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Mill Redevelopment Toolkit

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Mill Redevelopment Toolkit

Master of Regional Planning

Final Project

Created by Janko Tomasic

May 2023

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Mill Redevelopment Toolkit

A Master's Project Presented

by

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Acknowledgements

I would like to thank my committee members: Professor Mullin, Professor Renski, and Sarah LaCour.

Each offered invaluable guidance, direction, knowledge, and structure. I am forever grateful for their mentorship.

Dedicated to my Mom, Dad, Ruth, and, in loving memory, Chloe.



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Abstract

Not long ago, mills were the centerpieces and economic engine of many communities throughout New England. With the departure of the manufacturing industry, many of these structures and complexes fell into vacancy and blight, with many being demolished outright. The town of Ludlow, MA is an example of a smaller mill community that was impacted by the closure of its mill. It resulted in the decline and eventual stagnation of population and economic growth.

Large unused buildings may bring sorrow to the residents who once worked the floors and machines, but they can also offer opportunity. Through the effective adaptive reuse of mill buildings, they can be revitalized, bringing new economic possibilities to the community and preserving the industrial history that many residents are connected with. This approach, while appealing, comes with its own set of challenges and requires careful consideration of various factors in order to be successful. Over the last 15 years the Ludlow Mills complex has seen redevelopment efforts that show visible improvement to the site and surrounding area, with further development efforts currently underway. Drawing from previous successful revitalization case studies and from the in-progress redevelopment in Ludlow, this project will generate 25 factors that could be considered in the revitalization and combined into a toolkit for developers. By providing fiscal, economic, social, and practical reasoning for mill revitalization, this project aims to provide a first version of a template in which a successful revitalization can be done, and which can later be improved upon.

The Purpose

The purpose of this project is to generate a pre-development toolkit for potential mill sites, informed by the Ludlow Mills effort and results. This toolkit contains 25 factors that influence a successful mill redevelopment project. The goal of the toolkit is to provide a clear feasibility grade for how shovel-ready the site in question is, and to give developers a list of what physical and bureaucratic conditions will need to be met to allow for timely, cost effective, and purposeful redevelopment. The questions will follow a "Yes, No" answer format, with evidence or explanations to support the answers.

Introduction

Human settlements have existed for thousands of years, however the study of human settlements, ekistics, is a relatively new science. Ekistics focuses on five key elements: nature (environment), man and woman (human), shells (structures), society, and networks, and their interaction with each other in the context of human settlement (Doxiadis, 1968). The interaction between these elements at a central node creates a human settlement such as a mill town. The collapse of one or more of these interactions can lead to the decline and demise of a settlement, town, or city. All around America, many former manufacturing centers have seen a massive downturn in population, industry, and income. Many former industrial towns have sought to find other uses for their industrial infrastructure to help revitalize their economies.

One region affected particularly poorly by industrial manufacturing decline during the late 1970s and 80s is New England. It is a region with rich industrial heritage, with the first water powered mill built in the 1790s in Pawtucket, Rhode Island. The first major industrial mill complex, Boston Manufacturing Company, was built in 1814 in Waltham Massachusetts (Temin 1999). The success of the mill and the demand for textiles prompted additional mill development across New England. As the United States became more industrialized, the combination of the region's geography and population growth allowed for the development of hundreds of mills. By 1865, these factories employed over 100,000 people in New England and produced close to a billion yards of cloth (*Early Industrialization in the Northeast | US History I (OS Collection)*, n.d.). One of these many mills was the Ludlow Manufacturing Company based in Ludlow, Massachusetts on the banks of the Chicopee River. Ludlow is an example of a mill town undergoing revitalization through the redevelopment of the Ludlow Mills Complex.

During its heyday the company produced cloth, rope, and twine from Indian-grown hemp, jute and flax. World War One disrupted the raw material imports from India and caused the company to move the mill overseas. World War Two saw a brief economic upturn but the steady decline of economic activity led to the mills closing in the 1950's. By the end of the 20th century, Ludlow had become a "bedroom community", with residents mainly commuting out of Ludlow for work, and experienced stagnated population and economic growth (ludlow.ma.us). The Ludlow Mills complex which at one time employed over 5000 people, in 50 buildings with more than a million square feet of space, sat vacant and unused.

Over the last two decades, increased interest and investment in the revitalization of former mill complexes has seen the redevelopment of mill complexes all over New England through a combination of public and private partnerships. An example of one such redevelopment is the Ludlow Mills complex within the Town of Ludlow.

Westmass Area Development Corporation (WADC), a regional non-profit business and industrial development entity, acquired the site in 2011 for \$4.625 million from Ludlow Industrial Realty. The project has received millions of dollars in state grant money as well as private investment of tens of millions of dollars (Kinney, 2011). WADC proposed the project in 2008 and launched it in 2012. It said this would be a 20-year project that would generate \$300 million in public and private investments, create more than 2,000 jobs, and provide more than \$2 million increase in municipal property taxes. According to Jeff Daley who is the current president of WADC, it is "certainly at a turning point, where we're focusing our efforts on redevelopment as opposed to staying afloat and cleaning the site — it was a very dirty site back when they first bought it, And there's still a lot of cleanup left to do, but the focus is shifting from preserving and investing in the cleaning of the site to continuing that cleaning, which we need to do, but also looking now toward projects that we can invest good dollars in

and get good returns from.” (BusinessWest 2022). As of 2018 the project had received close to 127 million dollars in private and public investment, and completed Mill 10, an over-55 housing complex, and a health rehabilitation center. As of 2021, the riverwalk behind the mill was completed, and in 2022 a new proposal for mixed income housing received 30 million in funding and is currently in development. The 95 apartments to be built inside Mill 8 will cater to a wide range of incomes, offering 43 affordable units for rent at 60% of area median income (AMI), 40 market units, and 12 extremely low-income units available at 30% of AMI (BusinessWest, 2021). According to the Town Planner, Douglas Stefanick, the benefits to the community are already coming ahead of schedule. As BusinessWest quotes Stefanick, "As the mills develop, they will generate additional interest outside that area, that's because now, you're putting people down at the mills; you have people who are 55 and over in that housing project, and that's going to carry over into the community." Within walking distance, he added, are a post office, a library, restaurants and shops on East Street, and convenience stores. "There is a trickle down; people are getting into their routines [at Mill 10], and it's going to be a positive for the whole area." (BusinessWest 2018).

Research Questions:

The crux of this project is to use research questions to identify 25 key themes and factors within mill redevelopment projects and processes to help developers become more informed on the feasibility of the redevelopment. The goal of the research is to determine the most important factors that need to be taken into account before ground is broken.

Methods

This project consisted of multiple research methods. One was conducting interviews with the municipality and the development entity. Next was the examination of documents from the Town of Ludlow regarding the Ludlow Mills project including existing conditions study, planning board meeting materials, site plans (both envisioned and current), the town master plan, and the Ludlow Mills Comprehensive Plan. Furthermore, I reviewed literature on local economic development, mill revitalization, and examined modern uses for historic mills. The information gathered from research and interviews resulted in the creation of two dozen factors deemed to be (most) important to a mill redevelopment project.

Interviews

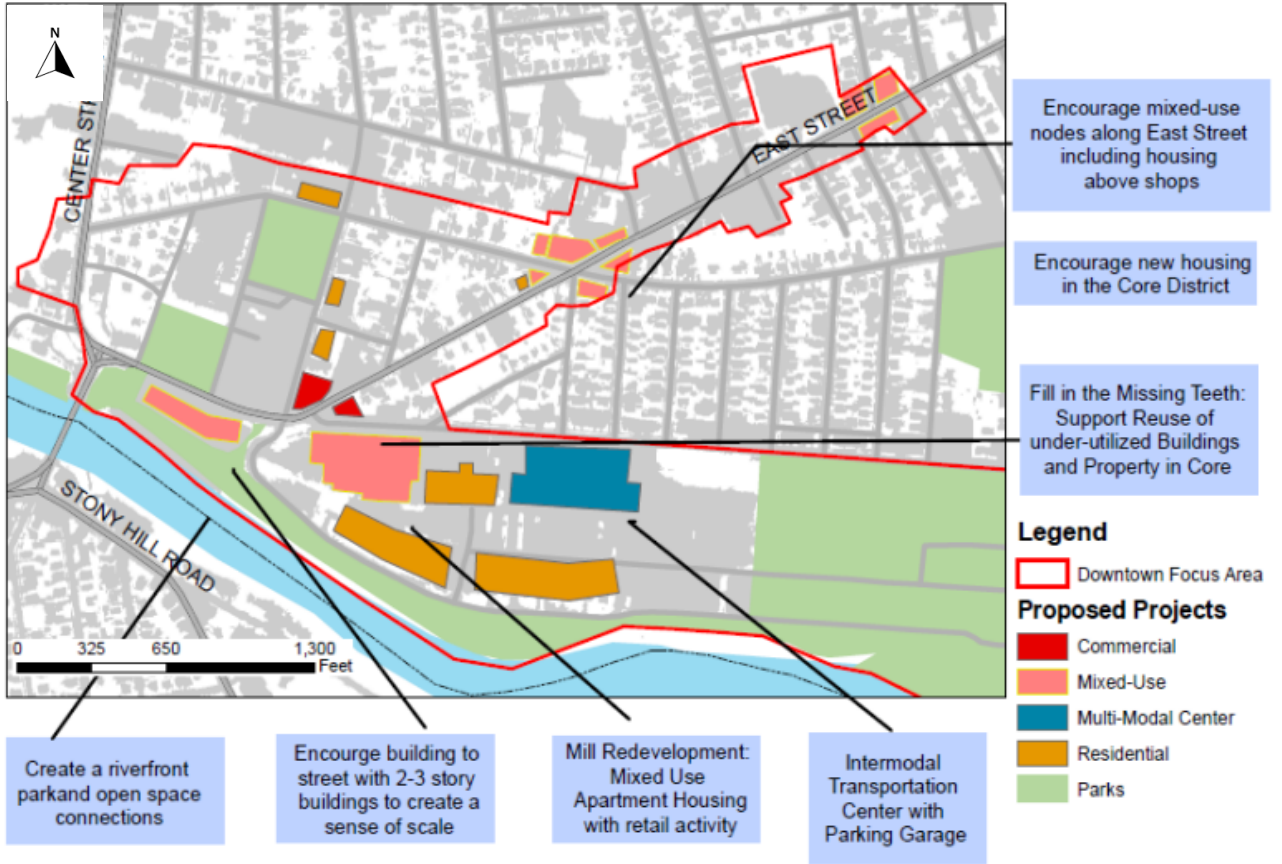
As part of the investigation, informal interviews were conducted with Sarah Lacour of WADC, the development entity overseeing the Ludlow Mills project, and Douglas Stefancik, the Ludlow Town Planner. Both are heavily involved and invested in this project. The interview questions relate to project challenges, priorities, legislative processes, economic impacts, and project goals. Appendix A contains interview questions.

Common themes such as political support, financial structure, funding sources, came out of the further analysis of the interviews. That in turn informed the developers' questions on the mill redevelopment toolkit.

The final product will contain two dozen questions regarding different characteristics of the redevelopment. These questions will be arranged into categories regarding the project characteristic. In answering the questions, the developers should not simply say Yes or No, but should also provide the reasons or evidence supporting their answers.

Ludlow Master Plan

An examination of the study area's master plan shows the involvement of the Pioneer Valley Planning Commission, WADC, and the UMass Landscape Architecture & Regional Planning Studio. This Studio was conducted in 2009, the same year the master plan was completed. I have also perused the Envision Ludlow: 2030 Master Plan which the community was asked to envision their community in 20 years. The plans describe how town residents were involved in the community visioning process, and from this it lays out three scenarios. One of these is a historical preservation, or "cultural core" district which outlines a section of Ludlow on the east street corridor, the mill sites, and a section of the riverwalk. The scenario outlines various cultural sites with the riverfront mill area being heavily focused on redevelopment. The main project is the Mill Redevelopment, in which a planned redevelopment of the Ludlow Mills, the largest cultural asset in Ludlow, brings renewed interest and economic development to the entire downtown. (*Town of Ludlow Master Plan: Envisioning 2030, 2009*).



The map above shows the proposed cultural core district from the *Town of Ludlow Master*

Plan: Envisioning 2030 UMass Studio

Literature Review

Mill Revitalization

Numerous mill towns across the state of Massachusetts are struggling to preserve the past while simultaneously planning for the future. The common themes of a strong industrial heritage coupled with the influences of the various immigrant groups define the mill town. The government of Massachusetts describes mills as “valuable cultural assets” and believes that their revitalization can spur local and potentially regional economic growth (Spencer, 2014).

Revitalized mills are part of a smart growth strategy and can accomplish several smart growth goals at once: reuse of existing structures, compact infill development, environmental restoration, and an increase in housing and job opportunities. Besides economic downturn and declining population rates, another problem facing some mill communities is that they are already too built up for further expansion, thus providing an incentive to use what is already available. Reuse of the existing structures can avoid wasteful construction and save materials, time, and money (Smart Growth America, n.d.).

The restoration of the surrounding environment occurs as the mill was often a source of major pollution when it was up and running, dumping much of its waste into the nearby river and surrounding air. After mills fell into disrepair there is a danger that some of the materials used in its construction could be exposed and damage the surrounding environment - for example lead and asbestos. Potential contamination of the surrounding area or site is a significant barrier to redevelopment (Mill Revitalization Districts (MRD), n.d.).

Mills are versatile industrial structures that can be revitalized to suit specific market conditions. If there is a need for housing, developers can easily adapt mills to suit housing needs and create job opportunities both within the development and as a result of the development. If there is a business need, mills can be adapted into large commercial buildings (Kotva & Mullin, 2009). Mill revitalization is versatile due to the characteristics of mills. They are usually large buildings, with a brick exterior and wood interior. Prior to 1903 and the implementation of the elevators they were 4-5 stories, but later reached up to 7 stories high. They contain spacious rooms with high ceilings, and many large windows. Mills are usually slightly set back from surrounding structures, often with narrow streets and alleys in and around the mill complex. To their disadvantage is the fact that they were frequently constructed using hazardous materials such as lead and asbestos. The aging infrastructure, environmental contamination, and site location are all challenges to the revitalization process (Mill Revitalization Districts (MRD), n.d.).

Mill revitalization itself addresses four focus areas: the site and mill building, the host community, development entity, and market conditions. Prior to a redevelopment of a mill site, the town established a Mill Revitalization District (MRD) zoning bylaw, allowing for mixed use development. Mass.gov defines a MRD as “areas that are composed of one or more historic mill buildings and surrounding structures such as worker housing, utilitarian service buildings, and canal infrastructure.” This allows for more legislative leeway regarding zoning changes, redevelopment use, tax incentives and other additions or changes that may present themselves during the redevelopment. Creating an MRD streamlines the redevelopment process. According to the Massachusetts government Mill Revitalizations District (MRD) Smart Growth Toolkit, considerations for these areas are in section B of the appendix.

These four focus areas are similar to the ones identified in Mill and Mill Town Pilot Feasibility Checklist from the University of Massachusetts Center for Economic Development. The checklist is organized into 9 sections, shown in section C of the appendix.

The checklist is intended to help prepare a town to revitalize its mill buildings and help potential developers identify priorities and viable redevelopment sites. The high volume of vacant mills makes this a useful toolkit and demonstrates the need for creative tools that can be used as a preliminary filter for mill redevelopment opportunities (Mullin & Roper, 2016).

Local Economic Development

According to the American Economic Development Council (AEDC): "Economic development is the process of creating wealth through the mobilization of human, financial, capital, physical, and natural resources to generate marketable goods and services. The economic developer's role is to influence the process for the benefit of the community through expanding job opportunities and tax base." (Malizia 2021) The International Economic Development Council defines economic development as "a program, group of policies, or activity that seeks to improve the economic well-being and quality of life for a community by creating and/ or retaining jobs that facilitate growth and provide a stable tax base". The older AEDC definition refers to both process and practice but fails to indicate that economic development is a long-term, ongoing enterprise. While flawed, this definition justifies what practitioners are currently doing in the name of economic development in the U.S. and Canada (Malizia, 2021).

The goal of economic development is to improve employment opportunities, increase wealth and income, and increase quality of life and opportunities for personal fulfillment. These encompass programs, policies or activities that seek to improve both economic well-being and quality of life for a community (Ministry of Jobs, 2022). The meaning of "economic

development" will change based on the community referenced. Each community has their own needs, challenges, opportunities and priorities. Communities are made up of people with varying views and needs, and the economic development strategy should reflect this.

There is no "one size fits all" approach to community economic development; there is too much variation amongst communities and the scope of the approach is too large. An example is the 1980s real-estate oriented economic development effort in downtowns of large cities. This effort was aimed at office workers but neglected to match the new jobs with the existing population base. This is why planning for local economic development is a more appealing and effective process. It is by no means easy, this process takes hard work, well defined goals, and a long-term commitment to achieve positive outcomes (Leigh, 2017). Two tasks must precede the local economic development process. The first task is determining and mobilizing the organizations or groups of institutions responsible for implementing or coordinating economic change. Strong organizational capacity is characterized by communitywide participation, strong leadership, and perceived legitimacy. The second is to determine the geographic scope of the economic development effort. The scope can range from a city block or area to an entire country. Most importantly, the economic area should be one with internal consistency and cohesion. The area's economic configuration should be determined carefully as economies do not begin or end with neighborhood or city boundaries (Leigh, 2017).

The planning approach to economic development involves six phases. The first phase involves gathering information about the characteristics of the economic base and the problems they have in generating jobs and wealth. Without accurate, impartial data, development projects may be unable to maximize the use of community resources. The second phase is strategy development. Planners use the information collected in phase 1 to determine the most effective strategy for meeting development goals. Phases 3-6 focus on the projects able to be done with

the selected strategy. First the determination of the project. Second, the construction of an action plan to implement the project. These plans look at alternative ways of designing funding and doing a project. Third, specifying project details and establishing a monitoring and evaluation plan. The final phase is the project being launched. This will be facilitated by detailed schedules, financial plans, community assets and overall support (Leigh, 2017). By thoroughly gathering data and developing an effective strategy, the economic development plan can be implemented for the benefit of the community.

Modern Uses for Historic Mills - Examples

Mills are not just economic engines of the past, they can also be drivers of economic growth in the future. The structural character of the mill and mill complex allow for various types of redevelopment opportunities. These can come in the form of housing, both affordable and market rate, mixed-use, commercial, and even industrial uses. Many towns in Massachusetts have started to reinvest in their defunct mills using state and federal grant dollars, and partnerships with development entities allowing them to revitalize their mills and foster new economic development and growth, while honoring the industrial heritage of the town. There have been a number of successful mill revitalization projects within Massachusetts . Below are some of them.

Eastworks, Easthampton MA



Source: Masslive.com

Eastworks is a former mill constructed by West Boylston Manufacturing Company in 1908 with an expansion of three floors to five floors by 1920. Four years later the company moved its operation down south and other owners, such as General Electric, began to file through. During WW2 the government commandeered the mill as an alternate bomb construction site. In the 1950s Stanley Home Products, a cosmetic and cleaning supplies manufacturer, bought the mill, The mill was one of the largest sources of employment in Easthampton before shutting down in 1996, dealing a serious blow to the local economy. One year later a resident, Will Bundy, and his business partner, who remains unnamed, bought the complex from Stanley Home Products. In 1997 the business partner was bought out by Will and his wife, Paula. Currently, Will and his wife Paula are the sole owners of the property.

Since being purchased the mill has seen a transformation. It has become a thriving mixed-use space for retail businesses, apartments, artist lofts, government offices, and nonprofits such as Rosenberg Fund for Children and Easthampton Neighbors Incorporated (eastworks.com). Some of the larger companies operating on the site are the Abandoned Building Brewery, and INSA, a recreational and medicinal cannabis dispensary. The 4 story, 500,000 square foot building is able to house the cultivating, processing, manufacturing, and sales processes for INSA allowing it to be a "fully integrated dispensary". The redevelopment has not been limited to just the mill building, with the surrounding area also seeing visible improvement and development. A rotary was built at the intersection of Ferry St and Pleasant St. The bike path, part of the Manhan rail trail, has been repaved and contains additional signage. Small pull-offs leading stairs that bring you to the mill have been strategically placed to entice a cyclist or pedestrian to stop by. The nearby connecting street, Ferry Street, has been widened and paved. Benches line the sidewalk overlooking the mill pond with streetlights and spaces for parallel parking. The decaying mill buildings on the other side of the street. have been partially redeveloped as the One Ferry project containing 43 330-900 sq. ft apartments and a parking garage (*5 Ferry Street*, n.d.).



Source: oneferryproject.com

Manchester Mills, Manchester NH



Source: wikipedia.org

Founded in 1810 as the Amoskeag Manufacturing Company, by Benjamin Prichard with assistance from Samuel Slater, this mill complex became the economic node from which the community of Manchester grew out. By 1835 skillful management and investment in the mill complex fostered economic growth. Using the Merrimack River to power the mill, the company produced denim and in 1842 began making locomotives as well. During the Civil War the mill

produced machinery and weaponry for the Union army. One of the mill's most famous customers was Levi Strauss whose jeans were made from Amoskeag denim (Woodard, n.d.).

The city that arose out of this mill is a representative of the planned 19th century New England mill town. The planning of Manchester was all done at the behest of the corporate benefactors, and centered around the mill. Evidence of this is still visible today when looking at the layout of the town and location of key buildings relative to the mill (Garner, 1984). By the 1920s the mill, which had employed tens of thousands people for generations, started to decline and by 1935 had declared bankruptcy and stopped production. World War II managed to stave off total closure with wartime contracts, but the rapid suburbanization of the 1950s and the construction of Interstate 293 drove both residents and businesses out of the area.

By the 1960s the city was considering knocking down the complex but was stopped by historical experts who saw the value in preserving the mill and turning it into a mixed-use development. The idea for University of New Hampshire (UNH) to move into the mill instead of constructing a suburban campus was suggested in 1969 but would not be acted upon until the 1980s. The city chose to go with Urban Renewal throughout the 1970s, convinced manufacturing would come back if the conditions in the city improved. In 1981, Dean Kamen brought the manufacturing of his invention, the first automatic drug infusion pump, to Manchester. He was drawn by the lower taxes, large space, and ease of licensing (Prevost, 2017). It would take some time but slowly other tech companies began to come to the area.

Many firms in the Boston-Cambridge area and Route 128 corridor started to feel the impacts of high rents, limited space, long commutes, and high taxes. With the expansion of the Manchester-Boston Regional Airport and other infrastructure improvements, the location's proximity to Boston, the ocean, and the White Mountains, the millyard began receiving

significant attention from both business and tourism interests. The high tech firms gradually began moving to the mill yard growing in conjunction with uses from the UNH campus. UNH began to expand its structures for housing and services for students. The influx of tech business created a domino effect in the surrounding area allowing for new restaurants and bars to accommodate the workforce for these new industries. The change in housing attitudes by millennials working in these areas has also led to a high demand for mill yard housing. There are over 410 apartments between two of the buildings at the mill yard and the large amount of space has allowed for various amenities, such as basketball courts and green spaces, all on a riverfront location (Woodard, n.d.).

More plans for retail, restaurants and other tech firms are in the works for Manchester, and there is hope the Manchester Renaissance will bring new life into the city (Woodard, n.d.). In the fall of 2022, Manchester was awarded a 44 million dollar grant by being one of 20 cities to win the Build Back Better Regional Challenge. The grant will be used to invest in the biofabrication cluster of the millyard which U.S. Department of Commerce Deputy Don Graves says will establish southern New Hampshire as “the global epicenter” of regenerative tissue and organs. The impact of medical advancements will change people’s lives everywhere and the magnitude of investment will extend the economic benefits well beyond Manchester (Manchester Receives \$44 Million for Millyard Biofabrication Expansion and Development |



Manchester Ink Link, 2022).

Source: WickedLocal.com

Gleasondale Mills, Stow MA

The name Gleasondale derives from the town's most successful industrialists Samuel Dale and Benjamin Gleason. These men were the first to construct mills in what is now part of the town of Stow. The mills processed textiles and were the industrial heart of the community. The area is also colloquially called “Rocky Bottom”. During construction of a factory on land nearby, the builders hit bedrock while digging for the foundation, telling the owners they had hit “rock bottom”, another term for bedrock. The owners were so taken aback by this that they named the area “Rocky Bottom”(Mark 2014).

The arrival of the railroad from Fitchburg to Boston in the late 1800s further helped development of the mills and surrounding villages. Uses included a shoe manufacturer, brickyard, cabinetry and furniture (Mark 2018). The mills fell on hard times in the 1850s and the owners attempted to expand and make the mill more efficient by replacing the water wheel with a turbine. On May 9, 1852 the entire mill burned to the ground. It was replaced by a brick factory building, 125 feet long, 50 feet wide, and five stories high, completed in 1854. Ownership and management continued into a second generation of Gleasons and Dales while the name transformed from B.W. Gleason & Co., to Dale Bros & Co., to B.W. Gleason’s Sons, and finally settled down to being Gleasondale Mills in 1898, acknowledged by a name-change for the post office.

By the 1900s the Gleason family had acquired much of the real estate around town with some of the most prominent architecture in Stow still visible today. Today, the mill buildings stand as host to small businesses that at one time or another have included printing, engraving,

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woodworking, furniture refinishing, product warehousing, and antiques storage. The dam also still exists, but serves no function (Mark, 2014). The mills are located in Stow's industrial park along the western bank of the Assabet River. The buildings are clustered on the southern end of the parcel, and the northern portion is largely set aside for parking. The Assabet River bounds the parcel's eastern edge, and the hydropower canal that fed the mills runs along much of the western edge.

The two buildings sited for use are the Lazott building and the Fahey building. The Lazott building has a footprint of 19,546 square feet. The Fahey building has a footprint of 14,784 square feet. The combined total of 33,330 square feet covers 17.36 percent of the property. The Lazott building provides approximately 52,900 square feet, and the Fahey building houses nearly 35,900 square feet of floor space. The mills are currently home to a number of businesses, nearly all of which are independently operated. Tenants in the Lazott building are engaged in printing, artisanal woodworking, product warehousing/distribution, and antique storage. The Fahey building is entirely occupied by various woodworking operations: furniture refinishing, cabinetry, engraving, millwork, and trade show/exhibit display construction (Bryan et al., 2013).

Some of Stow's largest tourist attractions lie just one mile from the mills: to the north is Stow Acres Country Club, and to the east is Honey Pot Hill Orchards. The mills provide an opportunity for Gleasondale to welcome a variety of interests. A potential mix of commercial, light industrial, and civic interests can occupy the ground floors, while upper floors are used for residential units and short-term lodging. The millyard can accommodate a number of public uses, including river access, bird watching, and popup markets for farmers and artisans. Structural elements salvaged from the mill and grounds – camshafts, flywheels, and sluice gates, for example – can be repurposed as sculptural landmarks, indicative of the mill's Early

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Industrial heritage, and reinforce the site identity established elsewhere in the Village.

Gleasondale has the potential to become a New England landmark. While not as impressive in size as many of their counterparts along the Chicopee, Merrimack, Concord and Assabet River, Gleasondale retains the scale and character envisioned by their founders, remaining the geographic and cultural center of the village. The potential in Gleasondale's revitalization serves as an example of the value of generating public investment and interest in the reuse and reimagining of structures and places (Bryan et al., 2013).

Ludlow History and Context

The study area for this toolkit is Ludlow, Massachusetts - a medium sized town, about 28 sq miles, along the Chicopee River with a population of 21,002 according to the 2020 census. The native tribes initially inhabited the area and used it as a fishing and agricultural grounds.

Ludlow's recreational areas include two state forests and a state park. Indian Leap, a rocky cliff on the Chicopee, is said to be the site where a band of Indians, led by Roaring Thunder, jumped into the water to escape their pursuers during King Philip's War from 1675 to 1676 (*Ludlow | Massachusetts, United States | Britannica*, n.d.). Settlers began to move into the area around the early 1700s, with the primary activity being agriculture.

As transportation routes began to develop, the town of Ludlow was founded in 1750 as a precinct of Springfield. In 1774 Ludlow population was around 200-300 people and it was then incorporated into a separate town. With the advent of the industrial revolution in the late 1700s the location of the town proved to be its advantage, with the Chicopee River providing a source of hydropower for the Ludlow Mills, which became the leading industry within the town. A mill dam was established in the town in the 1780s with a cotton mill being one of the first to be established in the Mill district of Ludlow, called Jenksville, after the Jenks cotton mill. Today, this is the area near the East Street corridor, Indian Orchard bridge crossing, and the Ludlow Mills site (ludlow.ma.us).

With the war of 1812, there was a heightened need for textile production due to the needs for uniforms by the army, and this area saw an influx of residents and business. In 1868 the Ludlow Manufacturing Company was formed, with regional railroads connecting the mill to the surrounding towns. To accommodate new labor, Ludlow Manufacturing Company created a

tenement district around the central mills, and suburban expansion along the East Street Trolley Line (Garner 1984). In addition, completion of the Springfield Reservoir in 1875 flooded farmland and further pushed the town to be centered around manufacturing. This increase in manufacturing prompted successive waves of cheap labor to come to Ludlow during the 1800s. Irish and French Canadians were the first, and they were followed in the 1890s by Austrians and Poles. By 1905, over 45 percent of the population was foreign born. Over a third of these were Poles, and nearly a third were French Canadians. The Polish-American Citizen center on East Street still stands as an homage to this immigrant population.

Between 1905 and 1925, as the population increased at a rate of over 200 persons per year, Ludlow Manufacturing Associates had become one of the largest mill companies in the world. By the mid-1930s the trend of growth had begun to shift in the opposite direction as a result of the Great Depression causing severe layoffs and the demolishing and sale of mill buildings. The town of Ludlow reached its low point in 1945 with just over 8000 residents. Today the town still has a significant Polish, French, and Portuguese community within its 21,000 residents. The Portuguese are the newest immigrant group and have had an influence on the town's culture with bakeries, financial assistance in the form of credit unions and priests assisting with mortgages, the Our Lady of Fatima parish holding “carnival” each year. Soccer has exploded in popularity, and the local team has repeatedly won regional championships (D. Stefanick, personal communication, March 29, 2023).

Since the mid-20th century, the town has remained somewhat stagnant in terms of economic growth - it is a “bedroom” community with needs to develop commercial, residential and industrial sectors. (ludlow.ma.us) The Ludlow Master Plan for 2030 contains plans to revitalize the community through visioning, historical and cultural preservation, specifically of the Mill District and buildings. Projects have both been completed and are currently underway (as of

2022) along East Street, the Chicopee River and Ludlow Mills. The Ludlow mills are in an excellent location, the buildings and the land around them provide an excellent opportunity for adaptive reuse. The planners' hope is that the development of this site will complete the centerpiece of the historic Mill district, and, arguably, the whole town, given its industrial heritage. By revitalizing the Ludlow Mills, the town hopes to improve its overall economic situation and spur additional development.

Deliverable

A Mill Redevelopment Toolkit

Based on the informal interviews, literature review, and analysis of the existing mill redevelopment project, I created the following toolkit comprising a battery of questions, in order to help the evaluation of mill site's suitability for development effort.

The questions are organized into categories to reflect what part of the development process they are addressing. In addition, they are labeled as either "critical" or "not-critical". Critical questions address the project's overall feasibility and *must* have positive answers in order for a project to even start. Non-critical questions would show the extent of the project's fitness and ease of implementation, as well as potential areas of concern that might require additional developer's attention. They are meant to serve as a guidance to the developer. Questions should be answered fully, and supporting evidence or data sources should be provided.

Critical	Economic Category
N	1. Does the project advance the economic needs of the community?
N	2. Do recent development trends within the town support this development?
Y	3. Are there other similar proposed developments already constructed or in planning?

Critical?	Process Category
N	4. Did community outreach inform the project?
N	5. Does the project have the support of local and state politicians?
Y	6. Can the zoning be changed for land sited for redevelopment?
N	7. Was the site environmentally suitable by EPA standards prior to development?
Y	8. In case of the negative findings of the 21E inspections can you still continue the project?
N	9. Are the building and site historically significant?
N	10. Are there components of the building that need to be preserved?

Critical?	Development Category
N	11. Does this project meet SMART growth standards?

Critical?	Fiscal Category
Y	12. Is there enough capital for the project to move forward?
N	13. Show different sources of funding available for a funding stack
N	14. Can the developer apply for historic tax credits?

Critical?	Existing Site Conditions
Y	15. Is the available land zoned for the desired development?
N	16. Are these parcels constrained by any environmental factors that would hinder or prevent development?
N	17. Are these parcels constrained by cultural factors that would hinder/prevent development?
N	18. Is the site physically accessible by road for personal and commercial vehicles ?
N	19. Are there harmful materials within the site that need to be cleaned up?
N	20. Is the site able to accommodate the project's spatial needs?
N	21. Is the site connected to current local infrastructure?
N	22. Does the local infrastructure have the capacity to support this development?
N	23. Is there enough available and obtainable land for the project?

Critical?	Existing Redevelopment Area Conditions
N	24. Is this site within 1 mile of an interstate exit?
N	25. Is there public transit accessibility within a 0.25 mile radius of the site?

Toolkit Application to the Ludlow Mills

Redevelopment

This chapter illustrates the application of the above Deliverable toolkit (set of questions) to the Ludlow Mills Redevelopment project. I obtained the answers using various methods (interviews, documentation, presentations, etc.), and their sources are listed under “evidence”.

Economic Category

1. Does the project advance the economic needs within the community?

Yes No

Evidence

Ludlow Mills are the town’s largest industrial assets and there is a desire to see them redeveloped to attract new businesses and residents, improve housing, and increase the tax base(Ludlow Master Plan). As Doug Stefanick says, “The downtown is becoming a major housing and economic development area, with most single family homes going for 500k and up, it is nice to see new housing and economic developments happening within the mill” (D. Stefanick, personal communication, March 29, 2023) (*Ludlow Mills Comprehensive Plan 2-15-12.pdf*. (n.d.)

2. Do recent development trends within the town support this development?

Yes No

Evidence

The town of Ludlow is planning an increase in residents in the coming decades and wants to be able to provide housing. The Ludlow Mills are at the heart of downtown Ludlow which is attempting to revitalize, the renovation of the mills is tandem to the development of surrounding businesses, mixed use development, and street amenities.

3. Are there other similar proposed developments already constructed or in planning?

Yes _____ No

Evidence

The Ludlow Mills complex is the only mill site within the town of Ludlow, there are no other mills within the town and no other viable former industrial sites being proposed for redevelopment. The mill redevelopment is the “largest economic development project by far in the town”. (D. Stefanick, personal communication, March 29, 2023) (ludlow.ma.us)

Process Category

4. Did community outreach inform the project?

Yes No _____

Evidence

Public meetings and hearings were held on the mill redevelopment. While there was not much attendance there was also no recorded opposition from residents. The general sense was that the community supported this decision and the impact it could have on the town. (D. Stefanick, personal communication, March 29, 2023 & S. LaCour, personal communication, March 24, 2023)

5. Does the project have the support of local and state politicians?

Yes No _____

Evidence

The various boards and committees in the redevelopment process supported the project and worked well with WADC. The project gained attention from the Massachusetts state government

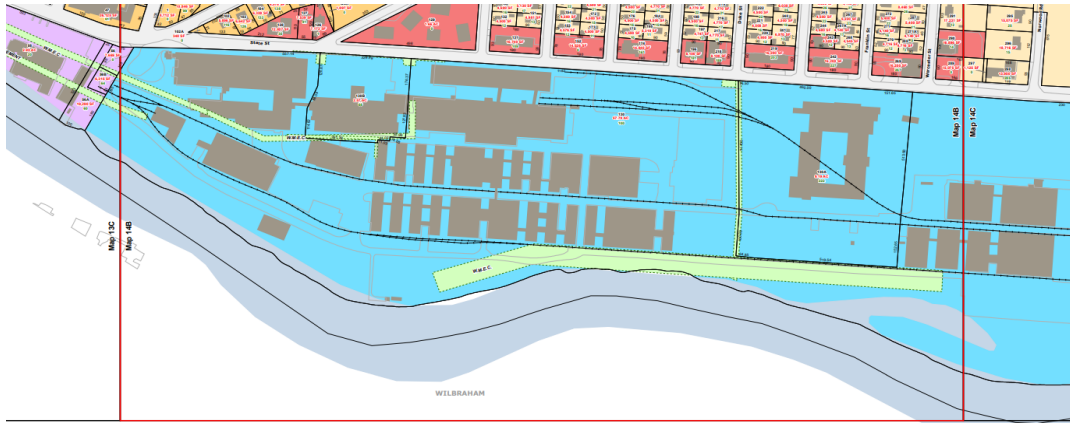
with interest and assistance from both the Baker and Healy administrations. Lt. Gov. Kayrn Polito visited Ludlow along with Housing and Economic Development Secretary Mike Kennealy, and CEO Dan Rivera of Massdevelopment to discuss the recipients of \$2.8 million through the Site Readiness Award, which included the Ludlow Mills (Ludlow Register). Through increased positive attention from the state legislature, the project was able to secure both state and federal funding. This attention also attracted more private capital investment, which has made up the bulk of capital invested into the project thus far (D. Stefanick, personal communication, March 29, 2023).

6. Can the zoning be changed for the land sited for redevelopment?

Yes No

Evidence

The town of Ludlow created a Mill Redevelopment District (MRD) bylaw In May of 2011 allowing for mixed use development on the Ludlow Mills site. Additional provisions were multiple uses within the same structure, and open space requirements. The MRD provides flexibility for completing the vision WADC has for the site (*Zoning Maps | Ludlow, MA*, n.d.)



<p>This map is for assessment purposes only. It is not valid to use this map as a survey or for property conveyance.</p> <p>Tighe & Bond Engineers Environmental Specialists</p>	<p>LEGEND</p> <ul style="list-style-type: none"> Current Tax Map Easement Private Right-of-Way Historic Lines 	<ul style="list-style-type: none"> Lot Number Lot Size Address Number Lot Dimension 	<ul style="list-style-type: none"> Buildings Waterbodies Streams Town Boundary 	<ul style="list-style-type: none"> Agriculture (A) Residential A (RA) Residential A-1 (RA-1) Residential B (RB) Business A (BA) 	<ul style="list-style-type: none"> Business B (BB) Mill Redevelopment (MRD) Industrial A (IA) Industrial C (IC) Not Zoned (NZ) 	<p>Town of Ludlow Massachusetts</p> <p>0 200 Feet</p>

Source: Ludlow Zoning Map

Prior to rezoning, the area in blue was all industrial zoning. It is now zoned as a Mill Redevelopment District or MRD, which allows for the desired mixed use development highlighted in the master plan.

7. Was the site environmentally suitable by EPA standards prior to development?

Yes _____ No x _____

Evidence

The Department of Environmental Protection identified 173 sites in Ludlow that restrict or limit use due under Massachusetts 21E law; 27 of these sites contain hazardous materials, in particular asbestos. (*Ludlow Housing Production Plan*)

8. In case of the negative findings of the 21E inspections can you still continue the project?

Mill Redevelopment Toolkit

Yes No

Evidence

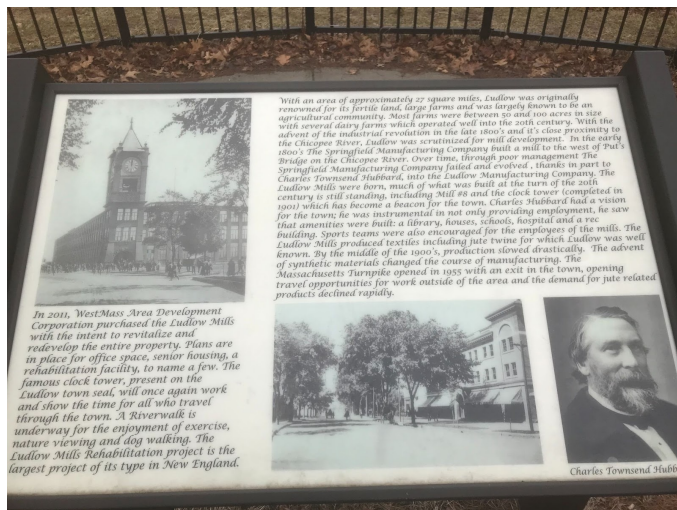
Most of these sites associated with the Ludlow Mills complex are in various stages of cleanup, including several already cleaned sites and some in the process of being cleaned.

9. Are the buildings and site historically significant?

Yes No

Evidence

The mill is tied to Ludlow's heritage and development. Downtown Ludlow emerged from the economic prosperity brought by the mill. The Clock Tower at Mill #8 is on the town seal even though the town has never owned Ludlow Mills. Many residents are descendants of various immigrant groups that came to work in the mills, which were once the largest jute manufacturing facilities in the world. The project site is located within the Ludlow Village Historic District, which is listed in the National Register of Historic Districts.



Source: Personal Photo



Source: Personal Photo

Pictured are plaques located along the Riverwalk, allowing for persons using the Riverwalk to learn about the history of the Ludlow Mills Site. These are part of the historic preservation effort.

10. Are there components of the building that need to be preserved?

Yes No

Evidence

The project site is located within the Ludlow Village historic District, which is listed in the National Register of Historic Districts. The comprehensive plan contains historical preservation objectives. The developers seek to preserve historic landscapes and plantings, include signage as it relates to the historic elements of the project, and maintain the historic character of the mill. Historic rehabilitation tax credits are key components for this project and are tied to the preservation of the site.

11. Does this project meet SMART growth principles?

Yes No

Evidence

The project meets several SMART growth principles:

Mix land uses - the project site has been rezoned to allow for open space and recreation development within the same area as mixed use development.

Create a range of housing opportunities and choices - the project is creating new housing units for low-income residents, the elderly (55+), and market rate units for those not who are not able or do not desire to purchase a single family home.

Foster distinctive attractive communities with a strong sense of place - downtown Ludlow grew and prospered from the economic output of the mill. The various immigrant groups who settled in the town have also left their cultural mark on Ludlow through restaurants, businesses, churches, social clubs, and festivals. Public amenities such as the library, tenement housing, Stephens Memorial Recreational Building, and even a golf course were built. The large clock tower on Mill #8 is one of the most distinctive symbols of the town. Through redevelopment the downtown area is seeing significant improvements to its cultural core and local residents and businesses are enjoying the benefits.

Fiscal Category

12. Is there enough capital for the project to move forward?

Yes No

Evidence

The project has received funding through Historic Tax Credits, State Grants, Federal Grants, Private Investment , WADC Capital Investment. Notable contributors are WinnDevelopment and HealthSouth, MassWorks, EPA and WADC Capital. This has leveraged upwards of 130 million dollars to date (Ludlow Mills Grant Applications Discussion Update) (D. Stefanick,

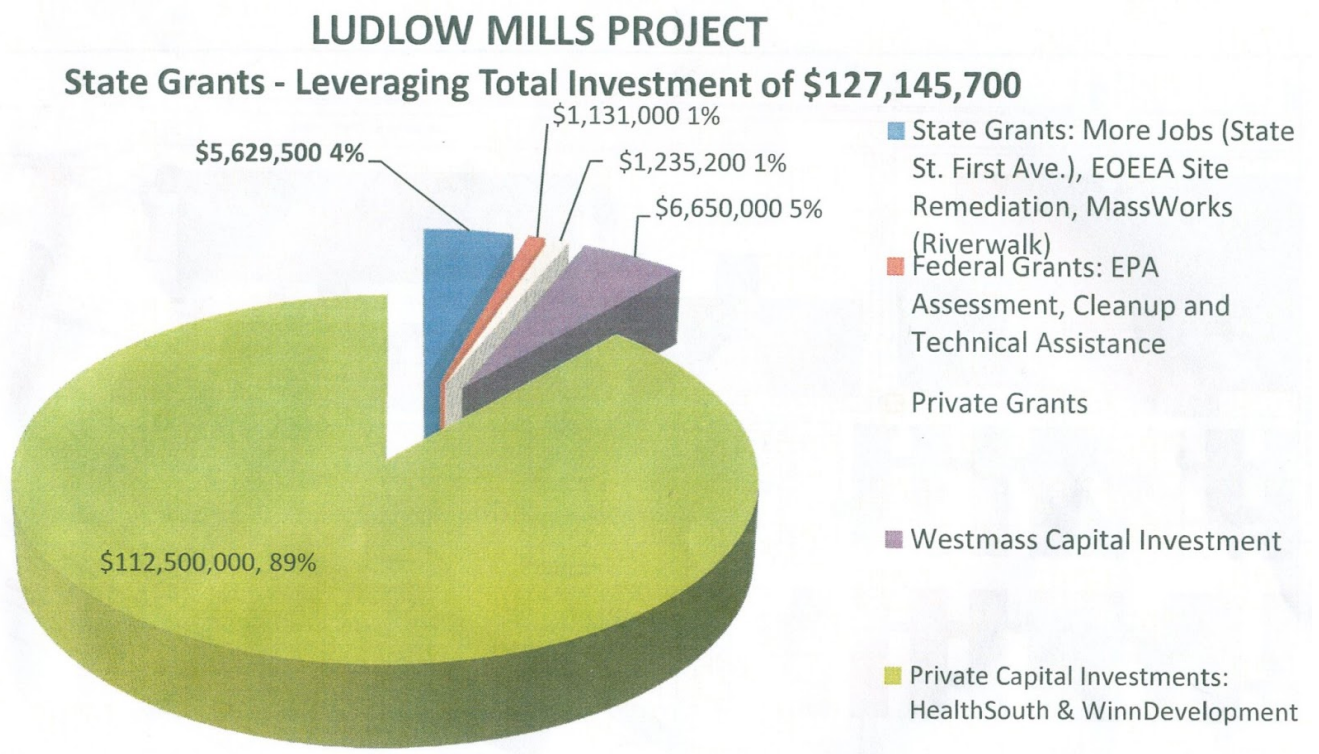
personal communication, March 29, 2023 & S. LaCour, personal communication, March 24, 2023).

13. Show the different sources of funding available for a funding stack?

Yes No

Evidence

The pie chart below shows the sources of funding for this project as of 2017:



Source: Ludlow Planning Board Meeting: Grant Applications Discussion Update 8/24/2017

14. Can the developer apply for historic tax credits?

Yes No

Evidence

The Ludlow Mills site is within a National Registered Historic District of Ludlow Village allowing it access to historic tax credits.

Existing Site Conditions

15. Is the available land zoned for the desired development?

Yes _____ No

Evidence

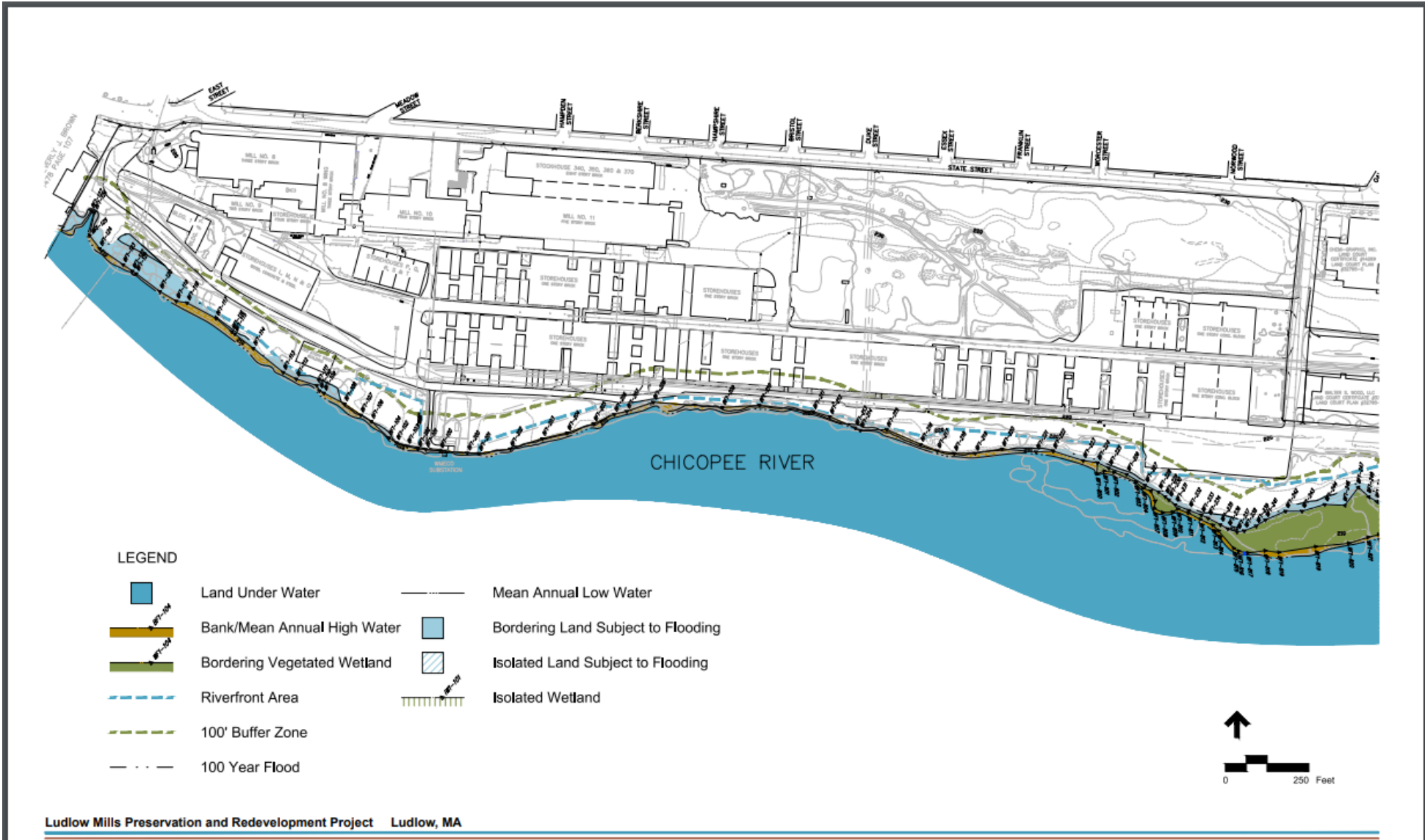
The Ludlow Mill site is zoned for industrial use, it will require a change in the zoning bylaw via a Mill Redevelopment District, which will allow for desired mixed use development (*Zoning Maps | Ludlow, MA, n.d.*).

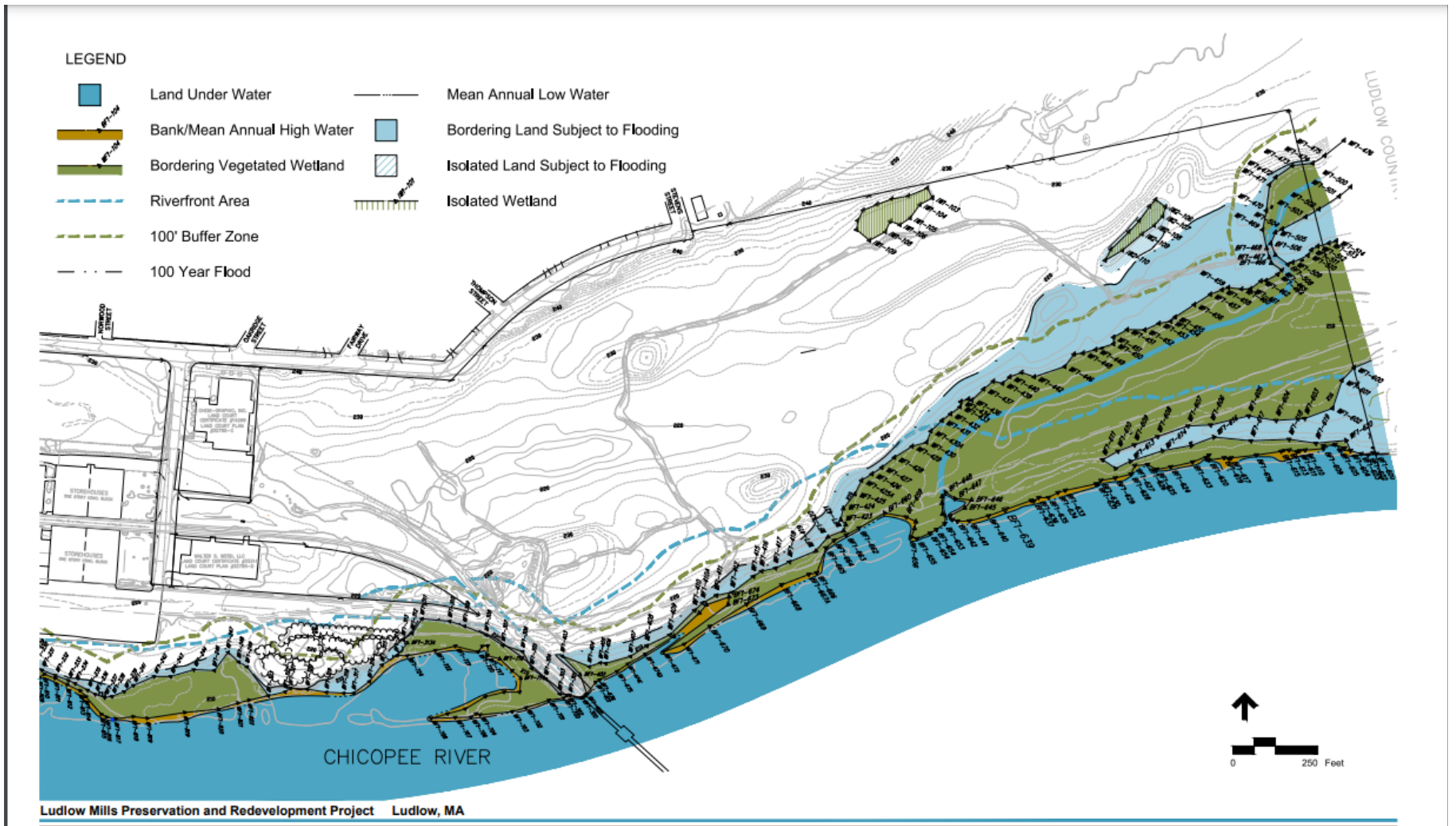
16. Are these parcels constrained by any environmental factors that would hinder or prevent development?

Yes No _____

Evidence

The site has two wetlands within it, these are protected under Massachusetts law. The main wetland area runs along the riverbank where the Chicopee River and Ludlow Mills meet. There are two additional isolated wetlands occupying depressions on the east side of the parcel. A 100 foot buffer zone, between the wetland and the site, has been established by the developer in accordance with the Massachusetts Wetlands Protection Act. (*Ludlow Mills Comprehensive Plan 2-15-12.Pdf, n.d.*) (mass.gov).





Source: Ludlow Mills Comprehensive Plan

These maps show the wetland constraints, buffer zones, water levels, and flood information on the Ludlow Mills Parcels.

17. Are these parcels constrained by cultural factors that would hinder/prevent development?

Yes No

Evidence

The parcels are within the historic Ludlow Village Historic District recognized by the Massachusetts Historical Commission (MHC) and listed in the National Register of Historic Places. Regulations under Massachusetts law require “identification of historic properties; assessment of effect; and consultation among interested parties to avoid, minimize, or mitigate any adverse effects ”(sec.state.ma.us). The Ludlow Mills comprehensive plan addresses these concerns by including the preservation of defining landscapes, buildings, and architectural features tied to the historic fabric and character of the project (*Ludlow Mills Comprehensive Plan 2-15-12.Pdf, n.d.*).

18. Is the site physically accessible by road for personal and commercial vehicles ?

Yes No

Evidence

The site abuts the southside of State Street all the way to the intersection with East Street. There are multiple entrances into the mill site via State Street and the completion of the Riverwalk Drive allows vehicles to drive the perimeter of the site, entering where State and East Street meet on the Western side of the site, and coming out on the Eastern end of the site on State Street via First Avenue. First Avenue provides accessibility to the easternmost portion of the

Mill #8 being viewed from Sewall Street, facing south east. The entrance to Riverside Drive is to the right and State Street entrances down the street on the right hand side. Riverside drive becomes First Avenue and exits onto State Street.

A pedestrian and cyclist entrance to the riverwalk which loops around the whole development providing plenty of non-vehicle access, while allowing for separation of transit modes.



Source: Personal Photo

19. Are there harmful materials within the site that need to be cleaned up?

Yes No

Evidence

The Ludlow Mills site contained significant amounts of hazardous materials, mainly asbestos, particularly on the windows, and required millions of dollars in EPA funding for cleanup and removal.



The comparison of old windows vs. modern windows. During redevelopment, Each of these windows has to be decontaminated from asbestos and replaced with appropriately themed windows.

20. Is the site able to accommodate the project's spatial needs?

Yes No

Evidence

The site has over 50 buildings and 1.1 million square feet of developable space and encompasses close to 130 buildable acres. Buildings have been able to accommodate housing, various commercial enterprises such as trucking storage and brewing. While the land itself has allowed for a scenic Riverwalk, open spaces, and new buildings to accommodate needs that the current structures were unable to accommodate for example a health rehabilitation center (LUDLOW MILLS, n.d.).

21. Is the site connected to current local infrastructure?

Yes No

Evidence

The site is connected to local water and sewer. Electrical and natural gas infrastructures required installation and renovation. The mill is connected to the existing transportation infrastructure (*Ludlow Mills Comprehensive Plan 2-15-12.Pdf, n.d.*).

22. Does the existing local infrastructure have the capacity to support this development?

Yes _____ No

Evidence

The water and sewer infrastructure needs to be updated, as well as the infrastructure regarding natural gas, where there is no infrastructure, and electricity, where the infrastructure no longer meets the needs of the project. The site also has a lack of modern communication infrastructure (high speed internet) which will need to be installed. One of the main projects is the reconstruction of State Street to support additional sewer and water capacity. Another, is the addition of natural gas infrastructure to allow its use on the site (*Ludlow Mills Comprehensive Plan 2-15-12.Pdf, n.d.*).

23. Is there enough available and obtainable land for the project?

Yes No _____

Evidence

The Ludlow Mills site encompasses over 130 acres, 50 mill buildings and 1.1 million square feet of developable space. This allows for mixed use development in the form of senior housing, senior center, a health rehabilitation facility, open space for recreation, a riverwalk, a brewery, and other commercial and industrial uses (LUDLOW MILLS, n.d.).

Existing Redevelopment Area Conditions

24. Is this site within 1 mile of an interstate exit?

Yes _____ No x _____

Evidence

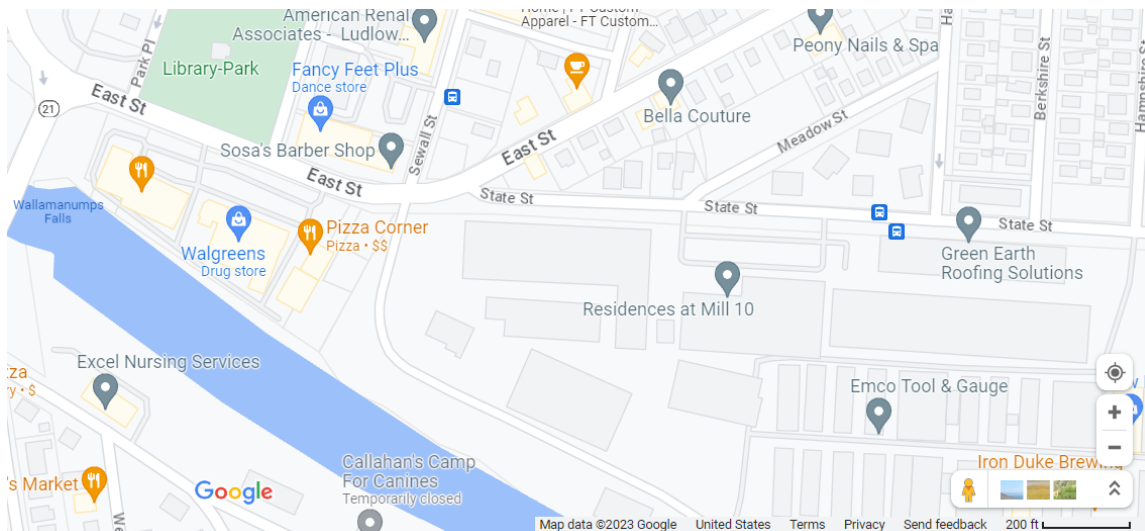
The distance from Ludlow Mills on State Street, to an on-ramp for I-90 East and West (Massachusetts Turnpike) is 1.2 miles via car according to mapping applications and under 2 miles according to the existing conditions report.

25. Is there public transit accessibility within a 0.25 mile radius of the site?

Yes x _____ No _____

Evidence

B6 PVRTA line includes Encompass Health, an inpatient rehabilitation facility, on their schedule, with limited service, stopping at 6:55 a.m., 7:55 a.m. , 12:55 p.m. , 2:55 p.m. , 5:30 p.m. 6:0 p.m , 7:25 p.m. There is also a stop near the corner of East St and Sewall St, which is under a 0.25 mile walking distance from the mill, that is serviced throughout the day. Pictured below are the bus stops along State and Sewall street, and the B6 PVRTA route. The second image shows the B6

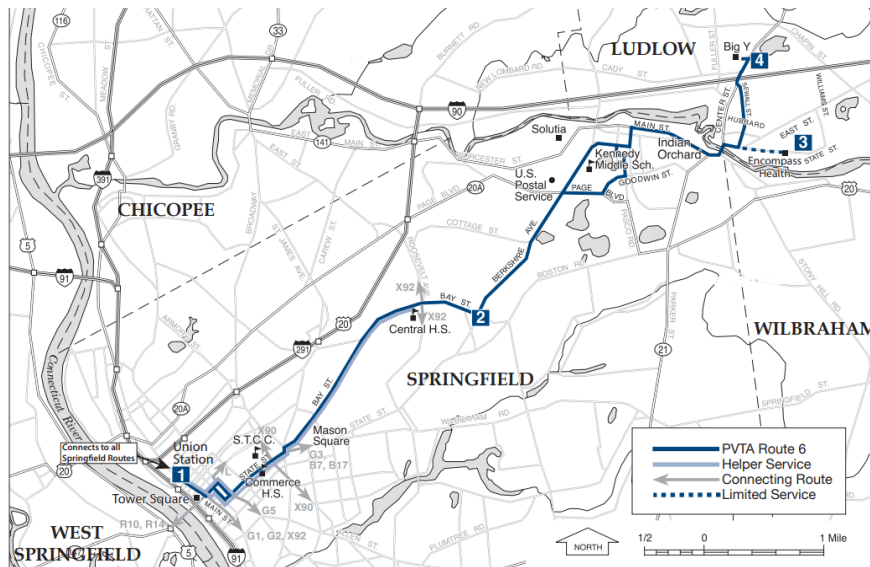


Source: Google Maps

Mill Redevelopment Toolkit

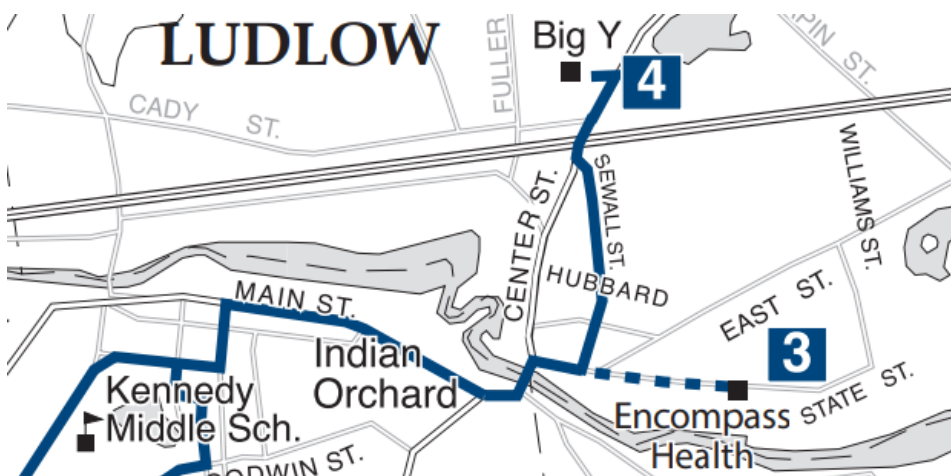
PVTA route and the third image focuses on the part of the route servicing Ludlow Mills and the surrounding area.

This map shows the bus stops within proximity to Ludlow Mills, marked by blue squares containing a bus symbol.



The full route of the B6 line, which runs from Union Station in Springfield to Big Y in Ludlow.

Source: pvta.com



The segment of route B6 that connects to the Ludlow Mills.

Source: pvta.com

Ludlow Mills Project Status

The Ludlow Mills shaped the community of Ludlow, bringing prosperity for nearly a century. Now with the redevelopment, the Ludlow Mills can once again be the centerpiece of the town, and provide economic and quality of life benefits for its residents. For Ludlow the project is a huge undertaking, with a lot of complexity, but it is a positive investment in the future of the town. Through close cooperation between local planning boards and WADC, by leveraging political connections and coalescence of private investment, state and federal grants, private grants, and developers capital the Ludlow Mills Project is moving forward on schedule and is providing returns on investment. **According to a 2017 report, for every dollar invested in the mill by the Commonwealth, \$21.58 has been realized through job retention, construction, environmental cleanup, or committed under a Purchase and Sale Agreement, with the project on track to be completed by 2030.**

WADC is a 501(c)(6) entity; while it is a non-profit they still pay taxes under IRS law. As part of an agreement with the town, WADC does not have to pay taxes on the land for the first 10 years of the project; however, the project is bringing positive tax impacts to the town. WADC still retains ownership of most of the parcels and will be paying property taxes for the rest of the development. The rest of the parcels are owned by WinnDevelopment, Galaxy Foods, Iron Duke Brewing, and Encompass Health. These entities pay their own property taxes. According to the Ludlow Town Assessor, the yearly tax revenues for the town at 19.51% are as follows: Mill #10 (WinnDevelopment): \$73,459, Galaxy Foods: \$13,044, Iron Duke Brewing: \$12,441, and Encompass Health: \$461,489.

Takeaway from Toolkit Application

Overall, the application of the toolkit questionnaire to the Ludlow Mills project gave many positive answers. Most importantly, the negatives were not impediments that would stop or derail the project. They were simply the points of data that developers had to address or accept as such. There's no perfect project, but there are less or more successful ones. The Ludlow Mills clearly falls into the latter category.

Conclusion

In conclusion, the successful revitalization of a mill complex can hugely benefit the town where it resides. Mill communities across New England are finding new uses for their historic mills, bringing prosperity and pride back to the communities that emerged from these mills. Mixed use developments, open spaces, housing, cannabis cultivation and processing, high tech manufacturing - the possibilities are vast.

However, mill redevelopment does not guarantee economically positive outcomes. It can sometimes have the “white elephant” effect, draining financial resources from a town that may not have much leeway. Poorly planned projects are then detrimental for both the developer and the community.

My research for this Master’s project resulted in the toolkit that could be used as a framework to assess a potential mill site by examining key factors across different categories of development, to allow both the community and the developer to determine if a mill redevelopment would be a positive undertaking for both parties.

The toolkit is meant to be a help for decision-making regarding the mill redevelopment efforts’ feasibility and viability. The application of this toolkit is a pretest, I applied the toolkit only to Ludlow mills, and consequently it has its limitations. The toolkit could be refined and improved upon if applied to various other mill sites. It is, however, a good start.

Appendix

Section A

Interview Questions:

The following questions were used during interviews with Sarah La Cour of WADC and Doug Stefancik the Ludlow Town Planner to determine key themes about the Ludlow Low Mills project and process..

- How important is the Mill to the town of Ludlow?
- Was community outreach conducted by you (the developer or town)? If so, when? And what were the biggest takeaways from the outreach?
- How did the community's input make it into the final redevelopment proposal/ manifest itself in the current redevelopment?
- What was the biggest bureaucratic hurdle in getting this project off the ground?
- What was the biggest site condition or physical obstacle in getting this project going?
- What are the specific town's goals regarding the redevelopment of the Ludlow Mills?
- If you could change one element of the project, what would it be?
- In your opinion do you expect Ludlow to grow as a place in terms of economic development?

Section B

Mill Site:

- Physical conditions
- Previous uses
- Utility systems
- Codes and Regulations

Mill Redevelopment Toolkit

Host Community:

- Determine values and secure commitment to revitalization
- Involve local leadership
- Mill redevelopment objectives reflected in Master Plan and Zoning Ordinances
- Willingness to engage in public-private partnerships

Development Entity:

- Available capital, innovation experience and capabilities
- Commitment to building effective public-private partnerships
- Respecting the history of the mill and its value to the town and community

Market Conditions:

- Identifying demand for different uses
- Conducting market feasibility study to assess costs/benefits
- Determining whether the local and regional planning agencies support brownfield redevelopment and smart growth principles

Section C

- Ownership and Debt
- Site Conditions
- Municipal Support
- Infrastructure
- Transportation
- Inspections
- Culture and Recreation
- Organizational Capacity for Innovation
- Financial Resources

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