD is a critical factor when determining the structural limitations of a water supply system. The distribution system must be capable of meeting maximum day demands with coincident fire demands with sufficient water pressure to be considered adequate to ensure public safety for the community. Estimates of projected maximum day demand and allowance for the required fire flow are used to evaluate and design pumping, transmission and storage facilities.

Projected Demands

The Department of Conservation and Recreation (DCR), Office of Water Resources, uses specific guidelines when projecting the water usage for communities in conjunction with the Massachusetts Water Resources Commission (WRC). The WRC and MassDEP are the two principle state-regulators for the WMA. Water demand projections through the year 2030 were completed for the Hingham, Hull and northern Cohasset system in November 2009. Any alternative demand projections must be accepted by the Office of Water Resources before MassDEP will approve the development of a new water supply source or authorize the withdrawal of additional volume from existing sources. The Group learned that Aquarion met established criteria for receiving revised forecasts following release of the 2010 Census; however, DCR concluded that there was insufficient data available to estimate the future water needs of this service area. A letter from DCR to Aquarion confirms that the primary concern related to the high unaccounted-for water (UAW) amounts. The average UAW value as reported in the Annual Statistical Reports between 2011 and 2015 was 20.9%. As a result, this report relies on the most recent 2009 official water demand projections from DCR for the years 2015 through 2030.

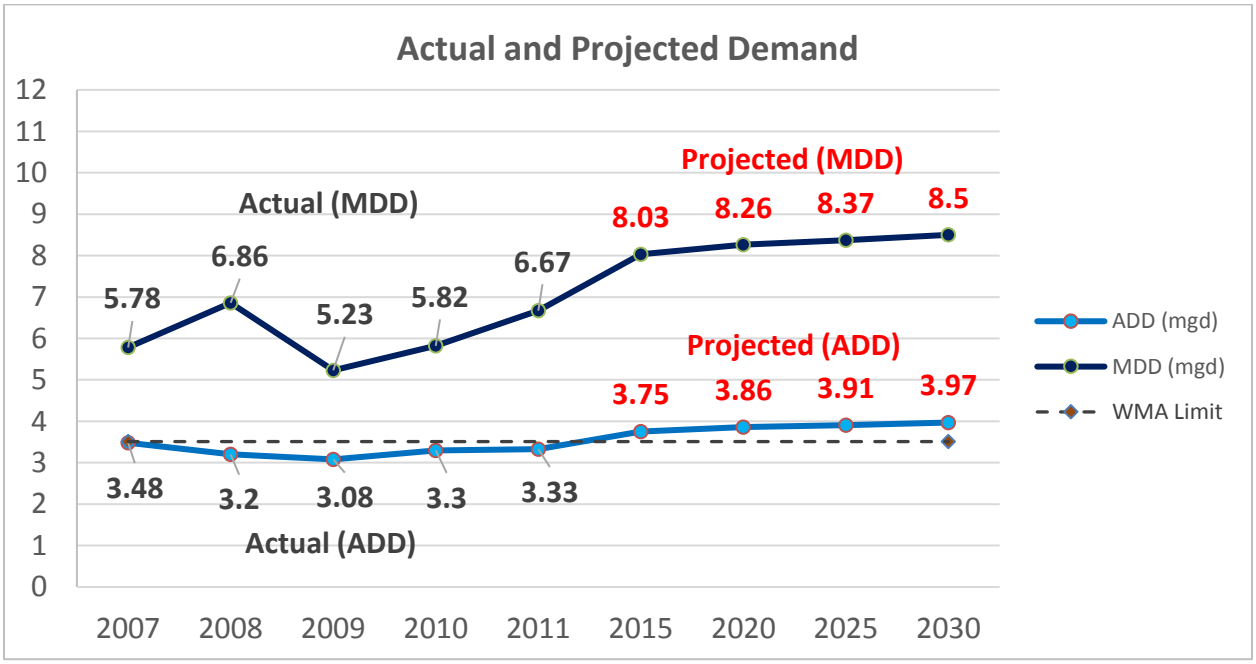
The DCR projected ADD is based on:

- Maximum residential consumption of 65 gallons per capita day;
- Year 2030 service population of 40,900; and
- Maximum of 10% unaccounted for water.

The ADD estimated by the Office of Water Resources is based on information provided by the Hingham, Hull, and Cohasset Planning Boards, as well as Aquarion Water Company and its consultants, Tata & Howard. The information includes developments completed since 2008 and planned growth within the water system boundaries as well as normal growth projections. The ADD does not include potential build-out of the water system.

Tata & Howard also prepared projected MDDs for the years 2015 through 2030 based on the maximum MDD/ADD ratio of 2.14 as observed in 2008.

Average daily and maximum day demands for the Hingham/Hull/Coshasset service area during the years 2007 through 2011, as reported to the Massachusetts Department of Environmental Protection (MassDEP) in the Annual Statistical Reports, are summarized in graph #2 below, alongside the projected ADD and MDD for 2015 - 2030.



NOTE: The Group compared the 2015 WRC-projections to actual in order to better understand the potential margin of error in terms of estimated future water demand. The actual ADD and MDD for 2015 were 3.42 mgd and 5.30 mgd respectively, or 0.33 mgd and 2.73 mgd less than that projected by the WRC. While the actual ADD was relatively close to that projected, the actual MDD varied significantly from the projected. The difference could be explained in part by customer compliance with outdoor water use restrictions.

Since the WRC projections are based in large part on residential consumption throughout the entire service area, the Group also considered the relationship between potable water and wastewater generation in order to compare water demand generated by likely types of future development in South Hingham, which presently would not include residential development. This correlation could be represented through a factor of 1.25 gallons of potable water use for each gallon of wastewater generated. This factor includes anticipated water needs for irrigation. Since

state Title 5 Wastewater Flow Design Criteria considers peak flows, the Group assumed that actual wastewater generation for each type of use would be half of the Title 5 value. Water demand based on this methodology is shown in Table 1.

Table 4: Water Demand Criteria

Application	Water Demand (Title V/2) x 1.25
Single Family Dwelling	68.8 gal. per bedroom
Multi-Family Dwelling	68.8 gal. per bedroom
Senior Housing (2-bedroom unit)	93.8 gal. per unit
Motel or Hotel	68.8 gal. per guest room
Retail Store	31.3 gal. per 1000 sq. ft.
Office Building	46.9 gal. per 1000 sq. ft.
Supermarket	60.6 gal. per 1000 sq. ft.
Medical Office	156.3 gal. per doctor (62.5 ± gal/1000 SF)
Restaurant, Sit-Down	21.9 gal. per seat
Factory, Industrial Plant, Warehouse	9.4 gal. per employee

Finally, it should be emphasized that projects currently in the permitting pipeline in both Hingham and Hull would create a total estimated ADD of approximately 108,000 gpd, which represents a significant share of the remaining system capacity (250,000 gpd) under the registered withdrawal limit. This doesn't consider any potential future development.

Water Supply

The WMA envisioned that future development, normal growth, and a diminishing return on water conservation efforts would eventually necessitate a public water supplier to petition the state for a WMA permit to either withdraw more water from its current source supply or import additional water that originates from outside of its source watershed. There is an abundance of evidence which suggest the Town and the Water Company are at that crossroad where a WMA permit seems inevitable absent a new water supply source. Correspondence dated October 24, 2016 from MassDEP to the Water Company similarly suggests this point.

Existing Conditions

The Water Company's Hingham/Hull/Cohasset service area is comprised of seven supply sources and one emergency source. Each of these sources and its estimated maximum withdrawal is identified in Table 5 below:

Table 5: Water Supply Sources

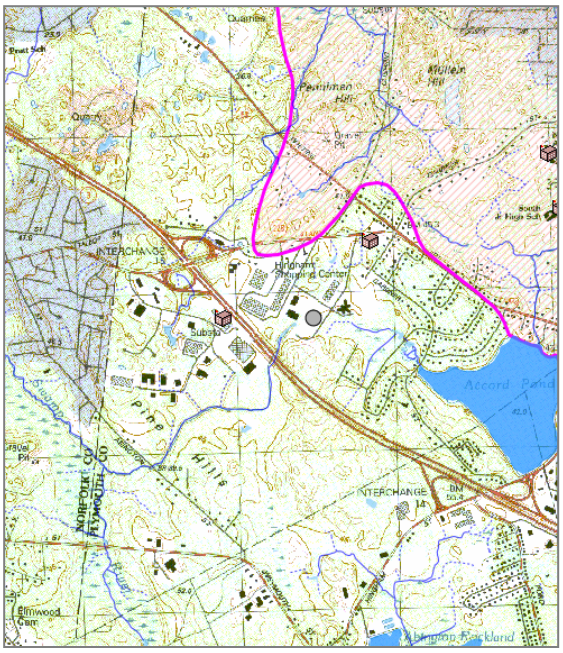
Groundwater Source	Estimated Maximum Withdrawal (mgd)
Downing Street Well	0.41
Free St. No. 2A and 4 Wells	1.80
Free St. No. 3 and 5 Wells	0.51
Fulling Mill Wells 1 and 2	1.36
Prospect Street Well	0.39
Scotland Street Wells 1 and 1A	1.55

Surface Water Source	Maximum Yield	Safe Yield
Accord Pond	3.0	0.69
Total	**9.02**	**6.71**

Source: Tata & Howard Report, dated June 10, 2013
Note: Free Street Well No. 2 is not identified in Table 2 since it is classified as an emergency source.

As Table 5 shows, production wells comprise the mainstay of the raw water supply intake system. All of these wells are relatively shallow, drawing their water directly from the watershed's groundwater rather than a deep bedrock source. The only surface water source, Accord Pond, is located to the east of the study area, in South Hingham and partially within both Norwell and Rockland. Although the pond functions as an important water supply reservoir, the immediately surrounding area largely consists of previously developed commercial and residential property and very little protected open space. Activities in the area are regulated through the Accord Pond Watershed Protection District.

While no groundwater sources are located within the bounds of the South Hingham study area, a portion north of Old Derby Street falls within a designated Zone II groundwater protection area (shown in pink in the image to the right). A Zone II is the portion of a water supply aquifer that contributes water to a groundwater withdrawal source (production well) under the most severe 180-day pumping and recharge conditions that can be realistically anticipated. The designation is supported by hydrogeologic modeling and approved by the MassDEP. This Zone II boundary along the Derby St. corridor also approximates the southernmost boundary of the Weir River watershed. Nearly all of the South Hingham properties that lie south of Route 3 are located



within the Old Swamp River watershed sub-basin which is hydraulically connected to Weymouth's water supply rather than our own.

The Water Company's water treatment facility was built in 1996, and with the exception of the Downing St. well, treats all customer water within the system. It has a reported maximum daily capacity of 7.7 mgd. It should be noted that the treatment facility's maximum daily capacity would not support the Tata & Howard-estimated 2015 – 2030 MDDs of 8.03 – 8.50 mgd. As noted above, the projections may be conservative based on an examination of the actual 2015 MDD of 5.30 mgd.

The Hingham/Hull/Cohasset service area is divided into two separate distribution systems, a high-service area and a main service area. The differentiation occurs at the Main St. Water Company treatment facility where all of central and northern Hingham, all of Hull, and a portion of North Cohasset constitute the 'main' service distribution system and served by the Turkey Hill storage tank. The southern section of Hingham, including the entire South Hingham study area, is served by the Accord Pond storage tank and comprises the 'high' service system. The 'high' descriptor refers to the South Hingham region being higher in sea-level elevation than the main service area. A storage tank (stand-pipe) serves two functions: it provides a steady water pressure to the distribution system and a reliable reserve for fire suppression activity; however, neither of these functions contribute to adequate fire suppression flows at the present time in the study area.

Environmental Conditions

The DCR maintains a classification system that assesses the level of environmental stress for each of the Commonwealth's watershed basins. The relative 'stress' of a watershed is proportional to the findings of a comprehensive analysis that compares existing stream flows to the minimal flows required to adequately support flora and fauna aquatic life. The WRC determined in July of 2005 that the Weir River watershed was "highly stressed" - the most serious of all possible classifications. The ramification of this state-assessment has a significant implication for the Water Company relative to the WMA permit process, should the Water Company seek any additional water withdrawal from the Weir River watershed sub-basin.

Previous WMA Permit Application

Prior to the above-mentioned stress determination, the Water Company applied to the state in 2004 for a WMA permit to withdraw additional water from the Weir River watershed. The application sought to permit Free St. Well #4, which at the time was the emergency back-up well for the water supply system, as a WMA new source supply. Free St. Well #4 was slated to have an estimated maximum withdrawal capacity of 1.3 mgd. The application included the filing of an Environmental Notification Form (ENF) which included notice that the Water Company would be seeking two significant regulatory waivers. The waivers were to not require a comprehensive Environmental Impact Report (EIR) - and for the WRC to grant a Determination of Insignificance under the Interbasin Transfer Act. The Massachusetts Executive Office of Environmental Affairs (MEPA) released their report in May of 2005 in response to the ENF application. MEPA stipulated

that a full EIR would be required due to numerous concerns which MEPA outlined in its report. In addition, the WRC issued its own report which similarly rejected the Water Company's intent to obtain a Determination of Insignificance. In the end, under the prospect of a comprehensive regulatory review, the Water Company chose to abandon the Free St. Well #4 WMA permit application.

Water Conservation Efforts

The Water Company implemented a Water Balance Program after exceeding its WMA registration allotment about 20 years ago. The program requires developers of new developments projecting to use more than 100,000 gallons per year to offset their planned water consumption by one of three potential options. A developer could: (1) offset its projected water use with an equal amount of water savings from elsewhere within the water distribution system, or (2) supply its proposed development with water that originates from outside of the Weir River watershed, or (3) pay into a "Water Balance Fund" with these funds dedicated to water conservation efforts the Water Company would eventually identify and implement. Early on, developers simply chose to replace inefficient water use fixtures in schools and larger buildings to offset their projected water consumption. But over time, it's become increasingly difficult to identify existing inefficiencies; and the Water Balance Fund option has become the exclusive choice. Through December 2016, approximately about $92,500 had been collected from Hingham developers. The Water Company is presently completing a comprehensive system use analysis in conjunction with developing its eventual conservation plan. To date, more than $65,000 has been expended from the Fund for this effort. Unfortunately, the reported $107,000 final projected cost of this two-phase analysis/report will significantly dampen the ability of the Water Company to fund actual conservation measures from this long-standing Fund, whatever these measures would be.

In 2017, the Water Company began a new program to promote water conservation. Through the program, customers could replace toilets, showerheads, and faucets for more efficient models for free. The Water Company also offered a $250 rebate that customers could apply towards an energy efficient clothes washer and a $2,500 rebate towards landscaping costs associated with removal of an automatic irrigation system.

Alternative New Source Supply

There are five recognized options for the Water Company to consider for obtaining a WMA new source supply. These include an additional withdrawal from the existing Weir River basin, withdrawal from a watershed basin, other than the Weir River basin, located within the Water Company's franchise area, an additional interbasin transfer from the Cohasset Municipal Water system, or a new interbasin transfer from the City of Brockton or the Massachusetts Water Resources Authority (MWRA).

1. *Weir River watershed withdrawal:*

It seems unlikely the Water Company would be able to obtain a WMA permit to withdraw additional water from the existing watershed unless legitimate offsets were in place to effectively recharge the source watershed. The construction of a decentralized wastewater facility in South Hingham is one such potential offset currently being studied.

The Water Company is currently trying to lower the amount of unaccounted-for-water (UAW) in its system from approximately 20% down to 15% (the industry's standard average) or even 10%. This has the same effect of increasing supply without further stressing the source watershed. Improvements in the UAW could also increase the likelihood that the WMA registration would be modified to permit additional withdrawals from the Weir River watershed.

2. *South Hingham (Old Swamp River watershed), North-West Hingham (Weymouth Back River watershed) or East Hingham (Cohasset Aaron River watershed) withdrawal:*

   The Water Company recently examined properties within Hingham for the purpose of developing a new source supply as a potential alternative to the Weir River. The examination included data collection from previously located test and observation wells (investigations conducted in 1950, 1957, 1959, and 1971 and groundwater monitoring in 2003). Additionally, the study identified candidate sites for further groundwater exploration based in part on property size, status (developed/undeveloped), and proximity to groundwater aquifers. The examination noted a number of concerns related to these properties as potential new source supplies, including location within the High Stress Weir River Sub-Basin, proximity to potential environmental impact areas, and other regulatory or legal constraints.

3. *Cohasset Interbasin Import:*

   The Cohasset Municipal Water Department has an existing relationship with the Water Company to supply up to 306,000 gallons per day for use within Hingham. This amount is tied to the measured water use by the Linden Ponds residential development. The following issues would need to be considered before the Water Company could purchase additional wholesale water from Cohasset:
   - Cohasset would likely require updated demand projections and safe yield analysis to confirm availability of water for wholesale;
   - The Water Company and Cohasset would have to execute a new or modified Intermunicipal Agreement; and,
   - MADEP and other regulatory agencies would need approve permits and assess the applicability of the Interbasin Transfer Act.

4. *Brockton Interbasin Import:*

   The Brockton alternative involves purchases from the City of Brockton using desalinated water produced by the Aquaria desalinization plant on the Taunton river

estuary. This same source was once explored by Linden Ponds for their source supply before selecting the less costly Cohasset option. Unanswered questions about the plant's reliability, future ownership, the inherently high cost of desalinization, required numerous wheeling arrangements and environmental concerns over Brockton's current water supply withdrawals would seem to warrant further investigation. In fact, neighboring communities have recently expressed renewed interest in the option.

5. *MWRA Interbasin Import:*

   The MWRA is the largest water supplier in all of New England and is aggressively seeking to expand its sales and community footprint. Where Hingham is already part of the MWRA sewer system, the regulatory issue of interbasin transfer which would plague other interbasin transfers becomes moot. Recent press accounts concerning the 1,500 acre Union Point development in South Weymouth, formally called Southfield, report that Union Point will pursue a direct connection with the MWRA for its water supply needs within the next five (5) years. There is a potential to convey MWRA water from Union Point to Hingham; however, there are both financial and regulatory hurdles to acquiring water through the MWRA.

Past Planning Efforts

Several planning studies have also been completed in recent years that analyze various aspects of the water supply and future demand projections.

2001 Master Plan

The *Hingham Master Plan*, completed in December 2001, identified nonpoint source pollution and polluted runoff as the most serious threat to Hingham's water supply. The Plan offered several strategies intended to maintain the overall quantity and quality of groundwater in Hingham's (watershed) aquifer. The Plan specifically recommended the following water-related action items, which remain generally relevant to potential future growth in South Hingham:

- Control nonpoint source pollution in order to protect water resources. Consider adoption of regulations that include stormwater management standards and design standards limiting impervious surfaces.
- Strengthen the Accord Pond Watershed and Hingham Aquifer Protection District By-Law by regulating additional uses and activities and incorporating stormwater management standards. Expand the District to include at a minimum all land within Zone II areas. Consider requiring a special permit for projects that have the potential to adversely impact the -water supply, including larger subdivisions or new construction that creates significant impervious surfaces limiting groundwater infiltration.
- Identify additional potential groundwater well sites and/or additional water supplies, beyond the existing watershed source for future use.

2003 Water Supply Committee Interim Report

The Hingham Water Supply Committee (WSC) drafted a 2003 interim report that addressed pertinent water supply issues. A brief synopsis includes:

- Information on the health of the water source supply including a 2002 study commissioned by the Dept. of Massachusetts Environmental Management which served as a core document for the WRC's 2005 Weir River watershed stress assessment determination.
- Twenty-year water needs projections that were grossly underestimated because of the (then) newly-permitted Erickson housing development (Linden Ponds) and the Hingham Shipyard development. The report described how the water supply for the Linden Ponds development would come from Cohasset via interbasin transfer through a renewable 20-year contract.
- A Water Balance Program implemented by the Water Company by consent agreement with the state. This followed the Water Company having exceeded its WMA registration allotment in both 1998 and 2001. The program required developers of new developments projecting to use more than 100,000 gallons per year (more than two homes) to offset their planned water consumption with water savings elsewhere within the system. The WSC noted how the Water Company implemented a 1:1 offset rather than a 2:1 or greater offset more commonly employed with mandatory conservation programs.
- Discussion about the formation of a Municipal Water District to give Hingham more autonomy over its water supply-related decisions. Both municipal and a private/public cooperative partnership models were identified.

2013 Tata & Howard Report

A 2013 Report, prepared by Tata & Howard on behalf of the Water Company, looked at likely demand and recommended infrastructure improvements needed to support anticipated growth in South Hingham, including the remaining build-out of the South Shore Park and development of the Bristol Property. A multifamily housing development proposed to be located on Recreation Park Drive was also factored into demand projections; however, the Town has since acquired the property for other purposes. As a result, recommendations related to this specific development are not summarized in this report.

In order to serve the potential future customers in the South Shore Park (SSP), Tata & Howard recommended installation of new 12-inch diameter water mains on both Abington and Sharp Streets and connect to the existing system through a water main between Research Road and Abington Street. A 12-inch diameter water main was also recommended on Commerce Road running from the existing 12-inch diameter water main on Commerce Road to the Rockland town line. An additional 12-inch diameter water main to connect the proposed Commerce Road water main to the proposed water main on Abington Street to provide desirable looping was also recommended. Construction costs for the proposed water main expansion within the SSP, which

would include approximately 16,500 linear feet of new 12-inch diameter water main, were estimated to be $3,300,000. Tata & Howard also assumed that future development of the Bristol Property would be served by a new 8-inch diameter water main that connects the existing water mains on Old Derby Street and Whiting Street. At approximately 1,300 linear feet, the estimated construction cost to this upgrade would be about $460,000.

The Report indicates that anticipated development in South Hingham would require additional water supply sources. Tata & Howard engineers believed that system improvements in conjunction with MassDEP approval of additional withdrawals from groundwater wells on Free Street (2A and 4) would enable the Water Company to meet projected demands. Tata & Howard also considered connection to the MWRA system in North Quincy across the Fore River as an alternative means to increase supply. This particular MWRA alternative involved construction of two miles of water main along Route 3A, in addition to a new pump house. An estimated entrance fee of $3,000,000 would also be incurred if the MWRA alternative were pursued.

The Report also considered alternative improvements that would provide the necessary water pressure for fire protection in South Hingham. These include:

1. *Water Main Improvements*

   Option #1 recommended water main improvements to the existing water distribution system to maintain adequate water pressure. The estimated probable cost for these improvements ranged from $2,670,000 to $3,800,000, depending primarily on whether or not a new water main under Route 3 would be installed.

2. *Water Main Improvements and Booster Pump Station*

   Option #2 utilizes a booster pump station to provide greater pressure and flow. The booster pump station would be located on the existing 12-inch water main that feeds the SSP off Industrial Park Drive. The estimated construction cost for the booster pump station and associated water main improvements ranged from $1,400,000 to $2,200,000.

3. *Water Main Improvements and Second Feed to South Shore Park*

   A second transmission line to the SSP was considered for Option #3. A second transmission main would also provide favorable redundancy. A new 16-inch diameter water main is recommended from Whiting Street to the proposed water main expansion on Commerce Road. The water main route would include Accord Pond Drive, Harvest Lane, Devon Terrace and Deerfield Road. A new 16-inch diameter water main would need to be installed under Route 3, which requires directional (horizontal) jacking and/or drilling. The estimated probable cost ranged from $1,840,000 to $3,410,000.

4. *New Water Tank*

Option #4 considered a new water storage tank in the SSP area. The water storage tank would be utilized for an additional fire protection reserve and to maintain adequate pressure during peak hour demands. No additional water main improvements would be recommended. The estimated probable cost for a new water storage tank and associated water mains is $2,940,000. This estimate does not include costs associated with land acquisition, easements, legal work, or significant site work. Of the four studied options, Tata & Howard recommended that Aquarion pursue this Option #4.

2016 EPG Draft Technical Memorandum

The Water Company engaged Environmental Partners Group, Inc. (EPG) to evaluate both the need for and feasibility of a new water supply source. EPG contacted DCR on behalf of the Water Company in April 2016 to request updated water demand projections for the Hingham/Hull service area. As discussed above, DCR determined in response that there was insufficient data available to estimate the future water needs due to high UAW. As a result, EPG prepared its own water demand projections for the period 2016 through 2036 using WRC General Methodology. EPG's draft Technical Memorandum, dated May 20, 2016, presents two separate demand scenarios (54 GPCD) and 65 GPCD) and three separate UAW scenarios to show the potential range of future system demands. The analysis concludes that: "Despite continuing efforts to reduce the amount of UAW, it is reasonable to assume that in order for Aquarion to reliably meet the future demands of the HHC water system, a new source of water will be required." The Memorandum then reviewed alternatives for new water sources that parallel those summarized in the *Alternative New Source Supply* section above.

EPG's draft Technical Memorandum included the following recommendations:

- Continue to implement UAW reduction measures and apply for a new WMA permit for existing sources as soon as 10% UAW is achieved.
- Examine wholesale water agreements, particularly with the MWRA, by 1.) preparing cost estimates to support any new interconnection and 2.) studying effects of interconnection on water quality and water system hydraulic gradelines.
- Investigate candidate groundwater exploration site identified in the Memorandum through a test well program with a focus on candidate site EPG-5, which is located immediately east of the Water Treatment Plant on land owned by the Water Company.

South Shore 2030: Choosing Our Future – Infrastructure Report

As noted in the Economic Development Section of this Report, the South Shore Chamber of Commerce recently completed a *Regional Competitive Assessment* and a regional plan, *South Shore 2030: Choosing Our Future,* to encourage economic development. Following on this work, the Chamber released an *Infrastructure Report* in early 2017, which identified a number of strategies intended to increase our infrastructure capacity. The Report acknowledges that "water/wastewater problems may be our largest obstacles to growth in the region…" Strategies intended to overcome these obstacles and related either directly or indirectly to South Hingham include:

- The Chamber should encourage extension of MWRA water to more communities south of Quincy.
- The Chamber should work with local officials on developing regional approaches to water supply and wastewater solutions, including possible use of water from Brockton.
- The Chamber should work with local/state officials to ensure water/wastewater systems are reliable and that the business community takes closer notice of communities with aging and failing systems.
- Three area of particular concern for water/wastewater resources include Union Point, the Derby Street area in Hingham and along sections of Route 53.

Wastewater

Wastewater is the biologic and/or industrial waste-product generated by human habitation or commercial activity. There are two possible options to safely and effectively manage wastewater disposal: either through the use of on-site 'septic' management or through a communal 'sewer' system. Septic management comprises a sanitary disposal mechanism that lessens the toxicity of septic waste and returns this treated wastewater back into the ground. Septic systems are typically associated with single source generation and private ownership. The owner is also responsible for the system's operation and maintenance. Septic management is governed by State Title-5 statute and Massachusetts Department of Environmental Protection (DEP) regulations as well as local supplementary regulations promulgated and overseen by the Hingham Board of Health. On the other hand, sewer management involves a collection system servicing multiple sources and the conveyance of untreated sewage waste to a local or regional common treatment facility which converts sewage into treated wastewater that is either returned into the ground (like a septic system) or discharged into an appropriate body of water. Sewer wastewater management in Hingham is largely governed by local sewer regulations promulgated and overseen by the Hingham Sewer Commission.

Wastewater Generation Comparatives

Each type of residential, industrial or commercial development has a specific Title-5 wastewater value linked to how the property is to be used. For instance, residential dwellings are assessed 110 gallons of wastewater per day per bedroom - so a typical 4-bedroom home would need to have a 440 gal/day capacity septic system or sewer flow assessment. An industrial or warehouse setting, ubiquitous to the South Shore Industrial Park, would have a 15 gal/day per employee assessment. The following table identifies some common Title-5 wastewater values.

Table 6: Title-5 Wastewater Flow Design Criteria

Application	Wastewater Generation
Single Family Dwelling	110 gal. per bedroom
Multi-Family Dwelling	110 gal. per bedroom
Senior Housing (2-bedroom unit)	150 gal. per unit
Motel or Hotel	110 gal. per guest room
Retail Store	50 gal. per 1000 sq. ft.
Office Building	75 gal. per 1000 sq. ft.
Supermarket	97 gal. per 1000 sq. ft.
Medical Office	250 gal. per doctor (100± gal/1000 SF)
Restaurant, Sit-Down	35 gal. per seat
Factory, Industrial Plant, Warehouse	15 gal. per employee

Existing Conditions

While the Town has public sewer infrastructure in some parts of the community, there is no public sewer system in South Hingham. Existing businesses and residences are served largely by individual on-site sanitary disposal systems for wastewater treatment and disposal. South Hingham has some of the largest septic systems in Hingham. For instance, the Linden Ponds residential complex, which is not in the South Hingham Sewer District, can process up to 300,000 gallons of septic effluent per day. The Derby Street Shoppes has a 50,000 gallon per day septic system, and the new South Shore Hospital Bone & Muscle Center has a 7,000 gallons per day septic system. Septic management is a tried and true, cost-efficient option for developments or regions of low to mid density. Because septic systems require certain soil conditions and ample land area on-site to support the dispersion of treated effluent into the ground, they becomes less prominent in regions of problematic soils, or when proximal to certain environmentally sensitive features, or with higher density developments. Several larger properties on the outer edges of the South Hingham study area have individual connections to municipal sewer systems in neighboring towns (Weymouth and Rockland); such connections have, in fact, been critical to allowing the development or re-development of these parcels. At this time, it appears that these individual outside sewer connections are no longer an option for Hingham properties in the South Hingham study area.

Individual on-site sanitary disposal systems in South Hingham, particularly on properties developed in the 70's and 80's, presently experience the highest rate of repair in town. As a result, several studies have identified a need to expand sewer infrastructure in the area, both to improve existing conditions and encourage additional economic activity.

Based on current building use types, existing building areas, and Title 5 Flow Design Criteria, the approximate wastewater design flow in the South Hingham Sewer District is 200,000 gallons per day.

Background

In April 2010, Town Meeting approved three related warrant articles to advance a wastewater management solution in South Hingham. Article 31 authorized the Board of Selectmen to pursue legislation needed to provide the option for connecting to the MWRA sewer system through Weymouth. Article 32 created a new South Hingham Sewer District and placed it under the control of the Hingham Sewer Commission. The District encompassed all properties in southwest Hingham then zoned Industrial Park and Office Park. Finally, Article 33 appropriated $15,000 for the design, engineering, and application for connection of the new sewer district to the MWRA sewer system.

The following year, Town Meeting endorsed the project again, voting to appropriate up to $190,000 to fund preliminary engineering, permitting, and submissions associated with development of a wastewater treatment facility in the South Hingham Industrial District.

In 2012, Town Meeting added approximately 200 acres north of Route 3 (the "Bristol Property") to both the Office Park zoning district and the Sewer District in South Hingham.

These legislative actions expressed voter interest in pursuing a public sewer system for commercial, largely non-residential properties in South Hingham. In each instance, the warrant article referenced the goal of encouraging low-impact, high-value economic development in South Hingham in order to yield significant, long-term tax revenue for the Town, and to reduce the tax burden placed on Hingham's residential properties.

Past Planning Efforts

Town Meeting action on the aforementioned warrant articles were an outgrowth of several planning projects.

2001 Master Plan

The *Hingham Master Plan*, completed in December 2001, includes a buildout analysis of all non-residential districts based on then existing zoning regulations. In the South Hingham Industrial Park District, total buildout was estimated to be approximately 3.7 - 4 million square feet. An alternative buildout analysis based on the local supplemental septic regulations adopted by the Board of Health was also prepared. The local regulations established a 20% higher standard for septic denitrifcation in Hingham, beyond the state standard, due to the stressed health of the Town's water supply watershed. This higher local standard was estimated to reduce potential industrial buildout by approximately 30% and potential office development by 60% in South Hingham, based on the assumption that wastewater disposal in the area would continue to be via on-site septic management rather than by local or regional sewer management.

2007 Comprehensive Wastewater Master Plan Phase 1 - Needs Analysis

The Massachusetts Department of Environmental Protection requires that each community that utilizes municipal sewers to manage its wastewater develop a Comprehensive Wastewater Master Plan (CWMP). These plans serve as a general roadmap to predict and facilitate sewer expansion over time. The first phase of the CWMP for the Town identified the South Hingham area as a priority for consideration of sewer treatment. The CWMP Needs Analysis identified a mix of problematic soil conditions for on-site disposal. The study area overall largely consists of both sand and gravel and till with underlying bedrock, which limits successful long-term function of on-site disposal systems. In addition, many of the septic systems in the South Shore Park (Pond Park area) were developed in the 70s and 80s for light industrial uses. As a result of these factors and with progressive development, this area was found to have the highest rate of septic failures in all of Hingham.

The Needs Analysis classified the Industrial/Office Park study areas as a "Priority" needs area. While this area did not qualify as "High Priority" based on environmental or public health conditions, the CWMP Steering Committee nonetheless chose to evaluate sewer management

options for the Industrial Park area in South Hingham, including both a centralized regional system (MWRA) and decentralized local treatment system, for socio-economic reasons.

2010 Outlook for Economic Development in South Hingham

The Hingham Business Council and the South Shore Chamber of Commerce (SSCC) reiterated the likely relationship between public sewer and positive economic development. In its *2010 Outlook for Economic Development in South Hingham*, the SSCC pointed to a lack of sewer service as an impediment to development in the area. Substantial land in South Hingham, relative to other areas of town, remains un- or under-developed. The report concludes that a proactive approach to infrastructure solutions, including but not limited to development of the sewer district, "will allow for a gradual build-out of the South Hingham area with a variety of businesses that individually lack the scale or resources to be the single fix..."

2011 Draft Comprehensive Wastewater Master Plan (CWMP) Phase 2 - Recommended Plan

The final phase of the Comprehensive Wastewater Master Plan is to develop a 20-year plan. The preliminary 2009 plan is currently being updated and finalized by the Hingham Sewer Commission and is not a completed document. However, a 2011 working draft of the CWMP's initial recommendations is available for comment.

The 2011 working draft recommended the establishment of an Industrial Park Sewer District as it provides the best balance between wastewater management needs and economic development. Implementation of a sewer system in the South Hingham Sewer District would benefit existing local businesses by eliminating costs associated with repairs of on-site systems and allowing for a diversity of future growth and expansion. This option also has the greater potential to generate additional tax revenue for the Town with minimal impact on other municipal services or resources.

The 2011 working draft considered several alternative methods to implement the recommended Sewer District in South Hingham. These included construction of one of the following: 1.) De-centralized Treatment and Disposal sewer system within the study area; 2.) Centralized Treatment and Disposal connection through Weymouth's MWRA sewer system; or 3.) Centralized Treatment and Disposal expansion through North Hingham Sewer District that is also part of the MWRA regional network.

Both De-Centralized and Centralized (MWRA) options would require installation of an area collection system. According to the 2011 working draft, the proposed industrial park area collection system would consist of a network of gravity sewers, pump stations, and force mains. This collecting system was estimated to cost approximately $7,460,000. All figures associated with the CWMP could be updated to account for the 30% increase in the Sewer District land area due to the inclusion of the Bristol Property in the District, and to incorporate approximate construction cost inflation of 3 – 4% per year.

1. Centralized Sewer System Discharge Alternative

The CWMP analyzed the feasibility of pursuing a centralized system to provide sewer services in South Hingham. Two potential connections to the MWRA system were considered - one through South Weymouth and the other through North Hingham. Advantages to connection to the MWRA system include a relatively unlimited waste water capacity, a relatively low-maintenance treatment system, and no need to purchase valuable, developable land for effluent dispersion and groundwater re-charge. The identified disadvantages to either route include the cost of the MWRA entrance fee and inflow mitigation and high entrance fees and mitigation cost via the Weymouth route and flow limitations via the North Hingham connection route. In addition, a side effect associated with the through-Hingham route could be the provision of a public sewer system throughout the town's residential districts, and the associated potential for increased residential development in these areas; to date, Town Meeting has not expressed support for allowing this kind of potential growth. Connection to the MWRA via either route would also result in an interbasin transfer, where users would draw their water supply from local stressed watershed resources, but ultimately ensuing wastewater flow would be discharged outside of town into Boston Harbor. However, connection to the MWRA water supply system for additional water supply, a connection currently being considered for the neighboring Southfield/Union Point development in Weymouth, could mitigate significantly many of these adverse impediments.

The 2010 estimated costs associated with a centralized sewer system to range from $25.5M for a connection through Hingham North Hingham Sewer District to $32.4M for a connection through Weymouth. These values do not include current escalation costs (which can range between 3-4% annually) or land acquisition costs, which can be significant given the ever-increasing cost of quality uplands in Hingham.

2. De-centralized Sewer System Discharge Alternative

The recommended alternative examined in the CWMP working draft includes construction of a sewer system within the study area with a decentralized wastewater treatment facility and discharge of treated wastewater back into the local water supply watershed. Depending on soil conditions and the projected volume of future new development and re-development, this alternative could require from 2 to 100 acres to handle infiltration of treated effluent.

The working draft's Recommended Plan indicates that the Town had identified several potential locations for a pumping station, treatment plant, and associated leaching fields or other disposal technology. These include a 4.1 acre site south of Route 3 and a 4.5 acre parcel to the immediate north of Route 3. The working draft estimates the probable cost of a de-centralized system to be $26.4M in 2010 dollars. This estimate does not include any expenses related to land acquisition, construction escalation costs, or opportunity costs (in terms of lost tax revenue) associated with removal of potentially developable land from the tax rolls. Subsequent to release of the 2011 working draft, the Town

purchased the referenced 4.1 acre site noted above, and also an 18.6 acre site off Recreation Park Drive, both for the express purpose of supporting some of the discharge for the proposed de-centralized system alternative; the cost of these two purchases was approximately $3.9M. However, the potential infiltration capacity of these two properties appears to be only in the range of 60,000 – 80,000 GPD, which is approximately 1/3 of the existing 200,000 GPD design wastewater flow for the entire District. Based on the land purchased to date, additional acreage would be required to support both the remainder of the existing design flow plus the flows associated with an initial phase of de-centralized system ("phase 1") to handle the desired amounts of new development and re-development on the south side of Route 3, or approximately 150,000 gallons per day. It is also estimated a subsequent phase ("phase 2") would involve an additional 150,000 gallons per day from the undeveloped lands located on the north side of Route 3.

South Shore 2030: Choosing Our Future – Infrastructure Report

As noted in the Economic Development Section of this Report, the South Shore Chamber of Commerce recently completed a *Regional Competitive Assessment* and a regional plan, *South Shore 2030: Choosing Our Future,* to encourage economic development. Following on this work, the Chamber released an *Infrastructure Report* in early 2017, which identified a number of strategies intended to increase our infrastructure capacity. The Report acknowledges that "water/wastewater problems may be out largest obstacles to growth in the region…" Strategies intended to overcome these obstacles and related to South Hingham include:

- The Chamber should work with local officials on developing regional approaches to water supply and wastewater solutions…
- The Chamber should work with local/state officials to ensure water/wastewater systems are reliable and that the business community takes closer notice of communities with aging and failing systems.
- Three areas of particular concern for water/wastewater resources include Union Point, the Derby Street area in Hingham and along sections of Route 53.

Transportation

Transportation is simply the way people and goods get to a destination. There are several common modes of transportation used to navigate in and about a community including driving, biking, and walking. More often than not, these forms of transportation take place within roadway layouts. The two basic functions of any roadway are land access and traffic management. Roadways are classified into three groups: arterials, collectors, and local roadways. An arterial, such as an interstate freeway or expressway, is a roadway that primarily serves through traffic and provides limited access as a secondary function. Collector roads primarily collect and distribute traffic between arterial and local streets, but also provide access to development as a secondary function. Finally, local roads primarily serve as access to adjacent properties and only play a minor role in accommodating through traffic.

The Massachusetts Department of Transportation ("MassDOT") classifies all roadways in the commonwealth according to these functional characteristics. The categories include: principal arterials, minor arterials, collector streets, and local streets. Examples of each type of roadway fall within the study area as follows:

Table 7: Roadway Categories

Classification	Street Name
Principal arterial	Route 3
Minor arterials	Route 53, Derby Street
Collector streets	Cushing Street, Gardner Street
Local streets	All other streets not referenced above

The National Highway System developed this classification system so that all areas would have similar percentages of each roadway category and funding for roadway improvements could be more equitably distributed. These functional classifications can also be helpful in identifying the principal use of a roadway itself; however, the classification system does not always accurately capture the principal uses adjacent to the roadway. For instance, properties along Cushing Street and Gardner Street, both identified as collector streets, have been developed primarily with single-family homes. These residents may experience incidental impacts associated with increased "cut-through" traffic, including noise, air pollution, and potential delays when exiting their properties.

Transportation management in Hingham is largely governed by the Town; however, several state highways fall under the jurisdiction of MassDOT. Within South Hingham, these include the following arterials: Route 3, Route 53, and Derby Street.

Traffic Generation Comparatives

Each type of residential, industrial or commercial development has a specific vehicle trip generation value linked to how the property is to be used. For instance, single family residential dwellings generate on average 9.57 weekday daily trips whereas apartment-style residential development averages 6.65 weekday trips per unit. An industrial or warehouse setting, ubiquitous to the South Shore Park, would have an estimated 6.97 average weekday daily trips per 1,000 SF of development. The following table identifies some common trip generation values based on national averages developed by the Institute of Transportation Engineers.

Table 8: Traffic Generation[2]

Land Use ITE Code	Average Daily Weekday Vehicle Trips
Single Family Dwelling (210)	9.57 per dwelling unit
Multi-Family Dwelling (220)	6.65 per dwelling unit
Senior Housing (252)	3.48 per dwelling unit
Motel or Hotel (320, 310)	5.63, 8.17 per room
Shopping Center (820)	42.94 per 1,000 SF
Office Building (710)	11.01 per 1,000 SF
Supermarket (850)	102.24 per 1,000 SF
Medical Office (720)	36.13 per 1,000 SF
Restaurant, Sit-Down (932)	127.15 per 1,000 SF
Industrial Park (130)	6.97 per 1,000 SF

Existing Conditions

A comprehensive field inventory of existing transportation conditions within the northern portion of the study area was completed by Vanasse & Associates, Inc. in November 2015 in support of the *2016 South Hingham Transportation Assessment*. Field investigation resulted in an inventory of existing roadway geometrics and operating characteristics, as well as posted speed limits and land use information within the study area, which included Derby Street and twelve (12) specific intersections. A capacity analysis was also performed, resulting in the assignment of level of service values for each identified intersection. Level of service ("LOS") is a qualitative measurement of operational conditions or traffic flow based on such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS "A" representing the best operating conditions and LOS "F" representing congested or constrained operating conditions. While operating conditions under 2015 existing traffic volumes, roadway, and intersection conditions varied, more than half of the intersections within the study area were shown to operate at or over capacity (defined as LOS “E” or “F") during one

[2] Trip Generation Rates from the 8th Edition of the ITE Trip Generation Report

or more peak hour[3] as shown in Table 2 below . More detailed existing conditions information can be found within the *Assessment.*

Table 9: Intersection Level of Service

Intersection Location	Traffic Control Type	Peak Hour Level of Service (LOS)		
		Weekday Morning	Weekday Evening	Saturday Midday
Whiting St./Derby St./Gardner St.	Traffic Signal	C	E	C
Whiting St./Cushing St.	Traffic Signal	C	C	C
Derby St./Recreation Park Dr.	STOP-sign	C	F	F
Derby St./Cushing St.	Traffic Signal	B	C	C
Derby St./Derby Street Shoppes Service Rd.	STOP-sign	C	F	F
Derby St./Derby Street Shoppes Rt. Turn Dr.	STOP-sign	C	F	F
Derby St./ Derby Street Shoppes Main Dr.	Traffic Signal	A	C	C
Derby St./Old Derby St. North	STOP-sign	D	D	B
Derby St./Old Derby St. South	STOP-sign	B	F	E
Derby St./Rte. 3 Northbound Ramps	STOP-sign/ YIELD-sign	F	F	F
Derby St./Rte. 3 Southbound Ramps	STOP-sign/ YIELD-sign	F	F	F
Derby St./Pond Park Rd./175 Derby St.	Traffic Signal	A	B	A

In addition to physical and operational roadway characteristics, the study examined available pedestrian and bicycle facilities, as well public transportation services. Sidewalks are provided along one or both sides of Derby Street and Whiting Street, with pedestrian traffic signal equipment and crosswalks provided at the majority of the study-area intersections. No formal bicycle facilities were identified within the study area; however, the *Assessment* noted that in

[3] Peak hours (weekday morning, weekday evening, and Saturday midday) are the periods during which the maximum amount of travel occurs

general Derby Street and Whiting Street both provide sufficient width (combined travel lane and shoulder) to support bicycle travel in a shared travelled-way configuration. Public transportation services are also absent within the study area. The Massachusetts Bay Transportation Authority (MBTA) offers bus services to the Town of Hingham by way of fixed-route to Hingham Center (Route 220) and Ward Street/French Street (Route 222). The MBTA also runs Commuter Boat service from the Hingham Shipyard and Commuter Rail service on the Greenbush Line from West Hingham Station. These services are not readily accessible to existing or potential future development in the study area. The closest commuter rail stop to South Hingham is located in Weymouth on the Kingston Line. There is also a Park & Ride location on Rt. 228 in Rockland for commuters interested in carpooling to work. Plymouth & Boston Street Railway Company, a private company, offers bus service to downtown Boston and Logan Airport from the Park & Ride.

The *Assessment* also examined motor vehicle crash trends by reviewing crash data for the most recent three-year period available (2011 through 2013, inclusive) from the MassDOT Highway Division Safety Management/Traffic Operations Unit. A total of 158 motor vehicle crashes were reported to have occurred within the study area during this period, 151 of which were reported to have occurred at or within the influence area of an intersection and seven (7) were classified as occurring at a mid-block location (i.e., between intersections).

Recent Background

In terms of capacity, the stop-controlled ramp intersections with Derby Street have been found to operate at LOS F during peak hour dating as far back as 1997. Traffic volumes have grown 15% since that time, intensifying traffic-volume issues in the area. Safety along the entire corridor has also been a long-term concern, and particularly at the Whiting Street/Gardner Street/Derby Street intersection given the very high crash rate measured at this location.

In order to mitigate these previously identified level of service constraints and safety concerns, the Board of Selectmen designated the Derby Street corridor as its number one infrastructure priority in 2010. The Town, acting as the proponent of an improvement project, then identified infrastructure needs, accident history, and poor “Level of Service” along the corridor to MassDOT in 2012 and subsequently undertook the effort of preparing design plans, addressing ROW issues, bidding, and permitting the Derby Street Corridor Reconstruction Project. Simultaneously, MassDOT initiated a related intersection improvement project at the Whiting Street (Route 53)/Gardner Street/Derby Street Intersection. Each project is an outgrowth of focused planning initiatives including Road Safety Audits, Functional Design Reports, design review, and public meetings. Both projects have respectively been programmed for funding in FFY 2017 and 2018.

Derby Street Corridor Reconstruction Project

The Derby Street Reconstruction Project is primarily an intersection improvement project that runs the length of the Derby Street corridor between Pond Park Road and Cushing Street. Traffic signals will be installed on Derby Street at both the Route 3 Southbound and Northbound ramps. In addition, left turn lanes will be added to enter the on ramps from Derby Street. A second eastbound lane will be incorporated into the design at the southbound ramp, as well as an

additional westbound lane at the northbound ramps. The proposed lights will be coordinated with those existing along the corridor. The project also includes reconstruction of existing and installation a new sidewalks along Derby Street. Finally, an increased shoulder width will accommodate a minimum 5-foot bicycle lane.

The Derby Street corridor design considered standard traffic growth at a rate of 1 percent per year for 20 years (base year 2012-final year 2022), in addition to a recently completed private development consisting of a 41,000 SF car dealership; however, the proposed designs will be able to accommodate potential additional growth as well. The Town's consulting engineer for the Project, CHA, prepared a sensitivity analysis specifically for the Route 3 Bridge. The analysis assumed that a 1.5M SF Business Park (LUC 770) would be located on land north of Derby Street. With multiple access points including Derby Street (via Old Derby Street) and Whiting Street in Hingham and Pleasant Street in Weymouth, it was estimated that 50% of the traffic from the potential development would access and egress from Derby Street. CHA determined that the bridge could handle traffic generated by this level of development.

That being said, future development at greater levels may result in a volume increase or change in traffic patterns that may trigger the need for additional offsite traffic mitigation. VAI completed a similar "failure analysis" for the Derby Street corridor and determined that the corridor can accommodate an additional 13,000 vehicles per day (vpd) on an average weekday with the currently contemplated improvements to the corridor that are being advanced as a part of the state funded improvement projects and no other major roadway improvements. For context, Derby Street currently accommodates approximately 30,000 vpd.

The control point for the corridor was determined to be the Derby Street/Old Derby Street intersection and the Route 3 Bridge. Development that would generate in excess of 13,000 vpd would result in vehicle queuing at the Derby Street/Old Derby Street intersection that would necessitate the addition of travel lanes to Derby Street west of the intersection and replacement of the Route 3 Bridge.

Finally, the Town recently developed a conceptual plan to realign the north and south legs of Old Derby Street. Analysis of the concept demonstrates that the realigned intersection would meet signal warrants and would operate at an acceptable level. The plan is under review by MassDOT for potential inclusion in the overall Derby Street Reconstruction Project, scheduled to begin in 2018.

Whiting Street (Route 53) and Derby Street Intersection Improvements

This project, sponsored by MassDOT, consists of geometric modifications and installation of an updated traffic signal. Presently, a motorist traveling eastbound on Derby Street has a leading phase to take a left turn onto Gardner Street. The existing traffic signal does not display a green arrow to inform motorists of their right-of-way during this phase, making it difficult for drivers taking this turn to accurately judge when oncoming traffic from Whiting Street/Route 53 will begin. The proposed project will alleviate this safety hazard. The project also extends to the

Cushing Street intersection and will include a turn lane at Recreation Park Drive. Finally, the project will provide improved accommodations for bicycles and pedestrians.

Route 3 Express Lane Feasibility Study

To address existing and future congestion and improve safety along the Route 3 Corridor, MassDOT recently studied the possibility of Express Toll Lanes to add capacity to the four-lane limited access highway. The toll lane would replace the current peak hour use of the breakdown lane, which was temporarily permitted by the Federal Highway Administration when volumes on Rte. 3 clearly exceeded capacity. The Express Toll Lanes would run parallel to the existing general purpose lanes between Exit 12 at Route 139 (Marshfield/Pembroke) and the Braintree split. Two concepts were explored, including a single toll lane in each direction open 24 hours a day, as well as a two-lane, reversible toll facility that would change direction to accommodate peak travel hours.

A number of concerns were raised about the concept during a series of meetings conducted in 2015. Many questions focused on the proposed project financing structure through a Public-Private Partnership. Other concerns related more to environmental impact since significant parts of the original Rte. 3 layout cross wetland resource areas. MassDOT ultimately decided not to include the project in the Boston Metropolitan Planning Organization's Long Range Transportation Plan, which means that the project will not be advanced through the design and environmental process in the near term.

With traffic volumes continuing to grow, both on Route 3 and the intersecting collector/distributer streets, Route 3 traffic will continue to be diverted for short distances onto the collector/distributer routes locally. This may have a negative impact on residential roads, including Gardner and Cushing Streets.

Past Planning Efforts

While all individual large-scale development projects prepare traffic impact analyses for review by local permitting boards as well as MassDOT when the development is accessed by a state roadway, more comprehensive transportation plans have also been conducted in Town.

2001 Master Plan

The *Hingham Master Plan*, completed in December 2001, includes a section devoted to Transportation. Crash data available at that time revealed that several intersections in South Hingham experienced the highest crash rates in Town. These included Derby Street at the Route 3 ramps, Whiting Route 53, and Derby Street at Gardner Street.

Transportation recommendations made in the Master Plan that could still be relevant in South Hingham are:

- Focus Roadway Improvements on Safety Improvements Not Capacity Improvements
- Look for Roadway Improvements that Maintain Character of the Community

- Prioritize Roadway Improvements
- Minimize Cut-through Traffic on Residential Streets
- Utilize Traffic Demand Strategies and Promote Transit Use
- Coordinate Long Range Transportation Improvements with Adjoining Towns

2014 Draft Master Plan Update

The Town of Hingham, with professional support from the Metropolitan Area Planning Council (MAPC) provided through a U.S. Department of Housing and Urban Development Sustainable Communities Grant, recently completed a planning effort to update the 2001 Hingham Master Plan. The public participation and outreach program conducted in association with the update identified traffic as one of the top challenges facing the community.

Recommended transportation-related goals in the Draft Master Plan Update include:

H.1) Accommodate all modes of transportation
- H.1.1: Adopt a "Complete Streets" policy which focuses on accommodating all roadway users by creating a road network that meets the needs of individuals utilizing a variety of transportation modes.
- H.1.3: Adopt measures to encourage or require new commercial developments to implement traffic demand management (TDM) strategies to reduce reliance on single-occupant vehicles.
- H.1.4: Encourage the development of a local trolley bus system for local transportation needs that will mitigate the need for single vehicle trips to all Town locations.

H.2) Make capital improvement to Hingham's roadways for the safety of all users
- H.2.1: Prioritize roadway projects that provide safety improvements over those that expand roadway capacity. Participate in the historic roadway program that allows the reconstruction of streets within the existing minimum width right of way.
- H.2.2: Address safety concerns at key locations...

H.3) Ensure that context-sensitive solutions are used to address transportation needs
- H.3.2 Make improvements to the gateways to the town.
- H.3.4: Coordinate transportation improvements with municipalities that share transportation infrastructure.

South Hingham Transportation Assessment by (VAI)

As noted above, Vanasse & Associates, Inc. (VAI) was retained by the Town of Hingham South Hingham Study Group to conduct an assessment of the Derby Street corridor and its intersecting roadways and major driveways in order to ascertain the ability of the corridor to accommodate conceptual build-out scenarios. Completed in July 2016, the *Assessment* identified the location

of capacity constraints within the study area and provided specific recommendations for improvements designed to accommodate potential future development in South Hingham without overburdening neighborhood streets.

Specific improvements were identified in the *Assessment* that expand upon those that are currently under design and for which funding has been committed as part of the Derby Street Corridor and Whiting/Derby/Gardner Street intersection projects. These improvements ranged from intersection and traffic control upgrades for less intensive levels of development to ROW and bridge widening and a new on-ramp to Route 3 for more intensive levels of development. Other potential mitigation included connector roads through both the undeveloped Office Park-zoned properties north of Derby Street and the South Shore Park south of Derby Street could both serve to divert future new traffic from the Derby Street corridor, reducing traffic demands at Route 3 at Exit 15. In addition, suggested traffic management strategies were offered to mitigate current and potential future traffic impacts along Gardner Street and Cushing Street, including the following:

Table 10: Traffic Management Strategies

Category	**Examples**
Traffic Calming	Median installation, textured pavement, pavement markings and other features that reduce travel speeds and increase travel times. Speed humps and raised intersections could also be considered, but only after careful consideration on collector roadways.
Turn Restrictions	Peak hour restrictions at Hingham St./Gardner St. (requires MassDOT approval) and at select intersections along Gardner St. south of Whiting that provide access to Whiting St.
Truck Restrictions	Exclude heavy commercial vehicles from Gardner St. and Cushing St. north of Whiting St. after completion of a *Heavy Commercial Vehicle Exclusion Study*
Education and Enforcement	Install radar speed signs to inform motorists and target police enforcement

These expanded improvement measures may serve as guidance for future development projects in South Hingham with the goal of advancing elements of the improvements that may be commensurate with the impacts of a specific development proposal.

Financing Options

Several possibilities are available to finance needed infrastructure improvements, including those transportation, water, and wastewater-related requirements explored in more detail in other sections of this Report, that would both support existing businesses and attract new development in South Hingham. Local options include financing through taxes, betterments, or a combination of both. The Group also discussed potential modification of thresholds for payment into the "Traffic, Safety and Infrastructure Improvement Fund" under the South Hingham Development Overlay District. This section of the Zoning By-Law allows by special permit more intensive development than the underlying zoning districts both in terms of height and floor-to-area ratios. Property owners seeking a special permit for an increase in the intensity of use under these regulations are required to make a monetary contribution into the Fund. Monies deposited into the fund could be used by the Town to mitigate development related impacts within the District. Presently allowable expenditures include traffic-related studies, land takings for right-of-way improvements, drainage, and sewer projects. However, the Study Group learned that little to no projects have triggered the requirement to make a contribution to the Improvement Fund. The Town may wish to study the program and adjust the currently specified thresholds in order to make the tool more effective.

The anticipated high cost of certain public infrastructure projects makes it likely that the Town will need to consider additional outside sources of financing. As a result, the Study Group examined potential state resources to assist both South Hingham property owners and the Town in funding required infrastructure improvements. These include:

1. *MassWorks Infrastructure Program*

MassWorks provides cities and towns with infrastructure grants for public improvement projects that will support economic development and job creation. Projects may include: sewers, utility extensions, roadways, parking facilities, pedestrian walkways, and water treatment systems to support four types of development:

- Multi-family housing development at a minimum density of 4 units per acre
- Economic development in distressed areas
- Mixed-use development
- Transportation improvements to enhance safety in rural communities

2. *Infrastructure Investment Incentive Program or "I-Cubed"*

I-Cubed is a financing program that creates a cost and risk sharing arrangement between the state, municipality, and private developer for significant new public infrastructure improvements necessary to support major new private development that results in new job growth and tax revenue for the Commonwealth and increased commercial property values and real estate tax revenue for the municipality.

3. *District Improvement Financing ("DIF")/MGL c. 40Q*

DIF is a financing program where the municipality establishes a district and agrees to use new incremental property taxes to fund public infrastructure for the district.

4. *Local Infrastructure Development Program/MGL c. 23L*

This legislation, adopted in 2012, allows a property owner to finance public infrastructure through the tax-exempt bond market. Property owner petitions town to establish a "development zone" and agrees to pay for the public infrastructure through an additional special assessment tax on the property. Debt service is paid through the special infrastructure assessment on the property, similar to a betterment.

Development Scenarios

This Report reviewed the opportunities and challenges facing development in South Hingham across a range of topics including demographics, labor force, public services, and infrastructure. But in order to imagine the possibilities for growth, the Group first began with an assessment of existing buildout.

Existing Conditions

Based on a comprehensive review of property records in the Assessors' Office, including revisions where needed to correct out-of-date information, the Study Group developed the following summary of existing development conditions within the 900(±) acre study area.

Office:	867,000 SF
Retail/Automotive:	540,000 SF
Institutional/Educational:	168,000 SF
Recreational:	113,000 SF
Warehouse/Industrial:	1,540,000 SF
Residential:	72,000 SF
Total:	**3,300,000 SF**

During its assessment of this buildout, the Study Group generally found that most of the office, retail, and institutional/educational space within the study area is relatively new and relatively fully occupied. Conversely, recreational space is relatively old, though still fully utilized. Finally, most of the warehouse/industrial space consists of older buildings from the 70s and 80s when the uses in the South Shore Park were more uniformly industrial. Due to the movement of warehouse/industrial uses to other locations, both within Massachusetts and out of state, many of these buildings are presently under-utilized, though some have already been converted to higher value uses.

There is also a modest amount of residential development in the South Hingham area, comprising less than 2% of the 900 acre study area. Existing residential development primarily consists of single family dwellings located in relatively isolated clusters along Abington Street and Old Derby Street (north).

The Group found it noteworthy that the total amount of existing development within the study area is approximately 1/3 of the amount of development currently allowed by our Zoning By-Law. While there are other physical and regulatory constraints in addition to zoning that could impact future development, it is clear that the Zoning Bylaw would permit significantly more development than currently exists.

Planning Efforts

Within each topic area, the Study Group reviewed land use and policy recommendations embodied in past town-wide plans such as the *2001 Master Plan* and *2014 Draft Master Plan Update,* and related to the Industrial Park and Office Park Districts. These recommendations, while potentially dated, were based on extensive analysis and public outreach and reflect then-existing needs and interests of the community. These recommendations also were also developed through extensive visioning processes, where a series of development options and alternatives were explored before land use goals were established. The Study Group similarly developed its own hypothetical development scenarios for the Study Area to assess the likely impacts associated with potential future development and redevelopment in South Hingham. Each scenario included permissible intensities of development under current zoning regulations; however, the Group also incorporated presently prohibited uses based in part on market trends and informal preferences expressed by property owners. The Group stopped short of developing a vision or making explicit recommendations for the Study Area, opting instead to arm policy makers and permitting boards alike with information that could support either future plan recommendations or development reviews.

These past planning efforts are summarized below. A more detailed review of the Study Group's recent analysis follows.

2001 Master Plan

The *2001 Master Plan* included buildout analyses based both on then-existing zoning and more restrictive Board of Health Regulations. The zoning buildout calculation used the lowest results from three different controls: 1.) buildout based on floor to area (FAR) ratios; 2.) buildout based on parking requirements; and 3.) buildout based on maximum lot coverage. The alternative buildout analysis based on Board of Health Supplementary Rules for the Disposal of Sanitary Sewage Governing, which allow a maximum of 110 gallons of wastewater flow per day per 12,500 SF of lot area. Each of these regulatory buildout analyses excluded wetlands and assumed that 221.7 acres of land in the Industrial Park and 42 acres of land in the Office Park were developable.

A "Guide Plan for Future Land Use" was also developed based on the particular land use recommendations contained in the *Master Plan.* As highlighted in the Economic Development section of this Report, the South Hingham-specific recommendations included the following:

- Rezone area along Abington Street to Residence A
- Create an Office and Multifamily overlay district along the westerly portion of Whiting Street
- Add newly acquired open space to the Official and Open Space District
- Adopt zoning that limits the amount of retail allowed in the Industrial Park District

The buildout results based on Zoning and Board of Health regulations are compared below and contrasted with the expected buildout following implementation of the Guide Plan recommendations:

Table 11: Buildout Comparisons

Zoning District	Land Area (Acres)	Zoning Buildout	BOH Buildout
Industrial Park	221.7	4.3M SF	1.9M SF
Office Park	42	366K SF	215K SF

Land Use Category	Land Area (Acres)	Guide Plan Buildout
Office & Multifamily	42.2	460K SF
Retail & Office	3	46K SF
High Tech/Office	186.5	3.3M SF
Industrial District	19	331K SF

2014 Draft Master Plan Update

In connection with its work on the *Draft Master Plan Update*, the MAPC developed a parcel-level buildout model for the Town. The model was also used to create three different development scenarios of future development specific to South Hingham. These scenarios were based on the characteristics of recent developments in Hingham and nearby communities and link together the land use, tax revenue, water demand, and other impacts that different forms of development would likely have on the Town.

These MAPC alternative futures included, from least intensive to most, the Derby Gateway, Commercial Expansion, and Economic Engine. The following summarizes each alternative's level of development and expected impacts based on MAPC's projections:

1. The Derby Gateway scenario envisions what might occur if new zoning was adopted to focus new development into targeted areas along Derby Street, while leaving other areas undeveloped. This option would potentially limit the need for sewer service to the area north of Route 3.

   MAPC also built into the Derby Gateway scenario the potential for 200 units of new housing that would partially addresses projected housing demand. This scenario would generate 25% less tax revenue than the Economic Engine scenario, and would likely add 54 school-age children to the town's population. MAPC notes that the additional school-age children may help to mitigate the projected enrollment declines and resulting surplus school capacity.

2. The Commercial Expansion scenario describes the patterns of development that might occur if the sought-after office and advanced industrial development does not materialize, due to regional competition and changing employer location preferences. MAPC said this alternative may compel the town to entertain less-desirable development proposals in order to recoup the costs associated with required infrastructure improvements.

3. The Economic Engine scenario anticipates a future in which South Hingham has become a major job center for the South Shore, attracting high-value corporate office, medical office, and advanced industrial development.

   MAPC concluded that the Economic Engine scenario has the potential to generate the maximum amount of new office development (605,000 sf), but it would also require the creation of a new sewer treatment facility and collection system at an estimated cost of $21 million dollars, at least one third of which would be borne by Hingham taxpayers, according to the Comprehensive Wastewater Management Plan. MAPC indicated that the Economic Engine scenario might generate $1 million of tax revenue annually, thereby reducing the average single family tax bill by $117 per year, assuming estimates of new tax revenue from recent developments in Hingham and nearby (the Study Group revised these estimates upward using more current tax assessment and tax rate data). On the flip side, the Economic Engine was projected to generate more than 14,000 new auto trips per day and require a quarter-million gallons of water per year—a volume not possible given the Water Company's current withdrawal limits. MAPC speculated that the town might also be required to finance a larger portion of the sewer treatment facility planned for South Hingham, thereby eroding any tax benefits, if the anticipated level of economic development did not materialize.

South Hingham Study Group Hypothetical Development Scenarios

Building on these prior efforts, and in order to better understand and quantify the potential impact of future development in the study area, the Study Group considered a number of specific development scenarios with varying mixes of use. By specifying actual uses and quantities (in gross floor area for non-residential uses and in bedroom count for residential uses), requirements for key infrastructure elements can be derived. The key infrastructure elements that the Study Group considered were water, sewer, transportation (traffic), and public services (e.g., police, fire, schools, etc.). The remainder of this section will quantify the impact of each potential development scenario on individual infrastructure elements; it will also quantify the approximate value to the Town of each development scenario in terms of property tax receipts.

The Group used best efforts to use creditable assumptions and values in developing its projected development impacts; however, it is worth noting that the calculations have not been reviewed by town departments or other professionals. Additionally, the Group presents the net impacts in each topic area absent any direct analysis of the costs to provide services or make infrastructure improvements required to support additional hypothetical development.

The Study Group considered a total of six different development scenarios. The first three mirrored the "alternative futures" developed by the Metropolitan Area Planning Council (MAPC) in 2014 and described in general above. The Study Group prepared three additional development scenarios that showed different mixes of uses and greater development density. The initial exercise was undertaken to provide the Group's traffic consultant detailed scenarios for traffic impact analysis; the Group adopted MAPC's most intense development scenario (Economic Engine) as its own least intensive scenario, and did not ask the traffic consultant to analyze

MAPC's other two, less intense, scenarios. Each development scenario describes net development increases over existing development conditions within the study area.

We should highlight again the fact that none of the six development scenarios approaches the development density currently allowed by right under the Zoning By-Law. Some of the hypothetical scenarios, however, do include types of uses (e.g., multi-family residential) that are not presently allowed by the By-Law in the area, and that would require zoning amendments.

MAPC Scenarios

MAPC's three development scenarios describe the following mixes of uses and building areas. For the purposes of this exercise, we assume approximately 30% of the new development in the MAPC scenarios is replacing existing underutilized industrial/warehouse buildings/uses, while the remainder is net new space on vacant land:

- MAPC 1, Derby Gateway:
  - Residential Multi-Family — 200,000 SF (200 1- and 2-bedroom units)
  - Industrial — 90,000 SF
  - Retail/Automotive — 75,000 SF
  - Office (Corporate and Medical) — 170,000 SF

  Total Gross Area — 535,000 SF
  Less demo of existing (30%) — 160,500 SF
  Net additional building area — **374,500 SF**
  % Growth — 11% net increase of building area within study area

- MAPC 2, Commercial Expansion:
  - Industrial — 150,000 SF
  - Retail/Automotive — 225,000 SF
  - Office (Corporate and Medical) — 270,000 SF

  Total Gross Area — 645,000 SF
  Less demo of existing (30%) — 193,500 SF
  Net additional building area — **451,500 SF**
  % Growth — 14% net increase of building area within study area

- MAPC 3 Economic Engine (Study Group Scenario 1):
  - Industrial — 180,000 SF
  - Retail/Automotive — 70,000 SF
  - Office (Corporate and Medical) — 605,000 SF

  Total Gross Area — 855,000 SF
  Less demo of existing (30%) — 256,500 SF
  Net additional building area — **598,500 SF**
  % Growth — 18% net increase of building area within study area

Study Group Scenarios

The Study Group considered the MAPC Economic Engine as its first development scenario, then developed three additional scenarios as follows. Some of the new uses are assumed to replace existing under-utilized industrial/warehouse buildings/uses, while the remainder is net new space on vacant land, as is the case in the MAPC scenarios.

- Study Group 1, (MAPC Economic Engine, as described above)

- Study Group 2, Full growth in Office Park district and modest growth in South Shore Park:
  - Residential Multi-Family — 200,000 SF (200 1-2-bedroom units; 300 beds)
  - Assisted Living — 70,000 SF (70 units)
  - Retail/Automotive — 230,000 SF
  - Office (Corporate and Medical) — 1,400,000 SF

  Total Gross Area — 1,900,000 SF
  Less demo of existing — 400,000 SF
  Net additional building area — **1,500,000 SF**
  % Growth — 45% net increase of building area within study area

- Study Group 3, Full growth in Office Park district and major mixed use development in South Shore Park:
  - Residential Multi-Family — 500,000 SF (500 1-2 bedroom units; 750 beds)
  - Assisted Living — 70,000 SF (70 units)
  - Hotel — 130,000 SF (260 rooms)
  - Retail/Automotive — 980,000 SF
  - Office (Corporate and Medical) — 1,085,000 SF

  Total Gross Area — 2,765,000 SF
  Less demo of existing — 315,000 SF
  Net additional building area — **2,450,000 SF**
  % Growth — 74% net increase of building area within study area

- Study Group 4, Significant growth throughout the study area, including along Sharp Street:
  - Residential Multi-Family — 500,000 SF (500 1-2 bedroom units; 750 beds)
  - Assisted Living — 70,000 SF (70 units)
  - Hotel — 130,000 SF (260 rooms)
  - Retail/Automotive — 980,000 SF
  - Office (Corporate and Medical) — 3,550,000 SF

  Total Gross Area — 5,230,000 SF
  Less demo of existing — 1,650,000 SF
  Net additional building area — **3,580,000 SF**
  - % Growth — 108% net increase of building area within study area

Development Scenario Projected Impacts

The following impacts are derived from metrics contained in earlier sections of this report. Impacts are quantified to the greatest extent possible, based on these metrics. Qualitative impacts are more difficult to assess, particularly in the Traffic and Public Services categories; however, it is possible to infer the qualitative impacts to some degree by the analyses provided.

Water

Hingham's water distributor (Aquarion) has reported that the water district is currently close to its maximum allowable water withdrawal amount under current permits granted by the State (approximately 3,510,000 GPD, average). Best case analyses indicate that water use in Aquarion's service area of Hingham, Hull, and North Cohasset in 2016 was approximately 91% of the maximum allowable amount, or 3,180,000 GPD. In addition, projects currently being permitted in the service area would require approximately 108,000 GPD, leaving approximately 222,000 GPD for all future development in the service area, including general background growth. As such, any significant new development, whether in South Hingham or elsewhere in Aquarion's service area, would likely put us at or over the maximum allowed amount and would require the development of new water sources, either within the district or from outside the district.

The following net increases in water demand are based on the gallons-per-day associated with each type of building use, as described in the Water section of this report, in addition to the following assumptions:

- The multi-family demand represents a weighted average, arbitrarily set at 50% one-bedroom and 50% two-bedroom units.
- The retail demand represents a weighted average of restaurant and retail use, arbitrarily set at 10% restaurant and 90% conventional retail.
- The office demand represents a weighted average of medical and conventional office use, arbitrarily set at 25% medical, 75% conventional.
- The existing uses that are demolished are assumed to have a water demand of approximately 20 GPD/1,000 SF of space (i.e., Industrial).

MAPC 1 Scenario Derby Gateway		**Water Demand Increase (GPD)**
Residential Multifamily	300 bedrooms x 68.8 GPD	20,640
Industrial	90,000 SF x 20 GPD/1,000 SF	1,800
Retail/Automotive	75,000 SF x 115.6 GPD/1,000 SF	8,670
Office (Corp./Med.)	170,000 SF x 50.8 GPD/1,000 SF	8,636
Total Gross GPD Increase		39,746
Less Demo of Existing	160,500 SF x 20 GPD/1,000 SF	3,210
Net Additional Demand		**36,536**
% Increase over Existing 3,510,000 GPD Limit		**1%**

MAPC 1 Scenario Derby Gateway		Water Demand Increase (GPD)
Residential Multifamily	300 bedrooms x 68.8 GPD	20,640
Industrial	90,000 SF x 20 GPD/1,000 SF	1,800
Retail/Automotive	75,000 SF x 115.6 GPD/1,000 SF	8,670
Office (Corp./Med.)	170,000 SF x 50.8 GPD/1,000 SF	8,636
Total Gross GPD Increase		39,746
Less Demo of Existing	160,500 SF x 20 GPD/1,000 SF	3,210
Net Additional Demand		**36,536**
% Increase over Existing 3,510,000 GPD Limit		**1%**

Study Group 1 Scenario and Economic Engine		Water Demand Increase (GPD)
Industrial	180,000 SF x 20 GPD/1,000 SF	3,600
Retail/Automotive	70,000 SF x 115.6 GPD/1,000 SF	8,092
Office (Corp./Med.)	605,000 SF x 50.8 GPD/1,000 SF	30,734
Total Gross GPD Increase		42,426
Less Demo of Existing	256,500 SF x 20 GPD/1,000 SF	5,130
Net Additional Demand		**37,296**
% Increase over Existing 3,510,000 GPD Limit		**1.1%**

Study Group 3 Scenario		Water Demand Increase (GPD)
Residential Multifamily	750 bedrooms x 68.8 GPD	51,600
Assisted Living	70 units x 68.8 GPD	4,816
Hotel	260 rooms x 68.8 GPD	17,888
Retail/Automotive	980,000 SF x 115.6 GPD/1,000 SF	113,288
Office (Corp./Med.)	1,085,000 SF x 50.8 GPD/1,000 SF	55,118
Total Gross GPD Increase		242,710
Less Demo of Existing	400,000 SF x 20 GPD/1,000 SF	6,300
Net Additional Demand		**236,410**
% Increase over Existing 3,510,000 GPD Limit		**6.7%**

Study Group 4 Scenario		Water Demand Increase (GPD)
Residential Multifamily	750 bedrooms x 68.8 GPD	51,600
Assisted Living	70 units x 68.8	4,816
Hotel	260 rooms x 68.8	17,888
Retail/Automotive	980,000 SF x 115.6 GPD/1,000 SF	113,288
Office (Corp./Med.)	3,550,000 SF x 50.8 GPD/1,000 SF	180,340
Total Gross GPD Increase		367,932
Less Demo of Existing	400,000 SF x 20 GPD/1,000 SF	8,000
Net Additional Demand		**359,932**
% Increase over Existing 3,510,000 GPD Limit		**10.3%**

Sewer

Massachusetts Title 5 regulations stipulate the anticipated sewer flow, in gallons of wastewater per day, for most typical use groups of the type envisioned in the four development scenarios, as described in the Wastewater section of this Report. Most of the Title 5 metrics are based on building area, though several use groups are based on other criteria, such as employees for industrial uses. For the purposes of this analysis we have used industry-standard guidelines to convert all the metrics to a building area basis.

Based on an analysis of the existing development in the Study area, we believe that the current existing waste water flow in this area is approximately 200,000 gallons per day. The following net increases in wastewater flow are based on the gallons-per-day associated with each type of building use. As with the Water demand analysis, we have made several adjustments and assumptions, as follows:

- The multi-family demand represents a weighted average, arbitrarily set at 50% one-bedroom and 50% two-bedroom units.
- The retail demand represents a weighted average of restaurant and retail use, arbitrarily set at 10% restaurant and 90% conventional retail.
- The office demand represents a weighted average of medical and conventional office use, arbitrarily set at 25% medical, 75% conventional.
- The existing uses that are demolished are assumed to have a sewer flow of approximately 32 GPD/1,000 SF of space (i.e., Industrial).

MAPC 1 Scenario Derby Gateway		**Sewer Flow (GPD)**
Residential Multifamily	300 bedrooms x 110 GPD	33,000
Industrial	90,000 SF x 32 GPD/1,000 SF	2,880
Retail/Automotive	75,000 SF x 185 GPD/1,000 SF	13,875
Office (Corp./Med.)	170,000 SF x 81 GPD/1,000 SF	13,770
Total Gross GPD Increase		63,525
Less Demo of Existing	160,500 SF x 32 GPD/1,000 SF	5,136
Net Additional Flow		**58,389**
% Increase over Existing 200,000 GPD Sewer Flow		**29%**

MAPC 2 Scenario Commercial Expansion		**Sewer Flow (GPD)**
Industrial	150,000 SF x 32 GPD/1,000 SF	4,800
Retail/Automotive	225,000 SF x 185 GPD/1,000 SF	41,625
Office (Corp./Med.)	270,000 SF x 81 GPD/1,000 SF	21,870
Total Gross GPD Increase		68,295
Less Demo of Existing	193,500 SF x 32 GPD/1,000 SF	6,192
Net Additional Flow		**62,103**
% Increase over Existing 200,000 GPD Sewer Flow		**31%**

Study Group 1 Scenario & MAPC 3 Economic Engine		Sewer Flow (GPD)
Industrial	180,000 SF x 32 GPD/1,000 SF	5,760
Retail/Automotive	70,000 SF x 185 GPD/1,000 SF	12,950
Office (Corp./Med.)	605,000 SF x 81 GPD/1,000 SF	49,005
Total Gross GPD Increase		67,715
Less Demo of Existing	256,500 SF x 32 GPD/1,000 SF	8,208
Net Additional Flow		**59,507**
% Increase over Existing 200,000 GPD Sewer Flow		**30%**

Study Group 2 Scenario		Sewer Flow (GPD)
Residential Multifamily	300 bedrooms x 110 GPD	33,000
Assisted Living	70 units x 110 GPD	7,700
Retail/Automotive	230,000 SF x 185 GPD/1,000 SF	42,550
Office (Corp./Med.)	1,400,000 SF x 81GPD/1,000 SF	113,400
Total Gross GPD Increase		196,650
Less Demo of Existing	400,000 SF x 32 GPD/1,000 SF	12,800
Net Additional Flow		**183,850**
% Increase over Existing 200,000 GPD Sewer Flow		**92%**

Study Group 3 Scenario		Sewer Flow (GPD)
Residential Multifamily	750 bedrooms x 110 GPD	82,500
Assisted Living	70 units x 110 GPD	7,700
Hotel	260 rooms x 110 GPD	28,600
Retail/Automotive	980,000 SF x 185 GPD/1,000 SF	181,300
Office (Corp./Med.)	1,085,000 SF x 81GPD/1,000 SF	87,885
Total Gross GPD Increase		387,985
Less Demo of Existing	400,000 SF x 32 GPD/1,000 SF	10,080
Net Additional Flow		**377,905**
% Increase over Existing 200,000 GPD Sewer Flow		**189%**

Study Group 4 Scenario		Sewer Flow (GPD)
Residential Multifamily	750 bedrooms x 110 GPD	82,500
Assisted Living	70 units x 110 GPD	7,700
Hotel	260 rooms x 110 GPD	28,600
Retail/Automotive	980,000 SF x 185 GPD/1,000 SF	181,300
Office (Corp./Med.)	3,550,000 SF x 81 GPD/1,000 SF	287,550
Total Gross GPD Increase		556,750
Less Demo of Existing	400,000 SF x 32 GPD/1,000 SF	12,800
Net Additional Flow		**587,650**
% Increase over Existing 200,000 GPD Sewer Flow		**294%**

Transportation/Traffic

Vanasse & Associates, Inc. (VAI) developed projected impacts on traffic volumes on roadways within both the Study Area and surrounding neighborhoods that would be expected to result from each of the Study Group's development scenarios. VAI's *Assessment* did not analyze the first two MAPC scenarios; the study did, however, analyze the third MAPC scenario – the Economic Engine – as it mirrors the Study Group's Scenario 1.

PEAK-HOUR TRAFFIC-VOLUME INCREASES Traffic Volume Increases					
Location/Peak Hour	2015 Existing	Scenario 1/ MAPC 3	Scenario 2	Scenario 3	Scenario 4
Rte. 53, south of Gardner St.:					
Weekday Morning	1,627	136	429	372	622
Weekday Evening	1,964	128	547	592	889
Saturday Midday	1,961	102	644	759	1,120
Rte. 53, north of Cushing St.:					
Weekday Morning	1,043	220	388	392	668
Weekday Evening	1,041	183	509	619	947
Saturday Midday	1,237	105	595	790	1,197
Gardner St., north of Rte. 53:					
Weekday Morning	407	51	108	109	213
Weekday Evening	381	49	139	193	289
Saturday Midday	347	40	166	262	379
Gardner St., south of Rte. 53:					
Weekday Morning	374	29	107	83	100
Weekday Evening	402	26	126	113	131
Saturday Midday	409	9	166	132	154
Cushing St., north of Rte. 53:					
Weekday Morning	724	53	109	111	203
Weekday Evening	904	54	141	194	291
Saturday Midday	975	40	166	262	379
Derby St., west of Pond Park Rd:					
Weekday Morning	1,415	155	320	312	729
Weekday Evening	1,878	162	407	552	1,049
Saturday Midday	1,308	119	482	759	1,330

Source: South Hingham Transportation Assessment, July 2016, Table 3

Public Services

Public services addressed in the Public Services section of this Report include Police, Fire and Emergency Management, and electrical power supply. It is difficult to quantify impacts to these public services by Development Scenario, though significant new development would have an impact. Police calls tend to be more frequent at commercial properties, particularly retail, so a significant increase in commercial/retail development could have a significant impact on the frequency of police calls. Likewise, the Town has already recognized that any significant new development in South Hingham, whether commercial or residential or both, would require either a substantial upgrade to the existing South Station, or the construction of a sub-station in the Study Area to supplement the capabilities of the existing South Station.

Another public service not addressed in the Public Services section is our public school system, which currently has approximately 4,300 students. Most of the development described in the Development Scenarios is commercial, and as such does not have a significant direct effect on school enrollment that is easily quantifiable. However, production of multi-family housing would have a potential impact on school enrollment. MAPC's study anticipated approximately 0.27 additional school age children per multi-family housing unit. If we accept this as an accurate estimate, then the number of additional school age children associated with each Development Scenario would be approximately as follows:

MAPC 1	200 units x 0.27 =	54 children = 1.3% enrollment increase
MAPC 2	0 units =	0 children = 0% enrollment increase
Study Group 1	0 units =	0 children = 0% enrollment increase
Study Group 2	300 units x 0.27 =	81 children = 1.9% enrollment increase
Study Group 3	750 units x 0.27 =	203 children = 4.7% enrollment increase
Study Group 4	750 units x 0.27 =	203 children = 4.7% enrollment increase

Taxes

The Town currently has a single tax rate of 1.225% for all real estate (land and buildings), regardless of type of use. The following summary of potential net new real estate tax receipts associated with each development scenario is approximate and is based on the assessment standards of the Town's Board of Assessors, current as of 2017. The summary includes basic real estate tax receipts only, and does not include incidental additional potential receipts from personal property taxes or excise taxes that might be associated with new development. The summary also estimates the tax receipts associated with the value of buildings only; although the value of land would increase as higher value development occurs and associated site areas are improved, it is more conservative to assume land value and associated tax receipts as constant. Where existing buildings are demolished or converted to new uses, the tax receipts of the existing buildings/uses are deducted from the totals below in order to estimate net tax receipt increases.

It is worth noting that the proportion of Hingham's real estate tax receipts associated with non-residential property is approximately 11% of total real estate tax receipts (not including personal property tax receipts), based on an approximate total value of all commercial property of $698,283,700.00 (the approximate value of residential property is $5,665,777,460.00), as reported by the Massachusetts Department of Revenue; this proportion is less than the average of our benchmark towns, which is approximately 15%, and it is less than the state average of all cities and towns, which is approximately 18%. In so far as significant future development within the study area would be commercial (counting multi-family, hotel, and assisted living as commercial uses), the 11% figure would increase, thereby bringing Hingham more in line with benchmark and state averages, and reducing Hingham's reliance on single-family residential property for tax revenue.

According to the Board of Assessors, following are current approximate values of higher quality new construction, per square foot; some values are averaged.

- Residential Multi-Family: $114/SF
- Assisted Living: $150/SF
- Hotel: $116/SF
- Industrial, R & D: $125/SF
- Retail/Automotive: $150/SF
- Office: $190/SF

For the purposes of this analysis it is assumed that any buildings demolished to make way for new development will be relatively low value industrial buildings; based on current assessment data, a value of $40/SF is assumed for these buildings in order to estimate associated lost tax revenue.

Based on the current Assessors' approximate values per SF of the various new uses described above, approximate net property tax revenue of each of the development scenarios, in 2017 dollars, is as follows:

MAPC 1 Scenario Derby Gateway	**Net Assessed Value**	**Net New Tax Receipts**
Residential Multifamily	200,000 SF x $114 x 1.225%	$ 279,300
Industrial	90,000 SF x $125 x 1.225%	$ 137,813
Retail/Automotive	75,000 SF x $150 x 1.225%	$ 137,813
Office (Corp./Med.)	170,000 SF x $190 x 1.225%	$ 395,675
Total Gross GPD Increase		$ 950,601
Less Demo of Existing	160,500 SF x $40 x 1.225%	$ 78,645
Net Additional Tax Receipts		**$ 871,956**

MAPC 2 Scenario Commercial Expansion	**Net Assessed Value**	**Net New Tax Receipts**
Industrial	150,000 SF x $125 x 1.225%	$ 229,688
Retail/Automotive	225,000 SF x $150 x 1.225%	$ 413,438
Office (Corp./Med.)	270,000 SF x $190 x 1.225%	$ 628,425
Total Gross GPD Increase		$1,271,551
Less Demo of Existing	193,500 SF x $40 x 1.225%	$ 94,815
Net Additional Tax Receipts		**$1,176,736**
Less Demo of Existing	1,650,000 SF x $40 x 1.225%	$ 808,500
Net Additional Tax Receipts		**$10,266,480**

Study Group 1 Scenario & MAPC 3 Economic Engine	Net Assessed Value	Net New Tax Receipts
Industrial	180,000 SF x $125 x 1.225%	$ 275,625
Retail/Automotive	70,000 SF x $150 x 1.225%	$ 128,625
Office (Corp./Med.)	605,000 SF x $190 x 1.225%	$1,408,138
Total Gross GPD Increase		$1,812,388
Less Demo of Existing	256,500 SF x $40 x 1.225%	$ 125,685
Net Additional Tax Receipts		**$1,686,703**

Study Group 2 Scenario	Net Assessed Value	Net New Tax Receipts
Residential Multifamily	200,000 SF x $114 x 1.225%	$ 279,300
Assisted Living	70,000 SF x $150 x 1.225%	$ 128,625
Retail/Automotive	230,000 SF x $150 x 1.225%	$ 422,625
Office (Corp./Med.)	1,400,000 SF x $190 x 1.225%	$3,258,500
Total Gross GPD Increase		$4,089,050
Less Demo of Existing	400,000 SF x $40 x 1.225%	$ 196,000
Net Additional Tax Receipts		**$3,893,050**

Study Group 3 Scenario	Net Assessed Value	Net New Tax Receipts
Residential Multifamily	500,000 SF x $114 x 1.225%	$ 698,250
Assisted Living	70,000 SF x $150 x 1.225%	$ 128,625
Hotel	130,000 SF x $116 x 1.225%	$ 184,730
Retail/Automotive	980,000 SF x $150 x 1.225%	$1,800,750
Office (Corp./Med.)	1,085,000 SF x $190 x 1.225%	$2,525,338
Total Gross GPD Increase		$5,337,693
Less Demo of Existing	315,000 SF x $40 x 1.225%	$ 154,350
Net Additional Tax Receipts		**$5,183,343**

Study Group 4 Scenario	Net Assessed Value	Net New Tax Receipts
Residential Multifamily	500,000 SF x $114 x 1.225%	$ 698,250
Assisted Living	70,000 SF x $150 x 1.225%	$ 128,625
Hotel	130,000 SF x $116 x 1.225%	$ 184,730
Retail/Automotive	980,000 SF x $150 x 1.225%	$ 1,800,750
Office (Corp./Med.)	3,550,000 SF x $190 x 1.225%	$ 8,262,625
Total Gross GPD Increase		$11,074,980
Less Demo of Existing	1,650,000 SF x $40 x 1.225%	$ 808,500
Net Additional Tax Receipts		**$10,266,480**

Based on the foregoing real estate tax analysis, and all other things remaining equal (e.g., the current value of tax revenue from one- and two-family homes and condominiums), the six development scenarios at full build-out would increase the non-residential proportion of Hingham's real estate tax revenue from 11% to the following. Note that the probable increase in

land value associated with new, higher value development, and the associated tax receipt increases, have not been considered in this calculation:

- MAPC 1: 12.0%
- MAPC 2: 12.3%
- Study Group 1: 12.9%
- Study Group 2: 15.2%
- Study Group 3: 16.5%
- Study Group 4: 21.3%

Study Group Scenario 2 increases the proportion of non-residential tax receipts to approximately the average of our benchmark towns. Study Group Scenario 3 increases this proportion to approximately the state-wide average of all cities and towns. Study Group Scenario 4 increases this proportion to more than the state-wide average. While any growth in tax revenue is potentially a positive outcome relative to the town's finances, growth in non-residential tax revenue has the added benefit of potentially reducing the tax burden on Hingham's home-owners, or slowing its rate of growth, assuming such growth is not cancelled out by associated increases in municipal expenditures. Should the Town decide to allocate all such new commercial tax revenue to reducing the tax burden on single-family residential property owners, the annual tax savings by Scenario could be as much as the following for the average Hingham home-owner:

- MAPC 1: $ 100
- MAPC 2: $ 135
- Study Group 1: $ 195
- Study Group 2: $ 435
- Study Group 3: $ 570
- Study Group 4: $1,058

Resources

Geography

South Hingham Study Area Map, prepared by Loni Fournier, Senior Planner/Conservation Officer

- South Hingham Study Area Map

Demographics

Town of Hingham Draft Master Plan Update. By the Metropolitan Planning Council (MAPC), dated March 2014.
http://www.hingham-ma.gov/communityplanning/documents/HinghamMasterPlan.pdf

Mutchler, Jan E., Caitlin Coyle and Hayley Gravette. *Aging in Hingham: A Community Affair.* Boston: John W. McCormack Graduate School of Policy & Global Studies Center for Social & Demographic Research in Aging Gerontology Institute, 2013.
http://www.hingham-ma.gov/elder/Documents/Aging_in_Hingham.pdf

Business Inventory and Market Conditions

South Hingham Commercial Inventory Study, Guiding the Future of Commercial Development in South Hingham. By the Hingham Development and Industrial Commission (HDIC), dated September 2014.
20140923 HDIC South Hingham Inventory copy.pdf

Town of Hingham Draft Master Plan Update. By the Metropolitan Planning Council (MAPC), dated March 2014.
http://www.hingham-ma.gov/communityplanning/documents/HinghamMasterPlan.pdf

South Shore Competitive Assessment presented at the South Shore Leadership Meeting on September 9, 2014 by Market Street Services, Inc. on behalf of the South Shore Chamber of Commerce.
http://www.southshorestrategy.com/documents.php

Outlook for Economic Development in South Hingham. Presented by Hingham Business Council South Shore Chamber of Commerce, dated January 2010.
http://www.hingham-ma.gov/document/SSCC_Hingham_Report.pdf

Environmental and Open Space Resources

South Hingham Resource Maps prepared by Abby Piersall, Senior Planner/Conservation Officer

- South Hingham Approximate Wetland Buffers (PDF)
- South Hingham Floodplain and Riverfront Area (PDF)
- South Hingham Public Open Space and Recreation Areas (PDF)

Transportation

Functional Design Report: Reconstruction and Related Work on Derby Street from Pond Park Road to Cushing Street, prepared for the Town of Hingham by CHA, dated September 2013. Traffic\Service Road\2013-09-05_FDR_Derby-DRAFT.pdf
"Appendix A, Traffic Count Data," Traffic\Service Road\2013-09-06_FDR-Derby Appendix-DRAFT.pdf

Derby Street Road Safety Audit, Derby Street at Route 3 Ramps, prepared for MassDOT on behalf of the Town of Hingham by CHA Consulting, dated December 2013. http://www.massdot.state.ma.us/Portals/8/docs/traffic/SafetyAudit/District5/Hingham_DerbySt_Route3_2013-11-06.pdf

Derby Street Preliminary Plans from Pond Park Road to Cushing Street
http://www.hingham-ma.gov/document/Derby_Street_Preliminary_Signing_Striping_Plan.pdf

Memorandum from John G. Morgan, Jr., P.E., PTOE to Roger Fernandes, regarding "Traffic Build-Out Analysis, Derby Street Corridor, MassDOT Project #607309, Hingham, MA," dated March 6, 2015.

MassDOT Reconstruction Plans Whiting Street (Rt 53) and Derby St.
http://www.hingham-ma.gov/document/Engineering/Whiting%20-%20Derby%20MassDOT%20project%20Highway%20Full%20Set.pdf

Service Road Documents

- Derby Street @ Derby Street Shops Service Road Traffic Counts
- Service Road Queue Length Observations
- Derby Street Shops Service Road Accidents (2008-2011), Hingham, MA
- Conceptual Reconfiguration Plan for Service Road

Laidler, John. "Traffic, Long Commutes Challenge Suburbs on South Shore." *Boston Globe*, September 25, 2014. http://www.bostonglobe.com/metro/regionals/south/2014/09/24/report-sees-traffic-congestion-long-commutes-challenges-south-suburbs/oHb5LGrhp1sTx2Zlj2gt4M/story.html.

Water and Wastewater

Tata & Howard Portable Water Concept/Approach and Cost Study, June 2013
http://hingham-ma.gov//DocumentCenter/View/5357

Draft Memorandum from Environmental Partners Group, Inc., to Aquarion Water Company, dated May 20, 2016, regarding: *Hingham-Hull-Cohasset Water System; Evaluation of Future Needs and Alternatives for New Water Sources*
http://hingham-ma.gov/Document Center/View/5356

Town of Hingham, Massachusetts Comprehensive Wastewater Management Plan (CWMP): Recommended Plan - Phase II, "Section 5 - Recommended Plan," prepared by CDM, dated July 2011. http://www.hingham-ma.gov/Committees/Wastewater/documents/CWMP_Recommended_Plan_Phase_II_Sec5.pdf

"Industrial/Office Park District: Wastewater Treatment Project Update," presentation by Roger Fernandes, Town Engineer, to the SHSG, dated April 7, 2014.

"Infrastructure and Development in South Hingham: Sewer, Water, and Economic Growth," presentation by Jerry Seelen, dated January 13, 2015.

Existing Permitting/Regulations/Resources

Hingham Zoning By-Law, Office Park, Industrial Park and South Hingham Development Overlay District Regulations

Hingham Wetlands Bylaw

Chapter 43D: Expedited Permitting

MassDevelopment Infrastructure Financing Programs: I-Cubed, DIF, Local Infrastructure Development Program, presented by Rebecca Sullivan, Senior Vice President, on January 21, 2015.

Development Opportunities

MAPC's Three Alternative Futures: Economic Engine, Commercial Expansion, Derby Gateway