## 1. Study Team

The study team will consist of the Old Colony Planning (OCPC) staff:

A. Bill McNulty, PTP – Project Manager, Principal Transportation Planner
B. Guoqiang Li, PTP, RSP1 – Principal Transportation Planner
C. Ray Guarino – Principal Transportation Planner
D. Shawn Bailey - Senior Transportation Planner
E. Matt Dyer - Senior Transportation Planner
F. Kyle Mowatt – Senior Transportation Planner
G. Andrew Vidal – GIS Manager
H. Megan Fournier- Communications and Operations Manager
I. Elise Prince – Communications and Creativity Specialist

## 2. Purpose Statement

The study purpose is to identify, quantify, and study in depth the Route 3A Corridor in South Plymouth, from the intersection of Warren Avenue (Route 3A) and Sandwich Street to the Bourne Town Line, and Herring Pond Road from Route 3A to the Bourne Town Line. This planning level study will assess existing conditions and operations in relation to service needs for the community, regional commuting and the economy, assess current zoning and land use along the corridor and result in the development of short-term and long-term actions that will enhance circulation and traffic flow efficiency and improve safety. Staff will review volume to capacity ratios, levels-of-service, crash analyses, vulnerable road user traffic and infrastructure, pavement conditions, traffic control, and signage and overall physical condition. Public input will be included as part of the project identification process. Staff will utilize the Old Colony Metropolitan Planning Organization's Congestion Management Process, Safety Management System, Pavement Management System, and Land Use Management System to assist in the identification and development of the short-term and long-term recommendations for vehicular traffic and vulnerable road users.

## 3. Project Timeline

The Route 3A South Plymouth Corridor Study will be developed during Federal Fiscal Year 2025, from October 2024 through September 2025. Advance consultation with Town officials and Massachusetts Department of Transportation will occur during the Fall of 2024. Data collection is expected to be completed by the end of calendar year 2024. Public outreach will occur throughout the project schedule at periodic intervals, coordinating with the Town Planning office A final report will be presented to the Town of Plymouth, Massachusetts Department of Transportation, and Old Colony Metropolitan Planning Organization in the Fall of 2025.

## 4. Public Outreach

**a)** Stakeholders will be identified for the study and will include those who have the potential to be impacted by the study, those who are responsible for the implementation of

improvements, and those who have an interest in the study and process. The process will include reaching out to the business community, residents, and the public at large, groups and agencies with interests in traffic and transportation, local officials (state representatives, councilors, etc.), news organizations (local newspaper and radio), state agencies, and groups that have been traditionally underserved including the elderly, groups with limited English proficiency (LEP), minorities, and people below the poverty line.

**b)** The outreach program will include meetings with local officials in Plymouth including Administration, Planning, Public Works, School Department, and Public Safety. Public meetings with stakeholders will include presentation of findings and will solicit discussion and facilitation of improvements and recommendations. In addition to public meetings, the outreach program will include interviews with stakeholders and meetings with state and local officials, including MassDOT. Notices of meetings will involve the use of a variety of new media, internet postings, as well as traditional means of notice (postings in public places of convenience and newspaper). Meetings may be held virtually in a webinar format. A project webpage within the OCPC website will be created and maintained throughout the project duration.

Stakeholders will include (but are not limited to) the following:

- Massachusetts State Senator for Plymouth and Barnstable
- Massachusetts State Representative for First Plymouth District
- Massachusetts Department of Transportation (District 5)
- Plymouth Select Board
- Plymouth Planning Board
- Plymouth Police Department
- Plymouth Fire Department
- Plymouth Planning Department
- Plymouth Town Manager
- Plymouth Department of Public Works
- Plymouth Area Chamber of Commerce
- Greater Attleboro and Taunton Regional Transit Authority (GATRA)

## 5. Inventory and Review of Peer Studies and Planned Improvements

A. Compile and review traffic studies by consultants and agencies pertinent to the study area.

B. Compile and review plans and studies by MassDOT.

C. Compile information on potential projects that will impact future trip generation within the study area network.

D. Compile and review existing land use and zoning patterns along the corridor, working with Town staff to assist with same.

## 6. Assess and Analyze Existing Conditions

A. Collect daily traffic counts, speeds, and heavy vehicle percentages at the following locations in Plymouth:

1. Route 3A North of Rocky Hill Road

2. Route 3A South of Rocky Hill Road
3. Route 3A South of Old Sandwich Road
4. Route 3A at Bourne Town Line
5. Herring Pond Road at Bourne Town Line

B. Collect turning movement counts at the following intersection locations listed below. The traffic counts will be conducted during the peak commute times of 7:00 AM to 9:00 AM, and 4:00 PM – 6:00 PM.

1. Route 3A at Sandwich Street
2. Route 3A at Cliff Street
3. Route 3A at Clifford Street
4. Route 3A at Plimoth Plantation Highway
5. Route 3A at Rocky Hill Road
6. Route 3A at Turn berry Drive
7. Route 3A at Beaver Dam Road
8. Route 3A at Manomet Point Road
9. Route 3A at Ship Pond Road
10. Route 3A at Old Sandwich Road
11. Roure 3A at Ellisville Road
12. Route 3A at Hedges Pond Road
13. Route 3A at Herring Pond Road
14. Herring Pond Road at Route 3 Northbound
15. Herring Pond Road at Route 3 Southbound

C. Turning movement counts will be conducted when school is in session to include the impact of school traffic.

D. Existing travel demand will be identified and documented through the utilization of travel demand models and the Replica application.

E. A Physical Inventory will be completed for each turning movement count location. The physical inventory will be a sketch of the intersection showing roadways and all attributes necessary for analysis. These include but are not limited to:

- Sidewalks and bicycle tracks and/or pedestrian paths, including those in Plymouth and Bourne within ¼ mile of the town line.
- Bicycle lanes.
- Utility poles and lighting
- Traffic signal and pedestrian signals (location of poles and the direction and lanes the signals face)
- Signs, signage, and traffic control (speed limits, stop signs, no turn on red, no parking and parking limitations, etc.)
- Hydrants and other utilities and fixtures including (but not limited to) guard rails, walls, traffic islands, curbs (granite or bituminous) and curb cuts.
- Number of vehicular lanes and lane use, including pavement markings, crosswalks, and curb ramps.
- Land uses and landmarks, including historic districts and business districts.
- Roadway and lane widths, as well as sidewalk and bicycle path widths

- Grades will be estimated in physical inventories.
- Sight distances will be measured at intersections where sight distances are limited.
- North arrows on the physical inventories will always be shown toward the top of the page. (North is always up)
- The date and initials of the person taking the inventory must be on the physical inventory sheet.

F. Signalized intersections will include sheets separate from the physical inventories showing signal timing and phasing diagrams. The locations of pedestrian signals and traffic signal heads will be shown on the physical inventories. Each signal phase shall be shown with the movements for the lanes given green marked clearly for the direction of travel, along with the clocked time. The north arrow on sketches and signal timing and phasing should always be up toward the top of the sketch.

D. Field surveillance of existing conditions will include photos and/or video of the study area corridor, documentation of locations of posted speed limits, and documentation of other pertinent traffic control and lane use restrictions within the study area corridor. The video and photos will be taken to document various conditions that affect the movement and safety of vehicles, bicyclists, and walkers. The utilization of drone technology will assist with the photo and video documentation.

E. Review of existing conditions will include a field review of existing land use, and a review of existing zoning within the study area.

F. Review of existing conditions will include a field review of existing pavement conditions in the study area corridor utilizing OCPC's pavement management system.

G. Traffic signal permits for signalized intersections and special speed regulation permits for study area roads will be requested from the Town of Plymouth and MassDOT

H. Existing peak hour level-of-service analysis for signalized and un-signalized intersections based on 2020 base year counts shall be conducted utilizing software based on the Highway Capacity Manual.

I. Crash data from 2022, 2023, and 2024 (the three most recent years of available data) for the study area intersections will be compiled and the number, type, and severity of crashes shall be documented, based on the practices published in the Manual on Traffic Engineering Studies. Crash patterns regarding type and cause will be discerned.

J. Crash rates for the study area intersections shall be developed based on practices published in the Manual of Traffic Engineering Studies and compared to average crash rates for the state and for the region.

K. The study area will be screened for locations within the top five percent crash clusters in order to determine HSIP eligibility. The MassDOT Top 200 Crash locations list and OCPC's Top 100 Crash Locations list will be reviewed to determine if any of the study area locations are included on those lists.

L. Data for determining non-motorized safety and accommodations at study area

intersections and within the study corridor will be collected. Non-motorized safety and accommodation will be assessed at the study area intersections and within the study corridor.

M. Warrant analyses, in accordance with the Manual on Uniform Traffic Control Devices will be conducted at un-signalized intersections if necessary to determine the justification for traffic signals, stop sign, four-way stop, and flashing yellow/red beacon at intersections deemed feasible.

N. Bridge and culvert inventory and condition information will be documented.

O. Maps will be developed including but not limited to illustrating the geographic scope of the study areas, as well as existing traffic counts, 85th percentile speeds, and percentage of heavy vehicles in the traffic flow.

P. Existing travel demand will be identified and documented through the utilization of travel demand models and the Replica application.

Q. Documentation of exiting transit services and demand will be documented. The documentation will include both fixed routes and paratransit services.

R. Demographic and Business Profiles will be developed and provided to provide a comprehensive understanding of the corridor and its potential. Staff will utilize the US Census, ESRI Business Analyst, and ESRI Community Analyst, as well as input from Town staff, business community, and other sources as may be identified. Included in the demographic profile will be the identification and mapping of any environmental justice populations (example is available here: Massachusetts 2020 Environmental Justice Populations (arcgis.com)

S. Sustainability involves encouraging alternative, non-motorized modes to conserve energy and reduce reliance on fossil fuels. Principles for creating more sustainable neighborhoods include designing streets and the rights-of-way to encourage shared pedestrian, bicycle and vehicular use (Complete Streets Concepts). The Federal Highway Administration (FHWA) defines Livability as "…tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, high quality schools, and safe streets. This includes addressing safety and capacity issues on all roads through better planning and design." This study will consider livability and sustainability principles in the planning process and in the development of recommended improvements. The "Complete Streets" design strategy enables safe road access and operation for all users including pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities. Complete Streets strategies will be considered and utilized to implement the goals of Sustainability and Livability.

T. Prepare documentation of climate change and resiliency. Climate Change Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks. Review and incorporate the Municipal Vulnerability Preparedness (MVP) Plan, including corridor sites where Sea Level Rise and hurricanes are mapped risk hazards and including floodway risk areas in the corridor.

## 6. Forecast and Analyze Future Conditions

A. The horizon year of 2030 will be used to forecast future peak hour traffic, in conformance

with MassDOT traffic study requirements. Future peak hour traffic conditions will be estimated using an overall background traffic rate. The background rate will be developed based on OCPC archived data and a review of MassDOT's permanent count stations. Future conditions will be determined based on the applications of a regional travel demand model and background growth rate (currently one percent per year) to 2030 traffic plus peak hour trip generation from planned developments. Local officials from Plymouth will be notified to determine the potential for planned developments in determining future traffic.

B. Peak hour Level-of-service analyses will be performed for study area intersections for 2025 conditions including "No-Build" and "Build" conditions. 2025 "No-Build" conditions will include existing traffic volumes increased by the background growth rate plus traffic due to other planned development. "Build" conditions will represent 2025 peak hour conditions with existing volumes increased by the background growth rate plus traffic due to other planned development and alternative recommended improvements in place. Signal Warrant Analyses, in conformance with the Manual on Uniform Traffic Control Devices (MUTCD), will be completed as needed for determining signalization, flashing beacons, and all way Stop Sign control.

## 7. Identify Current and Potential Deficiencies

A. Current and potential deficiencies will be determined based on traffic and safety assessments, at the study area intersections and within the study area corridors, as well as through field assessments and the public outreach program. The identification of deficiencies (traffic congestion and levels-of-service, safety, lighting, signage, and sidewalk and pavement conditions, ADA) will include traffic, transit, bicycle, and pedestrian analyses. These assessments will be coordinated with state and local plans and initiatives.

## 8. Develop Recommendations

Alternatives for improvements to traffic congestion, traffic circulation, transit, and safety hazards will be developed specific to problems identified based on the analyses, the public outreach program, and meetings with local officials and MassDOT. The improvements will also include non-motorized alternatives and will include cost-effective, short-term, and long-term recommendations. Zoning/economic recommendations/Strengths opportunities

## 9. Document Results

A draft report will be prepared and circulated for review and comment that documents findings and recommendations. Findings from the draft report will be presented in a public forum at a location of the community's preference. Stakeholders and general public will have no few than 21 days to review and comment on the Draft Report. The Old Colony Planning Council will prepare the Draft and Final Reports that include the identification of potential funding sources for implementation of recommended improvements and strategies.