

Infrastructure and Development in South Hingham

Sewer, Water, and Economic Growth

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Jerry Seelen

U. Mass Boston Collins Center Report

“What is the relationship between investment in water and wastewater infrastructure and economic growth?”

“Government investment in infrastructure has a far greater impact on private investment decisions than any other type of government expenditure.

“Investment in water and wastewater infrastructure can stimulate private investment, which in turn, generates municipal and state revenue.

“Conversely, the lack of infrastructure, or uncertainty about water (and sewer) infrastructure, can delay, if not outright halt, development projects.”

Study on Investment in Water and Wastewater Infrastructure and Economic Development
Prepared in response to request from MWRA Advisory Board
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Edward J. Collins, Jr. Center for Public Management
McCormack Graduate School of Policy and Global Studies
UMass Boston

Background

- Town Meeting 2010 voted to establish a 700-acre South Hingham Sewer District in Office Park and Industrial Park Zoning Districts of South Hingham, in order to ultimately construct a municipal sanitary sewer system for this commercial area.
- The purpose of the sewer system was to solve an infra-structure problem that is hampering commercial growth, and the associated growth of the town's tax base.
- Town Meeting 2012 voted to re-zone 200± acres of what is known as The Bristol Property, north of Rte. 3, to the Office Park zone, and to add this property to the South Hingham Sewer District.
- Town Meeting 2010 authorized expenditure of \$15,000 to proceed with connecting to the MWRA sewer system.
- Town Meeting 2011 authorized expenditure of \$190,000 to plan for a local, decentralized sewage treatment system, rather than the MWRA connection.
- The Town is currently looking at the water supply system, with particular interest in its impact on the potential for development in South Hingham.

Questions

- What is the current state of commercial development in the South Hingham Sewer District area?
- What is the potential quantity of future economic development and commercial growth (building floor area) in this area under current zoning standards?
- What are the quantifiable infrastructure requirements, especially sewer and water capacity, for different levels of development and commercial growth?
- What amount of commercial development is realistic to expect, what should we plan for, and what infrastructure improvements are required to accommodate it?

Sewer District Land in S. Hingham (Private)

- Land North of Rte. 3: 325± Acres x 43,560 SF = 14,157,000 SF (70% Off. Park, 30% Ind. Park)
- Land South of Rte. 3: 580± Acres x 43,560 SF = 25,264,800 SF (97% Ind. Park)
- Total: 905± Acres x 43,560 SF = **39,421,800 SF**

Notes

- Land area is based on information taken from Town Assessors' Data Base and GIS maps.
- Total land area excludes conservation land and Town-owned land (20± Acres), and streets.
- Total land area includes residential zones on Abington St., 22± Acres.
- Total land area includes wetlands and 50 ft. buffer zone, 250± Acres (28±% of district area).

Existing Development in the Sewer District

Existing building area = **3,300,000 SF**

- Industrial/Warehouse: 1,520,000 SF 47%
- Office: 867,000 SF 26%
- Retail/Auto: 540,000 SF 16%
- Institutional/Educational: 188,000 SF 6%
- Recreational: 113,000 SF 3%
- Residential (single-family): 72,000 SF 2%

[Vacancy, per HDIC Report 252,500 SF 8% of Total Building Area]

FAR: Floor Area Ratio – What Is It?

- FAR determines how much building floor area can be built on a particular lot under the Zoning By-Law. Building height limits, setbacks, parking requirements, and other non-Zoning constraints, such as wetlands and storm drainage, determine how that building area is configured on the lot.
- FAR is defined in the Zoning By-Law as: “The total gross floor area of all buildings on one lot divided by the total area of the lot.”
- FAR can also be defined as: “The fraction by which a lot area is multiplied to derive the total building area on that lot allowed by the Zoning By-Law.”
- Example of FAR calculation for a **one-acre lot**, where FAR = .25:
One acre = 43,560 SF
Maximum building area = $43,560 \times .25 = \mathbf{10,890 \text{ SF}}$
- Current total FAR in S. Hingham = $3,300,000 \text{ SF} \div 39,421,800 \text{ SF} = \mathbf{.08\pm}$
- NOTE: The quantity of wetlands on a lot does not affect the FAR calculation.

Potential Long-Term Build-Out, Commercial

- FAR = .25: .25 x 39,421,800 SF = **9,855,450 SF**
- FAR = .35: .35 x 39,421,800 SF = **13,797,630 SF**
- FAR = .45: .45 x 39,421,800 SF = **17,739,810 SF**

Potential building areas are not discounted for presence of wetlands.
Quantities above are total and would include existing building areas.

Notes

- In Industrial Park District, FAR = .35 is allowed by right, .45 by Sp. Permit.
In Office Park District, FAR = .15 is allowed by right, .25 by Sp. Permit.
- For sake of comparison, the SSH Orthopedics Center FAR is .27±
(3-story building with on-grade parking, 15 ± % wetlands).

Benchmark Towns: Percent of Tax Revenue from Commercial Property

One metric to consider, while projecting commercial economic development, is the proportion of a town's tax revenues derived from non-residential property. Following is a list of our benchmark towns (plus a few others), in descending order of proportion of tax revenues derived from commercial property. Towns with (*) have Triple-A bond rating.

Burlington 54%

Braintree 38% Canton* 32% Dedham 30% Andover* 24% Mansfield 23%

Foxboro 22% Westwood 19% Needham* 19% Lexington* 19% Norwell* 14%

Hingham* 11% (Commercial/Industrial assessed value: \$610,039,300±)

Wellesley* 11% Concord* 9% Cohasset 6% Belmont* 5% Marblehead* 4%

Milton 4% Scituate 4% Weston* 4% Winchester* 4%

Benchmark Average: **15%** (excluding Burlington)

State Average: **18%**

Snapshot of Three Suburban Office Parks

South Hingham's commercial development density (Total FAR = .08) is relatively low, on both sides of Route 3.

What does a higher density development look like? Following are snapshots of three suburban office/industrial parks in the region:

| <u>Park</u> | <u>Land Area±</u> | <u># of Bldgs.</u> | <u>Total Bldg. SF±</u> | <u>FAR±</u> |
|----------------------------------|-------------------|--------------------|------------------------|-------------|
| Assinippi Park, Norwell | 150 Acres | 24 | 1,100,000 SF | .17 |
| NE Executive Park, Burlington | 60 Acres | 13 | 1,000,000 SF | .37 |
| Wellesley Office Park, Wellesley | 27 Acres | 8 | 650,000 SF | .55 |

Assinippi Park has mostly at-grade parking, and is a mix of lower value industrial and higher value office space; recent development activity is trending toward more office space, including medical.

Wellesley Office Park and NE Executive Park have both structured parking and at-grade parking, and are both office developments with little or no industrial space.

MAPC Reports and Projections

- 2001: The Town's Master Plan includes MAPC projection for maximum potential additional commercial growth in S. Hingham (south of Rte. 3 only) to be approximately 4,000,000 SF of new space.
- 2014: During the recent MAPC master planning exercise, MAPC projected future commercial growth to be approximately 855,000 SF in the highest growth scenario ("Economic Engine"), notwithstanding that the land area for growth has increased substantially since 2002 (200± added acres in Bristol property).
- 855,000 SF is a low number for a long-term projection, especially when considering potential infrastructure improvements. It is the equivalent of developing 80 acres at an FAR of .25 (not very dense), or 55 acres at FAR of .35.
- MAPC's estimated value of new development in terms of tax revenue per SF is lower than the Town Assessors' value (\$1.30/SF vs. \$2.50/SF respectively).
- MAPC projections have been inconsistent over the years. MAPC's most recent projection has significantly discounted the commercial economic growth potential of S. Hingham, both in terms of total amount of growth (in SF of building area) and associated tax revenue per unit of growth.

Recent Major Development in South Hingham

It is difficult to predict the future, but we can look at what has happened in South Hingham in the past 12 years, despite a recession and infrastructure limitations. (* indicates connection to neighboring town's sewer or water system):

| | | |
|---------------------|-----------|---------------------|
| • Serono* | 2002 | 237,000 SF |
| • Linden Ponds* | 2004-2008 | 1,278,000 SF |
| • Derby St. Shoppes | 2004 | 445,000 SF |
| • Blue Cross* | 2005 | 185,000 SF |
| • SSH Ortho. Center | 2010 | 74,000 SF |
| • SSEC* | 2012 | 86,000 SF |
| • Chambers Lexus | 2014 | <u>41,000 SF</u> |
| • Total | | 2,346,000 SF |

Sewer & Water Demand - Conceptual Analysis

Following are estimates of existing and projected sewer and water demand, based on conventional office use, for the three development density scenarios described above.

Existing sewer demand is based on the Town's Comprehensive Wastewater Master Plan (CWMP), with an added range for properties not included (Derby St. Shoppes, BC/BS, SSH Orthopedics Center, etc.).

Projected sewer demand is based on 75 GPD per 1,000 SF of conventional office space; projected water demand is estimated at 10% greater than projected sewer demand.

Note that medical office demand (e.g. SSH Orthopedics Center) can be 45±% higher than for conventional office use, retail demand (not including restaurants) can be 33±% lower, and industrial/warehouse demand can be lower still.

Existing Approximate Sewer and Water Use/Demand

- Sewer Use (from CWMP): 140,000 – 220,000 GPD
- Water Use (wastewater x 1.1): 154,000 – 240,000 GPD (estimate)

| | | |
|---|---------------------|---------------------|
| <u>Total Projected Sewer and Water Use/Demand @ FAR = .25</u> | 739,000 GPD Sewer | 813,000 GPD Water |
| <u>Total Projected Sewer and Water Use/Demand @ FAR = .35</u> | 1,035,000 GPD Sewer | 1,138,000 GPD Water |
| <u>Total Projected Sewer and Water Use/Demand @ FAR = .45</u> | 1,330,000 GPD Sewer | 1,463,000 GPD Water |

Sewer Issues

- In 2011 the CWMP estimated costs of alternative sewage disposal systems for the Sewer District, including a de-centralized (local) disposal system, and systems that ultimately connect to the MWRA sewer through Weymouth or North Hingham. While the assumptions behind the capacity of the systems are questionable (ultimate build-out of the area was estimated significantly lower than the areas noted above), the same assumptions were used in developing each estimate:
 - MWRA, connected via Weymouth: \$32,400,000
 - MWRA, connected via N. Hingham: \$21,000,000
 - De-centralized system: \$30,600,000, plus land cost (\$3.9M spent to date), plus opportunity costs
- De-centralized system opportunity costs: Annual opportunity cost to the Town (based on foregone real estate tax revenue only) of using developable land for wastewater treatment, could be significant. Assuming an increased post-development value of \$2.0M – \$2.5M per acre, and a tax rate of \$12.56, lost future tax revenue would be approximately \$25,000 – \$30,000 per acre per year.
- De-centralized system annualized operations and maintenance (O & M) costs can be \$2 - \$5/GPD. Costs of capital re-investment can also be significant, including: equipment replacement, replacement of effluent discharge area, costs of regulatory changes.
- De-centralized systems have finite capacity, based on land area and soils characteristics of re-charge facility.
- In 2011 the Town decided to pursue the de-centralized system, and has purchased 22.7 acres of land to accommodate it; total cost \$3,900,000. Infiltration capacity has not yet been determined, possible range of 60,000 – 80,000 GPD, a fraction of existing flow (140,000 – 220,000 GPD).
- The total amount of land needed for a de-centralized system for the entire Sewer District has not been estimated at this time.
- With the exception of the land purchases, we have not committed additional major resources to the de-centralized approach (system design, plant construction, etc.).

Water Issues

- Current maximum allowed average daily water use (for Hingham, Hull, and North Cohasset) is 3,510,000 GPD; we are at or near this level currently, according to Aquarion's recent presentations.
- In order to provide more water, Aquarion would need to secure a DEP permit, or find new sources of water outside our Weir River watershed. Local groups have expressed concern about increasing withdrawals from the Weir River watershed.
- Aquarion projection for future demand (based on Department of Conservation and Recreation 2009 projections), **without significant commercial growth in S. Hingham**, is an additional 600,000± GPD by 2030. Without new sources of water, this leaves no capacity for commercial growth in S. Hingham.
- Aquarion has presented several approaches to providing more water and/or increased fire flow to S. Hingham, none of which contemplates the magnitude of demand created by the potential growth scenarios described above.
- The state has stringent rules regarding the balance of water withdrawals and sewage disposal within a watershed.

Preliminary Conclusions, Sewer and Water

Re-assessment of the approach to South Hingham sewer and water supply systems is warranted based on:

Sewer

- Unknown practical capacity of a local (de-centralized) sewage treatment and effluent discharge system.
- High cost of land purchased for siting of a sewage treatment plant and for disposal of sewage effluent.
- Cost of long-term capital reinvestment and operations and maintenance for a local sewage treatment system, including personnel costs, land costs associated with drain field replacement, etc.
- Unknown costs associated with increasingly stringent EPA regulations of local sewage treatment plants.
- Opportunity costs of lost tax revenue due to removal of land from the tax rolls.
- Higher potential sewage capacity associated with a regional sewer system, such as MWRA.

Water

- Inability of our locally sourced water supply to meet significant projected increased demand.
- Higher potential availability of water supply associated with a regional water supply system, such as MWRA or another as-yet unidentified source.

Recommendations

1. Determine desired growth target for the Sewer District in terms of:
 - Total building area;
 - Types of uses;
 - Potential property tax revenues.
2. Determine estimated sewer and water needs for prospective growth.
3. Hire utility/infrastructure consultant to:
 - Evaluate prospects for alternative methods of sewage disposal;
 - Identify potential sources of additional water supply;
 - Estimate approximate first costs and long-term costs for associated systems.
4. Explore state/federal grants and loans for infrastructure improvements.
5. Continue to discuss other related issues, such as roads and bridges.
6. Consider hiring economic development consultant to evaluate long term prospects for commercial/economic growth in South Hingham.



Thank You!