

7. VILLAGE CENTER STUDY AREAS

The sections that follow outline the process the study team used to evaluate different sites for their potential as village centers and then created preliminary designs for each. It begins with a broad assessment of the town as a whole, followed by presentations of individual evaluations and designs for each study area. Finally, the areas are compared to one another and ultimately, the historic village center was chosen as the most suitable site.

7.1 Preliminary Assessment of Village Center Study Areas

Bolton's Master Plan names three possible village center locations. These are along Route 117 by the Stow line, at the Davis Gravel Pit at the corner of Routes 110 and 117, and near the historic town center at the interchange of Route 117 and Interstate 495. Informed by our assessment research, the studio team identified the opportunities and challenges that each of these locations offer. These preliminary findings, listed in the following tables, guided exploration of the various possibilities of the individual sites.

In order to determine which of the forested areas were and were not off limits for new development, we utilized MassGIS data to display areas that are either permanently protected or have some form of protection in place. The resulting map is called "Undevelopable Land" (see Map 7.1.1). The definitions for the protected areas, as taken from MassGIS, are as follows:

In Perpetuity (P) - Legally protected in perpetuity and recorded as such in a deed or other official document. Land is considered protected in perpetuity if it is owned by the town's conservation commission or, sometimes, by the water department; if a town has a conservation restriction on the property in perpetuity; if it is owned by one of the state's conservation agencies (thereby covered by article 97); if it is owned by a non-profit land trust; or if the town received federal or state assistance for the purchase or improvement of the property. Private land is considered protected if it has a deed restriction in perpetuity, if an Agriculture Preservation Restriction has been placed on it, or a Conservation Restriction has been placed on it.

Temporary (T) - Legally protected for less than perpetuity (e.g. short-term conservation restriction or Chapter 61 lands), or temporarily protected through an existing functional use. For example, some water district lands are only temporarily protected while water resource protection is their primary use. These lands could be developed for other uses at the end of their temporary protection or when their functional use is no longer necessary. These lands will revert to unprotected status at a given date unless protection status is extended.

Limited (L) - Protected by legal mechanisms other than those above, or protected through functional or traditional use. These lands might be protected by a requirement of a majority municipal vote for any change in status. This designation also includes lands that are likely to remain open space for other reasons (e.g. cemeteries and municipal golf courses).

Wetlands, water, cemeteries, and waste disposal sites are also included under the rubric of "undevelopable land".

The next step in assessing the best potential borders for the village overlays was to look at other potential barriers to development. Labeled "Potentially Undevelopable land" (see

Map 7.1.1); these areas contain natural features that necessitate caution if not restriction on development. The data comes from MassGIS and are defined as follows:

Aquifers – This layer is generally based on the boundaries of the major drainage basins. Areas of high and medium yield were mapped. The town of Bolton may want to tap the large aquifer located on the west side of town for a public water supply. Before development, and the accompanying stormwater runoff and sewage needs that will accompany it, is approved, the hazards for this potential water source need to be taken into account.

Priority Habitat - The Priority Habitats of Rare Species data layer represents the geographic extent of habitat of state-listed rare species in Massachusetts. This is based on observations documented within the last 25 years in the database of the [Natural Heritage & Endangered Species Program](#) (NHESP). Priority Habitats alert municipalities and other stakeholders of a need for determining whether or not a proposed project must be reviewed by the NHESP for compliance with the [Massachusetts Endangered Species Act](#) (MESA).

Areas of Critical Environmental Concern - Areas of Critical Environmental Concern (ACECs) are “places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. ACEC designation also requires greater environmental review of certain kinds of proposed development under state jurisdiction within the ACEC boundaries” (MassGIS).

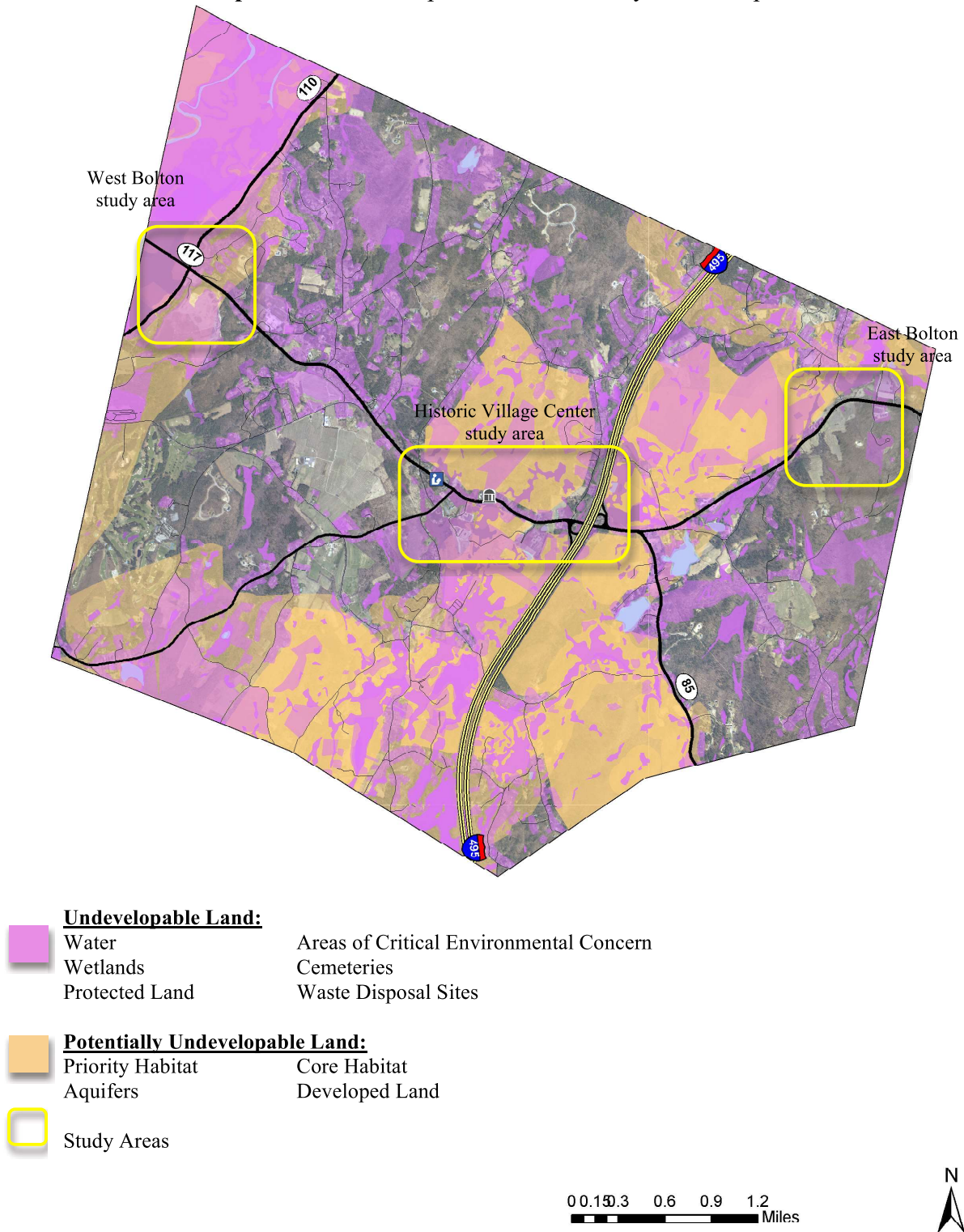
Core Habitat - Core habitat is defined as “the most viable habitat for rare species and natural communities in Massachusetts” (MassGIS). NHESP scientists delineated Core Habitat areas by using primarily field data, ancillary literature, and color-infrared aerial photographs.

Supporting Natural Landscapes – These are areas that can function to buffer and connect Core Habitat areas, and identify large, naturally vegetated blocks that are relatively free of roads and other development.

Land that has already been developed was also used as part of the “Potentially Undevelopable Land” layer.

In order to more easily view and interpret these many layers of definite or potential barriers, and to enable further analysis using parcel delineation and topography lines, we created two single color layers for Undevelopable and Potentially Undevelopable areas (see Map 7.1.1). From here, study groups zoomed in to focus on the three areas we were told the Town had identified as possible village districts; the historic village center, the intersection of Routes 117 and 110 on the west end of town near the Davis gravel pit, and the only zoned industrial section of town, in the northeast corner on 117 near Stow.

Map 7.1.1. Undevelopable and Potentially Undevelopable Land



7.2 West Bolton Village Plan

Bolton's western sector offers the opportunity to create a gateway to the central village district, and utilize the important node of activity centered on the high school, recreational opportunities in Bolton Flats, and the Bolton Orchards farm store. This study presents the development challenges faced in West Bolton, recommendations and some potential scenarios for consideration of the Town and planning board.

Assessment of West Bolton Village District

The western village district encompasses an area from the western border with Lancaster to the intersection of Forbush Mill Road and Route 117. The area includes:

- Residential neighborhoods
- The Bolton Flats State Conservation Area
- The Davis gravel mining operation
- Commercial businesses in the form of Bolton Orchards, the pizza place and a package store
- The Nashua Regional High School

Much of the western portion of the slated village district is situated on the largest aquifer in town. A major intersection occurs on the site where Rt. 110 meets Rt. 117 in the vicinity of Bolton Orchards.

Table 7.2.1

Opportunities and Strengths	Challenges and Constraints
Proximity to high school, post office, Bolton Orchards	Northern and western corners of this intersection have wetlands, standing water, prime agricultural soils
Land used for gravel mining already impacted	Soils not suitable for septic on south side
Convenient access to Routes 110 & 117	Unsafe for pedestrians due to high traffic speeds, lack of crosswalks, guard rail
	Eastern corner has soils well-suited to agriculture. but not to septic filtration and some steep, hard to develop topography
	More accessible to Lancaster, Harvard residents than Bolton residents
	Proximity to transfer station

Build-Out Summary

The existing zoning is mostly residential, except for a small business zone at the intersection of 117 and Forbush Mill Road. Bolton's residential zoning calls for a minimum of 2 acre lots with 200 feet of frontage and a 50 foot setback. Non-conforming lots can build a single family home, so existing one acre lots can still build one home. Business lots must have 200 feet of road frontage, and a front setback of 150 ft. Buildings

can only cover 8% of land area, but the parking lot can cover 50% of lot. Most of the undeveloped parcels have room for 1 home. The two largest undeveloped areas are the gravel pit (which can accommodate about 50 homes under existing zoning), and an unused orchard across the street from the school (which can accommodate 11 homes under current zoning).

Gravel Pit Redevelopment Case Studies

Case studies of gravel pit redevelopment examined the Storm King Arts Center in New York, Aldergrove Regional Park in British Columbia, and Widows Walk Golf Course in Massachusetts.



Figure 7.2.1. Storm King Arts Center (Photo Credit: Matt Medeiros)

Storm King is a 500-acre pastoral landscape that has been restored from its former use as a gravel pit to its current use as an outdoor gallery for large scale environmental sculptures. Landscape architect William Rutherford designed the site in the 1960s and used tons of gravel to restore the hillside near the visitor center from a disturbed site consisting of a cliff with pools of water below. The Art Center is in private ownership.

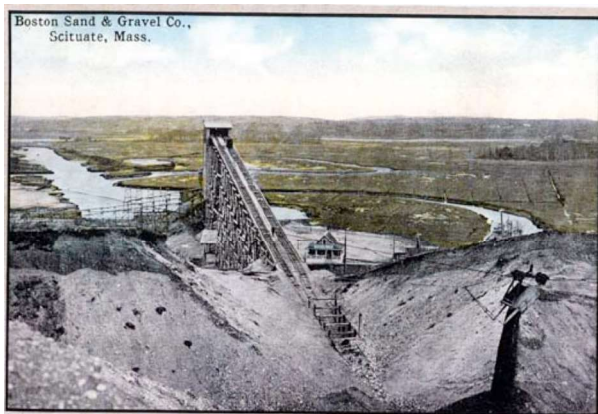


Figure 7.2.2. The Widow's Walk golf course when it was a gravel operation at the turn of the century.



Figure 7.2.3. The Widow's Walk golf course today.

Since the gravel site in Bolton is in private ownership, a golf course or art center would be a business-oriented option for redevelopment that could still conserve open space on the existing gravel excavation, and preserve aquifer resources.

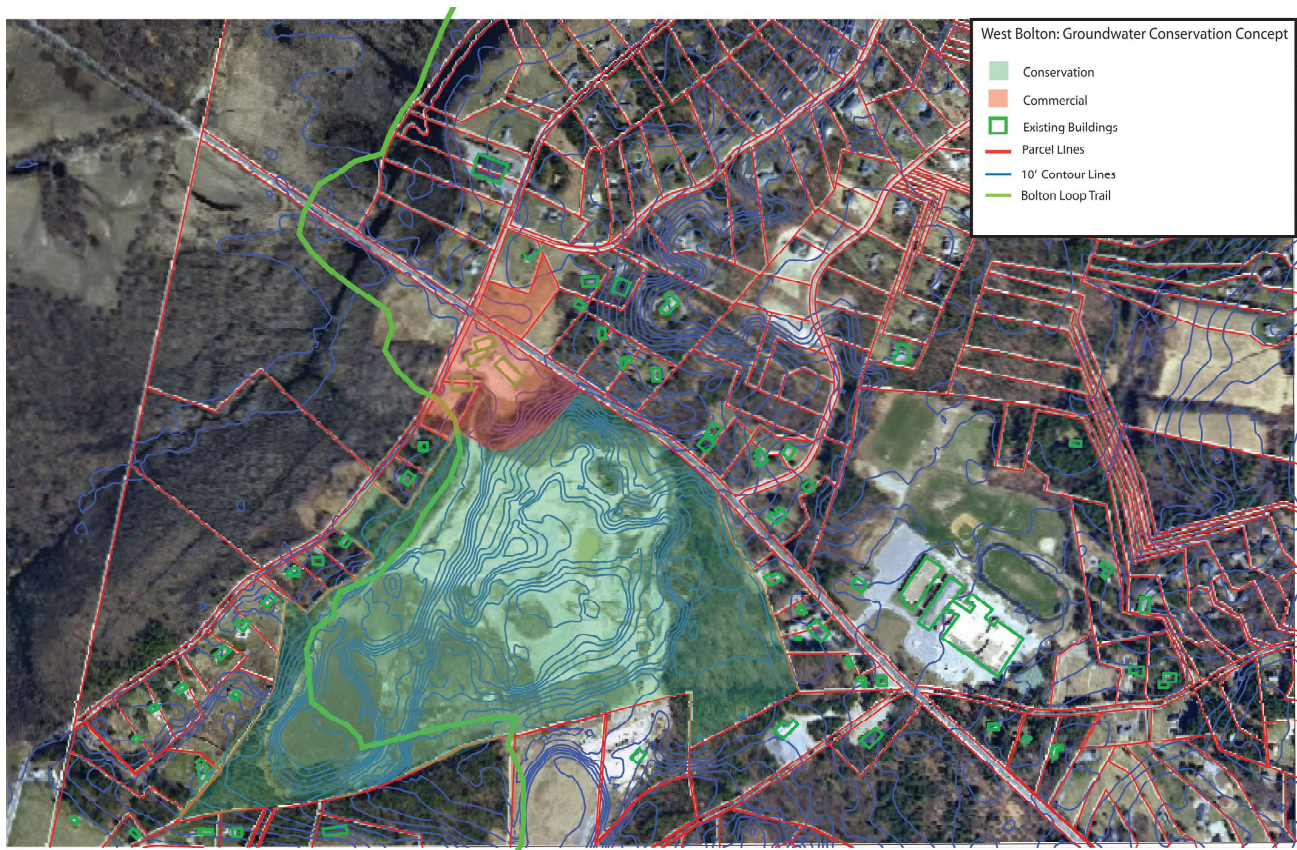
In the cases of Aldergrove and Widows Walk, fill was provided through the use of biosolids, which would be a sustainable (and also affordable) option for redeveloping the excavated areas of the gravel pit. Conveniently, the Boston metro area has a biosolids program that has provided free fill to other municipalities in the area—including Widows Walk. This approach has been shown to be safe for both groundwater and surface water.



Figure 7.2.4. The Aldergrove Regional Park. This lake and its surrounding landscape were reclaimed using biosolids and fertilizer.

Redevelopment Scenario 1: Aquifer Conservation

This scenario could be enacted if the Town decides that conservation of the aquifer resources is their prime emphasis for the area. The gravel pit could be reclaimed as an open space conservation zone, and connected with existing resources in Bolton Flats and south of Forbush Mill Road. The Bolton Loop Trail would wind through the site, as it is currently projected to do.



Map 7.2.1. Redevelopment Scenario 1: Aquifer Conservation

Data Source: MassGIS

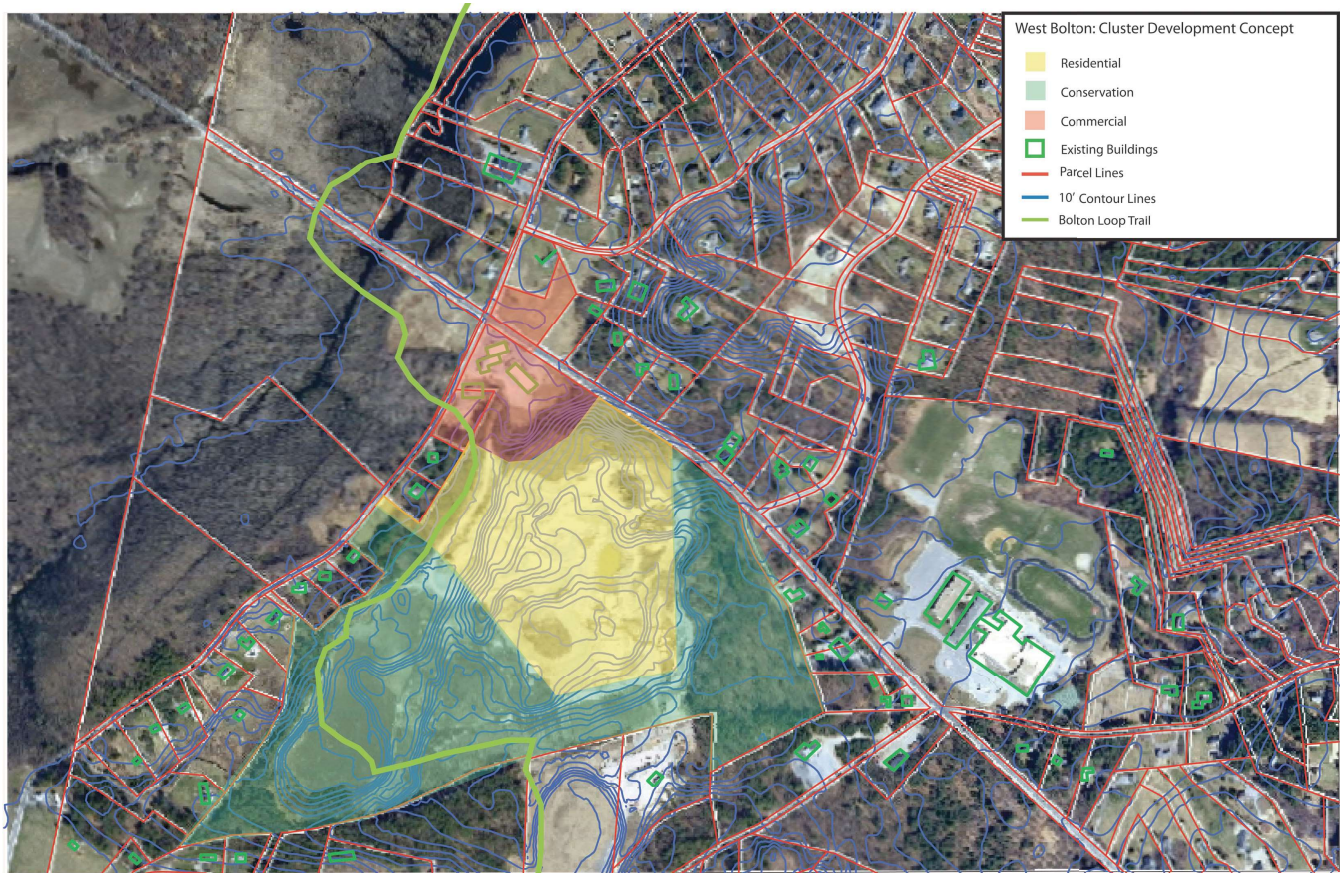
This Aquifer Conservation Development consists of:

10.4 acres – commercial area

100.3 acres – conservation area

Redevelopment Scenario 2: Residential Cluster Development

This cluster scenario would allow for conservation of the wooded area on the eastern side of the gravel site, as well as an additional area on the southeast where the Bolton Loop Trail is project to pass through and connect to the Bolton Flats.



Map 7.2.2. Redevelopment Scenario 2: Residential Cluster Development Data Source: MassGIS

In terms of acreage the cluster development concept consists of:

- 10.4 acres – commercial area
- 36.9 acres – residential area
- .74 acres per unit
- 63.4 acres – conservation area

Conclusion & Recommendation for West Bolton Study Area (Davis Gravel Pit)

Regardless of whether the gravel site is redeveloped for housing or conservation land, it is important to reduce the likelihood of groundwater contamination at this site. Since all the residences in Bolton, MA get their water from wells, it is recommended that the Town create an aquifer protection overlay district in Bolton. After reading two different zoning bylaws that include aquifer and groundwater protection overlays, which are Amherst, MA and Charlestown, RI, there are some performance standards and prohibited uses that the Town can implement to help maintain the quality of Bolton's drinking water. The overlay district can prohibit things such as solid waste transfer stations (there is currently one in the area of the aquifer), commercial wood preserving, furniture painting and refinishing, underground storage of petroleum products, metal plating, the washing of automobiles or trucks except as a residential use, storing uncovered road salt and deicing chemicals, car washes, and gas stations. It can limit the amount of salt used on the roads. The overlay district can limit the amount of impervious surfaces. These types of prohibitions can help protect water quality.

Development of a village center in the western portion of town presents problems and opportunities. On the one hand, it is a prime location for potential commercial ventures due to the high volume of traffic on 117 and at the intersection with 110. The gravel pit will present opportunities for development when excavations cease there, but careful planning will be important due to the presence of the aquifer. While the site has adequate space for continued residential units, the potential for groundwater contamination is high since the Town has no public sewers or wells. From the surveying and research it would make sense that the Town would want to conserve the land at the current gravel pit, as it would create connections to existing spaces-and goes in line with the sustainable land use emphasis of the village district project.

7.4 East Bolton Village Plan

The area referred to as East Bolton throughout this plan offers a unique opportunity to steer growth in a manner that preserves significant open space, important heritage landscapes and natural resources. Situated near the border of Stow, the district is an outlying area which is precisely why it was not identified by residents as a potential village center. This fact aside, it is inevitable that development will occur in this area and therefore it is feasible to consider East Bolton as a potential future village center; consisting of residential, commercial and limited industrial development. The following alternatives consider three distinct visions for East Bolton, ranging from the conventional subdivision approach paired with limited industry to an alternative cluster development employing sustainable design strategies sited around preserved farmland. These scenarios were informed by a comprehensive assessment of the study area. Additionally, these designs seek to incorporate innovative planning techniques to encourage the adaptive re-use of existing structures, conserve land, preserve natural resources and promote economic development. They can be used by the Town and planning board as a basis for discussion on the future of East Bolton as a village center.

Assessment of East Bolton

Scenic and Historic Character

As a distinct, multilayered landscape, East Bolton consists of working agricultural lands, well-preserved historic structures, a residential subdivision and a large-scale industrial site. The scenic qualities of this area are highly valued and offer a glimpse into Bolton's past as an agricultural settlement. In this area, Rt.117 has retained its scenic character of a narrow, winding country road lined with stone walls which travels through a landscape of rolling agricultural fields, orchards and forests. These landscapes are significant for their high scenic value and overall diversity.

The most significant landmark in the area is Bolton Spring Farm, a working farm of considerable size which includes an orchard and farm stand. Situated adjacent to the farm lands is a series of well preserved historic homes, including the Whitcomb house, the only structure in Bolton with a preservation restriction. The Whitcomb Lime Kiln, the Town's first industry is located on adjacent land which is currently under conservation and includes a number of walking trails. It should be noted that this particular area within the district is distinctive in that it accurately represents historical settlement patterns and landscape treatment.

Current Land Use

The East Bolton village study area offers a diversity of land uses. These include Bolton's only industrial properties, residential, commercial, protected open space, active farm land

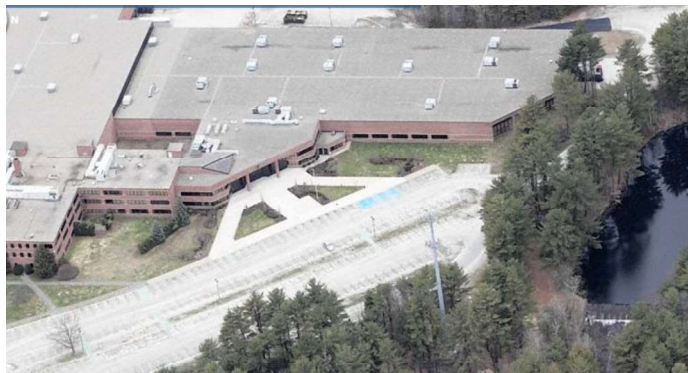


Figure 7.4.1. Future Electronics

and a cell tower. Map 7.4.1 demonstrates land use for East Bolton.

East Bolton includes the Town's only industrial zoned properties. Seven parcels fall within this industrial zone. Future Electronics occupies the largest parcel north of Route 117, and Atlantic Microwave occupies two adjoining parcels on the south side of Route 117. Two parcels are undeveloped and cannot be developed due to wetlands and steep slopes. One parcel lies within the Delaney Wildlife Management Area. The last parcel is a forested ten acre area owned by Bolton Spring Farm. The industrial zone is also the wireless communication overlay, which allows for a multi-service wireless tower located near Future Electronics.

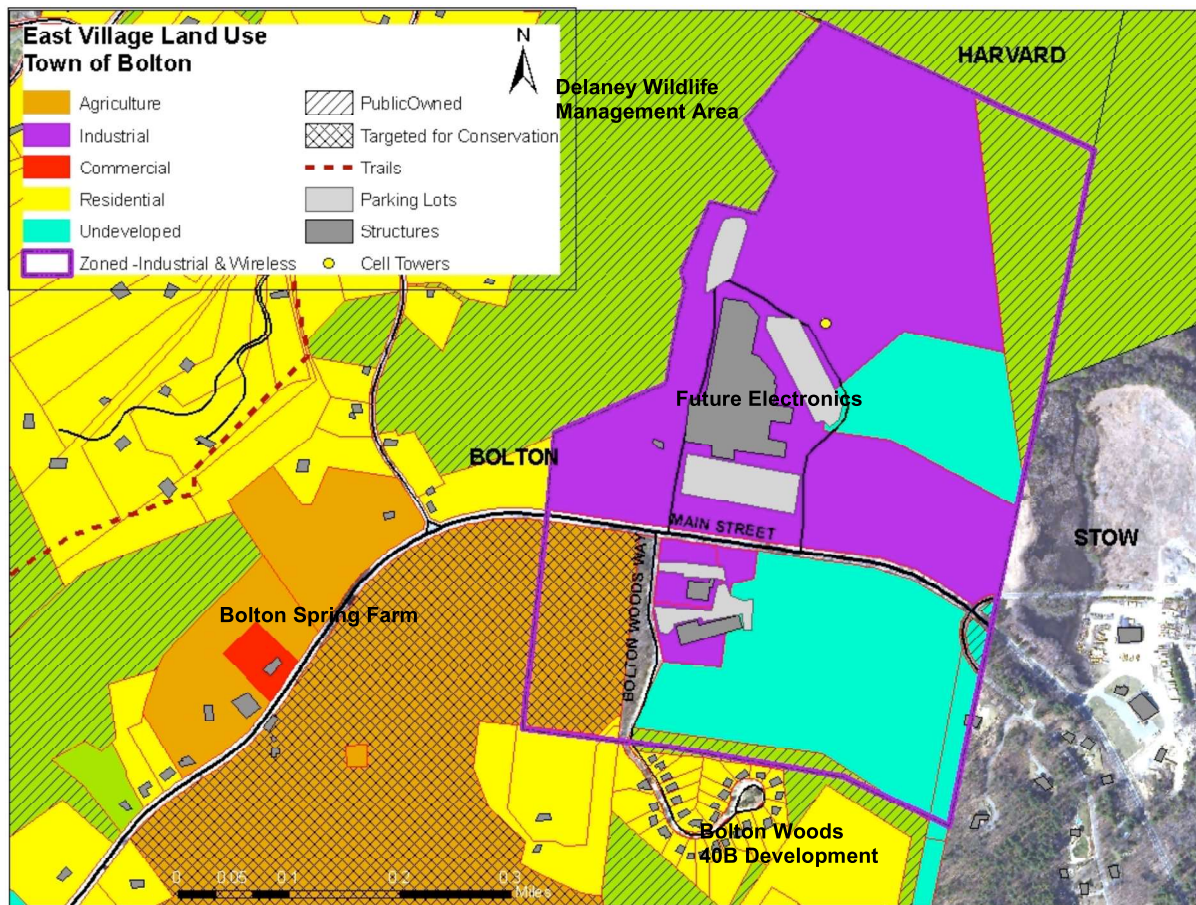
The industrial zone is bordered by the Delaney Wildlife Management Area to the north, as well as east and west borders on the north side of Route 117. The Delaney Area is permanently protected open space owned by the State of Massachusetts. The study area also encompasses the Lime Kiln Conservation Area on the southwest corner and town owned Conservation Commission lands around the Bolton Woods 40B residential development. One established trail connects the Lime Kiln Conservation Area to the residential neighborhood in the northwest section of the study area. Additional trails are available in the Delaney Wildlife Management Area, which are mainly accessed via Harvard Road in Stow.

The Bolton Spring Farm store offers the only commercial entity beyond home occupations in the study area. The 160-acre orchard is one of the largest in town. The 2005 Open Space Plan and Master Plan prioritize Bolton Spring Farm as one of six farms in town to target for conservation. However, the farm is currently not protected and has not been given Chapter 61 status.

Apart from these notable properties, almost all of the remaining land is designated for single family dwellings with two acres as the minimum acreage needed for building. In spite of this zoning, there are a number of historic homes having frontage on Main Street, East End Road and Sugar Road which are designated pre-existing, non-conforming, and which have a greater density than the required two acres. In addition to these historic non-conforming parcels, the study also encompasses two newer developments: one is less dense and the second is significantly denser. The northwest corner offers a dozen residential backland lots where single family homes sit on four to six acre parcels. The Bolton Woods development includes 28 residential lots that range from a tenth to a full acre each. As a 40B project, this development was able to provide affordable units in exchange for increased density.



Figure 7.4.2 Bolton Spring Farm Store, Main Street

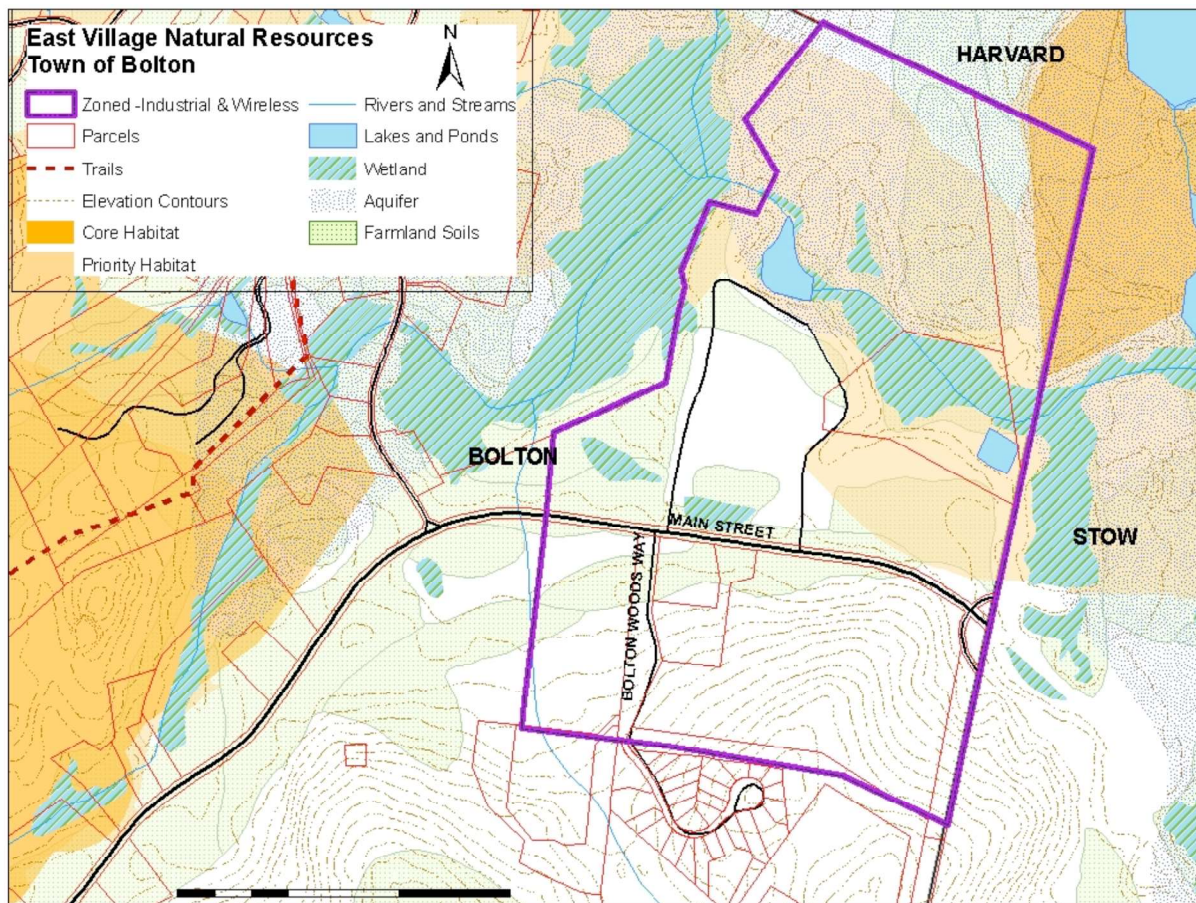


Map 7.4.1. Current Land Use at the northeastern study site.

Natural Resources

There are a significant number of critical natural resources within the district, including the Delaney Wildlife Management Area which is a significant area for flood control and aquifer protection as well as an area of core and priority wildlife habitat. The other area which hosts a significant amount of core and priority habitats is the Lime Kiln Conservation Area. Wetlands are prevalent in the north side of the study area, both within and adjacent to the aquifer. Farmland soils are found primarily in flat terrain near Main Street. Two forested hills in the south have steep slopes greater than twenty percent. Map 2 displays East Bolton's natural resources.

The district is divided into a residential zone on the west and Bolton's only industrial zone on the east. Storage areas, office buildings, research and development laboratories, light manufacturing industries and compatible allied uses are all permitted within the industrial zone. Only one principal building is allowed per lot. The building footprint may measure no more than 8% of the total lot area. Minimum parking requirements equal double the building floor area. The total built, impervious area cannot exceed 50% of the lot area, with the rest covered by vegetation. The industrial zoned properties are also



Map 7.4.2. Natural Resources at the northeastern study site.

included in the Wireless Communications overlay zone. The overlay bylaw identifies the following setbacks for new wireless towers or other facilities: 600 ft. from property lines; 800 ft. from the centerlines of town roads; and 1,000 ft. from existing residences or residences reviewed or pending review by the Town.

Two acre lots as well as “backland” lots, measuring a minimum of 4.5 acres, are allowed within residential districts. Only one single-family unit is allowed per lot, although accessory apartments are permitted in some cases. Agricultural and other business uses are allowed on undeveloped parcels with some restrictions. The town also allows large, “backland” lots in back of standard lots so long as their driveways are connected to a town right-of-way. Such lots must contain at least 1.5 contiguous, developable acres and no more than two can be adjacent to one another. Dimensional regulations for residential and industrial parcels are shown in Table 7.4.1.

Table 7.4.1. Dimensional Zoning Regulations

	Residential	Backland	Industrial
Area	40,000	4.5 acres	1.5 acres
Frontage	200 feet	50 feet	200 feet
Front Setback	200 feet	N/A	200 feet
Other setbacks	N/A	No structure within 50 feet of lot line	No structure within 50 feet of residential zone
Lot width at 100-foot setback	150 feet	25 foot minimum for entire lot	150 feet

Challenges

It is clear from our public participation efforts and as well as the assessment of existing conditions that small scale residential or mixed use development within East Bolton is possible; though there are a number of challenges which should be considered. Existing natural features and historic resources limit the amount of land suitable for development. Additionally, public opinion indicates that residents consider the historic town center to be the true village center; this is a potential limitation because it is often difficult to establish a new village center in an area that is not viewed as the center for activity. Further hindering the establishment of the village center is current traffic flows which demonstrate that Rt. 117 in East Bolton is not as heavily trafficked as other areas of Bolton. Despite these limitations, we believe that Bolton should consider strategic development in East Bolton as an essential component in the Town's long term planning.

Development Scenarios

Scenario A: Growth under Current Zoning

Scenario A shows possible build-out under current zoning. It features an additional development within the area currently zoned industrial, as well as a residential subdivision on the site of Bolton Spring Farm. The back lots are accessed via two pre-existing farm roads which have been lengthened to provide access to back lots. A total of X standard and Y "backland" lots were constructed with frontage on either Main Street or newly constructed roads.

The design also includes a subdivision of the Future Electronics parcel to allow for development of another small industrial building. Additionally, current regulations permit the construction of a small industrial building on the remaining ten acres of farmland which falls within the industrial zone.

Scenario B: Conservation of Bolton Spring Farm and Development

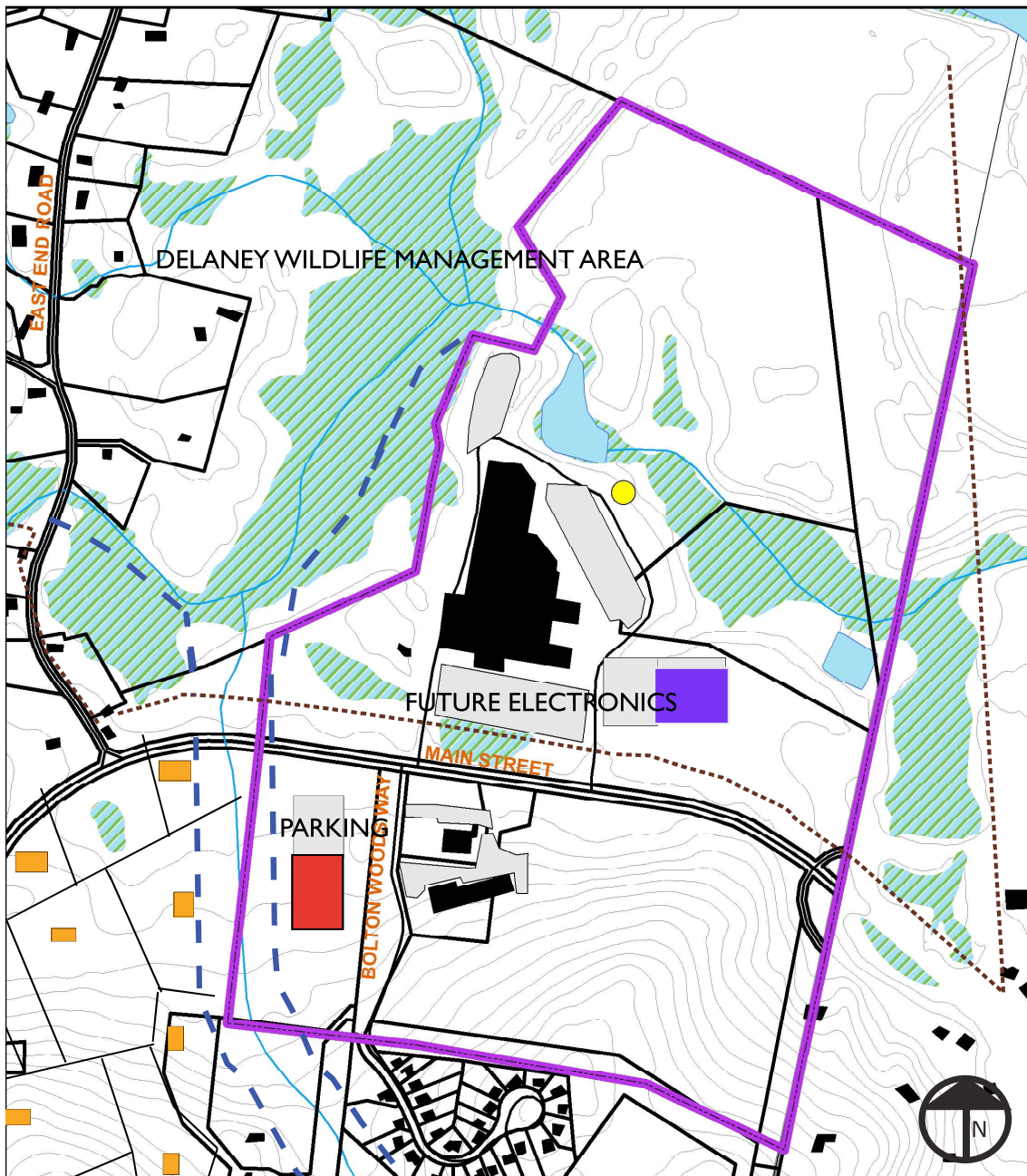
Recognizing the significance of Bolton Spring Farm as a scenic and cultural resource, as well as significant open space, this proposal promotes concentrating development on approximately 10 acres of the eastern section of the farm and preserving the remaining land. A new road network inside the parcel provides enough additional frontage to minimize the need to build backland lots. The developer is given a density bonus

SCENARIO A:
GROWTH UNDER CURRENT ZONING

SCALE 1" = 500'

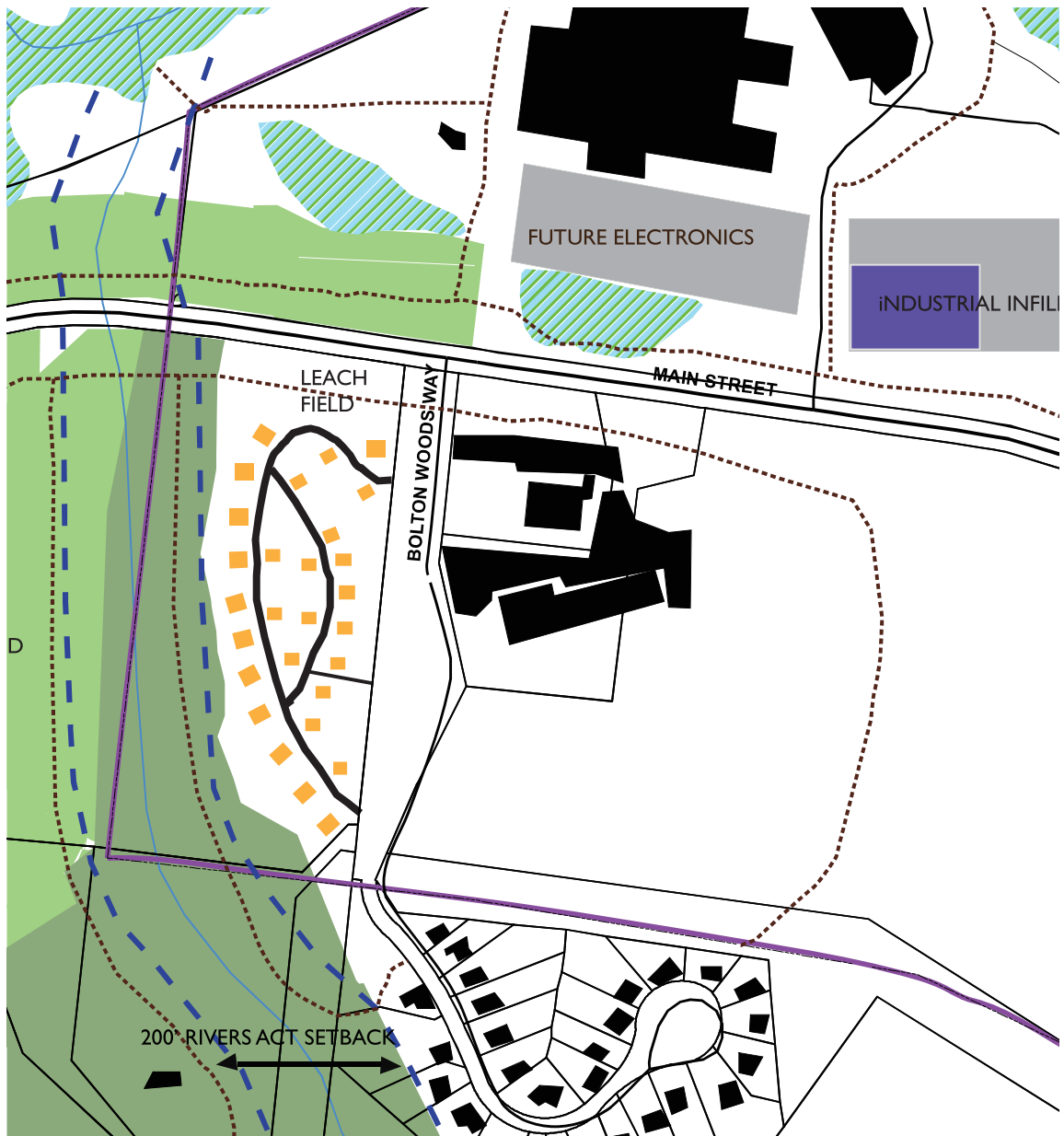
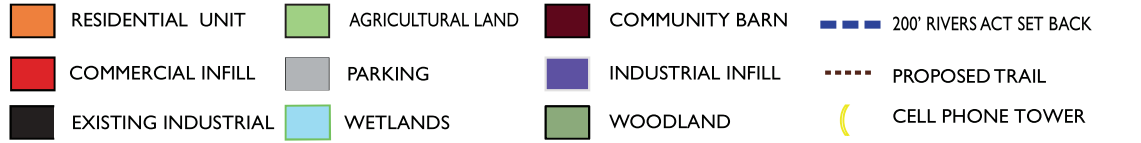
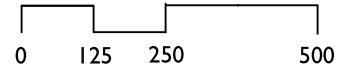


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|---|---|--|
|  RESIDENTIAL UNIT |  EXISTING INDUSTRIAL |  200' RIVERS ACT SET BACK |
|  COMMERCIAL INFILL |  PARKING |  PROPOSED TRAIL |
|  INDUSTRIAL INFILL |  WETLANDS |  CELL PHONE TOWER |



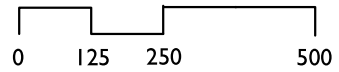
SCENARIO B: CLUSTER DEVELOPMENT WITH FARMLAND PRESERVATION

SCALE 1" = 250'



SCENARIO C: AGRICULTURAL ENTERPRISES
ECO-VILLAGE HOUSING

SCALE 1" = 250'



- | | | | |
|---------------------|-------------------|------------------|--------------------------|
| RESIDENTIAL UNIT | AGRICULTURAL LAND | COMMUNITY BARN | 200' RIVERS ACT SET BACK |
| COMMERCIAL INFILL | PARKING | COMMUNITY CENTER | PROPOSED TRAIL |
| EXISTING INDUSTRIAL | WETLANDS | WOODLAND | CELL PHONE TOWER |



allowing them to build more units in exchange for paying for a conservation restriction on the farm. This scenario would require rezoning a portion of the industrial zone to residential. Alternatively, the Town could negotiate a density bonus for a new industrial or commercial development in this area in exchange for conservation restrictions on the remaining farmland.

As in Scenario A, the Future Electronics parcel is subdivided to make way for a small new industrial building.

Scenario C: Agricultural Enterprises with Ecovillage Co-housing

Scenario C utilizes the land uses as shown in Scenario B while introducing an innovative design and approach which incorporates active farming into a newly proposed subdivision. As in the previous design, we propose preserving Bolton Spring Farm through conservation restrictions in exchange for a density bonus for the new residential development on the eastern section of the farm property. These homes will enjoy the aesthetics afforded by the wooded hills and apple orchards. Rather than a traditional neighborhood road, this design depicts a sustainable co-housing development. This includes a central community building, which would be open to the public at-large for gathering space and events. The centrally located open space is to include community gardens.

The former Future Electronics building would be converted into an agricultural processing and enterprise center for the region which could host a number of small agricultural enterprises including commercial kitchen processing facilities, cold and long term storage for local agricultural crops, and a sustainable agriculture research and education center. To complement this agricultural industrial park, the land adjacent to Route 117 and the area just east of the Future Electronics building could be transformed into working farmlands. These areas are noted to have prime farmland soils.

Certainly the current Atlantic Microwave buildings on the southern side of Route 117 offer jobs and active industry that support the local economy. Therefore, this business should be supported. Thinking long term, however, we feel that this area would also serve as a suitable village center when or if the Town feels an additional site for mixed-use and increased density is needed. Therefore, Scenario C demonstrates the opportunities to alter these two buildings into mixed-use retail, office, and light industry. We feel that these uses would complement neighboring residential uses, allow people to live in proximity to their work place, and offer an East Bolton village center.

The entire development would incorporate innovative green building and energy efficient techniques. The design fosters community connections as well as respect for environmental systems. It would serve as a model for new buildings and areas that incorporate environmental designs and maintain or increase functionality. Alternative transportation modes would be expanded. Pedestrian and biking connections would connect the 40B Bolton Woods project to the new co-housing project and the mixed-use center. Additional recreational trails would add further connections through the wooded hills and farmlands. Strong pedestrian connections across Route 117 would tie the

residential and mixed use areas into the agricultural industrial center, perhaps where many of these residents could work.

While Scenario C may offer a vision that seems quite unique, we feel that this vision would highly complement the character of Bolton and offer a development the Town would be proud to promote. Certainly, it should be used as a conversation starter, a way to provoke innovative thinking about how these properties could offer opportunities that enhance rather than detract from residents' interests while allowing growth and new offerings.

Recommendations

Low Impact Development

In recent years, industrial developments have sought to reduce their environmental impact by reducing stormwater runoff and promote infiltration on site. Low Impact Development techniques, utilize natural processes to manage stormwater. Such strategies not only serve to protect water quality and ensure the health of the aquifer; they also can function as attractive landscaping features.

Because of its proximity to an aquifer and to wetlands labeled as areas of critical environmental concern, pollutant filtration and drinking water protection are primary concerns for the redevelopment of the Future Electronics parcel and any future development in East Bolton. Including a network of bioswales and bioretention basins as part of the site design will not only reduce the amount of point source pollution entering conventional infrastructure systems but also facilitate recharge of the adjacent aquifer. Bioretention basins can be evenly distributed within the parking area to collect stormwater. Bioswales can be established on any undeveloped area of the site. Both will moderate the amount of runoff from impervious surfaces to the surrounding area.

Reuse/Greening of Future Electronics Building

High energy efficiency within the building should also be a top priority for the Future Electronics parcel. Energy Star systems provide an energy-saving alternative to conventional heating and cooling systems and also greatly reduce water usage. These systems work very effectively in combination with other energy saving methods such as added insulation or natural lighting. The new owner should also consider meeting some of their power needs with renewable energy, such as heating hot water using solar power.

The vacated Future Electronics building offers an opportunity for adaptive reuse, meaning updating and modernization of an existing structure. The retrofitting of the building could be publicized by a corporation and the Town to highlight their commitment to sustainability. Green retrofits are among the most effective measures that corporations and real estate owners can take to reduce their operating costs, raise commercial property values and achieve important environmental benefits, such as reducing energy use. Green retrofitting is rapidly becoming a critical business strategy. Beyond the positive financial considerations, such measures improve the corporate image as well as air quality. While a company relocating to the Future Electronics site may desire to make these improvements, the Town of Bolton can offer incentives for them to do so.

Streamlined Permitting

Developers and business owners appreciate certainty and transparency in the permitting process. As zoning and permitting processes change from town to town in Massachusetts, business owners pursue opportunities that are clear and understandable when looking to locate their business. Streamlined permitting offers towns the opportunity to revise their permitting process to a simplified method that will encourage business development.

Chapter 43D is the Massachusetts regulation authorizing streamlined permitting. To take advantage of this opportunity, a town identifies appropriate commercial, industrial, or mixed-use properties. They must also get agreement from the landowners of these properties to place them under a streamlined permitting process. Properties that meet the criteria are then approved by the state and marketed by the state as streamlined permitting properties. The town must review its permitting process and revise it to ensure permitting will be completed in a straightforward manner within 180 days. The regional planning agency offers technical assistance to assist towns through this process. It is important to note that streamlined permitting does not mean compromising on environmental protection or other standards that are important to the Town. The town is eligible for technical assistance grants from the state to assist with the process in exchange for establishing sites under streamlined permitting designation.

As the Future Electronics property is primarily vacated, streamlined permitting offers an attractive way to promote the site for reuse and redevelopment.

Conservation Restrictions

Encouraging increased density and offering business incentives can result in more concentrated development but these methods alone do not reduce the likelihood of dispersed residential development on the site of Bolton Spring Farm. Proactive and innovative thinking needs to be encouraged to address this concern. The design scenarios presented here encourage development on a small portion of land owned by Bolton Spring Farm. Developers of this area would be granted density bonuses from the Town in exchange for preserving a large portion of the farm by purchasing the development rights and placing the land under conservation restriction. These funds could be used to leverage state Agricultural Preservation Restriction funds to increase the extent of conserved area.

Zoning Changes

Design Scenario A illustrates no change to Bolton's current zoning. To create a village center or other aspects demonstrated in Scenarios B and C, zoning changes would have to occur. These changes may include alterations to the industrial zone or a village center overlay that includes mixed use and compact development opportunities. As the Town decides on a vision for this area of town, the zoning should be adapted to match.

The town should also consider altering the Farmland and Open Space Planned Residential Development bylaw to encourage denser development. Currently, the bylaw allows developers to build smaller lots but does not allow the number of units to exceed

the number for the conventional subdivision plan. Unfortunately, the intent of this bylaw has not been fully realized, as it has been only moderately successful in promoting dense development. Additionally, there is some concern that the overall usability of the open space in current FOSPRD developments is limited. Increasing the density allowed under the bylaw and detailing the specific type of open space desired would increase the amount of usable preserved land per subdivision while remaining profitable from a developer's standpoint.

Revision to the Town's inclusionary zoning bylaw should be considered to make the affordable housing requirement of one in every eight units more binding.

Conclusion for East Bolton Study Area

While East Bolton is not at the forefront of residents' minds when considering a village center, the area offers possibilities nonetheless. The scenarios presented here offer a variety of options for the planning board and residents to consider. These proposals are not fixed designs, rather they are intended to provide a vision to guide future planning efforts in East Bolton. The recommendations noted here have relevance for this study area and broader implications. They should be considered regardless of zoning changes or design scenarios.

7.5 Historic Bolton Village Center Vision

The Historic Bolton Village Center study area encompasses two areas that the Town asked the Team to study; the historic Town center from the Smith property at Wattaquaddock and 117 east to the Salt Box, and the area around the I-495 off-ramps further east on 117. Like the other two areas, an assessment was conducted followed by design exploration. In contrast to the other two areas, however, this his area was eventually deemed the most suitable for the development of Bolton's Village Center, and for this reason the design is further developed than those of the other two study areas. The design is organized according to sub-areas within the study area, which are labeled in Figure 7.5.1.

7.5.1 Village Center Sub-Area Designs

7.5 Bolton Village Center Vision

The approach the studio took for realizing the objective of a 'sustainable village center' recognizes the true interdependence and integration of planning and design. Built upon the notion of sustainability in context, the spatial layout and design detailing acknowledges the historic character, agricultural heritage, natural resource preservation, and progressive community spirit alive in Bolton. Our intent was to recognize these ideals, and respond by allowing design to inform innovative planning, and planning inspire innovative design. It was further our intent based on citizen input and expression, to create a unique 'rural urbanism'; one that acknowledges both the historic character and contemporary culture of Bolton. **Figure 7.5.1** illustrates the proposed development sites

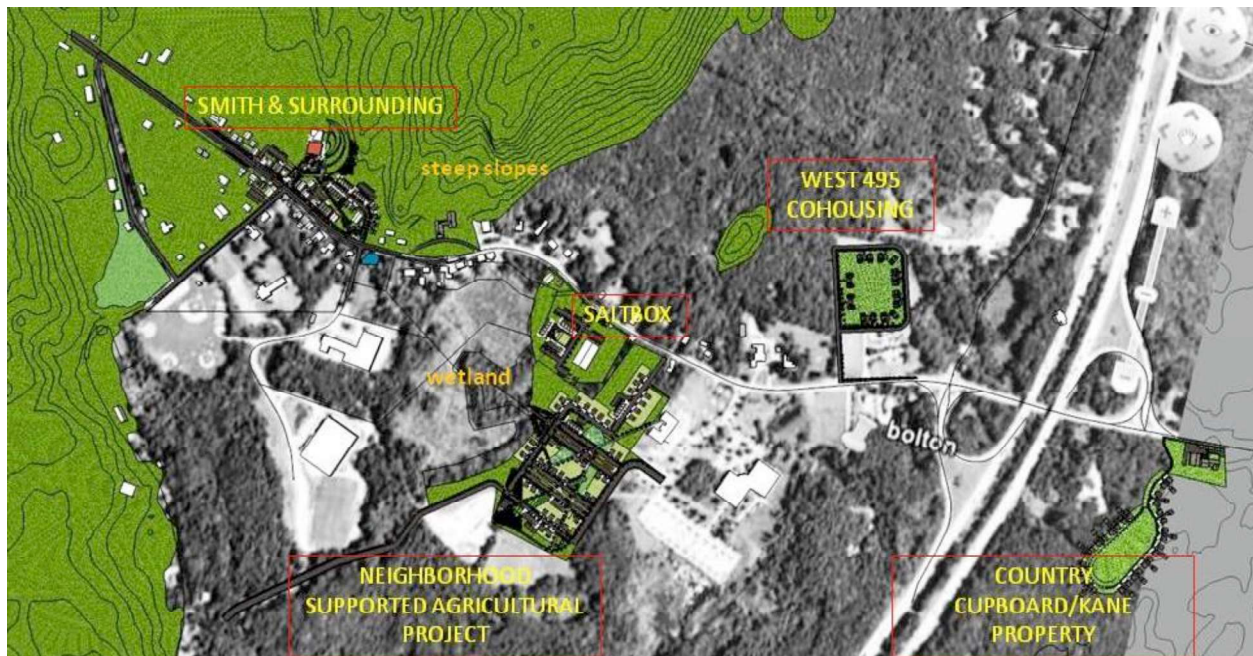


Figure 7.5.1. Proposed development sites within the village center with important constraints and opportunities

within the village center with important constraints and opportunities.

Understanding Village Center Visualizations

The visualizations are ordered from east to west and serve as a conceptual tool for informing potential design guidelines, pedestrian and vehicular networks, open space connections, and community/neighborhood integration. Important to note is the difference between existing built forms (plain white) and proposed built forms (textured). Enlarged plan views of each individual area inform the accompanying detail captures.



Figure 7.5.2. Desing for the Country Cupboard/Kane Property

Country Cupboard/Kane Property

This site is located east of the 495 interchange and is a current commercial development. Existing businesses include a Subway, small convenience store, florist and dry cleaner.

The design proposes to expand the existing market, and add an additional attached commercial building. The parking is moved to the rear as a way to create a larger vegetated buffer along Route 117, and the addition of a sidewalk enables pedestrian connections to the proposed neighborhood (Fig. 7.5.3a). A rain garden is used at the main entrance for stormwater capture off of the building (Fig. 7.5.3b).

A Traditional Neighborhood Development (TND) with large open space serving both passive

and active recreation. Strong tree line encourages a walkable neighborhood. Shared driveways enable reduced impervious surface, and responsible stormwater management. The housing density allows for potential 40R funding which would help assist the Town in achieving the state mandate of 10% affordable housing. Although disconnected from the village center by Rte. 495, it was included in the overlay district based on existing land use (business), and future commercial and residential potential. The Town could consider locating the road at the rear of the homes to better connect the shared open space with the residents of the neighborhood.



Figure 7.5.3. a) The Country Cupboard gets sidewalks and bioswales for stormwater infiltration. b) A rain garden helps mitigate stormwater from paved surfaces.



Figure 7.5.4. Street-level view of the proposed Country Cupboard/Kane Property residential area.



Figure 7.5.5. Bird's eye view of the proposed Country Cupboard/Kane Property residential area looking northwest.

Cohousing Neighborhood West of 495

This site is located just west of 495 adjacent to existing mixed commercial development. The design maintains current business and proposes residential infill with a large shared open space. Shared driveways reduce impervious surface. Bioswales are located along the main access road for point-source stormwater management. To the north, a

connection to a larger trail system would enable pedestrian access to the village center core off of busy Route 117. A strong pedestrian connection following the route of the old town road would also be established to the proposed Saltbox residential area to the southeast.



Figure 7.5.6. Plan view of the cohousing neighborhood west of 495, on the north side of 117.



Figure 7.5.7. Street-level view of the cohousing neighborhood west of 495.

Saltbox Residential Development

This site is located at the existing commercial venue known as the Saltbox. It currently includes a pizza place, hairdresser, massage therapist, and other mixed retail.

This design strives to create a mixed-use center by adding commercial infill on Route 117 (with green roof) and condo/townhouse units in the rear. These units have direct access to the proposed wetland boardwalk and sidewalks with a generous tree buffer along Route 117. The unit density satisfies requirements for 40R approval.

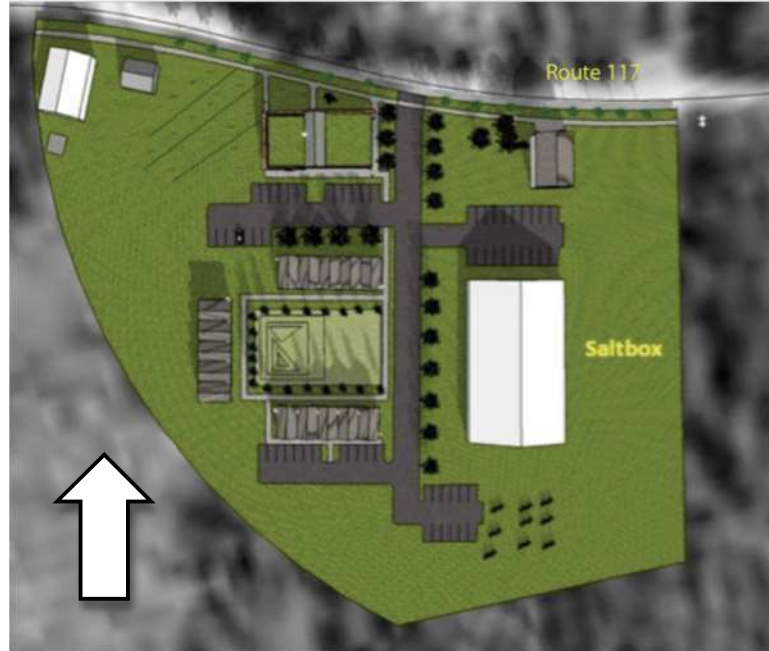


Figure 7.5.8. Plan view of proposed residential and mixed-use development near the Saltbox.



Figure 7.5.9. Bird's eye view of the proposed Saltbox residential and mixed-use development near the Saltbox. View from Rte. 117 looking southeast.



Figure 7.5.10. Graduated mowing pattern adds aesthetic interest and habitat.

The residential shared common with landform/meadow is mowed in complementary forms to exaggerate topography and also enables increased predator populations, supplying biological control for proposed adjacent agricultural/residential land use. This simple yet elegant form of space definition, pest control, and human connection, minimizes maintenance costs and maximizes an aesthetic of sustainability.

Neighborhood Supported Agricultural Project

This proposed residential development is on the former site of the original town agricultural fair. The design seeks a fusion of agricultural and residential land. Intersecting geomorphic bands of food production unify people within the larger neighborhood and create a unique and innovative place to live. Parcels would contain land in a farm trust that would shrink individual parcel size, lowering the parcel's property tax while still maintaining a production based open space system that could rotate biennially.



Figure 7.5.11. Plan view of neighborhood-supported agriculture housing.



Figure 7.5.12. View of neighborhood-supported agriculture housing looking northwest.

The biennial rotation would create a dynamic annual flux of land activity (active/passive recreation and food production), and simultaneously provide sustainable agriculture strategies by maintaining soil health. Land could either be leased or offered to local farmers or staffed via either buy-in funds (as is typical with Community Supported Agriculture programs), or a neighborhood association fee framework. Bolton could also adopt a local procurement procedure for eateries within the village center.



Figure 7.5.13. View of neighborhood-supported agriculture housing looking northeast. Growing a variety of crops and rotating them builds soil health, increases biodiversity and resilience to pests as well as market fluctuations.



Figure 7.5.14. Diversity in housing types allows people of different generations, different cultures and lifestyles to live side-by-side and learn from one another. Integrating food crops with housing takes the local food movement a step further and provides educational opportunities.

Strong pedestrian connections and a mix of housing types are proposed. In combination, these two elements help foster a close-knit and diverse community. Corridors (pedestrian and vehicular) would offer an interesting textural experience when passing through; the edges would be rhythmic, variable, and evolving.



Figure 7.5.16. Diagonal pathways connect people to agriculture and their neighbors.



Figure 7.5.15. Corridors prioritize pedestrian connections.

Powerful central corridor separating streets with on-street parking define the gateway to the wetland boardwalk, connecting the neighborhood-supported agriculture housing with the village center core, schools, and public spaces.

Multiple axes from the park radiate out and connect wetlands to agriculture and residences. All streets manage stormwater onsite with the use of bioswales. Shared parking and on-street parking reduce impervious surfaces.

The wetland gateway park would serve as an environmental education tool for adjacent elementary and middle school students (as well as the greater community). The park design speaks to the dynamic topography and natural features of the Bolton village center. These are hills (with one of the highest in the region), and abundant wetlands. It



Figure 7.5.17. A wetland park provides an educational opportunity as well as a gateway to the larger system of wetland boardwalks and walking paths that connect to the schools.

would serve as a dominant, interactive space connecting the village core with the neighborhood-supported agriculture housing.

Smith Property and Surrounding

The Smith property is located opposite of the Wattaquadock Road/Route 117 intersection. It has been recognized by both the planning board and citizens as an appropriate and promising development site.



Figure 7.5.18. Existing conditions at Wattaquadock Road and Rte. 117 near the Smith property.



Figure 7.5.19. Proposed design at Wattaquadock and Rte. 117 near the Smith property. Note that existing buildings are in white.



Figure 7.5.20. View looking east up Route 117. Designated parallel parking has been added as well as bioswales for stormwater infiltration, street trees, and sidewalks.



Figure 7.5.21. View looking west up Route 117 from the intersection at Mechanic Street. New housing opportunities have been created on a new side street. A pedestrian walkway connects the housing with the community center.

A dominant gateway into the core from the schools, outlying residential development, and the neighborhood-supported agriculture housing is proposed across from Mechanic Street. The path pays tribute in form to the existing stream that once traveled through. Residential infill behind commercial edge is within close proximity to all core amenities, and a mix of housing types is available.

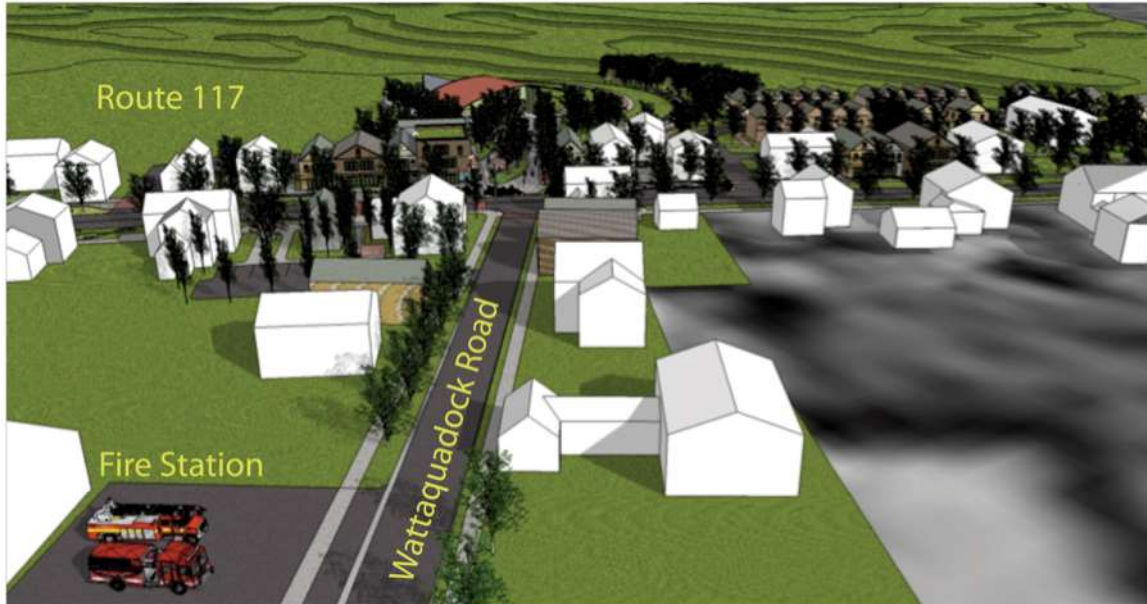


Figure 7.5.22. View looking north up Wattaquaddock Road from the fire station to the proposed community space in the distance.



Figure 7.5.23. View looking north up Wattaquaddock Road to proposed community space.



Figure 7.5.24. The green space corridor to the community center flanked by mixed use development including a coffee shop on the left. Note the improved crosswalks and signalized intersection at Wattaquodock Road and Route 117.

A coffee shop on the corner anchors the many gathering areas along the main corridors to the community center and outdoor performance venue. The decorative lighting and clock enhance the public experience.



Figure 7.5.25. The downtown gateway to the community center and gathering space.

The community center serves as a year-round active and passive recreation venue and outdoor performance area nestled into the existing hillside. Its structure is unique in that it has external louvers that rotate to accommodate art, enhance the corridor experience when traveling through, and allow the opportunity for a walk-in movie during the summer months.



Figure 7.5.26. Community center and amphitheater.

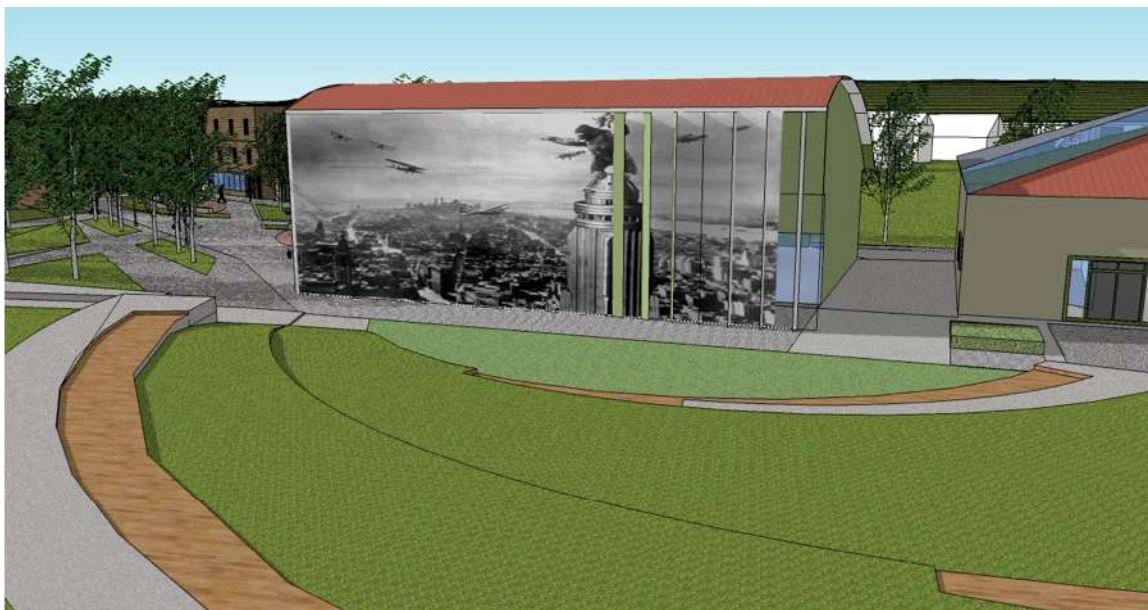


Figure 7.5.27. The exterior wall of the community center could be used to show walk-in movies in the summer.



Figure 7.5.28. View of proposed streetscape and public gathering spaces looking east from current Smith property



Figure 7.5.29. The streetscape shows on-street parking, generous sidewalks and amenities, appropriate architecture, and bioswales.

Final Statement

Bolton has marvelous potential to change constraints into opportunities, ethics into action, and ideals into icons. Beyond the development benefits of a village center overlay, Bolton could exemplify the progressive rural New England community through innovative design, inventive planning, and the synthesis of both.

8. POLICY RECOMMENDATIONS

8.1 Village Center Task Force

The aim of this village center study is to present a variety of design and policy options to the Town of Bolton. This report provides a depth of information with which to move forward. The immediate next step is to clarify and establish a group of individuals who will oversee the continued planning and begin implementing the recommendations presented here. This task force may include members of the planning board, representatives from other town committees, invested residents or a combination. The committee's role is to review this report's recommendations, prioritize the implementation steps, establish individuals or entities to pursue each strategy, continue dialogue with the public, and generally oversee the creation of a village center. This new committee or task force is critical for the project to progress.

8.2 Economic Recommendations

Promoting an Economic Development Plan

A major recommendation within this report is that the Town of Bolton form an Economic Development Commission to address the economic issues within the community. For the Town to achieve economic viability, it is necessary that the Town assess its current market and devise a strategic economic plan. Based on public feedback, it was clear that residents supported a Village Center and that they would also like to see more services and businesses in Bolton. With the onset of growth, the Town can achieve healthy economic growth if it develops a plan in which to manage it. We recommend these first steps toward achieving economic viability:

- Craft an Economic Development Plan – set goals and objectives and assess the current businesses within Bolton.
- Create a Local Economic Development Council – By appointing key individuals and stakeholders into this committee in order to fully represent the business needs of the community (i.e. Realtors, accountants, stock brokers, business owners, attorneys, and community residents).
- Expand and Develop Infrastructure – This will help support local businesses in town and future development.
- Pursue Federal and State grant and funding opportunities – The Federal and State governments offer tax incentives and funding opportunities to communities who try to promote smart growth through economic development plans.

However, the Town of Bolton has some limitations it must first overcome. The town lacks the proper infrastructure to promote economic viability. The issues of water and sewer along with traffic issues and parking along Route 117 make it hard for businesses to come to Bolton. More importantly, the current Zoning in the Town restricts business development. Front yard setbacks of 150' and side yard setbacks of 50' coupled with the lack of land zoned business makes it very hard for businesses to come and thrive in Bolton.

Bolton also has the potential to effectively promote manageable business growth within the Town. One of Bolton's major assets in terms of economics is Interstate 495. The Interstate highway cuts through the Town of Bolton bringing many travelers into the community on a daily basis. Rte. 117 is also a major artery road that is consistently traveled by those from within town and nearby towns in order to connect to Interstate 495. Most importantly, based on the public participation efforts described in this report, there is strong support and need for a comprehensive planning effort to guide the future economic growth of Bolton.

Below are some economic objective examples that the Town may consider when developing its Economic Plan:

- Promote a positive corporate identity that positions the Town as a business-friendly community with a superior quality of life
- Create employment opportunities suited to the local labor force
- Expand and diversify the tax base
- Support small business development, expansion and retention
- Attract new investment that meets social, environmental, and economic objectives

To promote economic development, there are state incentives and local incentives that the Town can initiate in order to continue successful economic growth. The State offers the Economic Development Incentive Program (EDIP) which involves a three step process to gain funding at the state level for economic projects. At the local level the Town can initiate incentives such as:

- ▶ **Tax Increment Financing (TIF) Agreements** – A 5- to 20-year property tax exemption based on the increased value of the certified project property due to new construction or significant improvements. Tied to geographically-constrained target areas that are difficult or impossible to configure in a way that extends benefits to farm businesses without diluting the effectiveness of other non-farm business support.
- ▶ **Transfer of Development Rights** – Can provide both flexibility and additional development density in Business districts in exchange for additional resources needed to preserve prime agricultural lands in the Town.
- ▶ **Synchronize town goals with MA smart growth criteria**

For an example of a town that incorporated many of these initiatives into a comprehensive economic plan, please visit the Town of Hatfield Massachusetts website:

<http://www.townofhatfield.org/Economic%20Development/EconoDevelopmentPlan.pdf>

Streamlined Permitting

Developers and business owners appreciate certainty and transparency in the permitting process. As zoning and permitting processes change from town to town in Massachusetts, business owners pursue opportunities that are clear and understandable when looking to

locate their business. Streamlined permitting offers towns the opportunity to revise their permitting process to a simplified method that will encourage business development.

Chapter 43D is the Massachusetts regulation authorizing streamlined permitting. To take advantage of this opportunity, a town identifies appropriate commercial, industrial, or mixed-use properties. They must also get agreement from the landowners of these properties to place them under the streamlined permitting process. Properties that meet the criteria are then approved by the state and marketed by the state as streamlined permitting properties. The town must review its permitting process and revise it to ensure permitting will be completed in a straightforward manner within 180 days. The regional planning agency offers technical assistance to assist towns through this process. It is important to note that streamlined permitting does not mean compromising on environmental protection or other standards that are important to the Town. The town is eligible for technical assistance grants from the state to assist with the process in exchange for establishing sites under streamlined permitting designation.

8.3 Transportation Recommendations

Like many small towns, Bolton's transportation system has evolved towards an automobile-focused network of roads. Due the automobile-focused nature of Bolton's transportation system, commuters of the region find it convenient to travel through the Town and make use of its interchange at 495. As they travel through, roadways deteriorate, accidents occur, and on-street parking is inhibited. Along route 117, high speed limits and the lack of crosswalks, bike lanes, sidewalks, and parking have only exacerbated issues. The following are recommendations on how Bolton can sustainably change its transportation focus from an automobile roadway network to a shared roadway network that is safe, reliable, and conducive to the vision supported by the Town.

Vehicular Transportation - Park-and-Ride

Park-and-ride lots play a key role in providing commuters with an opportunity to carpool or take public transportation for at least a portion of their commute. Park-and-ride lots are especially appealing to commuters in suburban locations, which often have residential neighborhoods that are too far from stations for walking. Park-and-ride lots are maintained by agencies such as, MassHighway, Massachusetts Port Authority, and the Massachusetts Turnpike Authority. Many of these lots are used for ridesharing, and some are served by intercity or commuter bus.

Massachusetts provides information about the Park and Ride lots, such as location, lot operator, lot owner, lot capacity, lot status, type of transportation service available, and details such as presence of phones, lights, and bike racks. Many of these lots are conveniently located along major highways and all-day parking is often free. Many suburban MBTA rapid transit and commuter rail stations offer inexpensive parking facilities. We recommend that Bolton contact Mass Rides and the property owner to initiate a feasibility study for park-and-ride on the large, underutilized lot behind the office park (see "Park and Ride Lot Map") just west of 495. If the Town were able to

integrate its surplus of parking into the MHD/MTA/MBTA network there could be significant decreases in congestion and commuter travel on 117.

Vehicular Transportation - Jitney

Jitney services are advised to be used in conjunction with park-and-ride locations to implement trip capturing. A 'jitney' is a door-to-door, flexible route microbus service that runs on a semi-fixed route and is available on demand, similar to a taxi. We recommend the development of jitney service in conjunction with park-and-ride locations to implement trip capturing. Jitney services can increase ridership at existing transit-and paratransit-ridesharing systems and improve feeder services to and from fixed-route, fixed-schedule bus and rail lines. Jitney services can reduce demand for limited park-and-ride lot spaces while reducing the overall carbon footprint of Bolton residents and the commuters who pass through. In addition, jitney services enable more households to get rid of their second or third cars (including vans, pickups and SUVs) or to earn extra income.

Vehicular Transportation - Car Sharing

Car sharing can be an incredibly easy way of reducing the amount of traffic congestion and parking needs. In the northeast one of the most popular car sharing companies is Zipcar. The use of the cars is very simple. Any person who would like to make use of a Zipcar would create an account on the Zipcar website and reserve a date and time slot when they would like to make use of the specific car. When the time comes, the user walks up to the reserved car and holds a card up to the car, it unlocks, and the keys are waiting inside. In many neighborhoods, Zipcars are as ubiquitous as ATMs. Business and personal drivers alike enjoy the freedom and cost savings a Zipcar brings to their life. The company claims that over 40% of their customers have either sold their car or have stopped their purchasing decision (www.zipcar.com). Placing these Zipcars within a transit-oriented development can seriously decrease the need for parking while lowering emission of greenhouse gasses. The users do not even need to pay for gas or maintenance. The vehicles are more convenient than a regular rental car and can be used for everyday uses like picking up groceries or driving to a sports game. Locating a car sharing within a Bolton plan doesn't necessarily mean that it will be utilized by the residents or users of the Town. It's advised that in conjunction with the proposed park-and-ride lot, the Town look into including a Zipcar space.

Vehicular Transportation - Shared Parking

Shared parking typically refers to when two public and/or privately owned properties share parking without conflict. Combining land uses with different peak parking demands results in a demand for parking that is less than the demand generated by separate free-standing developments of similar size and character, allowing more land to be used for other purposes. For example, an office building with high daytime demand could share parking with a cinema complex with higher evening demand. Shared parking conserves land and thereby promotes more compact, pedestrian-friendly development. The feasibility depends on the particular land uses' interaction.

It's advised that whenever the Town of Bolton is planning to put in a new parking development options of shared parking are investigated. In addition, parking ratio requirements need to be revised as to their applicability as Bolton continues to grow and become more dense.

Vehicular Transportation - Vanpooling

Vanpooling is a viable option at the proposed park-and-ride lot and also in the middle of town. Every vanpool has a unique route and schedule based on the needs of its members. In most cases, vanpoolers meet their rides at a common space and are driven to their worksites. At the end of the workday, vanpoolers are picked up near their worksite and are driven back to their park-and-ride lot or other meeting point. Vanpoolers share vehicle and gas costs, as well as tolls and parking. Based on figures provided by the American Automobile Association, driving alone to work 50 miles each way can cost approximately \$9,000 a year. The same commute in a 14-passenger vanpool can cost as little as \$1,650 annually.

Vanpools traveling to Boston can use Vanpool boarding zones designated by the Boston Transportation Department, along major commuting routes throughout the city. MassRIDES can assist the Town in obtaining a Vanpool Zone permit for the vanpool. Mass Rides does a great job organizing the vanpools. They form a vanpool by locating and bringing together 7 - 15 people to share the ride and commuting costs to and from work, map locations, identify meeting places for morning and afternoon pick-ups, and even assist with finding back-up drivers. Once the vanpool is on the road, MassRIDES' marketing and outreach for worksites helps to develop lists of potential new riders. It's advised that the Town of Bolton petition to have a vanpooling service in conjunction with MassRIDES.

Vehicular Transportation - Carpooling

Carpooling can be as simple as two co-workers or even a husband or wife sharing the ride to work. According to the AAA, commuters driving alone 25 miles to work spend about \$5,800 per year including gas, maintenance, taxes, depreciation and finance costs. The same commuter saves 50% by carpooling with one other person. It's advised that commuters within Bolton sign up for a commuter profile on www.MassRides.com and explore the feasibility of carpooling. It can lower the carbon footprint, save money, decrease congestion, and actually decrease commute times as the cars can travel in less congested HOV lanes.

Bicycle & Pedestrian Transportation

Providing travel choice gives people both independence and control over their lives. The ability to choose among different modes allows people to better provide for their own transportation needs. This is especially important for those who do not drive, such as seniors, children, the disabled and low-income citizens. Providing bicycle and pedestrian transportation options not only contributes to livability, but these modes are also fundamentally more sustainable than travel by private auto. Biking and walking have minimal environmental impact, allow residents to incorporate at least a small amount of exercise into their daily lives and can provide vital connections to public transit.

Pedestrian- and bike-friendly streets support public social contact and help to strengthen a sense of community (Portland METRO, Livable Streets, 2002).

In the last two decades, state and federal transportation agencies, as well as visionary local agencies, have come to recognize the need to better accommodate multiple modes on public right-of-ways. A recent US DOT policy statement recommends that, “bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist” (US DOT, 2008). As language in federal and state policy regarding bicycle and pedestrian facilities demonstrates, it is becoming easier to fund bicycle and pedestrian infrastructure, especially as part of other road improvements or maintenance.

Strengthening bicycle and pedestrian connections in town is essential to the success of a village center district in Bolton. Increasing development density shortens trips and makes biking and walking more feasible. Likewise, this increase in density is made far more economically feasible when people have a greater variety of ways to access businesses. Bolton also has unique and exciting opportunities for regional bicycle routes, some of which are referenced in the Massachusetts Bicycle Transportation Plan, released October 2008. Providing for transportation choice may even help to bolster Bolton’s potential to

become a local weekend recreation destination.

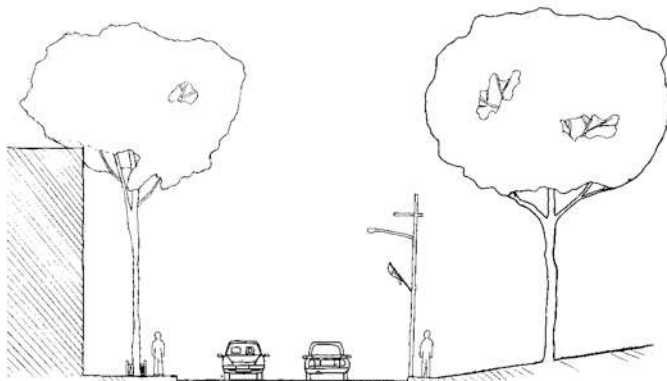


Figure 8.3.1. Existing streetscape conditions on 117 near the Town Hall.

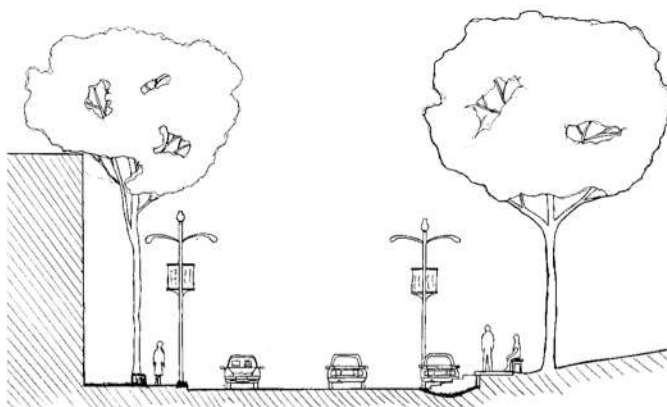


Figure 8.3.2. Proposed streetscape improvements on 117 near the Town Hall.

Sidewalks and Pedestrian Crossings

Sidewalks are essential to the viability of the village center district and Bolton’s pedestrian network will need to be strengthened to support livability in the village center. New pedestrian walkways need to be of an adequate width to comfortably accommodate enough pedestrian traffic to support the businesses that line them as well as accommodating amenities such as benches, bicycle racks, and outdoor dining. New walkways should also be designed to accommodate handicapped access and meet ADA requirements. Sidewalks that directly abut building façades invite passersby to take a closer look at business offerings.

Pedestrian walkways need to be buffered from high-speed, high-volume traffic (such as exists on Route 117) to improve the sense of safety for users. Parallel parking, planting strips and bicycle lanes all help to provide a buffer between pedestrians and vehicular traffic. For excellent examples of streetscape cross-sections that integrate the needs of pedestrian, bicycle and motorized travel, please see two publications by Portland METRO, “Creating Livable Streets” and “Green Streets”. Figures 8.3.1 and 8.3.2 show before and after such streetscape improvements on Route 117 near the Town Hall.

Crossings in the village center should be designed with a contrasting paving pattern at a minimum, but ideally would be slightly raised to further calm traffic in the village center and increase pedestrian safety. Curb extensions (often referred to as sidewalk “bump-outs”) should be added at crossings to improve pedestrian visibility to drivers and calm traffic by slightly narrowing the road. In most cases, this curb extension eliminates what would otherwise have been a single parallel parking space.

The intersection of Wattaquadock and 117 is at the heart of the village center and as such should be given special consideration for pedestrian needs. Our design proposes the installation of a traffic light at this intersection, which should be installed in combination with a pedestrian signal. A contrasting paving pattern would be appropriate for crosswalks here, but a raised crosswalk would be unnecessary as the traffic light already slows traffic and provides visual cues to drivers.

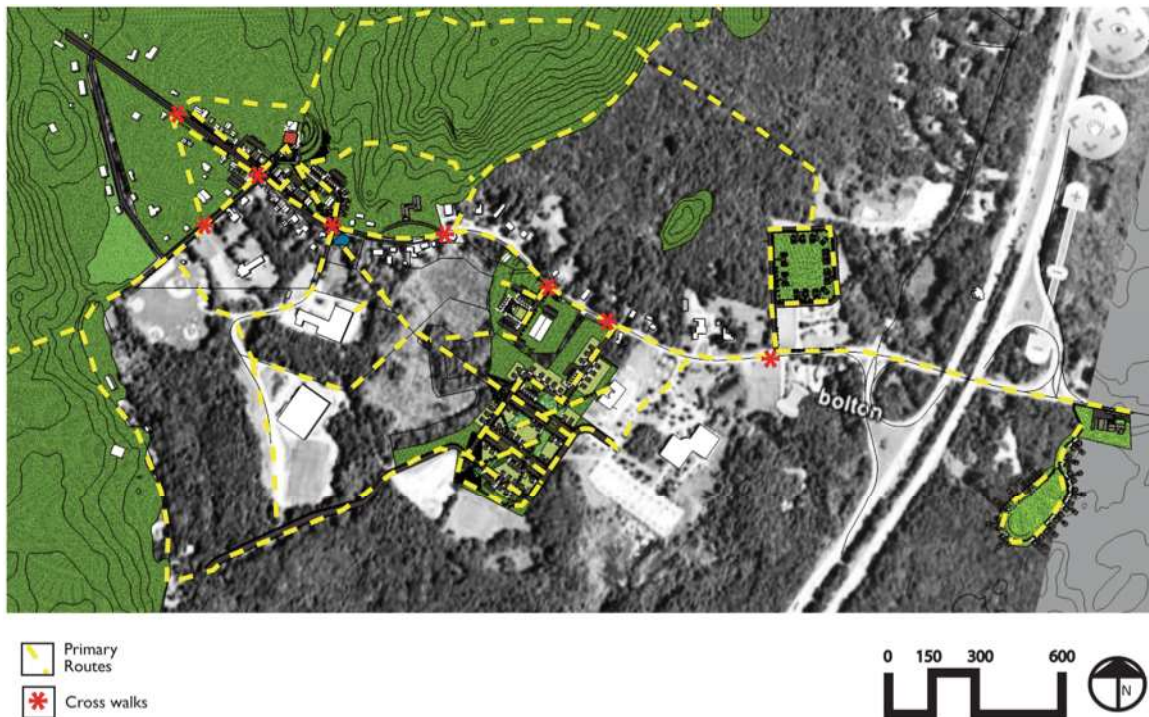


Figure 8.3.3. Recommended pedestrian network for Village Center. Also see Appendix 8 for a larger version.

Another critical intersection is at 117 & Mechanic Street. This intersection should be the first candidate for a raised crosswalk, as it is not signalized, marks the eastern boundary of the village center, and provides an important connection between mixed use and primarily residential neighborhoods. A third crosswalk is proposed approximately halfway between Mechanic Street & Wattaquaddock on 117. This crossing is also a good candidate for a raised crosswalk, as it is not signalized and there is no cross street to provide a visual cue for drivers. At a minimum, curb extensions and contrasting paving should be employed at these two crossings (see Figure 8.3.3 or the map entitled Pedestrian Circulation in Appendix 8 for sidewalk and crossing locations).

Trails

Within the village center, we propose to formalize existing trails and add new ones that will function not only for recreation, but also as alternative transportation routes to the village center (see Figure 8.3.3 or map “Pedestrian Circulation”). These trails will be open to pedestrians and, in some places, bicycles. The trails pass over wetland areas where they can serve an educational function near the schools. These trails offer transportation connections in environmentally sensitive areas where roads cannot be built.

The Mass Central Rail Trail is a multi-use trail that will span the Commonwealth from east to west and is currently under development. It crosses over the border into Bolton for several hundred yards. Making an on-road connection to this trail for bicycle use could be relatively simple, but currently there are no plans for trails in Bolton that might overlap the Mass Central Rail Trail alignment. The Hudson & Lancaster rail bed intersects the Mass Central alignment in the neighboring town of Hudson, so Bolton might consider collaborating with Hudson to make this connection if the Hudson & Lancaster rail bed were to be converted to trail use. The Hudson & Lancaster rail bed also intersects portions of the planned Bolton Loop Trail twice - once near the border of the Town of Hudson and Hudson Road/Route 85, and again near Wilder Road and the golf course. If Bolton chose to develop the rail bed as a trail, these connections should be made a priority.

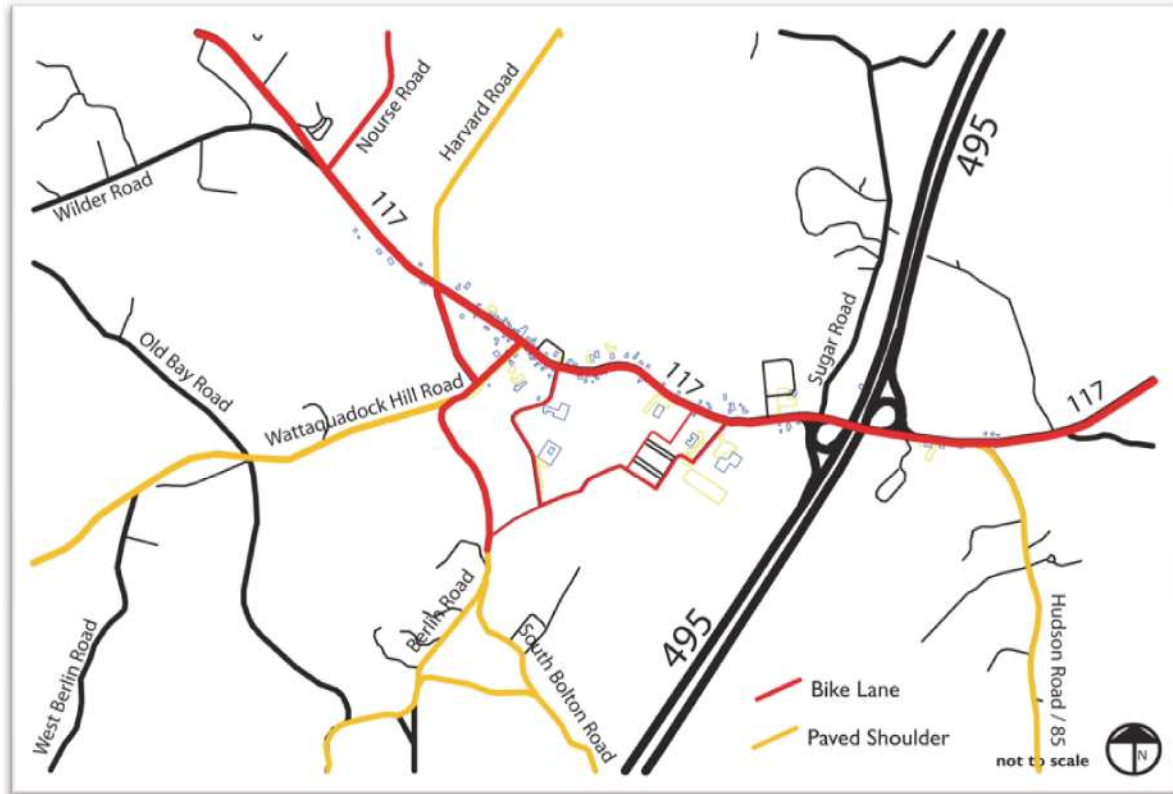


Figure 8.3.4. Recommended bicycle infrastructure for the Village Center.

Local Bicycle Network & Facilities

Bike lanes are recommended for most streets within the village center, excepting cul-de-sacs and streets with speed limits of 25 mph or less, rural roads with low traffic volumes and rural roads where a paved shoulder should suffice (see Figure 8.3.4). The standard bike lane width is usually between five and six feet, depending on the traffic volume and speed.

Regional Bicycle Routes

The Bay State Greenway and the Mass Central Rail Trail come within under five miles of one another in Bolton with the proposed village center district between the two. We recommend that Bolton 1) support the development of these two routes, and 2) develop a connection between these two routes that passes through the village center (see Figure 8.3.5), preferably on existing roads. The Hudson & Lancaster rail bed also provides an opportunity for connecting these routes with a rail trail and passes near the village center. Developing an on-road connection is likely to be a simpler process than developing the rail corridor into a trail as ownership of former rail beds is often highly fragmented. In addition, an on-road connection takes advantage of already existing infrastructure that is already connected to destinations. This is a great opportunity for recreation and small-scale tourism within Bolton which could also help to form an important part of the bicycle network in the village center district.

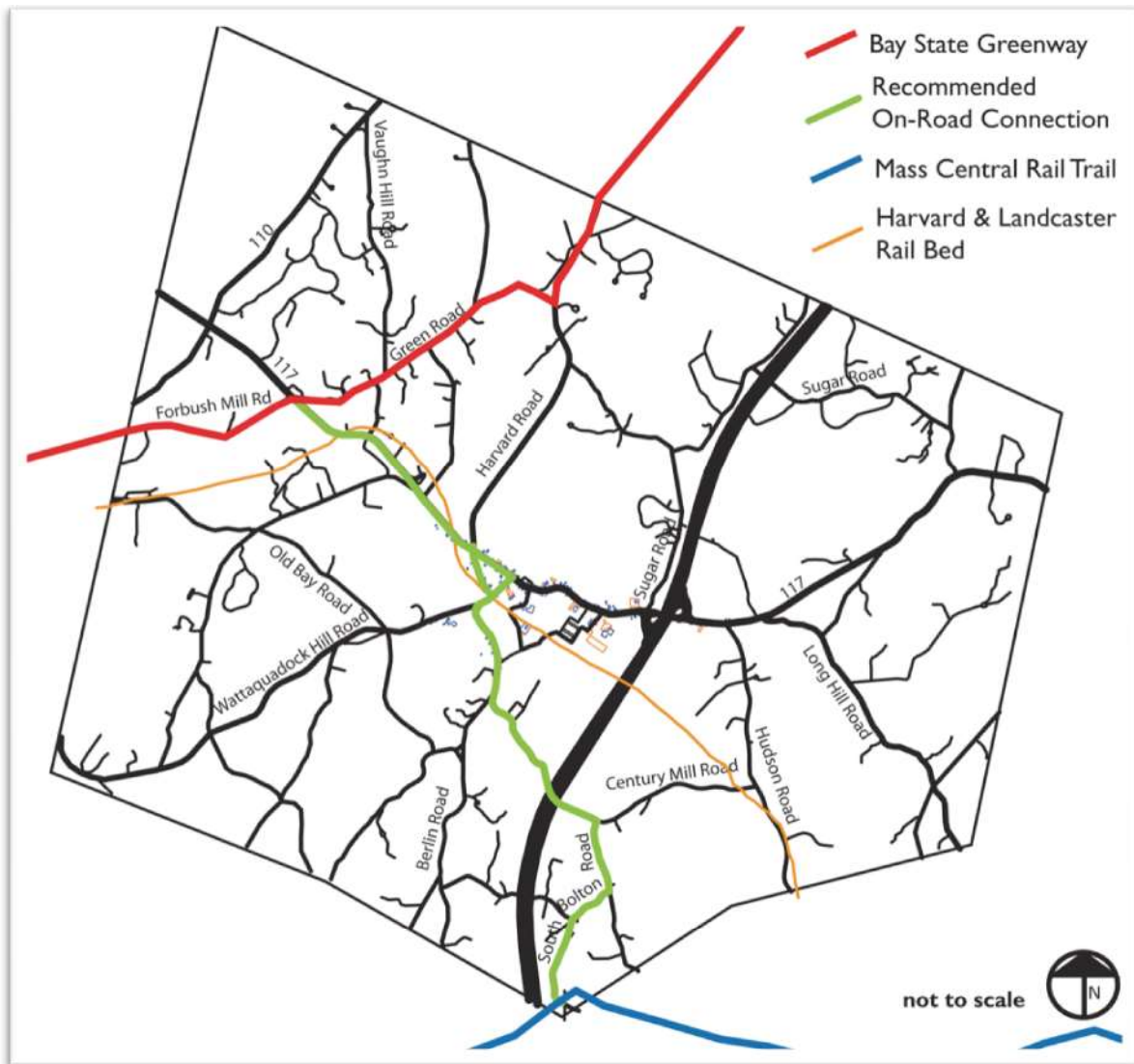


Figure 8.3.5. Opportunities for regional trail connections.

8.4 Infrastructure

Increase development of the existing Capital Improvements Plan (CIP)

The Capital Planning Committee is a key advisory entity for any potential new road, stormwater management, sewer, and drinking water infrastructure. The Capital Planning Committee was formed in 2006 by the Town's Board of Selectmen. It is charged with examining and analyzing short and long range capital purchases. The Committee conducts due diligence reviews of projects over \$25,000 with a useful life of at least 5 years. It reviews plans and expenditures for fire trucks, future municipal building, infrastructure and departmental capital needs. After its analysis, the committee produces a set of priorities and recommendations with special emphasis on any tax implications, which are then presented to the Selectmen, the Advisory Committee and at Town Meetings. The Committee is made up of 5 members and its advice to town employees is invaluable to Bolton's future development.

A CIP coordinates community planning, financial capacity and physical development of the municipality (MDM). The goal of a CIP is to insure sound accounting, fiscal and capital improvements planning. And an effective CIP requires leadership, communication and cooperation of all municipal departments. There are two parts to a Capital Improvements Plan:

- 1). A capital budget, which is a spending plan for the upcoming year's capital items. In Bolton, those are projects over \$25,000 and have a useful life of at least 5 years.
- 2) A capital program, which is a plan for capital expenditures that extends 5 years beyond the capital budget.

While there are many steps to managing a comprehensive CIP, the Town could improve their process with the following initiatives.

- Publish online a strong and clear CIP. Currently, Bolton has a brief introduction to the CIP Committee. This is a good start, however the purpose, process and analysis of the Committee's actions is not clearly explained. Further, the CIP should identify direct benefits for the residents it serves. This should include an annual schedule of the Committee's decisions and review process. For models, Bolton can refer to many towns of similar size in the 495 corridor whose CIP outlines and goals are published on their websites.
- Publish online an inventory of existing facilities in Bolton. This will inform the public of the financial issues related to managing a new Village Center plan.

All town and school properties, including assets and debt, equipment and infrastructure. This inventory should include the year and costs of the facility went online; dates of last improvement and current condition, extent of its use and schedules for improvements. The inventory should also document the need for repair, replacement, expansion or retirement of the facilities. The database can be a simple spreadsheet that is centralized and updatable.

- Publish online Bolton's financial capacity.

This process will take coordination and cooperation with all of the Town's various financial administrators (accountant, treasurer etc.).

The CIP will yearly publish an analysis of the Town's capacity to finance new projects. The intent of this analysis is to help keep tax rates stable; balance debt and operating expenditures; determine debt capacity; and maximize intergovernmental aid for projects.

These steps should serve as a communication tool for the residents of Bolton. It's been shown that the open governments, no matter how difficult to administer, empower its citizens to make better choices, builds trusting bonds between residents and government, and ultimately garners needed public support for projects, such as a Village Center, that impact all residents in a municipality (MDM).

8.5 Zoning

Recommendations: Zoning for the Proposed Village Center

Currently, Bolton's existing Zoning Ordinance does not allow for the creation of a sustainable, mixed-use village center. Large setback, minimum lot size, and road frontage requirements foster sprawling, low density, suburban development that discourage walkability and detract from sense of place. With the majority of the Town zoned for residential use it is currently impossible to introduce mixed use development of commercial, residential, and office uses in one building and/or district. The community is also lacking design guidelines or equivalent standards to regulate the form and character of the streetscape as well as the overall aesthetic of Bolton's historic New England village center.

The design that the studio team has proposed for Bolton's Village Center highlights three distinct sub districts within the center (mixed use Village Center, high density residential, and neighborhood supported agriculture). Each of these areas reflects different characteristics and combinations of use. This variation presents a challenge for creating a regulatory strategy that supports the vision reflected in the design and the community's vision and goals. Whatever regulatory strategy Bolton chooses to adopt to foster the growth of a Village Center should encompass the following objectives:

- Provide a diverse mix of housing, office, retail, service, and civic uses in the same building or general area
- Exhibit the design features of traditional villages and small towns in New England.
- Blend well with the landscape and help preserve sensitive environmental features.
- Provide the opportunity for people to work shop and utilize services in the vicinity of their residences.
- Preserve and restore the overall character of the Village Center.
- Encourage the growth of the local economy and jobs.
- Encourage the development of open spaces and parks within the Village Center.
- Promote denser, more compact and pedestrian friendly development.

Although many of these objectives can be achieved through the adoption of design guidelines, which are described in the next section of this report, it is still necessary to re-examine and/or modify existing zoning and subdivision regulations to regulate support for the objectives. It is important to note that some regulatory strategies, like form based code, incorporate design guidelines into their structure.

The sub districts designed within the Village Center plan are described in more detail below. Uses within these areas range from high density, mixed use development to medium density residential development neighboring commercial and office spaces. The plan supports a decrease in dimensional requirements like road frontage, minimum lot size, and setbacks for all the sub districts.

If a new regulatory strategy is not introduced, it would be nearly impossible to implement the design concepts characterizing these sub districts. The following sections describe changes to the existing zoning that should be considered before developing each of these areas.

Mixed Use Village Center- The existing Smith property serves as the main site for the mixed use Village Center sub district within the proposed plans. Currently, this area is zoned for residential uses only and business or commercial activities are prohibited. The design for this site promotes compact development that contains mixed uses of commercial, office, and residential in one building. There are plazas, a community gathering space, and other civic uses bordering existing and proposed buildings. Sidewalks run the length of the road and crosswalks are placed in appropriate locations. Green infrastructure is also incorporated into the design in the form of vegetated filter strips and bioswales bordering the street and sidewalks. For Bolton to be able to introduce the elements proposed for this site in the Village Center the following modifications should occur to current zoning:

Permitted Uses:

- Allow acceptable office and commercial uses within this area
- Two family, multifamily, cluster, elderly, live/work, and home occupation should be allowed by right.

Dimensional Requirements:

- Reduce existing front yard setbacks of 50' to no greater than 20'
- New development should be built to the front line of existing buildings, squares, courtyards, or parks.
- Stoops and open porches can encroach into front setbacks.
- Side yard setbacks should be modified from 20' to no greater than 20'
- Minimum lot size should be reduced from 80,000 square feet to 1/8 acre.
- Building entrances for small businesses and office establishments should generally open to the front sidewalk.
- Civic buildings should be located adjacent to parks, greens, or squares.
- Building heights should be no greater than 2 stories high.

Sidewalks & Parking:

- All lots should have an uninterrupted sidewalk 5' wide the entire width of the lot.
- All streets must include an active pedestrian way (land area developed for immediate use by pedestrians)
- Parking should be located behind structures

Signage:

-Signage should continue to be regulated in the Town but design guidelines for signs (detailed in the design guidelines section) should be strongly encouraged and utilized.

High Density Residential Development – The Kane property located behind the Country Cupboard and the site located to the West of 495 North of route 117 are areas that have been redesigned to support high density residential houses in the style of traditional neighborhood development. The fronts of these residences border an open green space to be used as a shared commons. Both of these properties are currently adjacent to office and commercial space and are located in the business and limited business district. To facilitate the development of these areas the zoning would need to be changed according to the following modifications:

Permitted Uses:

- Allow single family, live/work space, townhouses, two family, multifamily, cluster, elderly, and home occupation by right.

Dimensional Requirements:

- Reduce existing front yard setbacks of 50' to no greater than 20'
- New development should be built to the front line of existing buildings, squares, courtyards, or parks.
- Stoops and open porches can encroach into front setbacks.
- Side yard setbacks should be modified from 20' to no greater than 20'
- Minimum lot size should be reduced from 1.5 acres to 1/4 acre.
- Residential entrances should generally open to the front sidewalk facing the open green.
- Building heights should be no greater than 2 stories high.

Sidewalks & Parking:

- All lots should have an uninterrupted sidewalk 5' wide the entire width of the lot.
- All streets must include an active pedestrian way (land area developed for immediate use by pedestrians).
- Parking should be located behind structures.

Signage:

-Signage should continue to be regulated in the Town but design guidelines for signs (detailed in the design guidelines section) should be strongly encouraged and utilized.

Neighborhood Supported Agriculture - This sub district is located largely on town owned land south of 117 adjacent to Bolton's senior housing. Within this area residents

would grant a portion of their land to a cooperative for the production of a crop. Each parcel would grow a different crop and as a community would contribute to diversifying Bolton's food base and invigorating a local agricultural economy. For this operation to happen a tremendous amount of strategic planning and visioning needs to happen in addition to policy formulation. If this type of development were something the Town is interested in encouraging, zoning would need to be modified in the following way to allow for it:

Permitted Uses:

- Allow single family, live/work space, townhouses, two family, multifamily, cluster, elderly, and home occupation.
- Allow for shared agricultural and residential uses on one parcel.
- Regulate what types of agricultural uses are appropriate for this area and to what intensity they should be managed.

Dimensional Requirements:

- Reduce existing front yard setbacks of 50' to no greater than 20'
- New development should be built to the front line of existing buildings, squares, courtyards, or parks.
- Stoops and open porches can encroach into front setbacks.
- Side yard setbacks should be modified from 20' to no greater than 20'
- Minimum lot size should be reduced from 80,000 square feet to 1/8 acre.
- Residential entrances should generally open to the front sidewalk.
- Building heights should be no greater than 2 stories high.

Sidewalks & Parking:

- All lots should have an uninterrupted sidewalk 5' wide the entire width of the lot.
- All streets must include an active pedestrian way (land area developed for immediate use by pedestrians).
- Parking should be located on-street or in limited shared driveways spaces.

Signage:

-Signage should continue to be regulated in the Town but design guidelines for signs (detailed in the design guidelines section) should be strongly encouraged and utilized.

The above are general recommendations to be made to the current Zoning Ordinance so that Bolton can progress its planning efforts for a Village Center. The following options are available to Bolton for modifying the existing zoning to better support the sustainable elements and designs concepts introduced for the Village Center in the entire set of sub districts described above. The advantages and disadvantages of each option are considered. However, the Town should decide as a community which option would work best for Bolton.

Option 1: Create Village Center Zoning District

This option would involve several changes to the existing Zoning Ordinance for Bolton. These changes would attempt to implement the concepts presented for the Village Center

addressed earlier in this report and address as many of the inconsistencies between the proposed plan and current zoning as possible. However, it does not include the creation of separate standards for the different types of communities where Village Center zoning is applied.

The Zoning Ordinance changes would include the rezoning of the existing Village Center to create a Village Center District. The creation of a new district would allow the time to regulate what uses should be allowed by right or by special permit within a Village Center. For example, it might permit a mixture of commercial, civic, office, residential by right and agricultural land uses by special permit. It could encourage a mix of commercial, office, and residential uses within a single structure. Allowable residential and commercial density would be reduced, building height requirements would be created, and design guidelines would be incorporated into the Zoning Ordinance to address concerns with development scale and compatibility.

The following is an example of what the purpose of the Village Center zoning district might look like:

“Village Center zoning is located in sections of the community that contain the older village center as well as historic resources, which are unique characteristics of Bolton. It is the intent of the district to sustain this distinctive character and community identity through careful planned development. Every effort should be made to meet the design standards to ensure that new development is compatible with the unique characteristics and sense of place within each community. The scale and density of new development should conform to the requirements outlined for the Village Center district.”

Source:

<http://www.co.frederick.md.us/documents/Planning/Publications/VCOptionsRpt.pdf>

Unfortunately, a single village center district would not reflect the characteristics designed for each sub district. To do this, separate zoning districts should be created for the different types of communities. There could be a village center residential district nearby the Kane and Country Cupboard properties as well as a village center business district surrounding the Smith Property. The town of Amherst provides an example of what these districts might look like:

“Village Center Residence (R-VC)

The purpose of the R-VC District is to provide for residential neighborhoods, within and adjacent to village centers, that are of medium densities and that allow a limited mix of residential and office uses. The R-VC is, in general, intended to provide for a transition between the Business Village Center District and surrounding residential districts

Village Center Business (B-VC)

The purpose of the B-VC District is to provide areas within the village centers of Amherst that allow for a mix of uses, including retail, commercial, office and housing of moderate to high density.

This regulatory strategy is only one option available to Bolton for implementing the Village Center designs. The process of revising zoning ordinances can be restrictive and lengthy, especially if the public does not support or understand the need for alternative development and land use patterns. Even if the community is supportive of the changes proposed, it requires considerable fiscal resources and staff time to perform revisions to zoning codes.”

Source: Massachusetts Smart Growth Tool Kit, 2008, Citizen Planner Training Collaborative

Option 2: Create Overlay Standards (Village Center Overlay District)

An alternative to rezoning, is the creation of a Village Center Overlay District. An overlay district is a type of land use zoning that lies over the existing zoning and can serve as a way to adjust zoning regulations to meet the needs of a specific area without altering the existing ordinances. Overlays can be created with either optional or mandatory requirements for the area it covers. The restrictions included in a mandatory overlay district override those of the underlying zoning.

A Village Center Overlay could be created to specifically encourage mixed-use, denser development, reduced setbacks, sidewalk requirements and design standards within existing zoning districts. The MA Smart Growth Tool Kit explains zoning and overlay zoning in more detail: http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-zoning.html. The following websites provide examples of model village center overlays to be included into a town’s Zoning Ordinance:

MA Smart Growth Toolkit Traditional Neighborhood Development Overlay:
http://www.mass.gov/envir/smart_growth_toolkit/bylaws/TND_INC-Bylaw.pdf

Pioneer Valley Planning Commission’s Valley Vision Toolbox includes a section of strategies for implementing a mixed use village center. This document links to a model mixed use village center bylaw:
http://www.pvpc.org/val_vision/html/toolbox/PDFs/strategies/Strategy2.pdf

The Cape Cod Commission also has a model village center bylaw that other towns can adopt and modify:
<http://www.capecodcommission.org/bylaws/village.html>

Some of the advantages presented by using an overlay are listed below:

- Flexible way to alter zoning through a text amendment to the Zoning Ordinance
- Does not require rezoning properties
- Meets unique needs of specific areas
- Can cover portions of several existing zoning districts
- Perceived as less threatening than rezoning
- Does not alter basic fabric of ordinance

To be eligible for 40 R or 40S funding in Massachusetts smart growth districts must be overlay zones and not base zoning. Chapter 40R of the Massachusetts General Laws encourages cities and towns to establish new overlay zoning districts to promote housing production and, more generally, smart growth development. Chapters 40R and 40S both provide financial incentives to communities to adopt these new zoning districts (http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-40R.html).

The disadvantages of presented by an overlay are listed below:

- The overlay would provide a set of standards that would be consistent for whichever area of the Town falls within the overlay district. It does not take into account the differences between the various sub districts within the Village Center area.
- Unclear language may prevent its success
- Multiple overlays can make it difficult/confusing for applications to determine which regulations apply
- The existing permitting process might conflict with an overlay
- Which parcels fall under the overlay might become a contentious issue

Option 3: Form-Based Code Overlay

A more innovative option for Bolton is the use of form-based code. Unlike conventional zoning codes that primarily establish single-use districts and regulate what land uses are and are not allowed, form-based code is a regulatory tool that focuses on the design of spaces, buildings, and streets (Sitkowski 2006). It relies on diagrams and text to illustrate appropriate form and scale of development. Form-based code can either replace or supplement standard text-based zoning, subdivision and other local regulations and are a method of regulating development to achieve a specific urban form. Elements of form-based code that can influence the village center implementation include:

- Regulations for the public realm (e.g., sidewalks, travel lanes, on-street parking, street trees, street furniture, etc.).
- Regulations for architectural standards and building form
- Landscaping standards, which control landscape design, and plant material on private property as they impact public spaces
- Environmental resource standards, which control issues such as storm water drainage and infiltration, development on slopes, tree protection, solar access, etc.
- Communities can use this code to adopt more sustainable parking requirements such as, smaller stalls, allowing the use of permeable pavements, and requiring parking maximums.

Form-Based Codes Institute 2008

Form based code addresses community concerns and desires related to the built environment. They are typically drafted after an extensive inventory of existing physical attributes, and finalized after many public charrettes, workshops and hearings. Much like the studio team did in Bolton. The form-based code should ideally translate the specific goals and policies of the Town's Master Plan and community visioning into prescriptive

evaluation standards and guidelines. This ensures that new development exhibits the highest standards of design, architecture and landscaping while reinforcing the community's authentic and rich heritage at the scale of the neighborhood, block, lot and building.

There are three different ways form based codes can be incorporated. The first is modifying existing regulatory codes to include criteria for building forms. However, this approach is time consuming given that town's regulations limit density and segregate uses. Communities could replace the existing zoning with form-based codes; however, this would eliminate the entire existing regulatory framework and would be highly controversial and difficult to pass. The seemingly best alternative for introducing form-based code is through a form based code overlay. The existing zoning framework remains and form based codes simply augment the underlying code.

In general, form-based code represents an improvement over separated, single use-based codes because it allows developers to begin utilizing traditional planning techniques on a building, block and even neighborhood scale. The use of textual and graphic illustrations also make it a highly intuitive tool for both users and regulators.

The MA Smart Growth Toolkit address five main components that are necessary for adoption of successful form based codes:

1. **Regulatory consistency:** It that the code be calibrated to the physical elements of the Town as well as with the state zoning act (MGL 40A). Interestingly, MGL 40R (Smart Growth Overlay Districts) offer communities a unique opportunity to integrate form based codes and detailed design standards directly into their existing zoning and land use regulations.
2. **Local capacity:** Although these codes remove vague regulations (planning occurs upfront instead of when an application is received) and are prescriptive rather than proscriptive, plan submittals under form-based codes are generally much more sophisticated than standard zoning applications and will include a wide array of design and architectural considerations. A town can adopt provisions that allow them to hire outside professionals to conduct peer reviews at the expense of an applicant for these applications or appoint a Design Review Committee comprised of local professionals willing to donate their time.
3. **Respecting the unique characteristics at the neighborhood scale:** Although these codes can be applied community-wide, this may not be appropriate unless a community is prepared to address multiple transect zones. Different areas of a community may have distinctly different quality and character and play different roles or functions. It is necessary to have a clear vision of that desired place to produce the code for each specific area.

4. **A well-crafted bylaw/ordinance:** The success of these codes depends on developing a clear and concise vision for the applicant through the use of written standards and illustrations.
5. **Public outreach:** Form-based codes require extensive training for everyone in the community - elected and appointed officials, planners, engineers, developers and residents. This begins with a broad public participation effort as the code is developed, but it must also continue after the code is adopted.

For more information on form based code and how other communities have adopted it in Massachusetts visit the MA Smart Growth Toolkit:

http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-fbc.html

Overall, the Town of Bolton has a few options for implementing the design concepts and plan discussed within this report. Whether it be through rezoning, overlay districts, or form-based codes, it is imperative that the Town reexamine and modify the existing zoning. In general, dimensional requirements should be reduced to allow for denser, more compact and walkable development. Design guidelines should be incorporated into the zoning so that there are standards to ensure that new development reflects the traditional character of the Town and the elements of sustainability discussed earlier in this report. However, it is to be determined by the community which of these regulatory works best or makes the most sense for Bolton.

8.6 Architectural Guidelines

The intent of the following design guidelines is to ensure that future development occurs in a manner that responds to and respects the existing town character while allowing for architectural variation. New development should respond to the surrounding landscape and existing natural features without attempting to replicate historic structures. Rather new development should seek to create buildings that are compatible with existing structures in terms of proportion, scale, massing and detailing. It is critical that the proposed village district preserve the visual qualities which Bolton residents value and seek to preserve. To this end, the following guidelines were developed to promote contextually appropriate design that incorporates sustainable building practices while being site specific and providing enough visual linkages between the existing stock of good buildings and the proposed structure so as to create a strong visual identity within the village center district. A common architectural language which addresses such issues as window proportion, entryway placement, and rooflines would strengthen the new village core.

Special consideration should be given to maintaining visual continuity, promoting pedestrian friendly growth and allowing for a range of uses, including appropriate commercial development, moderately sized residential units and office space.

Relationship to the Site

- Use prominent site features to organize the architectural composition of the structure.
- Encourage compact development though provide for architectural variation.
- Establish a balanced proportional relationship between the building (mass and scale) and the site (terrain, landscape and views).
- A clear relationship between building form and pedestrian space should be articulated. Efforts should be taken to create areas for pedestrian interaction- benches, parks, intimate green spaces and performance areas should be promoted.
- Design buildings to face the street.
- Use the building form to shield parking lots.

Form and Space

Objective: Ensure that the proposed building forms and surrounding spaces reflect existing community character; in particular attention should be devoted to: establishing consistent setbacks and appropriate building size, as well as creating highly accessible and attractive open spaces.

- Large, monotonous buildings should be avoided. When larger structures are employed the façade should have façade articulation that reflects a group of small buildings and reinforces the architectural rhythm established in the village center.
- Setbacks are to be no more than 20' from the street with generous sidewalks and appropriate landscaping. Minimal front setbacks would bring the structures up to the sidewalk, helping to define the public space along the street and create welcoming entrances.
- Façades should contain elements that enhance pedestrian comfort and orientation while presenting features with visual interest that invite activity.

Scale, Massing and Proportion

Scale, massing and proportion refer to the overall size and shape of a building. Scale refers to the relative size of something, particular in reference to the human body.

Massing is concerned with the way a building is configured and how different units are arranged. Proportion deals with the relationship of length to width and height of structure.

Objective: Consider the scale, massing and height of existing development on contiguous properties when proposing new development. When there are two different sizes of building massing are proposed, a transitional structure of an intermediary should be employed.

- Maintain proportions between building height, length and width consistent with nearby patterns.
- Buildings greater than 40' in width should have modulated façades with recesses and protrusions which would lessen the buildings total mass and provide continuity with nearby patterns.
- Strive for visual simplicity rather than complexity.

Rooflines, Façades and Entrances

Objectives: Encourage the creation of interesting building forms which honor local historic detailing and present a clear, well defined façade. Ensure that proposed buildings have a defined relationship to the street with clear entrances.

Façades should contain elements that enhance pedestrian comfort and orientation while presenting features with visual interest that invite activity.

- Structures should be no greater than three stories tall.
- Windows and doorways should be incorporated into the façades in a manner that establishes a consistent pattern. Emphasis should be on creating variety through compatibility rather than conformity.
- Establish horizontal continuity by referencing adjacent prominent façade detail elevations and rhythms (e.g. fenestration, molding, and detailing).

8.7 Design Guidelines and Sustainable Strategies

The importance of preserving Bolton's visual character and protecting natural resources cannot be understated. Considering existing development pressures, future expansion within the village center is very probable. Without proper planning and design oversight, it is likely that future development will occur in a manner that fails to recognize the importance of the village's settlement patterns, historic architecture, natural features and cultural resources. The danger inherent in such development is that they will have the unintended consequence of altering a town's sense of place which impacts the community identity and relationships. In contrast to traditional development schemes, the overarching concept which behind the village district model is pairing contextually appropriate design with sustainable strategies to create places which protect the environment, enhance quality of life and foster sense of community. Additionally, our plan aims to guide development in a manner that concentrates development within the historic village center. The community has clearly stated its desire to maintain the small town atmosphere and qualities that have historically characterized the village center. However, it has also been recognized that new development would further define the village center by allowing for a broader mix of businesses, housing options and services, as well as greater employment opportunities and an expanded tax base. In this respect we recommend that design guidelines be utilized to create a compact, mixed use core that is pedestrian oriented in scale, character and function and incorporates various green infrastructure strategies to reduce environmental impact and lessen the need for the expansion and upgrade of infrastructure.

As the following design guidelines were drafted, it became clear that it would be most effective to establish general design guidelines which could be utilized as a framework for evaluating future development proposals across town, as well as site specific recommendations developed primarily for the village district. Drawing on the principles of sustainable planning and low impact development, the recommendations hope to provide strategies and techniques for managing and reducing the impact of growth on sites deemed suitable, while concurrently discouraging growth in sensitive ecological areas.

General Design Guidelines

Objective: Encourage site planning and architectural design that will enhance the character of the Town and ensure that new development fits well with the surroundings.

- Identify significant natural features such as wetlands, mature plantings, significant topographic features areas which function as core habitat, consider as fixed design determinants rather than malleable elements which can be altered to suit development.
- Wetlands buffers are to be strictly enforced. The removal of vegetation in these areas is prohibited.
- Preserve or create scenic views.
- Preserve historically significant properties to the greatest extent feasible.
- Protect places of historic or cultural significance or places which are special to the community. Give special consideration to the conservation of farm land and orchards.
- Perform a through site assessment to ensure that all rare habitat is protected. Design the site to minimize disruption to existing habitat.

Site Planning

Objective: Excessive topographic alterations which can adversely impact surrounding areas, especially in terms of drainage, should be avoided. Plan construction activities to minimize disturbance to the site, paying special attention to preventing soil compaction and damage to existing vegetation.

- Avoid development on steep slopes, ridge lines and hill tops.
- Situate utilities below ground when possible and screen utilities which cannot be buried.
- Wetlands buffers are to be strictly enforced. The removal of vegetation in these areas is prohibited.
- Locate structures to take maximum benefit of passive solar and cooling. Use vegetation to further gains when appropriate.
- Cluster buildings as much as possible and reduce the need for impervious surfaces.
- Minimize setbacks to reduce the disturbance to the site and limit driveway lengths.
- Promote shared driveways

Streetscape

Objective: Create sidewalks which are safe, vibrant and scaled appropriately to the site. Sidewalks are a critical component of a pedestrian friendly streetscape as they encourage walking and contribute to an attractive streetscape. Aside from serving as the organizing element defining public and private spaces, sidewalks are prime community spaces which can be designed to be attractive areas for social interaction.

- Sidewalks should be wide enough to accommodate movement and amenities such as lighting, landscaping and street furniture. A width between 8 and 12 feet is recommended, six feet of which must be clear from obstructions.
- All proposals should include well designed and durable site amenities including: benches, trash receptacles, bike racks and lighting fixtures.
- Benches and/or low sitting walls should be sited to face the building and in places where they will not obstruct traffic flow.
- Strengthen security with adequate illumination and street visibility.

Exterior Site Lighting

Objective: Incorporate adequate lighting which is tailored to the site and provides the user with illumination levels that are appropriate for the designated activity (i.e. parking, walking, outdoor dining) without exceeding minimum requirements. Illumination levels should be reasonable uniform throughout the site and strive to minimize glare. Lighting should have a character consistent with local character.

- Locate lighting features to respond to the anticipated use.
- Light glare or excess brightness should be minimized. Lighting should be similar to adjacent properties.
- Use selective night lighting on buildings. Avoid lighting which blink, flash or change in intensity.
- Coordinate lighting fixture assembly with the surrounding architecture.
- Architectural lighting should be used to highlight special features only. Lighting of expansive wall planes or roof planes should be avoided.
- Use lighting standards no more than fourteen feet high.
- Use lighting fixtures with shielding devices or sharp cut-off refractors to eliminate up-lighting.
- Direct lighting downward and orient fixture to prevent light pollution.

Signage

Objective: Integrate signage into the site plan to ensure that it complements its surroundings. Since signage is intended to be highly visible and attract attention, it is imperative that signage act as an architectural feature which does not deter from Bolton's visual quality.

- All signage should be architecturally integrated with their surroundings. The size, color, parapet and decorative features should not visually compete with the architecture of the building and the design of the site.
- Signage should be designed to reflect existing architecture and be integrated into the façade on the building, resting flat against the building.
- Signs should be externally lit from the front. Back lighting of signs should not be used.
- Neon, flashing, moving signs and roof signs should not be used.
- Signs should be made of an attractive material consistent with the character of the district. Materials may include wood (painted or natural), stone, copper, brass, galvanized steel, painted canvas or paint/engraved on façade surface.

Circulation

Objective: Designs attractive streets that allow for the safe and efficient flow of safe for pedestrian, bicycle and vehicular traffic and utilize LID techniques.

- Increase pedestrian safety and visibility by creating marked, raised crosswalks which are to be well lit at night.
- Utilize curb extensions to calm traffic and improve pedestrian safety. Additionally, these areas should act as bioswales or infiltration strips to manage storm water.
- Street trees are an integral component of street design. To this end, all streets should have planting strips to accommodate the planting of appropriate native street trees. Tree species should be mixed to prevent the spread of blight and pests. Though the planting of the same variety should be allowed for design purposes.
- Designate bike lanes where space permits. Only on-streets with very low speed limits- 25 mph or less should cyclist share the regular travel lane with cars.
- Bike lanes should be a minimum of 4' wide and incorporate proper signage.

Parking

Objective: Integrate on-street parking and parking lots into the plan for the village center. Limit the environmental and visual impact of parking lots by employing LID techniques to reduce surface runoff and facilitate infiltration, limit the square footage of parking areas and utilize either vegetation or architecture as screening.

- Provide space for on-street parking which has been shown to be effective in slowing traffic.
- Update municipal codes to suggest minimum and maximum parking requirements. Each proposal should determine which parking configuration represents the most efficient use of space.
- Promote shared parking lots.
- Incorporate LID techniques into the design of all parking lots. Stormwater should be collected and managed on site. Vegetated swales, buffers, filter strips and significant tree planting schemes should be realized.
- No more than 10 parking spaces will be permitted in a continuous row and the break between rows must be either an 8' wide planting strip landscaped with a variety of native, non-invasive trees, shrubs and perennials or a 12' wide vegetated bioswale.
- Tree planting should be incorporated into the parking lot design in an attempt to provide shade and limit the thermal heating.
- Permeable paving should be utilized in areas which do not receive heavy traffic flows- including emergency access routes and overflow parking areas.
- Screen the view of dumpsters, utilities and other service related features from the parking area.

Landscape Treatment

Objective: Ensure that the plant material is utilized to define and enhance the spatial relationship between buildings and the landscape, to create visual interest and contribute the ecological health of the site. Tree plantings and other types of vegetation also act to manage stormwater, reduce the heat island effect as well as serve as valuable wild life habitat.

- Landscaping should affirm the regional identity of the site by incorporating non-invasive, native vegetation.
- Landscaping should be provided along and against all buildings to anchor structures to the surroundings and to soften the structure.
- Trees, bioswales and infiltration strips should be incorporated in every design to provide shade, reduce the heat island effect and manage stormwater.
- Native, appropriate tree species and shrubs should be integrated into bioswales in parking lots and along parking lot edges whenever possible for shade and avoidance of heat island effect.
- Use of mature trees in planting designs is to be encouraged.
- Prohibit the use of invasive species.

Community Spaces

- Objective: Encourage the creation of accessible open space to serve as space for the informal social gatherings that foster a sense of community.
- Design spaces which are accessible to children and older adults and which promote a wide range of activities.
- Create pedestrian routes which link significant community spaces.
- Provide spaces for active and passive recreation. Strategically locate these sites.
- Encourage a wide scale of open spaces.

Historic Resources

- Objective: Recognize that Bolton's historic resources provide are an essential part of the Town's heritage. Take steps necessary to protect the integrity of these sites.
- Determine which properties should be preserved and move forward to explore appropriate avenues to reach this goal.
- Preserve and/or enhance natural views and features of historic importance.
- Incorporate historic cultural landmarks (e.g. houses, commercial buildings, old stone walls, barns or sheds, fences, trees, etc.) into new development.
- Preserve and reinforce historic scale, massing and proportion where applicable.

Guidelines for protecting the watershed: Stormwater and LID Techniques

The effective management of storm water through the utilization of green infrastructure and low impact development techniques is critical. Further development will increase the amount of impervious surfaces which will limit the areas for infiltration and increase surface runoff and the direct discharge of polluted stormwater into rivers, streams and wetlands, often jeopardizing the health of these vital ecosystems.

Low Impact Development

Low Impact Development (LID) is an innovative site design strategy that seeks to preserve to the greatest extent possible the existing hydrologic function of the site by identifying and protecting drainage patterns, minimizing soil disturbance, conserving vegetated buffers around wetlands and saving existing plantings. In addition to limiting site alterations, LID introduces a range of natural and engineered infiltration and storage techniques to control and filter stormwater on site. When LID techniques are integrated into the site design and uniformly applied across the site, the detrimental effects associated with stormwater, namely non source point pollution and watershed depletion are mitigated. In short, LID devices intercept surface flow, directing it into a temporary retention area where it is filtered to remove toxins and pollutants and allowed to slowly seep into the ground, eventually re-charging the aquifer. Communities which have been proactive in legislating that new developments follow LID methods have acted to protect their watersheds from pollution and depletion.

Table 8.7.1 Low Impact Development Techniques Suitable for Bolton and Benefits

	Peak Flow Control	Volume Reduction	Water Quality Improvement	Water Conservation
Bio-swales	X	X	X	
Cistern	X	X		X
Curbless Parking Lot Islands	X	X	X	
Infiltration Trench	X	X	X	
Narrow Road Design	X	X	X	
Permeable Pavers/ Pavement	X	X	X	
Rain Barrel	X	X	X	X
Rain Garden	X	X	X	

Past concerns over the health and protection of Bolton's Watershed are warranted, as the size of the watershed and its proximity to surface water sources, make it especially vulnerable to disturbance.

Site Preparation Recommendations

- Identify current hydrologic conditions (i.e., permeable and impermeable soils, vegetated areas) and document existing drainage patterns.
- Employ suitable LID techniques and devices in a uniform pattern.
- Avoid disturbing existing vegetated buffers.
- Carefully evaluate existing water resources to determine sewer and drinking water options. Alternative systems should be considered.
- Employ systems which limit water usage, such as grey water systems to limit wastewater discharge.

- Try to preserve as much as possible with the aim of preserving at least 25 % of the site as open space.
- Bioswales, retention basins and rain gardens should be employed to capture storm water and allow for infiltration.
- Impermeable surface coverage should be reduced to the minimum square footage deemed suitable for said program.
- In areas having greater density, bioswales and constructed wetlands are advocated to catch and treat stormwater close to the source.
- Native plants are preferred.

8.8 Open Space and Agricultural Preservation

Village center development is a prime opportunity to encourage dense, compact development in the town center and maintain rural open space and farmlands. This technique is highly useful for rural communities. While encouraging density and offering business incentives can concentrate development, opportunity for sprawling residential development will still exist. Proactive and innovative thinking needs to be encouraged to protect Bolton's farmlands and open spaces. The following recommendations offer additional tools for protecting priority lands in Bolton.

Encourage Conservation & Agricultural Preservation Restrictions

Bolton has a history of actively employing conservation and agricultural preservation restrictions. These efforts should be continued, particularly to protect lands targeted for conservation in the Town's Master Plan. The adoption of the Community Preservation Act or exploring other innovative funds or partners could extend these efforts.

Employ Transfer of Development Rights

Transfer of development rights (TDR) is an innovative land use tool that allows the rights of development on one property to be transferred to another property. The area to be protected (referred to as the sending area) is valued farmland, forestland, wetlands or other open space. The area to be developed (referred to as the receiving area) is typically an urban setting or village center where extra density is desired and profitable for developers. The process is voluntary and can be managed either through the real estate market or with the assistance of a TDR bank, e.g. an organization that collects development rights from land owners and resells them to developers. While not used exclusively for farmland preservation, recent years have seen it used more often as such (Daniels and Bowers 1997).



Figure 8.8.1. The Concern:
Sprawling Residential development
across Bolton's farms.

Source: Pioneer Valley Planning
Commission's Valley Vision 2

Transfer of development right programs can be cumbersome to implement for a small town. However, several towns in Massachusetts have implemented them. Hadley's TDR program offers an innovative model. Rather than shifting development rights from one property to another, a developer that desires a density bonus or would like to avoid town regulations can choose to pay into the Town's TDR fund. Hadley then uses these monies to leverage state APR funding and place priority farmlands under preservation restrictions. Three million dollars worth of farmland in Hadley has been protected in this manner.

An official TDR program does not need to be in place to transfer density when the property owners are the same. For example, the owners of Bolton Spring Farm own the large farm on Route 117 in east Bolton as well as parcels in proximity to the historic town center. The town could work with the land owners of Bolton Spring Farm and a potential developer to allow density bonuses of 5-8 dwellings per acre on the parcels near town center in exchange for conservation restrictions on the active farmlands in east Bolton.

Revise FOSPRD Bylaw

The intent of the Farmland and Open Space Planned Residential Development (FOSPRD) bylaw is to preserve agriculture lands and open space. Altering the bylaw would strengthen its intent. Planners and towns across the state are realizing the limitations of cluster bylaws. As with FOSPRD, these bylaws are typically voluntary. This leaves the opportunity open for a traditional subdivision. When constructing a development under FOSPRD, there is no guarantee that the remaining open space will be accessible by the general public or connected to other open space. Connectivity of open spaces is important for natural habitats, wildlife corridors and resource protection. Remaining agricultural lands may be too small to be actively utilized by a farmer.

To address the true intent of FOSPRD, Bolton should consider the smart growth technique of Open Space Residential Design (OSRD). Similar to cluster developments, OSRD approaches a subdivision with a different process that prioritizes the current natural and agricultural resources of the land first. Using OSRD, residential units are arranged to the landscape in order to maximize natural resource protection and community goals. Only then are lot lines and roads added to the subdivision. This approach is a more flexible and site specific design than the previously promoted cluster development, which requires open space protections but does not necessarily match this protection to key conservation areas.

Additionally, Bolton should consider increasing the percentage of open space requirement in FOSPRD to 50 percent. This requirement should be in addition to the wetland resource areas on the parcel. Reducing the minimum lot size and allowing for density bonuses are recommended, particularly if the development conforms to town goals. FOSPRD could be mandated rather than voluntary or allowed as of right with site plan review. Both of these measures would strongly encourage its use.

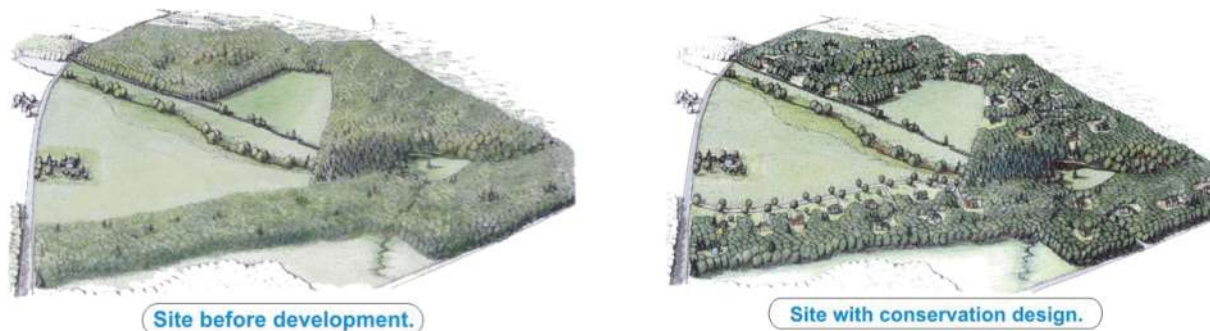


Image source: Massachusetts Smart Growth/Smart Energy Toolkit

Enact Farmland Conservation Zoning

An innovative zoning technique for farmland protection has been utilized since 1989 in Amherst, Massachusetts. The town's Farmland Conservation Overlay District requires any development within the overlay to be clustered. Mandating cluster development preserves important agricultural soils and limits sprawling development. When determining the placement of the overlay district, considerations included the amount of prime farmland soils, the proximity to other farmlands, parcel size and degree of development risk. Requiring cluster or open space residential developments will still allow for residential development while strengthening agricultural preservation.

All of these techniques are further explored in the Massachusetts Smart Growth/Smart Energy Toolkit. Bolton's Agricultural Commission should be encouraged to consider these in conjunction with the village center planning efforts. While a village center can certainly reduce development pressures on other areas of town, ultimately development will occur where it is the most easiest to do. Ensuring that the zoning and regulations are supporting town goals is important.

8.9 Brownfield Redevelopment

Brownfields are the remnants of an industrial past that have been contaminated with heavy metals, petroleum related chemicals and other pollutants. While most sites are not entirely polluted, pinpointing specific areas where the contamination occurred within a property is often challenging enough to designate entire property as contaminated. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) defines brownfields sites as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant" (EPA, 2005). Considerations to be made in the productive reuse of a brownfield include: financial issues, community involvement, liability considerations, environmental assessment and cleanup, regulatory requirements, as well as coordination among many groups of stakeholders (EPA, 2005).

Cost effective options to remediate brownfields include phytoremediation, bioremediation, as well as excavation. Phytoremediation is a plant-based approach and bioremediation is a microbial approach, both of which actually process and remove toxic substances, whereas excavation simply removes these substances to another location such as a landfill.

Phytoremediation

Phytoremediation has the capacity to assist in the remediation of petroleum hydrocarbons, benzene, and heavy metals (EPA, 2001). The simultaneous treatment of these contaminants makes phytoremediation a cost effective and attractive option for urban areas. Plants typically used in remediation situations include poplars, willows, grasses and legumes. These plants are often in the earliest stages of successional landscapes, indicating their resilience in stressful soil and water conditions. Their presence helps to rebuild soil structure through the establishment of their root systems and the deposition of organic material from leaves, branches and root cells. Those hardy characteristics can enable them to handle stresses of contamination. According to the Green Remediation primer from the EPA there are a number of processes by which Phytoremediation can work (EPA, 2008):

- Green Remediation
- Phytoextraction (phytoaccumulation and phytotranspiration) involving contaminant uptake by plant roots and subsequent storage or transpiration of contaminants in plant shoots and leaves,
- Enhanced rhizosphere biodegradation, whereby contaminants break down in soil or ground water surrounding plant roots,
- Phytodegradation, whereby plant tissue metabolizes contaminants, and
- Phytostabilization, whereby plants produce chemical compounds to immobilize contaminants at the root/soil interface

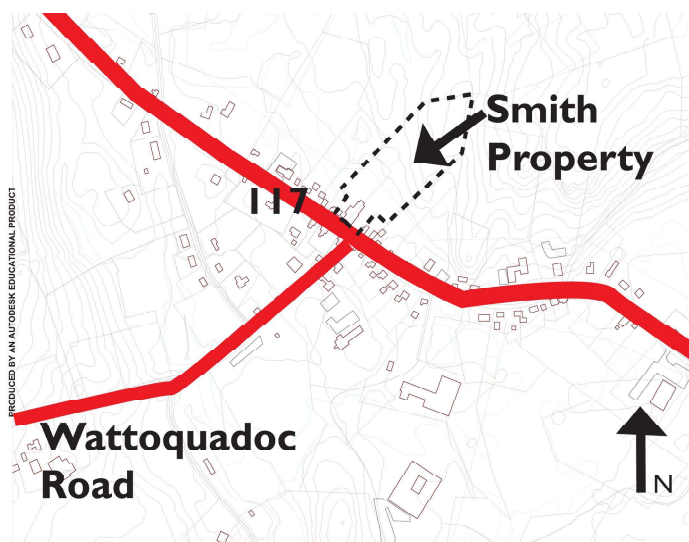
The most common concern about phytoremediation is that the plant material will be toxic after the uptake of heavy metals, benzene or other harmful chemicals. Research by Paulson et al. states,

“Planting woody biomass does not increase the liability of metals or their mobility to the wider environment, at least during the first 3 years. Ground cover with trees is likely to reduce the reentrainment of particulates and contamination of the wider environment. Thus, woody biomass may provide an effective form of phytostabilization or monitored natural attenuation. Cultivation of woody plants for biomass [also] provides aesthetic improvement and economic benefits” (Paulson et al., 2003)

Research from Rousseau (2008) shows that choice of plant species determines the efficacy of toxin uptake. These two findings taken together show that phytoremediation is a viable brownfield treatment alternative, and that when care is taken to provide the right conditions and choose the right plants, it can be more effective than previously thought.

Bioremediation

Bioremediation uses the activity of microorganisms to degrade organic contaminants in soil, sludge or groundwater. These contaminants include hydrocarbons and metals. It is important to provide appropriate conditions to foster the chemical reactions necessary to neutralize the toxic effects of the contaminants. These processes can sometimes produce nontoxic byproducts such as methane gas, sulfide or hydrogen gas. Bioremediation is also effectively used in constructed wetlands for cleaning contaminated ground water.



Excavation

In extreme cases, excavation is the most viable option because of the intensity of the contamination, the proximity to groundwater supplies, or the need to develop the property quickly. Excavation is expensive and requires a high level of energy input to transport the contaminated soil. Then it must be placed in a landfill or processed further.

Assessing the Smith Property

The Smith Property consists of eight acres near the junction of Wattoquadoc Hill Road and Route 117. Historically, it was a former auto repair shop. As of 2008, the heavy metals on site included lead and arsenic in amounts of 4550 mg/kg and 58 mg/kg respectively. It is unclear if that lead is in the soil or the building. The Massachusetts Department of Environmental Protection (DEP) report states that while there is no imminent hazard on site, there are permitting requirements for development. No clean up has been performed on the site to date (The full DEP report is available on line from: http://db.state.ma.us/dep/cleanup/sites/Site_Info.asp?textfield_RTN=2-0015753).

Using the Massachusetts Brownfields tool kit, Bolton is already halfway through the process for the Smith property, having identified the property they want to develop, and determining the presence of contaminants there. Cleanup and redevelopment are the next steps.

Use of the property will determine the extent of the cleanup. Having a clear intent for the area's use – for instance, recreation facilities, gathering, retail, dining and office spaces – will inform the clean up strategy for the site. Site development can include the integration of a clean up strategy into construction costs. This will reduce costs of mitigation and prove more effective than a full site cleanup.

With the configuration of the Smith Property as presented by the UMass studio team, new buildings are placed over the footprint of the former structure (the building on the left in the image below). To the right of the building, green space has the dual function of greenway and remediation area with plantings of Aspen, Birch and switch grass. These species are known for their capacity to uptake toxic metals.

If there are high concentrations of lead and arsenic on the grounds rather than inside the building, excavation is the most appropriate means of removal. This is necessary to protect water resources which would be at risk because of the high water table, proximity to wetlands, and most importantly the reliance on public wells for drinking water. Excavation, while among the most expensive options for remediation, is the fastest and safest way of ensuring the integrity of the drinking water supplies.

Brownfields Funding Opportunities

Bolton is not an economically challenged area and therefore does not qualify for many of the funding opportunities for Brownfields development available from the State. There are options in the form of loans, as well as organizations that can help Bolton develop the Smith property.

If the Town were to acquire the Smith property, the Massachusetts DEP offers a competitive grant opportunity – The Assessment/Clean-Up Grant of Service. Funding for this program, however, is not always assured. The Massachusetts Business Development Company provides expedited loans, which can be procured with a thorough environmental assessment and the hiring of an environmental engineer and remediation plan. The same company also offers insurance for developing Brownfields.

On the national level, the best option for funding is from the Rural Development Authority (RDA). The RDA is part of the USDA and helps to fund projects in rural and small communities that improve environmental conditions and infrastructure



improvements, including cleanups and water and sewer improvements. Cleaning up the Smith Property as the critical element of a sustainable re-development plan would have great potential in qualifying for grants. <http://www.rurdev.usda.gov/MA/>

The National Association of Development Organizations is an organization that helps communities strategize about economic development. They have a program entitled the Rural Brownfields Awareness Project. This program helps to raise awareness of Brownfields and helps to educate town officials about the process of turning Brownfield liabilities into assets. This organization has useful publications and resources for communities like Bolton to reclaim contaminated areas for economic development. <http://www.nado.org/rf/innocenters/brown.php>

Though Federal and state funding is limited for redevelopment of the Smith property, options exist. At the town level, expedited permitting as well as tax incentives for the developer could help to initiate the clean up process and lay the foundation for revitalization of the center of Bolton.

8.10 Green Infrastructure

Green infrastructure, in terms of planning for growth and the built environment, is most aptly described as, “an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations” (Benedict and McMahon, 2002, p. 12). The underlying concept is the understanding that natural functions can provide many of the functions that our built infrastructure (e.g., storm drains, water treatment, etc.) provides if given the chance. Examples include; stormwater management, drinking water cleaning and filtration, air purification, and even temperature regulation to some degree. Although nature can provide these functions, some minimal conditions are required to do so. These conditions can be provided by preserving existing natural areas or by building new areas designed allow natural functions to take place.

Green infrastructure can provide economic benefits to multiple parties including developers, homeowners, and municipalities. Municipalities can acquire long-term savings on infrastructure maintenance, save money on long-term investments due to improved flood protection, experience reduced winter salt needs due to reduced paved areas, and gain increased tax revenue from increased property values. Homeowners can save money on energy bills, gain increased curb appeal, and lower maintenance costs by implementing green infrastructure at the site level. Finally, developers benefit from lower costs of green infrastructure development compared to conventional infrastructure, from buyers who will pay more for a property with mature trees and landscaping, stormwater requirements which can double as required open space, and from public funding that is available for low impact development practices.

Communities can adopt regulatory and economic strategies to encourage the implementation of green infrastructure practices. Examples of successful implementation of these strategies by communities in the 495/MetroWest region such as Acton,

Bellingham, Foxborough, Franklin, Natick, Littleton, and Wrentham offer proof that the possibility and benefits of green infrastructure are regionally accurate and apparent within the 495 Metro/West Corridor.

The town of Bolton can craft its Village Overlay District to encourage the use of green infrastructure. Including elements of green infrastructure in the overlay district will offer greater protection to areas with valuable natural and cultural resources and will guarantee more sustainable development designs like cluster, conservation subdivisions, and village centers. Detailed below are some examples of green infrastructure strategies that Bolton could put into practice.

Stormwater Best Management Practices (BMPs):

- On-Lot Treatment (e.g., rain barrels, cisterns, downspout disconnections)
- Rain Gardens/Bioretenention Basins
 - Shallow, landscaped depressions designed to incorporate many of the pollutant removal mechanisms that operate in forested ecosystems.
- Grassy Swales
 - A vegetated, open-channel area designed specifically to treat and moderate stormwater runoff.
- Buffers/Forested Buffers Riparian
- Stream bank protection/restoration



Conservation BMPs:

Water

- Low flow (and dual flush) toilets and showerheads
- Irrigation timers and moisture sensors
- Drip irrigation systems



Energy

- Compact fluorescent light bulbs
- Insulation
- Double paned low-e windows
- Green building design

Habitat Protection

- Habitat corridors
- Open space protection
- Forest management



Mobility

- Trails
- Complete streets

- Living streets
- Bike lanes

The University of Massachusetts 2008 Spring studio team created a Green Infrastructure Toolkit, in conjunction with the 495/MetroWest Partnership. The toolkit was designed specifically as a resource for communities in the 495 Corridor who are interested in implementing green infrastructure practices. For more information, and to get a copy of the toolkit, contact Adam Ploetz at the Partnership (adam@arc-of-innovation.org).

9. IMPLEMENTATION MATRIX

	Immediate	Short-term (within 5 years)	Long-term (within 10 years)
Planning	<p>Establish a Village Center Committee:</p> <ul style="list-style-type: none"> *Evaluate UMass study recommendations and designs *Prioritize next steps, timelines, and responsibilities 	<p>Annually Review plan and adjust implementation as needed</p> <p>Oversee village center implementation</p>	<p>Begin consideration of east and west village centers</p>
	Pursue federal and state grant and funding opportunities		
Economics	<p>Create a local Economic Development Council:</p> <p>Craft an Economic Development Plan</p>	<p>Proactively recruit appropriate business to locate in Bolton.</p> <p>Designate sites for streamlined permitting.</p> <p>Implement strategies identified in Economic Development Plan</p>	
Brownfields	<p>Research funding opportunities</p> <p>Secure funding</p> <p>Develop site plan and program for the Smith property</p>	<p>Clean up and redevelop Smith property</p> <p>Harvest phytoremediation planting detritus</p>	
Green Infrastructure	<p>Review Arc of Innovation Partnership's Green Infrastructure Toolkit</p> <p>Identify appropriate solutions for Bolton</p>	<p>Incorporate green infrastructure elements in design guidelines and subdivision regulations</p>	
	Promote Low-Impact Development (LID) for new and redevelopment sites		

Final Report

	Immediate	Short-term (within 5 years)	Long-term (within 10 years)
Transportation	<p>Ensure walkability by upgrading sidewalks and universal access</p> <p>Establish bike lanes on Route 117</p> <p>Initiate feasibility study for park-and-ride at office park lot.</p>	<p>Create safe street crossings with curb extensions and crosswalks</p> <p>Establish park-and-ride lot</p> <p>Create shared parking areas in village center</p> <p>Locate car sharing service within Bolton</p>	<p>Connect to regional multi-use paths and develop connections to sidewalks and bike lanes</p> <p>Implement trip capturing with Jitney service</p>
Zoning	<p>Determine village center zoning approach: new district or overlay, form-based codes.</p> <p>Get public feedback on village center boundary and recommended zoning changes</p>	<p>Revise zoning to create a mixed-use village center district</p> <p>Incorporate design guidelines in subdivision regulations</p>	
Agriculture and Open Space	<p>Revise FOSPRD bylaw</p> <p>Employ a transfer-of-development-rights program</p> <p>Consider farmland conservation zoning</p>		<p>Explore innovative community farm models to support agricultural and community gardens in new town center</p>
Water and Sewer	<p>Evaluate current capacity and expansion opportunities for public water and sewer</p> <p>Incorporate public water and sewer upgrades into Capital Improvement Plan</p>	<p>Expand public sewer to service village center.</p> <p>Develop shared wells to service village center.</p>	

10. CONCLUSION

With the pressure of development from its proximity to Route 495, Bolton needs to define a center for development to reduce sprawl and preserve its rural character. Establishing a village center also benefits the Town by fostering a sense of community and providing goods and services that are desired by residents but are not currently available. This study found that mixed-use, village style development is the most suitable approach for future development in the Town, and is compatible with other town goals, such as increasing the stock of affordable and senior housing and preserving open space.

Many opportunities exist in town for moderate economic development uses and residential uses designed in a village setting and scale. Public participation sessions and the team's independent assessments confirmed that the area with the greatest opportunities for further development is the existing village center. New development in the center must include both retail and commercial space in close proximity, in order to allow people to access jobs or shopping from their homes by walking or biking. Development in the area must entail construction/rehabilitation of structures in a manner consistent with Bolton's current rural and agricultural character, and compatible with other proposed designs.

Appropriate landscape design is essential for promoting alternative modes of transportation. Streetscape and landscape improvements serve to both make the center safer for pedestrians and cyclists, and to create visual and aesthetic appeal. Planting street trees and other landscaping reinforce efforts to improve sidewalks and pedestrian connections. When combined, these new forms of infrastructure contribute to the character of Main Street and a sense of town identity, and have limited impact on vehicular circulation in town.

Although the idea of a Village Center is a popular idea in Bolton, current zoning disallows most of the changes that would need to be made to make the Village Center a reality. The proposed village overlay zone would help to guide the development/redevelopment of the studied sites. The town must also reform sections of its overall zoning to better enable mixed-use development in already developed areas. The town should also continue to research other regulatory approaches to this end.

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APPENDICES

1. Shopping in Bolton
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6. Online Survey Results
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 - Water Strategy

Appendix 1: Shopping in Bolton

The Major shopping places in region include the stores in the shopping place list “Community Guide to Local Resources 2007” and by searching for “supermarkets” in “Reference USA”.

Table 4.4.3: Number of Major Shopping Places in Region

	Bolton	Berlin	Box-borough	Clinton	Harvard	Hudson	Lancaster	Stow
Major Shopping Places	2	1	1	5	2	5	1	3
Supermarkets	0	0	0	1	0	3	0	1
Reference: (1) Community Guide to Local Resources 2007 by the staff of Community Newspaper Company, (2) Reference USA								

Table 4.4.4: Major Shopping Places in 7 Towns around Bolton

Town	Business	Supermarket
Clinton	Apple Country Market	
Clinton	Neighborhood Market	
Clinton	Stop & Save	
Clinton	Shaw's	Yes
Clinton	Next Door Market	
Berlin	Berlin General Store	
Boxborough	Boxborough Liquors & Convenience	
Harvard	Fiber Loft	
Harvard	Rooms With A View	
Hudson	Hannaford Supermarket & Pharmacy	Yes
Hudson	Wal-Mart	Yes
Hudson	Super Stop & Shop	Yes
Hudson	Li'l Peach	
Hudson	Lake Boon Convenience Food Inc	
Lancaster	Oakridge Farms Inc	
Stow	Russell's Convenience-Stow	
Stow	Stow Food Pantry	
Stow	Shaw's	Yes
Reference: (1) Community Guide to Local Resources 2007 by the staff of Community Newspaper Company, (2) Reference USA		

Appendix 2: Transportation Data and Traffic Counts

Intersection 1: Route 117 at Green Road/Forbush Mill Road

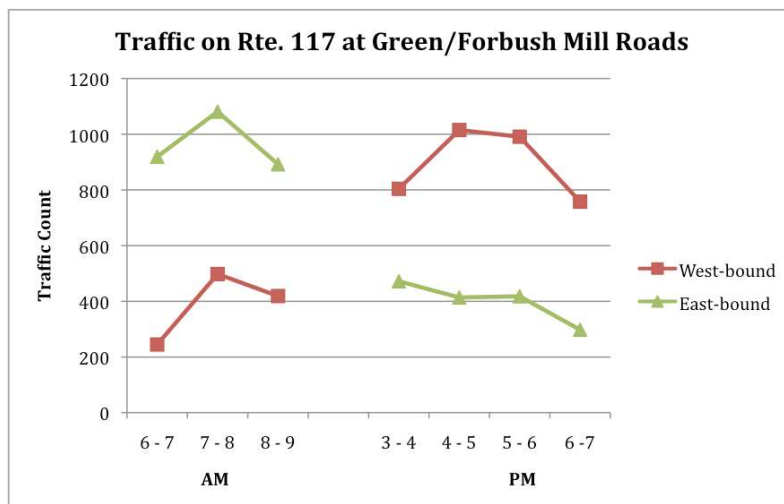
Figure 4.10.2 At the intersection shown (Figure 4.10.2), Route 117 is a two-lane road with a speed limit of 45mph. It receives an average daily traffic of 23,300 (CTPS).

Peak periods of traffic are 6pm-9pm and 3pm-7pm. The am peak period traveling Eastbound toward Interstate 495 contains 42% more traffic than westbound traffic (Mass Highway). During the afternoon peak period of traffic there is an inverse relationship of traffic as the westbound lane contains 40% more automobiles than the eastbound (Table 4.10.1).

Figure 4.10.2



Green Road is located north of Route 117 and serves as an access point for Nashoba Regional High School. Green Road contributes to Route 117's traffic congestion merely 8% in the am peak period and 6% in the pm peak period. During which, 20% of traffic



entering from route 117 westbound is buses. The resulting higher percentage of traffic in the morning could be due to Mass Highway's recording of the afternoon peak travel period starting at 4:45pm which is after the dismissal of school. If the peak period was shifted to an hour earlier, Green Road might see higher amount of traffic percentage.

Forbush Mill Road, located south of 117 and across from Green Road, is an access point for Route 110 traveling into Lancaster. During Route 117's peak periods of travel, the traffic on Forbush Mill Road accounts for 5% in the am and 6% in the P.M.

The Route 117 at Green Road/Forbush Mill Road intersection has a 4.4% truck average. Route 117 eastbound has significantly more truck travel as it accounts for 59% of the total trucks compared to Route 117 westbound having only 36%. This might be due to trucks exiting Interstate 495 and using 117 to access towns within its proximity.

Figure 4.10.3



Intersection 2: Route 117 at Harvard Road/Manor Road

At the intersection shown below (Figure 4.10.3), Route 117 is a two-lane 40mph zone. There are a total of 12 access points: 3 from 117 eastbound, 3 from 117 westbound, 3 from Harvard Road southbound, and 3 from Manor Road northbound.

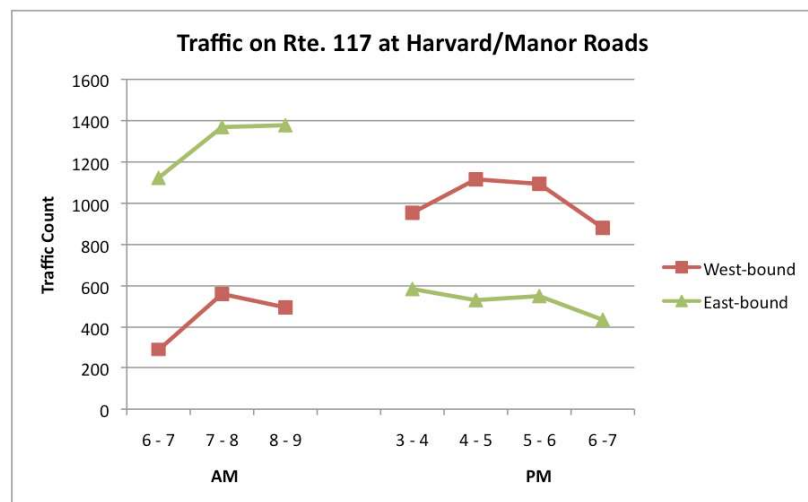
The eastbound lane of Route 117 generates 50% more traffic than the westbound lane during the am peak period. Inversely, Route 117

westbound pm peak period generates 30% more traffic than 117 eastbound (Table 4.10.2).

Harvard Road, located north of Route 117, can be used to travel to residential areas in Bolton and access the Town of Harvard. Harvard road accounts for 5% of traffic during am and pm peak periods of traffic on Route 117. Of the 237 trucks traveling through the intersection, only 6% of them were generated by Harvard Road.

Manor road is located south of Route 117 and across from Harvard Road. It can be used to access Wattaquaddock Road. During the am peak period it generates 5% of Route 117's traffic and 6% during pm peak period. Manor Road generates six of the 237 trucks traveling through the intersection.

Intersection 3: Rte 117 at Wattaquaddock Road



At the intersection shown below (Figure 4.10.4), Route 117 is a two lane 40mph zone that is connected to Wattaquaddock Road, which is 2 lanes and a 30 mph zone.

Figure 4.10.4

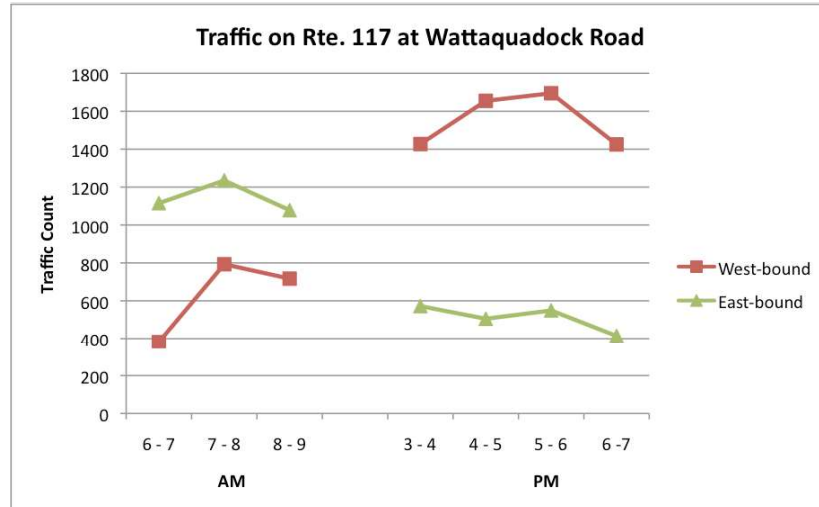


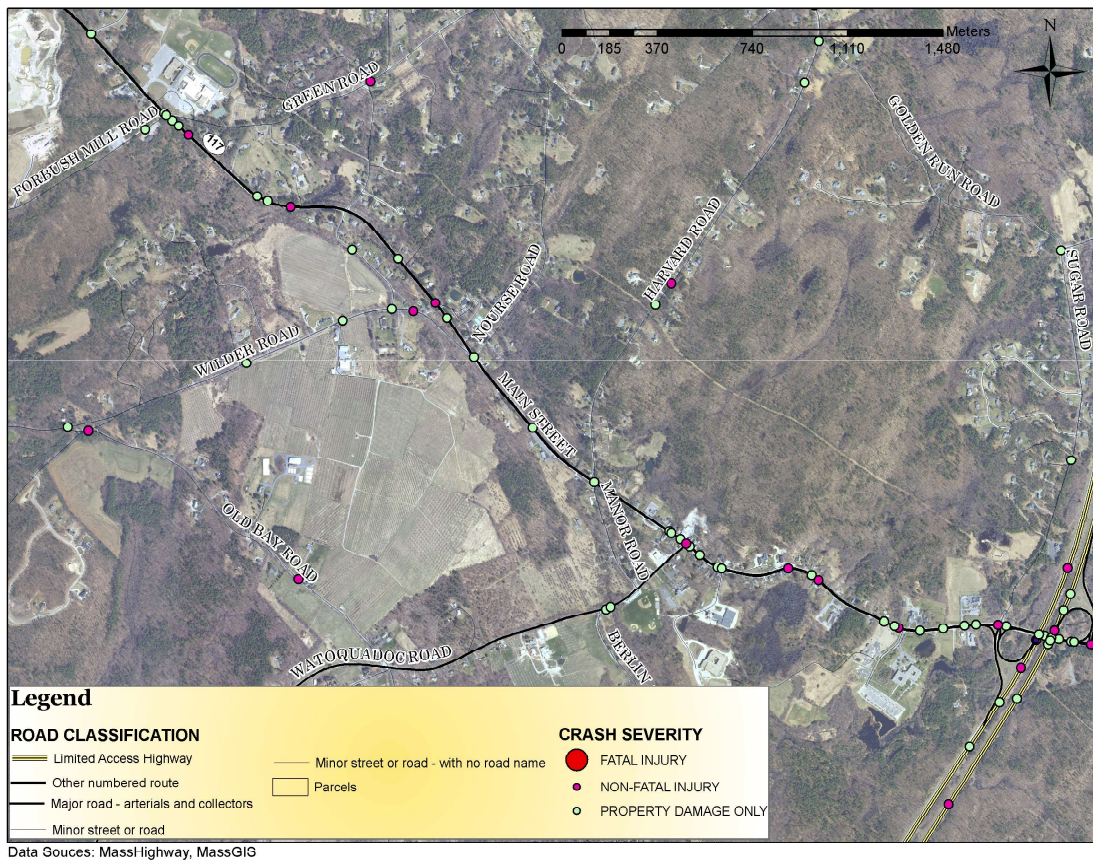
The intersection contains six access points: Two from Route 117 eastbound, two from Route 117 westbound, and two from Wattaquaddock Road northbound.

Wattaquaddock Road is used to access the recreational fields, residential neighborhoods, and the Town of Lancaster. During peak hours it generates 25% of the

total traffic through the intersection. Through peak periods of 7-9am and 4-6pm, 46 of 312 trucks traveling through the intersection were generated by Wattaquaddock.

As shown in Figure 4.10.5, there are numerous accidents that occurred at or near the intersection of Wattaquaddock and Route 117. Although many of these accidents only involved property damage, one involved an injury.





All three intersections analyzed have non-fatal injuries that were sustained during automobile accidents. Along Route 117, 8 out of 32 reported accidents from 2005-2006 involved non-fatal injuries; five of which occurred between the off ramp of Interstate 495 and Wataquadock Road.

Appendix 3: Mental Mapping Form

Community Mapping

Draw your own map of the Bolton center. Make sure to include roads, buildings, special places, and natural features you consider important, as well as their names. Just draw lines and shapes if you feel more comfortable, you do not need drawing skills.

Appendix 4: Visual Preference Survey Form

Age: _____

Gender: ☐ Female ☐ Male

Time of Residency in Bolton: _____ years, _____ months

Where do you live within Bolton? ☐ West ☐ Center ☐ East

Comments:

The photo board shows scenes of different village center settings. Please indicate how well you like each one.

1 = not at all 2 = a little 3 = somewhat 4 = quite a bit 5 = very much

1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Appendix 5: Visual Preference Survey Results

Online Visual Preference Survey Results



Bolton Town Fair Activity - Bolton Village Center Visualization Study

Images that proved popular held a number of characteristics in common. These images featured trees and public greenspace prominently, showed buildings closer to the street with varying rooflines and architectural details, and included generous sidewalks.

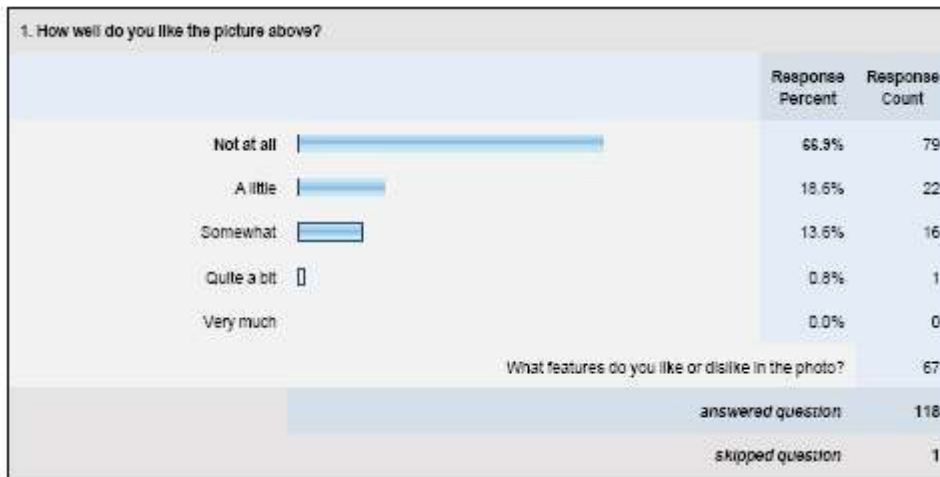
Images that received poor ratings from participants tended to have parking and roadways prominently featured (e.g., strip malls or small buildings along a wide road). Similarly, images lacking greenspace and trees also rated poorly. The appearance of utility wires had a negative effect on ratings. Monotonous architecture affected ratings negatively as well. Examples include; large-scale repeated patterns, buildings with vast walls with few or small windows, and buildings with flat façades. Images with dense housing rated poorly as well, though this may in part be attributed to the fact that the denser housing pictured often had monotonous architecture.

Respondents' verbal and written comments were very helpful in understanding what residents were responding to in the images. Complaints about traffic on 117 and requests for better bicycle and pedestrian facilities were common, as were comments asking for more public gathering spaces and the preservation of community character. Along those lines, some comments indicated residents' strong preference against large-scale retail.

Image 1:



Online Survey Results:



Respondent Comments:

"Buildings too close to the road. No green space/trees"

"Doesn't appear pedestrian-friendly. Seems 'shabby'."

"ugly city buildings"

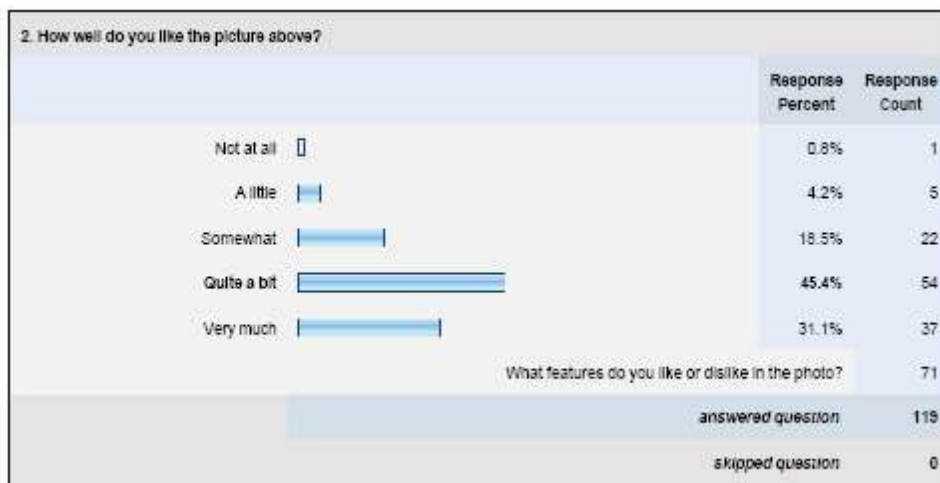
"Too close to the road and no parking"

"do not like the wires. Looks old and uninviting. Kind of scary, almost. Don't like the appearance of 'apartments' above."

Image 2:



Online Survey Results:



Respondent Comments:

"like safe distance between front doors of buildings and road, like green space"

"love the grassy flowering sidewalk areas with benches and how the buildings are set back from the street. very inviting."

"green space, park benches, trees/flowers, rural, historic character to buildings"

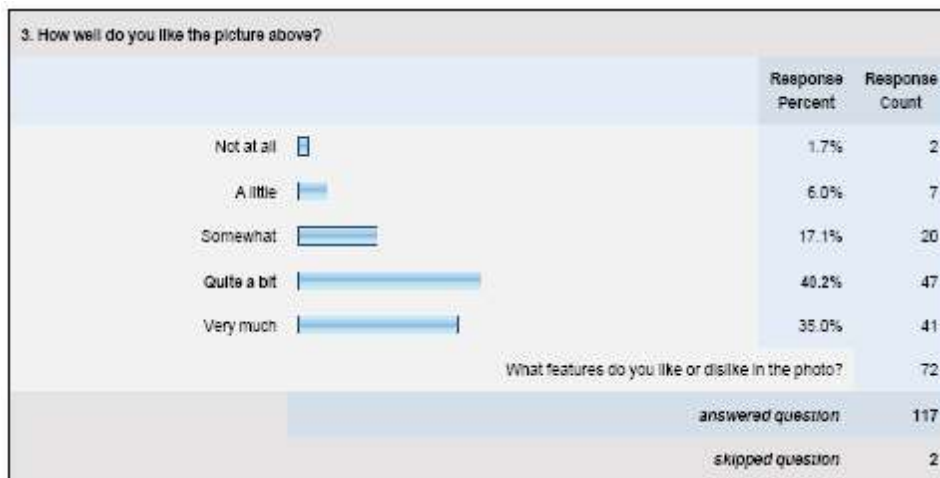
"Lots of green; characteristically New England structures; invites strolling with sidewalks and benches"

"Great open space blended with the buildings. Mature trees and benches are great."

Image 3:



Online Survey Results:



Respondent Comments:

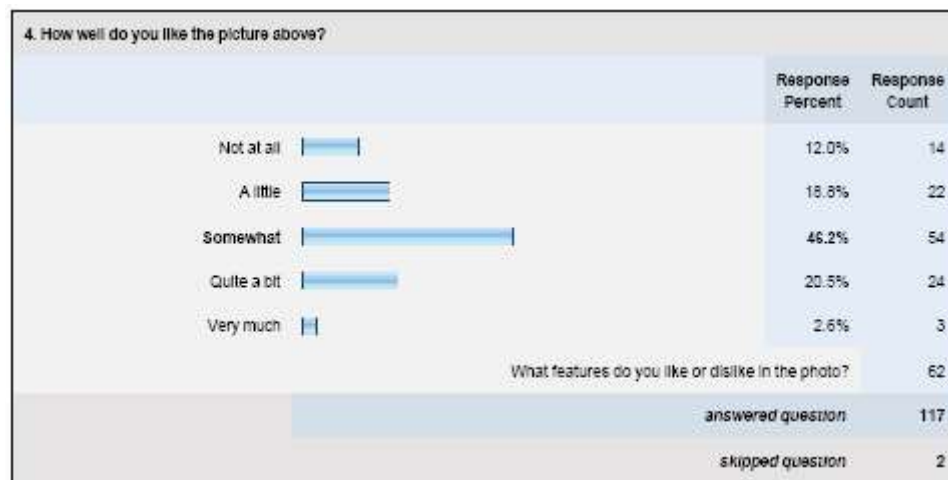
"I like signs of economic activity, green space (grass, shrubs/flower borders and trees) without cars and interesting architecture create a pleasant environment."

"like courtyard approach to businesses, keeps front doors away from street, allows space for gathering"

"wow - really like this a lot. Love the brick entryways and grassy landscaping with trees. Reminds me of Meredith new Hampshire. Very pedestrian friendly."

"Like: nice trees, benches, and BRICK SIDEWALK, discrete but colorful signs, grassy areas. Dislike: looks like only part of the story - is there parking for cars BEHIND the buildings? (that would be nice). How well is it lit at night?"

"It would be nice to see spaces completely devoid of traffic and cars where people could walk, shop, or relax and visit with neighbors and community members or even hold outdoor events."

Image 4:**Online Survey Results:****Respondent Comments:**

"Quaint store spoiled by ugly asphalt, cars right up front"

"looks quaint, but not very upscale"

"not much parking but it's got a warm welcoming appearance"

"Not bad but a parking lot in back would be better than the front. Cars will need to back out and that would cause traffic on 117"

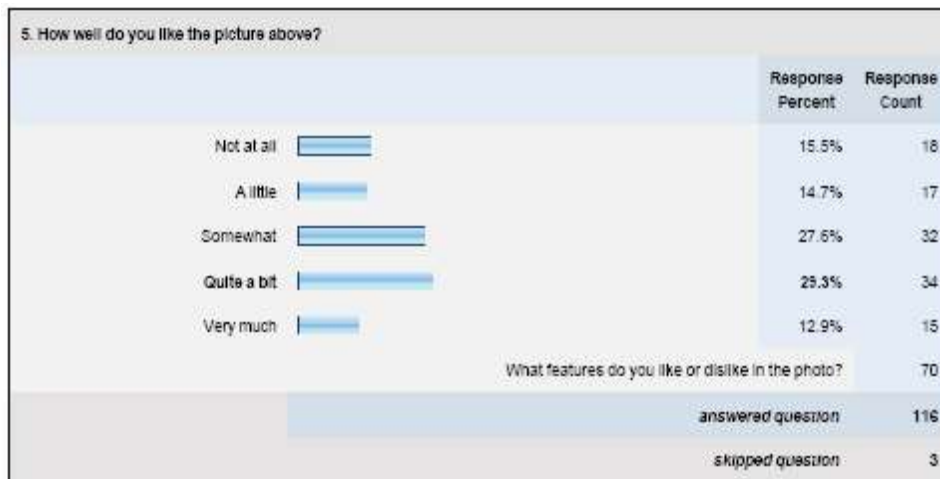
"Cute, looks like a tourist shop, fits the Bolton image. More of a country store feel. . ."

"This is the least impressive I would like to see as not long as it doesn't occur too often. Reminds one of a knick-knack tourist trap along a mountain or lake region road."

Image 5:



Online Survey Results:



Respondent Comments:

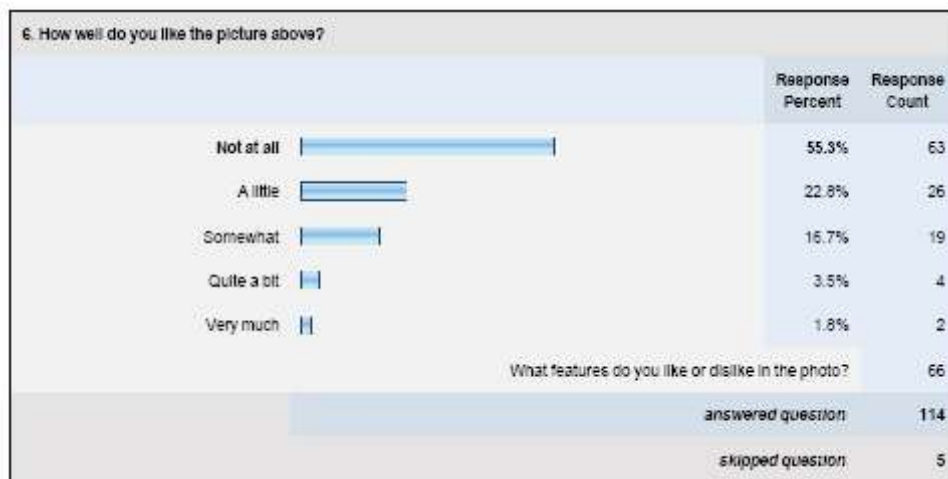
"I really like this, but don't see how it would be possible with 117 traffic and our current town layout"

"I'm not sure that Bolton Town center should or could be a tourist walking destination, which is what this reminds me of"

"A real Main Street with actual stores done very tastefully to walk to each one!"

"OK for a larger town - but too commercial for Bolton"

"I do like it for a certain size town but I don't think that's what Bolton is. Seems too big for Bolton. But I do like the safe sidewalks, trees, easy parking and welcoming storefronts."

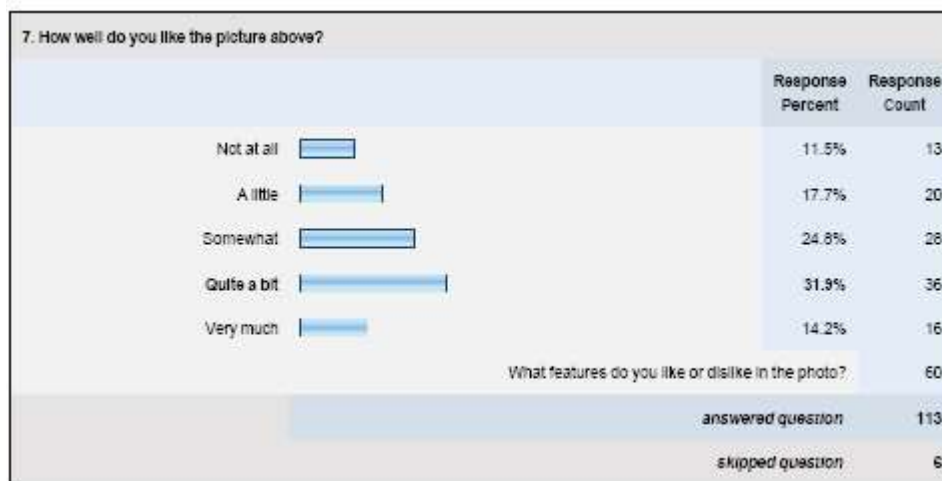
Image 6:**Online Survey Results:****Respondent Comments:**

"I like the concept of stores lined up, but don't like the development over it."

"not in keeping with the character of our town"

"Too big and austere. It doesn't "look" like anything that should be in Bolton. UGLY!"

"Not in keeping with Bolton, looks like lots of housing on 2nd and 3rd stories. There is already an abundance of available housing in Bolton. Do we have firefighting apparatus to support a building like this? Might not meet the height restriction requirement. The window air conditioners are a nice touch - all that is needed is for drying underwear to be hanging out the other windows."

Image 7:**Online Survey Results:****Respondent Comments:**

"like trees/landscaping as a barrier between storefronts and sidewalk and road, like uniformity of architecture"

"The architecture is interesting to attract economic activity, the green space between the shops and sidewalk is pleasing and the impression is a well planned and balanced between economic and environmental activity."

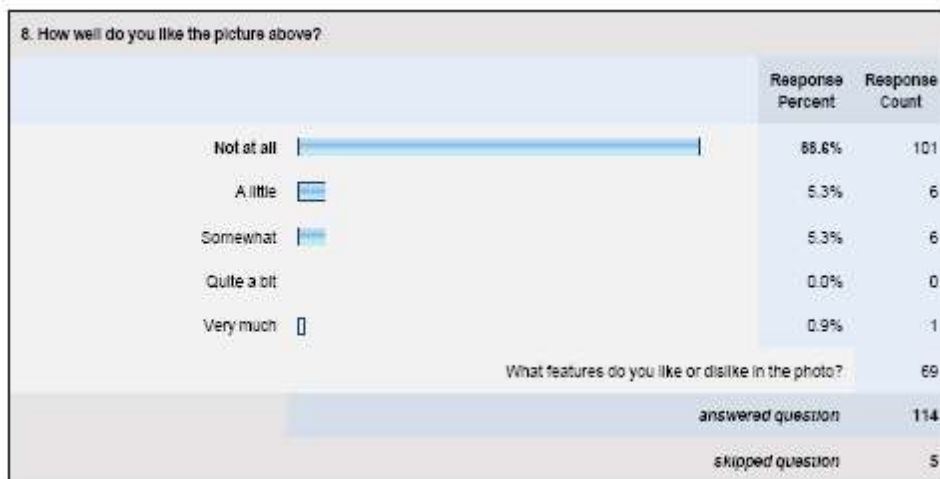
"Doesn't really maintain the old village center feel."

"I like the places to sit, the shade trees, and the pretty landscaping. I like that there is a pedestrian walkway right in front of the shops/offices. I would like the buildings to look a little more colonial, but these are nice."

Image 8:



Online Survey Results:



"Ugly, cheap strip mall"

"YUCK, dislike evident lack of maintenance, parking lot in front of building, architectural style"

"Vast expanse of asphalt, unkempt lawn, no landscaping, unappealing design, rickety signage--this is not Bolton."

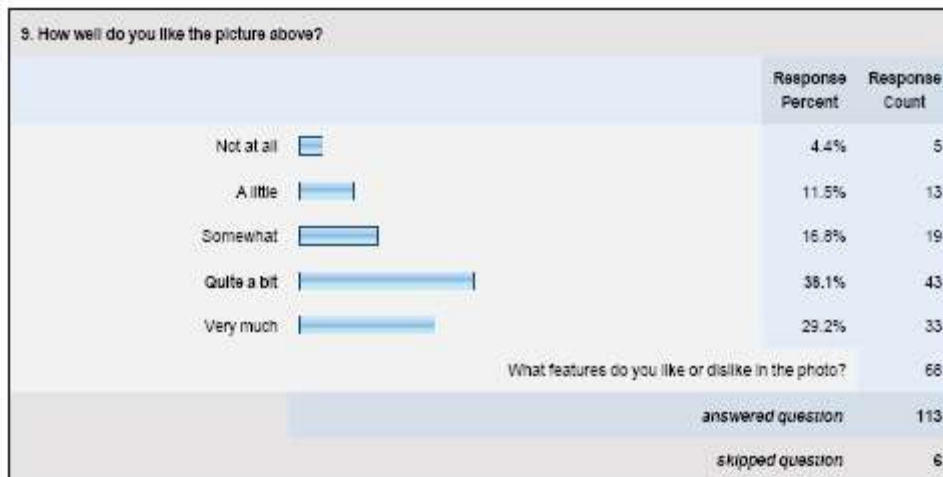
"Yuck. Looks poor. This is just a shopping plaza and not a town center."

"This is my worst nightmare and is the reason why we fight development in Bolton because we don't have sufficient bylaws to prevent a monstrous disaster like this."

Image 9:



Online Survey Results:



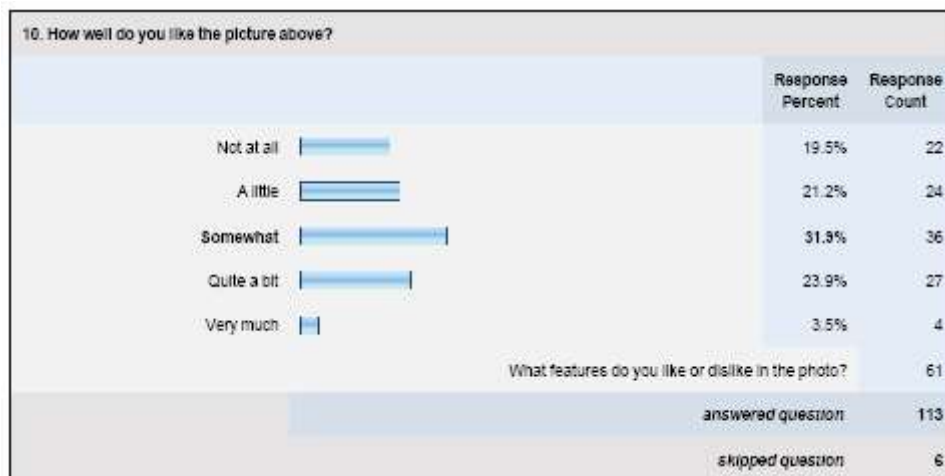
Respondent Comments:

"Like the sidewalk, streetlamp, clock and outdoor dining area"

"As with previously appealing photos, this shows a nice mix of cars, peds, green spaces, wide walks, and commerce. Very inviting."

"This is much more appealing and looks very nice. There is a green space net to the sidewalk separating the store fronts and sidewalk from the street and there are people sitting outside and talking. we need community development like this in Bolton before 117 becomes a superhighway!"

"Looks great! Would be a nice way to take advantage of the historic feel of Bolton - allow / encourage retail, in keeping with historic feel of town."

Image 10:**Online Survey Results:****Respondent Comments:**

"Like architectural style of building, like space between buildings, dislike parking lot in front of building and lack of green space between building and road"

"I like the off street parking and the fact that it feels cozy, but the building is not anything "historic" looking or feeling. It doesn't even look like it belongs in New England!"

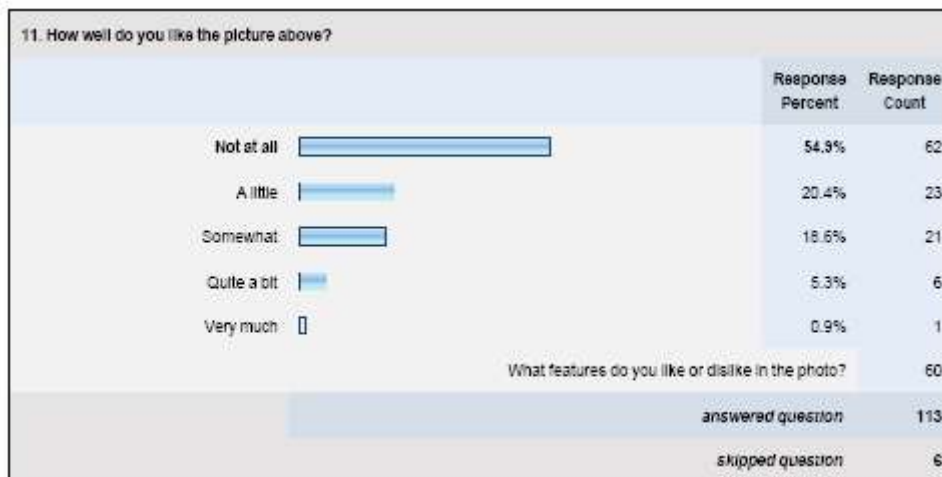
"The building has potential to be charming, the electrical wires need to be below ground."

"It's a cute & attractive building, but there is no protection at all for pedestrians, and there is no way I'd walk a baby carriage along the "sidewalk" which is AT GRADE with the road and is very poorly delineated."

Image 11:



Online Survey Results:



"Too commercial"

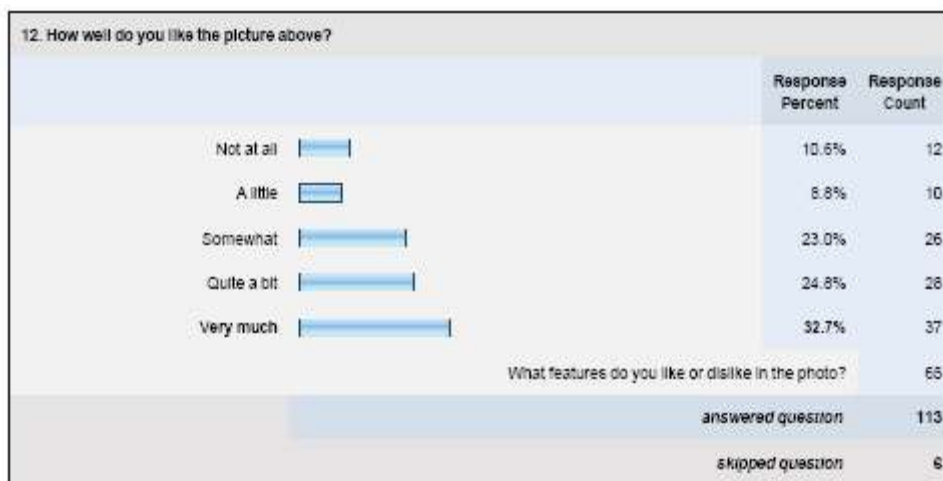
"Looks like row housing."

"like-sidewalk; dislike-looks like rental income property"

"Looks like dense housing. There seems to be an attempt to make each unit different from the next door neighbor. Seems a bit dense for Bolton. I think we need shops & restaurants more than housing."

"I like the walkway right in front of the buildings. But there isn't enough landscaping or shade. I also want places to sit. And I'd like there to be clear "store fronts" and a more colonial feel."

"Can you say 40B???"

Image 12:**Online Survey Results:****Respondent Comments:**

"Very nice. Looks historic and quaint , yet modern. Very clean looking"

"This is great! Lots of walking area. You can park once and visit many places. It has great curb appeal with the architecture, brick walk areas. Fun with strollers or a night out with the sweetie for a coffee or a just to go and read a nice book while frequenting the establishments... Could see lots of potential for multi-uses here."

"Interesting architecture, wide sidewalks, parking and a cafe...all good. This would be pretty elaborate for a town of less than 5000."

"Love it, feels like home, sidewalks, parking available, community feeling, a place where you could hold a lot of functions."

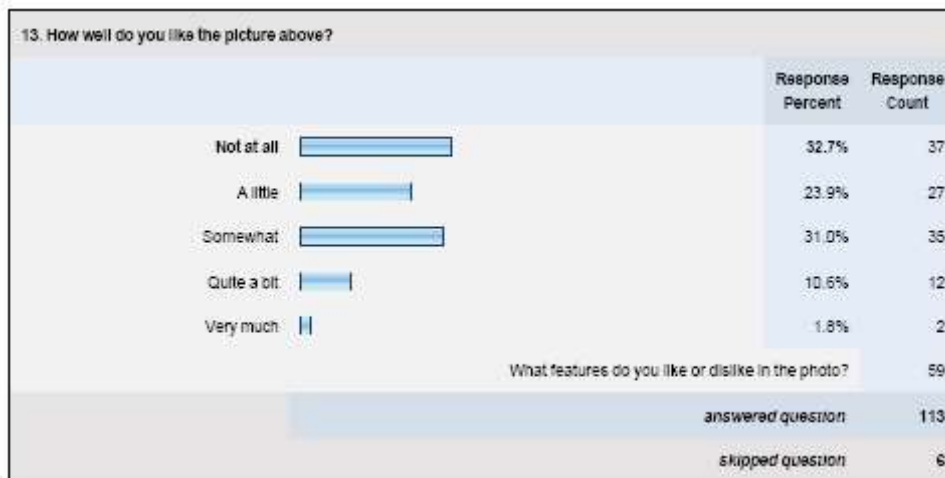
"again, too big for Bolton, but nice"

"Looks like a cross between The Stepford Wives, Disney's Orlando Village, or Wysteria Lane. Definitely NOT Bolton! Street too open and cold as well."

Image 13:



Online Survey Results:



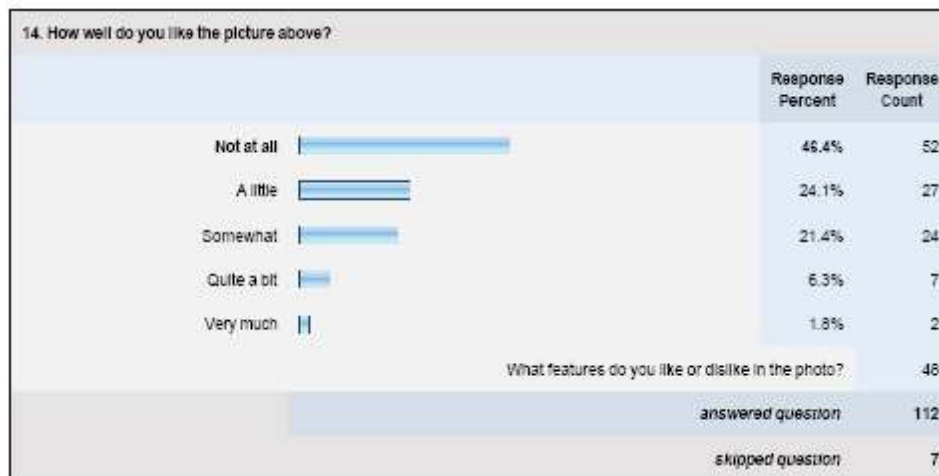
Respondent Comments:

"Typical boring shopping strip. Not much small-town appeal."

"This is nice, but it is a mall, not a town center. Replace the parking lot with a park and this could be an attractive candidate."

"parking lot, large ugly buildings, pavement"

"Suburban sprawl at its worst. Drive or die."

Image 14:**Online Survey Results:****Respondent Comments:**

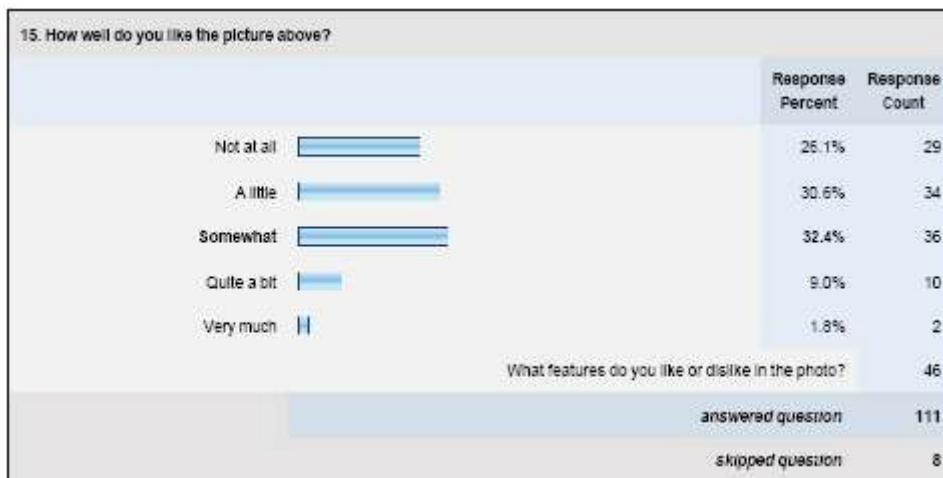
"Looks like a small hotel, or a rooming house. Cars under the windows=parking too close to building. Nicely kept, but not inviting."

"Assuming this is multi-family housing -- I like that it's not cookie-cutter with each unit and entrance looking identical to the one next to it. Like the front porch - looks New Englandy."

"Ugly! Cheap. Bad design. Like low income village up North."

"Building isn't very attractive, don't like the paving right up to building. Random walkways and stairs everywhere - too busy."

"nice upkeep and landscaping"

Image 15:**Online Survey Results:****Respondent Comments:**

"Don't see how this would work in Bolton. We don't have that space."


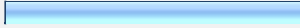



"Seems like a nice balance of grass area and buildings & parking, but overhead wires are ugly. Again, doubt there is anywhere this flat in Bolton"

"Needs more trees. It appears that the green is between the street and the buildings. I'd like to see the green extend from the buildings to the street with parking flanking the left and right of the green."

"Buildings seem too spread out. Doesn't seem to encourage walking or browsing."

"Buildings are nice. Green is nice, but parking lot seems to be the center piece. I'd prefer to see walking paths benches etc. Move parking to on street and behind buildings"

Appendix 6: Online Survey Results

1. What is your overall opinion of the quality of life in the Town?			
		Response Percent	Response Count
Excellent		14.5%	33
High Quality		50.2%	114
Good		27.3%	62
Fair		7.0%	16
Poor		0.9%	2
	<i>answered question</i>		227
	<i>skipped question</i>		1

2. Where do you currently go shopping or access services (please check off all that apply)?					
	Hudson/Marlboro-	Stow/Maynard-	Boxboro/Acton-	Harvard/Ayer-	Fitchburg/Leomin
Banking	49.0% (97)	18.2% (36)	6.6% (13)	0.5% (1)	7.6% (15)
Lawyer	22.9% (19)	2.4% (2)	14.5% (12)	6.0% (5)	2.4% (2)
Doctors/Dentists/other medical offices	29.8% (53)	6.7% (12)	40.4% (72)	14.6% (26)	4.5% (8)
Pharmacy	54.2% (109)	14.4% (29)	12.4% (25)	0.0% (0)	6.0% (12)
Automotive repair	39.0% (57)	8.9% (13)	18.5% (27)	2.1% (3)	15.1% (22)
Gas stations	41.8% (81)	27.3% (53)	8.8% (17)	1.5% (3)	17.0% (33)
Tailors/Dry cleaners	16.1% (25)	9.0% (14)	3.9% (6)	3.2% (5)	1.9% (3)
Package shipment store(Mailboxes Etc, UPS store)	59.3% (70)	6.8% (8)	11.0% (13)	0.8% (1)	10.2% (12)
Salon/beauty	46.5% (66)	7.7% (11)	12.0% (17)	0.7% (1)	8.5% (12)

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Child care services	28.1% (9)	12.5% (4)	15.6% (5)	3.1% (1)	0.0% (0)
Teen/pre-teen after school programs	25.9% (7)	11.1% (3)	11.1% (3)	0.0% (0)	3.7% (1)
Clothing store	82.0% (141)	10.5% (18)	20.9% (36)	1.2% (2)	23.8% (41)
Hardware/General store	63.2% (122)	23.3% (45)	4.7% (9)	0.5% (1)	32.1% (62)
Department store	88.4% (145)	1.2% (2)	3.7% (6)	0.6% (1)	29.3% (48)
Small crafts/Artisan galleries	44.6% (33)	21.6% (16)	31.1% (23)	5.4% (4)	6.8% (5)
Florist	15.0% (19)	5.5% (7)	4.7% (6)	0.0% (0)	1.6% (2)
Farm stands	5.1% (10)	18.7% (37)	11.6% (23)	11.1% (22)	2.0% (4)
Liquor store	49.4% (82)	24.7% (41)	11.4% (19)	0.6% (1)	3.0% (5)
Restaurant	75.3% (134)	30.9% (55)	29.8% (53)	8.4% (15)	29.2% (52)
Breakfast	45.6% (57)	19.2% (24)	8.0% (10)	0.8% (1)	5.6% (7)
Coffee shop	45.7% (63)	17.4% (24)	15.2% (21)	7.2% (10)	5.1% (7)

Final Report

3. How much would you like to see these shopping/services in Bolton?						
	1 = not at all	2 = a little	3 = somewhat	4 = quite a bit	5 = very much	Response Count
Banking	15.3% (27)	13.0% (23)	24.9% (44)	14.7% (26)	32.2% (57)	177
Lawyer	29.8% (50)	26.8% (45)	24.4% (41)	7.7% (13)	11.3% (19)	168
Doctors/Dentists/other medical offices	14.9% (27)	13.8% (25)	26.5% (48)	20.4% (37)	24.3% (44)	181
Pharmacy	25.8% (51)	15.2% (30)	16.7% (33)	17.7% (35)	24.7% (49)	198
Automotive repair	42.9% (76)	24.9% (44)	16.9% (30)	5.1% (9)	10.2% (18)	177
Gas stations	33.1% (59)	20.2% (36)	21.3% (38)	12.4% (22)	12.9% (23)	178
Tailors/Dry Cleaners	18.7% (32)	22.2% (38)	26.3% (45)	10.5% (18)	22.2% (38)	171
Package shipment store (Mailboxes Etc, UPS store)	47.4% (82)	20.2% (35)	15.6% (27)	6.4% (11)	10.4% (18)	173
Salon/beauty	23.6% (41)	25.3% (44)	24.1% (42)	12.1% (21)	14.9% (26)	174
Child care services	21.3% (30)	22.0% (31)	21.3% (30)	15.6% (22)	19.9% (28)	141
Teen/pre-teen after school programs	16.6% (24)	15.2% (22)	17.9% (26)	20.0% (29)	30.3% (44)	145
Clothing store	44.0% (77)	17.1% (30)	20.0% (35)	6.9% (12)	12.0% (21)	175
Hardware general store	30.7% (58)	12.7% (24)	18.0% (34)	21.2% (40)	17.5% (33)	189
Department store	71.1% (123)	11.6% (20)	6.9% (12)	2.9% (5)	7.5% (13)	173
Small crafts/Artisan galleries	11.3% (20)	10.7% (19)	18.6% (33)	20.9% (37)	38.4% (68)	177
Florist	11.3% (19)	14.9% (25)	31.0% (52)	16.1% (27)	26.8% (45)	168
Farm stands	2.7% (5)	0.5% (1)	3.8% (7)	17.6% (32)	75.3% (137)	182
Liquor store	24.4% (42)	18.0% (31)	23.3% (40)	14.5% (25)	19.8% (34)	172
Restaurant	6.1% (12)	4.6% (9)	19.9% (39)	21.9% (43)	47.4% (93)	196
Breakfast	10.0% (18)	6.7% (12)	13.3% (24)	25.0% (45)	45.0% (81)	180
Coffee shop	10.6% (20)	7.4% (14)	12.2% (23)	21.2% (40)	48.7% (92)	189
	answered question					210
	skipped question					18

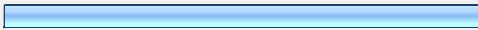
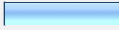
Final Report

4. How do the following items affect the overall quality of the Town as it is today?						
	1 = very negative	2 = slightly negative	3 = doesn't matter	4 = somewhat positive	5 = very positive	Response Count
Business diversity	17.9% (35)	21.9% (43)	29.6% (58)	20.4% (40)	10.2% (20)	196
Historic buildings & streetscape	1.0% (2)	8.8% (18)	8.8% (18)	32.2% (66)	49.3% (101)	205
Off-street parking	9.6% (19)	19.7% (39)	35.4% (70)	22.2% (44)	13.1% (26)	198
Restaurant variety	25.5% (51)	24.5% (49)	21.0% (42)	18.0% (36)	11.0% (22)	200
Small town character	2.5% (5)	4.4% (9)	4.9% (10)	28.4% (58)	59.8% (122)	204
Vacant buildings	48.5% (100)	30.1% (62)	18.4% (38)	0.5% (1)	2.4% (5)	206
Pedestrian sidewalks	20.8% (42)	21.3% (43)	12.9% (26)	19.8% (40)	25.2% (51)	202
Bicycle friendly paths	23.6% (48)	19.2% (39)	8.9% (18)	16.3% (33)	32.0% (65)	203
Public safety patrols	6.1% (12)	7.1% (14)	30.1% (59)	34.7% (68)	21.9% (43)	196
	<i>answered question</i>					209
	<i>skipped question</i>					19

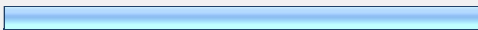
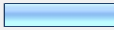
Final Report

5. Please rate the following features of Bolton.						
	1 = unacceptable	2 = poor	3 = fair	4 = good	5 = excellent	Response Count
Sidewalks on Route 117, outside of the downtown	27.3% (51)	32.1% (60)	20.3% (38)	16.6% (31)	3.7% (7)	187
Bicycle friendly pathways	33.0% (62)	43.6% (82)	9.0% (17)	8.5% (16)	5.9% (11)	188
Crosswalks	9.6% (18)	23.9% (45)	34.0% (64)	25.5% (48)	6.9% (13)	188
Traffic control (lights & signals)	12.4% (24)	18.1% (35)	31.1% (60)	32.6% (63)	5.7% (11)	193
Street lighting	5.8% (11)	17.9% (34)	40.5% (77)	31.6% (60)	4.2% (8)	190
Off street parking	8.7% (16)	25.0% (46)	37.5% (69)	23.4% (43)	5.4% (10)	184
On street parking	6.0% (11)	31.3% (57)	41.8% (76)	18.1% (33)	2.7% (5)	182
Paving & curbing	5.5% (10)	17.0% (31)	40.7% (74)	31.9% (58)	4.9% (9)	182
Public safety patrols	2.3% (4)	4.1% (7)	32.2% (55)	44.4% (76)	17.0% (29)	171
Cleanliness	0.5% (1)	1.0% (2)	22.3% (43)	55.4% (107)	20.7% (40)	193
Snow removal	0.0% (0)	5.7% (11)	18.7% (36)	48.2% (93)	27.5% (53)	193
Utility wires put underground in town center	8.9% (14)	11.5% (18)	33.1% (52)	30.6% (48)	15.9% (25)	157
Elderly services	1.4% (2)	11.5% (17)	50.0% (74)	31.1% (46)	6.1% (9)	148
Community center	20.0% (33)	34.5% (57)	26.1% (43)	13.9% (23)	5.5% (9)	165
Public parks/recreation area	3.8% (7)	16.4% (30)	24.6% (45)	39.9% (73)	15.3% (28)	183
Restaurant variety	24.3% (46)	42.3% (80)	24.3% (46)	5.8% (11)	3.2% (6)	189
Business diversity	22.2% (41)	42.2% (78)	23.8% (44)	9.2% (17)	2.7% (5)	185
Municipal signage	5.6% (10)	14.5% (26)	46.4% (83)	27.4% (49)	6.1% (11)	179
Private signage	6.7% (12)	14.5% (26)	51.4% (92)	24.0% (43)	3.4% (6)	179
Landscaping (non residential)	2.2% (4)	14.1% (26)	48.6% (90)	30.3% (56)	4.9% (9)	185
Historic buildings & streetscape	0.5% (1)	6.7% (13)	30.6% (59)	46.1% (89)	16.1% (31)	193
Small town character	2.1% (4)	4.1% (8)	21.5% (42)	44.1% (86)	28.2% (55)	195
	<i>answered question</i>					201
	<i>skipped question</i>					27

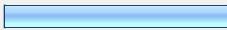
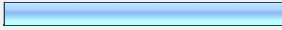
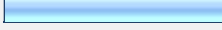
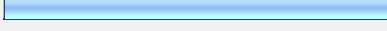
6. Do you support mixed use development in Bolton. For instance: -Space for different uses (i.e. retail / business /professional / housing) situated on one piece of land.-A structure that has business and/or professional space on the 1st floor and housing on the 2nd floor.

		Response Percent	Response Count
Yes		80.7%	159
No		19.3%	38
	answered question		197
	skipped question		31

7. Would you like to see the creation of a village district? This district would permit small to moderate economic development uses and residential uses designed in a village setting and scale. The district would be designed to create a small village with strong pedestrian connections, architectural design guidelines, consistent architecture and small scale structures to service Bolton Residents. This could include apartments over first floor commercial structures.

		Response Percent	Response Count
Yes		81.4%	158
No		18.6%	36
	answered question		194
	skipped question		34

8. If yes where should the village district be located? (check all that apply)

		Response Percent	Response Count
Along Route 117 by the Stow line		37.7%	61
Route 117/495 ramp		47.5%	77
At the corners of Route 110 and 117		37.0%	60
117/Wattaquaddock Hill Road		65.4%	106
	Other (please specify)		18
	answered question		162
	skipped question		66

Final Report

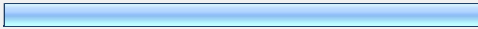
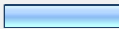
9. How important do you think the following features are for a village center?

	1 = not at all	2 = a little	3 = somewhat	4 = quite a bit	5 = very much	Response Count
Aesthetically pleasing buildings	1.1% (2)	3.3% (6)	4.4% (8)	35.7% (65)	55.5% (101)	182
Nearby parks and open space	3.9% (7)	5.0% (9)	12.2% (22)	38.3% (69)	40.6% (73)	180
Safety	0.6% (1)	1.7% (3)	7.3% (13)	34.5% (61)	55.9% (99)	177
Nearby transit (public transportation)	19.3% (34)	18.2% (32)	33.0% (58)	19.3% (34)	10.2% (18)	176
Walking and biking paths	3.9% (7)	6.1% (11)	12.2% (22)	31.5% (57)	46.4% (84)	181
Central park/recreation area/common area	3.9% (7)	6.7% (12)	17.2% (31)	33.9% (61)	38.3% (69)	180
Mixed use development	6.3% (11)	9.7% (17)	28.4% (50)	33.5% (59)	22.2% (39)	176
Affordable housing	31.8% (56)	14.2% (25)	24.4% (43)	18.8% (33)	10.8% (19)	176
Streets with low traffic	10.3% (18)	13.7% (24)	40.0% (70)	22.3% (39)	13.7% (24)	175
Quiet streets	12.7% (22)	15.6% (27)	31.2% (54)	26.6% (46)	13.9% (24)	173
Street trees	5.0% (9)	3.4% (6)	13.4% (24)	42.5% (76)	35.8% (64)	179
Landscaping around buildings	2.8% (5)	1.7% (3)	17.2% (31)	38.3% (69)	40.0% (72)	180
Sidewalks	2.2% (4)	2.8% (5)	13.4% (24)	34.6% (62)	46.9% (84)	179
Streetscape	3.0% (5)	4.2% (7)	20.2% (34)	37.5% (63)	35.1% (59)	168
Street lighting	3.4% (6)	7.9% (14)	24.9% (44)	33.3% (59)	30.5% (54)	177
Historic areas	8.4% (15)	11.8% (21)	21.9% (39)	32.0% (57)	25.8% (46)	178
Arts/culture	6.1% (11)	11.2% (20)	25.7% (46)	28.5% (51)	28.5% (51)	179
Theater/event space	13.2% (23)	16.7% (29)	26.4% (46)	25.9% (45)	17.8% (31)	174
Convenient shopping/dining opportunities	6.8% (12)	8.0% (14)	22.7% (40)	30.1% (53)	32.4% (57)	176
Small local businesses	3.4% (6)	2.8% (5)	21.2% (38)	37.4% (67)	35.2% (63)	179
Department stores	65.6% (118)	21.7% (39)	7.2% (13)	2.8% (5)	2.8% (5)	180
Local farmers market	2.2% (4)	3.4% (6)	16.9% (30)	32.6% (58)	44.9% (80)	178
Environmentally friendly building materials and practices	6.7% (12)	6.7% (12)	17.8% (32)	30.0% (54)	38.9% (70)	180
	answered question					182

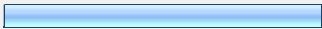
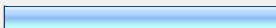
Final Report

	<i>skipped question</i>	46
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
10. Do you believe that a separate tax rate that is different from the residential rate should be set for commercial business?

		Response Percent	Response Count
Yes		80.5%	149
No		19.5%	36
	<i>answered question</i>		185
	<i>skipped question</i>		43

11. Should tax incentive financing be made available to attract commercial business and other in-town services?

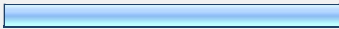

		Response Percent	Response Count
Yes		53.8%	99
No		46.2%	85
	<i>answered question</i>		184
	<i>skipped question</i>		44

12. Do you believe that design standards for the architecture, signage, parking and landscaping should be enacted as part of Bolton's planning bylaws for non-residential uses?

		Response Percent	Response Count
Yes		92.6%	175
No		7.4%	14
	<i>answered question</i>		189
	<i>skipped question</i>		39

Final Report


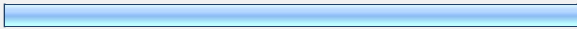
13. Should in-town services, amenities and businesses be focused in one area or spread out over multiple areas of the town?

		Response Percent	Response Count
One area		56.8%	105
Multiple areas		43.2%	80
	<i>answered question</i>		185
	<i>skipped question</i>		43

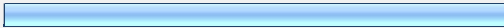


14. How long have you lived in Bolton?



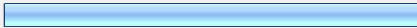
	Response Count
	166
<i>answered question</i>	166
<i>skipped question</i>	62

15. Do you:

		Response Percent	Response Count
Rent		2.6%	5
Own		97.4%	187
	<i>answered question</i>		192
	<i>skipped question</i>		36

Final Report

16. Are you:			
		Response Percent	Response Count
Employed		84.8%	162
Unemployed		5.2%	10
Retired		9.9%	19
answered question			191
skipped question			37

17. If you are employed, where do you work?			
		Response Percent	Response Count
At home		19.5%	32
In town but not at home		10.4%	17
Outside town		70.1%	115
answered question			164
skipped question			64

18. If you work at home, what is your occupation?		
		Response Count
		46
answered question		46
skipped question		182

Final Report


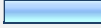
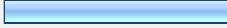




19. How many people are in your household?

	Response Count
	185
<i>answered question</i>	185
<i>skipped question</i>	43



20. How many people in your household are under 18?

	Response Count
	173
<i>answered question</i>	173
<i>skipped question</i>	55

21. Age

	Response Percent	Response Count
under 20 	2.6%	5
20-29	0.0%	0
30-39 	16.3%	31
40-49 	37.9%	72
50-59 	25.8%	49
60-69 	13.7%	26
70-79 	2.1%	4
80+ 	1.6%	3
<i>answered question</i>		190
<i>skipped question</i>		38

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22. Gender			
		Response Percent	Response Count
Male		40.0%	76
Female		60.0%	114
answered question			190
skipped question			38

23. Please feel free to add any more comments below.		
		Response Count
		73
answered question		73
skipped question		155

Appendix 7: Business Questions

Business Name _____

Contact Name _____

What type of business are you?

What is your market/demographic?

Do you interact with the town's people?

Who are your competitors in town?

Who are your competitors out of town?

What types of businesses new in town would benefit or strengthen your business?

Do you support a Village Center?

What types of businesses do you think were allowed to come to town would help the town?

What are your major constraints/issues?

How do you envision the town center could look like?

Do you know of any businesses that wanted to come to town and couldn't or didn't, and for what reasons?

Appendix 8: Design Maps

Vision Plan

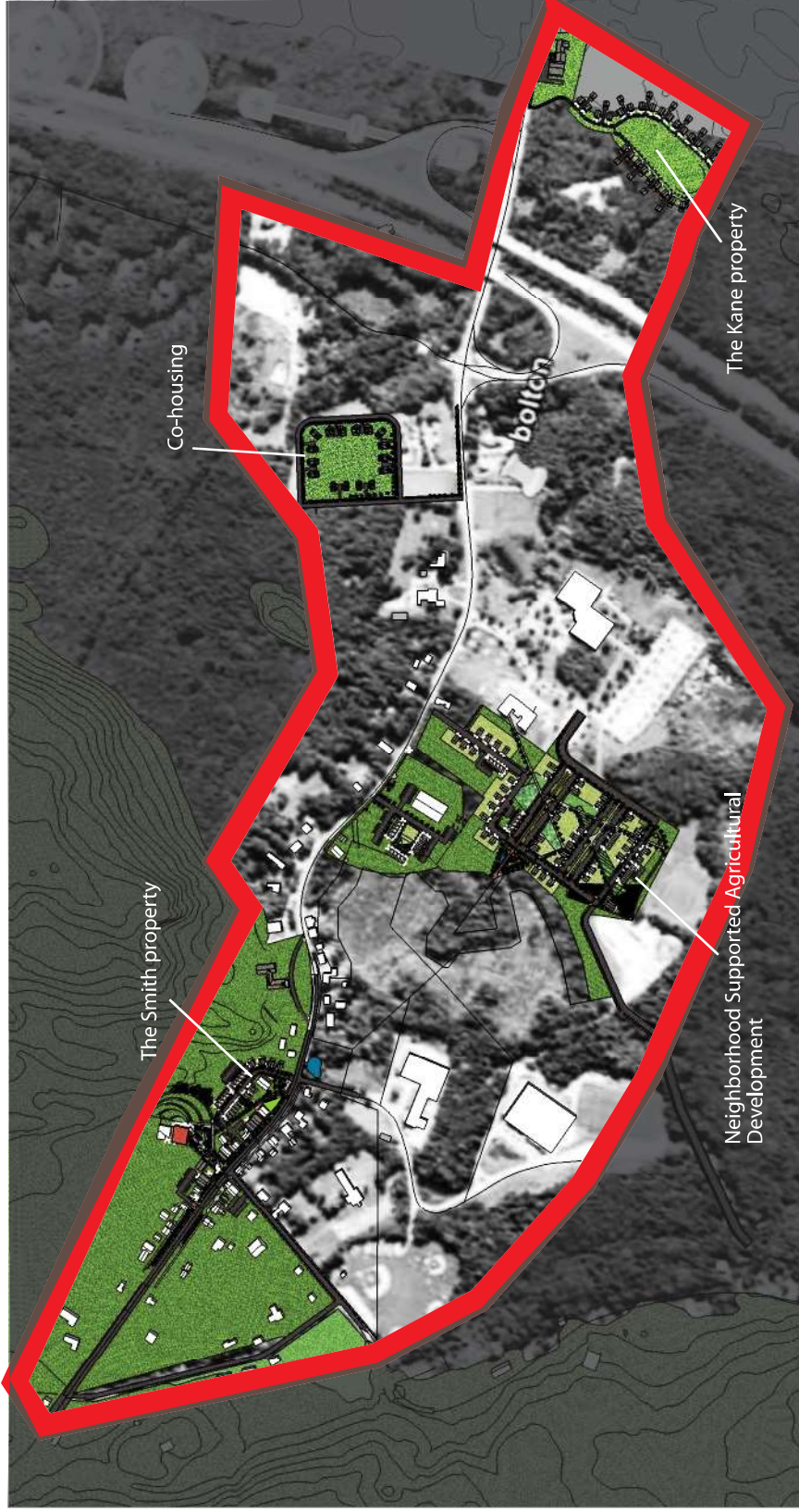
Public Open Space

Land Use

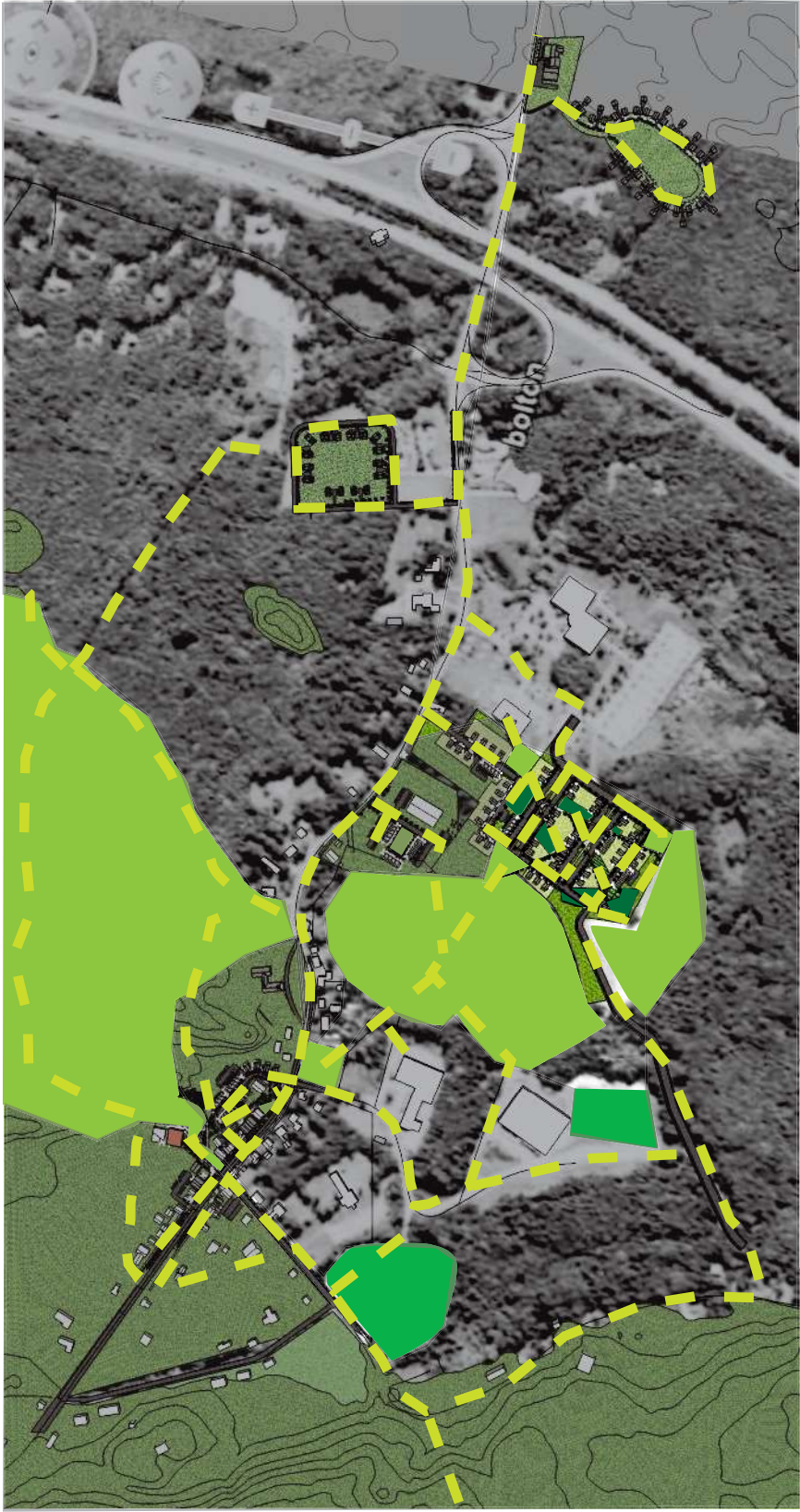
Vehicular Circulation

Pedestrian Circulation

Water Strategy



The Master Vision Plan unites the desires of Bolton residents, the physical dictates of the surrounding ecosystems and core sustainability concepts. The red line indicates the proposed overlay district boundary. There are four focus areas: The Smith property Neighborhood Supported Agricultural Development The Kane property Co-housing



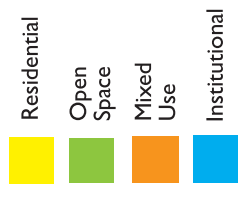
- Active Open Space
- Passive Open Space
- Agricultural Open Space
- Open Space Connections

Passive use consisting of the wetlands and Powder House Hill defines the open space system in the village center. Active use occurs in the ball fields near the schools and in Wattaquodoc road. Agricultural open space supports neighborhood food security for the Neighborhood Supported Agriculture Development. A system of pathways for pedestrians and bicycles creates an alternative mode of transportation and links open spaces on a village, town and regional level

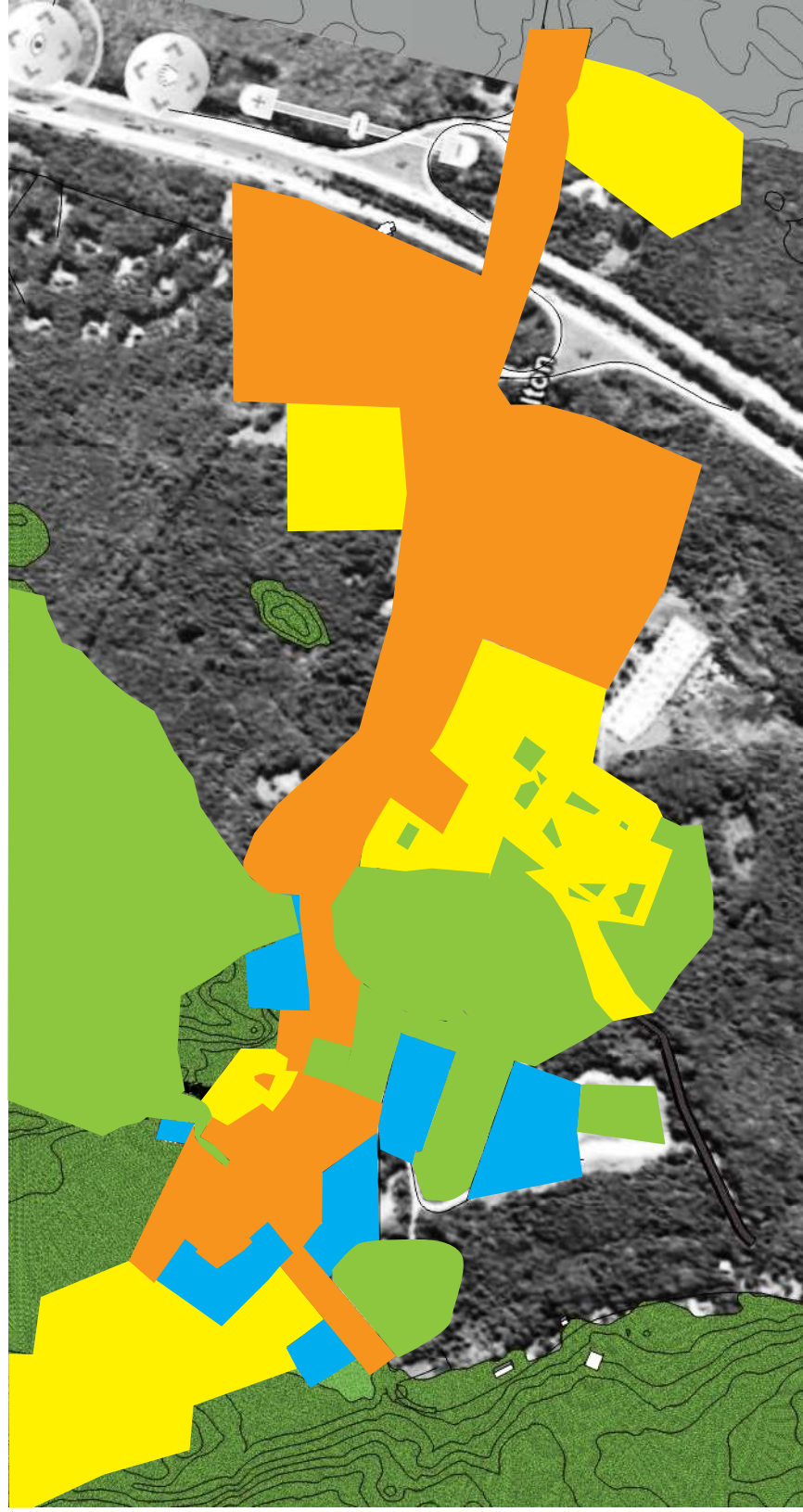


Sustainable Community Planning for Bolton, MA

Land Use



Proposed land use includes a spine of mixed use along Route 117 and Wataquadoc road that would be comprised of commercial, residential and office space. High density residential developments would help to support new businesses. Open space and institutional use would constitute a central axis perpendicular to the spine.

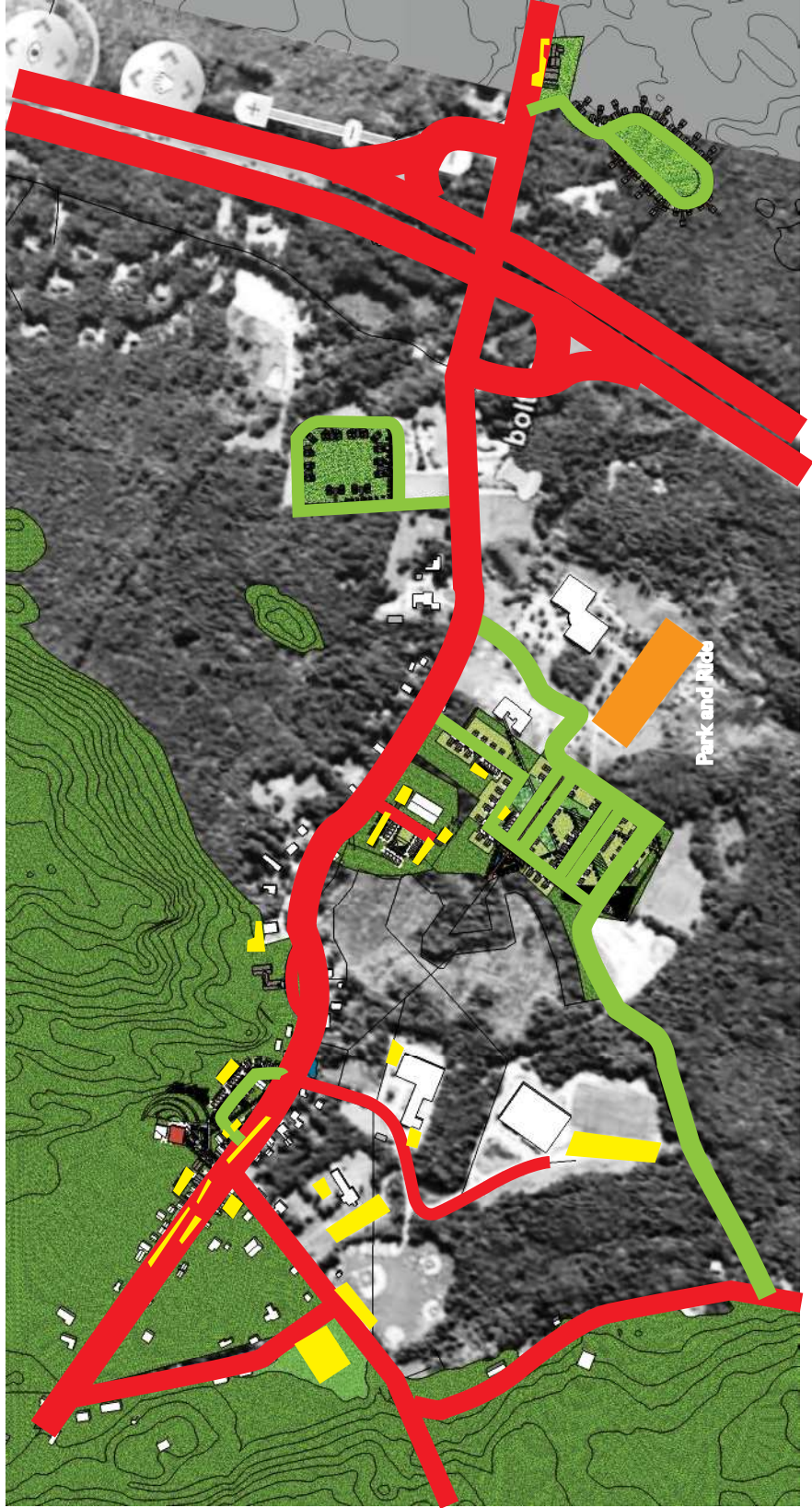


Vehicular Circulation

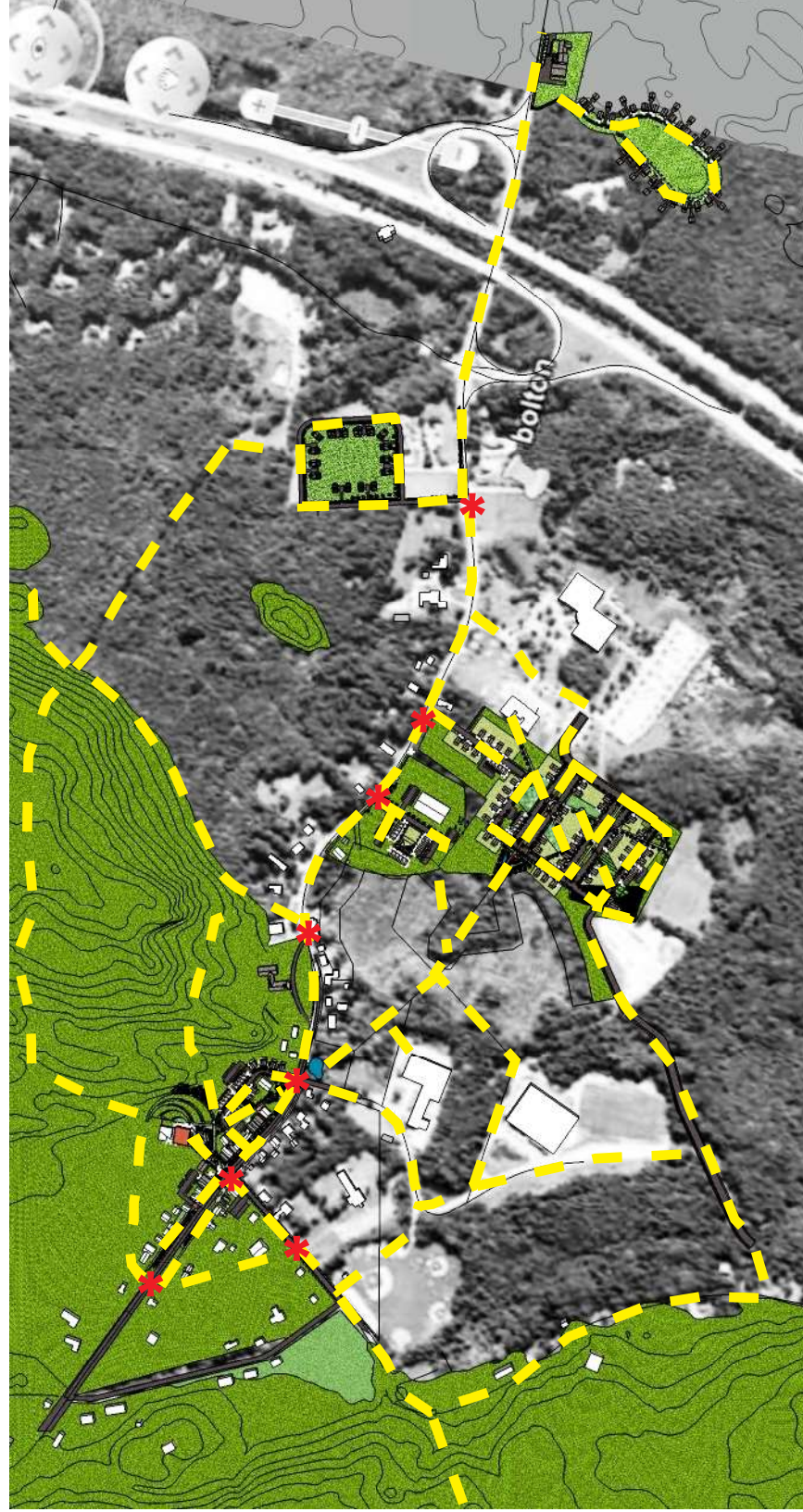
- Primary Roads
- Secondary Roads
- Tertiary Roads
- Proposed Secondary Routes
- Proposed Tertiary Routes
- Parking
- Park and Ride

Parking in the village center helps to support businesses located there, with large lots located behind buildings. On street parking in the west-bound lane of Route 117 helps support businesses, buffer traffic noise and slow traffic. Larger lots on the periphery of downtown accommodate overflow parking during events and festivals. The parking lot nearest 495 is ideally sited for park and ride, as well as for a jitney bus service that connects commuters to nearby mass transit.

New roads connect the proposed Neighborhood Supported Agriculture Development (NSAD) to Route 117 and the Berlin road. Smaller roads interlink new neighborhoods to larger vehicle circulation arteries. An extension of Mechanic street connects to the new access road for the neighborhood-supported agriculture development.



Pedestrian Circulation



Pedestrian circulation connects all of the proposed areas of development within the village center to each other as well as to trails within the town and the region. Sidewalks along Route 117 are reconfigured to give a greater buffer to pedestrians from cars. Cross walks allow safe passage across Wattoquodoc and Route 117. Alternative routes along already established paths are formalized and integrated into trail and walking network.

Water Strategy

- Septic Connection
- Well Head
- Constructed Wetland
- Leachfield

The Smith property ties into Bolton's existing septic package plant that accomodates the town institutional buildings. Leachfields in the Kane Property and Co-housing developments can be located in the common areas to reduce disturbance to surroundings. Constructed subsurface wetlands treat secondary effluent in areas that leach fields would not work because of either space constraints or perk issues. Well heads for drinking water are located well beyond mandated setbacks.

