

To: Alison C. Steinfeld, Planning Director
Department of Planning and Community Development
333 Washington Street
Brookline, MA 02445

From: James. D. Fitzgerald, P.E., LEED AP

Date: July 6, 2018

Subject: 1299 Beacon Street, Brookline MA
Traffic Peer Review

Environmental Partners Group, Inc. (Environmental Partners) has been retained by the Town of Brookline to conduct a traffic peer review of materials prepared relative to the proposed mixed-use development located at 1299 Beacon Street including the Traffic Impact Assessment (TIA) prepared by Vanasse & Associates, Inc. (VAI), dated February 2018.

In general, the TIA has been prepared in a professional manner, consistent with standard engineering practices with the exception of the issues identified below. The following is a summary of Environmental Partners' traffic review of available documents. A review of proposed parking has been provided by Walker Parking Consultants under separate cover.

Proposed Development

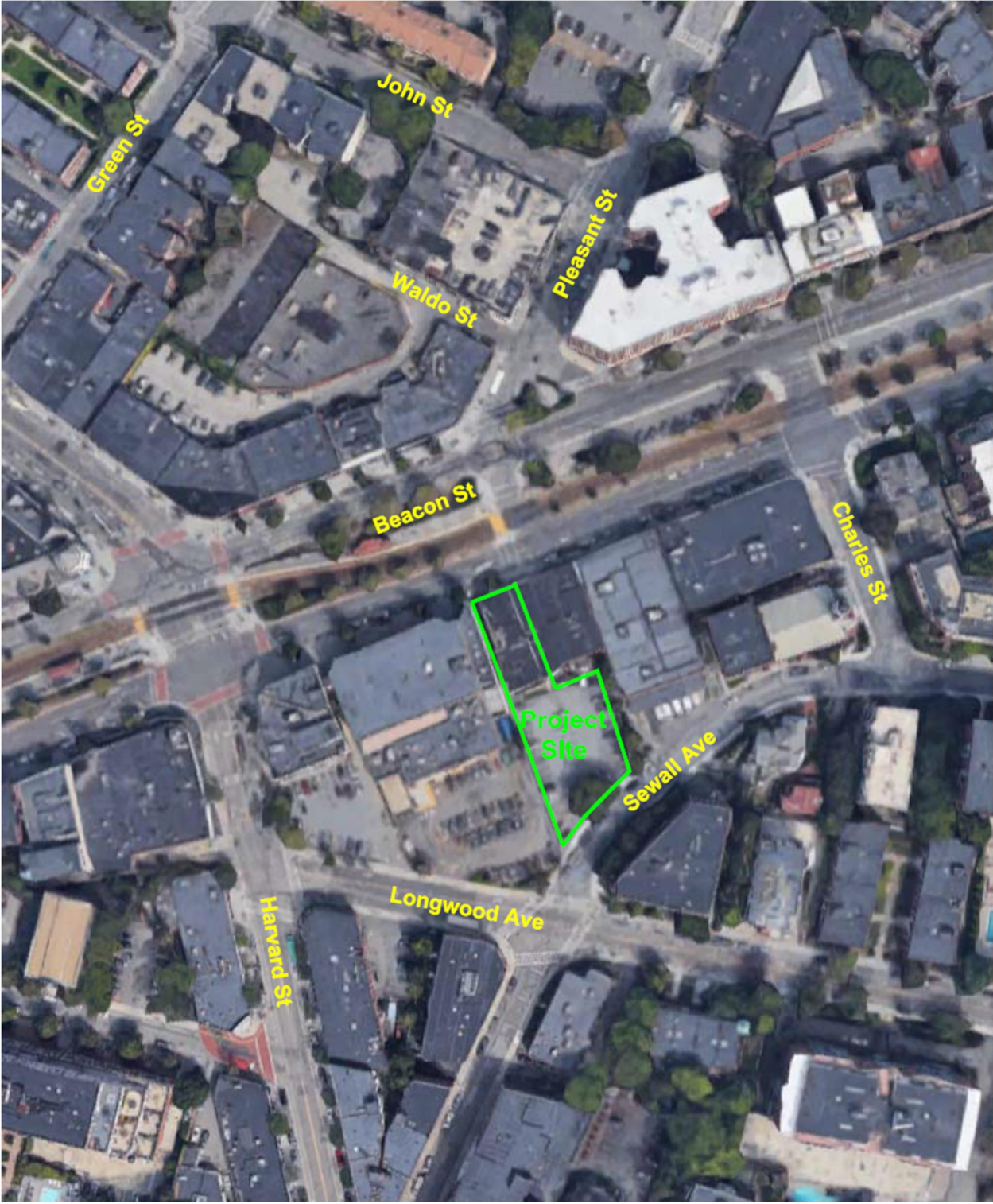
The proposed mixed-use development at 1299 Beacon Street is proposed to consist of 74 apartments (occupying eight floors) and 12,285 square feet of retail space (occupying two floors). 16 of the 74 units will be designated for households earning up to 50% of the area median income.

A total of 99 parking spaces are proposed on the site, with 93 garage spaces and 6 surface lot spaces. Access to the site is proposed via two bidirectional driveways with left-in /left-out access to one-way Sewall Avenue, one driveway for parking vehicles and one for loading. The existing parking spaces on Beacon Street in front of the project site are proposed to be converted into a pick-up/drop-off area.

Memorandum

July 6, 2018

Page 2



Memorandum

July 6, 2018

Page 3

Transit

The MBTA Green Line (C Branch) has local stops at Coolidge Corner located across the street from the project site and bus stops for MBTA Route 66 (Harvard Red Line station to Dudley station) are located nearby as well.

Existing Traffic Volumes

Weekday Turning Movement Counts were collected in September 2016 during typical morning and evening hours. No seasonal adjustment factors were applied to these counts as traffic volumes during these months are typically higher than the yearly average and are appropriate for analysis without adjustment. Although not stated, it appears a 1% annual growth rate was applied to the traffic counts to project the 2016 volumes to the 2018 Baseline volumes. Despite the lack of explanation, a 1% annual growth rate appears to be reasonable for this location based on historic traffic count data in the area.

Midday Saturday counts were collected in January 2018. A seasonal adjustment (increase) of 3% was applied to the volumes to adjust them to reflect average month conditions. However, since these counts were performed on the Martin Luther King holiday weekend and while nearby colleges such as Boston University and Boston College were on winter break, it is likely that the traffic volumes at this location experience greater fluctuations than typical. In comparing nearby traffic data along the Mass Pike for instance, a 25.6% difference in traffic is seen between January 17 and June 3, 2018. Since these traffic volumes were the basis of the weekend analyses, fluctuations in this base Saturday traffic data would impact the findings discussed below and should be considered.

Existing Traffic Operations

Existing turning movement counts were analyzed in Synchro traffic analysis software and capacity analysis results for the study area intersections were summarized Tables 7 and 8 in the TIA.

The study limits appear to be reasonable and include the following intersections:

- Harvard Street at Beacon Street (Signalized)
- Harvard Street at Longwood Avenue (Unsignalized)
- Harvard Street at Sewall Avenue/Stearns Road (Unsignalized)
- Sewall Avenue at Longwood Avenue (Unsignalized)
- Sewall Avenue at Charles Street (Unsignalized)
- Sewall Avenue at Site Drive (Unsignalized)
- Sewall Avenue at St. Paul Street (Unsignalized)
- Beacon Street at Pleasant Street (Signalized)
- Beacon Street at Charles Street (Signalized)

Motor Vehicle Crash Data

The report included a review of crash data at the study intersections from MassDOT for the five-year period of 2010 through 2014. The Town of Brookline accident data from MassDOT is

Memorandum

July 6, 2018

Page 4

known to be lacking due to (an) IT failure between the BPD and Mass RMV computer systems. Therefore reports from the Brookline Police Department may likely provide more accurate and reliable results.

MassDOT releases official Statewide and District rates that can be used as an effective tool to compare safety hazards at a specific intersection. The latest District 6 rate for unsignalized intersections is 0.52 C/MEV and for signalized intersections is 0.71 C/MEV. Crash rates higher than these averages could indicate a potential safety issue.

The crash rates at the study intersections are as follows:

- 0.43 C/MEV Harvard Street at Beacon Street (Signalized)
- 0.53 C/MEV Harvard Street at Longwood Avenue (Unsignalized)
- 0.08 C/MEV Harvard Street at Sewall Avenue/Stearns Road (Unsignalized)
- 0.27 C/MEV Sewall Avenue at Longwood Avenue (Unsignalized)
- 0.22 C/MEV Sewall Avenue at St. Paul Street (Unsignalized)
- 0.13 C/MEV Beacon Street at Pleasant Street (Signalized)
- 0.17 C/MEV Beacon Street at Charles Street (Signalized)

The TIA states that all of the study area intersections were found to have a motor vehicle crash rate below both the MassDOT statewide and District averages. However the Harvard Street at Longwood Avenue intersection just meets the District 6 average crash rate threshold.

It is assumed that since the unsignalized study intersections of Sewall Avenue at Charles Street and Sewall Avenue at Site Drive are not included in Table 1 (Motor Vehicle Crash Data Summary) that no crashes at these locations were recorded during the five-year study period. Clarification is requested.

Projected Traffic Volumes

Existing traffic volumes were projected to 2025 using an assumed background growth rate of 1% per year, higher than historic growth rates in the area. A 1% annual growth rate is reasonable.

Additional traffic volumes were also included in establishing the 2025 No-Build traffic volumes to reflect substantial developments anticipated in the area. These developments included:

- Waldo Street
- 40 Centre Street
- 420 Harvard Street
- Devotion School
- 455 Harvard Street
- 54 Auburn Street
- 384 Harvard Street
- Babcock Place

Back-up traffic networks for each of the above developments were not provided in the TIA. However, Environmental Partners was able to verify the projected traffic volumes using back-up provided for another proposed development in Brookline (the Traffic Impact Study for the

Memorandum

July 6, 2018

Page 5

proposed mixed-use development on Waldo Street prepared by Stantec, dated January 2018). Trips from the above anticipated developments were added to the background growth rate in order to generate 2025 No-Build traffic volumes.

Trip Generation

Trips were generated using Land Use Code (LUC) 220 for Apartments from the 9th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. According to ITE, "apartments are rental dwelling units located within the same building with at least three other dwelling units." The fitted curve method was used in generating apartment trips. Back up for these calculations were provided and appear reasonable. As a comparison, using LUC 221 Multifamily Housing (Mid-Rise) from the more recent 10th Edition of ITE's Trip Generation Manual, fewer trips would be generated. Therefore, the use of LUC 220 from the 9th edition of ITE's Trip Generation Manual is deemed acceptable and conservative.

Given the proximity to transit opportunities and general mode splits in the Town of Brookline, a reduction in site generated traffic was anticipated for residential trips based on census data from 2012-2016. Based on the information in this document, 28.0% of commuters use public transportation, 24.8% walk, 8.6% bicycle, 0.9% use taxi or other means, and 3.4% work at home. Therefore, projected apartment trips were reduced by 65%, which appears reasonable.

LUC 826 Specialty Retail Center from the 9th Edition of the ITE Trip Generation Manual was used in calculating the generated retail trips. According to ITE, "specialty retail centers are generally small strip shopping centers that contain a variety of retail shops and specialize in quality apparel, hard goods and services, such as real estate offices, dance studios, florists and small restaurants." Available data points in the ITE Trip Generation Manual for this LUC are very limited, significantly influencing the accuracy of predicted trip generation. For instance, in the case of the evening peak hour, three data points are provided for approximately 15,000 square feet of retail ranging from 45 to almost 100 trips per thousand square feet and only two other data points are provided, both for substantially larger developments.

For the weekday morning and Saturday daily trips, there are even fewer data points available. Given the limited data, retail traffic generated during the weekday morning peak hour and Saturday midday peak hour were estimated using ratios between LUC 820 (Shopping Center) and LUC 826. It should be noted that LUC 826 is no longer included in the latest edition of the ITE Trip Generation Manual (10th edition). Since the limited data available for LUC 826 has a direct effect on the accuracy of the predicted trip generation for 12,285 square feet of retail space, it is requested that more information regarding the retail type be provided and that a different LUC or empirical data from a more appropriate retail development be used to better estimate retail trips.

A 75% reduction was applied to retail trips which is not supported in the TIA. (The above census data used to justify a 65% reduction of apartment trips was residential-based, "Commuting to Work" information.) It is requested that justification be provided relative to customers accessing the site via walking, biking or transit for the type of retail anticipated.

Memorandum

July 6, 2018

Page 6

According to the original TIA (before any refinements to site-generated traffic), VAI projected the proposed development to generate a total of 336 new vehicle trips on an average weekday (168 entering and 168 exiting), with approximately 16 new vehicle trips (4 entering and 12 exiting) expected during the weekday morning peak hour and 33 new vehicle trips (19 entering and 14 exiting) during the weekday evening peak hour. VAI projected the proposed development to generate a total of 296 new vehicle trips on an average Saturday (148 entering and 148 exiting), with approximately 25 new vehicle trips (13 entering and 12 exiting) expected during the Saturday midday peak hour.

Traffic Operations

Traffic analysis was performed to compare operations under the future 2025 No-Build conditions to the 2025 Build conditions. The provided analyses (before any refinements to site-generated traffic) indicate a negligible increase in delay caused by the proposed development.

Transit

The TIA says that the following Transportation Demand Management (TDM) strategies will be committed to by Mason & Murphy Inc.:

- Designation of a Transportation Coordinator - Oversees all transportation issues (TDM measures, parking, loading, and service).
- Provision of Transit Schedules - Links to the MBTA website will be included on the website. Information will be provided in a central location regarding public transportation services, maps, schedules, and fare information.
- Bicycling Resources & Secured bike spaces will be provided in and out of the building for residents and employees. Lockers, a shower and a changing area will be provided for employees.
- Electric Car Charging Station - An electric car charging space will be provided in the garage.
- MBTA Discounts - Tenants will be encouraged to provide a discount toward monthly MBTA passes.
- Hubway Discounts - Tenants will be encouraged to provide a discount for membership

Bicycle

Regarding Transportation Demand Management strategies for bicyclists, the TIA indicates "Secured bicycle spaces will be provided both inside and outside the building for both residents and employees. Lockers, shower, and changing area will be provided for employees."

Sight Distance

The TIA did not review sight distance at the proposed site driveway despite the proposed driveway location being closer to the Longwood Avenue intersection than the existing driveway. Sight distance calculations are typically performed using the American Association of State Highway and Transportation Officials (AASHTO) guidelines. Intersection Sight Distance (ISD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive

Memorandum

July 6, 2018

Page 7

an oncoming vehicle and safely complete a turning or crossing maneuver. Stopping Sight Distance (SSD) is the distance required for a vehicle traveling at the design speed of a roadway to stop prior to striking an object in its travel path. According to AASHTO, *if the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions.*

Although not clearly defined on the current site plan, the text in the TIA indicates both site driveways will be two-directional despite the narrow widths shown on plan.

Speed data was not provided in the TIA as a basis for sight distance requirements. The travel speeds along this portion of Sewall Avenue are anticipated to be relatively slow given the close proximity to the Longwood Avenue intersection where northbound Sewall Avenue traffic is under stop-sign control. However vehicles currently park along the roadway, impacting sight distance from the proposed driveways; the proposed altered striping along Sewall Avenue has not been shown on the provided plans.

Depending on the location of the nearest on-street parking space relative to the proposed curb-cut opening, it appears that the available sight distance looking southerly (toward Longwood Avenue) could be as short as 40 feet, a SSD adequate for only approximately 7 mph. A sight distance assessment is requested including clarification of altered on-street parking, driveway circulation, and design speed.

Zoning bylaw requirements (Section 6.04.4.f.1) for driveway sight distance to pedestrians on sidewalks (within 5 feet) appear to be met assuming treatments will not be installed to block visibility at driveway corners.

On-Site Circulation, Parking & Drop-Off/Pick-Up

The Applicant proposes to consult with the Town of Brookline to convert parking spaces along Beacon Street to establish a taxi/drop-off area; this will impact the number of on-street parking spaces in the area. On-site circulation, parking and drop-off/pick-up have been reviewed by Walker Parking Consultants with findings documented in their Memorandum dated June 28, 2018.

Loading Zone & Trash Pickup

A loading zone/trash pick-up area is proposed on-site. Vehicle templates are requested to verify adequate space is provided for trucks to maneuver into the loading dock and for parking vehicles to access the site.

Driveway widths and corners appear to be tight. Although not dimensioned, the western driveway appears to be approximately 18 feet wide and the eastern driveway appears to be approximately 13 feet wide. The Town of Brookline Zoning By-Law requires 20 feet for two-way driveway access. The TIA indicates the "Site Drives should be a minimum of 24-feet in width and accommodate two-way traffic". Clarification is requested.

Clarification regarding trash pickup location is requested.

Memorandum

July 6, 2018

Page 8

Summary

- Weekend traffic counts were performed on the Martin Luther King holiday weekend and while nearby colleges such as Boston University and Boston College were on winter break. It is likely that the traffic volumes at this location experience greater fluctuations than typical; traffic counts in the area imply the 3% seasonal adjustment factor used is not adequate. Additional traffic data/assessment is requested for the Saturday mid-day peak.
- It is assumed that since the unsignalized study intersections of Sewall Avenue at Charles Street and Sewall Avenue at Site Drive are not included in Table 1 (Motor Vehicle Crash Data Summary) that no crashes at these locations were recorded during the five-year study period. Verification is requested.
- The Town of Brookline accident data from MassDOT used in the crash assessment of subject intersections is known to be lacking due to (an) IT failure between the BPD and Mass RMV computer systems. Therefore a comparison of reports from the Brookline Police Department is requested for a more accurate and reliable evaluation.
- Since the limited data available for LUC 826 has a direct effect on the accuracy of the predicted trip generation for 12,285 square feet of retail space, it is requested that more information regarding the retail type be provided and that a different LUC or empirical data from a more appropriate retail development be used to better estimate retail trips.
- A 75% reduction was applied to retail trips which is not supported in the TIA. It is requested that justification be provided relative to customers accessing the site via walking, biking or transit for the type of retail anticipated.
- Depending on the location of the nearest Sewall Avenue on-street parking space relative to the proposed curb-cut opening, it appears that the available sight distance looking southerly (toward Longwood Avenue) could be extremely limited. A sight distance assessment is requested including clarification of altered on-street parking, driveway circulation, and design speed.
- Vehicle templates are requested to verify adequate space is provided for trucks to maneuver the loading zone/trash pick-up area and for parking vehicles to access the site.
- Driveway widths and corners appear to be tight. Although not dimensioned, the western driveway appears to be approximately 18 feet wide and the eastern driveway appears to be approximately 13 feet wide. The Town of Brookline Zoning By-Law requires 20 feet for two-way driveway access. The TIA indicates the Site Drives should be a minimum of 24-feet in width and accommodate two-way traffic. A detailed/updated plan is requested.
- Clarification regarding the trash pickup location is requested.