Vanasse & Associates inc
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810

Ref: 8629

June 11, 2020

Ms. Mary F. Savage Dunham, AICP, CFM
Director of Community Planning
Town of Hingham
210 Central Street
Hingham, MA 02043

Re: Traffic Engineering Peer Review
Hingham Gas Redevelopment – 19 and 27 Whiting Street (Route 53)
Hingham, Massachusetts

Dear Mary:

Vanasse & Associates, Inc. (VAI) has completed a review of the materials submitted on behalf of Merhej and Sons Realty, LLC (the "Applicant") in support of the proposed redevelopment of the Hingham Gas site and an adjacent property located at 19 and 27 Whiting Street (Route 53), respectively, in Hingham, Massachusetts (hereafter referred to as the "Project"). The Applicant is requesting Site Plan Approval and a Special Permit A3 (Parking Determination) for the Project. Our review focused on the following specific areas as they relate to the Project: i) vehicle and pedestrian access and circulation; ii) Massachusetts Department of Transportation (MassDOT) design standards; iii) Town Zoning requirements as they relate to access, parking and circulation; and iv) accepted Traffic Engineering and Transportation Planning practices. The Applicant has submitted the following supporting materials which are the subject of this review:

1. *Application for Zoning Hearing,* Merhej and Sons Realty, LLC; May 4, 2020;
2. *Application for Site Plan Approval*, Jeffrey A. Tocchio, Esquire on behalf of Merhej and Sons Realty, LLC; May 4, 2020;
3. *Application for Special Permit A3, Parking Determination*, Merhej and Sons Realty, LLC c/o Jeffrey A. Tocchio, Esquire; May 4, 2020;
4. *Site Development Plans*, Hingham Gas, #19 & 27 Whiting Street, Hingham, MA; CHA Consulting, Inc.; May 1, 2020, no revisions; and
5. *Trip Generation Assessment*, Hingham Gas, #19 & 27 Whiting Street, Hingham, CHA Consulting, Inc.; April 24, 2020.

In addition, VAI reviewed the site locus in order to validate the existing conditions context of the Project and to observe factors that could impact the design and location of the access to the Project site and potential off-site improvements.

Based on our review of the April 24, 2020 *Trip Generation Assessment* and the accompanying *Site Development Plans*, we have determined that the materials were prepared in a professional manner and following the applicable standards of care. That being said, the Applicant should address the comments that were identified as a part of our review, a detailed summary of which follows.

PROJECT DESCRIPTION

The Project will entail the modification of the existing Hingham Gas gasoline fueling facility located at 19 Whiting Street and the construction of a 2,531± square foot (sf) convenience store with 1,000 sf of storage space and 1,000± sf of lower level site maintenance equipment storage that will be located on both 19 and 27 Whiting Street. The existing gasoline fueling facility which includes four (4) pumps (8 vehicle fueling positions vfps), a canopy and supporting appurtenances that are associated with Hingham Gas will be retained, and the attendant kiosk will be removed in conjunction with the Project, as will the existing structures that are located at 27 Whiting Street.

The Hingham Gas site located at 19 Whiting Street encompasses approximately 0.42± acres of land located is bounded by a commercial property to the north and east, Whiting Street to the south and a residential property (27 Whiting Street) to the west. The property located at 27 Whiting Street encompasses approximately 1.26± acres of land that is bounded by a residential property to the north, Whiting Street to the south, the Hingham Gas property (19 Whiting Street) to the east and a commercial property (Hingham Jewelers) to the west.

Access to the Project site (defined collectively as 19 and 27 Whiting Street) will be provided by way of the two (2) existing driveways that intersect the north side of Whiting Street that serve the Hingham Gas site, with the east driveway part of a common access easement with the abutting commercial property to the east, and a one-way exit driveway that will intersect the north side of Whiting Street at the location of the existing westernmost driveway that serves 27 Whiting Street. The remaining existing driveway that serves 27 Whiting Street will be closed in conjunction with the Project.

On-site parking will be provided for 16 vehicles, including two (2) handicapped accessible spaces. The Applicant has requested the issuance of a Special Permit A3 Parking Determination for the Project.

GENERAL COMMENTS

Comment G1: ***The Project will require the issuance of a State Highway Access Permit from MassDOT for access to Route 53 (Whiting Street) and, given the predicted increase in traffic that will be associated with the Project (>2,000 new vehicle trips), the Project will be subject to a filing under the Massachusetts Environmental Policy Act (MEPA). The Applicant should provide: i) a review of the MEPA Transportation thresholds as they relate to the Project and; ii) an update on any consultation that has occurred with the Massachusetts Department of Transportation (MassDOT).***

APRIL 24, 2020 *TRIP GENERATION ASSESSMENT*

The April 24, 2020 *Trip Generation Assessment* letter provides a comparative assessment of the traffic characteristics of the Project to those of the existing uses that occupy 19 and 27 Whiting Street (Hingham Gas and a single-family home), and qualitatively evaluates the potential impact that the Project may have on Whiting Street. Based on the use of trip-generation statistics published by the Institute of Transportation Engineers (ITE),[1] the Applicant's engineer has indicated that the Project may result in 2,260 additional vehicle trips visiting the Project site on an average weekday, with 109 additional vehicle trips expected during the weekday morning peak-hour and 111 additional vehicle trips expected during the weekday evening peak-hour. Not all of these trips will be new trips to Whiting Street. The ITE has estimated that up to 62 percent of the trips associated with gasoline/service station with a convenience store may consist of "pass-by" trips, which are vehicles that are traveling along Whiting Street for other purposes that will also patronize the Project. After accounting for "pass-by" trips, the Applicant's engineer estimated that the Project would result in 904 new vehicle trips added to Whiting Street on an average weekday and 44 new vehicle trips during both the weekday morning and evening peak hours. When considered in the context of the 22,000 vehicles per day that were identified as traveling along the Whiting Street corridor, the increase in "new" trips that are expected to be associated with the Project would not result in a significant increase in motorist delays or vehicle queuing over existing conditions.

Comment: *We generally concur with approach that was used to develop the trip-generation calculations for both the Project and the existing uses that occupy the Project site, the comparative assessment and the overall finding that the net impact of the Project along the Whiting Street corridor will be measurable but minor. That being said, further analyses are required to demonstrate that access to the Project site can be provided in a safe and efficient manner, and that the Project is designed so as not to inhibit travel along Whiting Street. Specifically, the Applicant should provide the following supporting information and analyses:*

T1. ***Traffic volume data and vehicle travel speed measurements should be provided for Whiting Street in the vicinity of the Project site. This information should consist of a 72-hour (Thursday through Saturday) automatic traffic recorder (ATR) count and the recorded traffic count data should adjusted following the guidance issued by MassDOT for traffic counts conducted during the COVID-19 pandemic and the Governor's phased "Reopening Massachusetts" strategy.[2] Historic traffic count data is available along Whiting Street and Derby Street that can be used for this purpose.***

T2. ***In accordance with MassDOT and MEPA standards, the Applicant may take credit for prior uses that occupy a site only if the prior uses were active within the past 3-years. The Applicant should provide documentation that the occupancy of the former uses is consistent with this standard as this will impact both the form of the MEPA filing and the State Highway Access Permit process.***

T3. ***A motor vehicle crash analysis should be performed for the segment of Whiting Street that includes the Project site driveways following MassDOT standards and using crash data for the most recent five-year review period available (2013-2017, inclusive). A roadway segment crash rate should be calculated and compared to the MassDOT average crash rate for the functional classification of Whiting Street (urban minor***

[1] *Trip Generation,* 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.
[2] *Guidance on Traffic Count Data*; MassDOT; revised April 2020.

arterial). In addition, a review of the MassDOT high crash location database should also be completed.

T4. ***We concur with the ITE Land Use Codes (LUCs) that were used to estimate the volume of traffic attributable to the existing uses that occupy the Project site (Hingham Gas and a single-family home) and the resulting calculations. For the proposed use, we note the following with respect to the ITE LUCs that were used:***

- ***LUC 853, Convenience Market with Gasoline Pumps: i) primary business is the selling of convenience items and not the fueling of motor vehicles; ii) gross floor area of convenience store is at least 2,000 sf; and iii) the number of fueling positions is less than 10.***

- ***LUC 945, Gasoline/Service Station with Convenience Market: i) primary business is the fueling of motor vehicles; ii) gross floor area of convenience store is between 2,000 and 3,000 sf; and iii) the number of fueling positions is at least 10.***

The Project will consist of a four (4) pump (8 vfps) gasoline fueling facility and a 2,531± sf convenience store with 1,000 sf of storage space and 1,000± sf of lower level site maintenance equipment storage. The ITE definition of "gross floor area" for the convenience store would include the 1,000 sf of storage space, but would exclude the 1,000 sf of site maintenance equipment storage. As such, the convenience store would comprise 3,531± sf.[3] As such, LUC 853, Convenience Market with Gasoline Pumps, would appear to be the appropriate ITE LUC for the Project and should be confirmed by the Applicant's engineer with respect to the Applicant's expectation as to the primary business of the Project (i.e., fuel sales or sales at the convenience store).

T5. ***Trip-generation calculations should be provided for the Saturday midday peak-hour.***

T6. ***A traffic operations analysis should be performed for the Project site driveway intersections with Whiting Street under 2027 Build (with the Project) conditions. The future baseline traffic volumes associated with this analysis should include background traffic growth, specific development projects by others as identified by the towns of Hingham and Norwell, and future roadway improvement projects that may be undertaken by MassDOT. The analysis results should be summarized in a table and report the appropriate performance indicators for all movements, including demand, delay, level-of-service and vehicle queue lengths.***

T7. ***A sight distance analysis (intersection <u>and</u> stopping sight distance) should be completed for the Project site driveway intersections, including the shared access driveway, following American Association of State Highway and Transportation Officials (AASHTO)[4] standards and using the measured 85th percentile vehicle travel speeds***

[3]ITE defines the gross floor area as "the sum of the area of each floor level of a building (expressed in square feet), including cellars, basements, mezzanines, penthouses, corridors, lobbies, stores, and offices, that are within the principal outside faces of exterior walls, not including architectural setbacks or projections. Included are all areas that have floor surfaces with clear standing head room (6 ft. 6 in. minimum) regardless of their use."

[4]*A Policy on Geometric Design of Highway and Streets,* 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.

along Whiting Street or the posted speed limit, whichever is higher. The intersection sight distance for left-turn movements exiting the Project site and the shared access driveway should be adjusted (increased) to reflect the need to cross additional travel lanes on Whiting Street (i.e., the gap time in the calculation should be increased accordingly).

T8. Recommendations should be provided with respect to: on-site circulation; regulatory signs and pavement markings; pedestrian and bicycle accommodations; traffic management during deliveries, with particular emphasis on fuel deliveries; and the management of conflicting movements at the connection to the shared access driveway.

MAY1, 2020 SITE DEVELOPMENT PLANS

The following comments are offered with respect to our review of the May 1, 2020 *Site Development Plans* that were prepared by CHA Consulting, Inc. in support of the Project:

S1: A truck turning analysis should be performed using the AutoTurn® software package for the following design vehicles: Hingham Fire Department design vehicle, a single-unit truck (SU-30 design vehicle) and a fuel delivery truck (WB-62 design vehicle or similar). The turning analysis should demonstrate that the design vehicles can access the appropriate areas within the Project site and circulate in an unimpeded manner without intrusion into parking spaces or vehicle fueling positions. The fire truck turning analysis should confirm that all elements of the design vehicle are retained within the traveled-way and do not overhang the curbline or cross into parking spaces.

S2: The center Project site driveway should be reduced in width to no more than 30 feet (standard MassDOT commercial driveway opening) and should include centerline pavement markings (double-yellow line) to separate entering and exiting traffic, a STOP-sign and a marked STOP-line;

S3: Consideration should be given to closing the shared access driveway to the Project site while retaining the access to Whiting Street that is afforded by the easement. If this access to the Project site cannot be closed, we recommended that driveway connection to Whiting Street be reduced in width to 30 feet and the access to the Project site from the easement be restricted to a one-way entrance that is no more than 20 feet in width and located as far north as possible from Whiting Street.

S4: Consideration should be given to restricting left-turn movements from the exit only Project site driveway.

S5: The sight triangle areas for the Project site driveway intersections should be added and based on the sight distance analysis (see T7).

S6: A sidewalk should be provided along the Project site frontage on Whiting Street with a connecting sidewalk between the new sidewalk and the proposed building. Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided for crossing the Project site driveways and at pedestrian crossings within the Project site, which should along include marked crosswalks.

S7: A bicycle rack should be provided at an appropriate location within the Project site that is proximate to the customer entrance of the proposed building.

PARKING

On-site parking will be provided for 16 vehicles, including two (2) handicapped accessible spaces. A review of Section V-A, *Off-Street Parking Requirements*, of the Town of Hingham Zoning By-Law requires that 5 parking spaces per 1,000 sf of gross floor area be provided for a "Retail and Service Business" and that 1 parking space per 1,000 sf be provided for "Warehousing & Wholesaling". The Applicant has suggested that the storage areas (2,000± sf total) be treated separately from the retail store area (2,531± sf) for the purpose of establishing the parking demands for the Project, which results in 13 parking spaces being required for the retail component and 2 parking spaces for the storage area, or a total of 15 parking spaces.

The ITE[5] does not have parking demand data for a similar use (Convenience Market with Gasoline Pumps), but does have parking demand data for a convenience market. The ITE data indicates that a convenience market has an average peak parking demand on a weekday of 5.44 parking spaces per 1,000 sf gross floor area (gfa) based on a limited sample size (two (2) sites). Applying the ITE peak parking demand ratio to the Project (3,531± sf based on the ITE definition of gfa), results in an average peak parking demand of 19 parking spaces.

Comment: ***We do not support considering the storage space as warehouse space for the purpose of establishing the traffic characteristics or parking demands of the Project. As discussed previously, the gross floor area of the convenience store should include the storage space that is attached to and directly accessible from the retail space, which would result in 3,531± sf of retail space. The 1,000± sf of equipment storage/mechanical space this is accessed from a separate door on a sublevel of the building should not be included, as the space in and of itself does not result in additional traffic or parking demands. Applying the parking requirements of the Zoning By-Law for a "Retail and Service Business" to the Project (3,531± sf of retail space) would result in a parking requirement of 18 parking spaces, which is consistent with the average peak parking demand for the Project using the ITE parking demand data for a convenience market (19 parking spaces).***

The above being said, we would support a reduction in the number of parking spaces that are required for the Project under the Zoning By-Law from 18 spaces to 16 spaces, as it is expected that a portion of the customers that purchase fuel will also patronize the convenience store and the associated vehicle will occupy one of the eight vehicle fueling positions.

This concludes our review of the materials that have been submitted to date in support of the Project. If you should have any questions regarding our review, please feel free to contact me..

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey S. Dirk

Jeffrey S. Dirk, P.E., PTOE, FITE
Partner

Professional Engineer in CT, MA, ME, NH, RI and VA

[5]*Parking Generation Manual, 5th Edition*; Institute of Transportation Engineers; Washington, D.C.; January 2019.