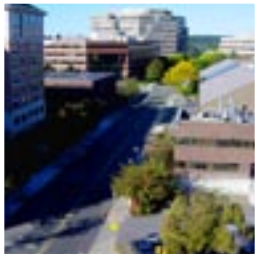

Concord-Alewife Plan

A REPORT OF THE CONCORD-ALEWIFE PLANNING STUDY | NOVEMBER 2005

City of Cambridge
Community Development Department
Concord-Alewife Planning Study Committee

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Beth Rubenstein,
Assistant City Manager for Community Development

Susan Glazer
Deputy Director

Stuart Dash
Community Planning Director

Iram Farooq
Project Manager

Lester Barber

Cliff Cook

Taha Jennings

Brendan Monroe

Owen O'Riordan

Catherine Preston

Susanne Rasmussen

Catherine Woodbury

CONSULTANT TEAM

Goody Clancy & Associates
land use, planning, urban design

VHB, Inc.
transportation planning, traffic engineering

Byrne McKinney & Associates
real estate analysis, housing

Community Planning Solutions
land use, zoning

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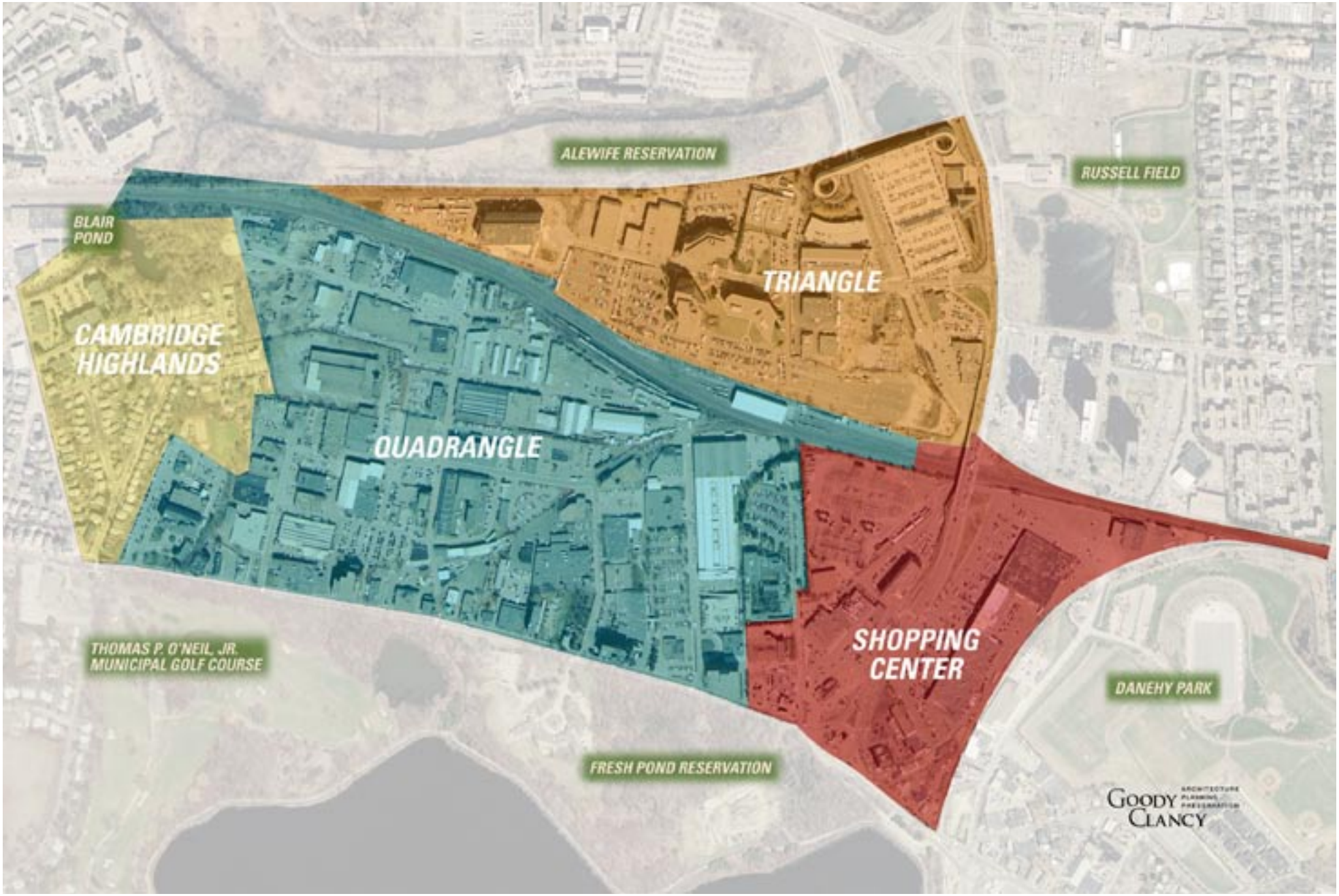
STUDY AREA


ALEWIFE RESERVATION
RUSSELL FIELD
BLAIR POND
TRIANGLE
CAMBRIDGE HIGHLANDS
QUADRANGLE
SHOPPING CENTER
THOMAS P. O'NEIL, JR. MUNICIPAL GOLF COURSE
DANEHY PARK
FRESH POND RESERVATION
GOODY CLANCY

1 Introduction

BACKGROUND

Following the citywide and Eastern Cambridge rezonings of 2001, the Concord-Alewife area in the western part of the City remains the last large commercial area of Cambridge having significant development potential and in need of more detailed planning. The City embarked upon a multidisciplinary planning study of this area in January 2003. To guide this planning study, the City Manager appointed a Study Committee including neighborhood residents, representatives of area businesses, property owners and institutions, and City staff. The resulting Concord-Alewife Planning Study builds upon the work of the Citywide Growth Management initiative, and aims to develop a plan for the Concord-Alewife area through a participatory community process. Key issues addressed by the Concord-Alewife Planning Study include the appropriate mix of uses, including housing, commercial, possible City uses, and open space; the character of future development; access and traffic; and zoning changes needed to accomplish City goals.

STUDY AREA

Located between Alewife Reservation and Concord Avenue, and Blanchard Road and Danehy Park, the 250-acre Study Area includes the sub-areas known as the Cambridge Highlands, the Triangle, the Quadrangle, and the Fresh Pond Shopping Center (shown on the facing page). The area adjoins the Cambridge-Belmont town line and is a major point of entry into Cambridge, primarily from the west and north.

To a great extent, the area's special character is derived from its industrial history, its proximity to some of Cambridge's primary open space resources, including the Alewife Reservation, and its proximity to transit.

The Study Area is connected to the transit system by the Alewife Station of the Massachusetts Bay Transportation Authority (MBTA) Red Line subway and additional bus lines along Concord Avenue. As a terminus of the Red Line and a transportation center with a convergence of multiple bus lines,

Public meetings informed the Study Committee's work throughout the process.

this station is an important resource for travelers, particularly commuters from Cambridge and regional locations to the west.

The Concord Alewife Study Committee met approximately monthly between February 2003 and June 2004 to develop a vision for the area and formulate zoning and non-zoning recommendations to achieve the vision. The work of the Committee was informed by public input received during the process, both at Study Committee meetings and at four public meetings held during the process.

The Concord-Alewife zoning recommendations were forwarded to the Planning Board in July 2004 for discussion, and in March 2005 the Planning Board voted to forward a rezoning petition based on these recommendations to the City Council. The Concord-Alewife Rezoning Petition was filed in April 2005 and will be considered by the City Council and Planning Board during 2005 and 2006. Any actions adopted by the City Council will be incorporated into the Cambridge Zoning Ordinance. The non-zoning recommendations, which are discussed in this report, include a series of transportation and stormwater recommendations to be forwarded to the City Manager for future consideration in the City's capital planning and other appropriate venues.

PUBLIC MEETINGS

March 27, 2003
June 6, 2003
December 10, 2003
June 2, 2004

2 Analysis and Discussion

SUB-AREAS

This study divides the Study Area into four sub-areas with distinctly different development characters—the Triangle, the Quadrangle, Fresh Pond Shopping Center, and Cambridge Highlands. Brief descriptions of each sub-area appear on the following pages.

TRIANGLE

CAMBRIDGE HIGHLANDS

QUADRANGLE

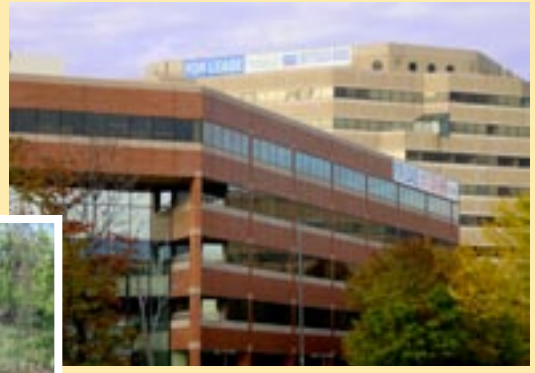
FRESH POND SHOPPING CENTER

Cambridge Highlands

This 20-acre area is a traditional residential neighborhood of just over 200 homes. It is characterized by small block sizes, narrow, pedestrian-friendly streets with small lots, and two- to three-story houses. There are very few unbuilt parcels in this area, although development potential remains on a number of larger parcels.

The Triangle

This 60-acre area lies between the Alewife Reservation, the commuter rail tracks and Alewife Brook Parkway. Over the last 25 years, it has seen the development of many large-scale office and R&D buildings, as well as over 300 units of housing. With the T's Alewife Station, this area benefits from excellent access to transit through the Red Line and regional bus service. Large parts of the Triangle fall within the 100-year floodplain, and recent development here has aggressively managed stormwater on-site to meet state wetlands-protection regulations.



The Quadrangle

Many properties in the 130-acre Quadrangle have significant remaining development potential. Traditional industries used large parts of this area in the past; more recently those parcels have served as incubator space for emerging companies. Despite proximity to transit and open space resources, this area is auto-oriented and not well connected to those resources. The extensive paved surface in this area presents a stormwater-management challenge.

Fresh Pond Shopping Center

This 40-acre area includes the business areas on either side of Alewife Brook Parkway. It comprises Fresh Pond Shopping Mall to the east and a cluster of retail and commercial structures to the west. This area, particularly on the east side, serves as a resource for local residents as well as a draw for shoppers from the rest of Cambridge and the region. Despite its proximity to Alewife Station, the area is currently more auto-oriented, fronted by a large surface parking lot.

LAND USE AND ZONING

History of Planning Efforts in Concord-Alewife

The Alewife area has been the subject of a number of planning efforts in the past. A detailed urban design study was conducted more than 30 years ago resulting in the *Alewife Revitalization: Alewife Urban Design Study Phase II* (1979). The goal of this study was to create a framework for development of Alewife as it made the transition from an industrial area to an office, research, and service-oriented center. The zoning currently in effect in the Study Area largely results from the 1979 plan, modified by the citywide rezoning of 2001, as noted below.

A June 1981 study established this part of the City as the Alewife Commercial Area Revitalization District, as part of the City's strategy to revitalize and strengthen its commercial base. This was to be spurred by the then-ongoing extension of the MBTA Red Line and construction of Alewife Station as well as other infrastructure improvements.

A 1974 aerial photo takes in most of Cambridge, including the majority of the study area (tinted portion). The view is toward the Charles River and Boston.

The Alewife master planning process, 1991–93, designed to be consistent with the City's growth policy document *Toward a Sustainable Future,* resulted in the draft master plan entitled *Alewife: A Plan for Sustainable Development* (March 1994). The study was not adopted and the plan was deferred for future study.

In 1981 the Parkway Overlay District zoning was enacted, creating setbacks and height limitations as well as landscaping and urban design guidelines to guide the character of development along the major parkways in the area—Concord Avenue, Alewife Brook Parkway, and the areas in Cambridge adjacent to Route 2. Subsequent development along these roads has improved upon the character of the district. In 2000, the Tennis Petition resulted in further reducing heights along Concord Avenue adjacent to Fresh Pond Reservation to 50 feet.

Views of the study area: Fawcett Street (right) and Concord Avenue (below left) both lie in the Quadrangle. Cambridgepark Drive (below right) is the main road through the Triangle.

A Citywide Growth Management Advisory Committee and the Community Development Department worked from 1998 to 2000 to address citywide growth management issues in Cambridge. Key areas addressed included adjusting allowed development density downward for nonresidential uses, facilitating housing, providing for citywide project review and reducing allowable off-street parking for commercial development in order to control traffic impacts. This study effort resulted in the citywide rezoning that was adopted by the City Council in February 2001. In the Concord-Alewife area, citywide rezoning reduced nonresidential densities permitted in the office and business districts by 38%.

The issues and strategies identified in the citywide rezoning served as a launching point for the Concord-Alewife Planning Study. This section further explores existing conditions in the area and analyzes opportunities and challenges.

Mix of Uses and Densities

The Concord-Alewife area has been a valuable industrial and business area in Cambridge for decades. Due to its industrial/commercial nature and comparatively low rents, this is also one of the few parts of the City that offers incubator opportunities for startup businesses. With increased housing demand and prices, and following the end of rent control in 1995, enhancing the Cambridge housing stock and its affordability for a diverse range of residents has become a primary goal of the City. Citywide rezoning created density (or floor area ratio) incentives for housing development in most nonresidential districts and allowed residential development to occur in industrial areas where it was previously not permitted. This change is particularly significant in Concord-Alewife, the city's only remaining predominantly industrial area.

Concern was expressed at Committee meetings that the zoning proposals might make it difficult for owners of small properties to use the full FAR capacity on their sites. The goal of retaining existing low-intensity commercial uses in the Quadrangle was also mentioned. The zoning proposal therefore exempted very small parcels from having to undergo a special permit process to reach full FAR. A transfer-of-development rights (TDR) provision was also included to allow properties close to Cambridge Highlands and far from transit to sell their

The mix of uses and architectural forms in the area does not project a coherent character.

development rights while allowing modest residential or commercial ventures to remain on the site.

Review of Development Projects

Significant development and investment has occurred in the Study Area since the 1979 Alewife Revitalization plan has been in effect. However, the improvement in character, particularly in the Quadrangle, has been small and the quality of urban design varies. A key reason for this is that a large percentage of the development was able to occur as-of-right, with limited review and public input. In the Triangle, where a special permit/PUD provision was in place, significant development capacity existed in base zoning that did not require use of the PUD, incentives to enter the special permit/PUD process were not strong enough to induce its use, and a minimum parcel size requirement made it impossible for small lots to utilize the PUD.

In developing a land use plan for the future, the study has to create a balanced policy regarding the appropriate mix of uses and densities for the Study Area while responding to transportation and environmental considerations and addressing the impacts of future development.

URBAN DESIGN AND OPEN SPACE

Urban Design

The opportunistic development in the Concord-Alewife area has resulted in development that lacks a coherent character and a sense of place. Zoning changes, such as the creation of the Parkway Overlay District and citywide changes encouraging housing, have started to create positive impacts, but more is needed to improve the urban design character and pedestrian experience along Concord Avenue and Alewife Brook Parkway, to improve internal streets within the Quadrangle to be more pedestrian-friendly, to foster a vibrant public realm by creating active streets and outdoor gathering spaces, and to reinforce connections to nearby open spaces.

Concord-Alewife Community

While this area includes 700,000 square feet of residential and 3,800,000 square feet of commercial development, it was felt that it lacks community-centered spaces easily accessible to pedestrians that could form a "neighborhood heart" where residents and workers could gather. Building on the stability of the existing residential neighborhood and creating the framework for a new mixed-use community in the rest of the Study Area were seen as key to

supporting and enhancing the Concord-Alewife area. There was a desire to see new places and public spaces that are accessible to all and that support the community and a range of activities. There was discussion of the critical mass of residents and/or workers that are needed to support such a place. There was general consensus that improved connections, as well as future development in the area, would be needed to reach a critical mass of users in the neighborhood to support the development of such community centered gathering spaces.

Block Pattern
Internal streets, particularly in the Quadrangle and the Shopping Center, form a pattern of large blocks that is difficult to navigate, with dead ends, cul-de-sacs, and streets that do not connect. The distinction between vehicular and pedestrian zones is often blurred, and a hierarchy of public and private spaces is missing due to a lack of curbs, street definition, street trees and sidewalks on many streets. Breaking up the blocks as the area redevelops would help create a more urban and intimate scale. Improved internal streets within the Quadrangle could create a more pedestrian-friendly environment and reinforce connections to the outdoor spaces that adjoin the Study Area.

Edges, Barriers, and Connections
Railroad tracks and major roadways traverse the Study Area and although they serve critical functions, they also create physical and visual barriers that cut off the various sub-areas from each other, nearby transit, and open space resources. There exist opportunities for great improvement by overcoming barriers and improving connections. There was a lot of interest in the creation of connections across the railroad tracks, connecting Alewife Station to the Quadrangle and Cambridge Highlands; connecting the shopping center to other parts of the Study Area as well as North Cambridge; linking open spaces; and improving connections within the Quadrangle. The rail right-of-way corridor of the Fitchburg Line ranges in width from 100 feet to 200 feet, and along with multiple active tracks, includes some tracks that are not in use. This is an important consideration when contemplating any crossing of the railroad tracks, as clearance requirements for bridges are significant.

Public Realm
The Study Area lacks community-centered spaces easily accessible to pedestrians that could form a “neighborhood heart” where residents and workers could informally gather. Building on the stability of the existing community is the key to supporting and enhancing the Concord-Alewife community. As

Automobile-oriented development provides limited places for people to gather and interact.

the area develops, it offers the opportunity for filling this gap by creating a mix of uses interspersed with plazas and open spaces where residents and workers could gather and interact. The Shopping Center, particularly, presents an opportunity for enhancing sense of place and creating a true neighborhood gathering place where shopping and recreation could come together in a walkable neighborhood-serving destination.

Sense of Place

The Concord-Alewife area currently lacks a coherent character and a sense of place. This can be seen in the blurred line between pedestrian and auto realms, lack of hierarchy of public uses, and a lack of physical and visual connections to existing outdoor spaces. It is evident in the Quadrangle, in the lack of distinction between public and private spaces; along Concord Avenue in discontinuous street edges and awkward mix of uses; and in the Triangle and along Alewife Brook Parkway in suburban-style development and large surface parking lots.

Image—Highly Visible Locations

The Study Area lies at the western entrance to Cambridge, making it important to create a positive image of the area for visitors, as well as for those who live and work there. More than 7,500 linear feet of frontage along Concord Avenue and Alewife Brook Parkway fall within the Study Area. Much of this frontage demonstrates the disadvantage of fragmented development without significant urban design review. This is particularly evident in strip commercial development along Alewife Brook Parkway. The Parkway Overlay District zoning that has governed the areas adjacent to Concord Avenue and the Parkway since 1981 provides design guidelines and has had a noticeably positive impact. Attention to the area's urban design needs to continue in order to ensure that this highly visible area presents a positive face.

Transitions

Residents often raised the issue of protecting the character of Cambridge Highlands. This neighborhood of two- and three-story homes adjoins the industrial and commercial activity of the Quadrangle with minimal transition. Concerns were raised about the noise, fumes and traffic from the uses in the Quadrangle. It was deemed important to

Safe and walkable connections are needed to improve access to the numerous open spaces that surround the Concord-Alewife area.

find appropriate transitions in land use and scale to create a harmonious relationship between these different uses. A vegetated buffer between the two areas would help create a visual and noise buffer and also provide a walkable, green connection among various open spaces—Rafferty Park, Fresh Pond, and Blair Pond. Appropriate land use and scale transitions are also important to creating a harmonious relationship between these different districts.

FIGURE 1 ***OPEN SPACE CONNECTIONS***

Open Space

The provision of abundant and diverse open space is an important component of maintaining quality of life in the city. The Green Ribbon Open Space report of March 2000 evaluated open space needs in Cambridge and developed criteria for the City to use as it explores open space acquisition opportunities. Important open space issues from the Green Ribbon Report include improving access to existing open space by various modes of transportation, utilizing creative management techniques to increase urban park areas without additional land acquisition, and altering the current zoning and urban design guidelines to strengthen open space requirements.

These issues are particularly significant in the Study Area, which is bounded by some of the City's richest open space resources, ranging from urban wilds and passive recreational areas to active playing fields, regional resources, and smaller neighborhood parks.

TRANSPORTATION

Transportation issues raised during the study process include inadequate pedestrian and bicycle connections, both within the Study Area and to important transit resources, open space, and other amenities; traffic congestion; a lack of coherence of traffic patterns within the Quadrangle and the Shopping Center area; and specific speed and safety concerns along some Study Area roads and intersections. Many of the traffic issues that affect the Study Area are regional in nature, owing to the area's location on several major regional travel corridors.

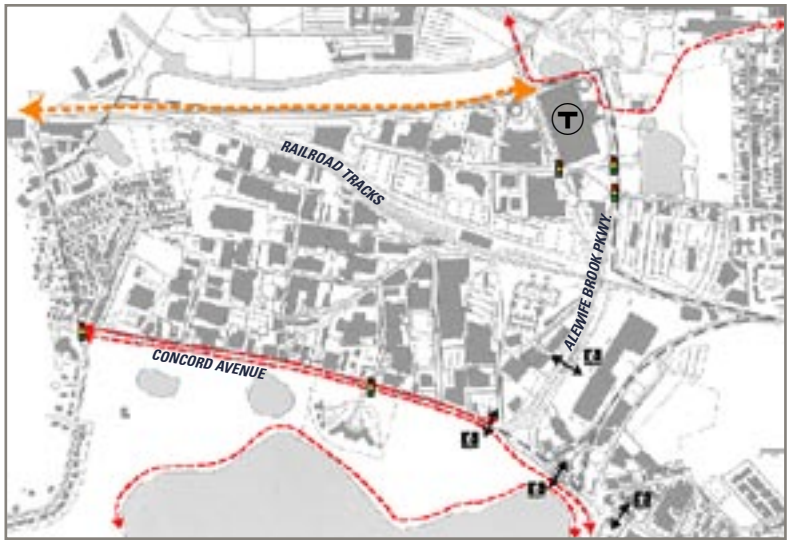
The Alewife Brook and Fresh Pond parkways and the two Concord Avenue rotaries are part of an east-west corridor that connects Boston to its western suburbs along Route 2, as well as part of the Route 16 corridor. Because of this, a large percentage of the

FIGURE 3 ***REGIONAL TRAFFIC NETWORK***

Pedestrian and bicycle pathways exist at the edges of the Study Area but are not integrated and do not allow connections through the area

traffic on the Alewife Brook Parkway and Concord Avenue is regional in nature and is passing through the Study Area, having neither origin nor destination within the area. Therefore, the impact of actions taken within the Study Area on the overall volume of traffic will be limited. The primary way to reduce traffic volume would be through very significant expansion of the regional transit infrastructure to serve communities well beyond Belmont and Arlington to the west and communities along Route 16. While the City actively seeks to encourage improved transit access to the area, it does not control such regional changes, which are more likely to be addressed over a longer time-frame by an effort to work with the MBTA. The Committee recognized that land use plans for the Study Area cannot significantly influence regional traffic, but it felt strongly that the recommendations for the Study Area respond to traffic volume by encouraging and facilitating use of non-auto modes of transportation. This study therefore focuses on providing a safe and pleasant pedestrian and bicycle environment, enhancing access between Alewife Station and bus routes and all parts of the Study Area, taking a closer look at the transportation network with respect to its efficiency in processing traffic, and ensuring that rigorous efforts are made to mitigate traffic impacts of new development.

FIGURE 4 ***PEDESTRIAN AND BICYCLE CIRCULATION***



Vehicular traffic generation in the area is influenced by local land uses, hence the study evaluated the transportation impacts of uses and densities proposed in the Study Area. An important way to affect traffic is to enhance non-auto mobility.

Role of Transit

The Study Area is served by the Red Line subway service at Alewife Station, which caters to the neighborhood as well as the broader region; by the MBTA parking garage, which is used as a park-and-ride facility by residents of neighboring communities; and by “feeder” bus routes to and from the

FIGURE 5 ***WALKING DISTANCE FROM ALEWIFE STATION***

Areas within the 10-minute walking radius from Alewife Station include large parts of the Quadrangle. However, the absence of a direct connection across the commuter rail tracks means that walking to these areas from the station requires more than 10 minutes (route shown in purple).

station (bus routes #62/76, #67, and #84 from the west and bus routes #79 and #350 from the north). Committee discussions revealed that users from parts of the Study Area south of the railroad tracks find bus routes #74 and #78 (that run along Concord Avenue and connect to Harvard Square) a more convenient connection to the Red Line than Alewife Station.

Commuter Rail

The Fitchburg Line of the MBTA commuter rail system bisects the Study Area but stops in Cambridge only at Porter Square. The idea of a commuter rail stop in Alewife was discussed during the study. The issues that the MBTA typically considers in determining whether to create a new stop are:

a. estimated number of new riders that would be served by the creation of the stop;
b. cost per rider; and
c. estimated number of riders lost due to increased travel times.

In past analyses, the MBTA has found that the potential new ridership for a commuter rail stop in the Concord-Alewife area was insufficient to justify delays and potential loss of ridership due to increased travel time. It is possible, however, that as the area redevelops, land uses change, and the number of potential users increases, such an analysis might yield a more favorable result. The Committee emphasized its desire for the City to pursue the idea of a commuter rail stop in Alewife with the MBTA as the area evolves.

Railroad Crossing

The Committee discussed the feasibility of a vehicular crossing of the railroad tracks and an at-grade pedestrian crossing. For safety reasons, neither the City staff, nor its consultants, nor the MBTA recommends at-grade crossings of railroad tracks.

A grade-separated vehicular connection between the Triangle and the Quadrangle would provide a direct connection for Route 2 traffic in and out of the Quadrangle (similar to the Alewife Station garage) without using the Alewife Brook Parkway, thereby enhancing vehicular access and reducing some trips (existing and new) on the Parkway. However, such a connection could create a short-cut route for avoiding the Alewife Brook Parkway/Concord Avenue rotary, and could be attractive for trips to destinations within and beyond the Study Area. Additional considerations include the size and cost of a grade-separated vehicular crossing, as well as issues of land needed to accommodate access ramps. The land on

FIGURE 6 ***TRANSIT, BUS ROUTES***

The Fitchburg commuter rail line creates a barrier between the Quadrangle and the Triangle.

either side of the railroad tracks is privately owned, and development of a connection across the tracks would require agreements with multiple property owners, including the MBTA. After discussion, such a vehicular connection was deemed not to be an attractive option.

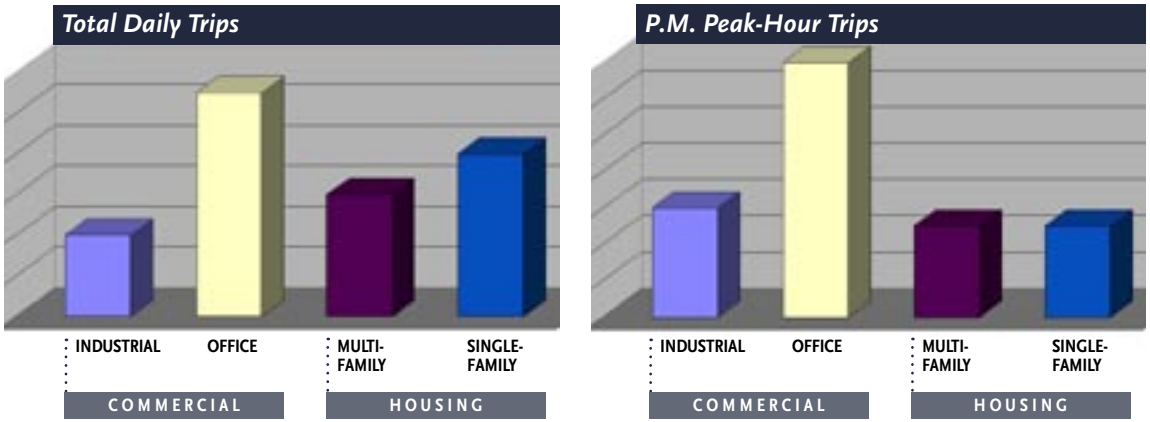
A crossing for pedestrians and bicycles is crucial, however, to improving the connection from the Quadrangle and Cambridge Highlands to Alewife Station and for providing a bicycle connection to a regional network through the Minuteman Trail, Linear Park, and the Belmont Path. An above-grade crossing of the tracks is recommended as the optimal way to create this connection. Such a connection could be a free-standing bridge or could be achieved by incorporating the connection into future buildings and landscapes on either side of the tracks. The Priority Infrastructure map on page 34 shows a preferred zone for the connection.

Travel Characteristics

Walking and bicycling to work is much less common in Concord-Alewife than elsewhere in Cambridge. For obvious reasons, the Triangle makes greater use of transit than the Quadrangle, while the percentage of people driving is greater in the Quadrangle than the Triangle. The large supply of parking in the Study Area also encourages automobile use. Land uses influence the number of trips generated in a given area. The graphs below compare trip generation by various land uses in the general case, demonstrating that housing typically generates fewer auto trips than most commercial uses.

Since automobile traffic and congestion are important issues in the area, the Committee considered various ways to influence trip generation and auto demand. These included enhancing mobility through non-auto modes, such as transit, walking, and bicycling. Key ideas included

FIGURE 7 ***HOW DIFFERENT USES AFFECT AUTO-TRIP GENERATION (GENERAL CASE)***



Traffic issues on Blanchard Road include speeding, noise from passing trucks, and narrow sidewalks.

providing missing pedestrian and bicycle connections, as well as safe and high-quality crossings; improving safety and traffic calming to enhance the pedestrian and bicycle environment; controlling vehicular access and circulation, where appropriate; and managing parking demand and supply.

Additional transportation concerns identified during the study included keeping through-traffic off residential streets in the Highlands, addressing speeding on Blanchard Road, addressing smooth movement of traffic on Concord Avenue, particularly at peak hours, and managing truck traffic and noise from trucks that use the area. Appendix F, "Transportation Recommendations," details these concerns and the recommendations proposed for addressing them.

Transportation Analysis

Critical movements analysis (CMA), a methodology previously used in traffic studies conducted by the City for the *Citywide Growth Management Study* and the *Eastern Cambridge Planning Study,* was employed for this study to compare the transportation impacts of proposed zoning to those created by existing zoning. The methodology for CMA is described in the 1985 *Highway Capacity Manual* as a basic assessment for signalized intersection operation in transportation planning. This approach was used to compare how six signalized intersections in the Study Area would operate in the evening peak hour under the Existing Zoning and Proposed Zoning build-out scenarios. Appendix E contains an explanation of this analysis and summarizes the results for the six intersections evaluated.

The intersection analysis and the projection of future trip growth associated with the proposed zoning scenario described in Chapter 4, "Recommendations,"concluded that the impact of Study Area development on traffic operations would be significantly less under the proposed zoning than with the build-out projected under existing zoning as:

- The build-out under proposed zoning is expected to generate 30% fewer new auto trips in the Study Area during the P.M. peak hour compared to a build-out under existing zoning.
- Compared to projections for existing zoning, the proposed zoning is expected to reduce the projected increase in critical sums at study intersections. The projected increase would be about 22% lower for background growth and new development trips combined, and about 30% lower for new development trips alone.

The fragmented pattern of ownership poses a challenge to implementation of a plan that requires coordination among multiple properties.

MARKET ANALYSIS/ ECONOMIC DEVELOPMENT

The contributions of new development to the City's tax base enable the community to enjoy a high level of public services and to invest for the future. Cambridge's ability to attract diverse companies provides its residents not only many goods and services but also a variety of employment opportunities.

The Study Area's large stock of older industrial buildings has been a valuable resource for emerging companies due to comparatively low rents and adaptable physical characteristics. The Study Committee discussed the advantages and disadvantages of preserving these industrial buildings for future commercial use. The recommendation for incentives to allow such incubator uses to remain in the area are incorporated into the choice of base districts, allowed uses under the special permit, and the transfer of development rights recommendation described in Chapter 4, "Recommendations."

Development Trends

The eclectic nature of development in Concord-Alewife shows a pattern that is opportunistic, driven by parcel availability and location. The pattern of multiple small parcels under different ownership makes it difficult to implement a plan that requires coordination among multiple owners. This has led to the mixed pattern evident in the Study Area today.

Development Outlook

If the regulations guiding development and infrastructure serving the area remain unchanged, development is likely to continue in a haphazard fashion. As other large areas of the city with development potential are built out, the Concord-Alewife area will likely become more attractive for development. Given this potential, it is important that the goals for the area be incorporated into the zoning and urban design guidelines so future development can occur in a manner consistent with a long-term vision.

Parcels that have received major investment within the last 20 years, and most parcels within the mature Cambridge Highlands residential neighborhood, are not likely to witness significant change, nor will parcels with long-term leases or other restrictions. Sites more likely to change include vacant or underutilized parcels or buildings, parking lots, and storage yards that may be developed for higher-value uses or densities in the future. Issues affecting development within the various sub-areas are outlined below.

The Triangle
This area has direct access to Red Line transit, linking it to the rest of Cambridge. The Red Line, bus routes, and Route 2 also provide regional access. Consolidated ownership and good parcelization characterize this highly visible location. The area has coherent infrastructure and a record of successful development, with a number of large office, R&D, and residential buildings. A number of parcels with older structures and large surface parking lots offer potential for additional redevelopment.

The Quadrangle
Highly visible frontage on Concord Avenue, with views of Fresh Pond, is attractive for development, particularly residential development—as multiple developments in this area over the last decade attest. While bus service along Concord Avenue connects to Harvard Square and Belmont Center, the Quadrangle as a whole suffers from limited access to transit and to Route 2. The Quadrangle's roadway infrastructure is not well developed and its often unconnected streets do not form a coherent network. In many cases, roads lack pedestrian amenities, including sidewalks. Less consolidated ownership and fragmented parcelization in this area also discourage development.

The Triangle has several large surface parking lots.

Shopping Center Area
This highly visible location—with consolidated ownership and good parcelization—has proven successful in its current use. The area holds potential, however, for creating a more urban, transit-oriented, mixed-use district. Existing tenants with long-term leases may represent obstacles to wholesale redevelopment, but the potential exists for redevelopment carried out in phases.

Cambridge Highlands
This well-established residential enclave contains a few larger residential parcels with potential for additional development or expansion of existing structures, but it has few vacant parcels.

ENVIRONMENT/STORMWATER

Early in the planning study process, flooding and stormwater management were identified as important considerations. A large percentage of the Study Area, particularly in the Quadrangle, the Triangle, and the Shopping Center, is paved and impervious. As a result most rainwater runs off into storm sewers without an opportunity to filter into the ground and lose suspended solids and other pollutants. The proximity of the Study Area to two significant water resources, Fresh Pond and the Alewife Brook, makes it important to consider how development in the area would affect stormwater management and flooding.

The Concord-Alewife area falls within the Alewife sub-watershed of the Mystic River Watershed. The majority of stormwater discharges to the Alewife Brook come from Arlington and Belmont. These towns convey their separated stormwater into the Brook, which discharges into the Mystic River and ultimately into Boston Harbor. When considering stormwater management, key issues of concern are the quality of the runoff, the quantity of water to be handled, and the rate at which it is discharged to Alewife Brook.

Development within the 100-year floodplain requires rigorous stormwater-management efforts.

Recent and Ongoing Efforts

A number of important environmental issues in the area were addressed by the recently completed Fresh Pond Master Plan and a master plan created by the Metropolitan District Commission (MDC—now Department of Conservation and Recreation, or DCR) for the Alewife Reservation. The Fresh Pond Reservation Stormwater Management Program addresses stormwater that travels through the reservation and reaches Fresh Pond. Cambridge has joined Belmont and Arlington to form the Tri-Community Working Group, which addresses flooding issues that involve all three cities.

Cambridge is improving the functioning of its sewer system throughout the city by separating sanitary and stormwater sewers. The entire Study Area is now served by a separated sewer system. The Department of Public Works is also engaged in stormwater-system improvements to enhance flood protection, combined-sewer overflow control, and water-supply protection. The City is also working to implement Massachusetts DEP's approach to "pollutants of concern."

The City and MWRA have undertaken a major sewer-separation and stormwater-management project in the neighboring areas to protect Fresh Pond Reservoir, provide relief for local residents and businesses from flooding, and reduce the frequency and volume of combined-sewer-

FIG. 8 ***CONSTRUCTED STORMWATER WETLAND AT ALEWIFE RESERVATION***

The City plans to create a stormwater wetland in the Alewife Reservation to better accommodate stormwater discharge.

overflow discharges. The City's plan includes discharging separated stormwater into a newly created stormwater wetland in the Alewife Reservation, which is currently in permitting at DEP. The stormwater wetland will enhance water quality and provide a way to attenuate/slow stormwater before it reaches the Little River, thus not exacerbating existing flooding in other communities. The City is also working with the Department of Conservation and Recreation to include enhancements of the stormwater wetland that would support the reservation's wildlife and native plant communities and enhance the area's passive recreational uses.

Private Stormwater Controls

Historically a swamp and now filled, the Concord-Alewife area is flat and prone to flooding, since much of the area was built without stormwater-management elements. A large percentage of stormwater runs off the properties in the Study Area through the drainage system and into Alewife Brook. Redevelopment of properties within the Study Area represents the best opportunity to address stormwater-management goals using low impact development (LID) principles such as green-roof systems, retention ponds, rain gardens and bioswales to control and treat stormwater.

Floodplain Considerations

In 1982 the Federal Emergency Management Agency (FEMA) issued Flood Insurance Rate Maps (FIRM) for the Alewife area that depict land within and outside the 100-year floodplain. Approximately 60% of the Triangle lies within Zone A, the limit of the 100-year flood; approximately 5% of the Quadrangle and Fresh Pond Shopping Area lies within the limit of the 100-year flood. Most of the remaining area within the Triangle, and approximately 55% of the Quadrangle and Fresh Pond Shopping Area, lie within Zone B, between limits of the 100-year flood and the 500-year flood.

Since 1982 there have been many changes within the Alewife sub-watershed, and FEMA has hired a consultant to update the FIRM maps. Draft revised maps are expected to be available for comment in 2006. Until the revised maps are released, the 1982 maps continue to be the legal floodplain delineation. All areas within the 100-year floodplain are subject to review by the Conservation Commission under the state

FIGURE 9 ***IMPERMEABLE SURFACES***

Wetlands Protection Act, which imposes rigorous stormwater-management and permeability standards. Any parts of the Study Area that are designated as falling within the 100-year floodplain will be subject to these state regulations, in addition to the City's zoning.

As previously mentioned, a large percentage of the Study Area is currently hardscaped and impermeable—buildings, streets, parking lots, paving—and produces large volumes of surface runoff. A key strategy for addressing flooding concerns is to reduce surface runoff by increasing permeability and/or retaining stormwater on site for a period of time. In many ways, redevelopment is the best way to address flooding problems, as one requirement for redevelopment of existing hardscaped areas could be more active stormwater management. Increasing the percentage of permeable surface in the Quadrangle, Triangle, and the Shopping Center would allow more water to recharge back into the ground and reduce the volume and rate of runoff. The use of best management practices to control stormwater quality and quantity, including low impact development measures and structural controls, is the surest way of improving the area's stormwater handling.

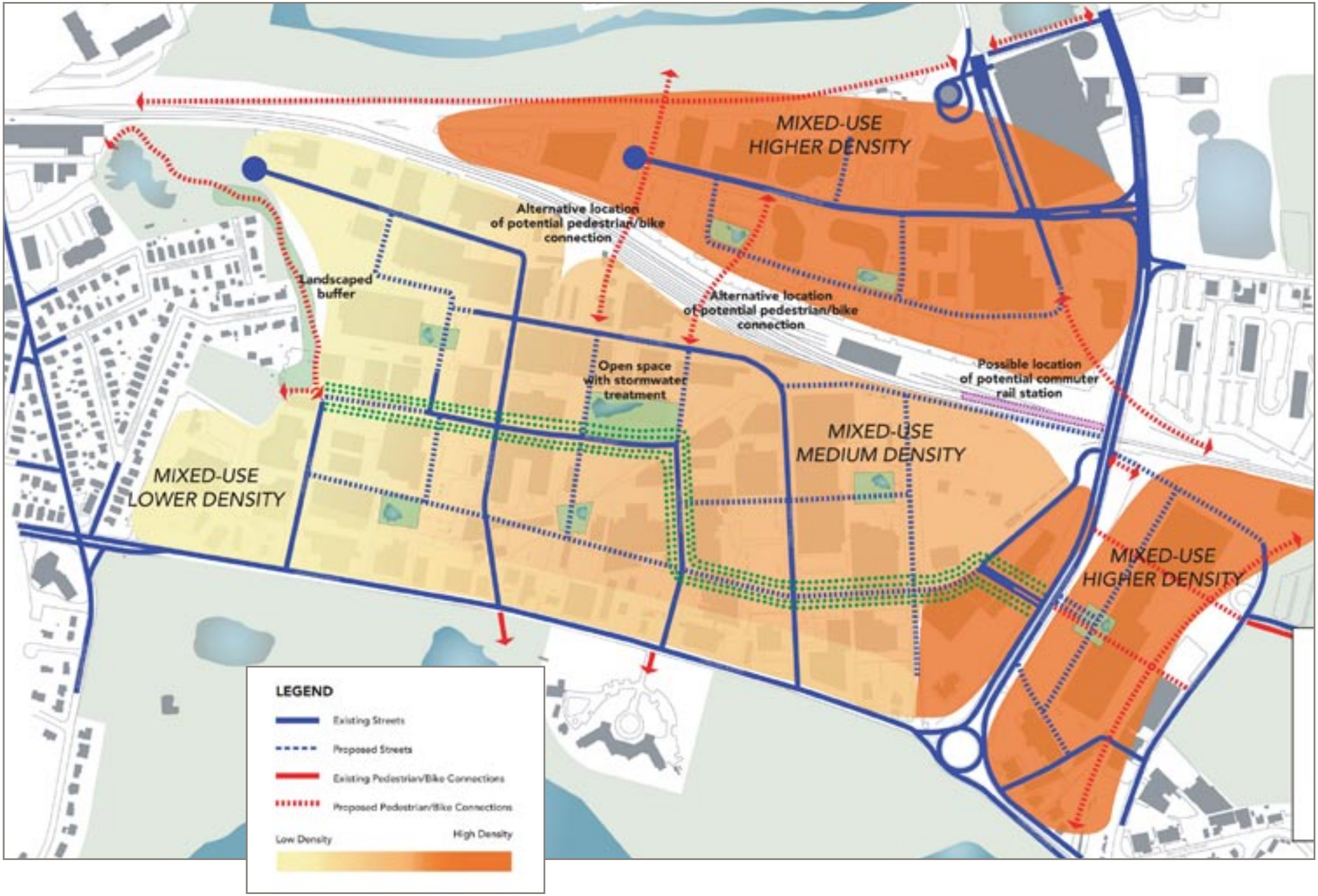
Constructed wetland at 200 Cambridgepark Drive is a mechanism of low-impact development.

3 Vision and Goals

Starting with the earliest Committee discussion and informed by public meetings and workshops, a vision for the area emerged that emphasized creating a people-oriented sense of place; achieving a mix of uses throughout the area, including housing, office/R&D, industry, retail, possible municipal uses, and open space; structuring densities to respond to available infrastructure; developing a neighborhood "heart" for people who live, work, play, and shop in the area; overcoming barriers and establishing much-needed connections to create a walkable neighborhood; transforming Concord Avenue into a great street; and enhancing the environment.

In addition to goals that apply across the Study Area, the Committee recognized that the diversity in character and conditions of the sub-areas required careful consideration of each one individually. Specific goals for each sub-area follow the listing of areawide goals that appears on pages 24–26.

10 CONCEPT PLAN



Goals: Areawide

Land Use and Density

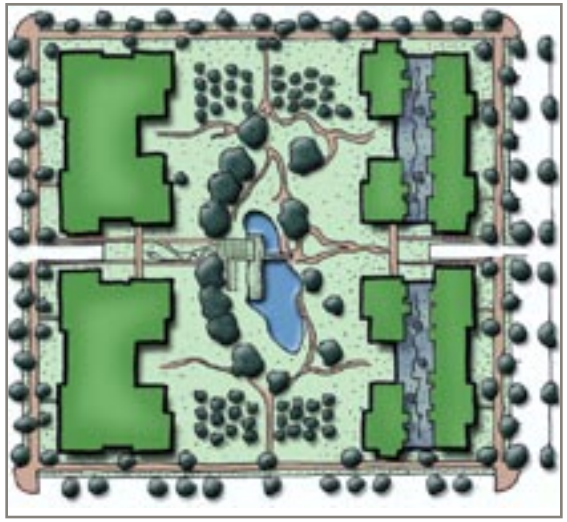
- Support mixed-use development throughout the Study Area to create a vibrant urban environment.
- Encourage development that responds to transit proximity by allowing higher densities and taller heights closer to Alewife Station.
- Create incentives for cooperation among property owners to meet study goals, especially stormwater management and infrastructure goals.
- Create urban design guidelines that encourage future development and create a sense of place for Concord-Alewife.
- Create guidelines that encourage future development to be responsive to stormwater, open space, and transportation goals for the Study Area.

Infrastructure, Stormwater Management, and Open Space

- Encourage creation of some combination of large open spaces, smaller retention ponds, and neighborhood squares; use parks, street plantings, parking lots, and other open space to enhance stormwater retention and treatment.
- Ensure that new development and redevelopment increases permeability and utilizes principles of low-impact development to improve runoff quality and reduce runoff quantity.
- Apply best management practices and low impact development strategies to mitigate stormwater runoff.
- Improve connections between open space resources in and adjacent to the Study Area.

Traffic and Transportation

- Reduce anticipated auto-trip growth as compared to what is allowed under current zoning.
- Reduce auto mode share by employing measures such as:
  - improving access to transit,
  - designing a walkable and bike-friendly community,
  - improving the pedestrian environment, and
  - balancing provision of parking with transportation-demand management (TDM) goals.



Encourage site planning that incorporates low-impact development strategies to improve stormwater management in future development.

GOALS: AREAWIDE [continued]

- Address safety issues on the periphery of the Study Area as well as within its interior.
- Provide for the possibility of consolidating existing surface parking into a structure as part of overall site improvements.

Housing

- Create a variety of housing opportunities that serve a diverse population of varying incomes, ages, and household sizes.
- Provide a mix of ownership and rental housing at all income levels.

These renderings and photos illustrate the desired future character of the mixed-use area.

Goals: The Triangle

- Encourage more transit-oriented development. Allow higher density and height to take advantage of proximity to Alewife Station.
- Continue to allow commercial development to be focused in this area, while also encouraging housing close to the T station.
- Create a pleasant, walkable connection between Alewife Reservation and Fresh Pond Reservation consistent with the Alewife Reservation Master Plan and the Fresh Pond Master Plan.
- Create public access to the Alewife Reservation from Cambridgepark Drive.
- Reduce auto mode share within the Triangle.
- Improve bicycle and pedestrian connections among the Minuteman Trail, Belmont Path, Linear Park, and a future pathway along the Watertown rail line.
- Improve signage and enhance access to the multiuse trail from Alewife Station.
- Encourage development of additional housing close to Alewife Station while continuing to support commercial development.

Goals: The Quadrangle

- Encourage creation of housing along Concord Avenue.
- Introduce neighborhood-focused retail to form a mixed-use core near the Alewife Brook Parkway edge of the Quadrangle.
- Continue to allow light industrial uses closer to the railroad tracks.
- Create appropriate transitions between the Highlands and nonresidential uses in the Quadrangle by introducing a green buffer and allowing lower densities and heights near the Highlands.
- Create a public space that serves a stormwater function as well as being an open space resource.
- Increase the amount of permeable surface in the Quadrangle as the area redevelops.
- Encourage future development to respond to stormwater goals for the area.
- Create a hierarchy of boulevards, avenues, streets, and pathways.
- Enhance the character of Concord Avenue by improving its streetscape.
- Design new public spaces and places that support a range of community-focused activities.

- Improve traffic circulation within the Quadrangle by enhancing existing roads and adding new ones—without creating a direct vehicular connection to the Highlands.
- Improve the streetscape within the Quadrangle to enhance the pedestrian and bicycle environment.
- Strengthen pedestrian/bicycle access to Alewife Station to improve connections to transit and to the Minuteman Path and Linear Park.
- Improve the pedestrian environment along Concord Avenue and provide safe crossings.
- Continue to encourage residential use along Concord Avenue.
- Encourage housing development within the Quadrangle, particularly close to the Highlands.

Two development concepts for the Quadrangle: Above, residential development along Concord Avenue with views to Fresh Pond; at left, a passive park that incorporates stormwater-management features.

Goals: Shopping Center

- Introduce a mix of uses, including housing, in the Shopping Center area.
- Encourage small-scale neighborhood retail.
- Use building and site design to create a vibrant, walkable environment.
- Improve circulation within the Shopping Center with a clearly visible roadway system.
- Enhance overall accessibility to and from the Quadrangle, Alewife Station, the Highlands, and North Cambridge via improved and new pedestrian walkways.
- When the Watertown rail line ceases to be active, create a multiuse path along the right of way and connect it to the rich regional path system created by Linear Park, Minuteman Path, and Belmont Path.
- Encourage improvements within the Shopping Center that support housing as well as a mix of uses.

Goals: Cambridge Highlands

- Ensure that new development close to the Highlands is compatible with the neighborhood in terms of use, scale, height, and density.
- Protect the character of the Highlands as a mature, medium-density residential neighborhood.
- Create a green buffer between the Highlands and the Quadrangle that also connects existing open spaces.
- Work with Belmont to enhance the pedestrian environment along Blanchard Road through the application of traffic-calming and other techniques to improve safety along the thoroughfare.
- Study the intersection of Concord Avenue and Blanchard Road to see if improvements are possible.
- Maintain the stability and character of the Highlands residential neighborhood.

These views show how development adjacent to Cambridge Highlands could provide an appropriate transition between the Cambridge Highlands and the Quadrangle.

4 Recommendations

Starting with the goals identified in the previous chapter, the study created a series of zoning and non-zoning recommendations.

ZONING RECOMMENDATIONS

The zoning approach includes the principal elements outlined below. Appendix A contains a comparison of existing and proposed zoning. The proposed zoning:

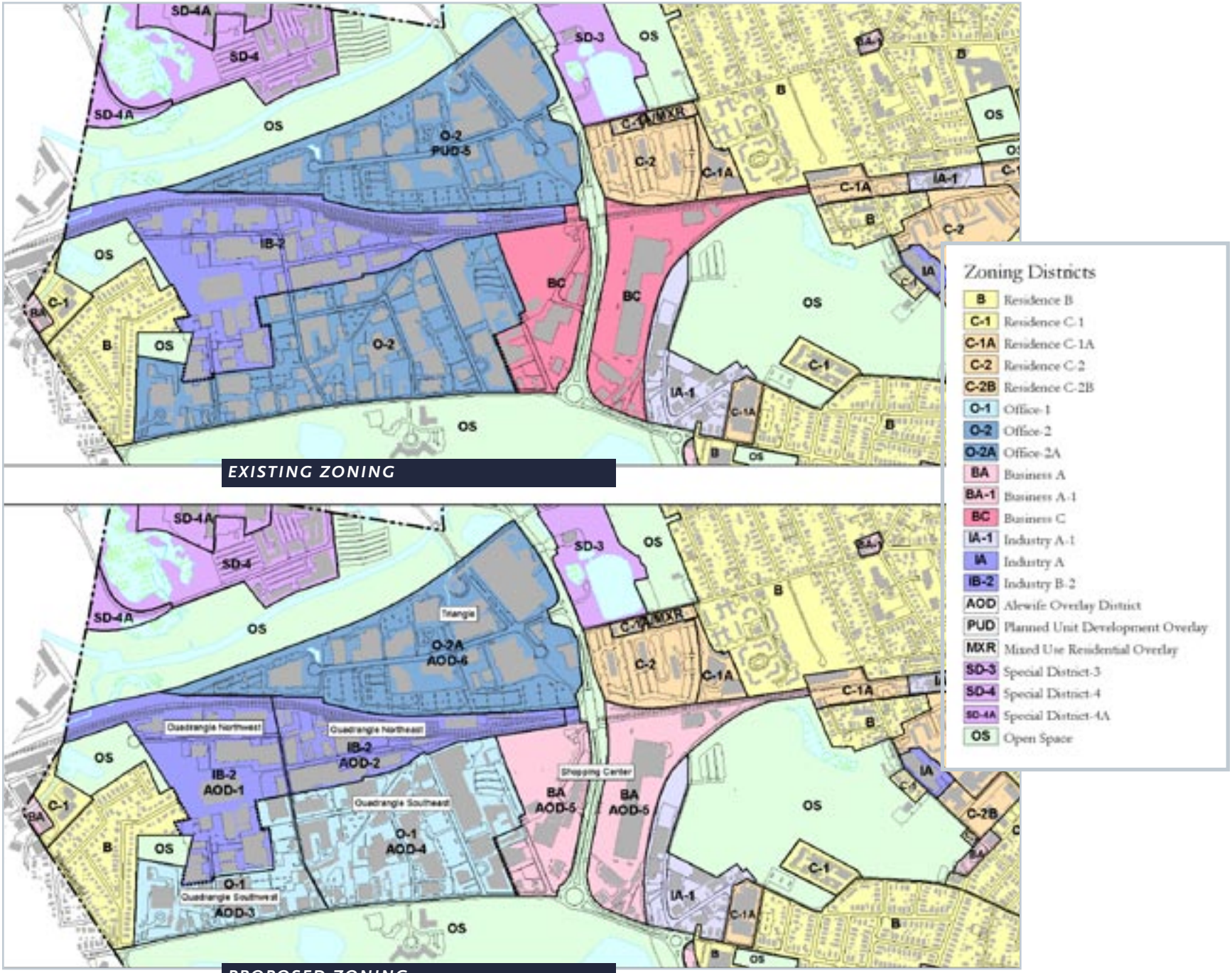
- encourages a mix of uses throughout the area;
- encourages housing similar to citywide rezoning;
- creates the framework for transit-oriented development near Alewife Station by proposing adjusted densities and transfer-of-development-rights zoning;
- establishes a base district with acceptable densities for as-of-right development. In general the base zoning treats existing allowed uses as conforming uses and, in most cases, conforming in FAR;
- establishes a special permit through use of overlay districts, allowing increased FAR and height and permitting flexibility in permeability requirements while establishing guidelines and/or requirements for development that is consistent with study goals, including transportation mitigation, open-space and stormwater improvements, enhanced urban design and public realm, and infrastructure rights-of-way; and
- adds mechanisms for better stormwater management, including a permeability requirement that will result in higher permeability both on individual parcels and areawide, a proposed areawide stormwater-retention basin/open space, and encouragement of low-impact development to manage stormwater on-site in a sustainable fashion.

The key zoning principles are listed below. Details of the zoning recommendations are attached in Appendix B.

Permitted Uses

Generally, legally conforming uses that currently exist would continue to be allowed in the proposed districts. In office and industrial districts, retail, business, and consumer services would be allowed by special permit with some limitations.

FIGURE 10 ***COMPARISON OF EXISTING AND PROPOSED ZONING***



FAR and Height Requirements

- Base zoning would establish as-of-right FARs ranging from 0.75 to 1.50, and heights ranging from 35′ to 70′. Increased FARs and heights would be allowed by special permit, with greater density and height allowed closer to the T Station and lower height and density in areas farther from transit and adjacent to the Cambridge Highlands neighborhood.

Open-Space and Permeability Requirements

In recognition of stormwater-handling needs within the Study Area, the proposed zoning creates a permeability requirement and increases open-space requirements.

- The proposed zoning increases the open space requirement to 15% of a lot, and introduces a permeable area requirement of 25% of a lot. Both requirements may be satisfied concurrently on the same portion of a parcel. These requirements may be reduced by special permit, by participation in joint stormwater management with other parcels, or by employment of alternative means to meet the City DPW on-site stormwater-management standards.

Infrastructure recommendations

These key infrastructure elements would contribute significantly to fully realizing the long-term development potential of the Concord-Alewife area.

- **An east-west main roadway** will improve circulation within the Quadrangle, allow direct travel from Alewife Brook Parkway into the Quadrangle, and enhance property value, particularly for parcels away from Concord Avenue, by creating a sense of address.
- **A pedestrian/bicycle bridge** will improve the connection between Alewife Station and the Quadrangle, thereby increasing the number of people who could get to and from the Concord-Alewife area by means other than automobile.
- **A stormwater park** located at the low point in the Quadrangle will help manage stormwater throughout the area and serve as a passive park.

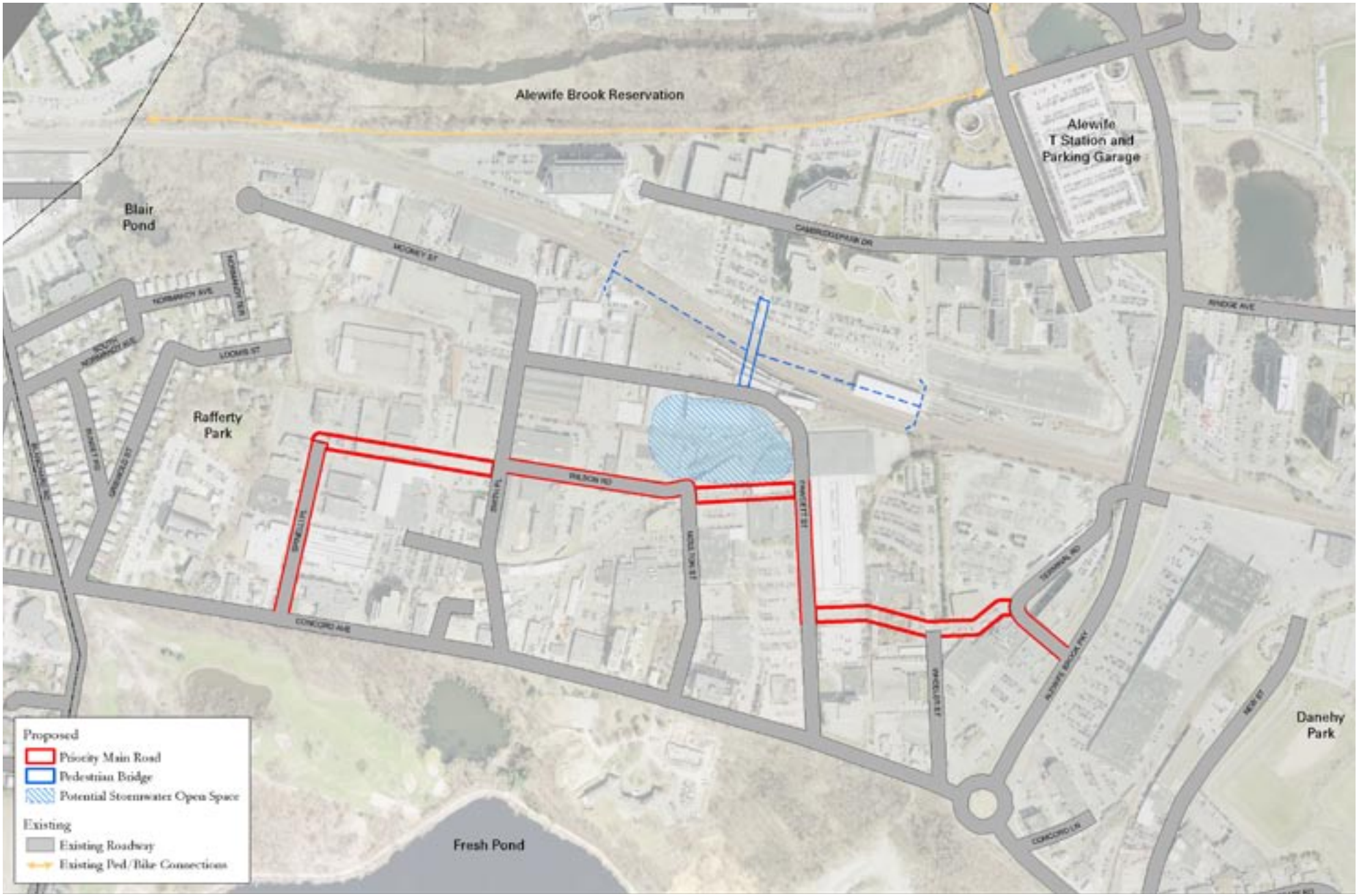
Refer to pages 34-35 for maps showing the location of recommended infrastructure improvements.

Mechanisms for Infrastructure Improvements

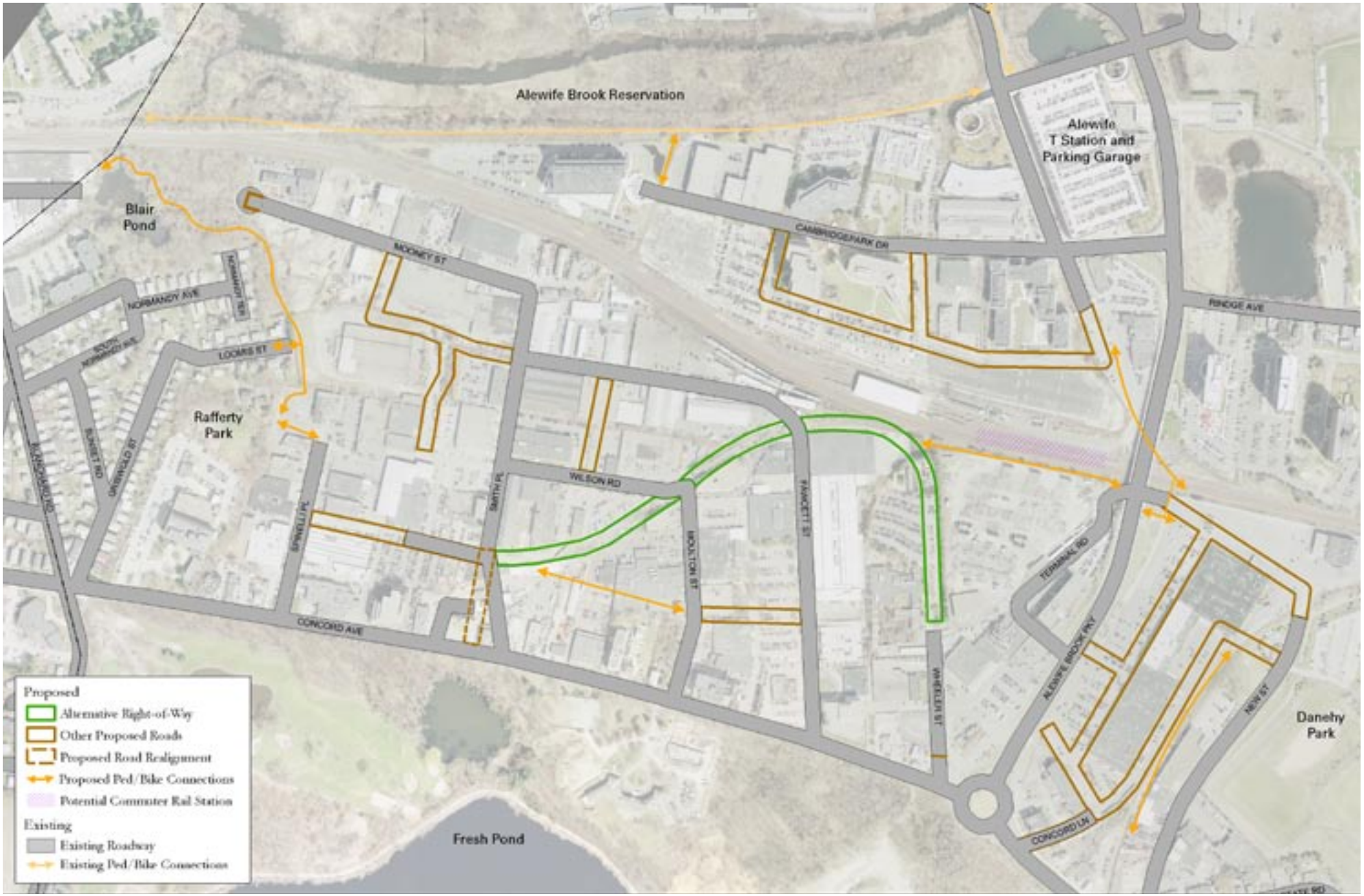
The plan identifies key infrastructure improvements important for ensuring coherent and sustainable long-term buildout within the Concord-Alewife area. An east-west main road would help organize transportation patterns within the Quadrangle and create a pedestrian/bicycle connection linking the Highlands, the Quadrangle, and Fresh Pond Shopping Center. A stormwater-management feature would incorporate a passive public park. A pedestrian and bicycle connection across the railroad tracks would improve access to Alewife Station. The following mechanisms and incentives are proposed to facilitate these improvements:

- Consistency with the Concord-Alewife Plan would be a key criterion for granting of special permits in the area. Proponents would be asked to reserve and/or transfer right-of-way easements for the key elements listed above.
- By special permit, FAR from the transferred land, along with a density bonus, would be available for use on the remainder of the site. FAR bonuses would be granted for various infrastructure rights-of-way:
  - A bonus equal to the FAR permitted on the portion of a parcel transferred for roadways, pedestrian/bicycle connections, open space, or stormwater management consistent with the plan.
  - A bonus of up to FAR 0.25 for the site for development that contributes to creation of a pedestrian/bicycle connection across the commuter rail tracks.

11 PRIORITY INFRASTRUCTURE



12 ADDITIONAL INFRASTRUCTURE



- A Pathway Overlay District would be created coterminous with the railroad right-of-way located along the Watertown line, along the east side of the Study Area, with the goal of allowing a future multiuse path.

Transfer of Development Rights

A transfer-of-development-rights provision is included to reduce densities close to Cambridge Highlands; to further promote transit-oriented development by allowing density to be moved to areas near public transit; and to encourage more desirable patterns of development.

- Some or all the GFA permitted on a parcel in the Donating District would be allowed to be transferred to the Receiving District. The Donating and Receiving districts are shown on the Transfer of Development Rights Districts map on the next page.
- Transferred residential GFA could only be applied to residential use; transferred non-residential GFA could be applied to any use allowed on the Receiving Parcel.
- Height bonuses would be allowed on the Receiving Parcel to accommodate the transferred GFA.
- The Donating Parcel would be required to conform to base zoning requirements or could be used for open space.
- When all permitted FAR on a parcel is transferred, a bonus of 0.75 FAR would be allowed on the Donating Lot for residential, technical office, R&D or lab use. Thus, the owner of a Donating Lot might sell development rights and continue an existing conforming business use or redevelop for residential, technical office, R&D, or lab use up to 0.75 FAR.

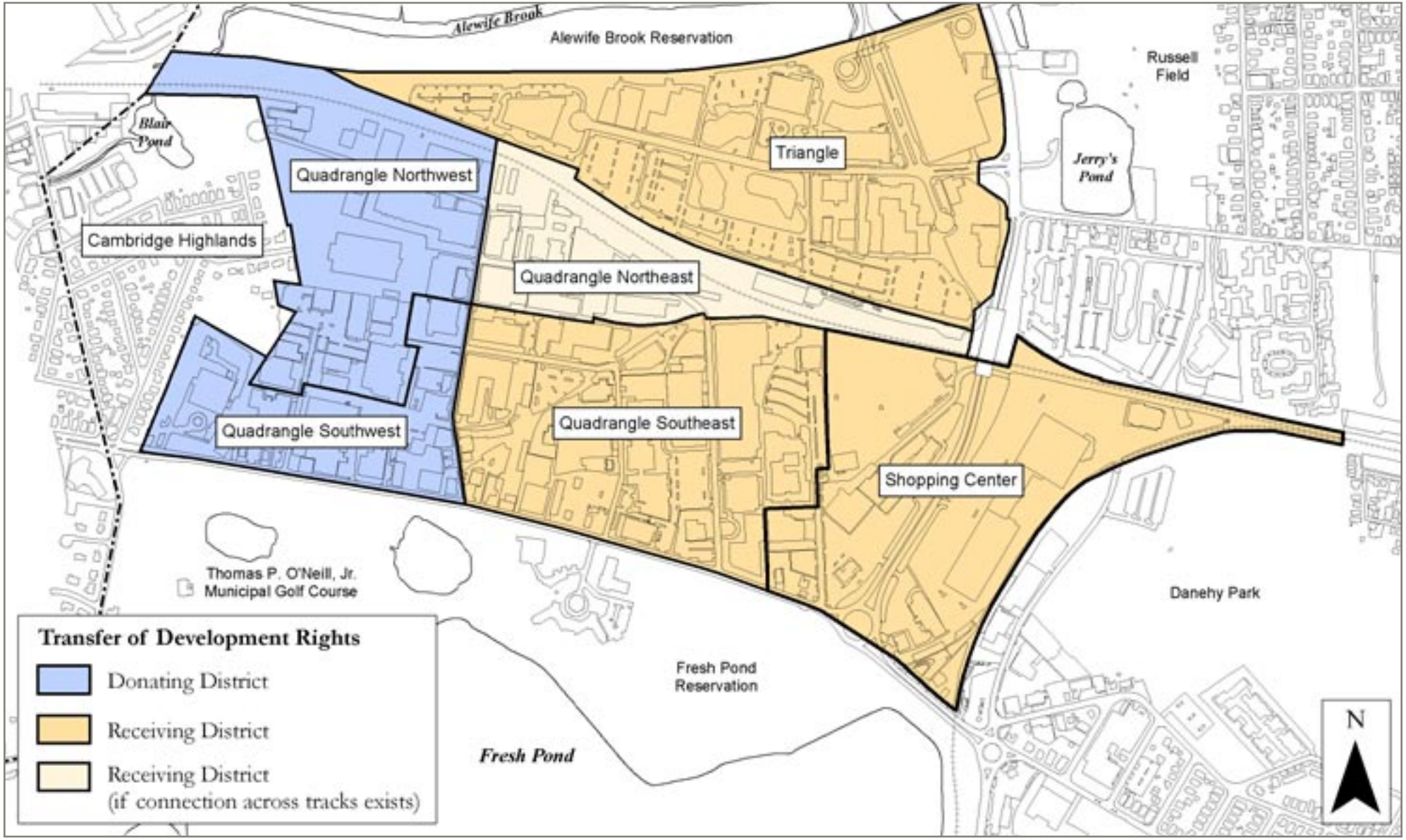
Urban Design Guidelines

A series of urban design guidelines are recommended to guide the character of future development in the Study Area. The Planning Board would refer to these guidelines when granting any special permits for projects within the Study Area. Appendix D lists the complete guidelines. Some highlights include:

Study Area guidelines

- Vary building design to create an architecturally diverse district.
- Design buildings and sites using low-impact-development features—such as green roofs, bioswales, filter strips, and retention/detention ponds—to meet stormwater requirements.
- Break large blocks into a system of smaller blocks to improve pedestrian, bicylce, and vehicular circulation and increase compatibility with surrounding neighborhoods.
- Use site design that preserves future rights-of-way identified in this Plan.
- Create active uses at the street level. Design buildings with front doors facing the street and for residential uses; create frequent doorways/entries at street level.
- Design signage and lighting to support pedestrian-friendly quality.
- Encourage parking below grade. Where parking structures are built, wrap them with active uses and use the structures to screen the rest of the area visually and acoustically from the railroad tracks.

13 TRANSFER OF DEVELOPMENT RIGHTS



Low-impact development measures reduce the volume and improve the quality of stormwater runoff. Examples include green roofs and holding ponds, which can serve as features in passive parks.

- Provide streetscape improvements to define the rights of way of existing streets.
- As in the rest of the City, continue to encourage green building features.
- Reinforce bicycle and pedestrian links to adjacent areas. Provide links that strengthen physical and visual connections to open space resources.

Location-specific guidelines

- Develop a vegetated buffer between the Highlands and the Quadrangle that also provides a north/south pedestrian/bike link between open spaces.
- Site new development to be consistent with desired above-grade crossing between the Quadrangle and the Triangle.
- Improve pedestrian connections among Alewife Station, Fresh Pond Shopping Center, and North Cambridge.
- Create open spaces in the Quadrangle that incorporate stormwater management. Locate active uses around the park to create a safe and active 24-hour environment.

NON-ZONING RECOMMENDATIONS

Transportation

The study proposes a number of actions that will enhance the character of development and of streets to make the area more bike- and pedestrian-friendly and to address specific transportation issues raised during the study. These include introducing safety improvements, particularly on Blanchard Road, Concord Avenue, and Alewife Brook Parkway; reducing new auto trips from future development in the Study Area by using transportation-demand management measures; enhancing access to various sites within the Study Area by improving existing connections and building new connections where needed; and reducing disturbance from noise and vibration on Blanchard Road.

Appendix F, "Transportation Recommendations," details these recommendations.

Environment/Stormwater

Increasing permeability to improve stormwater handling in the area was a key study goal. The study recommends utilizing principles of low-impact-development to improve runoff quality and reduce runoff quantity and rate. The urban design guidelines incorporate this emphasis so that future development improves stormwater-handling capability within the Study Area.

Additionally, recommendations encourage creation of some combination of a large open space, smaller retention ponds, neighborhood squares, and street plantings to enhance stormwater retention and treatment, as shown on the Concept Plan diagram in Chapter 3, "Vision and Goals."

Infrastructure

The plan identifies three key infrastructure elements that are crucial to achieving the transportation, urban design, and stormwater goals for the Study Area and

that hold the key to the long-term feasibility of development in the area. The Priority Infrastructure Plan diagrams on page 34–35 show these elements, which are described below.

East-west main road connecting the Quadrangle and the Shopping Center. This proposed roadway supports key urban design, development, and transportation goals in the Study Area. Creating an east-west connection would improve circulation within the Quadrangle, and establishment of a "main street" character would create a desirable new address within the area. Adding a new access point would improve traffic conditions at existing intersections and improve east-west access through the site for bicycles and pedestrians, creating ped/bike connections all the way from the Highlands to the shopping center.

Pedestrian/bicycle bridge across the railroad tracks connecting the Quadrangle and Triangle. Creating a pedestrian and bicycle connection between the Quadrangle and the Triangle is the single most important element for improving transit access to/from the Quadrangle and Cambridge Highlands. It would reduce auto mode share and positively impact traffic in the Study Area. An additional benefit would be improved connections to open space resources, making it easier to reach Fresh Pond and Alewife Reservation.

Public open space that incorporates a stormwater-management feature. While individual properties undergoing redevelopment would improve stormwater handling on their sites as per DPW standards, a larger stormwater-management feature would improve stormwater handling for the Study Area overall. It would reduce loads on the City's sewer system during storms by retaining water during such events and would greatly improve the quality of runoff that enters Alewife Brook.

In addition to the infrastructure elements, breaking up the large block structure in the Quadrangle, Triangle, and Shopping Center would help create a more walkable environment and improve circulation for all modes. The Additional Infrastructure Plan demonstrates this concept. The rights of way (ROW) identified in the two infrastructure plans establish desired connections and alignment of infrastructure elements and were developed with some attention to existing property lines. Alternative alignments that accomplish the objectives of the plan would also be acceptable.

The area's pattern of multiple small parcels under different ownership poses challenges to the efficient timing, coordination, and completion of infrastructure goals. It is anticipated that the special-permit process would serve as the primary tool for carrying out the infrastructure recommendations described above. As parcels develop and special permits are sought, the Planning Board would refer to the Priority and Additional Infrastructure plans. Depending on the scope of a project, its location, and its impacts, special permit conditions could be imposed that require preservation of ROW, transfer of ROW to the City, or contribution to/construction of a section of the infrastructure element.

APPENDICES

page 43 **A** COMPARISON OF EXISTING AND PROPOSED ZONING

page 45 **B** PROPOSED ZONING

page 71 **C** ANTICIPATED DEVELOPMENT UNDER EXISTING AND PROPOSED ZONING

page 73 **D** CONCORD-ALEWIFE DESIGN GUIDELINES

page 75 **E** CRITICAL MOVEMENTS ANALYSIS

page 79 **F** TRANSPORTATION RECOMMENDATIONS

APPENDIX

A Comparison of Existing and Proposed Zoning

	EXISTING					PROPOSED				
AREA	ZONING DIST.	USE		BASE	SPCL. PERMIT	ZONING DIST.	USE		BASE	SPECIAL PERMIT
Quadrangle northwest	IB-2	Res	FAR Height	1.5 85′	Same Same	IB-2 (mod)/ AOD 1	Res	FAR Height	0.75 35′	1.5 65′ (35–45′ near Highlands)
		Comm	FAR Height	1.5 85′	Same Same		Comm	FAR Height	0.75 35′	1.0 55′ (35–45′ near Highlands)
Quadrangle northeast	IB-2	Res	FAR Height	1.5 85′	Same Same	IB-2 (mod)/ AOD 2	Res	FAR Height	0.75 35′	1.5 70–85′ (105′ with TDR)
		Comm	FAR Height	1.5 85′	Same Same		Comm	FAR Height	0.75 35′	1.25 70′ (85′ with TDR)
Quadrangle southwest	O-2	Res	FAR Height	2.0 85′	Same Same	O-1/ AOD 3	Res	FAR Height	0.75 35′	2.0 65′ (35–45′ near Highlands)
		Comm	FAR Height	1.5 35–70′	Same 35–85′		Comm	FAR Height	0.75 35′	1.0 55′ (35–45′ near Highlands)
Quadrangle southeast	O-2	Res	FAR Height	2.0 85′	Same Same	O-1/ AOD 4	Res	FAR Height	0.75 35–75′	2.0 85′ (105′ with TDR)
		Comm	FAR Height	1.5 35–70′	Same 35–70′		Comm	FAR Height	0.75 35–70′	1.0 70′ (85′ with TDR)
Shopping Center	BC	Res	FAR Height	2.0 55′	Same Same	BA/ AOD 5	Res	FAR Height	1.75 45′	2.0 55–85′ (105′ with TDR)
		Comm	FAR Height	1.25 55′	Same Same		Comm	FAR Height	1.0 35′	1.25 55–70′ (85′ with TDR)
Triangle	O-2/ PUD-5	Res	FAR Height	2.0 85′	Same Same	O-2A/AOD 6	Res	FAR Height	1.5 70′	2.0 85–105′ (125′ with TDR)
		Comm	FAR Height	1.5 70′	1.75 85′		Comm	FAR Height	1.25 60′	1.75 85′ (105′ with TDR)

APPENDIX

B Committee Zoning Recommendations

Shopping Center 46

Triangle 50

Quadrangle Northwest 54

Quadrangle Northeast 58

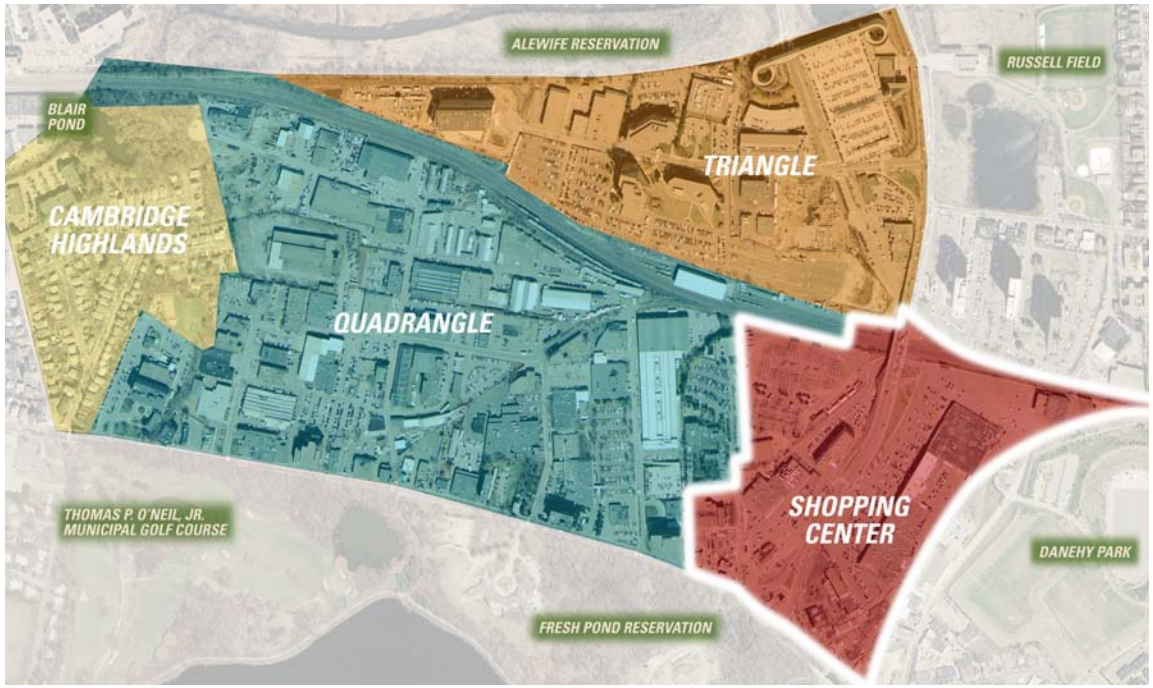
Quadrangle Southwest 62

Quadrangle Southeast 66

Shopping Center

ZONING GOALS

> Encourage new residential development.
> Encourage mix of retail, including destination and neighborhood.
> Support development of structured parking.
> Create incentives that encourage future development to be responsive to storm-water, open space, and transportation objectives.



CURRENT ZONING

BASE

BUSINESS C

FAR

- Commercial: 1.25
- Residential: 2.0

HEIGHT

- Commercial: 55′
- Residential: 55′
- 35′ (or height permitted in the abutting residential district) within 50′ of a residential district line.

MINIMUM YARD

- Front: none
- Side: none
- Rear: 20′ (or 2/3 of rear wall height). No rear yard where the rear lot line abuts a business or industrial district.

MINIMUM RATIO OF USABLE OPEN SPACE

to lot area: none

PROPOSED ZONING STRATEGIES

BASE

BUSINESS A

FAR

- Commercial: 1.0
- Residential: 1.75
- Note: For parcels where the maximum permitted special-permit GFA is less than 10,000 sq. ft., the special-permit FARs may be available as-of-right

HEIGHT

- Commercial: 35′
- Residential: 45′

USES

Retail, office, housing

MINIMUM YARD

- Front: none (commercial), formula (housing)
- Side: none (commercial), formula (housing)
- Rear: 20′ (commercial); formula (housing); 25′ front yard at Parkway

PERMEABILITY REQUIREMENT:

- 25% of lot **or** a signoff from the Cambridge Department of Public Works (DPW) noting that the development meets the requirement of accommodating the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW)

GREEN AREA REQUIREMENT:

- 15% of lot (permeability and green area requirements may be satisfied on the same part of the lot)

CURRENT ZONING

SPECIAL PERMIT/OVERLAY

No equivalent provision in current zoning

PROPOSED ZONING STRATEGIES

SPECIAL PERMIT

FAR

- Commercial: 1.25
- Residential: 2.0

USES

- Retail, office, housing; no more than 50% of the development to be nonresidential

HEIGHT

- Commercial
  - 55′–70′ (heights over 55′ limited to buildings or elements of buildings with a floorplate of 15,000 sf or less located at least 50′ apart)
- Residential
  - 55′–85′ (heights over 55′ limited to buildings or elements of buildings with a floorplate of 10,000 sf or less located at least 50′ apart)
  - Heights up to 105′ allowed for FAR transferred to this district through TDR. Heights over 85′ limited to buildings or elements of buildings with a floorplate of 6,000 sf or less located at least 50′ apart
- Parkway Overlay District height limits to remain

POSSIBLE ADDITIONAL RELIEF/REQUIREMENTS

- Allow pooled parking
- Parking GFA waiver
- Allow pooled green/permeability area
- Setback waivers from base requirements
- Provide for infrastructure improvements

CURRENT ZONING

PROPOSED ZONING STRATEGIES

– Exemption from 25′ setback at Alewife Brook Parkway if accommodating a pedestrian connection
– Meet DPW requirement that each development accommodate the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW)

TRANSFER OF DEVELOPMENT RIGHTS

No equivalent provision in current zoning

TRANSFER OF DEVELOPMENT RIGHTS

- Within the district consistent with plan goals, and receive from Quadrangle Northwest and Southwest
- The Shopping Center is a desirable area in which to locate TDR-related development.

The Triangle

ZONING GOALS

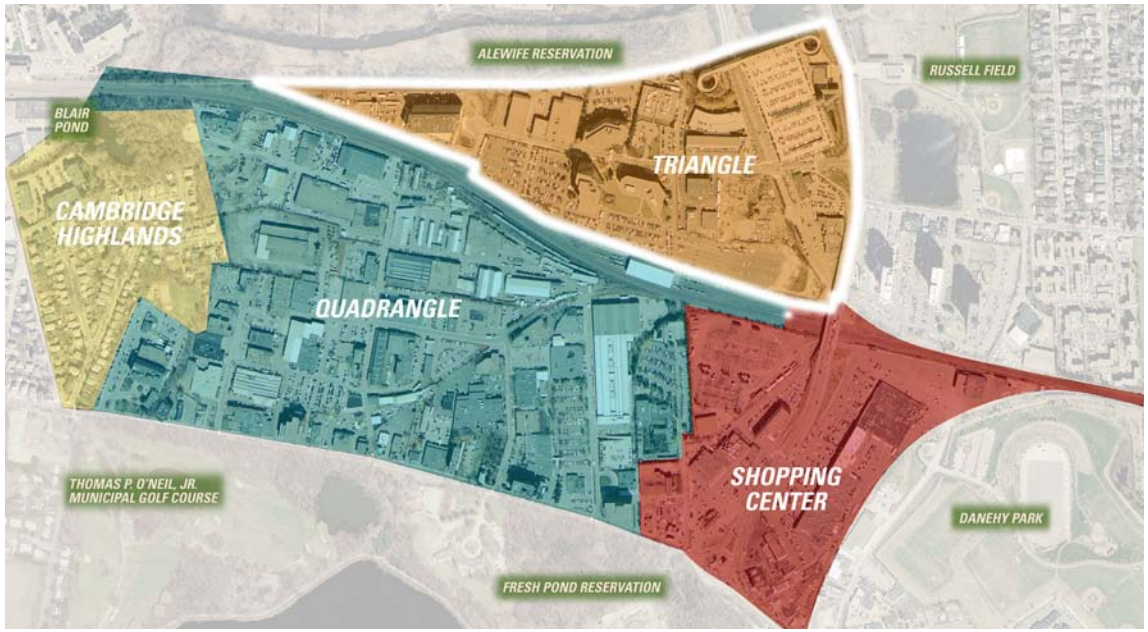
> Encourage increase in transit-oriented development, with residential focus closer to T.

> Support development of structured parking.

> Encourage office/R&D development with first-floor retail to support walkable Cambridgepark Drive "boulevard."

> Create incentives that encourage future development to be responsive to storm-water, open space, and transportation objectives, including increased permeability.

> Create incentives for cooperation among property owners to meet study goals around improved public and private realm.



CURRENT ZONING

BASE

OFFICE 2

FAR

- Commercial: 1.5
- Residential: 2.0

HEIGHT

- Commercial: 70′
- Residential: 85′
- 35′ (or height permitted in the abutting residential district) within 50′ of a residential district line.

MINIMUM YARD (FEET)

- Front: $\frac{H+L^{(a)}}{4}$
- Side: $\frac{H+L}{5}$
- Rear: $\frac{H+L^{(c)}}{4}$

MINIMUM RATIO OF USABLE OPEN SPACE to lot area: 15%

PROPOSED ZONING STRATEGIES

BASE

OFFICE 1A

FAR

- Commercial/retail: 1.25
- Residential: 1.5
- Note: For parcels where the maximum permitted special-permit GFA is less than 10,000 sq. ft., the special-permit FARs may be available as-of-right

USES

- Office/housing

HEIGHT

- Commercial: 60′
- Residential: 70′

MINIMUM YARD

- 25’ front yard at Parkway; formulas elsewhere

PERMEABILITY REQUIREMENT

- 25% of lot **or** a signoff from the Cambridge Department of Public Works ( ) noting that the development meets the requirement of accommodating the 2- to 25-year flood event on-site as outlined in “Low Impact Development in Cambridge: Concepts and Criteria” (currently under development by the DPW)

GREEN AREA REQUIREMENT

- 15% of lot (the permeability and green area requirements noted above may be satisfied on the same part of the lot)

ARCHITECTURAL AND SITE PLAN STANDARDS

- parking location, front-door location, glass area, build-to lines

CURRENT ZONING

SPECIAL PERMIT/OVERLAY: PUD 5

FAR

- Commercial: 1.75
- Residential: 2.0

HEIGHT

- Commercial: 85′
- Residential: 85′

MINIMUM YARD SETBACKS

- None

MINIMUM RATIO OF USABLE OPEN SPACE to lot area: 15%

PROPOSED ZONING STRATEGIES

SPECIAL PERMIT/OVERLAY

FAR

- Commercial: 1.75
- Residential: 2.0
- An FAR bonus of up to 0.25 may be provided for development that facilitates a pedestrian connection across the railroad tracks. This could include building the connection, providing ROW or a landing site for a connection, or designing a building that could accommodate a connection.

HEIGHT

- Commercial: 85′
- Residential:
  - 85′–105′ (heights over 85′ limited to buildings or elements of buildings with a floorplate of 10,000 sf or less located at least 50′ apart)
  - Heights up to 120′ allowed for FAR transferred to this district through TDR and to accommodate FAR bonus. Heights over 105′ limited to buildings or elements of buildings with a floorplate of 6,000 sf or less located at least 50′ apart
- Parkway Overlay District height limits to remain

USES

Uses allowed in base district, retail (to be located on the ground floor and to occupy no more than 10% of total GFA, with individual establishments to be no more than 10,000 sq. ft.)

CURRENT ZONING

PROPOSED ZONING STRATEGIES

POSSIBLE ADDITIONAL RELIEF/REQUIREMENTS

- Allow pooled parking
- Parking GFA waiver
- Allow pooled green/permeability area
- Setback waivers from base requirements
- Allow limited retail. Relief from retail cap in specific locations, if consistent with plan.
- Provide for infrastructure improvements
- Meet DPW requirement that each development accommodate the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW)

TRANSFER OF DEVELOPMENT RIGHTS

No equivalent provision in current zoning

TRANSFER OF DEVELOPMENT RIGHTS

- Within the district consistent with plan goals, and receive from Quadrangle Northwest and Southwest.
- TDR-related development should be used to achieve plan goals such as replacing surface parking and should result in transit-oriented development.
- TDR-related development should be set back from Alewife Reservation.

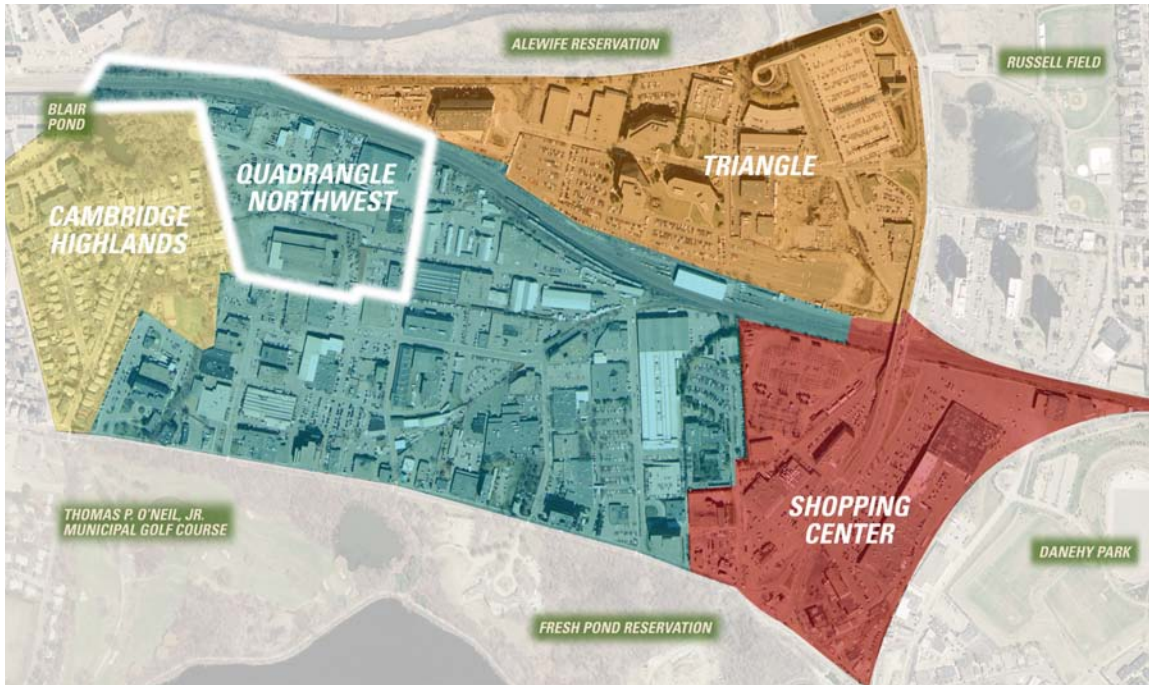
Quadrangle Northwest

ZONING GOALS

> Encourage lower-density mixed-use R&D/office development in proximity to the Highlands.

> Create incentives that encourage future development to be responsive to stormwater, open space, and transportation objectives.

> Create incentives for cooperation among property owners to meet study goals for improved public and private realm, including creation of structured parking and increased permeability.



CURRENT ZONING

BASE

IND.B-2

FAR

- Commercial: 1.5
- Residential: 1.5

HEIGHT

- Commercial: 85′
- Residential: 85′
- 35′ within 100′ of a residential district

MINIMUM YARD

- Front: 0
- Side: 0(b)
- Rear: 0(b)

MINIMUM RATIO OF USABLE OPEN SPACE

to lot area: none

PROPOSED ZONING STRATEGIES

BASE

INDUSTRY C (reconfigured)

FAR

- 0.75 all uses
- Note: For parcels where the maximum permitted special-permit GFA is less than 10,000 sq. ft., the special-permit FARs may be available as-of-right

HEIGHT

- 35′ all uses

USES

- R&D, office, housing, light industrial

MINIMUM YARD

- Front yard: 15′
- Yards adjacent to residential district or use: 25’

PERMEABILITY REQUIREMENT

- 25% of lot **or** a signoff from the Cambridge Department of Public Works (DPW) noting that the development meets the requirement of accommodating the 2- to 25-year flood event on-site as outlined in “Low Impact Development in Cambridge: Concepts and Criteria” (currently under development by the DPW)

GREEN AREA REQUIREMENT

- 15% of lot (the permeability and green area requirements may be satisfied on the same part of the lot)

ARCHITECTURAL AND SITE PLAN STANDARDS

- parking location, front door, glass area, build-to lines

CURRENT ZONING

SPECIAL PERMIT/OVERLAY

No equivalent provision in current zoning

PROPOSED ZONING STRATEGIES

SPECIAL PERMIT

FAR

- Commercial: 1.0
- Residential: 1.5
- An FAR bonus of up to 0.25 may be provided for public open space with stormwater feature, and east-west main road. This could include building the connection, providing ROW or a landing site for a connection, or designing a building that could accommodate a connection, donating land for the public open space, or providing ROW for the east-west road.

HEIGHT

- Commercial: 55′
- Residential: 65′
- 35′ within 100′ of Res C-1 and OS districts, 45′ within 200′ of all uses

USES

- Uses allowed in base district, retail (to be located on the ground floor and to occupy no more than 10% of total GFA, with individual establishments to be no more than 10,000 sq. ft.)

POSSIBLE ADDITIONAL RELIEF/REQUIREMENTS

- Allow pooled parking
- Parking GFA waiver
- Allow pooled green/permeability area
- Setback waivers from base district requirements
- Provide for infrastructure improvements

CURRENT ZONING

PROPOSED ZONING STRATEGIES

- Meet DPW requirement that each development accommodate the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW).
- Relief from retail cap in specific locations if consistent with plan.

TRANSFER OF DEVELOPMENT RIGHTS

No equivalent provision in current zoning

TRANSFER OF DEVELOPMENT RIGHTS

- Property owners are encouraged to use TDR, transferring development out to defined Receiving Areas (Quadrangle Southeast and Northeast [if transit proximity created], Shopping Center, and Triangle)
- If all allowed FAR is transferred out, a bonus of 0.75 10 pt may be allowed for residential or incubator uses if LID principles are utilized and remaining parts of the site are used for public open space and stormwater management.

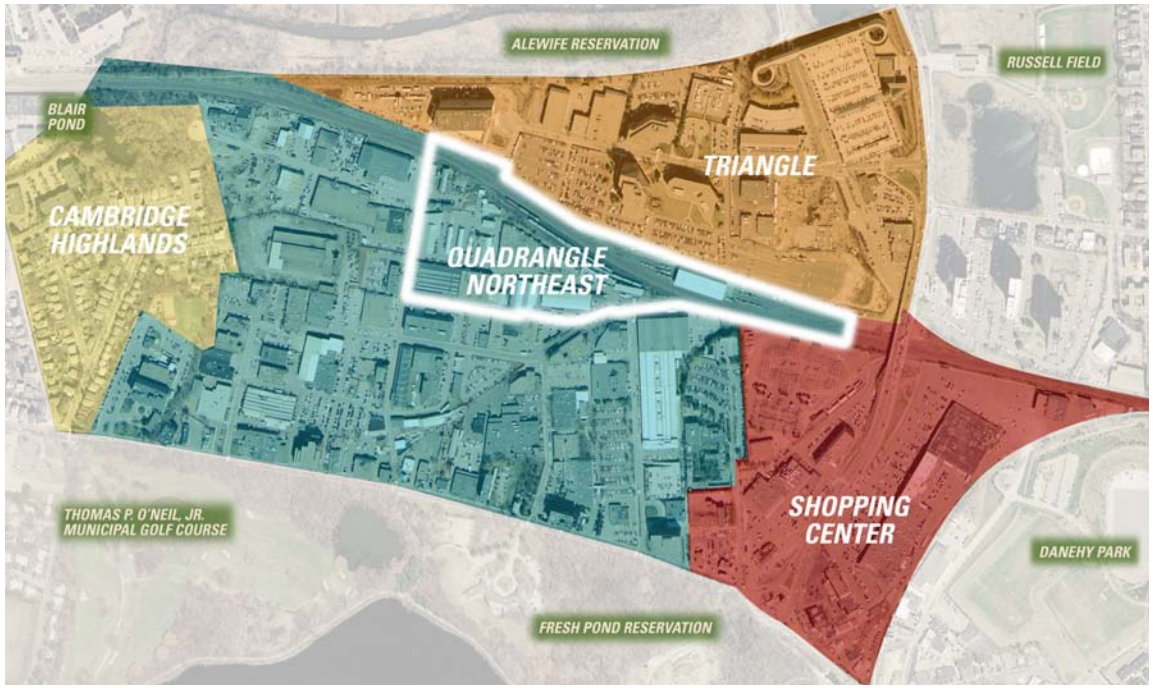
Quadrangle Northeast

ZONING GOALS

> Encourage mixed-use, high-density development emphasizing residential, office, and light industrial.

> Create incentives that encourage future development to be responsive to storm-water, open space, and transportation objectives.

> Create incentives for cooperation among property owners to meet study goals around improved public and private realm, including creation of increased permeability and structured parking.



CURRENT ZONING

BASE

IND.B-2

FAR

- Commercial 1.5
- Residential 1.5

HEIGHT

- Commercial 85′
- Residential 85′

MINIMUM YARD (FEET)

- Front: 0
- Side: 0(b)
- Rear: 0(b)

MINIMUM RATIO OF USABLE OPEN SPACE

to lot area: none

PROPOSED ZONING STRATEGIES

BASE

INDUSTRY C (reformulated)

FAR

- 0.75 all uses
- Note: For parcels where the maximum permitted special-permit GFA is less than 10,000 sq. ft., the special-permit FARs may be available as-of-right

HEIGHT

- 35′ all uses

USES

- light industrial, office, residential

PERMEABILITY REQUIREMENT

- 25% of lot or a signoff from the Cambridge Department of Public Works (DPW) noting that the development meets the requirement of accommodating the 2- to 25-year flood event on-site as outlined in “Low Impact Development in Cambridge: Concepts and Criteria” (currently under development by the DPW)

GREEN AREA REQUIREMENT

- 15% of lot (the permeability and green area requirements may be satisfied on the same part of the lot)

MINIMUM YARD

- Front: 15′

ARCHITECTURAL AND SITE PLAN STANDARDS

- parking location, front door, glass area, build-to lines

CURRENT ZONING

SPECIAL PERMIT/OVERLAY

No equivalent provision in current zoning

PROPOSED ZONING STRATEGIES

SPECIAL PERMIT

FAR

- Commercial: 1.25
- Residential: 1.5
- An FAR bonus of up to 0.25 may be provided for development that facilitates a pedestrian connection across the railroad tracks, public open space with stormwater feature, and east-west main road. This could include building the connection, providing ROW or a landing site for a connection, or designing a building that could accommodate a connection, donating land for the public open space, or providing ROW for the east-west road.

HEIGHT

- Commercial: 70′
- Residential:
  - 70′–85′ (heights over 70′ limited to buildings or elements of buildings with a floorplate of 10,000 sf or less located at least 50′ apart)
  - Heights up to 105′ allowed for FAR transferred to this district through TDR and to accommodate FAR bonus. Heights over 85′ limited to buildings or elements of buildings with a floorplate of 6,000 sf or less located at least 50′ apart
- Parkway Overlay District height limits to remain

USES

- Uses allowed in base district, retail (to be located on the ground floor and to occupy no more than 10% of total GFA, with individual establishments to be no more than 10,000 sq. ft.)

CURRENT ZONING

PROPOSED ZONING STRATEGIES

POSSIBLE ADDITIONAL RELIEF/REQUIREMENTS

- Allow pooled parking
- Parking GFA waiver
- Allow pooled green/permeability area
- Setback waivers from base district requirements
- Provide for infrastructure improvements
- Meet DPW requirement that each development accommodate the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW).
- Relief from retail cap in specific locations if consistent with Plan.

TRANSFER OF DEVELOPMENT RIGHTS

No equivalent provision in current zoning

TRANSFER OF DEVELOPMENT RIGHTS

- Within the district consistent with plan goals, and receive from Quadrangle Northwest and Southwest.
- TDR-related development should be used to achieve plan goals such as replacing surface parking and should result in transit-oriented development.

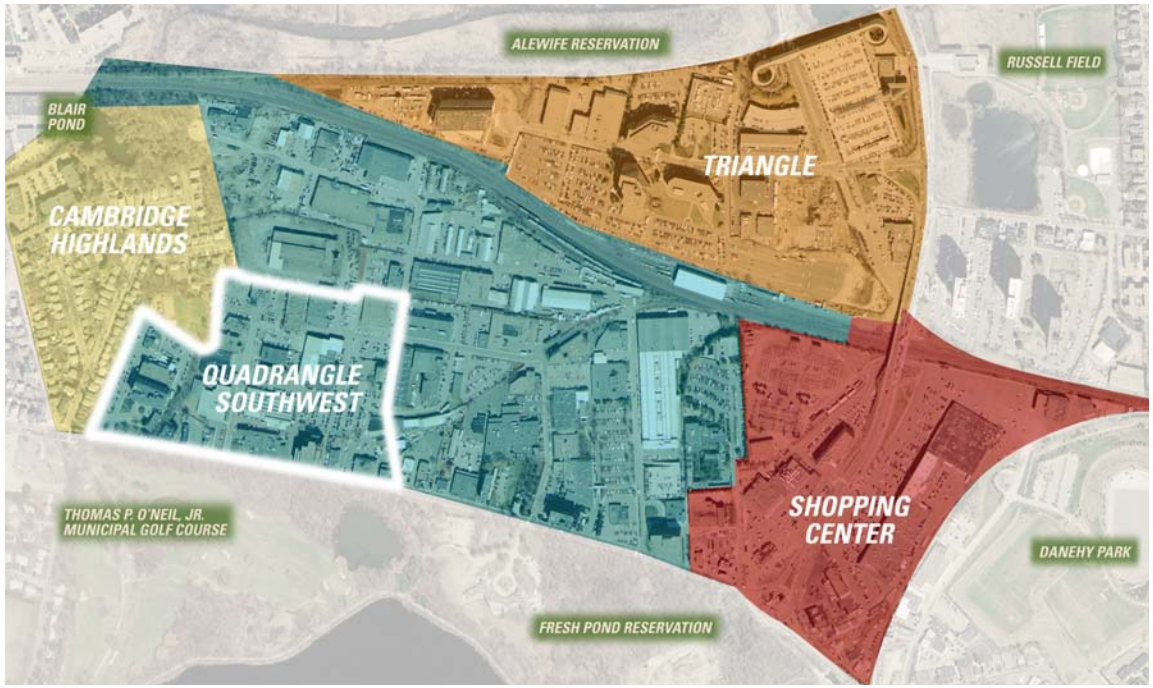
Quadrangle Southwest

ZONING GOALS

> Encourage mixed use, with residential development along Concord Avenue.

> Create incentives that encourage future development to be responsive to storm-water, open space, and transportation objectives, including increased permeability.

> Create incentives for cooperation among property owners to meet study goals around improved public and private realm.



CURRENT ZONING

BASE
OFFICE 2

FAR
- Commercial 1.5
- Residential 2.0

HEIGHT
- Commercial 70′
- Residential 85′
- 35′ within 125′ of a residential district

MIN. YARD (FEET)
- Front: $\frac{H+L^{(a)}}{4}$
- Side: $\frac{H+L}{5}$
- Rear: $\frac{H+L^{(c)}}{4}$

MINIMUM RATIO OF USABLE OPEN SPACE to lot area: 15% (residential)

BASE
IND.B-2

FAR
- Commercial 1.5
- Residential 1.5

HEIGHT
- Commercial 85′
- Residential 85′

MIN. YARD (FEET)
- Front: 0
- Side: 0(b)
- Rear: 0(b)
- Min ratio of usable open space to lot area: none

PROPOSED ZONING STRATEGIES

BASE
OFFICE 1

FAR
- 0.75 all uses
- Note: For parcels where the maximum permitted special-permit GFA is less than 10,000 sq. ft., the special-permit FARs may be available as-of-right

HEIGHT
- 35′ all uses

MINIMUM YARD
- Formulas, with 10′ minimum

USES
- Residential, office

PERMEABILITY REQUIREMENT
- 25% of lot **or** a signoff from the Cambridge Department of Public Works (DPW) noting that the development meets the requirement of accommodating the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW)

GREEN AREA REQUIREMENT
- 15% of lot (permeability and green area requirements may be satisfied on the same part of the lot)

MINIMUM YARD
- Front: 15′
- Yards adjacent to residential district or use: 25′

ARCHITECTURAL AND SITE PLAN STANDARDS
- Parking location, front door location, glass area, build-to lines

CURRENT ZONING

SPECIAL PERMIT/OVERLAY

No equivalent provision in current zoning

PROPOSED ZONING STRATEGIES

SPECIAL PERMIT

FAR

- Commercial: 1.0
- Residential: 2.0
- An FAR bonus of up to 0.25 may be provided for public open space with stormwater feature, and east-west main road. This could include building the connection, providing ROW or a landing site for a connection, or designing a building that could accommodate a connection, donating land for the public open space, or providing ROW for the east-west road.

HEIGHT

- Commercial: 55′
- Residential: 65′
- 35′ within 100′ of Res C-1 and OS districts, 45′ within 200′ of all uses

USES

- Uses allowed in base district, retail (to be located on the ground floor and to occupy no more than 10% of total GFA, with individual establishments to be no more than 10,000 sq. ft.)

POSSIBLE ADDITIONAL RELIEF/REQUIREMENTS:

- Allow pooled parking
- Parking GFA waiver
- Allow pooled green/permeability area
- Provide for infrastructure improvements
- Setback waivers from base district requirements
- Allow limited retail

CURRENT ZONING

PROPOSED ZONING STRATEGIES

- Meet DPW requirement that each development accommodate the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW).
- Relief from retail cap in specific locations if consistent with plan.

TRANSFER OF DEVELOPMENT RIGHTS

No equivalent provision in current zoning

TRANSFER OF DEVELOPMENT RIGHTS

- Property owners are encouraged to use TDR, transferring development out to defined Receiving Areas (Quadrangle Southeast and Northeast [if transit proximity created], Shopping center, and Triangle)
- If all allowed FAR is transferred out, a bonus of 0.75 FAR may be allowed for residential or incubator uses if LID principles are utilized and remaining parts of the site are used for public open space and stormwater management.

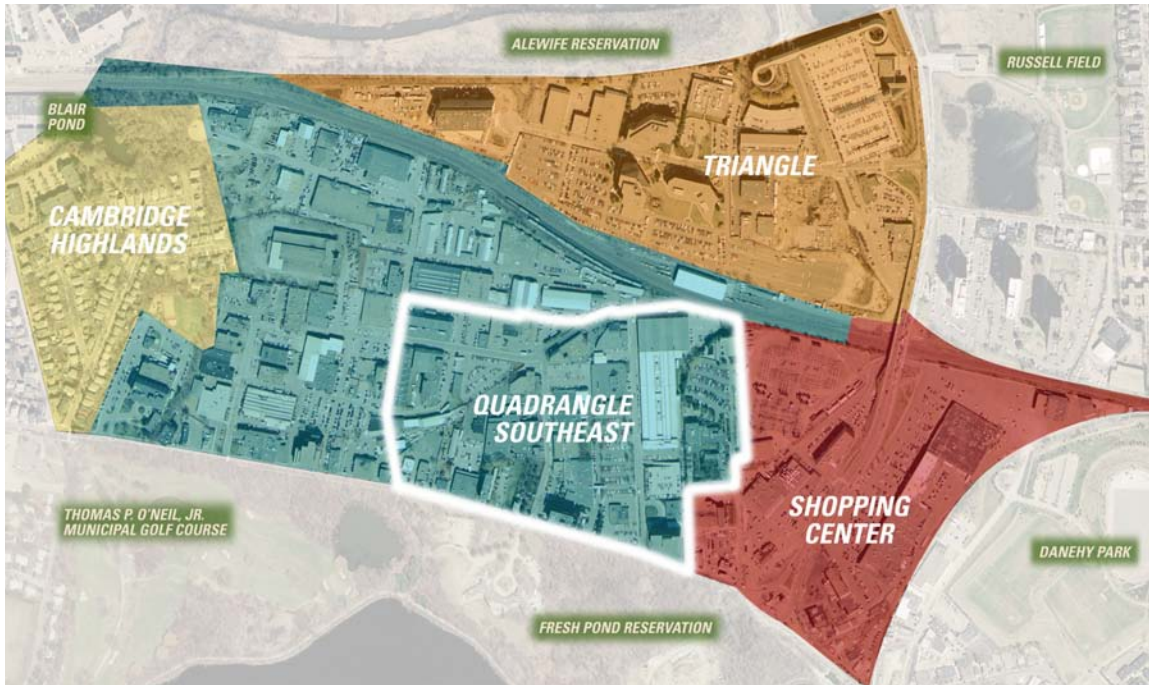
Quadrangle Southeast

ZONING GOALS

> Along Concord Avenue encourage mixed use, with residential and higher-density commercial development closer to parkway.

> Create incentives that encourage future development to be responsive to storm-water, open space, and transportation objectives, including increased permeability.

> Create incentives for cooperation among property owners to meet study goals around improved public and private realm.



CURRENT ZONING

BASE

OFFICE 2

FAR

- Commercial 1.5
- Residential 2.0

HEIGHT

- Commercial 70′
- Residential 85′
- 35′ within 125′ of a residential district

MINIMUM YARD (FEET)

- Front: $\frac{H+L^{(a)}}{4}$
- Side: $\frac{H+L}{5}$
- Rear: $\frac{H+L^{(c)}}{4}$

MINIMUM RATIO OF USABLE OPEN SPACE to lot area: 15% (residential)

PROPOSED ZONING STRATEGIES

BASE

OFFICE 1

FAR

- 0.75 all uses
- Note: For parcels where the maximum permitted special-permit GFA is less than 10,000 sq. ft., the special-permit FARs may be available as-of-right

HEIGHT

- 35′ all uses

MINIMUM YARD

- formulas, with 10′ minimum

USES

- residential, office

PERMEABILITY REQUIREMENT

- 25% of lot or a signoff from the Cambridge Department of Public Works (DPW) noting that the development meets the requirement of accommodating the 2- to 25-year flood event on-site as outlined in “Low Impact Development in Cambridge: Concepts and Criteria” (currently under development by the DPW)

GREEN AREA REQUIREMENT

- 15% of lot (permeability and green area requirements may be satisfied on the same part of the lot)

SETBACKS

- Front: 15′
- Parkway front yard: 25′

ARCHITECTURAL AND SITE PLAN STANDARDS

- Parking location, front door, glass area, build-to lines

CURRENT ZONING

SPECIAL PERMIT/OVERLAY

No equivalent provision in current zoning

PROPOSED ZONING STRATEGIES

SPECIAL PERMIT

FAR

- Commercial: 1.0
- Residential: 2.0
- An FAR bonus of up to 0.25 may be provided for development that facilitates a pedestrian connection across the railroad tracks, public open space with stormwater feature, and east-west main road. This could include building the connection, providing ROW or a landing site for a connection, or designing a building that could accommodate a connection, donating land for the public open space, or providing ROW for the east-west road.

HEIGHT

- Commercial: 70′
- Residential: 85′
- Heights up to 105′ allowed for FAR transferred to this district through TDR and to accommodate FAR bonus. Heights over 85′ limited to buildings or elements of buildings with a floorplate of 10,000 sf or less located at least 50′ apart
- Parkway Overlay District height limits to remain

USES

Uses allowed in base district, retail (to be located on the ground floor and to occupy no more than 10% of total GFA, with individual establishments to be no more than 10,000 sq. ft.)

POSSIBLE ADDITIONAL RELIEF/REQUIREMENTS:

- Allow pooled parking
- Parking GFA waiver
- Allow pooled green/permeability area

CURRENT ZONING

PROPOSED ZONING STRATEGIES

- Setback waivers from base district requirements
- Provide for infrastructure improvements
- Meet DPW requirement that each development accommodate the 2- to 25-year flood event on-site as outlined in "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW).
- Relief from retail cap in specific locations if consistent with plan.

TRANSFER OF DEVELOPMENT RIGHTS

No equivalent provision in current zoning

TRANSFER OF DEVELOPMENT RIGHTS

- Within the district consistent with plan goals; the Quadrangle Southeast is a desirable area in which to receive density from Quadrangle Northwest and Southwest
- TDR-related development should be used to achieve plan goals such as replacing surface parking and should result in transit-oriented development.

APPENDIX

C Anticipated Development: Existing & Proposed Zoning

PROJECTIONS BY LOCATION

		PROJECTED 20-YEAR BUILD-OUT			
		UNDER EXISTING ZONING		UNDER PROPOSED ZONING	
LOCATION	**EXISTING DEVELOPMENT**	**PROJECTED NEW**	**TOTAL**	**PROJECTED NEW**	**TOTAL**
Triangle	1,696,400	596,487	2,292,887	707,388	2,403,788
Quadrangle	1,910,400	1,141,765	3,052,165	1,175,493	3,085,893
Highlands	361,300	33,694	394,994	35,541	396,841
Shopping Center	508,100	483,432	991,532	871,497	1,379,597
TOTAL	**4,476,200**	**2,255,378**	**6,731,578**	**2,789,919**	**7,266,119**

PROJECTIONS BY LAND USE

		UNDER EXISTING ZONING		UNDER PROPOSED ZONING	
LAND USE	**EXISTING DEVELOPMENT**	**PROJECTED NEW**	**TOTAL**	**PROJECTED NEW**	**TOTAL**
Commercial	3,257,200	1,423,460	4,680,660	1,297,935	4,555,135
Residential	710,900	573,152	1,284,052	1,315,319	2,026,219
Retail**	508,100	258,766	766,866	176,665	684,765
TOTAL	**4,476,200**	**2,255,378**	**6,731,578**	**2,789,919**	**7,266,119**

*** Includes retail in Shopping Center only; retail in other locations is included in "commercial"*

APPENDIX

D Concord-Alewife Design Guidelines

These urban design guidelines are recommended to guide the character of future development in the Concord-Alewife Study Area.

AREAWIDE GUIDELINES

- Break large blocks into smaller blocks, of sizes similar to those in surrounding Cambridge neighborhoods, to improve circulation and to be compatible with surrounding neighborhoods.
- Vary the design of individual buildings to create an architecturally diverse district.
- Street-level facades should include active uses such as frequent residential entrances, with setbacks for stoops and porches; neighborhood-serving retail including shops, restaurants, cafés; services for the public or for commercial offices such as fitness centers, cafeterias, day care centers; community spaces such as exhibition or meeting spaces; and commercial lobbies and front entrances.
- Encourage awnings/canopies to provide shelter and enliven ground-floor façades.
- Design residential buildings with individual units and front doors facing street, including row-house units on the lower levels of multifamily residences.
- Encourage sustainable and green building design and site planning.
- Use low-impact-development principles in building and site design as a way to meet city, state, and federal stormwater requirements. Examples of low-impact development strategies include green roofs, bioswales, filter strips, and retention/detention ponds. For additional detail refer to "Low Impact Development in Cambridge: Concepts and Criteria" (currently under development by the DPW). As an additional benefit, reducing impermeable surfaces in the area would lessen the urban heat-island effect.
- Use site design that preserves future rights-of-way identified in the Circulation Concept Plan.
- Improve existing streets to meet City standards, including streetscape improvements.
- Strengthen bicycle and pedestrian links to adjacent areas. Provide links that strengthen physical and visual connections to open space resources.
- Screen service areas from major streets.
- Parking below grade is preferred. If above-grade parking is to be provided, design it so it is not visible from nearby residential neighborhoods, from public streets, or from pathways. Line above-ground structured parking with active uses (shops, cafés, lobbies) along important public ways; use parking structures to provide visual and acoustical screening between the railroad tracks and the rest of the area.
- Design and locate lighting and signage to support the district's pedestrian-friendly quality.

LOCATION-SPECIFIC GUIDELINES

SHOPPING CENTER (AOD-5)

- Provide pedestrian links to create strong physical and visual connections to Danehy Park.

- Improve the pedestrian connection to Alewife Station and to North Cambridge.
- Create a new street network, including a north-south main street.
- Ensure that a significant number of entrances for building(s) face Alewife Brook Parkway and/or new main street.
- Create a strong pedestrian link across the Alewife Brook Parkway to connect the east and west parts of the Study Area.
- Create building height/façade setbacks between 55′ and 85′.

TRIANGLE (AOD-6)

- Create a pedestrian-friendly environment along CambridgePark Drive.
- Provide small setbacks (5′ to 15′) from the right-of-way for café seating, benches, or small open spaces.
- Screen service areas from CambridgePark Drive.
- Provide pedestrian links that strengthen physical connections to Alewife Reservation, consistent with its master plan.
- Create building height/façade setbacks between 85′ and 105′.
- Locate new development to preserve right-of-way for future crossing of the railroad tracks to connect the Triangle and Quadrangle.

QUADRANGLE (AOD-1, 2, 3, 4)

- Scale and use in areas adjacent to Cambridge Highlands should be compatible with the residential neighborhood and serve as a transition between the Highlands and the rest of the Quadrangle.
- Use streetscape and other improvements to define Wilson Road as part of a major east-west connection through the Quadrangle.
- Develop a vegetated buffer between the Highlands and Quadrangle that also provides a north/south link to adjacent open spaces.
- Create an open-space system characterized by parks and green spaces of varying scales and uses.
- Use pooled resources to create a new central public open space in the Quadrangle that incorporates stormwater management.
- Locate active uses around the future open space to create a safe and active environment throughout the day and evening.
- Provide pedestrian links to strengthen physical connections to the shopping center.
- Create building height/façade setbacks between 85′ and 105′.
- Create a consistent edge along Concord Avenue, with a combination of residential and retail uses.
- Use streetscape and other improvements to define Smith Place and Spinelli Place as major north-south entries into the Quadrangle, and to establish Concord Avenue as a major gateway.
- Provide pedestrian links to strengthen connections to Fresh Pond Reservation, consistent with the Fresh Pond Master Plan.
- Strengthen the streetscape and other improvements to define Concord Avenue.
- Locate new development to allow for a future above-grade crossing between the Triangle and the Quadrangle.

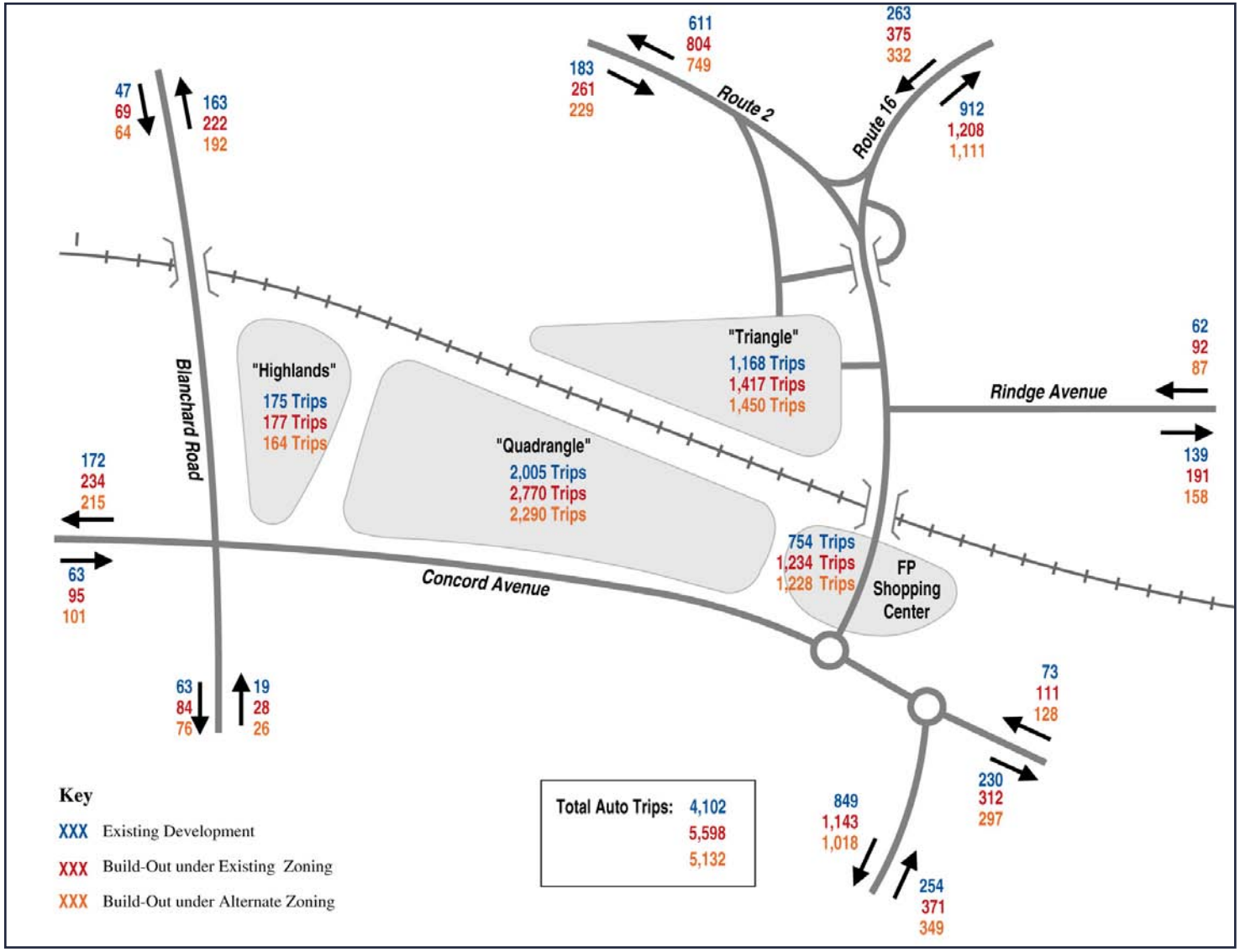
APPENDIX

E Critical Movement Analysis

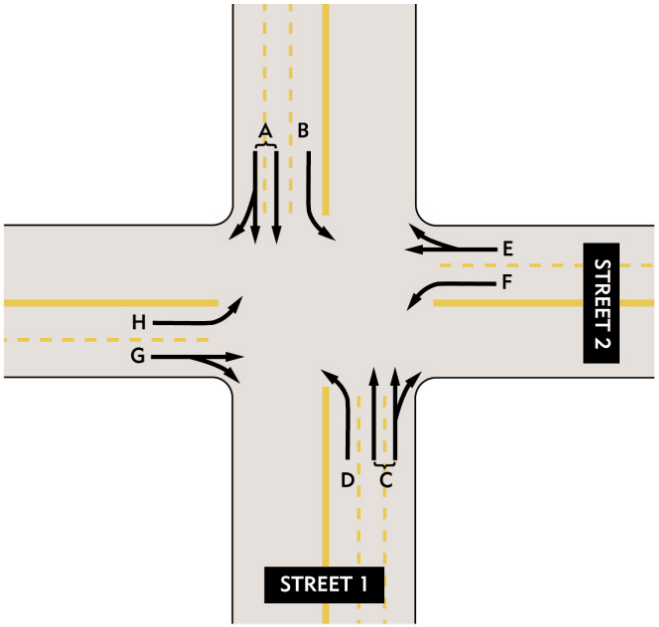
"Critical movement volume" at an intersection is defined as the sum of all conflicting traffic movements, expressed in vehicles per hour. For a *north-south street*, the conflicting movements are the combination of either the northbound left-turn and the southbound through/right-turn volume per lane or the southbound left-turn and the northbound through/right-turn volume per lane, whichever is greater. Similarly, for an *east-west street*, the conflicting movements are the combination of either the eastbound left turn and the westbound through/right-turn volume per lane or the westbound left-turn and the eastbound through/right-turn volume per lane, whichever is greater (see Figure E-1 for an illustration).

Thresholds for performance are based on total intersection capacity. The 1994 *Highway Capacity Manual* recognized that the maximum operating volume had increased from 1,800 to 1,900 vehicles per hour. This higher volume indicates that an appropriate threshold for intersection performance in this area would be 1,500 or fewer vehicles per hour. Capacity for a rotary is calculated differently than it is for a signalized intersection and more approximates the capacity in a lane merge/diverge situation. Therefore, an appropriate performance threshold for a rotary would be 1,800 or fewer vehicles. In both cases, an intersection at or below these thresholds is considered to operate adequately, *i.e.*, motorists will wait no more than two light cycles to get through the intersection. Once these thresholds are exceeded, drivers start to experience exponentially longer wait times.

E-1 SUMMARY OF INTERSECTION OPERATIONS



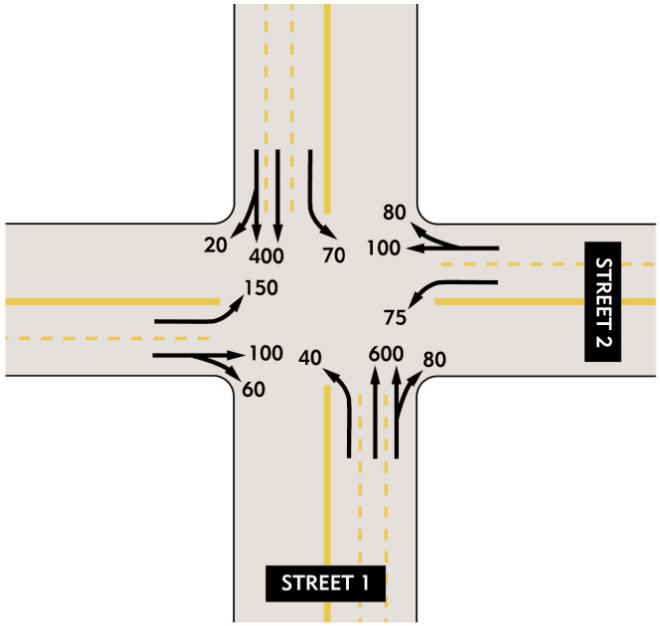
E-2 EXAMPLE OF CRITICAL MOVEMENT ANALYSIS



Street 1: (A ÷ 2) + D *or* (C ÷ 2) +B, whichever is more

Street 2: E + H *or* G + F, whichever is more

Critical Sum = Result of Street 1 + Street 2



Street 1: [(400 + 20)/2] + 40 = 250 *or* [(600 + 80)/2] + 70 = $\boxed{410}$

Street 2: (100+ 80) + 150 = $\boxed{330}$ *or* (100 + 60) + 75 = 235

Critical Sum = 410 + 330 = 740 vehicles

E-3 CRITICAL SUM ANALYSIS SUMMARY: P.M. PEAK HOUR

Intersection	2004		2024 Buildout		2024 Buildout	
	Existing Conditions		EXISTING Zoning		PROPOSED Zoning	
	Total Volume	Critical Sum	Total Volume	Critical Sum	Total Volume	Critical Sum
Alewife Brook Parkway/Route 2	4,100	1,620	4,620	1,820	4,520	1,780
Alewife Brook Parkway/Cambridge Park Drive	4,800	1,340	5,740	1,560	5,500	1,520
Alewife Brook Parkway/Rindge Avenue	4,730	1,560	5,680	1,760	5,400	1,730
"Ground Round" Rotary	4,300	1,880	5,640	2,440	5,140	2,270
"Sozio" Rotary	4,040	1,670	4,760	1,870	4,640	1,850
Concord Avenue/Blanchard Road	2,460	1,400	2,920	1,630	2,860	1,610

Total Critical Sum above 1500 threshold *	-130	1,480	1,160	*-22%* *
Total Critical Sum above 1500 threshold * for NEW Development	N/A	1,050	730	*-30%* *

Auto Trips Generated for NEW Development	N/A	1,500	1,030	*-31%* *

*** 1800 threshold for rotaries**

* *xx% = Change, Proposed Zoning v. Existing Zoning*

APPENDIX

F Transportation Recommendations

1. Undertake safety improvements

OBJECTIVE

Enhance safety for all modes throughout the Study Area.

BLANCHARD ROAD

STRATEGY	RECOMMENDATIONS
Address speeding, particularly during off-peak hours, in cooperation with Belmont.	**BLANCHARD ROAD NORTH OF CONCORD AVENUE** • Develop traffic-calming options to be built as part of planned street reconstruction. *In 2004, Cambridge and Belmont traffic-calming staff conducted public meetings on traffic calming on Blanchard Road. Construction documents and a bid package for this project have been developed. Construction is scheduled for 2006.* **BLANCHARD ROAD SOUTH OF CONCORD AVENUE** • Hire consultant to conduct study and develop recommendations for how to reduce speeding. **BLANCHARD ROAD AND GROVE STREET** • Improve intersection through geometric changes, improved signage, and traffic calming. *Public meetings have been held on this subject, and the design is complete. The Town of Belmont will be undertaking construction of the project.*
Improve pedestrian facilities	• Implement traffic-calming measures. • Improve sidewalk accessibility and walkability wherever possible. • Improve safety at parking lots through curb-cut redesign. • Improve crosswalk markings.

OBJECTIVE

Enhance safety for all modes throughout the Study Area.

CONCORD AVENUE

STRATEGY	RECOMMENDATIONS
Improve safety for pedestrians at crosswalks, particularly with regard to bus stops along Concord Avenue.	• Test viability of a left-turn lane on Concord Ave at Spinelli Way. If possible, create a left-turn lane along the length of Concord Ave. eastbound, incorporating pedestrian crossing islands at Spinelli Way, Smith Place, and Fawcett Street, and possibly Moulton Street.
	CONCORD AVE AND WHEELER STREET
	• Improve signage to increase awareness of signal in the short term. In the long term, connect Wheeler Street to Fawcett Street and eliminate the Concord Ave/Wheeler Street intersection.
Improve intersection operation.	**CONCORD AVE AND SMITH PLACE**
	• Review options for adjusting alignment of Smith Place to improve turning movements.
	SMITH PLACE
	• Create a continuous pedestrian walkway along the east side of the street to create short-term safety improvement. In the long term, rebuild Smith Place with sidewalks on both sides and realign the street where it intersects with Concord Avenue.

RINDGE AVENUE/ALEWIFE BROOK PARKWAY

STRATEGY	RECOMMENDATIONS
Improve intersection for pedestrian crossings; improve walkway conditions along Alewife Brook Parkway.	• Add appropriate ADA ramps; improve curb radii for safer and more accessible pedestrian crossing; renovate pedestrian walkway on north side of Rindge Ave.

T STATION ROAD BETWEEN CAMBRIDGEPARK DRIVE AND MINUTEMAN BIKEWAY

STRATEGY	RECOMMENDATIONS
Redesign road to enhance conditions for pedestrians and cyclists and clarify lane configurations for motorists; reduce speeds; enhance crossing from T to Minuteman Bikeway.	• Coordinate with the MHD Belmont-Cambridge-Somerville project that is improving path connections from the Minuteman Bikeway to the Belmont path along the Alewife Reservation. • Improve pedestrian crossing from the T area to the Minuteman Bikeway. • Redesign the road; rebuild it, when the opportunity arises, with continuous bicycle and pedestrian facilities on both sides.

OBJECTIVE	CAMBRIDGE HIGHLANDS STREETS
Enhance safety for all modes throughout the Study Area.	**RECOMMENDATIONS** • Examine cut-throughs and speeding issues.

2. Reduce new auto trips

OBJECTIVE	STRATEGY	RECOMMENDATIONS
Achieve a significant reduction in new auto-trip generation from development within the Study Area.	***Implement transportation demand management (TDM) measures or infrastructure projects that support alternatives to driving.***	• Require new development to support the goal of a reduced auto mode share with a package of measures beyond the level of TDM already required by the City under PTDM initiatives. Examples of measures that might be considered include: – Car-sharing-service membership for residents and/or employees to reduce individual car ownership; use of set-aside of parking spaces for car-sharing vehicles – Provision of T passes for households to encourage transit use – Commercial and residential membership in a transportation management association (TMA) with a coordinator to enable TMA benefits such as shuttle and vanpool programs – Graduated parking rates (increased rate for multiple cars/space) to discourage multiple car ownership – Shuttle service, including connections to transit stations, to provide attractive alternative to single-occupancy-vehicle auto travel – Allocation of space for transportation information center to promote/encourage non-auto modes – Bicycle fleet and support facilities available to residents or employees – Allocation of space for day-care facilities to reduce vehicle trips associated with child care drop-off – State-of-the-art public transit stops (*e.g.*, shelters, seats, information, etc.)
	Infrastructure projects to enhance non-auto mobility	• Creation of a pedestrian/bicycle overpass over the railroad tracks connecting the Quadrangle and Triangle to enhance access to transit and improve overall connections throughout the Study Area. This would include right-of-way protection and/or providing accommodation for such a connection within a building.

OBJECTIVE	STRATEGY	RECOMMENDATIONS
Achieve a significant reduction in new auto-trip generation from development within the Study Area.	*Infrastructure projects to enhance non-auto mobility*	• Upgraded pedestrian crossings of Concord Avenue and Blanchard Avenue, particularly to improve safety • Secure, sheltered bicycle parking facility located close to transit, to improve intermodal connections. • Roadway and streetscape improvement to better accommodate non-auto modes, particularly bicyclists and pedestrians • Protect rights-of-way needed for bicycle and pedestrian accommodations, such as Watertown Branch and North Cambridge Railroad crossings/path.

3. Enhance access to various study area sites

STRATEGY	RECOMMENDATIONS
Create new roads.	• Create new streets as shown in the plan to provide safe and convenient access to future development for bicyclists and pedestrians, particularly within the Quadrangle and the Shopping Center area. • Develop detailed roadway and pathway layouts/cross sections based on conceptual plan. • As the area develops/redevelops, protect rights-of-way for new roadways/pathways as identified in the conceptual plan.
Improve existing roads.	• Improve existing roadways and sidewalks as appropriate to facilitate access and provide a safe and pleasant experience for travelers, regardless of mode.
Fresh Pond Shopping Center	• Improve access from the Alewife Brook Parkway bridge to the shopping center, especially along desire lines connecting the area to Alewife Station and the residential neighborhoods.

4. Reduce disturbance noise and vibration

OBJECTIVE	STRATEGY	RECOMMENDATIONS
Reduce noise and vibration associated with motorcycles, pick-up trucks, heavy trucks, and buses adjacent to the Highlands.	*Improve the condition of Blanchard Road.*	• Repave Blanchard Road to improve its surface, thereby reducing noise and vibration.

OBJECTIVE	STRATEGY	RECOMMENDATIONS
Address significant truck and heavy vehicle traffic on Blanchard Road.	*Review enforcement mechanisms, limitations, and potential improvements.*	• Request regular, targeted police enforcement of truck-route violations. • Residents will direct complaints and requests for enforcement to the Cambridge Police Department Truck Hotline.