



To: Town of Sudbury

Date: February 8, 2016

Memorandum

Project #: 13125.00

From: Karen Staffier, P.E.

Re: 526 and 528 Boston Post Road Redevelopment  
Utility Infrastructure Memo

KES

BPR Sudbury Development LLC (the Applicant) is proposing to redevelop the property located at 526 and 528 Boston Post Road, Sudbury, MA (the Site). The redevelopment will include a grocery store, retail/restaurant buildings, multi-family, senior housing, and age-restricted housing, along with associated landscape, parking, and utility improvements (the Project). To facilitate the Project, the Applicant is proposing to include the site in a new Mixed-Use Overlay District.

This memo has been prepared to support the Conformance Determination Review by the Town of Sudbury's Planning Board by providing an overview of the utility infrastructure associated with the Project. The Site is currently developed and occupied by over 561,000 square feet of office, manufacturing and research and development space, which are currently served by a robust network of public and private utility services. In general, the Project can be fully supported by the existing utility infrastructure at or on the Site; certain utility services or systems will be upgraded and replaced as necessary to support the Project and make it compliant with current regulations and standards, as described below.

➤ **WATER**

There is an existing 12" waterline running under Boston Post Road on the northern (Project site side) of the Boston Post Road right-of-way, which was recently re-built. The Site is currently served by three (two 8" and one 3") existing taps off of the Boston Post Road water main into the Raytheon site. Raytheon has historically been a large consumer of water on the site.

In October of 2015, VHB performed flow tests on hydrants served by the Boston Post Road water main, to confirm available water flows and pressures. The test indicated static water pressure in the 12" main of approximately 100 pounds per square inch and flows near 1,700 gallons per minute at the hydrant. Based on these results of these tests, the available flow and pressure of water in the system is sufficient to support the project.

The Project proposes to reuse the 8" western-most and 8" eastern-most water taps into the Site and proposes to cut and cap the existing 3" tap near the center of the Site. The Project proposes to construct a network of new 8" water mains and fire hydrants throughout the site, which will be adequately sized for the domestic and fire flows associated with the project. Water usage will be reduced through the use of low flow water fixtures and other water conservation measures. The Project is not anticipated to rely on Sudbury Water District supply for irrigation purposes.

➤ **SEWER/WASTEWATER**

In both the existing and proposed conditions, sewer/wastewater is handled entirely onsite.

The existing development includes a 50,000 gallon capacity onsite wastewater treatment facility and a series of leaching fields authorized in accordance with a Groundwater Discharge Permit from the Massachusetts Department of Environmental Protection ("MassDEP"). Wastewater from the existing on-site buildings reaches the existing wastewater treatment facility via a mix of gravity and force sewer mains. The force sewer main originates from an existing on-site pump station.

The Applicant currently plans to upgrade and expand the capacity of the existing wastewater treatment facility (WWTF) and leaching fields by applying to MassDEP for a modification to the existing Groundwater Discharge Permit for the Site. Other options for completing the project that do not involve expanding the capacity of the existing WWTF include: providing dedicated Title V septic systems for certain components of the project and/or, demonstrating to DEP that the Project's "real" flows based on comparable properties justify permitting the maximum capacity of the WWTF based on these empirical flows instead of on the overly conservative base-line DEP Title V sewer flow assumptions that are otherwise used in sizing wastewater treatment facilities.

After redevelopment, wastewater from the Project will be directed to the upgraded on-site wastewater treatment facility by use of newly constructed gravity and force sewer mains. The proposed force sewer main will originate from a newly constructed pump station. The treated wastewater will be dispersed to the on-site leaching fields. As part of the treatment plant upgrades, the treatment facility will be designed in accordance with current DEP standards and will provide upgraded treatment technologies and add significant redundancy to the treatment plant key systems.

#### ➤ **WATER / SEWER DEMAND PROJECTIONS**

The Applicant has been working cooperatively with both MassDEP and the Town of Sudbury's Water District to plan for and permit the water and sewer services required for the proposed redevelopment. With respect to water service, the Applicant is preparing a "water impact" report for the Town of Sudbury's Water District as required by the District's newly issued rules and regulations. As indicated above, the Applicant's engineering analysis indicates that existing water service to the property (currently used by Raytheon) provides sufficient flow size and pressure to easily support the proposed development. The forthcoming water impact study will provide a formal report confirming these conclusions and also document in greater detail the water conservation measures that the Project will be committing to.

With respect to sewer service, as indicated above, the Applicant is in the process of preparing to pursue a modification to the Site's existing MassDEP issued Ground Water Discharge Permit for the existing wastewater treatment plant. The initial steps in this process involve the following: (1) completing under MassDEP's supervision a hydrogeological study simply to determine what volume of effluent flow the leaching fields and surrounding vacant land can support. Our team's initial estimates indicate that this could be well in excess of 90,000 gallons per day; (2) determining what the DEP Title V regulations require as a base-line for wastewater treatment capacity based on the nature and size of each of the proposed uses – a summary of these initial calculations is provided below and currently total between approximately 60,000 and 80,000 gallons per day depending on the retail tenant mix and the precise unit mixes in the residential developments; and, (3) determining how much actual wastewater flow the proposed development will actually produce upon full build out given that actual flows are often substantially less than theoretical design flows. It is well documented that Title V flows often vastly over estimate the amount of wastewater generated by multifamily developments as one example. The Applicant's team is currently compiling flow data from facilities owned and operated by the Applicant or affiliates to share both with MassDEP and the Town.

Anticipated Wastewater Flows According to Title V Regulations\*

Retail Development		Quantity	Unit	GPD/Unit (310 CMR 15)	Estimated Total Flow (GPD)*
	Grocery Store	45,000	SF	0.097	4,365
	Restaurant	250-500	SEATS	35	8,750-17,500
	Retail Store	25,000	SF	0.05	<u>1,250</u>
				Subtotal	14,365 - 23,115
Age Restricted Condos		Quantity	Unit	GPD/Unit (310 CMR 15))	Estimated Total Flow (GPD)*
	Housing for the Elderly		1-BED UNIT	110	0
		60	2-BED UNIT	150	<u>9,000</u>
				Subtotal	9,000
Senior Housing Use		Quantity	Unit	GPD/Unit (310 CMR 15)	Estimated Total Flow (GPD)*
	Housing for the Elderly	42	1-BED UNIT	110	4,620
		6	2-BED UNIT	150	<u>900</u>
				Subtotal	5,520
Avalon 40B Housing		Quantity	Unit	GPD/Unit (310 CMR 15)	Estimated Total Flow (GPD)*
	Family Dwelling, Multiple	124	1-BED UNIT	110	13,640
		101	2-BED UNIT	220	22,220
		25	3-BED UNIT	330	8,250
	Club House	2000	SF	0.075	<u>150</u>
				Subtotal	<u>44,260</u>
				<b>Project Total*</b>	<b>73,145 - 81,895*</b>

*\* Note: The estimated wastewater flows for the Project listed above are based on Title V guidelines even though for certain uses, the wastewater flow anticipated by Title V have been empirically demonstrated to be greater than actual flows. Furthermore, the estimated flows for the Project that are listed above are at the high end of the range that is expected from the retail development tenant mix and residential unit mix (for example, less than 10,000 sf of restaurants would result in substantially less flow than anticipated above). The Applicant will finalize estimates for these program elements prior to filing for the modification to the existing MassDEP Wastewater Discharge Permit.*

➤ **STORMWATER**

The existing Site consists of two major catchment areas: (1) on-site and off-site areas tributary to the centrally located retention basin, which accepts stormwater from a majority of the site area, and (2) an area that drains via a closed piping system without any significant retention features. On the southwestern perimeter of the site, stormwater swales and wetlands also collect and convey water to the centrally located retention pond. Outflows from the retention pond combine with the closed drainage system located on the southern portion of the site and ultimately discharge to a wetland on the southern side of Boston Post Road, east of the Sudbury Plaza.

As proposed, the Project will maintain the existing centrally located retention basin and reduce impervious cover across the Site. Through the implementation of supplemental Low Impact Development techniques, including decentralized stormwater BMPs, the stormwater management system proposed by the Project will result in further attenuation of peak rates of runoff, improved water quality and balanced hydrologic conditions to existing wetland resource areas. The addition of stormwater BMP's will aid to treat the site runoff before discharging to the closed drainage system and introduce the opportunity for additional groundwater recharge to the underlying aquifer, subject to validation of adequate separation to groundwater.

➤ **GAS**

There is an existing high-pressure National Grid gas main within the Boston Post Road right-of-way. The existing development is served by a single tap from the main located near the middle of the Site along Boston Post Road. This tap provides high-pressure gas service to the site to meet the very large historical demand that Raytheon required. The Site will continue to be served by National Grid for gas service. The Applicant's engineering team estimates that the proposed project will require approximately 111M BTU/HRs for HVAC, hot water and cooking needs by the various property owners and tenants – including both commercial and residential. Based on the Applicant's initial discussions with National Grid, there appears to be more than adequate capacity at Route 20 already stubbed into the property via the site's high-pressure gas stub to satisfy all of the anticipated gas demand from the proposed project. The Proponent is working with National Grid to determine whether the existing tap will be re-used or whether new tap or taps will be constructed (the current location may conflict with proposed improvements – e.g., future retail buildings).

➤ **ELECTRIC**

Existing electric service is provided to the Site from Boston Post Road by Eversource Energy. Presently, the site is served by two redundant 13.8kV circuits from Eversource that support the existing 15kV switchgear primary metered equipment serving five (5) major buildings and several remote buildings/structures (including a sewage treatment plant) on the Site. The Applicant's engineering team estimates that the total electrical demand from the project will require a circuit that can easily be supported by the existing 13.8kV circuit putting no additional net new demand on the local utility grid.

As part of the Project, the electrical service to the Site will be converted from a primary service (with transformers owned and maintained by Raytheon to allow for bulk/discounted energy rates) to a series of secondary services that will allow for individual metering for either entire buildings or per tenant and that will make Eversource responsible for owning and maintaining all of the transformers in the proposed redevelopment. To allow for the widening of Route 20 required to accommodate the new signalized intersection, approximately twelve utility poles at the front of the site will be maintained in their current form, but relocated to the north. However, the electrical cabling throughout the site will be in newly constructed underground utility

ductbanks. Furthermore, the Applicant currently intends to loop this underground ductbank infrastructure in order to provide a redundant circuit to the various buildings and tenants at the Site.

➤ **TELECOMMUNICATIONS**

Telecommunications services are currently provided to the Site by Verizon. The Applicant has initiated discussions with Verizon and Comcast concerning the Project. Both of these telecommunications providers have expressed strong interest in and ability to provide a wide range of modern telecommunications services to the Site from existing infrastructure on the utility poles that run alongside the southern boundary of the property (along Route 20). Initial discussions have focused on steps required to obtain disconnect letters prior to demolition of the Raytheon facilities and coordination related to the relocation of utility poles to allow for the Route 20 widening. Similar to the electrical services in the proposed development, all of the telecommunications infrastructure necessary for the Project will be located in underground ductbanks within the Site.