EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of the Pine Oaks Village multifamily residential development to be located off Queen Anne Road and Main Street in Harwich, Massachusetts (hereafter referred to as the "Project"). This assessment was prepared in consultation with the Massachusetts Department of Transportation (MassDOT), the Cape Cod Commission (CCC), and the Town of Harwich, and was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports.

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE),[1] the Project is expected to generate approximately 2,234 vehicle trips on an average weekday (two-way, 24-hour volume), with 211 vehicle trips expected during the weekday morning peak hour and 235 vehicle trips expected during the weekday evening peak hour;

2. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over anticipated future conditions without the Project (No-Build condition), with the majority of the movements at the study area intersections expected to continue to operate at a level of service (LOS) of D or better, where an LOS of "D" or better is defined as "acceptable" traffic operations;

3. Independent of the Project, one or more movements at the Queen Anne Road/Pleasant Lake Avenue (Route 124) and Main Street/Depot Street intersections were identified to operate at or over capacity (i.e., LOS "E" or "F") under 2030 No-Build peak summer month conditions;

4. With the restriction of the Main Street driveway to emergency vehicle access only, all movements exiting the Project site driveway to Queen Anne Road are predicted to operate at LOS B during the weekday morning peak-hour and at LOS C during the weekday evening peak-hour under both average and peak-month conditions with vehicle queuing of

[1] *Trip Generation,* 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

up to one (1) vehicle predicted. All movements along Queen Anne Road are predicted to operate at LOS A with negligible vehicle queuing predicted;

5. With the Main Steet Project site driveway improved to accommodate full access to the Project site, all movements exiting the Project site driveway to Queen Anne Road are predicted to operate at LOS B during the peak hours under average-month conditions and at LOS B/C under peak-month conditions with vehicle queueing of up to one (1) vehicle predicted, similar to the operating conditions with the Main Street access restricted to emergency vehicles only. All movements along Queen Anne Road are predicted to operate at LOS A with negligible vehicle queuing predicted;

6. No apparent safety deficiencies were noted based on a review of MassDOT motor vehicle crash data for the study area; and

7. Lines of sight at the Project site driveway intersection with Queen Anne Road exceed the recommended minimum distance for safe operation. Lines of sight at the Project site driveway intersection with Main Street were found to be limited by an existing fence to the east of the driveway and by trees and vegetation to the west. To the extent that these obstructions cannot be removed or relocated outside of the sight triangle area of the driveway, the Main Street access should be secured by means of a gate and restricted to emergency vehicles only.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with implementation of the recommendations that follow.

RECOMMENDATIONS

A detailed transportation improvement program has been developed that is designed to provide safe and efficient access to the Project site and address any deficiencies identified at off-site locations evaluated in conjunction with this study. The following improvements have been recommended as a part of this evaluation and, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals.

Project Access

Access to the Project site will be provided by way of two driveways that will intersect the south side of Queen Anne Road approximately 460 feet east of Northwind Lane and the north side of Main Street approximately 1,380 feet southeast of Deacons Folly Road. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation and are reflected on the Site Plans:

- The Project site driveways and internal circulating drives are a minimum of 20 feet in width and will be designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle.

- Where perpendicular parking is proposed, the drive aisle behind the parking will be a minimum of 23 feet in width in order to facilitate parking maneuvers.

- Where parallel parking is proposed, the parking will occur outside of the traveled-way and will consist of an 8 foot wide by 22 foot long parking space.

- Vehicles exiting the Project site will be placed under STOP-sign control with a marked STOP-line provided.

- All signs and pavement markings to be installed within the Project site will conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[2]

- A sidewalk is provided along at least one side of the internal roadway network that will extend to Queen Anne Road. Within the Project site, sidewalks with marked crosswalks will be provided to connect the proposed buildings, parking areas and the community building. A widened sidewalk area will be provided at Queen Anne Road to serve as a school bus waiting area subject to discussions with the Harwich School Department as to the location of the school bus stop for the Project.

- Americans with Disabilities Act (ADA)-compliant wheelchair ramps will be provided at all pedestrian crossings where a sidewalk is present.

- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas will be designed and maintained so as not to restrict lines of sight.

- To the extent that the existing fence and trees/vegetation that are located within the sight triangle areas of the Main Street driveway cannot be removed or relocated out side of the sight triangle areas, the driveway will be restricted to emergency access only and secured by means of a gate or other device as approved by the Harwich Fire Department.

- Snow accumulations (windrows) within the sight triangle areas will be promptly removed where such accumulations would impede sightlines.

Off-Site

Route 124 at Queen Anne Road

Independent of the Project, one or more movements at the Route 124/Queen Anne Road intersection are predicted to operate at or over capacity under 2030 No-Build peak-month conditions. In an effort to improve traffic operations and off-set the predicted impact of the Project, the Project proponent will design and implement an optimal traffic signal timing and phasing plan prior to achieving 60 percent occupancy of the residential component of the Project and will be reevaluated upon achieving 80 percent occupancy in order to determine if additional adjustments are necessary to accommodate the increase in traffic resulting from the Project.

Transportation Demand Management

Regularly scheduled public transportation services are not currently provided within the study area. The Plymouth & Brockton Street Railway Company (P&B) provides fixed-route bus service between Logan International Airport and Provincetown twice daily by way of the *Hyannis/Boston/Logan Airport – Outer Cape/Provincetown* Bus, with the closest regular stop located at the Harwich Park-and-Ride located off Route 124 north of Queen Anne Road, approximately 2 miles northeast of the Project site. The Cape Cod Regional Transit Authority

[2] *Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

(CCRTA) provides a daily public demand response service called Dial-a-Ride Transportation (DART), which is a door-to-door, ride-by-appointment transportation service. The CCRTA also provides door-to-door shared ride transportation for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive, or mental disability in compliance with the ADA. In addition, the Harwich Council On Aging (COA) also provides medical and non-medical transportation for seniors and disabled persons.

In an effort to encourage the use of alternative modes of transportation to single-occupancy vehicles (SOVs), the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- A transportation coordinator should be designated for the Project to coordinate the elements of the TDM program;
- Information regarding public transportation services, maps, schedules, and fare information should be posted in a central location and/or otherwise made available to residents and employees of the daycare center;
- A "welcome packet" should be provided to new residents and employees of the daycare center detailing available public transportation services, bicycle and walking alternatives, and other commuting options, including the services provided by the COA;
- The daycare center operator will be encouraged to offer specific amenities to discourage off-site trips that may include: providing a breakroom equipped with a microwave and refrigerator; offering direct deposit of paychecks; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;
- Pedestrian accommodations should be incorporated within the Project site and extend to both Queen Anne Road and Main Street to encourage walking; and
- Secure bicycle parking should be provided at the daycare center and for each of the multifamily residential buildings.

With implementation of the aforementioned recommendations, safe and efficient access will be provided to the Project site and the Project can be accommodated within the confines of the existing transportation system.