

Legacy Farms

Hopkinton, Massachusetts

Prepared for Legacy Farms, LLC

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Recommendations

As has been noted, this report has been developed in a manner to present a conservative assessment of the potential Legacy Farms traffic impacts. While the analysis contained within the report reviews and analyzes the traffic projections associated with traffic intensive potential land uses, the likely – and more realistic – outcome will be that the actual traffic numbers are less intense than has been assessed in the report. For that reason, it is critical to consider that the recommendations presented are provided to address the most conservative estimate of potential traffic to be generated by this development.

With this in mind, the traffic study has reviewed the existing transportation conditions within the study area; projected future traffic impacts associated with planned and permitted developments in the region, and then evaluated the potential impacts of Legacy Farms on the transportation conditions within the area. This section discusses the recommendations being proposed to address those identified traffic impacts, and to improve overall traffic and pedestrian conditions within the project's study area. Additionally, detailed discussions of Legacy Farms' Travel Demand Management (TDM) strategies are also provided.

Master Plan Special Permit & subsequent Site Plan Review Process

Before discussing the specific recommendations, it is important to point out that this is simply the first of several opportunities for the community to evaluate the impacts of the project on the transportation environment. Because of the manner in which the Master Plan Special Permit review process has been proposed, the various stages of the project will be presented to the planning board and its consultants in a detailed and methodical process. This is being done so that each submission considers the impact of the prior stage as well as estimates the potential future stages of Legacy Farms.

In other words, the Board will have the ability to examine the actual traffic impacts of each stage *after* it is developed through a monitoring and reporting program and will have the ability to compare these conditions to the future stages of development. This way, the transportation comparisons will be able to be adjusted as needed to account for other conditions outside of the influence of Legacy Farms over the next several years. As noted, it is our assertion that this study has considered a conservative assessment of future traffic projections. The actual future conditions will, at best, be significantly less than what has been considered in this document

and, at worst, equivalent to what has been reviewed.

Community Character/Context Sensitive Approach

As has been documented in the prior chapters of the report, the traffic impacts associated with Legacy Farms will have an impact on many of the study area intersections examined. In many cases, there are impacts directly attributable to the Legacy Farms development, but in other cases there are latent impacts associated with other area developments both within and outside of the Town of Hopkinton that are currently in the planning and permitting stages.

As the applicant developed this recommendations section, it is important to recognize that the preservation of the “community character” was a message that was received throughout our discussions with members of the community. With this in mind, it is the applicant’s desire to incorporate the principals of context sensitive design throughout the project planning, design and construction efforts. These principals would consider a collaborative, interdisciplinary approach that involves all constituents to develop a transportation recommendation that is in harmony with its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility for its users.

While traditional engineering solutions may allow traffic to flow in an uncongested manner – the traffic improvements necessary to achieve this goal might create roadway alignments and/or widenings that would be perceived as too intense or in contrast to the Low Impact Development objectives of the proposed Legacy Farms plan. For this reason, the following recommendations were developed in a manner that provides “traditional engineering solutions” as well as a more refined and subtle “context sensitive” solutions.

Recommendations

The applicant has developed a series of recommendations which are focused on addressing Legacy Farms’ traffic impacts along study area roadways and intersections. These measures include strategies related to improving both existing and future intersection capacity, traffic safety, traffic flow and progression, as well as providing safe and efficient access into and throughout Legacy Farms for vehicular, bicycle, and pedestrian traffic. Intersection capacity strategies include measures such as traffic control upgrades, roadway modifications and/or possible roadway widening as needed.

This section discusses proposed site access and off-site capacity and operational strategies to mitigate project impacts and address existing operating deficiencies,

where possible. Furthermore, this project has the potential to significantly enhance the bicycle and pedestrian environments by building upon the Town of Hopkinton's existing infrastructure in the vicinity of the project site. Specific details of the mitigation are discussed in the following section. Ultimately, improvements would be segmented to coincide with development and certain traffic volume and would be reviewed with the Town during the Site Plan Review process using this document as a guide.



Site Access Recommendations

The first stage of identifying the necessary improvements for the development of Legacy Farms is to detail how vehicles are going to access and egress from the project site in a safe and efficient manner. For this effort, there are two primary means of access to each of the south and north parcels along with separate access points to the various commercial "village" developments along East Main Street. The following recommendations are being made to define how the driveway connections to the existing Hopkinton roadway network would be provided.

Route 135 (East Main Street) at the South Spine Road & North Spine Road/Frankland Road/Peach Street Area

As part of the first stage of development, it is recommended that this location be developed as an unsignalized intersection. The South Spine Road should be designed to provide separate left- and right-turn lanes exiting the site onto East Main Street. As the south area of the site is developed, consideration should be given to provide a short left-turn lane in the westbound direction of East Main Street leading to the project site. This would provide an area for left-turning vehicles to wait for an acceptable gap in the traffic stream while not interfering with the mainline flow of traffic along East Main Street during the congested peak periods.

With these improvements in place, and prior to the connection of the North Spine Road, there will be virtually no delays for mainline East Main Street traffic flow as well as only minor delays for traffic exiting the site via the South Spine Road.

Upon completion of the North Spine Road, a connection will be created between the North Spine Road and Route 135. This connection will follow the general alignment of the Frankland Road and Peach Street roadways to a point opposite the South Spine Road. At this point in time, additional considerations should be given to addressing the operations of this intersection. For the purposes of this assessment, three possible options were considered ranging from "minor" to "signalization".

Minor Modifications Option – Lane Delineation

This first option results in the least impact to the current roadway alignments by essentially reusing the existing layout of the East Main Street, Peach Street, and Frankland Road intersection with some minor enhancements. These enhancements would include:

- Extending the eastbound left-turn lane along East Main Street (leading to Frankland Street) to provide for additional queuing for left-turning drivers; and
- Modification of the divider island where Frankland and East Main Street meet to provide a better defined STOP condition for drivers approaching the intersection from Frankland Road.

Traffic arriving and departing from the South Spine Road would do so opposite Peach Street under the roadway layout defined on the previous page when the South Spine Road is connected to the East Main Street intersection. Operationally, this would provide excellent levels of service along East Main Street (LOS A) for all drivers while containing the operational delays (LOS F) to the side streets (along Peach Street and the South Spine Road). Delays from Frankland Road would be comparable to those already experienced by drivers.

Intermediate Modification Option– Realignment

The second option considered at this intersection includes the provision of separate left-turn lanes on both eastbound and westbound East Main Street leading to both the North and South Spine Roads. Under this proposal:

- Frankland Road would be realigned to flow into Peach Street and would be discontinued as a through way to East Main Street;
- East Main Street would be modified to provide a through lane in each direction and appropriately designed left-turn lanes for drivers seeking to enter the site to the south or the realigned Frankland Road intersection to the north.
- Each of the side streets would provide exclusive right-turn lanes as well as a shared through/left-turn lane leading onto East Main Street.

Mainline traffic along East Main Street, as well as turning traffic from East Main Street onto the north and south legs of the intersection would experience negligible delays (LOS A) while traffic waiting to turn left or travel through the intersections from the north and south approaches would operate at LOS F. In this case, it is important to point out that these delays are contained within the project driveways and are based on the conservative projections of traffic volumes for the project.

Major Modification Option – Signalized Intersection

Under this option, it was found that the conservative traffic projections carried through this report would meet some of the Federal criteria for the installation of a traffic signal at this intersection. An obvious advantage to installing a traffic signal would be to provide safe and efficient access for Legacy Farms for all approaches, especially when coupled with additional roadway improvements noted in the Minor “Realignment” option discussed above. The disadvantages include the need to stop mainline traffic to permit the side street traffic to exit the side streets which could lead to unnecessary delays to through drivers along East Main Street. In sum, this action would include:

- widening the eastbound and westbound East Main Street intersection approaches to provide two approach lanes at the intersection;
- each of the side streets would provide shared through/left-turn lanes on each approach as well as exclusive right-turn lanes as needed; and
- The installation of a traffic signal at the intersection.

Under this option, the entire intersection would operate at a very reasonable and acceptable LOS C during the evening peak hour.

While there are a number of valid reasons for implementing a traffic signal at this location, this option is only available as an alternative if the traffic volumes generated by the development meet certain thresholds for the implementation of the traffic signal. If, as expected, the traffic volumes do not meet those thresholds (as defined in the Manual on Uniform Control Devices), a traffic signal could not be installed at this location and other actions would need to be considered as discussed previously.

Recommendation

Ultimately, this intersection should be monitored as the development is built out in a staged manner to determine what level of improvements is necessary to support the traffic volumes entering and exiting Legacy Farms. It is the recommendation of this study that the realignment option is considered as the first option following the implementation of the north Spine Road and that traffic volumes and delays are monitored to determine how traffic is flowing through the intersection. Should traffic volumes warrant the installation of a traffic signal, the applicant should work with the Town of Hopkinton to determine what scale of improvements are necessary and install the signal as a final option – only after other options have been considered and tested.

Route 135 at the Village Center Driveway

Similar to the South Spine Road intersection with East Main Street, this intersection

should remain unsignalized with some minor modifications considered in the development of the site access. These modifications should consider a separate left- and right-turn lane exiting the Village Center driveway. It would also be beneficial to consider the installation of a short dedicated left-turn lane along East Main Street for drivers waiting to turn into the Village Center driveway if demand warrants.

The mainline traffic flows would operate at LOS A with the left-turn into the site operating at LOS C during the critical evening peak hour. Operational delays would exist on the Village Center driveways (LOS F) during the peak hours – but predominately for only those few drivers seeking to turn left from the project site.

Clinton Street at the South Spine Road

The southern access point to the project site exists where the South Spine Road will meet Clinton Street. Based on the traffic projections for the project, only a minimal amount of project-related traffic will likely utilize this access point to enter or exit the Legacy Farms development. However, the real value of this connection is that it will provide an alternative route which will be more efficient than using the northern portion of Clinton Street as drivers are traveling to and from the west on Route 135. As drivers find that the South Spine Road is a more efficient connection to Route 135, they will undoubtedly alter their driving patterns to avoid the delays traditionally experienced at the Clinton Street/Route 135 intersection. Depending on the magnitude of the improvements at the South Spine Road/Route 135 intersection, this could draw a significant volume of traffic off of northern Clinton Street.

For this reason, it is recommended that this intersection be designed as a simple unsignalized “T” intersection with Clinton Street. From a capacity perspective, this intersection will serve traffic at a LOS A operation.

North Spine Road at Rafferty Road/Wilson Street [Howe Street]

In order to promote the North Spine Road as a possible alternative route to those commuters seeking to travel between Route 85 and Route 135, it is recommended that this intersection be modified as noted below:

- Implement STOP conditions along Wilson Street as drivers approach this intersection.
- Designate the Rafferty Road and North Spine Road as the ‘free flow’ movement through this intersection.
- Consider the implementation of turn restrictions between the southbound Wilson Street approach and the North Spine Road to reduce the likelihood of traffic traveling through Ashland to the project site.

- Care should be given to integrating the scenic road designation of Wilson Street in the vicinity of this location – therefore only minimal modifications to this approach should be considered.

With these improvements in place, the Wilson Street approach would operate at LOS B and LOS C during peak commuter hours. Moreover, the free flow condition between Rafferty Road and the North Spine Road would further promote the use of the North Spine Road as an alternative to traveling through the downtown.

Route 85 at Rafferty Road

In addition to the improvements noted above at the intersection of Rafferty Road and Wilson Street, it is also important to note that the intersection of Route 85 at Rafferty Road be improved to promote the North Spine Road as an alternative to traveling through the downtown area. To this end, once the North Spine Road is constructed, improvements should be considered at this unsignalized intersection as follows:

- Provide separate right- and left-turn lanes exiting Rafferty Road onto Route 85.
- Given the potential for up to 260 left-turns from Route 85 to Rafferty Road, it is recommended that an exclusive left-turn lane along Route 85 be installed.

This improvement would promote the use of the North Spine Road as well as improve the safety and efficiency of this intersection for drivers traveling along Route 85 both in the northbound and southbound directions. Operationally, this intersection would operate at LOS A with mainline operations unimpeded and Rafferty Road operations at LOS B and D for right- and left-turn movements, respectively.

Rafferty Road

As Rafferty Road will provide the connection between Route 85 and the project site, consideration should be given to modifying the roadway to provide for adequate width and accommodation for the pedestrian requirements noted in the vicinity of this roadway. To this end, Rafferty Road will ultimately serve as an extension of the North Spine Road and, therefore, consideration should be given to its existing condition, along appropriate pedestrian accommodations.

Summary of Site Access Options

Collectively, these improvements will provide reasonable, safe, and efficient access options to and from the Legacy Farms site both during the initial and full build out stage of the project. While there are multiple options described for the primary access driveway where the North and South Spine Roads come together along East

Main Street, it has been identified that safe and efficient access can be provided at this location through the signalization of this intersection.

It is important to remind the reader that the more 'intrusive' options would be provided only after other reasonable options were considered and implemented. If, as expected, traffic volumes are lower than those estimated in this document, it is likely that these more intense options would not be required.



Off-Site Recommendations

The previous section has identified the need and solutions to the "front-door" access. This section identifies the potential off-site improvements needed to address the project impacts at key intersections. This section considers signalized intersections, unsignalized intersections, and non-physical actions.

Route 85 at Route 135 (Signalized)

It has been clear in our discussions with the Town of Hopkinton that the impacts of Legacy Farms in the downtown intersection of Route 85 and Route 135 are of interest. On one hand, this intersection poses some challenges that are not uncommon in the older downtowns of many MetroWest communities. Poor alignment, antiquated signal equipment, limited available right of way, and a general feeling of attachment to the layout and character of the intersection from residents in the town.

With these challenges in mind, a series of potential improvements have been identified which will address the general traffic impacts of Legacy Farms and could provide a blueprint for future improvements for the community as they consider options to address the long-standing traffic issues at this intersection. Similar to the prior discussion noted above about the site access driveways along the North and South Spine Roads at East Main Street, there are a series of progressive improvement actions that could be implemented within the downtown to methodically address the impacts of the project and address the existing issues inherent at this location. It is envisioned that these actions would build upon each other as time and the development progresses.

No Action

The simplest improvement that could add capacity to the intersection would be to implement the North Spine Road as soon as practicable. By constructing this roadway, the capacity of the downtown intersection would be improved by drawing through traffic away from the downtown area (and onto the Spine Road). This option would draw up to 10 percent of the left-turns and right-turns traveling between East Main Street and Route 85 to the north and build efficiency in the signal

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by subtracting those trips.

Minor Modifications – Upgrades to the Traffic Controls

The first physical option for consideration within the downtown would be to completely replace and upgrade the traffic signal equipment at the intersection. Based on a visual inspection of the signal equipment and the traffic control cabinet, the entire assembly is antiquated and is operating in an inefficient manner by today's traffic engineering standards.

By replacing and upgrading the traffic control assembly and replacing the signal heads and loops in the roadway, the signal could become more responsive to the traffic demands placed upon it during peak hour conditions as well as off-peak conditions. Couple this with the replacement of the exclusive pedestrian stage with a more dynamic, safe, and efficient concurrent pedestrian phasing program and the downtown intersection would improve significantly over current conditions.

Intermediate Modifications - Realignment Option

While the upgrade of the traffic signal equipment by itself will provide added capacity to the downtown operations, other factors still exist that create inefficiencies within the operations of the intersection. Specifically, the off-set nature of the northbound and southbound Route 85 approaches creates the need for drivers to 'slalom' through the intersection at a slower than average pace.

To that end, it is possible to shift the northbound Route 85 approach to provide for a shared through/left-turn lane and an exclusive right turn lane which would – in turn – shift the receiving lane adjacent to the Colella's to the west slightly. This would improve the southbound alignment significantly and would add needed efficiency to the overall intersection operations.

Major Modifications - Added Capacity Option

While the previous two options would provide for moderate capacity and efficiency upgrades to the intersection operations, the full-build solution at this intersection would include providing a single additional lane along Route 135 in the westbound direction. This option would include the above noted improvements as well as the following:

- Addition of a westbound through lane and receiving lane along Route 135;
- Shifting the northbound Route 85 approach to provide for an exclusive left-turn lane as well as a shared through/right-turn lane; and

- Modification of the traffic signal operations to split the northbound and southbound stage of the signal operations (so as to eliminate the off-set issue when both streams of traffic are flowing).

These improvements would require roadway widenings and have the potential to impact adjacent properties as well as on-street parking in the vicinity of the downtown. These improvements, therefore, are not recommended as a first (or even second) option to address the impacts of Legacy Farms and other developments planned for the region. However, they remain a viable improvement option that could address all the project impacts as well as those of other projects in the downtown area. Ultimately, the added capacity option would result in an improved LOS as compared to what the traffic conditions would be without Legacy Farms in place.

Recommendation

It is important to note that this intersection is currently operating at capacity (LOS F) during the existing peak commuter hours. With the addition of new traffic associated with other area developments – unrelated to Legacy Farms– intersection operations are expected to deteriorate.

Ultimately, this intersection should be reviewed as Legacy Farms is built in a staged manner to determine the level of improvements necessary to support its traffic volumes. It is recommended that the upgrade of the traffic signal equipment be performed as the first option for the downtown. The intersection operations should be monitored as the stage is built out and the realignment option should be implemented only when needed and practicable. Finally, the upgrade of the intersection should continue to be studied and discussed with the downtown business owners in the Town so that their issues are considered in the final buildout of the intersection. Should traffic volumes warrant the need to implement the revised traffic signal and layouts, the applicant should work with the Town of Hopkinton to determine what scale of improvements are necessary and upgrade the intersection as a final option – only after other options have been considered and tested.

West Main Street at Wood Street (Signalized)

Based on capacity analysis information provided previously, this intersection is projected to operate at LOS C/B during morning and evening commuter peak hours, respectively. The introduction of Legacy Farms-related and other background traffic unrelated to Legacy Farms will have an impact the weekday evening peak hour incrementally by shifting the operating level to LOS F during the weekday morning and evening peak hours at full buildout.

Modifications to the traffic signal operations could improve the level of service at this

location to LOS D during the weekday evening peak hour with the implementation of a concurrent pedestrian crossing and minor signal timing changes. One modification that should be made to encourage a safe and efficient concurrent pedestrian crossing modification is the relocation of the crosswalk over Route 135 to the western approach to the intersection. As the predominant movement from Wood Street at this location is left onto Route 135 eastbound, it would not be logical to have the pedestrians crossing over that path.

Based on discussions with the Town DPW, long range improvements at this intersection have been explored in the past to provide additional capacity to this location. For the most part, these improvement actions require additional right-of-way to be acquired and, therefore, no specific proposal is being considered or pursued at this time. However, as opportunities present themselves, Legacy Farms could assist in these discussions if it is found that the traffic volumes require additional capacity upgrades relating to Legacy Farms' impacts.

West Main Street at Lumber Street/Elm Street (Signalized)

Similar to the West Main Street/Wood Street intersection, the projected operating level at this location is projected to be LOS F during the peak commuter hours. This intersection was upgraded approximately 10 years ago by MassHighway and the Town of Hopkinton. Monitoring this intersection will allow for the modification of the signal timings and, potentially, phasing to improve the efficiency of the signal. At full buildout, assuming the conservative traffic volumes estimated for this development are realized along with all the other background developments in the region, this intersection could operate at LOS D/E during the peak commuter hours – with mainline West Main Street traffic operating at reasonable LOS C/D levels during these periods.

Unsignalized Intersection Assessments

In reviewing the level of service analysis for the unsignalized intersections, many of the side streets feeding into the arterial roadways are projected to operate at LOS F. This is not uncommon for smaller feeder street systems serving arterial roadways. In many cases, this operational deficiency only impacts 5-30 vehicles waiting to turn left onto the arterial roadway during the peak hour. In many cases, this poor operation on the side streets actually serves as a disincentive to drivers to “cut through” these side streets to reach arterial roadways.

In the specific cases of many unsignalized intersections, there are no feasible means and measures to address the poor levels of service along these side streets. Typical approaches consider:

- Updated traffic control, striping, and signage;

- flaring the approach of the side street to provide the ability for a right-turning vehicle to bypass a left-turning vehicle;
- more traditional turn lane treatments include providing separate left- and right-turn lanes along the side street to more formally move traffic through the intersection; and
- Ultimately, signalization should be considered if the traffic volumes on both the mainline and side streets meet certain thresholds.

Cut Through Traffic

Based on our review of the project impacts, there is a likelihood that some development-related traffic will seek to travel through local roadways to short-cut normal arterial travel routes. While there are several streets that are already known as cut-through street networks, it is the intent of the Legacy Farms development to minimize their impacts on both the known and potential routes through those established neighborhoods.

For example, as the North Spine Road is developed, Frankland Road should come under STOP control as it could for a “T” intersection with the Spine Road. This would serve to both slow traffic along this corridor as well as deter the unfamiliar driver from simply driving into the neighborhood.

As the project is being developed in a staged manner, observations will be conducted to report to the Planning Board and its consultants the traffic patterns, how the observed operations compare to the estimates reflected herein, and any recommendations for alterations to the plans being considered.

Monitoring

As has been referred to several times, one of the benefits of a staged development approach to the Legacy Farms project is the ability to monitor the traffic impacts as they occur. Specifically, as development comes on line, real traffic numbers and impacts can be compared against those estimated prior to buildout so that the Town, Developer, and abutters can all work from a realistic set of assumptions as opposed to the theoretical values. If impacts are found to be greater than expected, however unlikely, the development program may implement changes prior to the next stage of development. If impacts are found to be less than projected, improvement actions can be adjusted to handle the revised traffic patterns. With this in mind, the applicant will develop a monitoring program to report back to the Planning Board and its consultants the actual impacts of the development.

Pedestrian and Bicycle Facilities

As previously mentioned, the site will be designed to encourage pedestrian and bicycle travel throughout Legacy Farms. These will include features such as sidewalks and crosswalks at key points within the site and connecting to adjacent existing pedestrian networks off the site as well as accommodate a future bicycle trail being considered by the Commonwealth of Massachusetts on an abandoned rail trail.

The proponent will also consider working with the community to accommodate a series of off-site pedestrian connections around the project site to link up with other area pedestrian amenities. These links will build upon the walking trails throughout the site and connect to other destinations in the area of the project.

Transportation Demand Management (TDM)

Transportation Demand Management (TDM) refers to measures that can be put in place to minimize or lessen the impact of vehicular traffic to an area. TDM plans are generally most effective with residential or office developments, where the same people are regularly at a given site. The most important objective in implementing an effective TDM program is to provide appropriate alternatives to the single-occupant motor vehicle as the principal travel mode to and from the site.

With Legacy Farms' proposed mixture of commercial and the residential users, there is an opportunity for several effective TDM measures to be implemented as part of the project. The site's pods of residential and commercial uses will all also help promote alternative modes of travel and reduce the number of cars traveling to the site.

For the commercial component of the site, separate TDM measures have been developed for both employees and site patrons. The residential components of the site allow for additional measures to be put in place due to the regular nature of the occupants travel patterns. The following TDM measures will all be considered by the Proponent for the overall Legacy Farms development, as well as for specific components of the site as noted.

General TDM Measures

Although not a direct part of the TDM program, the mixed-use nature of the various site components, which will include several amenities intended to service residents and workers at the site, will help reduce the need for employees and residents to travel off the site. The mix of residential and office can also provide a means to contain entering and exiting traffic volumes, thereby allowing for better management

of project-related traffic during the morning and evening commuter peak periods. The following specific TDM measures will be considered for the project as a whole:

TDM Coordinator

An on-site TDM coordinator will be appointed to oversee site-related transportation demand management program to be developed. The person (or persons) in this role will coordinate with other parties within the Legacy Farms area to help promote a lesser reliance on single-occupant motor-vehicle travel to and from the site. To that end, the TDM measures identified in the following section will be implemented under the direction and supervision of this person. The duties of the TDM Coordinator will include, but not be limited to: coordinating with CARAVAN for Commuters, Inc. /MassRides, the MBTA, the MetroWest Regional Transit Agency, and site employers, disseminating information on alternate modes of transportation and developing related marketing materials; developing and implementing appropriate TDM measures; and, monitoring the effectiveness of those measures.

Commuter Information

The TDM coordinator would provide updated central commuter information centers within the various development pods to assist residents as well as employees and visitors. These locations would be in convenient locations such as the lobbies of a residential or commercial building, or at the entrance of a retail facility – among other possible locations – that could be identified by the TDM coordinator.

Facilitate Bicycle and Pedestrian Travel

Travel to the site by biking or walking will be promoted by the Proponent through the provision of convenient bicycle parking. Bike racks will be provided at locations in the vicinity of various buildings within the overall development. The exact location will be determined through consultation with the Town of Hopkinton and the development team. Walking to/from and within the Legacy Farms development site will be encouraged by the provision of a pedestrian-friendly site layout, which features sidewalks and crosswalks at key points both within the site and connecting to possible off-road pedestrian trails and networks.

Promote Alternative Transportation

Discussions with the MBTA and the MetroWest RTA have identified opportunities to expand existing service to and from the Legacy Farms development. Further discussions will identify an appropriate location for bus stops on the site and possible amenities to be added to supplement those services. The TDM coordinator will also post local bus and train schedules at central points within the lobbies of

various community buildings within the overall Legacy Farms development. Specific measures to promote ridership are also noted below for specific uses.



Commercial TDM Measures

As the commercial aspect of the development is advanced, employers within the Legacy Farms development site will be encouraged to implement appropriate TDM measures by the TDM coordinator. As not every TDM program will be suitable for every type of employer, such as telecommuting or flexible work hours, the coordinator will offer technical assistance to individual tenant employers to evaluate potential programs and to implement them when appropriate. Potential employer-based TDM measures include the following:

- ▶ Provide flexible hours so that employees have the option of commuting outside the peak traffic periods. Similar benefits can also be realized through staggered work hours so that employee trips occur over a broader period and thereby reduce peak hour demands.
- ▶ Massachusetts' employees have the ability to use pre-tax dollars for the purchase of MBTA passes. The pre-tax purchase is free from both federal and state income and payroll taxes.
- ▶ Consider telecommuting options.
- ▶ Hold promotional events for bikers and walkers.
- ▶ Provide incentives for bicycle commuting.
- ▶ Offer direct deposit to employees with local banks.
- ▶ Sponsor vanpools and subsidize expenses.
- ▶ Provide preferential carpool and vanpool parking within the parking garages and spaces near office building entrances as a convenience to participants and to promote ridesharing.
- ▶ Provide subsidies to employees who purchase monthly or multiple trip transit passes.

Residential TDM Measures

In addition to providing a pedestrian friendly, mixed-use environment, the planned development will also consider a variety of additional strategies to reduce the need for auto trips by residents. This could include working with a car-sharing service (such as Zipcar®) to provide cars for periodic use by residents. Several of the TDM measures to be implemented for the entire site should also be attractive to residents at Legacy Farms. Specifically, the provision of bicycle racks, pedestrian walkways, and proximity to potential scheduled public transportation should also help minimize the need for vehicular travel.



Long-term Improvements

As previously mentioned, the development of Legacy Farms is envisioned to occur over a ten-year+ time frame. While the analysis contained in this report has been geared towards evaluating the full development, as well as the other potential developments in the area, additional local and regional improvements would likely benefit the region as a whole. The primary mode of identifying these improvements will be the municipality's creation of a long-range transportation planning study for the benefit of the Town of Hopkinton followed-up with a traffic monitoring study.

Regional Transportation Master Plan

As noted, the improvements identified for the development are designed to address many of the existing infrastructure issues in and around the project site as well as provide additional capacity to address the project-related impacts. While it has been stated repeatedly that these roadway improvement options have been developed in a planned and methodical manner, it is likely that – over time – additional development beyond those known developments (including Legacy Farms) will begin to come on-line within the region. As these projects are proposed, new and more complex solutions to the regional traffic flow may be need to be explored.

Among these developments are the redevelopment of underutilized parcels, changes in state programs, and other assorted development plans not currently known. Given the current infrastructure available and the traffic volumes through the area, regional improvements may be required in the future to accommodate all these potential projects. These actions could range from simple modifications and “tweaks” to more significant actions which could involve the acquisition of right-of-way, involvement with state and federal agencies, and substantial funding. These are improvements that cannot be the responsibility of a single developer and involve a broad public-private partnership.

The goals of this effort would be to identify opportunities to continue to provide for the continued quality of life that the residents of Hopkinton have come to know, along with stimulating an appropriate level of economic growth within the Hopkinton area as well as provide a roadmap to the community for future infrastructure investments. This process may also provide for an opportunity to identify regional funding strategies to help with regional solutions.

Conclusion

This Traffic Impact and Access Study presented a detailed traffic assessment to evaluate the impacts associated with Legacy Farms. In total Legacy Farms will

consist of 940 residential dwelling units and 450,000 square feet of commercial development within a 700+ acre development. The development will be constructed in a staged approach with opportunities for the Town to review what has already been constructed, compare it with prior estimates of traffic generation and impact, and consider future development on the community roadways. While the project is certain to generate additional traffic on area roadways, this study has identified a series of detailed and flexible transportation solutions to help mitigate the overall impact of the full development on area roads subject to the characteristics of the town.

This detailed traffic analysis has identified locations impacted by the project. A comprehensive transportation mitigation program was developed to mitigate potential impacts with the anticipated traffic associated with the project. These improvements can be staged into existence as development within the project, and its concomitant volume occurs.

It should be stated that the Proponent fully expects to provide reasonable off-site roadway improvements to address their impacts on area roadways as the project advances into the long-term portion of the development. The development project will also entail the construction of several new internal roadways within Legacy Farms to benefit not only the residents, visitors and employees of the site, but the general traffic patterns in the region. This street network was developed and will be further refined with both consideration for vehicular access needs, while maintaining the appropriate accommodations for bicycle travel and sidewalks and internal walkways.