



ENVIRONMENTAL IMPACT AND INFRASTRUCTURE ASSESSMENT

Proposed Mixed-Use Development | Planned Development District (PD-4)

Project Address: 186 Bedford Street
Lexington, MA 02420

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INTRODUCTION

This Environmental Impact and Infrastructure Assessment (The Report) is submitted to the Town of Lexington to accompany a Preliminary Site Development and Use Plan (PSDUP) Application for a Mixed-Use Development at 186 Bedford Street in Lexington, Massachusetts (The Project). The Project Proponent, 186 Bedford Street LLC seeks approval of a zoning petition to allow expansion of the existing property through the construction of a new mixed-use development within the present RS zoning district. When approved the PSDUP and related zoning amendment will change the designation of the current RS district to a PD-4 | Planned Development District (PD – hereafter referred to as The District).

The PSDUP Application including all accompanying plans, reports, and zoning amendments are referenced throughout this Report. Refer to those specific documents as necessary.

The Project scope includes the following:

- Preservation and renovation of an existing 13,156± s.f. historic structure, demolition of a 1969 era building wing, and construction of a new two and a half story addition with ground floor commercial/retail and second/third floor residential apartments. Total post-development GFA = 24,707 gsf.
- Preservation and renovation of an existing 1,500± s.f. historic barn.
- Site improvements to support The Project including vehicular/pedestrian access drives and walkways interconnecting the buildings, surface parking, landscape/hardscape amenities, and building service connections to public/private utilities.
- Environmental improvements including preservation of mature trees and implementing stormwater controls and recharge where none exist today.

Refer to the body of this report for Project analysis with respect to environmental and utility infrastructure impacts and associated mitigation.

ENVIRONMENTAL IMPACT ASSESSMENT

I. Project Summary

Existing Site Conditions

The Project site is located within the current RS Zoning District located specifically at 186 Bedford Street in Lexington, Massachusetts. The Property consists of one parcel of land owned by the Proponent totaling approximately 1.36 acres of land. The Proponent seeks to amend the current zoning regulating the RS District, changing the designation to a Planned Development District (PD-X) and modifying zoning to allow additional commercial/residential development expansion within the District. The Proponents vision is to preserve the historic character of the existing buildings and complement this style with a 2.5 story building addition.

The Property development dates to 1874 and has been periodically expanded and renovated over the years. The buildings have been used for commercial purposes serving as a mental health clinic since the 1960's. The property is presently vacant.

There are no environmental resource areas located on the property.

The Property fronts on three streets including Bedford Street, Vaille Avenue, and Reed Street. In addition to the buildings the Property includes access drives, surface parking areas, a vegetable garden, and mature trees located throughout the site. A wooden stockade fence is located along the side and rear lot lines.

Project Scope

The Project scope includes the following:

- Preservation and renovation of an existing 13,156± s.f. historic structure, construction of a new two and a half story addition with ground floor commercial/retail and second/third floor residential apartments. Total post-development GFA = 24,707 gsf.
- Preservation and renovation of an existing 1,500± s.f. historic barn.
- Site improvements to support The Project including vehicular/pedestrian access drives and walkways interconnecting the buildings, surface parking, landscape/hardscape amenities, and building service connections to public/private utilities.
- Environmental improvements including preservation of mature trees and implementing stormwater controls and recharge where none exist today.

The Project's positioning within the site minimizes impacts to mature trees by substantially developing the Project within previously disturbed areas and surface parking lots.

I. Stormwater and Groundwater

The District contains approximately 1.36 acres of land. Based upon the USDA – Soil Conservation Service Maps for Lexington, the underlying soils within the District development area include the following:

- Merrimac–Urban Land Complex (Hydrologic Soil Group (HSG)–A/D)
- Urban Land – (HSG N/A)

Based upon soil testing, groundwater is generally estimated to be 12' below grade depending on surface elevation.

Based upon the MassGIS database, there are no environmental resource areas on or adjacent to the property.

Proposed Conditions

The development program includes preservation and renovation of the historic building and barn, and construction of a 2.5 story mixed-use commercial addition with related site and infrastructure improvements.

Appropriate pre- and post-construction erosion control measures will be incorporated into the definitive design. The development will include implementation of new stormwater controls to promote infiltration and retain stormwater on-site to the extent site constraints allow.

The Project will result in an increase in impervious cover of approximately 6,600 sf, qualifying the project as a "New Development" under the Massachusetts Stormwater Management Handbook.

Stormwater collection, pre-treatment, and peak flow attenuation will be provided in accordance with the Handbook and the Lexington Stormwater Management Regulations. Within the developed area a new drainage collection system will be constructed with 100% recharge on-site.

Stormwater mitigation methods being considered for the Project include:

- Best Management Practices (BMP's) including structural and non-structural techniques outlined in the Massachusetts DEP – Stormwater Management Handbook including closed drainage collection system, hydrodynamic separators, and subsurface retention/infiltration facilities. Groundwater recharge will be provided, and water quality improvements will be designed to treat runoff from contributing paved surfaces.
- Low Impact Development (LID) techniques including grass paver surface treatment for the emergency vehicle access driveway.

The design of site-specific BMP's appropriate for this development will be advanced during the definitive design phase. A definitive stormwater management design and report will be submitted to the Permit Granting Authority (PGA) via Site Plan Review.

See Appendix B – Stormwater Management Analysis with this report for a summary of the preliminary hydrologic analysis, proposed stormwater mitigation, and BMP's to be used for the Project.

II. Wildlife and Vegetation

The site is predominately developed throughout the District. Vegetation includes a mixture of mature trees, shrubs, groundcover, and lawn. Specialty plantings and vegetation enhance the building entries and exterior courtyards. The Project seeks to maintain the mature trees and vegetation that provide a natural buffer between the District and abutting residential properties.

Mature tree loss will be concentrated at the parking islands and adjacent to the existing surface parking lot. Landscape materials will be installed at select locations throughout the Project to maintain the residential aesthetic of the area.

III. Noise

Potential noise impacts associated with the Project may be attributed to rooftop or pad mounted mechanical equipment required for heating, cooling, ventilation, and air supply/exhaust vents for the buildings. To mitigate these impacts the building and landscape design will include screening to dampen potential increases in noise levels.

IV. Air Quality

The Project is not anticipated to be subject to air quality permits for the facility. Regarding potential increases in greenhouse gas emissions, the Proponent will consider implementing LEED design initiatives to reduce emissions based on Building Code Requirements.

Air quality will directly benefit from this strategy using building materials and energy-efficient mechanical systems to reduce energy consumption. Additionally, the proposed Transportation Demand Management Plan to be implemented by the Proponent will promote the use of public-transportation, carpooling, and alternative transportation modes thereby reducing vehicle trips and reducing carbon emissions associated with fuel consumption.

V. Historical and Archaeological

The Property and buildings are listed in the Massachusetts Historical Commission (MHC) register as recorded by the Lexington Cultural Resources Inventory. Two buildings on the Property are designated as historical structures including:

- MHC #765 - Main 2.5 story building first built in 1874 with subsequent interior and exterior renovations. In 1969, a one-story building addition with finished basement was constructed off the west side of the building. Existing Building GFA = 13,156± gsf.
- MHC #766 – Accessory 1.5 story barn. Time period origination unknown. Existing Building GFA = 1,500± gsf.

The Project will preserve and renovate the existing historic structures, demolish the one-story 1969 building addition, and construct a 2.5 story building addition for a total gross floor area of 24,707 gsf. The building renovation and addition of architectural treatments will complement each other to preserve the historic architectural integrity of the District.

VI. Sustainable Design

The Project will consider and where appropriate, incorporate sustainable design measures into the proposed buildings and site improvements with respect to the U.S. Green Building Council - Leadership in Energy and Environmental Design (LEED) initiatives Building Design and Construction (BD+C), and the Lexington Sustainable Action Plan/Zero Net Energy Policy, which encourages residents and businesses to reduce energy consumption and carbon emissions through innovative design, while still meeting the energy needs of the owner and the community.

- USGBC – LEED Design Standards: The building/site design will be completed with reference to traditional sustainable design measures that can reasonably be incorporated into the Project. The design team will refer to the LEED v4.1 BD+C Point Credit Rating System and LEED Checklist during schematic design, with the goal of accumulating enough credits to warrant a potential LEED Silver rating. Where feasible the identified sustainable design

measures will be incorporated into the final design, however the Project will not undergo formal LEED certification.

- Lexington Sustainable Action Plan/Zero Net Energy Policy: It is the goal of the Lexington Sustainable Action Plan and Zero Net Energy Policy to transform the Town into a Zero Net Energy community. This will be accomplished only with full participation and cooperation of the municipal, residential, and commercial stakeholders in town. For commercial buildings such as the Project, the goals include reducing greenhouse gas emissions, promoting energy efficiency, designing for extreme weather event resilience, and creating healthy indoor environments.

The Project design will consider the goals and recommendations of the Sustainable Action Plan by seeking to incorporate the following attributes:

- Improve energy efficiency of existing historic structures to be preserved through repairing/replacing doors, windows, and insulation.
- Design for electric air-source heat pumps for both residential and commercial heating and air conditioning.
- Consider feasibility of rooftop mounted photovoltaic solar panels with net metering to supplement electric power needs for the Project and supply to the local electric grid.
- Limit natural gas use to resident kitchen ranges and food-service establishments.
- Promote alternative modes of transportation by:
 - Adding electric vehicle charging stations on-site to promote use of hybrid or zero-emission electric vehicles by tenants and businesses.
 - Provide short and long-term bicycle storage facilities on site to promote alternative modes of transportation for both residents and businesses. Promote interconnect to adjacent road network and the Minuteman Bikeway.
- Reconstruct stormwater infrastructure promoting stormwater recharge and significantly reduce off-site discharges improving resilience of adjacent municipal infrastructure.
- Minimize impervious cover increase by incorporating compact parking where possible. Maintain a significant number of mature trees and supplement with new plantings to minimize the existing site's potential long-term heat island affect.

Additional energy efficiency and climate change resiliency design opportunities will be considered during the schematic design phase.

INFRASTRUCTURE ASSESSMENT

I. Sanitary Sewer/Wastewater

The municipal sewer collection system within the site area is connected to the regional MWRA sewer collection system, which ultimately flows to the Deer Island Wastewater Treatment Plant in Boston, Massachusetts for treatment and disposal. Presently the buildings within the district are served by an 8-inch gravity sewer main located within Vaille Avenue. Discussions with Lexington DPW indicated that connection to Vaille Avenue sewer should be made for the Project and there is adequate capacity for both the sewer and receiving sewer pump station.

Estimated sewage discharge from the Project is 1,963 GPD assuming conventional dry goods retail uses.

The Utility Plan will be further detailed upon preparation of definitive engineering plans for the project.

II. Water Supply

The municipal water supply serving the District is connected to the Massachusetts Water Resource Authority (MWRA) regional water distribution system, which is controlled locally by the Lexington Water Department. An 8" dia. water main within Bedford Street services the property. The water main provides domestic water service to the existing buildings.

The domestic water demand is estimated to be 1.1 times the estimated sewage generation, or approximately 2,160 gpd. This does not include make-up water for building mechanical/cooling systems or irrigation.

Based upon discussions with the Lexington Engineering Department, there is adequate operating pressure and flow within the municipal system within Vaille Avenue and should be used to serve future development. Hydrant flow testing will be performed and overseen by the Lexington Department of Public Works to obtain water pressure and flow data for future design of the domestic and fire protection water systems for the Project. Lexington DPW Staff have encouraged the extension of fire service from the Vaille Avenue water main.

III. Fire Suppression/Access

As noted in the Water Supply section, hydrant flow testing will be conducted to confirm there is adequate flow and pressure to serve the District.

A Fire Access Study Plan has been completed to depict apparatus access maneuvering throughout the site. The engineer has reviewed the access study plan with the Fire Department and they have no objections to the project as proposed.

See Appendix C for the Fire Access Study Plan.

IV. Stormwater

The District is not served by any stormwater management systems, with roof and parking lot runoff discharging overland onto Bedford Street or abutting streets.

A new stormwater management system will be developed to serve the Project. This system will enhance water quality, promote groundwater recharge, and attenuate existing rate of runoff in conformance with MassDEP and Lexington Stormwater Regulations.

This will be achieved by implementing the following:

- Install pervious pavers to promote infiltration and reduce impervious cover for emergency access drives.
- Direct roof and parking lot runoff to underground stormwater retention/infiltration facilities. Promote storage and recharge of total runoff up to the 100-Year Storm Event. volume for the one-year design storm.
- Install deep sump catch basins and hydrodynamic separators to polish the first flush of runoff prior to recharge.

The Project will approximate existing drainage patterns with exception of retention/infiltration where none exists today.

Soil testing has been performed to confirm soil and groundwater conditions for the preliminary design. Soil Logs are included in the Hydrologic Analysis.

A preliminary stormwater analysis has been conducted for the Project to identify appropriate design and location of the selected BMP's. The definitive stormwater management system design will be completed in conformance with the requirements of Massachusetts DEP - Stormwater Management Handbook and the Lexington Stormwater Management By-law.

V. Electrical

NSTAR provides electrical service to the Town of Lexington. It is assumed that adequate electric grid capacity exists within South Lexington to service this project. Upon development of the building systems design, a calculation of electrical load projections and application for upgraded service will be made to NSTAR.

VI. Gas

Keyspan provides natural gas service to the Town of Lexington. It is assumed that adequate natural gas pressure and capacity exists within South Lexington to service this project. Upon development of the building systems design, a calculation of gas load projections and application for upgraded service will be made to Keyspan.

Appendix A

Fire Apparatus Access Analysis

Appendix B

Stormwater Management Report