



## Memorandum

To: City of Newton  
Planning Department

Date: May 3, 2018

Project #: 14105.00

From: Sean M. Manning, PE  
Christina Dube

Re: St. Elizabeth's Remote Parking Lease  
Transportation Impacts Analysis

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VHB was retained by Simon Property Group to assess and quantify the anticipated peak hour vehicle trips that would be generated in connection with the lease of up to 253 parking spaces at the Chestnut Hill Mall that would be designated for weekday use by St. Elizabeth's Medical Center for remote staff parking. This memorandum provides an analysis and summary of the following:

- Morning and evening peak hour trip generation that can be expected in connection with this lease of 253 parking spaces.
- Shuttle bus routes and operational parameters that will be required to transport remotely parked St Elizabeth's staff between the Mall and the Hospital.

### Vehicle Trip Generation Analysis

To determine the anticipated peak hour trips that would be generated with this lease, VHB assessed existing St Elizabeth's employee parking lot occupancy counts that were recently compiled from Fall 2017 to determine the morning and evening peak hours based on vehicle activity. These counts were conducted at the Monastery Parking lot, which is used exclusively for staff only, and is a parcel of land slated for redevelopment, thus requiring the need to seek a new location to accommodate these staff. This parking lot has a maximum capacity of 310 vehicles. The vehicle activity was recorded hourly and is shown in **Table 1**.

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**Table 1 St. Elizabeth’s Medical Center  
 Main Monastery Parking Lot  
 Vehicle Occupancy vs. Future Leased Occupancy**

Time Period	Main Monastery Parking Lot		
	Total Vehicles in Parking Lot	% of Parking Lot Occupancy	Vehicles Entering/Exiting
7:00 AM	204	66%	76
8:00 AM	280	90%	24
9:00 AM	304	98%	4
10:00 AM	308	99%	2
11:00 AM	310	100%	1
12:00 PM	309	100%	15
1:00 PM	294	95%	7
2:00 PM	287	93%	22
3:00 PM	265	85%	62
4:00 PM	203	65%	59
5:00 PM	144	46%	67
6:00 PM	77	25%	-

Below are some key points as it relates to existing on-campus staff parking operations on the Monastery Lot:

- It was determined that most staff that park in the Monastery Lot arrive prior to 7:00 AM.
- Between 7:00 and 8:00 AM, about 76 staff arrive and park.
- The lot has typically reached capacity at around 8:00 AM (prior to surrounding typical peak commuting period)
- From 3:00 to 6:00 PM, approximately 50 to 75 staff depart the lot per hour during this three-hour window.

These data were then utilized to help determine likely travel arrival and departure data for the 253-space lease at the Chestnut Hill Mall. The following key assumptions were made in utilizing the data synthesized from **Table 1**:

- As most hospital staff are required to work under fixed, defined shifts, it was assumed that the parking arrival times at the Mall would be 30 minutes earlier than that observed at the Monastery Lot to account for travel time between the Mall and the Hospital (shuttle bus travel time, waiting for next bus, etc.).

- Similarly, it was assumed that departing staff would leave the Mall parking 30 minutes later than what was observed in the Monastery Lot.
- The volume of cars accessing the Mall is based on a 253-space lease and capacity.

**Table 2** summarizes anticipated St Elizabeth staff arrival and departure volumes for a lease of 253 parking spaces based on the observed data and assumptions defined previously.

**Table 2 St Elizabeth’s Medical Center \ Remote Parking Trip Generation Chestnut Hill Mall**

Time Period	Chestnut Hill Mall Parking Lot		
	Future Vehicle Parking Lot Occupancy	% of Parking Lot Occupancy	Vehicles Entering/Exiting
before 6:30 AM	167	66%	-
<b>6:30 AM</b>	<b>167</b>	<b>66%</b>	<b>62</b>
7:30 AM	229	90%	20
8:30 AM	249	98%	3
9:30 AM	252	99%	2
10:30 AM	253	100%	0
<i>Shuttle Service Ends at 10:45 AM</i>			
<i>Shuttle Service Begins at 2:00 PM</i>			
2:30 PM	235	93%	6
3:30 PM	217	85%	18
4:30 PM	166	65%	51
5:30 PM	118	46%	48
<b>6:30 PM</b>	<b>63</b>	<b>25%</b>	<b>55</b>

The majority of the employees will arrive at the parking lot from before 6:30 AM to account for the shuttle travel time to St. Elizabeth’s and the requirement to be on-campus by 7:00 AM. During the evening peak, there is a steadier rate of departure of about 50-55 vehicles per hour between 4:30 and 7:30 PM. Note that the volumes indicated in **Table 2** also include trips that would be generated by the shuttle bus operation.

To determine the route that these vehicles will travel once they are relocated to the Chestnut Hill Mall, a trip distribution network was created based on the employees’ place of residence, as shown in **Table 3** and **Figure 1**.

**Table 3 Employee Trip Distribution**

<b>Route</b>	<b>% Trips</b>	<b>AM Peak Hour Vehicles (6:30-7:30 AM)</b>	<b>PM Peak Hour Vehicles (5:30-6:30 PM)</b>
Beacon Street to/from the East	1%	9*	9*
Beacon Street to/from the West	10%	6	6
Hammond Pond Parkway to/from the South	50%	31	27
Route 9 to/from the West	33%	20	18
Route 9 to/from the East	6%	4	3
<b>Total</b>	<b>100%</b>	<b>70</b>	<b>63</b>

\*Includes future shuttle bus trips

As shown in **Table 3**, the number of peak period vehicle trips that would be generated by this proposed lease would be relatively small due to the following key factors:

- The rate of arrival and departure will be spread out over multiple hours.
- The shift requirements have been designed so that essential staff can get to the hospital outside of traditional commuter peak periods
- Most cars path of travel will be limited to Hammond Pond Parkway (DCR) and Route 9 (MassDOT).
- There will be only a small amount of incremental traffic generated on local Newton streets.

### Shuttle Transportation

To transport the employees to and from the Chestnut Hill Mall, St. Elizabeth’s will provide a dedicated shuttle service. Four shuttles will run on 15-minute headways during the morning from 6:00 AM – 10:45 AM with the last shuttle leaving from the Chestnut Hill Mall at 10:45 AM. During the afternoon and evening hours, the shuttle will run from St. Elizabeth’s to the Chestnut Hill Mall from 2:00 PM – 7:00 PM with the last shuttle leaving St. Elizabeth’s at 6:45 PM. An example of the shuttle bus type that will be used is shown in **Figure 2**.

The shuttle will travel north along the Hammond Pond Parkway from the Chestnut Hill Mall and continue east onto Beacon Street to Cleveland Circle. At Cleveland Circle, the shuttle will take a left turn onto Chestnut Hill Avenue to Washington Street. The shuttle will then continue from Washington Street to Cambridge Street, and it will turn right onto Warren Street to enter the St. Elizabeth’s Medical Center campus. To load and unload passengers, the shuttle will use the drop-off area by the Endocrinology Department. The return trip from St. Elizabeth’s to Chestnut Hill Mall will follow the same path. For more details, refer to the map in **Figure 3**.

Ref: 14105.00

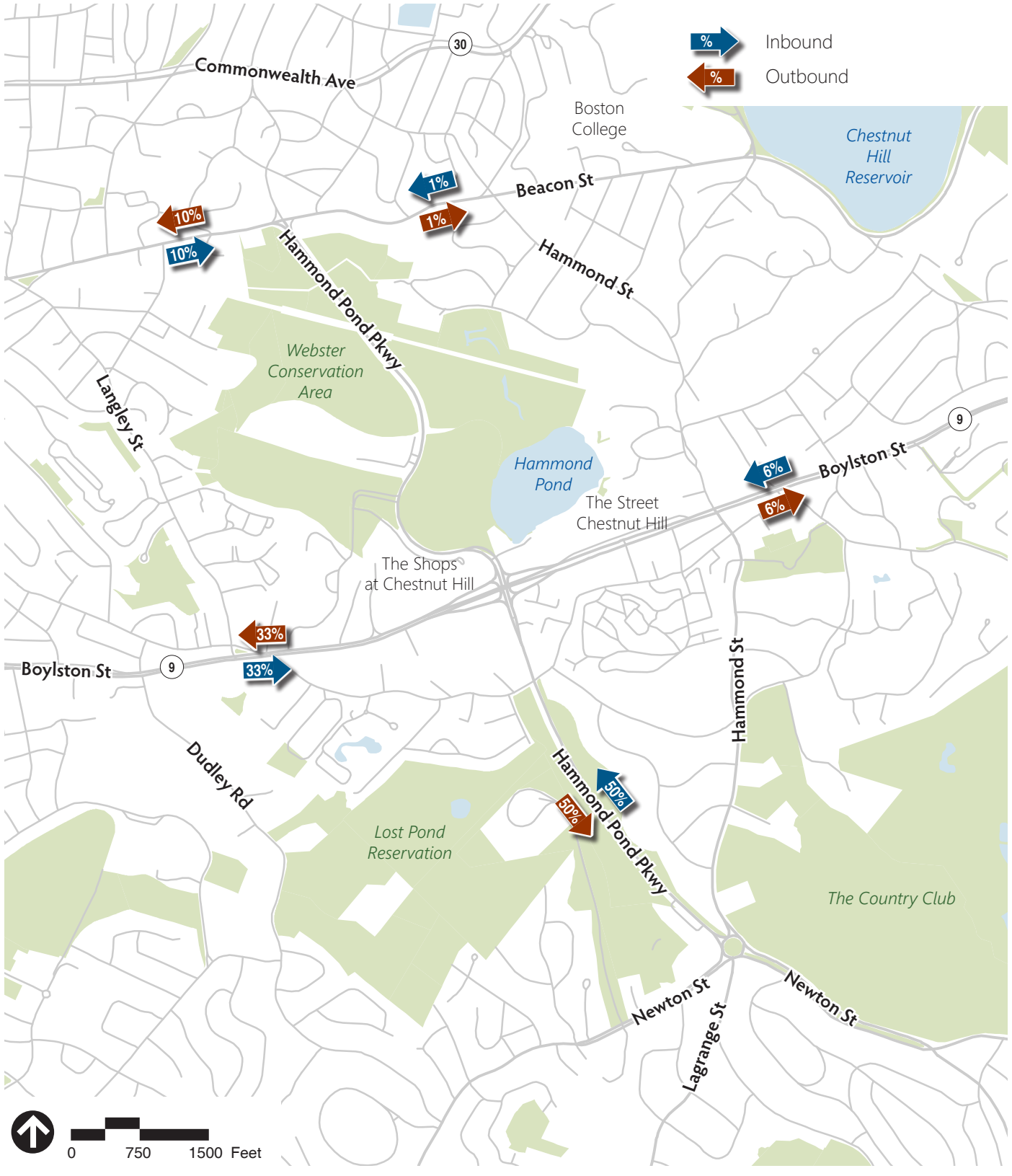
May 3, 2018

Page 5

## **Conclusion**

The relocation of the St. Elizabeth's employees to the Chestnut Hill Mall will not create a measurable impact on the surrounding traffic network due to the operations occurring mainly outside of the typical peak hours for this area. The shuttle bus will operate along major roadways and will not travel down local streets and through neighborhoods. Most of the shuttle bus trips and employee arrival/departure trips will occur outside of the morning and evening peak hours.

Please call us if you have any questions.



Source: MassGIS



Figure 1

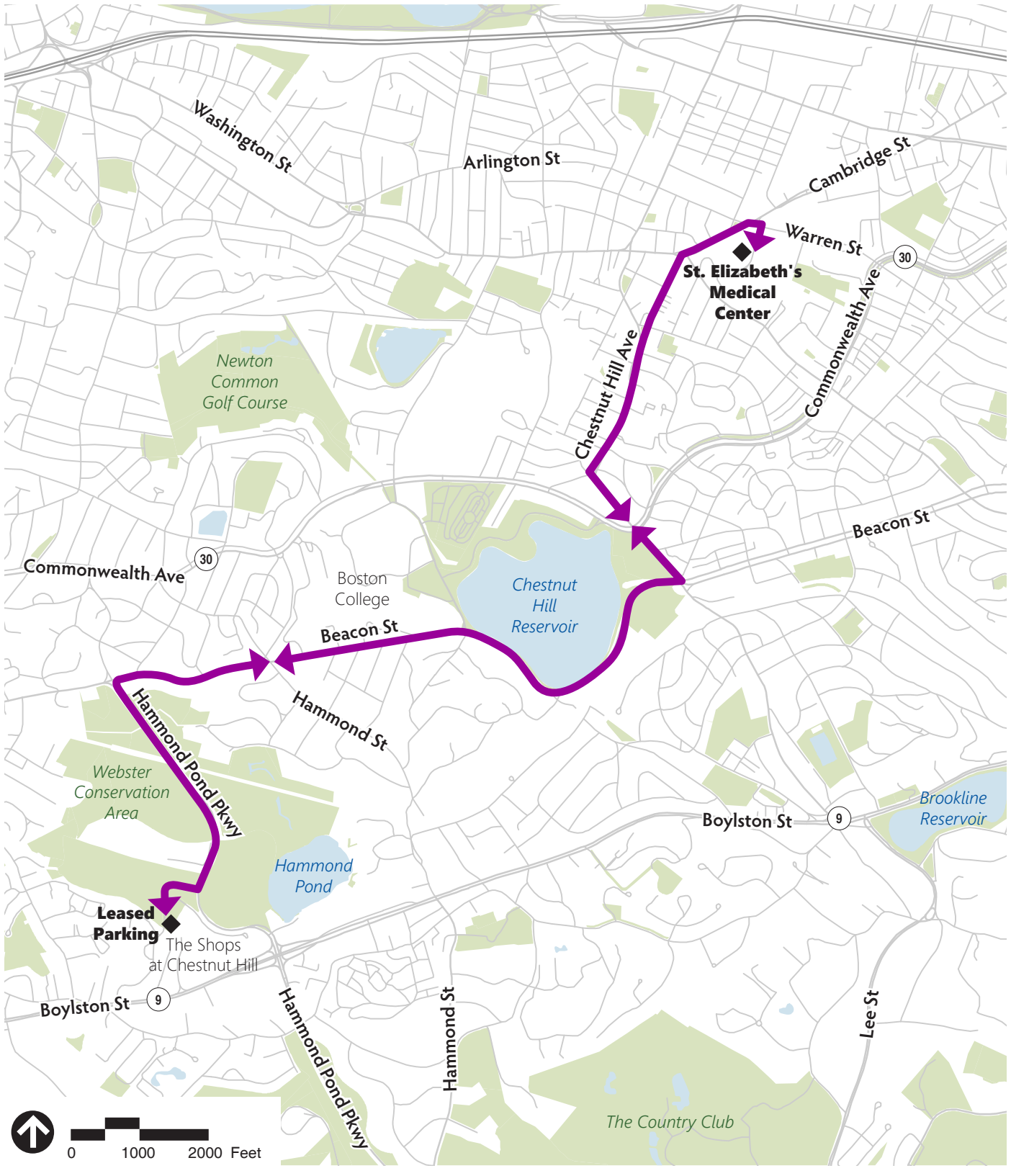
St. Elizabeth's Medical Center  
Employee Trip Distribution

**Simon Property Group**  
**The Shops at Chestnut Hill**



St. Elizabeth's Medical Center  
Employee Shuttle Bus Example  
Simon Property Group  
The Shops at Chestnut Hill

**Figure 2**



Source: MassGIS



Figure 3

St. Elizabeth's Medical Center  
Employee Shuttle Bus Route

**Simon Property Group**  
**The Shops at Chestnut Hill**