



City and County of Honolulu

Kalihi

Neighborhood Transit-Oriented Development Plan

Existing Conditions Report

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1 INTRODUCTION

1.1 Background and Purpose

Honolulu High-Capacity Transit Corridor Project

The U.S. Department of Transportation Federal Transit Administration and the City and County of Honolulu (City) Department of Transportation Services are undertaking a project that will provide rail transit service on Oahu.

As shown in Figure 1-1, the Honolulu High-Capacity Transit Corridor (HHCTC) is approximately 20 miles from East Kapolei in the west (Waianae or Ewa direction) to Ala Moana Center to the east (Diamond Head direction) and, in subsequent phases, to Kapolei, the University of Hawaii at Manoa and Waikiki. The fixed guideway system will operate in an exclusive right-of-way to ensure speed and reliability and avoid conflicts with vehicles and pedestrians. Each multi-vehicle train, electrically powered by a third-rail system, will carry up to 500 passengers. The service will connect employment and residential centers, and provide links via feeder buses at stations to areas not served by the rail. Overall goals of the project are to improve corridor mobility and reliability, access to existing and planned development, and transportation equity. The project is to be constructed in four phases. First phase preliminary construction preparations have begun. The third phase will end with the Middle Street station and be operational by the end of 2017.¹ The last phase, which includes the Kalihi and Kapalama stations, will be under construction between 2013 and 2018. The entire four phase project will be operational by 2019.

1 Honolulu High-Capacity Transit Corridor Project Environmental Impact Statement; by the United States Department of Transportation Federal Transit Administration and the City and County of Honolulu Department of Transportation Services; June 2010; Page 2-48, Figure 2-42.

Kalihi Neighborhood Transit Oriented Development (TOD) Planning

Kalihi Neighborhood TOD Plan Overview

The City is preparing neighborhood plans that integrate land use and transportation planning around the rail stations in anticipation of the High Capacity Transit Corridor Project. Closer integration of transportation and land use will help support transit ridership, minimize traffic congestion as more people use transit, decrease the need for parking and even car ownership, and enable more people to live close to a rail station. Community members will be able to walk to the station to get to their job or school, or shop or recreate more easily using the new rail system.

The Kalihi TOD Plan will address land use, local transportation, and economic, and infrastructure planning around three planned stations: Kapalama, Kalihi, and Middle Street (collectively referred to as the Kalihi planning area in this report). According to City analysis, the Kalihi-Palama Sub-area (a City-defined area, which includes much of the Kalihi TOD planning area, but also neighborhoods mauka of the planning area) contains the third highest portion of jobs among all sub-areas of Oahu after Downtown and Waikiki (approximately 40,800 in 2000); this number is expected to increase by 17 percent by 2030. Although the area has fewer residents (approximately 25,300 in 2000), population is expected to increase by 34 percent by 2030.² The TOD Plan can help to holistically plan for orderly growth in the area.

2 City and County of Honolulu. Honolulu High-Capacity Transit Corridor Project. Final Environmental Impact Statement. p. 1-10, 1-11. June 2010. Note that planning boundaries for sub-area referenced in the EIS and the Kalihi TOD planning area are not identical.



The Kalihi Neighborhood TOD planning area encompasses three stations along Dillingham Boulevard: Middle Street (top row), Kalihi (middle row), and Kapalama (bottom two rows). The Middle Street station will be integrated with the bus transit center, providing feeder bus access throughout the city. The Kalihi station will serve the residential neighborhoods and schools in the area. The Kapalama station will provide access to Honolulu Community College and the surrounding neighborhood. New and rehabilitated land uses and community amenities may be possible given the planning area's close proximity to Downtown.

In 2008, the City passed an amendment to its Land Use Ordinance, creating a framework for the development of neighborhood TOD plans to include:

- Objectives for economic revitalization; neighborhood character, and community historic and other design themes; desired mix of land uses, intensities, circulation strategies, general urban design forms, and cultural and historic resources;
- Market interest in redevelopment and the benefits of transit including the potential to increase ridership;
- Recommended zoning controls, including architectural and community design principles, open space requirements, parking standards, and other modifications to existing zoning requirements;
- Preservation and expansion of affordable housing opportunities, as well as ways to avoid gentrification;
- General direction on implementation of the recommendations, including the phasing, timing and approximate costs and financing strategies;

The Land Use Ordinance also describes that the TOD planning process should be inclusive, open to residents, businesses, landowners, community organizations, government agencies, and others. The public process will be complemented with technical data, such as population, economic, and market analyses and infrastructure analyses, including capacities of water, wastewater, and roadway systems. Where appropriate, public-private partnership opportunities should be investigated. The ordinance also specifies that the neighborhood TOD plans should be consistent with the applicable regional development plan (e.g. the Primary Urban Development Plan) and other community or master plans.

What is Transit-Oriented Development (TOD)?

This report explores opportunities and challenges for TOD in the Kalihi planning area. TOD typically refers to development within easy walking distance of a major transit stop that both capitalizes on and supports transit ridership. Development may be on vacant land, or redevelopment of sites with low-density buildings. TOD should be designed at the pedestrian scale, since virtually all transit trips begin and end as walking trips. Therefore, the TOD catchment area is typically a five- or ten-minute walk from the station.

TOD is relatively more intense development, in an urban environment that is safe and appealing to pedestrians. While a mix of uses is desirable to maintain street vitality, depending on the context, uses may be primarily residential or commercial, or a combination of the two. Major activity centers and destinations—such as shopping and educational institutions—should also be located to be highly transit accessible. Higher densities are an important part of the TOD equation in order to encourage transit use and efficient use of land, as well as to support a diverse mix of uses and a range of daily activities easily accessible on foot. In other words, a community cannot support the amenities inspired by a TOD opportunity without an adequate population base (residents or employees). Additionally, a diversity of housing choices and densities can enable all population groups—including those needing more affordable housing and others who need or desire to use transit as their primary mode of travel—to live in a transit-oriented setting.

Public Outreach for TOD Plan Preparation

Preparation of the Kalihi Neighborhood TOD Plan is proceeding with an integrated community outreach and technical analysis process. Throughout the planning process, community members will be offered a variety of opportunities to help develop a vision and plan for these station areas that reflects the community's most important values and priorities. Outreach activities include stakeholder interviews, community workshops, a community needs assessment survey, an advisory committee, and ongoing updates to the City's website. The input gathered through the outreach activities will inform the evolving plan.

Report Organization

This report represents one of the first steps toward the development of the Kalihi Neighborhood TOD Plan. It provides a summary of existing conditions, opportunities, and challenges related to land use, urban design, transportation, and infrastructure. (An analysis of market demand and economic factors will be prepared separately.) This report also documents and responds to community needs and priorities identified during initial community outreach activities. It is organized as follows:

- **Chapter 1: Introduction** includes an overview of the project, planning area, and discussion of the existing planning context (adopted and ongoing planning efforts and policies).
- **Chapter 2: Corridors** analyzes land use, community design, public safety, transportation, infrastructure, and environmental factors at the corridor level (that is, for the three Kalihi stations collectively).
- **Chapter 3: Stations** analyzes station configuration, pedestrian accessibility to and around the station, and potential development opportunity sites for each of the three stations.
- **Chapter 4: Planning Issues and Implications** identifies key issues that emerged from this analysis that will need to be addressed by the planning team, the Advisory Committee, and other community members through this planning process.

Next Steps

This report concludes the research and analysis phase of the project. Following publication of this report, the project team will work with the Advisory Committee and community members to develop Project Area Vi-

sion and Planning Principles, synthesizing concepts and objectives expressed during early community outreach activities, and providing a framework for plan and policy development. Next, the planning team will prepare a Station Area Alternatives Report, analyzing future land use and development possibilities based on the opportunities and challenges described herein and direction from community outreach activities. Based on feedback about the alternatives, the Preferred TOD Plan will be prepared, which will outline the preferred neighborhood character for each station area, including the vision, land use, circulation, and key characteristics. The Preferred Plan may be one of the alternative concepts or some combination of two or more concepts. Finally, the Kalihi Neighborhood TOD Plan will be prepared, providing a land use and circulation plan; goals and policies for the station areas; implementation actions and zoning recommendations; and a conceptual phasing plan.

Public meetings and workshops will be held throughout the planning process in order to maintain ongoing communication with community members and feedback on the direction and components of the Plan.

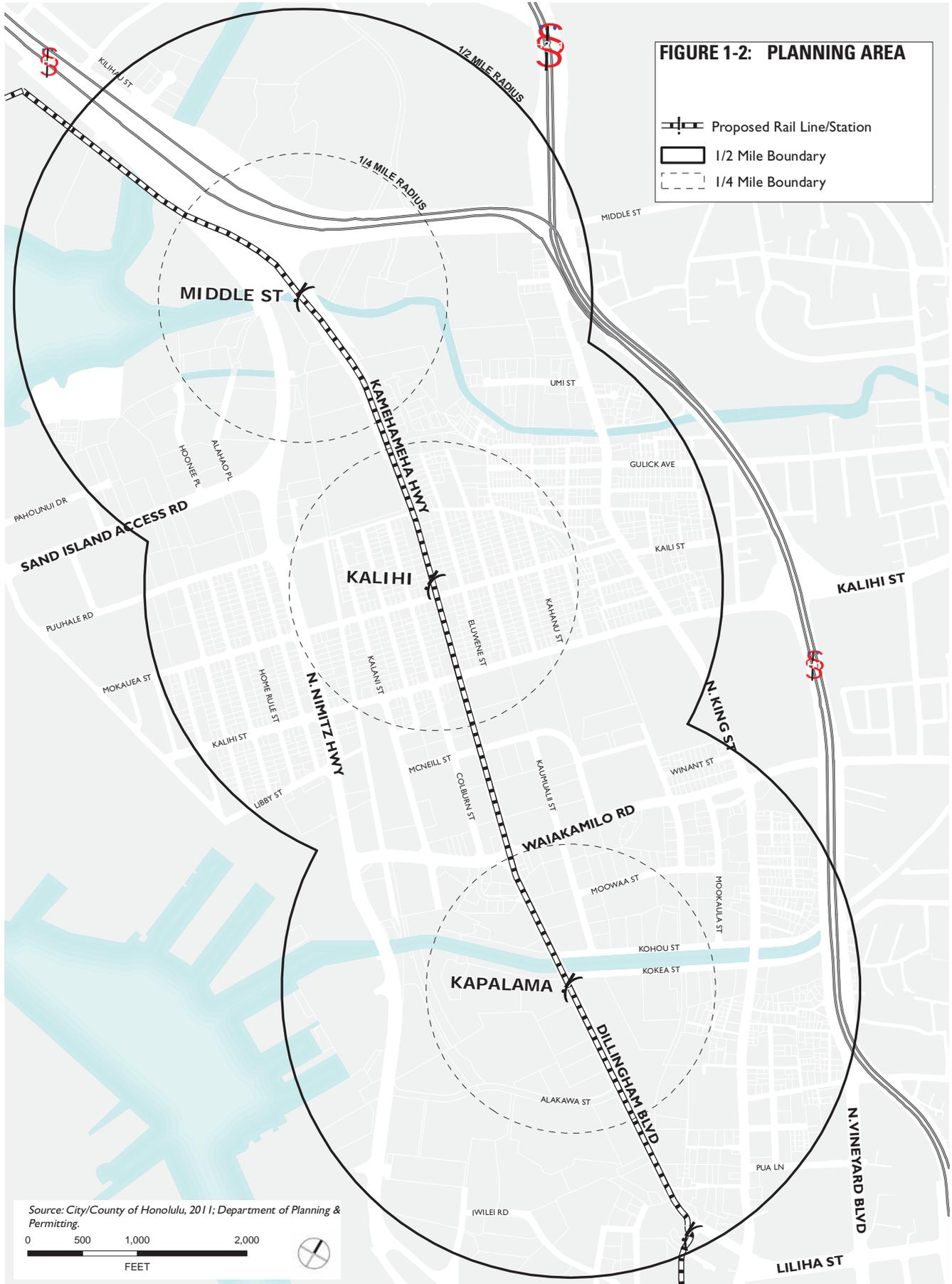
1.2 Location and Planning Area

The Kalihi stations are located in the Primary Urban Center, as shown in Figure 1-1. The planning area for examining opportunities for land use and community facilities will be approximately a ¼-mile radius around each station. (The final area may be larger or smaller depending upon specific opportunity sites). A larger ½-mile area is used to examine existing land use, environmental, transportation, and infrastructure conditions, as shown in Figure 1-2.



FIGURE 1-1: REGIONAL LOCATION





1.3 Existing Plans and Policies

While the focus of the Kalihi Neighborhood TOD Plan is to create new policies to promote TOD, the TOD Plan should also respect and incorporate current policies and programs that reflect the community's values and promote development that is transit supportive. The TOD Plan may also recommend amendments where existing City policies may need to be altered to meet Plan goals. A summary of existing plans and policies is provided below.

Transportation

Oahu Regional Transportation Plan 2030

Adopted by the Oahu Metropolitan Planning Organization in 2006, the Oahu Regional Transportation Plan (ORTP) provides a framework for addressing mobility issues and meeting transportation needs, in the context of future growth patterns and available financing. It includes a vision and goals, identifies projects, and provides an implementation program to allocate available transportation funds across Oahu in a fair and equitable manner. The \$15 billion in identified funding needs through 2030 is split roughly evenly between capital projects and operations/maintenance.

The ORTP's vision acknowledges dual objectives: the importance of relieving congestion in the H-1 travel corridor, and providing transportation choices, including rail, bus, ferry, bicycle, and pedestrian accessibility. The plan calls for rail to be the "backbone" of urban Honolulu's transit system, with bus and ferry service providing feeder access. Within the Kalihi Neighborhood TOD planning area, the ORTP includes the rail project and a two-lane elevated and reversible HOV flyover above Nimitz Highway, between the Keehi interchange and Pacific Street.³

3 Oahu Metropolitan Planning Organization. Oahu Regional Transportation Plan 2030. Adopted April 2006. Amended May 2007.

Harbors Modernization Plan

The State Department of Transportation Harbors Division is implementing a Harbors Modernization Plan to address facilities upgrades in order to accommodate current and projected shipping needs. Honolulu Harbor, a portion of which lies in the planning area, is the hub of the State's commercial harbor operations. Nearly all overseas cargo passes through this port before it is shipped out or into the rest of the state. According to the Oahu Commercial Harbors 2020 Master Plan, the harbor is congested due to a lack of berths, insufficient landside operations, and constant vessel traffic. In addition to user fees, rentals, federal funds, and potential public-private partnerships, tax-exempt bonds and a grant, both provided through the American Recovery and Reinvestment Act, will help fund modernization projects.⁴

Oahu Bike Plan (Draft)

Prepared by the Department of Transportation Services in 2009, the Draft Oahu Bike Plan provides strategies for integrating bicycling and bicycle planning into Oahu's transportation system. Currently, many Oahu residents are hesitant to travel by bicycle for fear of excessive vehicle speeds and the lack of dedicated facilities for bicyclists. The plan offers five "Es" to improve safety and increase bicycle trips: encouraging biking through improved marketing, events, and information/maps; engineering new bike lanes, signage, and routes; educating community members about safety and rules; enforcing violations by drivers and bicyclists; and evaluating the links between programs/policies and outcomes in terms of ridership and accidents. See Section 2.4: Transportation for a description of proposed improvements in the planning area.

4 Hawaii State Department of Harbors Division. Oahu Commercial Harbors 2020 Master Plan. May 1997; "Fact Sheet" and "Honolulu Harbor to Receive \$24.5 Million in Federal Stimulus Funds" <http://hawaii.gov/dot/harbors/whats-new/harbors-modernization-plan>.

Land Use

General Plan

The General Plan represents the first tier of planning in a three-tier system—General Plan, development plans (Primary Urban Center Plan), and implementing ordinances and regulations—that relates to the planning area. Together these plans define objectives, policies, planning principles, guidelines and regulations. Prepared in 1977 (and amended several times), the General Plan establishes goals and policies to guide planning on Oahu. The General Plan is divided into 11 chapters: population; economic activity; natural environment; housing; transportation and utilities; energy; physical development and urban design; public safety; health and education; culture and recreation; and government operations and fiscal management. Policies include support for a diverse economy, public transportation options, affordable housing, adequate public facilities/services and energy resources, well-designed buildings and public spaces, safety from natural and manmade disasters, community health and education opportunities, multi-ethnic culture, and historic and cultural resources.⁵

The Plan distinguishes planning areas within the island. The Kalihi TOD planning area lies within the Primary Urban Center planning area; this area has its own plan—part of the second tier of the system—which is discussed below. As the name of the planning area suggests, the Primary Urban Center represents the primary location for urban development, housing the greatest share of Oahu’s population compared with other planning areas, even as other areas, including Ewa with its center in Kapolei, expand. Implementing ordinances and regulations, including the Land Use Ordinance, represent the third tier of the planning system. In addition, special area plans may be prepared to provide specific guidance for neighborhoods, communities and specialized resources. All of these plans should be consistent with the General Plan.

Primary Urban Center Development Plan

Two of Oahu’s eight planning regions—Ewa and the Primary Urban Center—are expected to take on the vast majority of population and economic growth through at least 2025. Adopted in 2004, the Primary Urban Center Development Plan is a policy guide for the development decisions and actions required to support expected growth in Oahu’s most populous region. It extends from the core of downtown Honolulu to Pearl City in the west and Waialae-Kahala in the east, and it includes all of the Neighborhood TOD planning area. Key elements of the plan’s vision include enhancing natural resources, enabling livable neighborhoods, supplying housing choices, establishing a leading employment center and travel destination, and providing a balanced transportation system. Notably, since this plan was authored in advance of the proposed rail project’s plans, it does not specifically reference rail or the Kalihi stations. However, it does support TOD, in the form of bus rapid transit corridors within major activity centers, high-density neighborhoods, and redevelopment areas (including Kalihi).

The plan also includes guidance on neighborhood planning. It calls for developing existing and new “neighborhood centers:” central places where people gather for shopping, entertainment or recreation, necessitating pedestrian and park improvements. While plan policies promote this strategy, specific locations of neighborhood centers are not designated. Policies promote mixed land uses, where commercial and community services uses coexist with housing, creating activity 24 hours a day and convenient access to services. They also call for streetscape and landscape improvements on routes that connect neighborhoods.⁶

The plan sees the Harbor waterfront area as a prime site for new commercial, hotel, and residential development, as well as supportive entertainment and recreation activities. It envisions that revitalization of the waterfront will provide inspiration for the redevelopment of Iwilei.⁷ However, Nimitz Highway is an im-

⁵ City and County of Honolulu. General Plan. Adopted 1977.

⁶ City and County of Honolulu. Primary Urban Center Development Plan. June 2004. P. 3-24, 3-25.

⁷ Ibid., p. 3-38.

pediment to pedestrian access to the harbor; the plan favors a bypass highway and tunnel from Sand Island so that airport-to-Waikiki and other pass-through traffic can bypass Downtown. This new route would reduce traffic on Nimitz Highway, allowing for a narrower street and the installation of a pedestrian promenade with waterfront activity area and space for restaurants and shops.⁸ At the same time, the plan supports the continuation of harbor-related and warehouse uses. It also supports the continuation and enhancement of commercial and industrial uses in the Kalihi and Kapalama areas, calling for appropriate noise and visual mitigations where located near residential and other sensitive communities.

The plan recommends improvements to alternative modes of transportation, including bus transit, pedestrian mobility, intra-island ferry service (e.g. between the airport and Waikiki), and bicycle use. It encourages increased bicycle ridership by increasing bike lanes (implementation of the Bicycle Master Plan) and related amenities (e.g. lockers, showers, racks on buses, and bike parking). It acknowledges that “relatively large physical separation between walking destinations and poor pedestrian infrastructure discourage people from walking.”⁹ To combat this, the plan supports pedestrian improvements—prioritizing routes along the canals and Dillingham Boulevard—including connected sidewalk network crosswalks, bulb-outs, pedestrian median refuges, broad promenades, pocket parks, shade trees, street furniture, and adjustment of traffic signal phasing.

Generalized land use designations for the Neighborhood TOD planning area are shown in Figure 1-3. The plan shows a range of land use designations in the Kalihi planning area, including Industrial, District Commercial (allowing a range of commercial uses and mixed-use with residential, mostly along Dillingham Boulevard), Medium and Higher-Density Residential/Mixed Use, and Institutional (for public school properties, the Oahu Community Correctional Center [OCCC], and Honolulu Community College[HCC]). The Zoning Ordinance stipulates specific uses permitted within each refined zoning district.

⁸ Ibid., p. 3-45.

⁹ Ibid., p. 3-54.

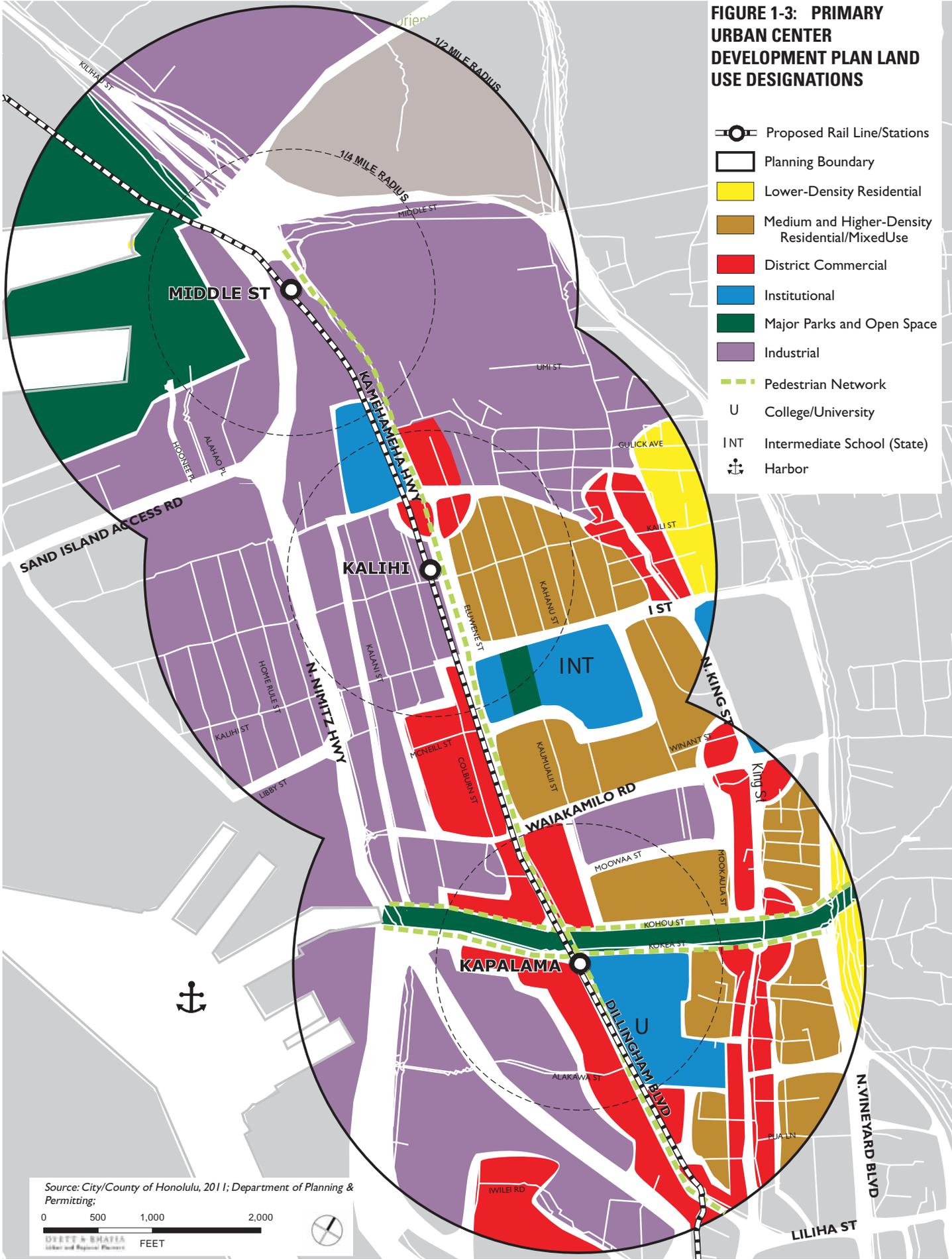
While some of the Primary Urban Center Development Plan’s ideas—such as those relating to harbor revitalization and promoting pedestrian orientation—continue to be germane, concepts related to a bypass highway or a Sand Island tunnel may no longer be relevant, especially in light of the High Capacity Transit project.

Kalihi-Palama Action Plan

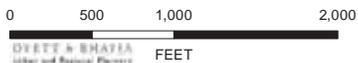
Prepared in 2004, the Kalihi-Palama Action Plan provides a vision for the future of the neighborhoods in the Kalihi-Palama area (8,500 acres between the coastline and the ridgeline) and a series of actions that could improve quality of life for residents, businesses, and visitors. The plan presents a vision statement, which reflects on the area’s multi-cultural heritage and natural beauty. The plan calls for the area between Nimitz Highway and H-1, which includes the TOD planning area, to be maintained as a mixed-use area that includes industrial, manufacturing, office, and retail, with an emphasis on small businesses and single-family homes and low-rise apartments. Specific recommendations and programs include:

- Revitalize existing buildings and redevelopment of vacant lots (into off-street parking facilities or park space).
- Improve Dillingham Boulevard: addition of pedestrian and bike paths, and infrastructure upgrades, including undergrounding of utilities.
- Develop a “college town” around HCC, with dormitories and commercial establishments that cater to students (e.g. copy services, dining), as well improvements to Kokea Street.
- Improve Kapalama Canal, including clean-up, preservation, and construction of trail amenities. Reconfigure Kokea and Kohou streets to one-way streets.
- Redevelop the Oahu Community Correctional Center as a community gathering place, such as a multi-cultural marketplace. (Notably, discussions with OCCC personnel in December 2010 suggested that the facility does not intend to relocate as was supposed in the Kalihi-Palama Action Plan. Rather, OCCC intends to expand capacity within the existing facility.)

FIGURE 1-3: PRIMARY URBAN CENTER DEVELOPMENT PLAN LAND USE DESIGNATIONS



Source: City/County of Honolulu, 2011; Department of Planning & Permitting;



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- Maintain Dillingham Boulevard and Waiakamilo Road area as major commercial shopping areas and limit big box stores to the Iwilei area.
- Improve existing open space (addressing concerns about insufficient lighting, homeless, and vandalism) and develop new open space to rectify park deficiency.
- Improve roadways and streetscapes: including adequate and ADA-compliant sidewalks, street lighting, street trees, landscape medians, and drainage systems, on- and off-street parking, and bus stops with a shelter, benches, and safe setbacks from moving vehicular traffic.
- Revitalize neighborhoods: rehabilitate deteriorated housing and encourage mixed use development. Revitalize industrial uses and improve access for pedestrians makai of Dillingham, particularly for students at Puuhale School and residents, until residential uses transition to industrial or other uses.
- Low-Density Apartment District (A-1) is intended to provide low-density multi-family dwellings that may serve as a transition between residential district and other more intense non-compatible districts. The district permits single-family, duplex, and multi-family homes, with a maximum height of 30 feet and floor area ratio of 0.9.
- Industrial-Commercial Mixed Use District (IMX-1) allows a mix of industrial and commercial uses to create diversified businesses and employment opportunities. To a limited extent, residential uses are permitted (e.g. accessory/caretaker units). The maximum FAR value is 2.5.
- Intensive Industrial District (I-2) allows a full range of industrial uses, including light and heavy activities. Uses in this district should be located away from residential communities. The maximum FAR value is 2.5.
- General Preservation District (P-2) designates open space or recreation land that provides outdoor space for the public's use and enjoyment within the city's built environment. The minimum lot area is five acres.

Kapalama Development Regulations

Land Use Ordinance

Regulations in the City's Land Use Ordinance influence the use and character of development in the city. The Land Use Ordinance includes standards for land use, lot size, setbacks, and building area. The Kalihi planning area primarily includes the following zoning districts as shown in Figure 1-4:

- Community Business Mixed Use District (BMX-3) is intended to provide commercial and residential uses outside of the central business district and at a lower intensity. The maximum floor area ratio is 2.5.
- Community Business District (B-2) is intended to provide community-serving businesses that permit a range of commercial uses that can serve several neighborhoods. The maximum floor area ratio is 2.5. Residential uses are not permitted.
- Residential District (R-5) is intended to provide areas for urban residential development, permitting single-family, duplex, and multi-family homes, with a maximum height of 30 feet.

Building Height Regulations

Building height regulations are shown in Figure 1-5. The tallest building heights in the planning area are currently permitted along North King Street (up to 200 feet) and around Kapalama station (up to 150 feet). The maximum permitted height makai of Dillingham Boulevard, near Kalihi and Middle Street stations, is 60 feet. Mauka of Dillingham Boulevard and Kalihi station, where residential and school uses predominate, permitted heights are lower, generally a maximum of 30 feet.

Standards and Design Precepts for Future Park Development

Previously known as the Islandwide Parks Master Plan, the Standards and Design Precepts for Future Park Development was updated by the City's Department of Parks and Recreation in 2004. The purpose of the plan is to determine current and projected needs for physical

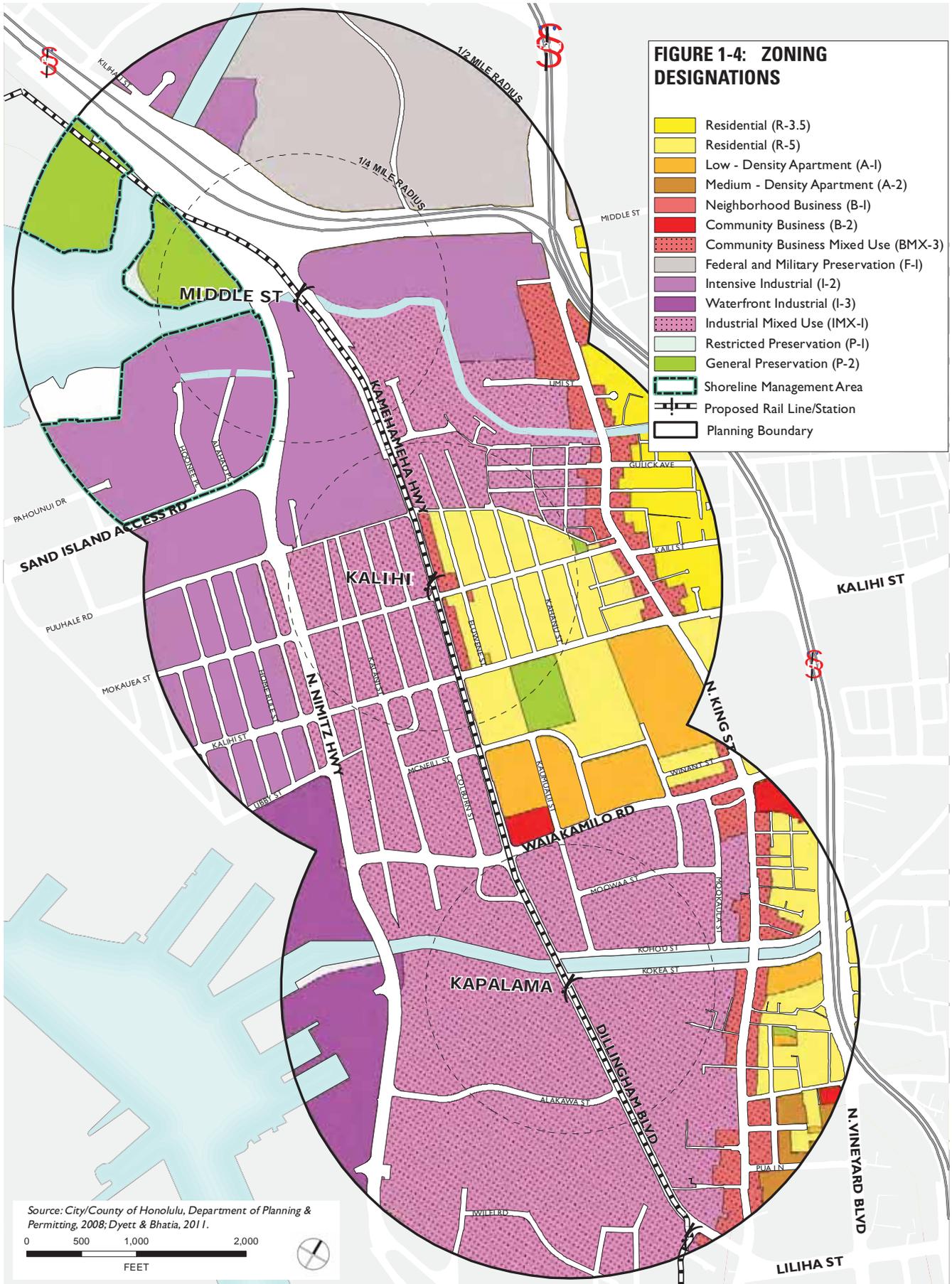
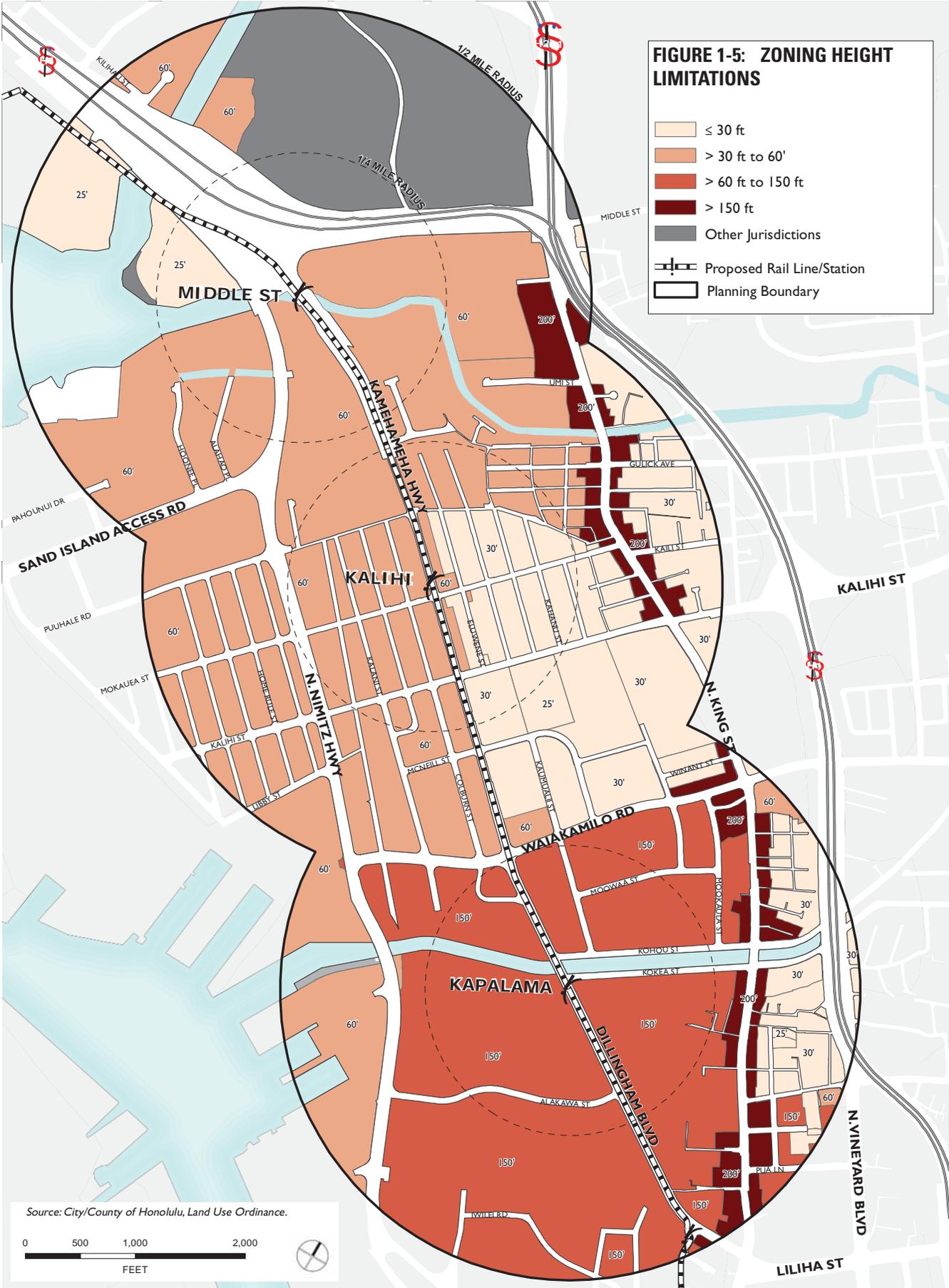


FIGURE 1-5: ZONING HEIGHT LIMITATIONS

- ≤ 30 ft
- > 30 ft to 60'
- > 60 ft to 150 ft
- > 150 ft
- Other Jurisdictions
- Proposed Rail Line/Station
- Planning Boundary



Source: City/County of Honolulu, Land Use Ordinance.



facilities that will support recreation activities for Oahu's residents and visitors. The plan reiterates the City's two acres of local parks per 1,000 resident standard and acknowledges that the areas with the greatest deficit are in the City's most urban areas, including the Kalihi planning area. With population increases expected, the plan acknowledges that park planning will be essential in these urban neighborhoods to ensure good access to open space. The plan provides recommendations and standards for size, amenities, parking, and access, by various park types. It also contains policies for promoting the joint use of facilities (e.g. with schools and non-profits) and park financing strategies through exactions, incentives, zoning and streamlining the park dedication ordinance.

There are several open spaces proposed for the Kalihi planning area. The US Army is considering redevelop a site in the Fort Shafter Flats area, Ewa of Middle Street for active recreation allowing for shared civilian use. This could add up to 20 acres of recreation space near the Middle Street Transit Center and improve linkages to Keehi Lagoon Park just outside the planning area near the airport. In addition, the plan proposes a continuous greenbelt along Kapalama Canal from H-1 to Honolulu Harbor and improving existing resources by adding outdoor seating, play areas, and places for small community events.

Park Dedication Rules and Regulations

The City's Subdivision Ordinance specifies rules for dedicating park space. The regulation applies to land being subdivided into two or more lots and to construction of multi-family developments. The regulation stipulates the land area required for parks for various residential designations and districts. For example, multiple-family dwellings in mixed use districts require parkland that totals 10 percent of the maximum permitted floor area or 110 square feet per unit (whichever is less). The same standard is applied to apartment buildings in mixed-use districts. In lieu fees may also be acceptable in meeting the park dedication requirement.

Affordable Housing Policy

Adopted in February 2010, this inclusionary housing rule requires projects of 10 or more units seeking a zone change to provide affordable units at below market rate. It stipulates that 30 percent of the total number of dwelling units should be sold or rented to low and moderate income households, meaning up to 80 percent and 140 percent of area median income (AMI), respectively. At least 10 percent of the total units must be available to households with incomes at 80 percent of AMI or below and at least 20 percent available to households with incomes at 120 percent of AMI or below. The policy also offers incentives for TOD housing. In-lieu fees may be paid to satisfy the affordable housing requirement for projects totaling 100 units or fewer.

2 CORRIDOR

This chapter analyzes existing conditions at the corridor level—for all three station areas. It includes an analysis of land use, public safety, transportation, infrastructure, and environmental issues.

2.1 Land Use

Land use planning is a fundamental component of a TOD plan. Land use influences the types of users that will frequent the neighborhood, such as workers, families, shoppers, or commuters, and a community's infrastructure requirements, from parks and schools to road capacity and water supply. This section examines existing land use development and trends in the planning area.

Land Use Pattern

Existing Land Use

The planning area encompasses a range of land uses, as illustrated in Figure 2-1. Table 2-1 and Chart 2-1 depict the breakdown of land use in acres for proper-

ties that lie partially or completely within 1/2-mile of a station. Building area is also documented for non-residential land uses.

Industrial uses represent the largest land area, in terms of both acreage and building square footage. These uses comprise 31 percent of the land area with 6.2 million square feet of building area. Public/institutional uses, such as the Honolulu Community College campus and the Oahu Community Correctional Center represent a quarter of the planning area, while commercial uses comprise 15 percent. Residential uses comprise 14 percent of the planning area, while water from the two Kapalama and Kalihi canals totals six percent. Only two percent of the planning area is devoted to open space. Office uses are also quite limited in the planning area, representing just two percent of the land area. There are approximately 38 acres of vacant land in the area, in addition to surface parking lots, or three percent of the total. Although some buildings have a mix of uses (e.g. ground floor commercial with residential uses on the upper floor), only the predominant use is shown in the acreage values.





Industrial uses are the most prevalent land uses in the planning area, with a variety of manufacturing, distribution, printing, warehouse, and port-related uses.

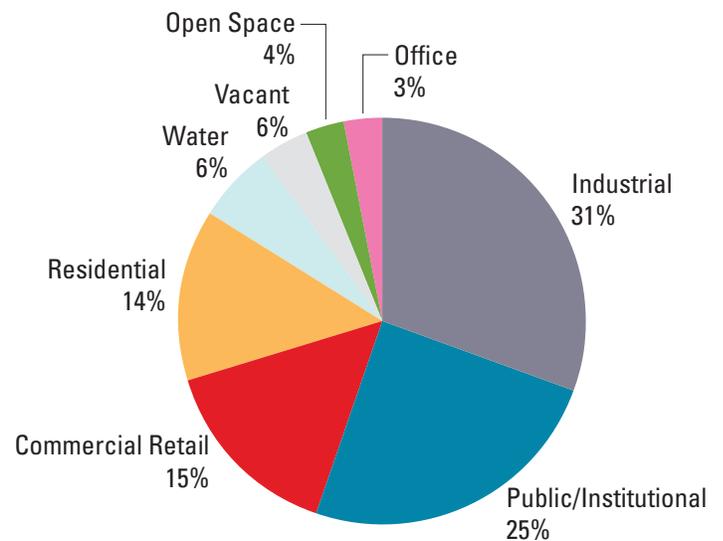
TABLE 2-1: EXISTING LAND USE AND NON-RESIDENTIAL BUILDING AREA

LAND USE	ACRES	BUILDING AREA (SQ. FT.)
Residential	176	
Non-Residential		
Commercial Retail	617	4,191,412
Office	35	713,530
Industrial	367	6,231,982
Public/Institutional	296	(1)
Open Space	43	
Other		
Parking Lot	5	
Vacant	38	
Water	66	
TOTAL	1,194	11,136,924

(1) Building area total for public/institutional uses not shown due to missing data.

Source: City/County of Honolulu, Department of Planning and Permitting, 2008; State of Hawaii, 2011; Dyett & Bhatia, 2011.

CHART 2-1: EXISTING LAND USE, PERCENT BY ACRES



Source: City/County of Honolulu, Department of Planning and Permitting, 2008; State of Hawaii, 2011; Dyett & Bhatia, 2011.

The Kapalama station area is one of the few remaining places in the city providing a concentration of warehouse and industrial space for uses such as printing presses, auto body shops, and storage facilities. The area is also home to large retailers, including Costco, Best Buy, and Home Depot, as well as many small businesses and established “mom and pop” shops. The Middle Street Transit Center station area is occupied by military/public uses as well as some industrial and warehouse operations. Housing is mostly focused in the Kalihi station area, which includes both small apartments and small lot single-family homes. In some locations, homes are directly next door to industrial uses.

Land Ownership

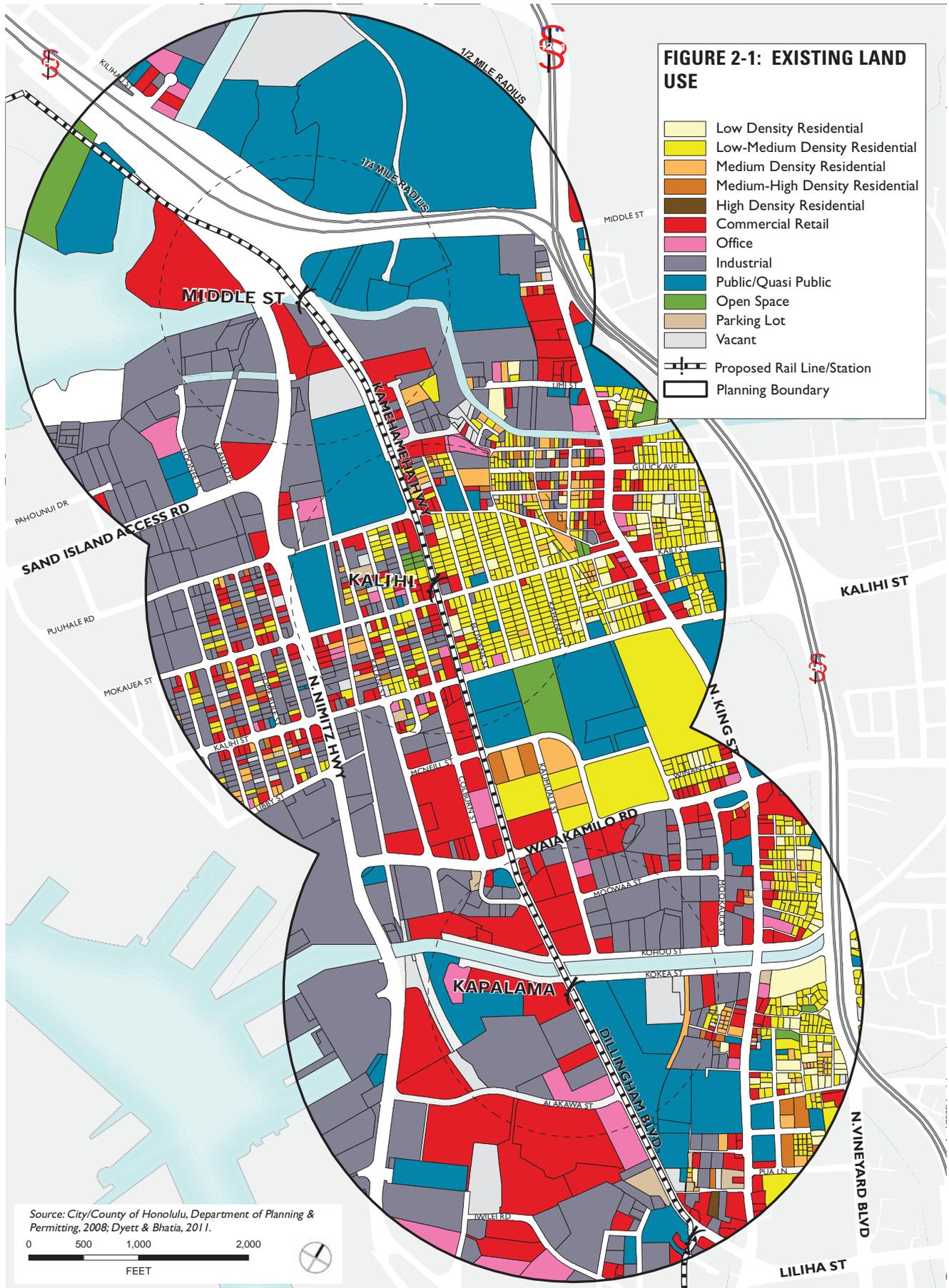
Land in the planning area is owned primarily by public agencies (City, State, and Federal) and Kamehameha Schools, as shown in Figure 2-2. Public agencies include the University of Hawaii Honolulu Community College campus, the Oahu Community Correctional Center, and Hawaii Department of Transportation’s ownership of most of the port lands. The Fort Shafter military base is located Ewa of Middle Street.

Kamehameha Schools is the largest private landowner in the state of Hawaii. They provide pre-school through grade 12 education, serving more than 6,550 students throughout the state. Income generated from its residential, commercial and resort leases help fund the schools’ maintenance and operations.¹ While none of their school sites lie within the planning area, Kamehameha Schools does own 91 acres of land (about eight percent of the planning area) with retail and other ground leases around the Kapalama station. Castle & Cooke is another major landowner in the planning area, though their Iwilei properties are primary addressed in the Downtown TOD Plan. Most of the small lot residential and industrial sites around Kalihi station have individual private owners.



There are a range of commercial uses in Kalihi, including self-storage businesses, fast food establishments, local retailers, and revitalized uses along the waterfront.

¹ Kamehameha Schools. “Kapalama Strategic Implementation Plan” 1.0 Background: 1.





Schools have a large presence in the planning area, particularly around the Kapalama station where several K-12 schools and Honolulu Community College are located.

Public/Quasi-Public Facilities

K-12 Schools

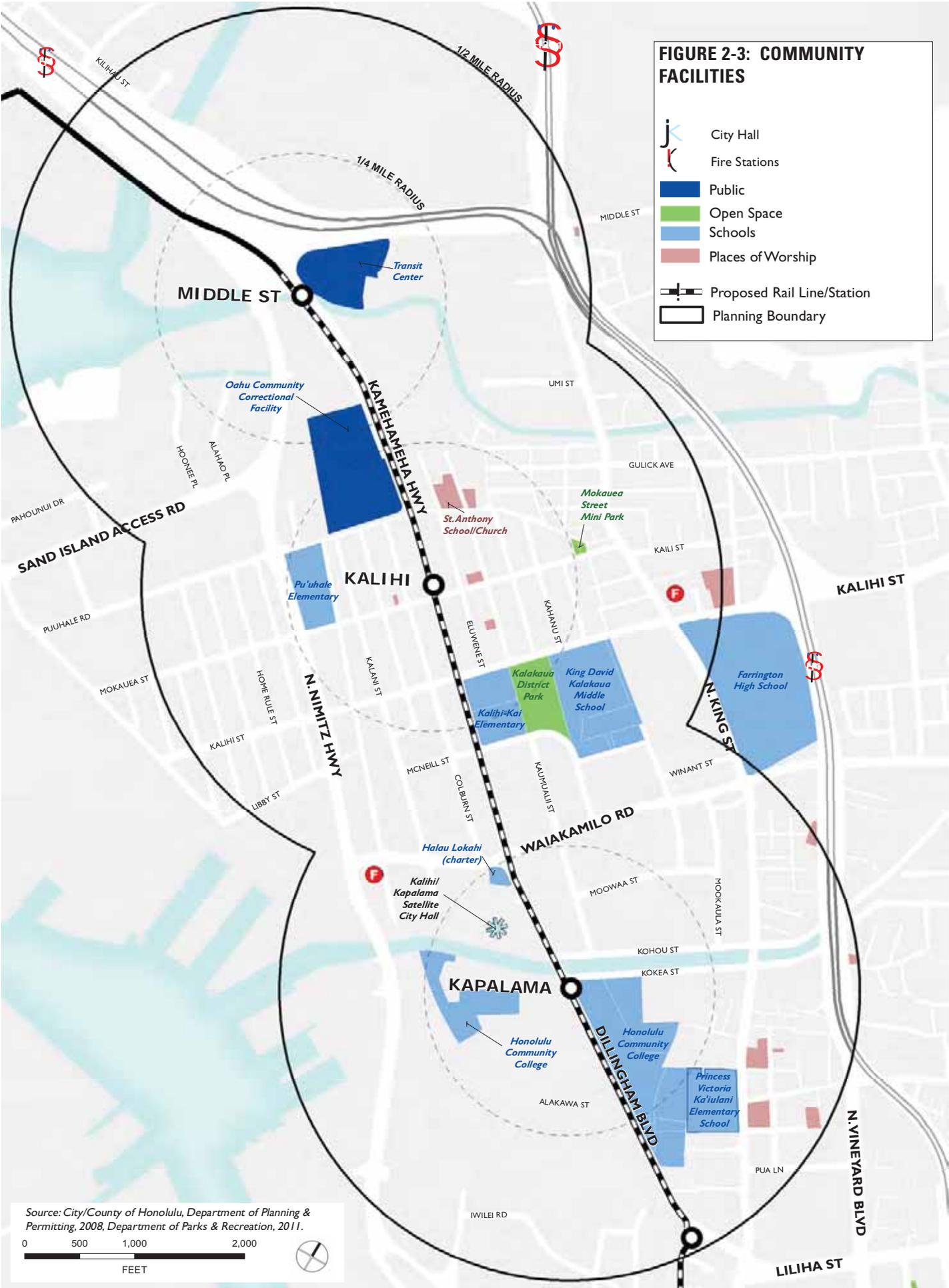
There are several schools sites in the neighborhood, serving as both education institutions and community gathering places. Table 2-2 describes enrollment for schools in the planning area, as well as the percent of students eligible for free or reduced price lunch (a proxy for economically disadvantaged households). In addition to these schools, Farrington High School lies just outside the planning area, mauka of the Kalihi station. In general, students living in the community attend Puuhale or Kalihi-Kai Elementary, depending on whether they live makai or mauka of Dillingham Boulevard, respectively. (Princess Victoria Kaiulani Elementary is also located in the planning area, but serves the neighborhood southeast of Kapalama station.)

TABLE 2-2: SCHOOL ENROLLMENT			
	GRADES	STUDENT ENROLLMENT	ECONOMICALLY DISADVANTAGED
Puuhale Elementary	PK-5	234	69%
Kalihi-Kai Elementary	PK-5	605	73%
Princess Victoria Kaiulani	PK-5	402	77%
King David Kalakaua Middle	6-8	956	68%
Farrington High School	9-12	2,269	59%
Halau Lokahi (charter)	K-12	219	
St. Anthony School (private)	K-8	108	
TOTAL		4,793	

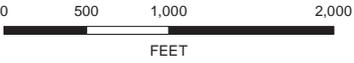
Source: Hawaii Public Schools, Enrollment Report 2010-2011 and School Status and Improvements Report 2009-2010 (public); GreatSchools.net (charter and private).

FIGURE 2-3: COMMUNITY FACILITIES

-  City Hall
-  Fire Stations
-  Public
-  Open Space
-  Schools
-  Places of Worship
-  Proposed Rail Line/Station
-  Planning Boundary



Source: City/County of Honolulu, Department of Planning & Permitting, 2008, Department of Parks & Recreation, 2011.



Notably, Puuhale Elementary and Kalihi Elementary (outside the planning area) have been recommended for closure as of June 30, 2011, due to low enrollment and potential savings through consolidation. Consequently, most Puuhale students would transfer to Kalihi-Kai. The Department of Education does not provide student transportation services in this area, except for certain special needs students and students who qualify for free and reduced price lunch and live more than one mile from school and are therefore eligible to receive student bus passes. This change would mean that more students would be traveling longer distances on foot, bicycle, bus, or even rail, to get to school. The Department of Education's 2011 Consolidation Study remarks that community members have expressed concern about students walking farther distances in areas with busy street crossings and streets without paved sidewalks.²

Higher Education

Honolulu Community College is part of the University of Hawaii (UH) system, providing career and technical education, as well as direct transfer to UH or other colleges to complete four-year baccalaureate degrees. The main campus occupies over twenty acres on Dillingham Boulevard, while the Kokea Street campus, makai of Kapalama station hosts the automotive and heavy equipment programs. Many of the College's programs have ties with local industries, such as aeronautics, automotive technology, carpentry, commercial aviation, communication arts, and industrial education. The College is currently involved in a master planning effort, as described in the Major Development Projects section below.

Parks

Open space in the planning area is limited, as shown in Table 2-3. The Mokauea Street Mini Park provides playground facilities, half-court basketball, and open space mauka of Kalihi station. In addition, Kalakaua District Park at Kalihi-Kai Elementary/Kalakaua Middle School are used by the surrounding schools by day and available to the public (e.g. organized sports teams from throughout the city) during non-school hours. Though not shown in the table, Kapalama Stream does provide some open space benefits.

TABLE 2-3: PARKS INVENTORY

NAME	ADDRESS	ACRES
Kalakaua District Park	720 McNeil Street	7.8
Kanoa Street Mini Park	856 Kanoa Street	0.4
Mokauea Street Mini Park	834 Mokauea Street	0.3
TOTAL		8.5

Source: City and County of Honolulu, Department of Parks & Recreation and Department of Planning & Permitting, 2011.

The City has citywide park standards for the size and service area of public parks and facilities. For example, neighborhood parks should be four to six acres in size and serve a ½-mile radius or population of about 5,000, while a community park should be ten acres and serve a one-mile radius or population of about 10,000. By these standards, park availability in the Kalihi planning area is very low. The Primary Urban Center Development Plan acknowledges Kalihi-Palama as one of the neighborhoods that lacks adequate park, recreation and other open space facilities.³ According to the Kalihi-Palama Action Plan, the area's existing parks lack adequate facilities because most of these parks were built before City standards were established.⁴

There are a total of 8.5 acres of park land within the planning area and approximately 12,500 residents, resulting in a ratio of 0.7 acres of park per 1,000 resi-

² State of Hawaii Department of Education. "Consolidation Study Farrington Complex Elementary Schools" Draft #5. February 3, 2011 and State of Hawaii Department of Education. "Discussion/Recommendation for Board Action on the Closure of Puuhale Elementary School." Letter to Garrett Toguchi. February 7, 2011.

³ City and County of Honolulu. Primary Urban Center Development Plan. June 2004: 3-21.

⁴ City and County of Honolulu. "Kalihi-Palama Action Plan" September 2004: 3-2.

dents.⁵ This does not meet the City’s standard for two acres of Neighborhood Parks (4-6 acre parks serving a 1/2-mile area) and 1,000 residents. This is also extremely low compared with national standards. The National Recreation and Park Association (NRPA) used to publish recommended standards for park provision, from six to ten acres per 1,000 residents for local parks to 15 to 20 acres per 1,000 residents.⁶ Although NRPA now recommends a more localized analysis of level of service needs, it does provide an indication of Kalihi’s current deficiency. Given the residential and employment population increase that may be expected from TOD planning, the provision of local neighborhood parks will be essential to creating a more attractive, livable, and healthy community.

Oahu Community Correctional Center

Oahu Community Correctional Center (OCCC) operates the largest jail facility in the State of Hawaii and is situated on 16 acres on Dillingham Boulevard between the proposed Middle Street and Kalihi stations. The 950-bed facility houses pre-trial detainees and provides a reintegration program. According to the State Department of Public Safety, a planning study is underway to reconstruct and expand existing facilities in order to increase overall capacity. As an update to the Kalihi-Palama Action Plan, the Department of Corrections no longer has any plans to abandon OCCC at this location.⁷

5 To calculate parks per 1,000 person ratio, Dyett & Bhatia estimated 2,220 housing units in the planning area, which translates to 2,109 households (assuming a 5 percent vacancy rate) or over 12,000 persons, assuming 3.57 persons per household (statistic for the Kalihi-Palama Sub-Area).

6 National Recreation and Park Association. *Recreation, Park and Open Space Standards and Guidelines*. Revised 1990: 56.

7 Correspondence with Department of Public Safety and Oahu Community Correctional Center staff, December 2, 2010.

Public Housing

According to the Kalihi-Palama Action Plan, approximately 50 percent of Oahu’s public housing stock is located in Kalihi-Palama (which extends outside this report’s planning area).⁸ This includes two public housing developments north of Kalihi station, as shown in Table 2-4. Several more housing developments are located just beyond the planning area in Kalihi Valley and closer to the Iwilei station to the east. During meetings with stakeholders in December of 2010, most community members agreed that there is a need for more rental housing at a range of income levels, including both affordable and market-rate units.

Social Services

There are a variety of social service providers throughout the planning area:

- Helping Hands Hawaii serves over 3,000 clients per year in their location makai of Kalihi station. They provide services for low income residents with mental health problems living in transitional housing; financial services for persons with language barriers; donations for families (clothing, food, furniture, bus passes); behavioral support; and school supplies for kids.
- Palama Settlement, mauka of the Kapalama station, provides a range of services and programs to promote educational, recreational, athletic, cultural, social, health, and community building for children, adults, and seniors.

8 City and County of Honolulu. “Kalihi-Palama Action Plan” September 2004: 1-1.

TABLE 2-4: PUBLIC HOUSING INVENTORY

NAME	ADDRESS	HOUSING UNITS	TARGET INCOME LEVEL (% AREA MEDIAN INCOME)
Kaahumanu Homes	Alokele & Kaiwiula Streets	152	50
Kamehameha Homes	1541 Haka Drive	221	50
TOTAL		373	

Source: Hawaii Housing Finance and Development Corporation, *Affordable Housing Inventory*, January 2001. <<http://hawaii.gov/dbedt/hhfdc/resources/Affordable-Housing-Inventory.pdf>> Accessed March 17, 2011.

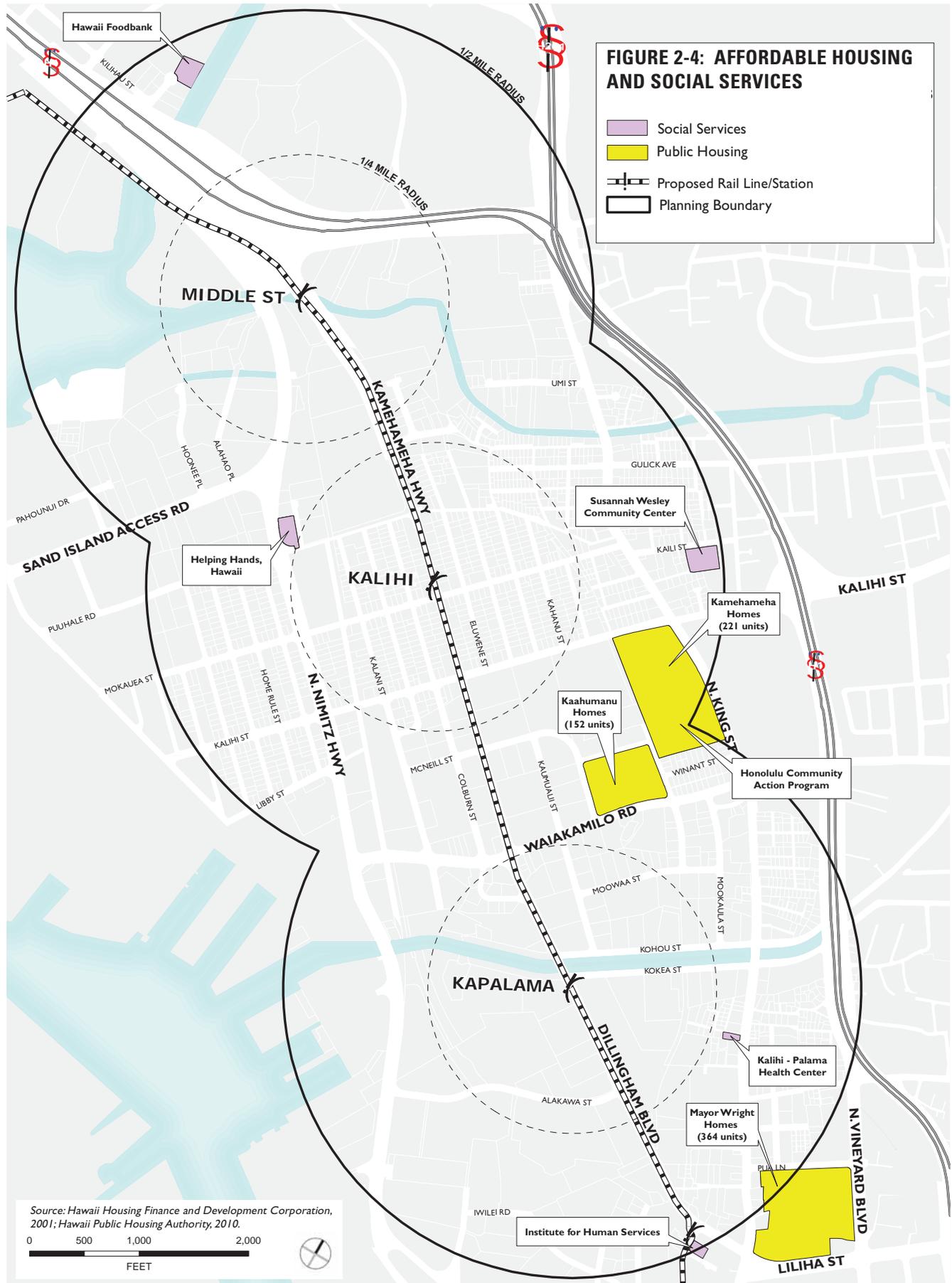


FIGURE 2-4: AFFORDABLE HOUSING AND SOCIAL SERVICES

- Social Services
- Public Housing
- Proposed Rail Line/Station
- Planning Boundary

Source: Hawaii Housing Finance and Development Corporation, 2001; Hawaii Public Housing Authority, 2010.

0 500 1,000 2,000
FEET



- The Susannah Wesley Community Center provides a range of services to youth, adults, and seniors, with an objective to provide comprehensive services that promote the self-sufficiency of each individual and family.
- Kalihi-Palama Health Center is a full service outpatient health center offering behavioral, dental, and family health services, in addition to women’s health, homeless, education, Women, Infants & Children’s Nutrition (WIC), and other services.
- Honolulu Community Action Program, located within Kamehameha Homes, delivers need-based human services to economically challenged individuals and families through a variety of services designed to alleviate the social, emotional and economic stress often associated with poverty.



Density and Intensity

The intensity of development within the planning area is described below. Through the planning process, determining appropriate future densities and intensities will be paramount to ensure efficient use of land, compatibility between old and new development, and take advantage of locations that are proximate to the rail stations.

Building Heights and Building Footprints

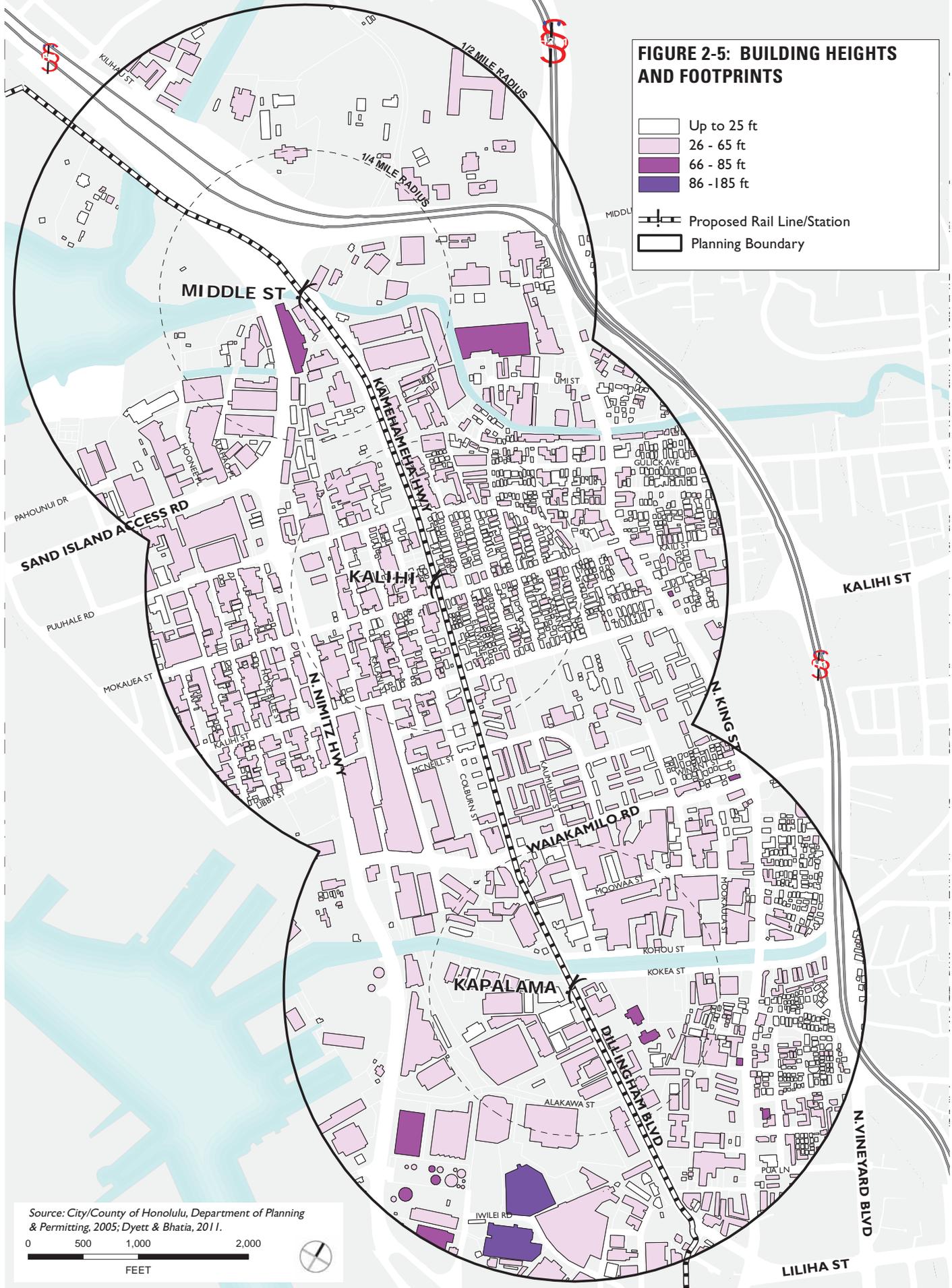
Figure 2-5 shows building footprints and building heights in the community, illustrating the bulk of buildings on each parcel. The light gray color indicates surfacing parking, streets, open space, and vacant lots, while the darker colors indicate taller building heights. In general, taller buildings may need smaller footprints and more open space to ensure good sunlight access and avoid casting large shadows.

Building heights are highest makai of Kapalama station, closest to Downtown, with buildings such as the Dole Cannery extending above 65 feet. Most of the residential uses around Kalihi station are one- and two-story homes, but homes are situated closely together with limited yards. Overall, the average building height in the planning area is 24 feet.



Building heights are generally low throughout the planning area: generally no more than three stories along Dillingham Boulevard and slightly higher makai of Dillingham.

FIGURE 2-5: BUILDING HEIGHTS AND FOOTPRINTS



Source: City/County of Honolulu, Department of Planning & Permitting, 2005; Dyett & Bhatia, 2011.

0 500 1,000 2,000
FEET

Residential Density

Density is the number of people or housing units in a given area. Residential density is usually measured in housing units per acre. Figure 2-6 illustrates the number of housing units per acre on all residential properties in the planning area, with darker shades indicating higher densities. There are approximately 3,700 housing units in the 1/2-mile planning area with an average density of 18 housing units per acre.

Residential densities are moderate in the planning area, with a range of housing types, including single-family homes and small to mid-rise apartments. As shown in Table 2-5 and Chart 2-2, nearly half of all units in the 1/2-mile area are low-medium density housing, meaning between eight and 25 units per acre. Medium- and medium-high density housing represent 21 and 15 percent of all units, respectively. Notably, even single-family homes in the Kalihi planning area often house more than one family or multiple generations, including children and grandparents. In addition, some of these homes are “care homes”, in which residents operate fee-based businesses providing care for seniors or persons with disabilities. Other homes are occupied by unrelated families or individuals. So, although the density of residential units may be low or moderate, the population density is in effect much higher.

Non-Residential Intensity

Intensity of non-residential development (office, commercial, and industrial) is measured by floor-to-area ratio (FAR). The FAR measurement describes the ratio of building floor area to lot size. Thus, a two-story building covering all of a parcel will result in a FAR of 2.0, as will a four-story building covering half the parcel. Figure 2-7 illustrates intensity for non-residential buildings in the planning area, with the darkest colors indicating the most intense developments. Overall, the average intensity within the 1/2-mile planning area is 0.8 FAR. Intensities are moderate throughout the planning area. The majority of higher intensity uses are clustered around Kapalama station, which is closest to Downtown, and makai of Dillingham Boulevard.

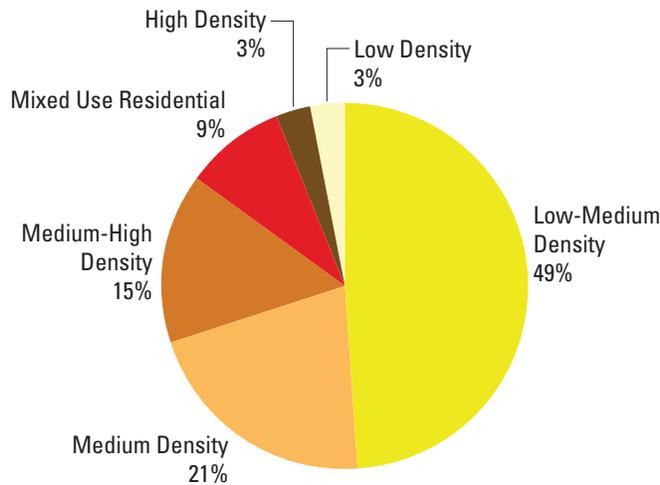


The housing stock consists of single-family homes, duplexes, and small apartment buildings. Residential densities are low to moderate throughout the planning area.

TABLE 2-5: RESIDENTIAL UNITS, BY DENSITY	
RESIDENTIAL DENSITY	UNITS
Low Density (1-7 du/ac)	115
Low-Medium Density (8-24 du/ac)	1,792
Medium Density (60-109 du/ac)	748
Medium-High Density (60-109 du/ac)	564
Mixed Use Residential (various)	118
TOTAL	3,679

Source: City/County of Honolulu, Department of Planning and Permitting, 2008; Dyett & Bhatia, 2011.

CHART 2-2: RESIDENTIAL UNITS, BY DENSITY



Source: City/County of Honolulu, Department of Planning and Permitting, 2008; Dyett & Bhatia, 2011.

Major Development Projects

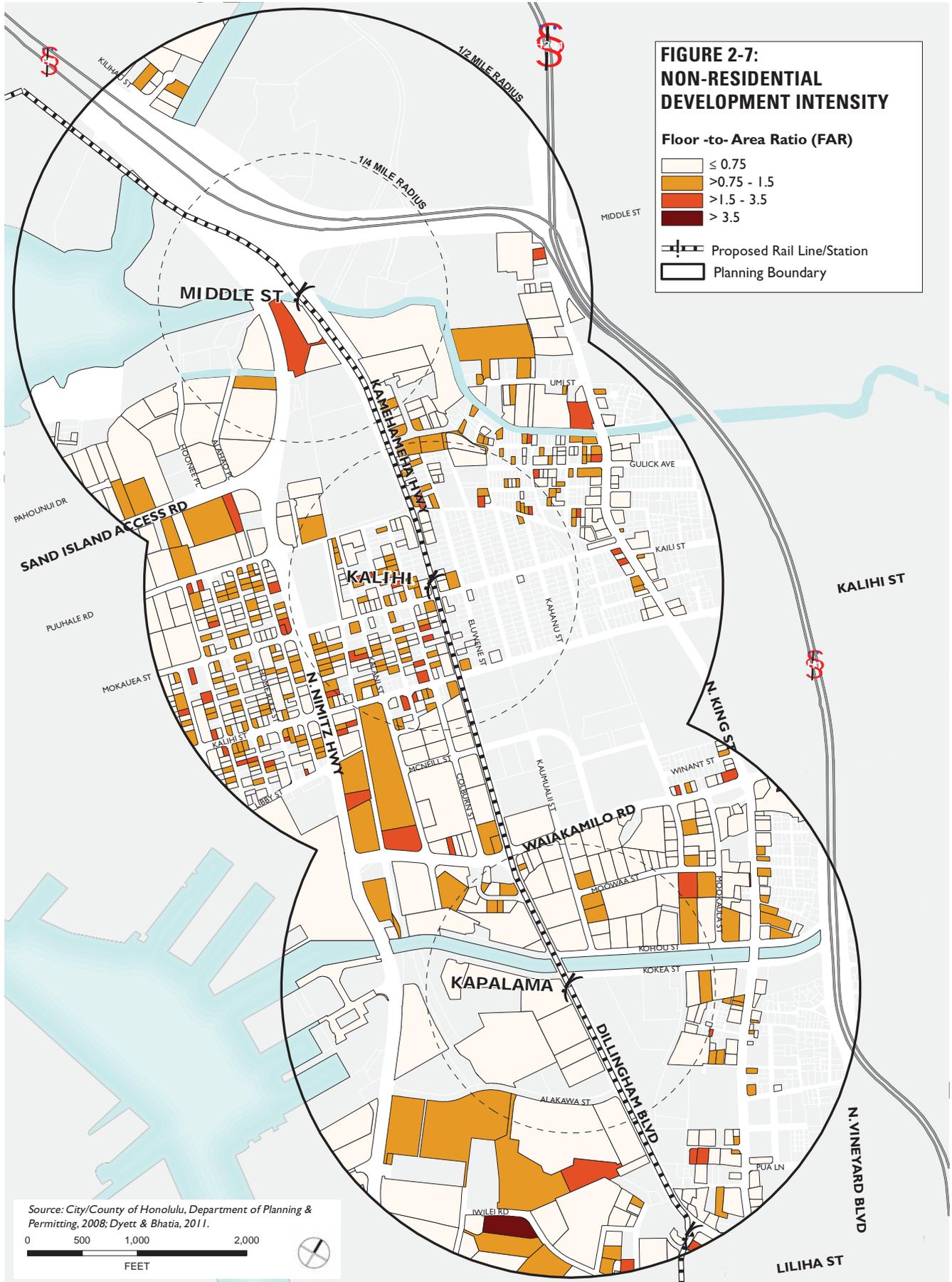
Honolulu Community College

Honolulu Community College’s main campus is located at the planned Kapalama station, along Dillingham Boulevard and Kokea Street. An auxiliary site is located on Kokea Street, one block makai of the main campus. HCC is a liberal arts and career and technical education institution, which also provides an apprenticeship training program and a variety of non-credit continuing education courses. HCC is currently preparing a Long Range Development Plan to redevelop its campus that seeks connections to and integration with the Kapalama station. The plan includes new instruction facilities; direct pedestrian connections through campus and a pedestrian-only mall leading to the rail station; a student union to provide more recreation and activity space for students, and a parking garage that may include ground-floor commercial uses and housing above the parking decks. New buildings, between two and six stories, will increase the overall density of the campus. Sustainability principles, including energy efficiency and native landscaping, are key tenets of the plan.⁹

9 Honolulu Community College. 2010 Interim Long Range Development Plan Report, July 2010. Correspondence with Honolulu Community College staff and Helber Hastert & Fee Planners, December 2, 2010.



There are several initiatives underway in the planning area, including Honolulu Community College’s proposed Master Plan (above left). The Kapalama Canal (right) has been identified for improvements in several planning efforts; it provides great views, but lacks flood control and pedestrian walkways.



Kamehameha Schools

Kamehameha Schools owns several properties around the proposed Kapalama and Kalihi stations. Kamehameha Schools recently initiated a master planning effort for these parcels—the Kapalama Strategic Implementation Plan—which describes a vision, land use and urban design strategies, design concepts for public spaces, an infrastructure assessment, and design guidelines. It also includes identification of redevelopment opportunities within the Kalihi Neighborhood TOD planning area once existing ground leases expire, specifically targeting Dillingham Plaza, Waiakamilo Industrial, NY Tech Blocks, and the Kokea and Kohou Street waterfronts. New development may include over 1,500 mid- and high-rise housing units along Kohou Street and Kapalama Canal and commercial development that could serve existing and new residents and students. New and improved public amenities, such as improvements to the Canal, are also promoted. The plan envisions a “piko,” or central plaza on Dillingham at the Kapalama Canal, as a gathering space and center for community facilities and local retail. It also describes incubator corridors that would target high-tech, alternative energy, media and other innovative industries.¹⁰

Kapalama Canal

A persistent idea in the community has been to develop a linear park along Kapalama Canal (Kohou and Kokea Streets), including construction of sidewalks (currently provided inconsistently) and improvements to the riparian area.

2.2 Community Design

Community Character

The Kalihi planning area encompasses diverse neighborhoods and districts, composed of a variety of land uses and ethnicities, including Southern Chinese, Micronesian, Filipino, Samoan, and Korean families.

Households tend to be multi-family and/or multi-generational, while some homes serve as “care home” facilities for unrelated individuals. The neighborhood is seen as convenient and relatively inexpensive for new immigrants and long-term residents.

Community members also describe several negative characteristics of the neighborhood that they would like to see overcome. They perceive the area as busy and safe during the day, but unsafe at night, and are concerned about crime related to drugs and prostitution. Some stakeholders have also described the area as a “pass through” neighborhood. Commuters use Dillingham Boulevard as an alternate route to Nimitz Highway or North King Street. Costco and other big box store customers travel straight to their destination and do not stop at the local businesses. The neighborhood is both a gateway to the Honolulu International Airport in the Ewa direction and to Downtown Honolulu.

Community Structure

Community design comprises physical elements such as buildings, trees, and streets, as well as the activities and pace of life that they accommodate. Ultimately, the location, orientation and design of these physical elements determine how a neighborhood looks and feels. Figure 2-8 illustrates the “structure” of the planning area: the mix of land uses, infrastructure, transportation network, topography, and views that create the natural and manmade look and feel of the place.

- **Form and Framework:** The planning area is bordered and intersected by several major roadways: the H-1 Freeway, Nimitz Highway, and North King Street extend east and west, while Kalihi Street and Waiakamilo Road, along with Kapalama Canal and Kalihi Stream extend perpendicularly makai and mauka. The street network forms rectangular blocks around Kalihi station, but around Middle Street and Kapalama stations parcels and blocks are larger and irregularly shaped, creating a less accessible walking environment for pedestrians.

¹⁰ Kamehameha Schools. “Kapalama Strategic Implementation Plan” and correspondence with Kamehameha Schools staff, December 1, 2010.



The planning area includes several locations with views of the harbor or waterways. Some portions of Kalihi Stream are open to the air, but they back up to industrial uses and the Middle Street Transit Center, and are not true amenities.

- **Land Use:** There is a mix of uses throughout the planning area, with public and industrial uses around the Middle Street station, a mix of industrial and residential uses around the Kalihi station, and big box retail, shopping centers and educational uses around the Kapalama station. The area makai of Dillingham Boulevard represents one of the city’s only remaining industrial/warehouse districts. Residential uses are predominantly mauka of Dillingham Boulevard.
- **Views:** There are limited waterfront views at Nimitz Highway at Kalihi Stream and mountain views from Puuhale Road, Mokauea Street, Kalihi Street, Libby Street, Waiakamilo Road, Moowaa Street, Kohou Street, Kokea Street, and Alakawa Street, as illustrated on Figure 2-8.
- **Activity Nodes and Destinations:** The area includes major retail centers (Costco, Dole Cannery, Best Buy) and Honolulu Community College. Despite its proximity to Downtown, activities nodes are limited.
- **Age of Structures:** There is a mix of new and old buildings of various stages of quality and disrepair. Approximately 24 percent of the building stock was constructed before 1945, and only ten percent has been constructed since 1990. The average building within the 1/2-mile planning area was constructed nearly 50 years ago.

Although the Kalihi planning area does not project a cohesive identity, it does have a range of unique uses and architectural styles, including small businesses, “mom and pop” shops, and a range of housing types. The TOD Plan will need to consider ways to enhance existing characteristics that community members cherish, while providing incentives to take advantage of development opportunities and meet community needs.



Middle Street Transit Center will serve as a major bus-to-rail transfer facility, but is constrained by its location in the median of Dillingham Boulevard, surrounded by on- and off-ramps.

Many of the structures in the planning area are over 50 years old and in need of repairs and renovations. Sidewalks are missing throughout most of the neighborhood.



Some community members see Kalihi as a "pass through" neighborhood, a convenient route to Downtown and home to several regional retail destinations. The neighborhood lacks activities or uses that encourage people to stay and linger.

FIGURE 2-8: COMMUNITY STRUCTURE



Community Snapshot

The City has divided the island of Oahu into planning areas and sub-areas. Though not contiguous with the Kalihi Neighborhood TOD planning area, the Kalihi-Palama Sub-area (which extends up Kalihi Valley) provides demographic statistics and projections for a similar area and can be used to indicate the makeup and characteristics of current residents. For comparison purposes, values for the island as a whole are also provided in Table 2-6.

The Kalihi population is similar in age to the rest of the island, with a median age of 36 and 16 percent of the

population over 65 years old. Approximately 66 percent of residents are Asian, 14 percent are Native Hawaiian/Pacific Islander, 14 percent describe themselves as being two or more races, four percent are white, and one percent is black. Over 60 percent of residents speak a language other than English at home; this is twice the rate compared with the island as a whole. Household incomes are substantially less than Oahu as a whole, at \$31,000 annually, and more housing units (66 percent) are renter occupied. Kalihi Sub-area residents are much more likely to take transit to work and far less likely to drive alone compared Oahu as a whole. Nevertheless, commute times tend to be similar.

TABLE 2-6: DEMOGRAPHICS FOR KALIHI SUB-AREA AND OAHU

CHARACTERISTIC	KALIHI SUB-AREA	OAHU
Population	37,987	876,156
Age (median)	36	36
Population Under 18 years old	25%	24%
Population Over 65 years old	16%	13%
Race		
White	4%	21%
Black	1%	2%
American Indian/Alaska Native	<1%	<1%
Asian	66%	46%
Native Hawaiian and Pacific Islander	14%	9%
Other	1%	1%
Two or More Races	14%	20%
Language Spoken Other Than English	60%	29%
Median Household Income	\$31,627	\$52,280
Jobs	42,317	501,129
Housing		
Renter Occupied Housing	66%	41%
Average Persons Per Household	3.57	2.95
Education Attainment		
% High School Graduate or Higher	64%	85%
% Bachelor's Degree or Higher	10%	28%
Transportation		
Mean Travel Time to Work (minutes)	26	27
Commuting to Work		
Driving Alone	41%	61%
Carpool	19%	19%
Public Transportation	29%	8%
Walk	8%	6%
Other Means	2%	2%

Source: City/County of Honolulu, Department of Planning & Permitting, 2000 Census SF 1 File.

2.3 Public Safety

Police and Fire Facilities

The Honolulu Police Department is comprised of 28 divisions and elements, and as of January 2011 the department has 1,959 sworn officers and 479 civilian personnel.¹¹ There are no police stations within the Kalihi planning area. The Honolulu Fire Department has over 1,100 firefighters, within 44 fire stations and five battalions.¹² There are two fire stations in the planning area: at North King and Kalihi Streets and at Waiakamilo Road and Nimitz Highway.

Crime

Community stakeholders interviewed for this project are concerned about safety and crime in some areas, such as around public housing and east of the Kapalama station near the Institute for Human Services shelter in Iwilei. Some community members see the area as busy and safe during the day, but unsafe at night and are concerned about crime related to drugs and prostitution. Homeless services are also perceived as driving potential customers and tenants away from the area.

A rough review of crime activity between January 16, 2011 and March 31, 2011 on the Police Department's crime mapping website suggests that there were about 175 crimes reported during the nearly 2.5-month period within about 1/2-mile of the stations. Over half of the reported crimes were thefts/larceny, 20 percent were vehicle break-ins, and the remaining quarter of crimes were motor burglaries, vehicle thefts, and vandalisms. Notably, this mapping service does not map other types of violent crime, including assaults and homicides. Crimes were distributed throughout the planning area during this period and do not appear to be concentrated in any one particular area.¹³

11 Honolulu Police Department. <<http://www.honolulu.gov/hpd/index.htm>> Accessed March 17, 2011

12 Honolulu Fire Department. <<http://www1.honolulu.gov/hfd/index.htm>> Accessed March 27, 2011.

13 Honolulu Police Department, <<http://www.crimemapping.com/map/hi/honolulu>>, Period: January 1, 2011 and March 26, 2011.

2.4 Transportation

This section reviews existing transportation conditions in the segment of the Honolulu High Capacity Transit Corridor Project that includes the planned Kalihi stations. The Middle Street station will be located on Kamehameha Highway over Kalihi Stream. The Kalihi and Kapalama stations are to be located along Dillingham Boulevard. The inventory of existing transportation conditions primarily addresses the transportation infrastructure and services within 1/4-mile of these stations. Only major transportation features outside of this radius are referenced when appropriate due to their influence upon, or connectivity with, the TOD planning area.

Available multi-modal transportation information relating to the TOD planning area was gathered from existing plans, traffic studies, on-going planning projects and associated documents and data. Existing and projected conditions are presented below.

Public Transportation Services and Facilities

Public transportation on Oahu is the responsibility of the City and County of Honolulu, Department of Transportation Services (DTS). The service is popularly known as *TheBus* for fixed route operations and The Handi-Van for demand-responsive curb-to-curb service for Americans with Disabilities Act of 1990 (ADA) paratransit-eligible individuals.

DTS plans, designs, operates and maintains transportation systems; locates, selects, installs and maintains traffic control facilities, devices and street lighting systems; approves plans and designs for construction, reconstruction and widening of public streets and roads; administers rules and regulations for the use of streets and roadways; and, manages the City's contract for bus and paratransit operations. Within DTS, the Public Transit Division (PTD) is the division responsible for managing the City's contract for bus and paratransit operations. The current contractor is Oahu Transit Services (OTS), a private, non-profit corporation that operates and maintains *TheBus* and The Handi-Van services.

Existing Public Transportation Services

TheBus consists of 97 fixed routes and four deviation routes (operated by the paratransit division) for a total of 101 routes. Of these, four are limited stop routes (CityExpress! A, CityExpress! B, CountryExpress! C and CountryExpress! E), and 34 are peak-period, peak-direction-only express routes. The 101 routes serve about 3,800 bus stops. Passenger amenities include approximately 980 passenger shelters and 2,400 benches. Table 2-7 lists those existing bus routes operating in the vicinity of the project area.

Figure 2-9 is the current OTS map that includes the bus routes serving the Kalihi neighborhood. The general demographic and travel characteristics of those who use these routes are further detailed in Appendix C.

TOD Planning Area Public Transportation Services

The bus routes and levels of service in the vicinity of each station vary considerably. The following provides some highlights of the service at each station.

Middle Street Transit Center Station

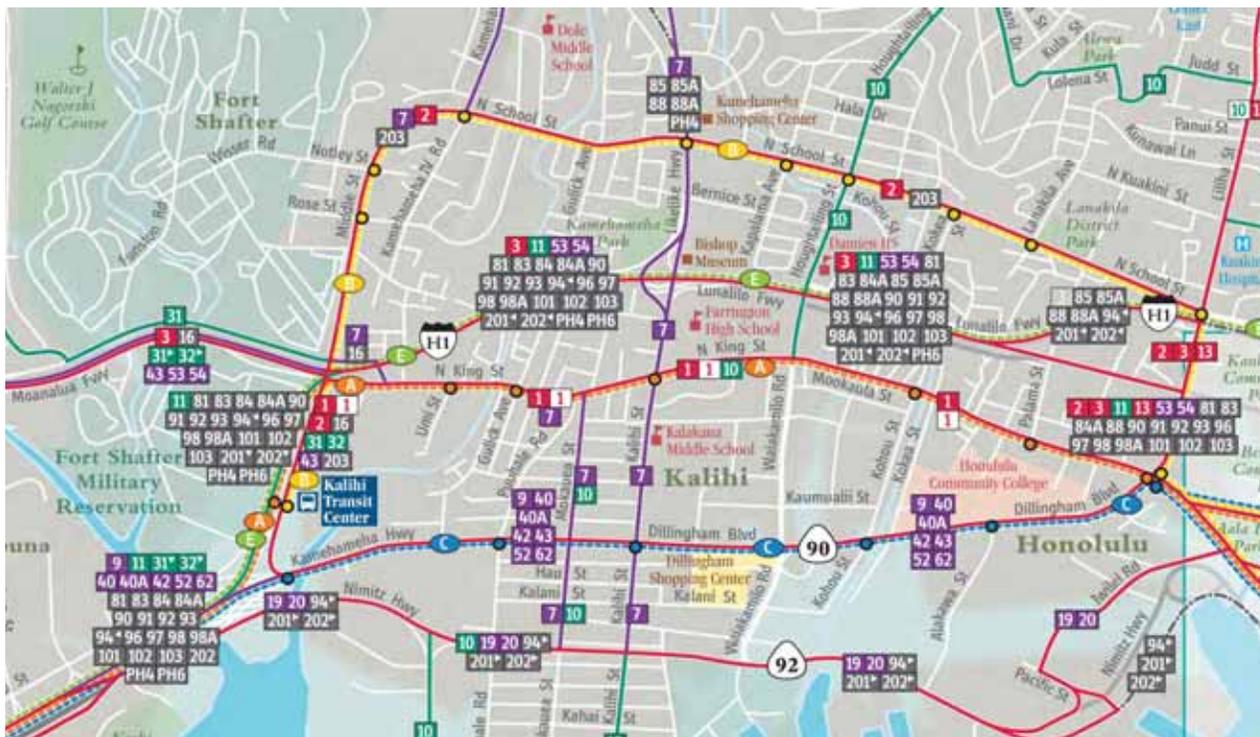
The Middle Street Transit Center station area includes the existing Kalihi Transit Center. The closest bus stop at the current transit center is about 1,200 feet from where the edge of the rail station’s passenger platform will be located. This transit center is being relocated, and the closest bus stop will be within 100 feet of the platform by the time the rail station is open for service.

TABLE 2-7: EXISTING BUS ROUTES

EXISTING ROUTES		STATIONS			SERVICE CLASSIFICATION
No.	Destinations Served	Middle Street	Kalihi	Kapalama	
A	Waipahu-UH Manoa	√			Rapid Bus
B	Kalihi-Waikiki	√			Rapid Bus
C	Waianae-Honolulu	√	√	√	Rapid Bus
1	Kalihi-Hawaii Kai	√			Urban Trunk
2	Kalihi-Waikiki	√			Urban Trunk
7	Kalihi Valley	√	√		Urban Feeder
9	Pearl Harbor-Palolo Valley	√	√	√	Urban Trunk
10	Kalihi Kai-Alewa Heights		√		Urban Feeder
16	Moanalua Valley-Kalihi	√			Urban Feeder
19	Hickam-Waikiki ¹	√			Urban Trunk
20	Pearlridge-Waikiki ¹	√			Urban Trunk
31	Airport-Tripler	√			Urban Feeder
32	Pearlridge-Kalihi	√			Urban Feeder
40	Makaha-Honolulu	√	√	√	Suburban Trunk
42	Ewa Beach-Waikiki	√	√	√	Suburban Trunk
43	Waipahu-Honolulu	√	√	√	Suburban Trunk
52	Circle Island	√	√	√	Suburban Trunk
62	Wahiawa Heights-Honolulu	√	√	√	Suburban Trunk
94	Kapolei-UH Manoa ¹	√			Peak Express
201	Ewa Beach-Waikiki ¹	√			Peak Express
202	Waipahu-Waikiki ¹	√			Peak Express
203	Kalihi-Waikiki	√			Peak Express

1. Route operates on Nimitz Highway.

FIGURE 2-9: EXISTING TRANSIT ROUTES



Source: Oahu Transit Services System Map B Insert

Buses now serving the Kalihi Transit Center include Routes A, B, 1, 2, 16, 31, 32, 43, and 203. These buses board passengers at three bus stops as shown in Figure 2-9. Photographs on the following pages illustrate amenities at the Kalihi Transit Center including ample lighting, security cameras, audio capability, customer service, telephones, restrooms, drinking fountains, smoking area, news vending machines, ATM, *TheBus* HEA trip planning kiosk, and electronic information displays. These amenities are important for creating a convenient and accessible TOD environment, but adequate staffing and maintenance are essential to their success.

The new Middle Street Transit Center will continue to offer the wide array of customer services now available at the current location. Existing transit services are being reviewed as part of the Short Range Transit Plan now under development. It is anticipated that these adjustments will be interim to the full set of routes and their service levels identified in the Honolulu High-Capacity Transit Corridor Project Environmental Impact

Statement (EIS). The future operating service characteristics of the routes serving the Middle Street Transit Center station have been extracted from this document and are included in Appendix B.

The HHCTCP EIS assumes the following routes would be operating in the year 2030 at the Middle Street Transit Center station: A, B, 1, 2, 40, 40A, 52, 85, 85A, 86, 86A, 301, 302, 303, 304, 305 and 306. Figure 2-10 shows the alignment of these routes within the Kalihi neighborhood, nearby the residential areas, and Honolulu International Airport area. Buses from neighborhoods not served by rail transit would terminate at the Middle Street station, with passengers transferring to rail at the station to continue to Downtown destinations and beyond. Thus, Middle Street will be an even more important passenger transfer hub in the future.

Kalihi Station

The future Kalihi rail station is located at the confluence of six existing east-west routes along Dillingham Boulevard (Routes 9, 40/40A, 42, 43, 52 and 62) and two mauka-makai urban feeder routes (Routes 7 and 10). Figure 2-11 shows the alignment of these routes within the Kalihi neighborhood and upland residential neighborhoods. Two routes will remain the same – Routes 40/40A and 52. Service levels and connections currently provided by Routes 9, 43, 42 and 62 will be replaced by the rail line. These routes will be truncated to connect with other HHCTCP stations. Route 305 represents new community circulator service. Routes 85, 85A, 88 and 88A are the Windward express routes that will offer those commuters connections to other islandwide workplaces other than just Downtown Honolulu.

Kapalama Station

The future Kapalama station is currently served by the same six existing east-west routes along Dillingham Boulevard (Routes 9, 40, 40A, 42, 43, 52 and 62) as service the Kalihi station location. Figure 2-14 depicts the possible future alignments of the routes serving the Kapalama station. Two routes will remain the same – Routes 40/40A and 52. Service levels and connections currently provided by Routes 9, 43, 42 and 62 will be replaced by the rail line. These routes will be truncated to connect with other HHCTCP stations.

Current and Future Transit Rider Characteristics

This section presents some characteristics of current bus riders and forecasts for future station area activity.

Current Transit Rider Characteristics

Rider characteristics for existing routes within the Kalihi planning area are detailed in Appendix C. Many of these routes are long rapid bus (Routes A and B), urban trunk (1 and 2), suburban trunk (40, 42, 43, 52 and 62) or peak express routes (201, 202 and 203). These routes primarily serve riders passing through Kalihi.

FIGURE 2-10: ASSUMED HHCTCP EIS BUS ROUTES AT THE MIDDLE STREET TRANSIT CENTER STATION



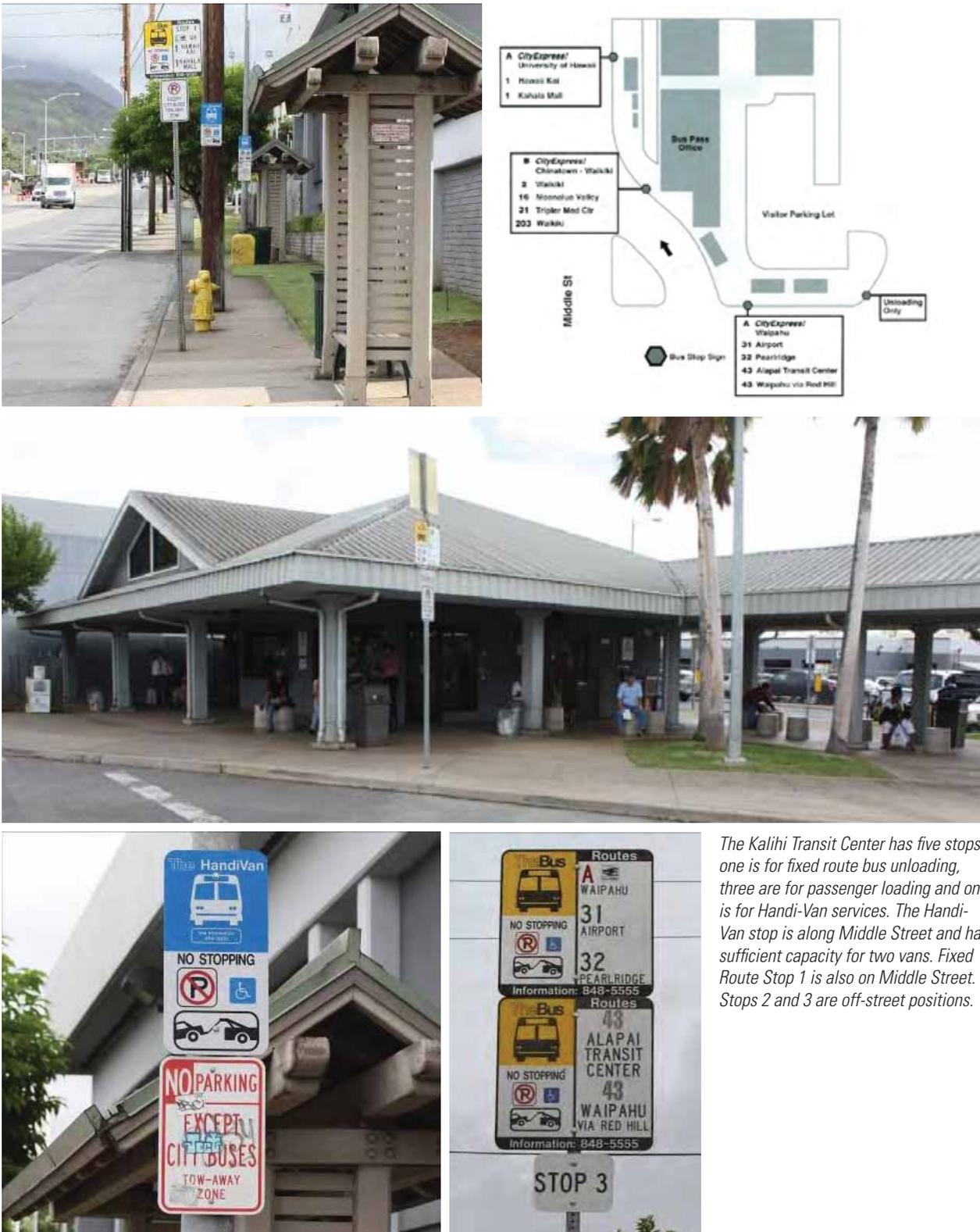
Source: HHCTCP EIS Appendix D

FIGURE 2-11: ASSUMED HHCTCP EIS BUS ROUTES AT THE KALIHU AND KAPALAMA STATIONS



Source: HHCTCP EIS Appendix D

FIGURE 2-12: EXISTING KALIHI TRANSIT CENTER STOP LOCATIONS



The Kalihi Transit Center has five stops, one is for fixed route bus unloading, three are for passenger loading and one is for Handi-Van services. The Handi-Van stop is along Middle Street and has sufficient capacity for two vans. Fixed Route Stop 1 is also on Middle Street. Stops 2 and 3 are off-street positions.

Source: Weslin Consulting Services

FIGURE 2-13: EXISTING KALIHI TRANSIT CENTER LIGHTING AND SECURITY

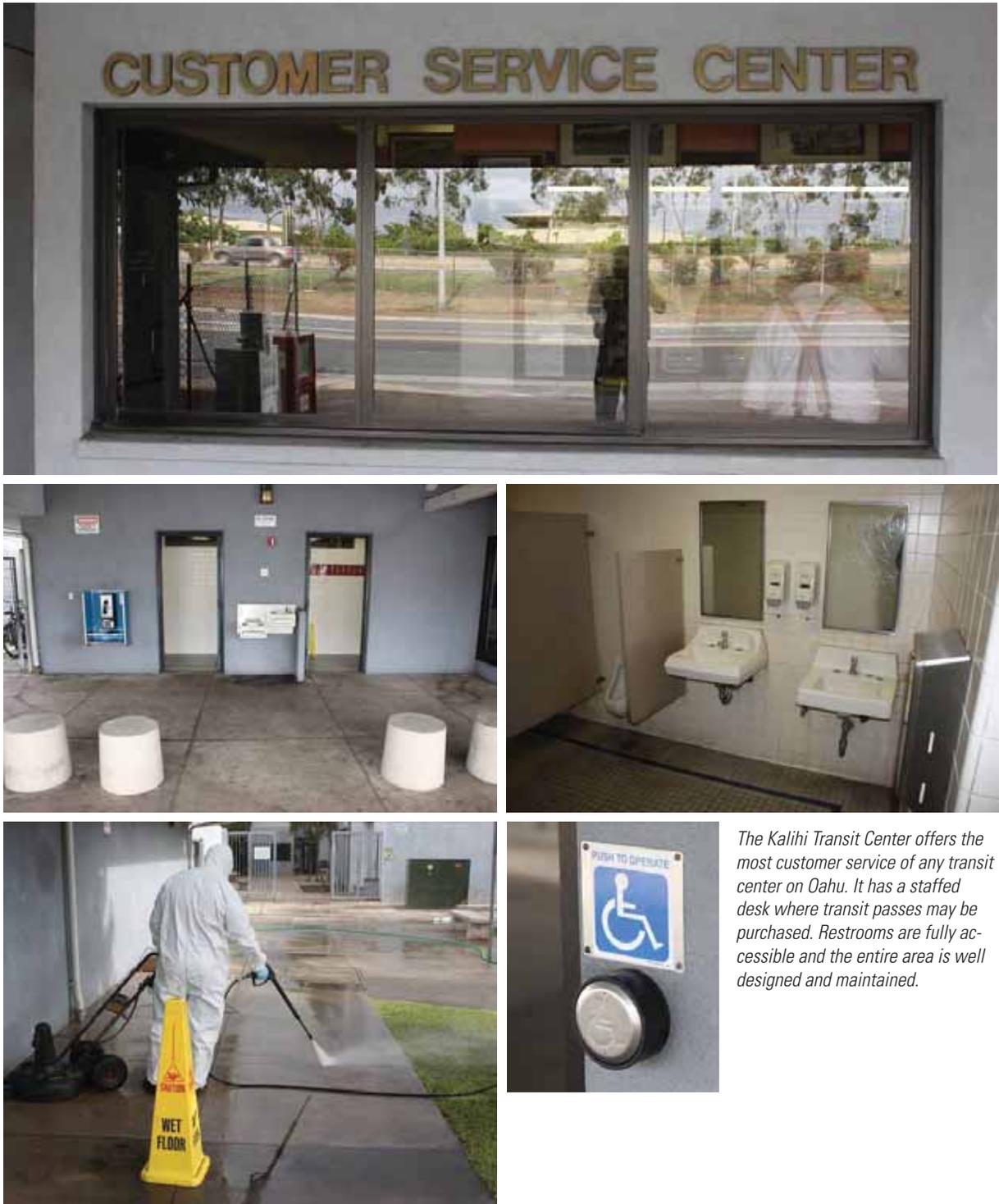


The Kalihi Transit Center has a wide variety of lighting, camera and audio provisions. Some of the high masted lights are solar powered. In-ground lights provide for an attractive and safe atmosphere while eliminating shadows from overhead lighting.



Source: Weslin Consulting Services

FIGURE 2-14: EXISTING KALIHI TRANSIT CENTER CUSTOMER SERVICE CENTER



The Kalihi Transit Center offers the most customer service of any transit center on Oahu. It has a staffed desk where transit passes may be purchased. Restrooms are fully accessible and the entire area is well designed and maintained.

Source: Weslin Consulting Services

The other routes listed are urban feeders or community circulators serving riders who are primarily residents or students within the area. A few observations are offered about the riders of these shorter, more neighborhood-oriented routes.

At Middle Street the most locally-oriented bus services are Routes 31 and 32. Route 31 is an urban feeder route connecting Moanalua Gardens and Tripler Army Medical Center with the Transit Center. Only 4.4 percent of the riders are students, as compared to 28.1 percent for the overall bus system. Over a fifth of the ridership is over 65 as compared to 13.1 percent for the entire system. Over 30 percent of all riders on Route 31 are on a shopping trip.

Route 32 connects Salt Lake neighborhoods with the Kalihi Transit Center. Two groups seem to be predominately using Route 32. One group is composed of more established residents. Almost a third of all riders on Route 32 have been using the bus for over 15 years, and over a quarter are over 65 years of age. The other group using Route 32 is composed of younger residents—a third of all Route 32 riders are students.

The two urban feeders currently serving the future Kalihi station area are Routes 7 and 10. These routes serve more of the transit dependent population than the bus system does overall. Only about 30 percent have a driver's license, whereas the average for all riders is over 40 percent. This reflects the fact that many of these riders are students on school trips. School trips represented over 28 percent of all person trips for Routes 7 and 10; whereas, the overall system rate is about 19 percent.

The future Kapalama station location is not presently served by any urban feeder or community circulator routes, making it difficult to draw any observations from existing transit survey data.

Future Transit Rider Forecasts

It is estimated that there will be a total of 116,330 daily boardings at 21 rail stations by 2030.¹⁴ This is an average of 5,540 daily person trips using each rail station. The average for the three stations in the Kalihi Neighborhood TOD planning area is 2,890, substantially less than projected for other stations. In fact, forecasts indicate that the Middle Street Transit Center and Kapalama stations will be two of the four least used stations along the rail line. Notably, projected ridership does not include the potential increase in riders as a result of TOD. Projected ridership will be explored further in subsequent phases of the TOD planning process.

Table 2-8 identifies the travel demand forecasting model results for how rail riders would access the three Kalihi neighborhood stations. Over 80 percent access the Middle Street Transit Center station by bus, but the majority of riders using the Kalihi and Kapalama stations are expected to walk.

¹⁴ Ibid., p. 3-46, Table 3-20.

TABLE 2-8: 2030 FORECASTS BY DAILY MODE OF ACCESS TO RAIL STATIONS

STATION	DAILY PERSON TRIPS USING GUIDEWAY STATIONS BY MODE								
	Walk/Bike		Bus		Kiss-and-Ride		Park-and-Ride		Total
	Volume	Share	Volume	Share	Volume	Share	Volume	Share	
Middle Street Transit Center	320	11%	2,320	83%	140	5%	30	1%	2,810
Kalihi	2,180	60%	1,200	33%	200	6%	50	1%	3,630
Kapalama	1,830	82%	330	15%	60	3%	10	0%	2,230
TOTAL	4,330	50%	3,850	44%	400	5%	90	1%	8,670

Source: HHCTCP EIS page 3-46, Table 3-20.

Bicycle Facilities

Table 2-9 identifies bicycle facilities within 1/2-mile of the stations, as being either paths, lanes, or routes. These three primary bicycle facility types were defined by Bike Plan Hawaii, A State of Hawaii Master Plan and adopted with some revisions in the Oahu Bike Plan: A Bicycle Master Plan. A shared-use path is physically separated from motorized vehicular traffic by an open space or barrier and is located either within the roadway right-of-way or has an independent right-of-way. A bike lane is a roadway section designated by striping for the preferential or exclusive use of bicyclists. A shared roadway bike route is a preferred street or highway open to both bicycles and motor vehicle travel.

Currently, the only existing bikeway facilities around the three immediate station areas is the terminal stretch of the Radford to Middle Street bicycle path and the bicycle lane along Waiakamilo Road. Dillingham Boulevard lacks dedicated bicycle facilities, parking lanes or a shoulder in most locations since the road is used exclusively for traveling vehicles. As a result, bicyclists use sidewalks, where available, or side streets to travel between destinations, creating potential conflicts between bicyclists and pedestrians or vehicles.

The Oahu Bike Plan divides implementation between priority one, two, and three projects. Projects within the planning area that provide access to and from the stations include priority two and three projects, as shown in Table 2-9. These include bike lanes along Dillingham Boulevard, which would connect all three stations.

In addition, the plan supports integration of bicycle facilities with the rail transit system. At each station, the plan calls for bike storage (racks or lockers depending on the number of boardings), “stair rails” to facilitate moving bicycles up and down stairs, and services such as attended parking and repair facilities at stations with high AM peak period boardings (e.g. >1,000).¹⁵

Roadway Facilities

The section of the rail alignment between Middle Street and Iwilei is the western end of the urban core of Honolulu. Within this area roadways are functionally classified into five general categories: interstate/freeway/expressway, principal arterial, minor arterial, major collector and neighborhood street. The categories are based on geometric and traffic characteristics of each street type. The following describes the roadways within or nearby the TOD planning area using this classification scheme:

- Interstate roads include the H-1 Freeway which runs in an east-west direction and the Moanalua Freeway which connects to the H-1 Freeway. These freeways do not penetrate the Kalihi Neighborhood TOD planning area, but the vehicle traffic they serve and the roadways this vehicle traffic uses to access those freeways does heavily impact the area. The freeway classification also includes the segment of roadways which transitions between

¹⁵ City and County of Honolulu. Oahu Bike Plan: Public Review Draft. July 2009. P. 4-3 – 4-5.

TABLE 2-9: EXISTING AND PROPOSED BICYCLE FACILITIES WITHIN ONE HALF MILE, BY STATION		
STATION	BICYCLE FACILITIES	
	Existing	Proposed
Middle Street	Bike Path on Middle Street from Nimitz Highway to North King Street Shared-Use Path on Nimitz Highway from Radford Drive to Middle Street	North King Street Bike Lane (project 2-121) Dillingham Boulevard Bike Lane (project 3-100) Middle Street Bridge Bike Lane (project 3-128)
Kalihi	Bike Lane on Sand Island Access Road from Nimitz Hwy. to Sand Is. State Park	North King Street Bike Lane (project 2-121) Dillingham Boulevard Bike Lane (project 3-100)
Kapalama	Bike Lane on Waiakamilo Road from Nimitz Highway to North School Street Bike Lane on Nimitz Highway from Waiakamilo to Fort Street Mall	Alakawa Street Bike Lane (project 2-98) Kapalama Canal Bike Path eastern side (project 2-116) Kapalama Canal Bike Path eastern side (project 2-117) North King Street Bike Lane (project 2-121) Dillingham Boulevard Bike Lane (project 3-100)

Source: Oahu Bike Plan Public Review Draft, July 2009.

H-1, Nimitz Highway, Kamehameha Highway and Middle Street.

- Three principal arterials accommodate east-west travel within and through the Kalihi planning area. Nimitz Highway, Kamehameha Highway/Dillingham Boulevard and North King Street are all high volume roadways that serve to define the transportation network of the area.
- Minor arterial streets that provide mauka-makai access between the interstate and principal arterials in the Kalihi neighborhoods include Middle Street, Kalihi Street, and Waiakamilo Road.
- Major collector streets that provide access between arterials and collector streets to obtain access to industrial, commercial and residential areas within the Kalihi Neighborhood TOD planning areas include Puuhale Road, Mokauea Street and Alakawa Street.
- Collector streets provide direct access to industrial, commercial and residential areas within the Kalihi Neighborhood TOD planning areas.

Vehicle circulation within the Kalihi planning area is provided by roadways that generally comprise a grid-like network. However, large industrial operations occupy large tracts of land in the vicinity of the Middle Street station, limiting the number of collector streets.

The Kapalama station area also has a broken street network caused by several factors. One is Kapalama Canal, which is bridged only by the principal arterial streets. The other is large land tracts occupied by a variety of large-scale land use functions including education, warehousing and big box commercial.

The primary principal arterial through the Kalihi neighborhood TOD planning areas is Dillingham Boulevard. This is a four-lane roadway that runs in the east-west, or Diamond Head-Ewa, direction. The roadway functions as both a local and regional arterial that provides access to adjacent commercial uses, as well as services through traffic. Dillingham Boulevard connects to H-1 via a short segment of Kamehameha Highway and to the edge of downtown Honolulu via its intersection with North King Street. The posted speed limit along

the roadway is 35 miles per hour (mph).

Traffic Analysis

The three principle arterial roadways in the area (North King, Dillingham Boulevard and Nimitz Highway) carry significant volumes of traffic into and out of the Downtown area and provide access to large numbers of non-residential developments. The HHCTC Transportation Technical Report includes a vehicular Level of Service (LOS) analysis of 26 intersections within or near the Kalihi planning area. (LOS is a measure used to determine the effectiveness and congestion of the roadway network.)

The results of the LOS traffic analysis are included in Table 2-10. Four intersections in this neighborhood with a LOS of E or F indicating severe traffic delays in either the a.m. or p.m. peak hours are as follows:

- Dillingham Boulevard & North King Street with LOS E in both the a.m. and p.m. peak hours
- North King Street & North Beretania Street with LOS F in the p.m. peak hour.
- North King Street & Kalihi Street with LOS E in the p.m. peak hour.
- North Nimitz Highway & Waiakamilo Road with LOS E in the a.m. peak hour.

North King Street's close and parallel proximity to H-1 means that it normally doesn't carry longer vehicle trips, but occasionally it may be used by through traffic when H-1 is heavily congested. The favorable LOS shown in Table 2-10 likely represents typical conditions, not those when H-1 gridlock forces some vehicle traffic spillover onto North King Street.

North King Street serves a wide variety of community-oriented facilities including churches, social service agencies, supermarkets, restaurants, a post office, neighborhood banks, and schools. Some of these land uses and the character of the street date back to the 1920s when King Street was the centerpiece of Honolulu Rapid Transit Company's streetcar network. The King Street line extending from Fort Shafter to Kaimuki was the "bread and butter" of the HRT's six lines, bringing in almost

half of the company’s revenue.¹⁶ It was the only leg of the streetcar network serving areas west of Liliha Street.

Oahu’s development was heavily influenced by streetcars. “From Kalihi to Kamuki, from Manoa to Moiliili, the streetcar lines created modern Honolulu.”¹⁷ Private transit operators developed real estate along the lines and used the profits to subsidize transit operations. Oahu’s transportation and land development history makes it clear that TOD is not a new concept. However, the basic principle of developing around transit

stations fell into disuse as accessibility for automobiles became the focus of development and public works.

Dillingham Boulevard was also a rail corridor in the past with 28 passenger trains per day passing through on their way from Downtown Honolulu to destinations in Pearl City and Waipahu.¹⁸ The pattern of today’s road network and the land uses being served are as much influenced by past rail operations as today’s vehicle movements.

Dillingham Boulevard hosts a broad mix of land uses

16 Streetcar Days In Honolulu – Breezing Through Paradise; MacKinnon Simpson and John Brizdle; October 2000; page 118.

17 Ibid., p. 71.

18 Next Stop Honolulu – The Story of the Oahu Railway & Land Company; Jim Chiddix and MacKinnon Simpson; September 2004; page 169.

TABLE 2-10: EXISTING VEHICLE TRAFFIC CONDITIONS AT KALIHI INTERSECTIONS IN 2007					
INTERSECTION	TYPE OF CONTROL	EXISTING VEHICLE TRAFFIC CONDITIONS			
		A.M. Peak Hour		P.M. Peak Hour	
		Delay in seconds	Level of Service	Delay in seconds	Level of Service
Kamehameha Hwy & Middle St	signal	19	B	17	B
Kamehameha Hwy & Pedestrian Crossing Koko Head of Kalihi Stream/West of Oahu Community Correction Center	signal	11	B	11	B
Kamehameha Hwy & Laumaka St	signal	4	A	5	A
Kamehameha Hwy & Pu’uhale Rd	signal	16	B	19	B
Kamehameha Hwy & Mokauea St	signal	20	B	26	C
Kamehameha Hwy & Kalihi St	signal	27	C	22	C
Dillingham Blvd & Waiakamilo Rd	signal	26	C	29	C
Dillingham Blvd & Kohou St	signal	16	B	11	B
Dillingham Blvd & Kokea St	signal	14	B	15	B
Dillingham Blvd & Alakawa St	signal	22	C	47	D
Dillingham Blvd & Ka’aahi St.	signal	5	A	4	A
Dillingham Blvd & North King St	signal	69	E	62	E
North King St & Middle St	signal	15	B	11	B
North King St & Mokauea St	signal	10	B	34	C
North King St & Kalihi St	signal	39	D	62	E
N Nimitz Hwy & Sand Island Access Rd	signal	52	D	36	D
N Nimitz Hwy & Pu’uhale Rd	signal	21	C	25	C
N Nimitz Hwy & Waiakamilo Rd	signal	60	E	43	D
North King St & Kohou St	signal	8	A	9	A
North King St & Kokea St	signal	7	A	11	B
Nimitz Hwy & Mokauea St	signal	18	B	11	B
Nimitz Hwy & Kalihi St	signal	35	D	45	D
Nimitz Hwy & Alakawa St	signal	42	D	50	D
North King St & Iwilei Rd	signal	11	B	18	B
Iwilei Rd & Kuwili St [a]	Two-way stop	12	B	19	C

including retail, industrial, business, and institutions which generate significant vehicle traffic volumes even during the midday period. Vehicular LOS along Dillingham Boulevard is relatively good, but traffic flow is uneven given the nature of land use in the area, the volume of cross street traffic, and vehicle traffic making turns off the main intersecting roadways in conflict with pedestrian and bicycle movements.

The intersections adjacent to the three proposed stations on Dillingham Boulevard are generally operating at an acceptable LOS for an urban area. The intersection with the worst traffic data within a quarter mile of one of the three stations is at Dillingham Boulevard and Alakawa Street. This intersection has a LOS D.

Nimitz Highway serves many industrial uses and land side goods movement traffic associated with Honolulu Harbor marine shipping. It is also a major through traffic corridor for peak period commuter traffic related to downtown Honolulu's high employment activity. It operates with a morning inbound contra flow lane that involves an extensive array of manually placed cones, barriers and traffic control signs. It has largely become a facility for vehicle traffic not affiliated with local destinations.

The LOS along Nimitz Highway is relatively good, but vehicles are often channelized to optimize vehicle flow. This creates awkward pedestrian pathways even where crosswalks are provided. The priority given to vehicles makes Nimitz Highway incompatible with TOD and Complete Streets objectives. The characteristics of Nimitz Highway make it an unappealing setting for pedestrians and bicyclists even though many pedestrians use Nimitz bus stops and cyclists use the Nimitz bike lanes.

Vehicles turning into the Costco access driveway on the makai side of Dillingham Boulevard create significant queues during the afternoon peak hour. On the stretch of Dillingham Boulevard between Alakawa Street and Kaaahi Street, a bottleneck exists because of the absence of a Diamond Head-bound right-turn pocket and a queue of Ewa-bound left-turning traffic, which exceeds the capacity of the existing left turn pocket.

The Oahu Regional Transportation Plan 2035 includes

the HHCTC, but no new road projects in the Kalihi Neighborhood TOD planning area.¹⁹ The plan includes routine islandwide City and State roadway operations and maintenance programs. Solutions to the types of traffic movement problems that arise in the Kalihi Neighborhood TOD planning area would be funded from these ongoing programs.

Parking

The Middle Street Transit Center station is planned for an area with no signed, publicly-available, on- or off-street parking. The Hawaii Department of Transportation has an off-street surface parking lot under H-1 along Middle Street that has been observed on several occasions to have excess capacity but is not signed as being available for public use. The master plan for the Middle Street Transit Center has an area set aside for 700-1000 parking stalls in a structured facility, but this will not be constructed in the current rail project phase.²⁰

On-street parking can be found on the residential side streets off Dillingham Boulevard immediately adjacent to the proposed Kalihi station at Mokauea Street. These residential streets are often narrow, one-way and poorly maintained. On-street parking along these streets is typically haphazard. There are no on-street metered parking spaces or regulations prohibiting long duration parking in residential areas. Some predominately residential areas have experienced an infiltration of commercial and retail operations which generate traffic and parking demands inconsistent with a safe and appealing residential environment.

Individual commercial establishments along the primary arterials normally provide sufficient off-street parking for their businesses. There are no off-street surface public parking lots or parking structures throughout the planning area.

There is ample on-street unregulated parking along

¹⁹ Oahu Regional Transportation Plan 2035 Public Review Draft, OMPO, February 2011, Table 8.

²⁰ Master Plan, Middle Street Intermodal Center; City and County of Honolulu, Department of Transportation Services; July 2003.

Kapalama Canal mauka of Dillingham Boulevard and the proposed Kapalama station on Kohou and Kokea Streets. There is also ample on-street regulated and metered parking along Kapalama Canal on those same streets makai of Dillingham Boulevard. No parking is allowed on Dillingham Boulevard. Honolulu Community College operates large surface lots for students, faculty and staff. Other off-street parking is used by retail centers and local markets along Dillingham Boulevard. All off-street lots are designed to serve specific businesses.

2.5 Infrastructure

The following information provides an overview of the existing water, sewer and drainage infrastructure for the Kalihi TOD planning area.

Water

Existing System

The Honolulu Board of Water Supply (BWS) oversees and operates the water system that serves the Kalihi planning area. The BWS system has three components: source, storage and transmission. BWS pumps ground water from the basal lens underneath the island to concrete storage tanks located at strategic elevations throughout the island. Transmission mains allow flow from the source to the storage tank(s) and to the various service zones. Within the service zone, distribution mains provide water for both domestic and fire fighting purposes.

The existing water distribution system is described below:

- The Middle Street station area is considered a commercial/industrial area, and existing mains are primarily sized to accommodate commercial/industrial fire flows ranging between 2,000 and 4,000 gallons per minute (gpm). Mains in the area vary from 6-inch diameter to 24-inch. There is a 24-inch concrete cylinder transmission main running down Middle Street and a 42-inch concrete

cylinder transmission main running down Dillingham Boulevard and continuing along Liliha Street. Major transmission mains like these 24-inch and 42-inch lines are reserved for conveying large amounts of water and service connections do not occur on these larger transmission mains. Service connections normally are limited to the 6-inch through 24-inch water lines or lines that are not concrete cylinder pipe.

- The Kalihi station area is also considered commercial/industrial, and mains are primarily sized to accommodate a commercial/industrial fire flow of 2,000-4,000 gpm. The Kalihi station area mains are 8-inch through 16-inch. The 42-inch concrete cylinder pipe running down Dillingham Boulevard mentioned in the Middle Street station description also passes through the Kalihi station area.
- The Kapalama station area is also considered commercial/industrial, and mains are primarily sized to accommodate a commercial/industrial fire flow of 2,000-4,000 gpm. The existing Kapalama station mains are 8-inch through 24-inch. The same 42-inch concrete cylinder pipe transmission main that passes through the Middle Street and Kalihi station areas also passes through the Kapalama station area.

Future Improvements

The backbone water infrastructure is relatively strong in the planning area. Once TOD growth projections are developed (during a subsequent phase of this TOD study), the actual impact of TOD on the water system can be projected.

The procedure for obtaining BWS water service is typically initiated at the building permit processing phase of the development process. Project plans identify fixture unit counts, water meter locations and sizes, fire department connection requirements, and adequacy of external fire protection coverage (fire hydrant spacing). Water System Facility Charges (WSFC) are assessed to each building permit based on the total number of fixture units. The WSFC is then applied according to facility charges assessed by land use type. The WSFC allows BWS to provide upgrades to their existing source,

storage and transmission water system components to offset the impact of new project construction.

For redevelopment projects credit is given to “existing” fixture units and WSFC is paid on the “net” increase in the fixture unit count.

BWS encourages water conservation for existing and future water users. The Board cites leak detection programs, use of water saving fixtures, Xeriscape systems, and attention to water saving tips as effective ways to address and be aware of conservation principles.

Sewer

Existing System

The City and County of Honolulu Department of Environmental Services (ENV) provides sewer service to the Kalihi planning area. New connections to the wastewater system are processed by the City and County of Honolulu Department of Planning and Permitting-Wastewater Branch (DPP-WWB).

All wastewater from the Kalihi planning area is treated at the Sand Island Wastewater Treatment Facility. The treatment facility is under a Consent Decree Order with the U.S. Environmental Protection Agency (USEPA) to provide various upgrades to the treatment process. The Consent Decree is relatively extensive and also includes upgrades to the collection system in many areas of Honolulu. The Consent Decree will not have a direct effect on TOD unless projected densities exceed that allowed by the current underlying zoning. A subsequent phase of this TOD study will develop proposed densities and TOD growth. Once these projections are available, a determination of the potential impact of the Consent Decree can be evaluated.

Typically wastewater from the Kalihi planning area is collected by gravity sewer and transported to strategically located major pump stations. These major pumping stations deliver wastewater to the Sand Island Treatment Facility. All three station areas are accommodated by the Hart Street Pump Station.

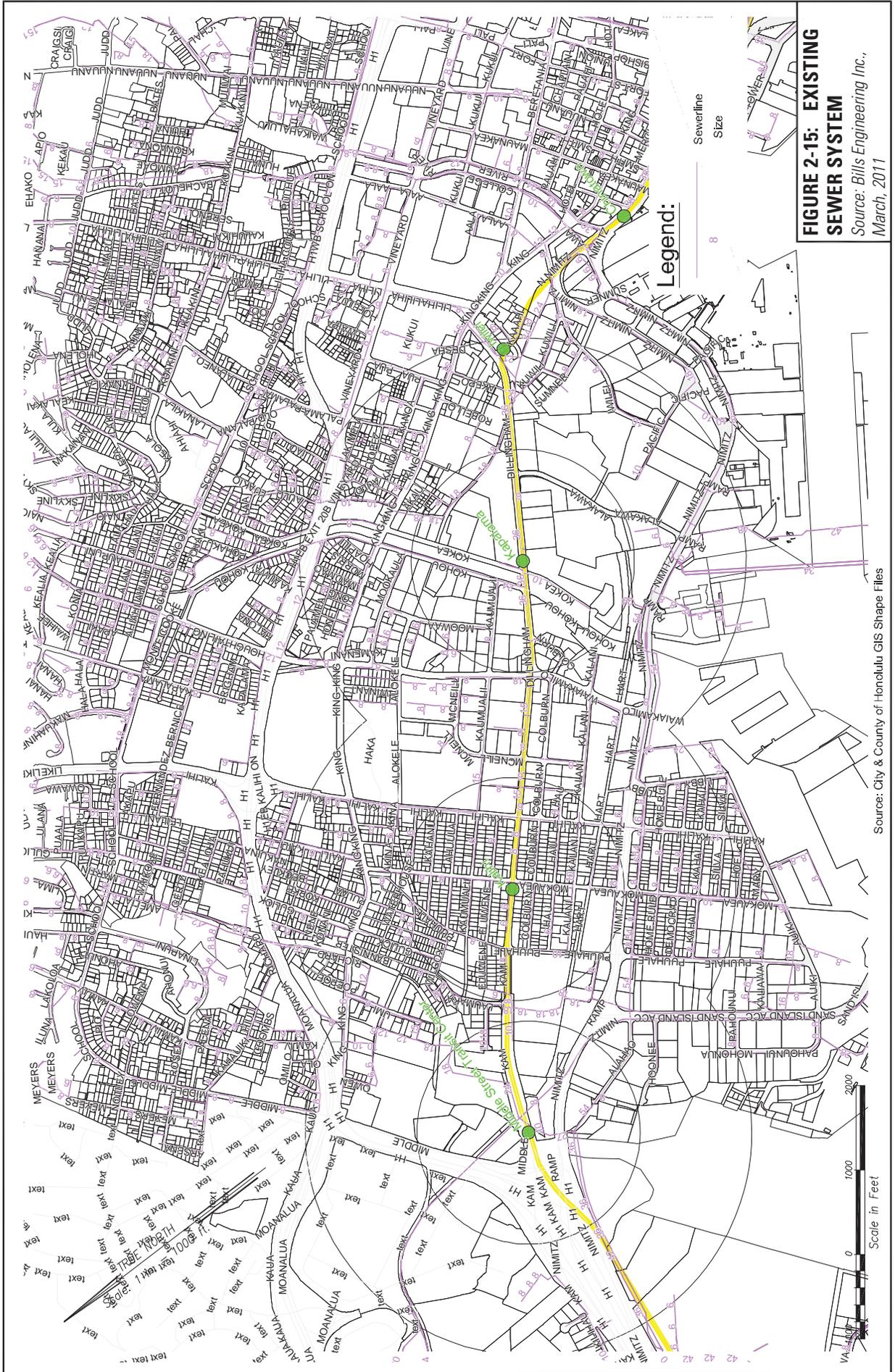
The existing sewer system in the planning area is illustrated in Figure 2-15 and described below:

- The Middle Street station area has relatively limited but adequate gravity sewer mains. The ¼ mile radius around the station is dominated by larger lots, and each lot is serviced. Therefore, there is not an extensive network of gravity sewer lines. The sewer lines in the area are typically 8-inch through 24-inch. The larger sewers (24-inch) are adequate to convey wastewater to the main pump station serving the area (Hart Street).
- The Kalihi station area was originally sewered based on an underlying zoning district designation of residential. Over the years, the City rezoned the area to industrial. The area is known for sewer inadequacies primarily linked to the fact that the current zoning does not match that under which the sewer was designed and installed. The adequate backbone sewers in the area are a 36-inch running down Dillingham Boulevard and a 54-inch in the vicinity of Hart Street. Both backbone lines transport area sewer to the Hart Street Pump Station and ultimately the Sand Island Wastewater Treatment Facility. It should be anticipated that collector system improvements conveying sewer to the backbone sewer lines would be required with or without TOD development and growth.
- The Kapalama station area has a 36-inch backbone sewer directly at the center of the ¼ mile radius near the station site. The backbone sewer connects to the Hart Street Pump Station. 8-inch through 24-inch lines create a gravity sewer network covering the Kapalama station area. The area is currently adequate with respect to sewers.

Future Improvements

Once TOD growth projections are developed (during a subsequent phase of this TOD study), the actual impact of TOD on the wastewater system can be projected.

The procedure to obtain City sewer service is typically initiated when a potential project is being conceptualized and traditionally during project due diligence. A Sewer Connection Application (SCA) is submitted to



DPP-WWB for consideration. The SCA identifies the anticipated project sewer flows. DPP-WWB evaluates the application and determines the adequacy or inadequacy of the existing sewer system. If the system is deficient, improvements are identified. The individual project will be required to design and install the deficiencies identified. DPP-WWB also identifies Wastewater System Facility Charges (WSFC) during the sewer connection application process. These charges are assessed to allow the City to “replenish” system capacity burdens created by the new project. If there are system deficiencies, money spent to remedy the deficiency can be used as credit against the WSFC.

In the past, multiple projects having the same sewer deficiencies have collaborated on joint efforts with respect to system upgrades. The joint effort, however, has been solely coordinated by the various projects for design, construction and dedication. The City (DPP-WWB or ENV) has no mechanism in place to allow for a district improvement concept for sewer improvements or cost sharing.

Drainage

As of January 19, 2011, the City and County of Honolulu adopted revised Flood Insurance Rate Maps (FIRM). The previous FIRM dated from September 2004. The Kalihi and Kapalama station areas are identified as being in Zone X— defined as “areas determined to be outside the 0.2 percent annual flood (500-year) chance.” There are no requirements for the Kalihi and Kapalama station areas with respect to the Federal Emergency Management Agency (FEMA) and floodplain regulations.

Only the Middle Street station area is affected by FIRM mapping, as shown on Figure 2-16. Large portions of the station area have minimum finished floor elevation requirements related to AE zones and AO zones. AE zones designate the minimum finished floor elevation (up to 13 feet in area makai of Nimitz Highway). AO zones designate the required feet a finished floor must be above existing ground (up to three feet around Middle Street station). In addition, flood insurance rates carry a higher premium when in AE and AO zones.

The City and County of Honolulu Department of Planning and Permitting Civil Engineering Branch (DPP-CEB) is responsible for plan review with respect to implementation of the City’s drainage standards. These standards are officially recognized as the “Rules Relating to Storm Drainage Standards, January 2000.”

The Rules have two (2) components. One component governs drainage system sizing for proper conveyance of storm water. This includes hydrologic studies and hydraulic studies to ensure drainage systems are adequate to accommodate various design storms. Design storms have either a 10-year recurrence interval or a 50-year recurrence interval.

The second component of the Rules addresses storm water quality related to the Federal Clean Water Act and the City’s MS4 National Pollutant Discharge Elimination System (NPDES) Permit. In general, all residential, commercial, public facilities, and transportation development projects must address storm water quality through the use of best management practices (BMPs). For residential projects over 10 acres and commercial, public facilities and transportation facilities over five acres, there are specific sizing requirements for structural BMPs.

With respect to the hydraulic capacity analysis section of the Rules, the Kalihi planning area should not be significantly affected. For all practical purposes, the three stations are in almost completely urbanized settings dominated by hard surfaces, and existing drainage systems are already in place to convey storm water. TOD development has a good chance of softening the amount of hardscape.

With respect to the storm water quality requirements of the Rules, any redevelopment parcel over five acres will have to address the use of structural BMPs. The use of flow-through vortex type devices is commonly used to address the structural BMP requirement in urban environments.

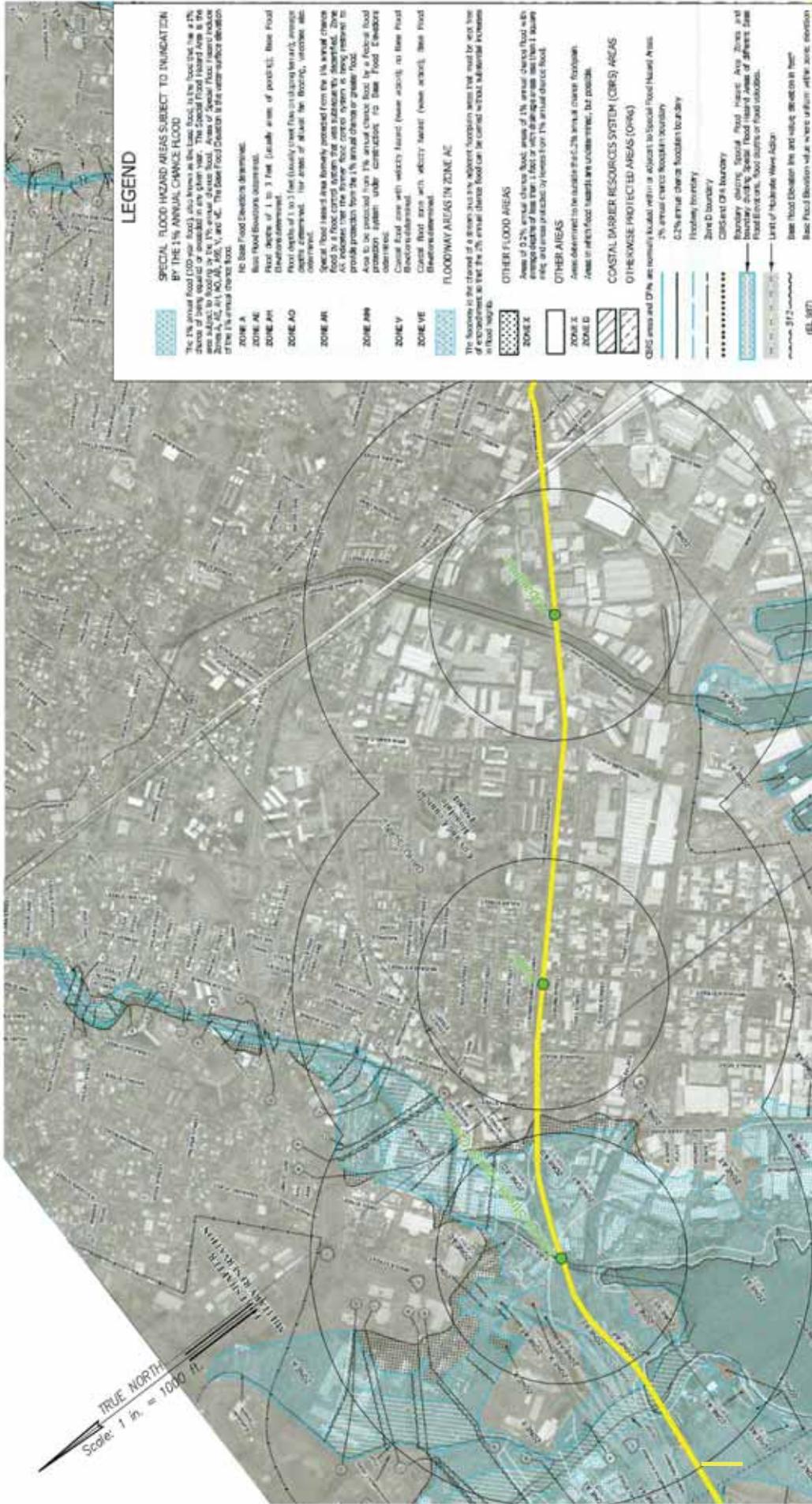


FIGURE 2-16: FLOOD INSURANCE RATE

Source: FEMA Map Service Center (WWW.FEMA.GOV)

Source: Bills Engineering Inc., March, 2011

TRUE NORTH
Scale: 1 in. = 1000 ft.

1000
0 500
Scale in Feet

Other Utilities

Hawaiian Electric Company provides electricity service to residential and non-residential customers. Most of the power on Oahu is generated by plants located on the west side of the island and delivered through two primary transmission corridors and then from transmission and distribution substations to customers. Within the planning area, gas transmission pipelines run along Nimitz Highway from Middle Street to Kapalama Canal, and hazardous liquid pipelines run makai of Nimitz Highway from Sand Island Access Road through Iwilei.²¹ Hawaiian Electric Company's Iwilei Pipeline is buried underground along a one-mile stretch of Nimitz Highway from Iwilei to Downtown, transporting low sulfur fuel oil to the Honolulu Power Plant.²² Utility poles, including electricity, phone, and/or state or city-owned streetlights, run overhead along Dillingham Boulevard and throughout the planning area. Overhead lines that are in conflict with the rail guideway and safety clearance requirements will be relocated underground.²³

2.6 Environment

This section reviews environmental conditions and constraints in the planning area that may affect the potential for development and/or that will need to be preserved or protected. Potential environmental hazards and historic and cultural resources are described below. Their locations will inform the selection of development opportunities and preparation of appropriate policies or mitigations.

Potential Hazards

Potential hazards evaluated include flooding, potential hazardous materials, and erosion. Fire hazards, and seismic risk are deemed to be low and are not discussed here.

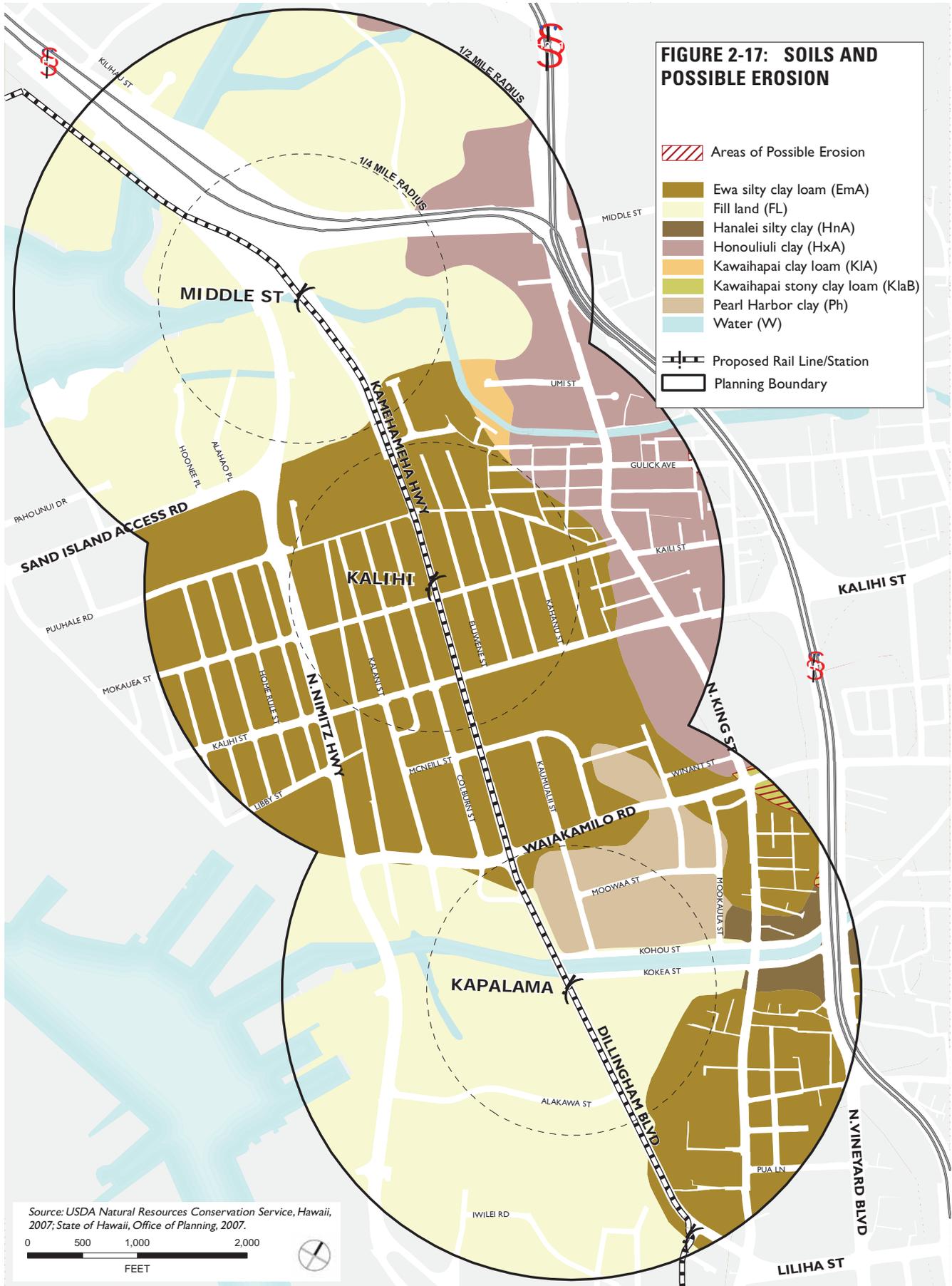
- **Soils and Erosion.** Figure 2-17 describes soil types and erosion potential in the planning area. Most of the land makai of Dillingham Boulevard and Nimitz Highway is landfill. Areas where erosion is possible, though limited, are mauka of Kapalama station, on Kaena clay soils with slightly sloped terrain. Excessive soil erosion can eventually lead to damage of building foundations and roadways. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, asphalt, slope protection, or vegetation.
- **Hazardous Materials.** Leaking underground storage tanks can contaminate groundwater. Locations where site clean-up has not yet been completed on such installations in the planning area are shown in Figure 2-18.
- **Flooding.** As described in Section 2.4: Infrastructure, potential flood risk is confined to the Middle Street station area. However, flooding could also occur as a result of storms, sea level rise, and tsunamis, as depicted by the tsunami evacuation areas on Figure 2-18.
- **Sea Level Rise.** Compounding potential flooding, the University of Honolulu, School of Ocean and Earth Science and Technology, Coastal Geology Group researchers predict that up to one meter (just over three feet) of sea level rise may be plausible by 2100. Note that this mapping effort is a work in progress, and it is too early to draw conclusions about the implications of this modeling. However, initial modeling suggests that three feet of sea level rise at mean higher high water (MHHW) height (the average of only the higher of the high water heights) could inundate areas makai of Dillingham Boulevard near the Kapalama station, along Kapalama Canal, and the Middle Street station area makai of Nimitz Highway.²⁴

21 National Pipeline Mapping System <<https://www.npms.phmsa.dot.gov/PublicViewer/composite.jsf>>

22 Hawaiian Electric Company. "Fact Sheets" <<http://www.heco.com/>>

23 Honolulu High-Capacity Transit Corridor Project Environmental Impact Statement. Page 4-203.

24 Fletcher, Charles H. "Sea level by the end of the 21st century: A review" University of Hawaii at Manoa, http://www.soest.hawaii.edu/coasts/publications/fletcher2009_sealevelreview.pdf.



Historic and Cultural Resources

Historic Districts and Sites

There are several sites in the planning area designated as historic or eligible for listing in the State Registry or National Register of Historic Places, as shown in Figure 2-19 and Table 2-11. Registered historic sites are clustered along North King Street, including Farrington High School and two historic fire stations. Several sites that may be eligible for historic status are also shown.

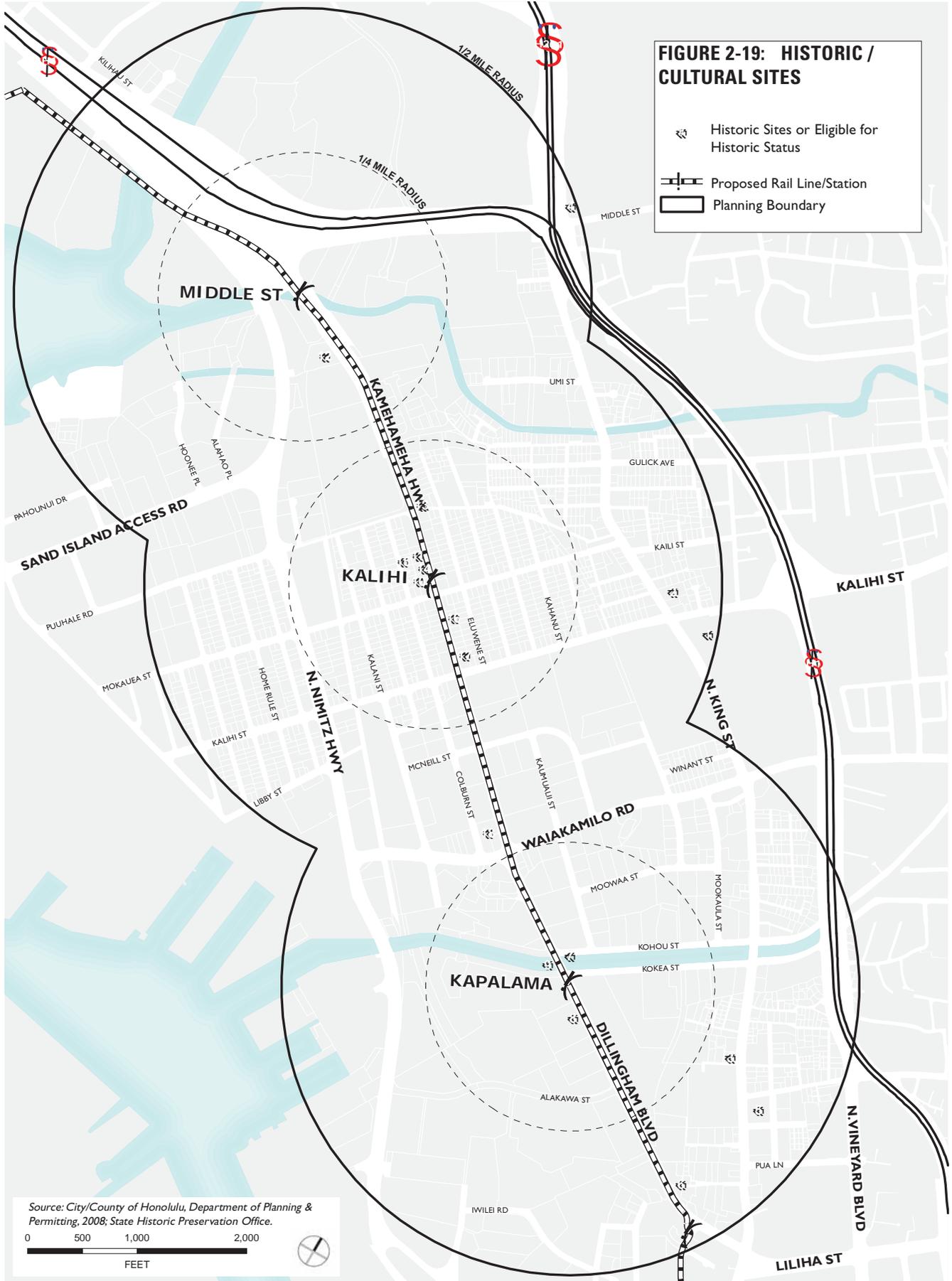
Cultural Resources

Cultural resources include sites associated with significant events or important people in Hawaiian history. According to the Final EIS for the rail, there is a high potential for archeological resources and burial sites in the planning area.²⁵

²⁵ City and County of Honolulu. Honolulu High-Capacity Transit Corridor Project. Final Environmental Impact Statement. June 2010: 4-184.

TABLE 2-11: HISTORIC SITES				
MAP ID	NAME	STATE REGISTRY	NATIONAL REGISTRY	ELIGIBLE
1	Farrington High School	√		
2	Kalihi Fire Station	√	√	
3	Palama Fire Station	√	√	
4	Fort Shafter, Palm Circle		√	
5	Kaumakapili Church		√	
6	Kamani Trees			√
7	Kapalama Canal Bridge			√
8	Quonset Huts			√
9	Lava Rock Curbs			√
10	Teixeira House			√
11	Afuso House			√
12	Gaspro Store			√
13	Pu'uhale Market			√
14	Higa Four-Plex			√
15	Pang Craftsman-style House			√
16	10 Courtyard Houses			√
17	Duarte House			√
18	Boulevard Saimin			√

Source: State Historic Preservation Office; Honolulu High-Capacity Transit Corridor Project, Final Programmatic Agreement, Surveyed Properties Considered Eligible for National Register, 2011.



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3 STATIONS

Though the station area boundaries may overlap, each station within the rail corridor has particular land use and mobility opportunities and constraints that can be better addressed at the individual station level. To delve into greater detail, Chapter 3 analyzes the character, pedestrian facilities and station access (including station configuration), and potential opportunity sites at each of the three Kalihi stations.

3.1 Station Level Analysis

Station Character

This section describes the character of each station area in text and photographs to illustrate key characteristics, opportunities, and constraints. This analysis helps to identify elements of each station area that should be retained and enhanced, or redeveloped and changed. In some cases, there may be existing characteristics that community members want to change, such as improvements to public safety. On the other hand, there may be qualities that community members want to preserve, such as the small business nature of a station area.

Pedestrian Facilities and Station Access

This section describes and illustrates the location of each station and how pedestrians will access it from the surrounding neighborhood. Maps illustrate pedestrian connections, including locations of sidewalks, pedestrian-only paths, and designated crosswalks. In contrast, they also show barriers to walking to and from the station, including inadequate sidewalks and barriers created by freeways and major roads.

Pedestrian Facility Inventory

Weslin Consulting undertook a complete sidewalk and crosswalk inventory of all streets within a 1/4-mile of each station, generally a five-minute walk. A crosswalk across a leg of an intersection was counted as being part of the street parallel to the crosswalk. The sidewalk along both sides of each street was placed into one of five categories: (1) no sidewalk, (2) 3-4 feet of effective width, (3) 5-6 feet of effective width, (4) 7-8 feet of effective width, and (5) 9+ feet of effective width. Effective width was defined as the amount of sidewalk that provides a continuously unobstructed pathway with the exception of occasional temporary obstructions, such as illegally parked vehicles.

The detailed results of the sidewalk inventory are included in Appendix D. Table 3-1 provides a summary of the sidewalk inventory.

Overall, 54 percent of all curb length within a 1/4-mile of the three stations was found to lack sidewalks. Of the 70 crosswalks, most are concentrated in the Kalihi station area. Even where sidewalks are present, including along Dillingham Boulevard or adjacent to the planned stations, they are not generous. Significant variations exist in the consistency and quality of the sidewalk network, as described for each station area.

TABLE 3-1: EXISTING SIDEWALK CHARACTERISTICS IN 2011 BY SIDEWALK CURB LENGTH AND SIDEWALK WIDTH												
STATION	SIDEWALK LENGTH BY EFFECTIVE WIDTH										TOTAL CURB LENGTH	CROSS-WALKS
	none		3 to 4		5 to 6		7 to 8		9+			
	feet	%	feet	%	feet	%	feet	%	feet	%		
Middle Street	6,630	46%	890	6%	2,010	14%	2,380	17%	2,350	16%	14,260	5
Kalihi	35,590	69%	9,470	18%	6,520	13%	0	0%	0	0%	51,580	48
Kapalama	5,981	26%	10,890	47%	5,870	25%	660	3%	0	0%	23,400	17
TOTALS	48,201	54%	21,250	24%	14,400	16%	3,040	3%	2,350	3%	89,240	70

Source: Weslin Consulting Services.

Potential Opportunity Sites

Vacant and underutilized sites can provide strategic opportunities to create new uses, meet community needs, and capitalize on access to rail transit. This section and the maps within each station subsection present potential opportunity sites based on the follow methodology:

- Vacant sites or sites currently occupied by surface parking lots;
- Properties where assessed value is less than land value, suggesting that the site is “underutilized;”
- Low intensity sites, where FAR values are below 0.75 or 0.50 and more intensive redevelopment may be appropriate. (sites with low FAR values);
- “Other Opportunity Sites” that have been identified as potential opportunities by stakeholders, landowners, City staff or consultants; but
- Excluding open space, schools, and residential uses (except those identified as “Other Opportunity Sites”).

Using this methodology, there are as many as 360 acres that may be appropriate for redevelopment in the Kalihi TOD planning area. These potential opportunity sites have been further categorized to suggest those sites with the highest potential for redevelopment. This is signified by the color gradient in Table 3-2, with the darker color suggesting those sites that are more likely to redevelop. The highest potential includes 22 acres classified as vacant or surface parking and 146 acres that have a FAR value that is less than 0.5 and an assessed value that is less than land value. Not all of these sites will be redeveloped or are in fact appropriate for redevelopment. The planning process will help to identify locations for intensification of existing uses, redevelopment, and preservation.

TABLE 3-2: POTENTIAL OPPORTUNITY SITES, BY ELIGIBILITY AND ACRES			
CRITERIA	BUILDING VALUE < LAND VALUE?		TOTAL ACRES
	YES	NO	
Vacant/Surface Parking	22	n/a	22
Low FAR: Less than 0.5	146	14	161
Low FAR: Between 0.5 - 0.75	63	3	66
Building Value < Land Value (FAR >0.75)	84	n/a	84
Other Opportunity Sites	0	27	27
TOTAL ACRES	315	44	360

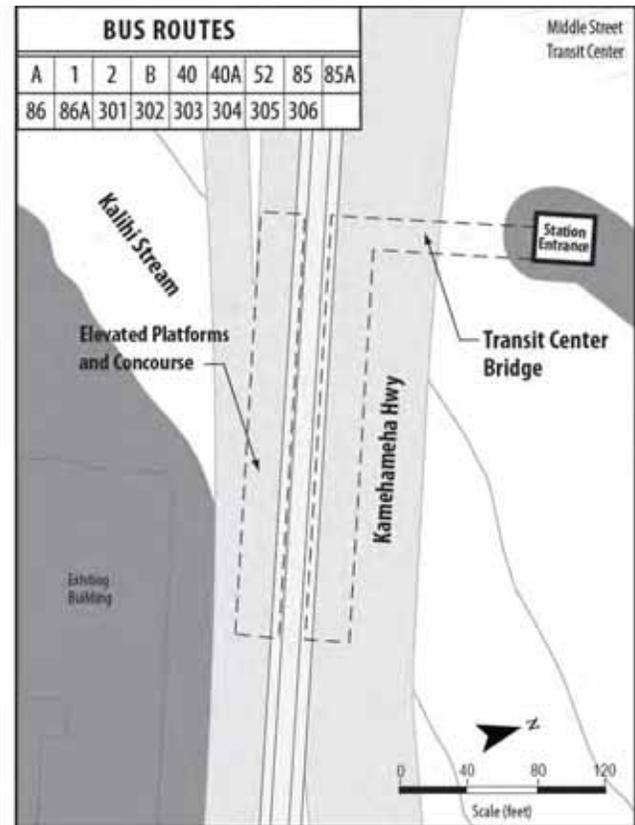
Note: Color gradient suggests likelihood for redevelopment, with the darker colors signifying a higher potential.

Source: City and County of Honolulu, Dyett & Bhatia, 2011.

3.2 Middle Street

Station Character

The Middle Street Transit Center station will function as the entrance to Kalihi from the west, but it is constrained by freeway infrastructure and a lack of connectivity. Figure 3-1 illustrates the character of Middle Street station. This station will serve as a bus transfer, and ultimately, a park and ride facility—the only station planned to have substantial parking in the planning area. The station will be located in the median of Dillingham Boulevard, with access on both sides of the roadway. The station area has few opportunities for development, given the freeway off-ramps and over-passes, and Fort Shafter military base Ewa of the freeway. Land use in the area is primarily industrial, warehouse, and commercial development, including some wholesale stores (e.g. Marukai Wholesale Mart) and smaller retail. Off of the main thoroughfare, there are many dead-end streets and large parcels which inhibit connectivity. There are a range of businesses, many shipping and sheet metal related, supporting airport operations. Wayfinding and street signs are limited. The Oahu Community Correctional Center is sited on Dillingham Boulevard, between the Middle Street and Kalihi stations.



Middle Street station configuration.

Pedestrian Facilities and Station Access

Station Configuration

The Middle Street Transit Center station will be located on an elevated structure centered above Kamehameha Highway, where the roadway crosses Kalihi Stream. The station's elevated platforms and concourse level will include a pedestrian bridge crossing over the Ewa-bound lanes of Kamehameha Highway and the center platform of the Middle Street Transit Center, which is slated to be opened for service in 2011. The Middle Street Transit Center was designed, funded and constructed independent of, but coordinated with, the development of the rail project.



Middle Street from Dillingham Boulevard to King Street lacks ground level uses.



Public access is prohibited in the military area (Fort Shafter) Ewa of Middle Street



Much of the area under the freeway is inaccessible on foot.



Trail and bike route connects under H-1 Freeway and over Kalihi Stream.



Future transit center site will accommodate park and ride and transfer facilities.



Mauka of Dillingham Boulevard, industrial properties back onto Kalihi Stream



Walking on Dillingham Boulevard near Middle Street feel dangerous due to narrow sidewalks next to fast vehicle traffic.



Industrial area immediately Ewa of Oahu Community Correctional Center



Industrial area makai of Nimitz Highway

FIGURE 3-1: STATION AREA CHARACTER – MIDDLE STREET



Source: City/County of Honolulu, 2011; State of Hawaii, 2011; Dyett & Bhatia, 2011.

Nimitz Highway lacks pedestrian access Ewa of Sand Island Access Road.



Unwelcoming view of older, vacant buildings and graffiti.



Buildings along Dillingham Boulevard across from Oahu Community Correctional Center



Razor wire fences at Oahu Community Correctional Center



The Middle Street Transit Center is on 9.15 acres of City-owned land that includes the Kalihi-Palama Bus Facility complex with administrative, maintenance and operations buildings to support both *TheBus* and The-Handi-Van. The new Middle Street Transit Center will have eight bus bays, replacing an existing facility with five bus bays.

The existing Kalihi Transit Center offers the most customer service of any transit center on Oahu. It has a staffed desk where transit passes may be purchased. Restrooms are fully accessible and well maintained. Today, ten bus routes service this facility. Seventeen bus routes will serve the Middle Street Transit Center station in the future when rail is operational.

Station Access

The fact that 46 percent of all curb length in the Middle Street Transit Center station TOD planning area does not have sidewalks does not fully convey the inhospitability of the area to pedestrians. The more telling statistic is that the total amount of curb length in this area is 14,260 feet, as compared to 51,580 feet in the Kalihi area. In other words, pedestrians have few streets to walk on – and fewer destinations to walk between – regardless of whether they have sidewalks are not.

Pedestrian access to the proposed Middle Street station from the west is limited because of proximity to the H-1/Nimitz Highway/Kamehameha Highway interchange and ramp complex that gives priority to vehicular movement. However, this web of roadways also includes one of Oahu's best separated pedestrian/bicycle pathways, as shown in Figure 3-2. It is not well marked and suffers from a lack of maintenance, but its alignment from Radford Drive to Middle Street is a substantial facility. It provides access from the Mapunapuna area, with its concentration of employment destinations, to the proposed station location by way of one of the five crosswalks within the Middle Street station area.

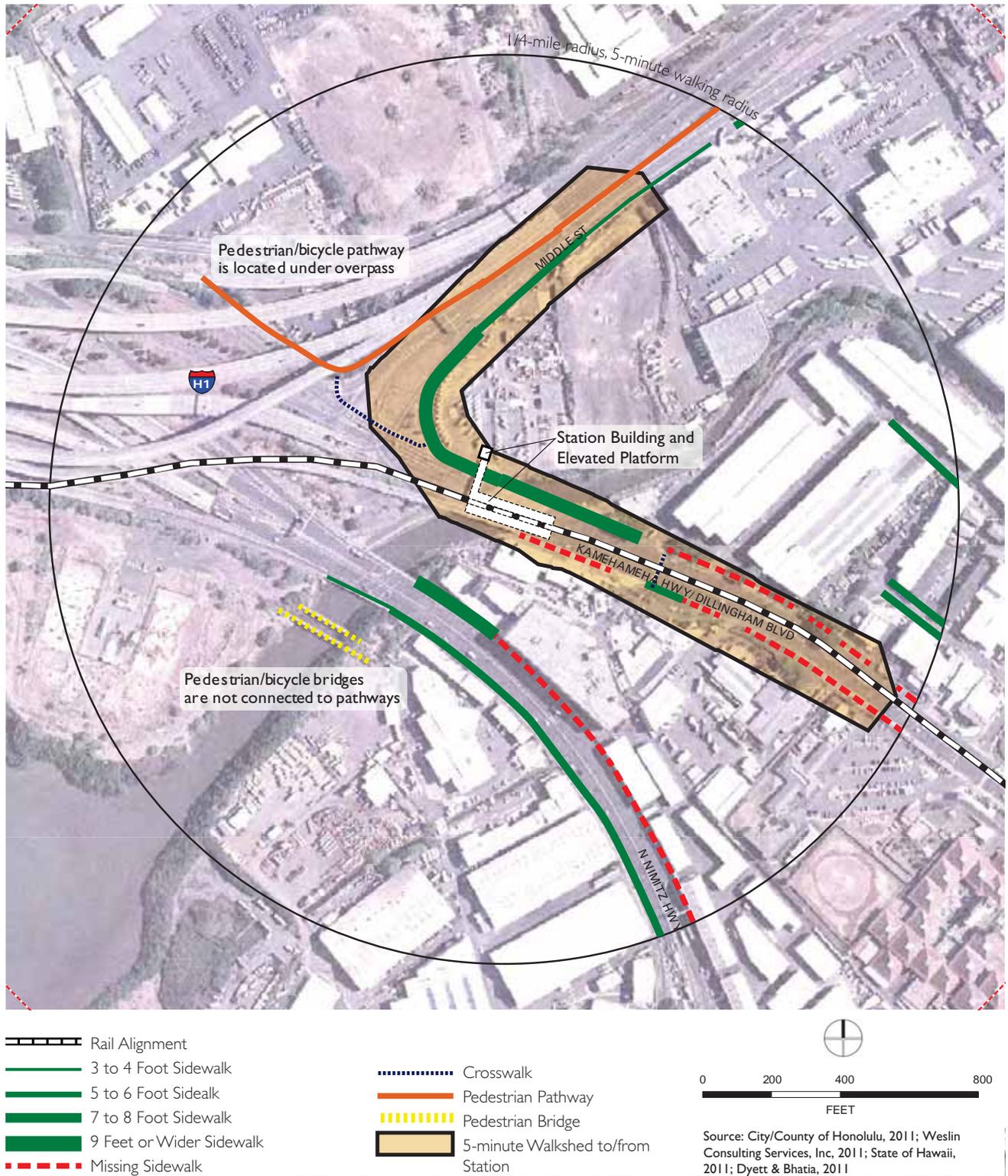
Pedestrian access is limited from the east because Kamehameha Highway is the only option for pedestrians and both sides lack sidewalks. Pedestrian access is lim-

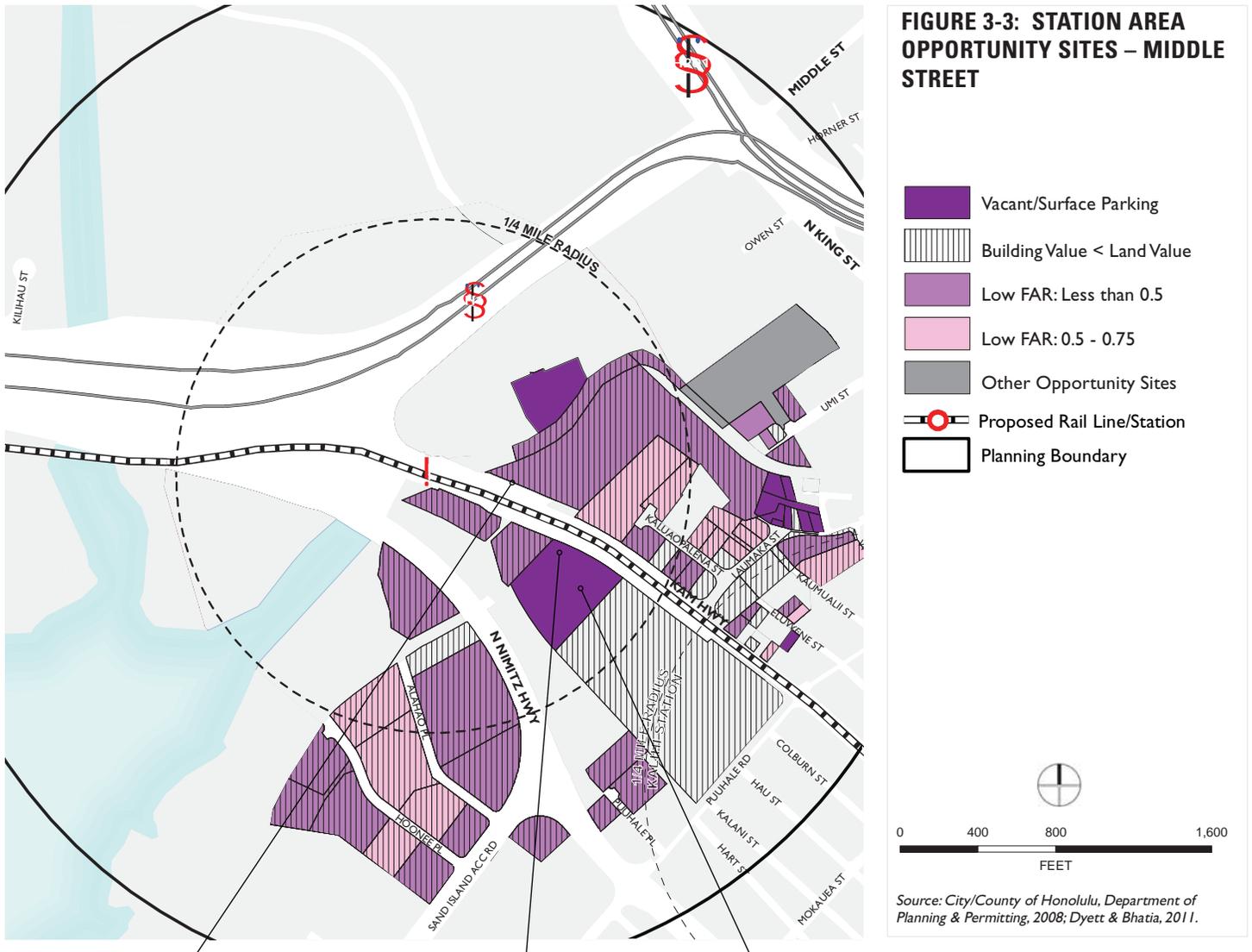
ited from the south and north, or blocked altogether, by large land parcels with large buildings and no public roads, as shown in Figure 3-2. From the south, Puuhale Place has been blocked even though some maps show this as a connected public street between Dillingham Boulevard and Puuhale Road.

Potential Opportunity Sites

The planned rail station at the Middle Street Transit Center has few development opportunities, given the cluster of highway off- and on-ramps and institutional land uses (military and correctional facilities) as shown in Figure 3-3. The former Foremost Dairy site, which fronts Dillingham Boulevard, is a key opportunity site given its recent demolition/vacancy and proximity to the future station. In addition, Class B Warehouse uses may be due for rehabilitation or redevelopment. Still, at this station, convenient connections between rail and bus transit will be paramount. Over time, there may be additional development opportunities along Dillingham Boulevard.

FIGURE 3-2: STATION PEDESTRIAN ACCESS – MIDDLE STREET





The area around the Middle Street station contains larger parcels, such as this recently demolished site, presenting greater opportunities for development.

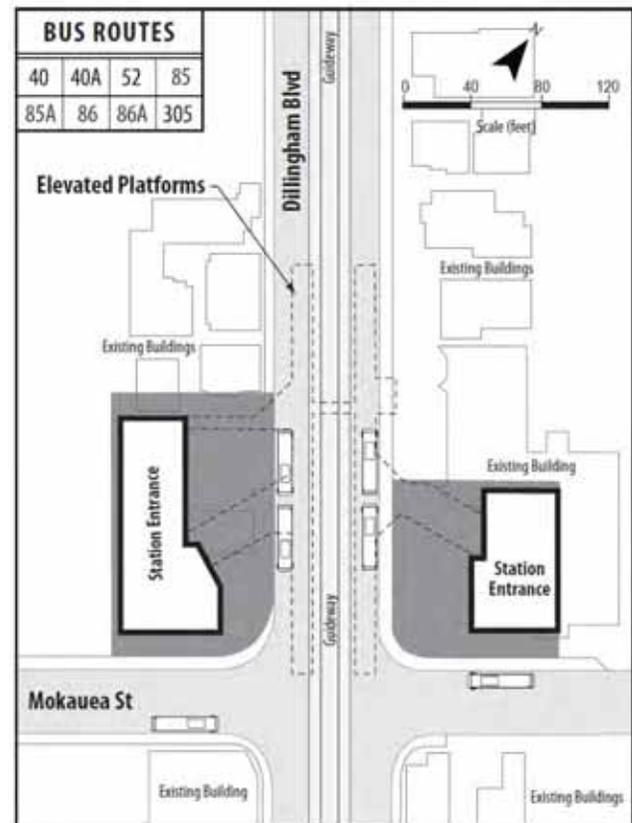


There are a variety of commercial and auto-oriented uses along Dillingham Boulevard that may be appropriate for redevelopment.

3.3 Kalihi

Station Character

Surrounding Kalihi station are a range of uses, mostly on small lots, and a grid pattern of streets, providing better access between uses, compared with the Middle Street station area, as shown in Figure 3-4. Along Dillingham Boulevard, there are a range of small commercial buildings, including fast food, gas stations, offices, banks, and auto uses. Side streets parallel to Dillingham tend not to have curbs or sidewalks, and roadsides are obstructed by utility poles. The station area has views of Downtown and the mountains. Makai of Dillingham, there is a range of uses from engineering offices/machine shops to food industries and warehouses, to single-family residential homes. Mauka of Dillingham Boulevard, land uses are generally residential, with some stores and auto uses, as well as an electric utility transfer facility. Most residences are two-story single-family homes with carport parking. There are also several small and large apartment buildings. The area is also home to a park and an elementary and middle school on Kalihi Street.



Kalihi Station configuration.

Pedestrian Facilities and Station Access

The Kalihi station will be located on an elevated structure centered above Dillingham Boulevard on the Ewa side of the intersection with Mokauea Street. Access to the elevated platforms will be offered at two station entrances located on either side of Dillingham Boulevard. Bus stops will be located on both sides of Dillingham Boulevard and on both sides of Mokauea Street. Today eight bus routes serve this intersection, and eight bus routes will serve the Kalihi station in the future.

Table 3-1 shows that 69 percent of all curb length in the Kalihi station area lack any sidewalk. This statistic may make it seem as though this area has the worst pedestrian environment of the three TOD planning areas, but a close examination of Figure 3-5 should draw a different observation, especially as it pertains to the positioning of the station.



Razor-wire fences at Oahu Community Correctional Center



Narrow streets with a mix of residential and industrial uses dominate the area Ewa of Mokauea Street and mauka of Dillingham Boulevard



Older residential buildings mauka of Dillingham Boulevard



Residential buildings are often located adjacent to industrial uses.



Industrial uses makai of Nimitz Highway



Dillingham Boulevard and major side streets are characterized by overhead utility wires and minimal streetscape.



Along residential streets, parking takes precedence over sidewalks.

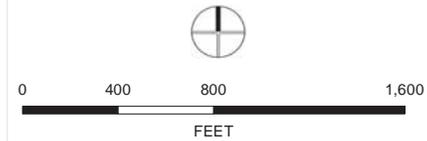
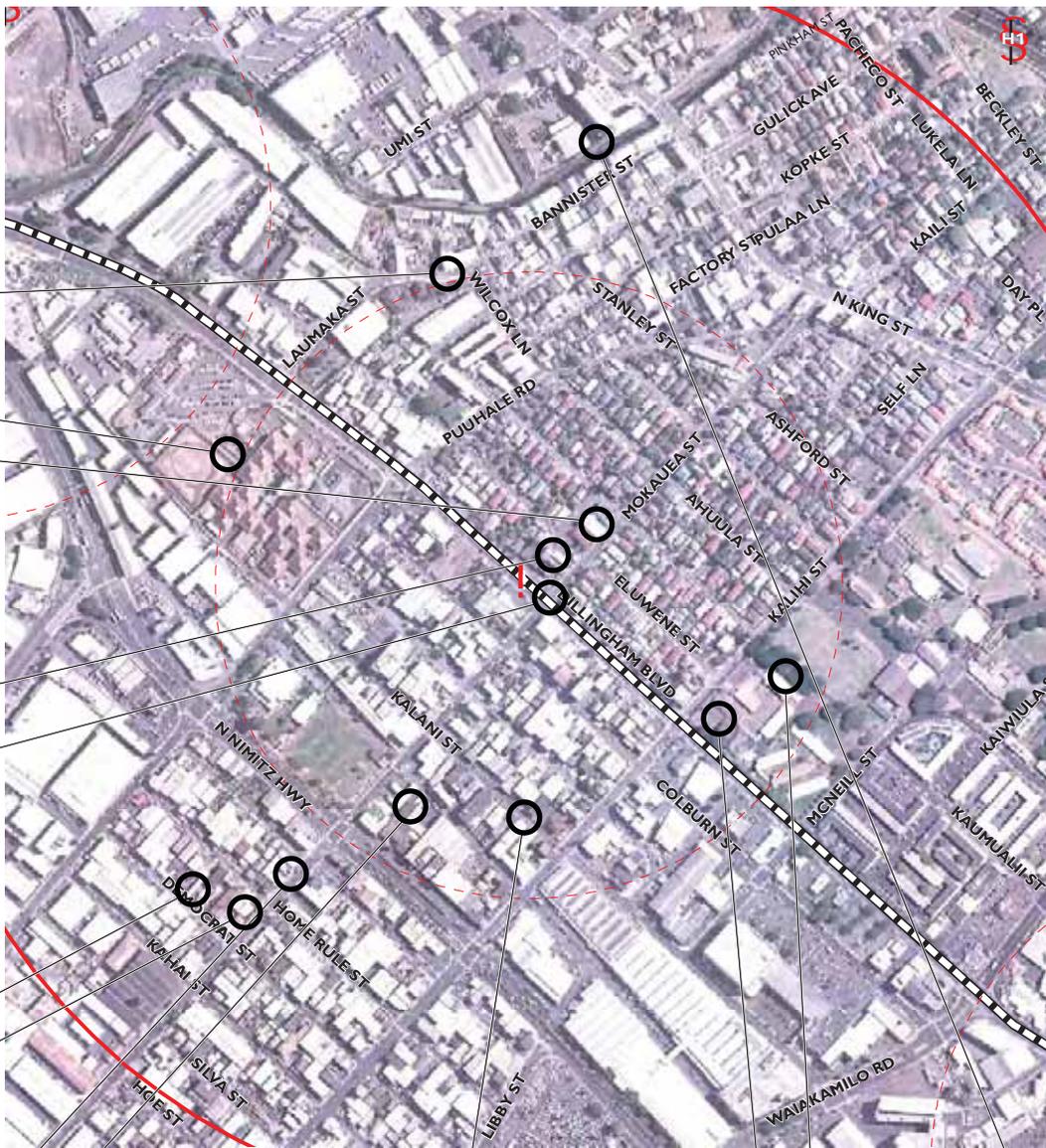


Small local markets such as Alicia's are located at key intersections throughout planning area.



Industrial buildings with blank walls and streets without sidewalks are common traits in Kalihi.

FIGURE 3-4: STATION AREA CHARACTER – KALIHI

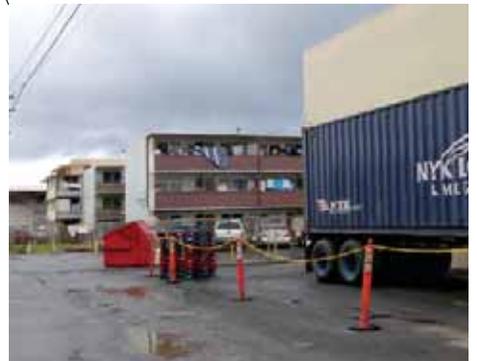


Source: City/County of Honolulu, 2011; State of Hawaii, 2011; Dyett & Bhatia, 2011.

Older multi-family apartment building makai of Dillingham Boulevard



Another example of multi-family apartment building next to industrial operations.



Students from Kalakaua Middle School waiting for a bus



Kalakaua Recreation Center and Middle School



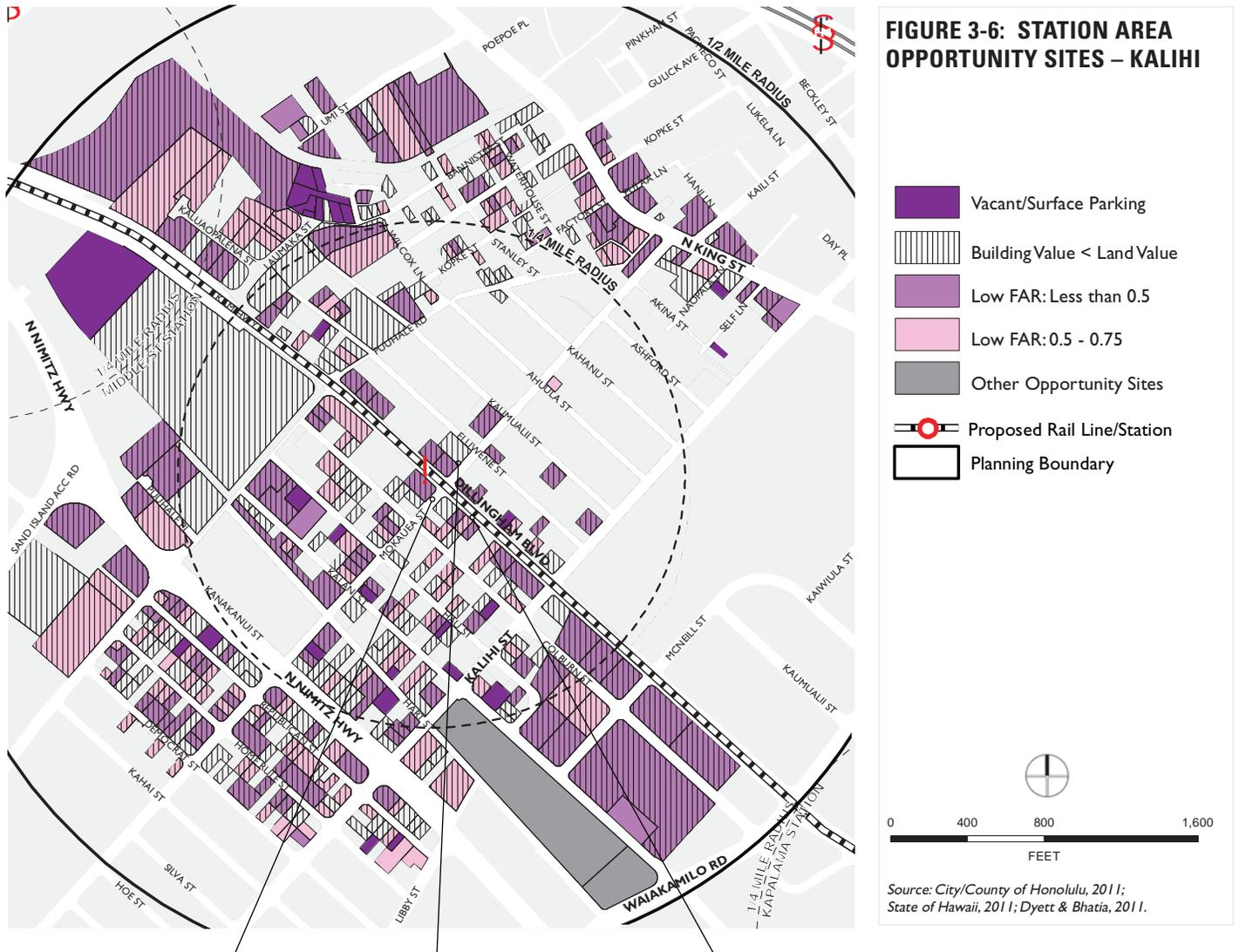
The Kalihi station is located at the intersection of Dillingham Boulevard and Mokauea Street. Both of these streets have sidewalks on both sides throughout the area. Crosswalks exist across both of these streets. Altogether, there are 48 crosswalks in this TOD planning area. The grid of streets includes nine east-west streets without sidewalks. But, these streets are narrow and short, many terminating at the Oahu Community Correctional Center, Puuhale Elementary School, Kalihi-Kai School, Kalakaua Recreational Center or the Kalakaua Middle School. This community street network design contributes to light and slow vehicle traffic on these east-west residential streets, making for a more pedestrian-oriented environment than one might infer from the lack of sidewalks.

Potential Opportunity Sites

The area around the Kalihi station is made up of small-lot single-family homes, small retailers fronting Dillingham Boulevard, and a mix of industrial and other uses, making new development difficult due to small parcel sizes and fragmented ownership. Where buildings have deteriorated, or commercial and industrial developments have extended beyond their useful life, redevelopment opportunities should be examined. In the shorter-term, there may be small development opportunities for some basic services, including grocery stores and health services.

FIGURE 3-5: STATION PEDESTRIAN ACCESS – KALIHI





Dillingham Boulevard, Diamond Head of Mokauea Street.



There is a mix of auto-oriented and industrial uses directly adjacent to residences around the Kalihi station, suggesting air quality and noise impacts that may affect public health. Strategic redevelopment and changes in development and performance standards can help to ease the transition between uses.



The Kalihi station site is currently occupied by commercial uses with surface parking lots along the street edge, which are not conducive to encouraging transit ridership and pedestrian activity.

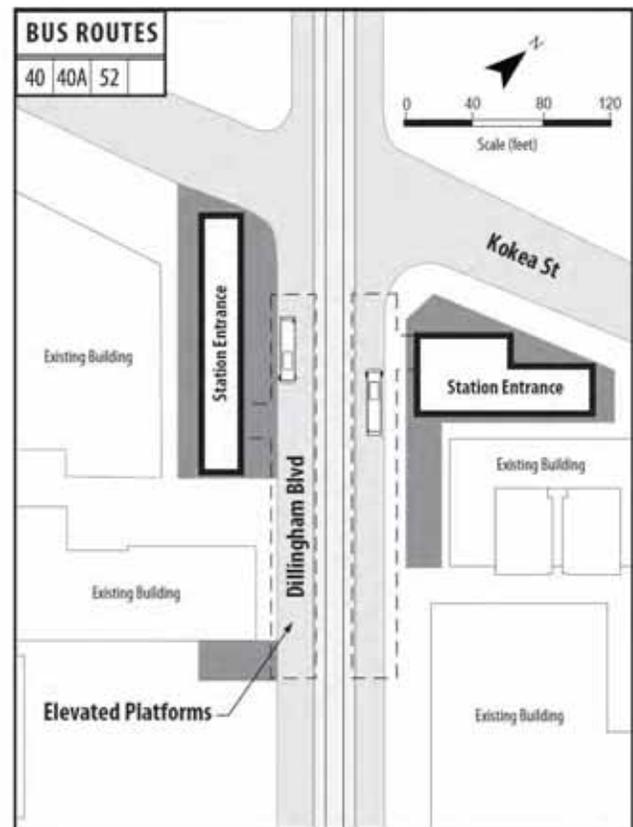
3.4 Kapalama

Station Character

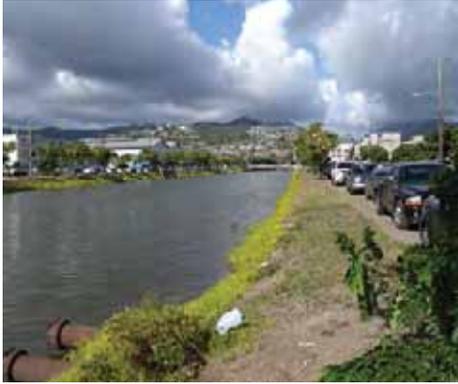
Kapalama station is notable for the presence of Honolulu Community College, Kapalama Canal, and several shopping centers, as shown in Figure 3-7. Kamehameha Schools is also a major land owner in the area. There are several older retail buildings and shopping centers along Dillingham Boulevard, with small and medium-sized tenants and surface parking. A range of retail services are provided, including restaurants, fast food, groceries, goods, karaoke clubs, gas stations, self-storage, and student-oriented services. The canal provides views of the harbor and mountains but currently appears eroded and lacks sidewalks, curbs, or proper parking aisles. Makai and mauka of Dillingham Boulevard, there are commercial and warehouse uses, including trucking, import, and woodworking businesses, as well as hardware stores and contractors supplies, generally housed in one- or two-story buildings. These side streets also have limited infrastructure: no curbs, designated parking aisles, or sidewalks. Residential uses are more limited in this area. Princess Kaiulani Elementary School is located just on the edge of the planning area.

Station Configuration

The Kapalama station will be located on an elevated structure centered above Dillingham Boulevard on the Diamond Head side of the intersection with Kokea Street. Access to the elevated platforms will be offered at two station entrances located on either side of Dillingham Boulevard. Bus stops will be located on both sides of Dillingham Boulevard. Today, six bus routes serve this intersection, and three will serve the Kapalama station in the future.



Kapalama Station configuration.



There is a community vision to transform Kokea Street and Kohou Street along Kapalama Canal into linear parks.



Ewa of Kapalama Canal and mauka of Dillingham Boulevard is a mix of light industrial, wholesale food distributors, mechanics, and a few clubs and bars.



Areas Ewa of Kapalama Canal and makai of Dillingham Boulevard features large industrial buildings with blank walls.



Kapalama Shopping Center is a strip mall at the key intersection of Dillingham Boulevard and Kohou Street.



Nimitz Highway is a major thoroughfare that caters to vehicles, strip malls, and industrial buildings.



Though Dillingham Boulevard is not particularly pedestrian-friendly. Walking is part of a daily commute for many in the community who depend on transit.



Utility poles on Dillingham Boulevard may be placed underground during the construction of the railway.

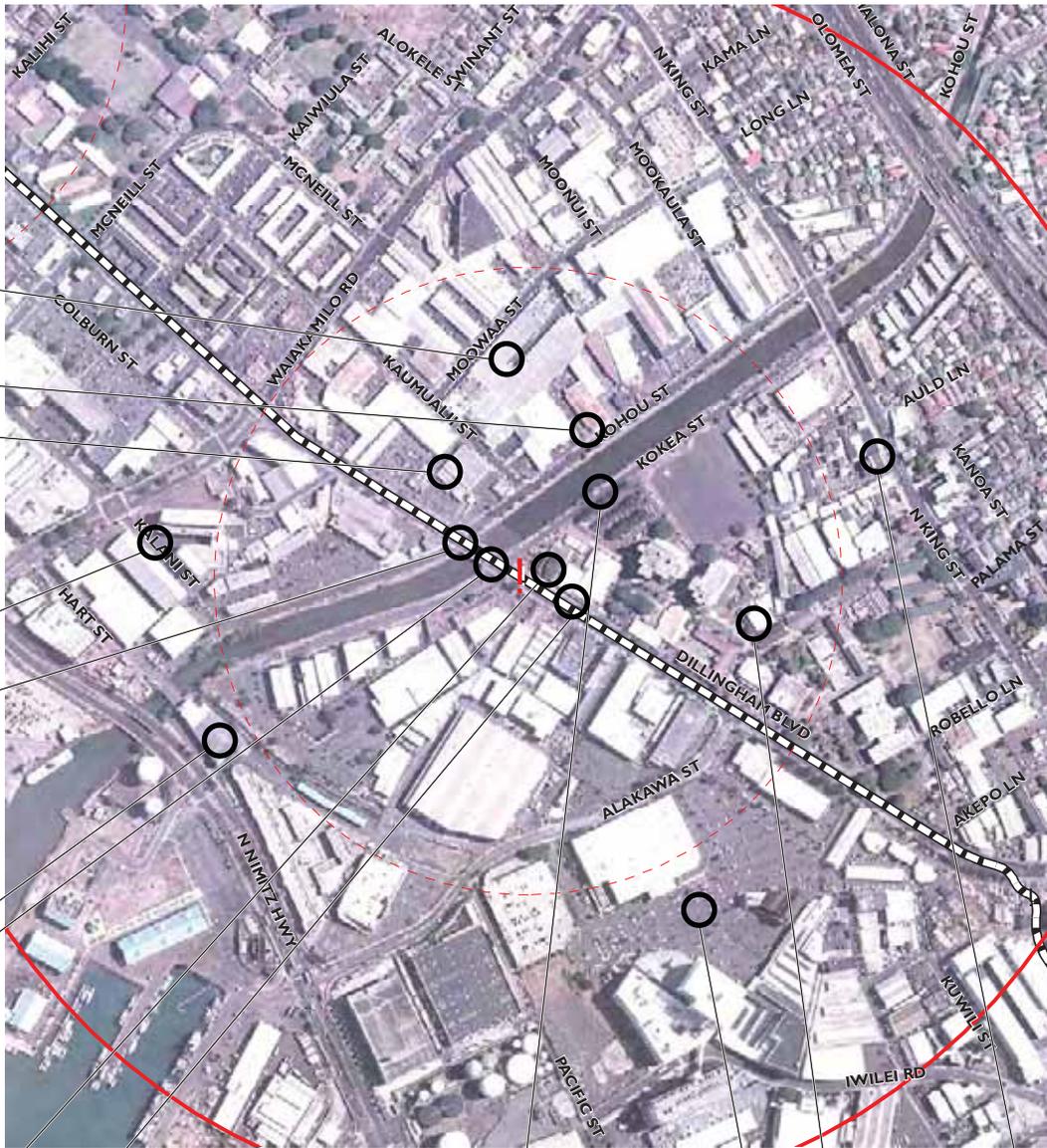


Sidewalks along Dillingham Boulevard across Kapalama Canal lack landscaping and signs.



Where pedestrian realm landscape exists, plantings are often not well-maintained.

FIGURE 3-7: STATION AREA CHARACTER – KAPALAMA



Source: City/County of Honolulu, 2011; State of Hawaii, 2011; Dyett & Bhatia, 2011.

Streets along Kapalama Canal (Kokea Street and Kohou Street) accommodate parking instead of sidewalks.



Small, independent stores have survived due to lower rent in older buildings along N. King Street.



Area makai of Dillingham Boulevard along Alakawa Street is composed of large blocks with big box retail stores.



A new master plan for Honolulu Community College proposes open space, a gateway at Kokea Street, and street-oriented buildings along Dillingham Boulevard.



Pedestrian Facilities and Station Access

The Kapalama station has a different pedestrian environment than either of the other two stations, influenced substantially by the presence of Kapalama Canal. The only crossing of the stream for any transport mode within the 1/4-mile planning area is Dillingham Boulevard. To access the proposed Kapalama station, pedestrians have to use the sidewalks and crosswalks along Dillingham Boulevard. At five to six feet in width, these sidewalks are too narrow to adequately accommodate pedestrians walking to and from the future rail station, especially given the lack of parking aisles or shoulders on this section of Dillingham Boulevard and the fact that these sidewalks are already encumbered by utility poles.

There are no bicycle facilities in the area, and bicyclists tend to use the sidewalks extensively to obtain safe passage. This is one of the factors that makes the relatively narrow sidewalk unappealing for pedestrians. Other factors include numerous heavily-used driveway entrances and exits on the west side of the stream and vehicles parked on these driveways or on the sidewalk.

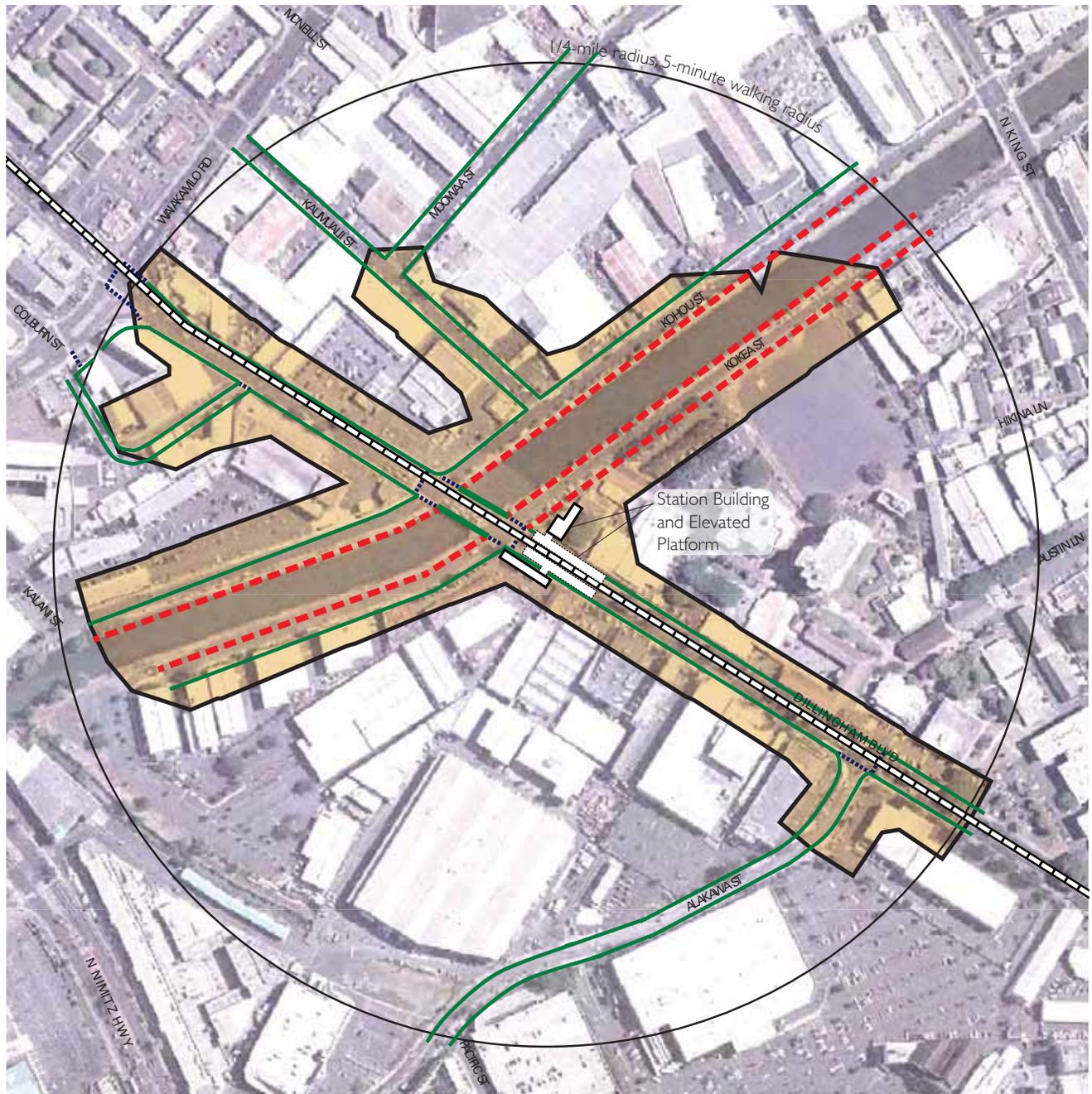
Table 3-1 indicates that only 26 percent of curb length lacks sidewalk, best amongst the three areas. But Figure 3-8 depicts the missing sidewalks are in critical locations. Whereas the Kalihi station has sidewalks on both sides of the major intersecting streets, sidewalks are missing along on one side of Kokea and Kohou Streets adjacent to retail and educational land uses.

The layout of Honolulu Community College, with its pedestrian mall is a good example of the type of environment a TOD plan should strive to create in terms of pedestrian connections to and from transit. However, HCC does not relate well to Dillingham Boulevard, with the college separated from the public street by surface parking lots, landscaped setbacks, and blank walls (i.e. building entrances face the interior courtyard). Moreover, pedestrian access through campus is disrupted because of the large block size and the configuration of streets.

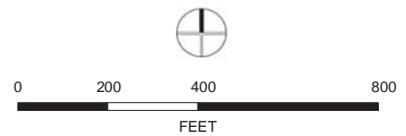
Potential Opportunity Sites

Potential opportunity sites include redevelopment of older commercial strip malls along Dillingham Boulevard and Kohou Street, especially where leases are set to expire in the near term. New uses could include residences complemented by basic services (e.g. groceries stores) and public amenities (e.g. improvements to the canal). Kamehameha Schools has a master plan for its landholdings underway. Honolulu Community College is pursuing a long term master plan to redevelop its campus and create connections to and better integration with the Kapalama station.

FIGURE 3-8: STATION PEDESTRIAN ACCESS – KAPALAMA



-  Rail Alignment
-  3 to 4 Foot Sidewalk
-  5 to 6 Foot Sidealk
-  Missing Sidewalk
-  Crosswalk
-  5-minute Walkshed to/from Station



Source: City/County of Honolulu, 2011; Weslin Consulting Services, Inc, 2011; State of Hawaii, 2011; Dyett & Bhatia, 2011



Pedestrian obstacles and sidewalk conditions next to Kapalama Canal



Dillingham Boulevard lacks bicycle facilities near Kapalama station



Honolulu Community College pedestrian mall



Source: Weslin Consulting Services

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4 ISSUES AND IMPLICATIONS

This chapter reviews key issues raised in the preceding chapters that will need to be addressed through the Neighborhood TOD planning process.

1. **Enhance District Identity and Character.** Each of the station areas has a distinct character that can be enhanced through the TOD planning and implementation process. The Kapalama station area is characterized both by the presence of Honolulu Community College, as well as strip malls and big box stores. The Kalihi station area presents a real mix of residential, commercial, and industrial uses, within small lots and a fine network of streets. The Middle Street station area is the least accessible and walkable station area, with large industrial parcels and freeways acting as barriers to pedestrian connectivity. Community outreach activities, including the community needs survey, advisory committee and public workshops, will help refine the vision and priorities for each station area.
2. **Integrate Stations with Surroundings (Public and Private Improvements).** Integrating the stations with the surrounding neighborhoods will be essential to the success of rail. This may include developing a station that is integrated within a larger development, prioritizing active uses at the ground level (such as cafés to promote self-policing and safety), escalators and additional access points to enable people to get to the station more easily, and streetscape improvements to improve appearance and pedestrian comfort. Kiss-and-ride and park-and-ride facilities should be designed to avoid pedestrian conflicts and limit large expanses of asphalt. Several stakeholders expressed a need for feeder bus or shuttle service to bring transit

riders from outside the planning area (e.g. Kalihi Valley) to the rail stations. The stations will need to integrate bus and rail transit to ensure seamless connections. (This is already being planned for the Middle Street Transit Center.)

Implementation of this objective from both a design and development perspective will be the responsibility of both the public and private sectors. While the City will provide the rail infrastructure and stations, TOD will result primarily from private development. Development standards and City policies should provide a framework for development that responds to the vision of the community while ensuring that projects are feasible from the developers' perspective. Moreover, structured public-private partnerships can create arrangements wherein private developers contribute to public improvements, in return for assistance with land assembly, financing, and ultimately an increase in resident and employee population (i.e. customers) over time.

3. **Identify Development Possibilities and Prioritize Opportunity Sites.** A market analysis of the planning area is being prepared in tandem with this report and will help inform the demand and feasibility for various land uses. Stakeholders have identified a variety of land use needs, including new residential and commercial development. The planning area provides proximity to Downtown and existing activity centers (including Honolulu Community College and big box stores), and high levels of existing transit service and use. Many stakeholders want to see more retail businesses and a broader range of businesses (both local and re-

gional in nature), but do not see a market opportunity for hotels or office space. Chapter 3 of this report presents an analysis of potential opportunity sites which will require further review and refinement to determine the most appropriate sites for development:

- *Kaplama:* This station has the greatest potential for redevelopment given the presence of underutilized sites and ongoing master planning by Honolulu Community College and Kamehameha Schools. Potential opportunity sites include redevelopment of older commercial strip malls along Dillingham Boulevard and Kohou Street. In addition, a range of housing types may also be appropriate, including high-rise towers, mid-rise apartments, and townhomes at market, workforce, and affordable rates.
- *Kalihi:* Although the Kalihi station area is challenged by small lot sizes and individual property owners, and has the fewest opportunity sites within the planning area, there may be locations to provide nodes of more “active” commercial development and residential uses. Older buildings that are in disrepair should be examined for renovation or redevelopment.
- *Middle Street:* A few opportunity sites are identified in the Middle Street area where intensities and building values tend to be low. The area is constrained by the freeway ramps and institutional land uses, but does have the benefit of larger parcels which could be renovated or redeveloped.

Constraints will need to be addressed to make development attractive and feasible. These challenges and barriers to development include: crime and safety (real or perceived), industrial presence, existence of long-time small businesses, fear of gentrification, small lot/dispersed ownership that will require lot consolidation, and high construction costs.

4. Consider Future of Industrial/Warehouse Uses.

The Kalihi planning area is one of the few remaining places in urban Honolulu providing a concentration of industrial space for uses such as printing presses, auto body shops, and storage facilities. The majority of the planning area is zoned Intensive Industrial or Industrial Mixed Use. The neighborhood is home to many small businesses that have survived in Kalihi because of low rents. Some community members are concerned about gentrification and potential increases in rent, while others believe the time is right for improved development. The plan will need to prioritize to what extent these uses should be retained and enhanced, or transitioned to other uses. To the extent that redevelopment is desired, incentives (e.g. lot consolidation) and higher densities may be needed to achieve transition to different uses.

5. Provide Transitions Between Uses.

In some locations, homes are directly next door to industrial uses. The latter uses can produce noise and air quality impacts that may be harmful to “sensitive receptors,” which includes residents, specifically children and seniors, and students at Puuhale School. Stakeholders have expressed mixed opinions about whether and how new development should be “integrated” with existing housing. Much of the existing housing stock is not well maintained or in conformance with City standards.

6. Coordinate with Local Institutions.

Kamehameha Schools and Honolulu Community College both have master plans underway that embrace the principles of TOD. These sites have been identified as potential opportunity sites since the Plan will provide guidelines for their development. These projects can help serve as catalyst projects for further development and improvements. The TOD planning process will also need to coordinate with the Oahu Community Correctional Center, which is planning to increase capacity at the existing site.

7. **Improve Public Safety.** Community members have expressed concern about public safety in the planning area. Crime prevention through environmental design is a philosophy that effective urban design can reduce actual and perceived crime. Design criteria include maximizing visibility and natural surveillance, and controlling access through differentiation between public and private space. This can be achieved by allowing “eyes on the street” through “active” ground floor uses, such as restaurants, hotel lobbies and shops, and transparency standards that require windows and restrict opaque security gates and fences. In addition, improving lighting, providing pedestrian routes, and designing appropriate landscaping, can help to improve safety for community members and visitors.
8. **Improve Multi-Modal Circulation/Manage Traffic Congestion and Parking.** Stakeholders hope that rail will provide alternatives to driving, thereby reducing growth in traffic congestion. Since several intersections are already operating at LOS E or F. Community members lament the “pass through” traffic of customers accessing the big box stores makai of Kapalama station.

As described in Section 2.4: Transportation, parking is haphazard and typically unregulated throughout the planning area. Many of the small businesses in the area have limited parking, since they preceded the current parking requirements. The zoning for TOD will need to include a coordinated parking strategy and standards that emphasize transit and pedestrian movement, rather than cars. This could include removing or reducing minimum parking requirements, establishing maximum parking allowances, providing credit for shared parking with adjacent uses that have different peak demand periods, allowing exemptions for certain uses or locations, and/or developing parking benefit districts.

9. **Create a Pedestrian- and Transit-Oriented Environment.** Development of a transit- and pedestrian-oriented district will necessitate attention to at least three components of development: types of uses, design of streets and streetscapes, and design of buildings:

- *Use Types:* TOD areas should be vibrant places to encourage transit ridership, allow for linking of trips, and provide places to gather, shop, and access services. High levels of population and/or employment are typically needed to support stores and restaurants, and enable access to services on foot. It may be appropriate to foster “active” uses along the Dillingham corridor and areas immediately adjacent to stations to generate pedestrian activity. The Land Use Ordinance calls for active uses in certain special districts, requiring active retail-oriented uses at the ground level and distinctive facade treatments. Outside of special districts, uses are regulated as permitted, conditionally permitted, or not permitted. This controls some of the use types allowed in various districts, but does not specify whether or not “active” uses are required.
- *Streets and Streetscapes:* Much of the road right-of-way, particularly on Nimitz Highway and Dillingham Boulevard, is devoted to vehicle travel lanes, at the expense of bike lanes, shoulders, on-street parking, and sidewalks, as well as actual and perceived pedestrian safety. Ideally, more of the right-of-way should be devoted to alternative modes by widening sidewalks and providing adequate bikeways. Throughout the planning area connected streets, sidewalks, and crosswalks are lacking. City standards require only five-foot sidewalk widths in residential zones and six-foot sidewalks in commercial zones. Pedestrian-oriented design elements, such as storefront windows, wide sidewalks, street facades, and streetscape improvements are already applied in special districts, but do not apply in the Kalihi planning area.

In addition, community members in the planning area would benefit from shade trees and landscaping, new streets to provide better walking connections, and undergrounding of utilities to improve visual connections to businesses and destinations. Stakeholders also recognize an opportunity to improve the ca-

nal along Kohou and Kokea Streets as a public amenity and an attraction for new higher density residential uses.

- *Site Planning and Building Design:* The elements that make places feel comfortable for pedestrians include how buildings align to the street and to other buildings, their distance from the sidewalk, the size of entryways, the amount of sun and shade that buildings displace, and whether the outdoor spaces between buildings are merely “left over” or purposefully created. Specific design standards, such as transparency, building entrance locations, and façade treatments can ensure visual interest at the ground level. The City’s current general development standards help to improve the pedestrian environment only to a limited extent, for example by screening parking, loading, utility or other unsightly areas with landscaping or other materials. The Land Use Ordinance can go further by addressing the relationship between buildings and public sidewalks, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. These features contribute to the character of a place and, in turn, whether or not residents, workers, and visitors are attracted to the place.

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A APPENDIX

Kalihi Neighborhood Transit Oriented Development Plan Appendix A Existing Bus Route Characteristics In 2011

EXISTING ROUTES		STATIONS			SERVICE CLASSIFICATION	BEGIN SERVICE	END SERVICE	AVERAGE HEADWAYS					
		Middle Street	Kalihi	Kapalama				AM Peak	Mid-Day	PM Peak	Even	Weekend	
No.	Destinations Served											Sat.	Sun.
A	Waipahu-UH Manoa	✓			Rapid Bus	4:18 AM	10:33 PM	15	15	15	30	22	30
B	Kalihi-Waikiki	✓			Rapid Bus	4:50 AM	10:04 PM	15	20	15	30	15	15
C	Waianae-Honolulu	✓	✓	✓	Rapid Bus	3:07 AM	10:48 PM	30	30	30	30	30	30
1	Kalihi-Hawaii Kai	✓			Urban Trunk	4:06 AM	1:17 AM	10	12	10	32	12	15
2	Kalihi-Waikiki	✓			Urban Trunk	4:09 AM	1:42 AM	12	15	12	20	15	15
7	Kalihi Valley	✓	✓		Urban Feeder	4:39 AM	11:07 PM	15	40	15	60	40	60
9	Pearl Harbor-Palolo Valley	✓	✓	✓	Urban Trunk	5:10 AM	11:26 PM	15	45	15	60	40	50
10	Kalihi Kai-Alewa Heights	✓	✓		Urban Feeder	4:53 AM	10:46 PM	40	50	45	65	65	65
16	Moanalua Valley-Kalihi	✓			Urban Feeder	5:50 AM	6:12 PM	30	--	42	--	--	--
19	Hickam-Waikiki ⁽¹⁾	✓			Urban Trunk	4:04 AM	1:45 AM	40	40	40	30	50	50
20	Pearlridge-Waikiki ⁽¹⁾	✓			Urban Trunk	5:14 AM	7:35 PM	38	40	38	0	60	60
31	Airport-Tripler	✓			Urban Feeder	4:40 AM	10:28 PM	35	75	35	60	60	60
32	Pearlridge-Kalihi	✓			Urban Feeder	5:05 AM	9:50 PM	30	60	30	60	60	60
40	Makaha-Honolulu	✓	✓	✓	Suburban Trunk	12:00 AM	12:00 AM	30	30	30	60	30	30
42	Ewa Beach-Waikiki	✓	✓	✓	Suburban Trunk	4:06 AM	2:51 AM	26	30	30	30	30	30
43	Waipahu-Honolulu	✓	✓	✓	Suburban Trunk	7:12 AM	6:07 PM	30	30	30	--	30	30
52	Circle Island	✓	✓	✓	Suburban Trunk	4:05 AM	1:19 AM	30	30	35	60	33	33
62	Wahiawa Heights-Honolulu	✓	✓	✓	Suburban Trunk	4:27 AM	1:19 AM	15	30	25	30	35	35
94	Kapolei-UH Manoa ⁽¹⁾	✓			Peak Express	5:40 AM	6:27 PM	20	--	20	--	--	--
201	Ewa Beach-Waikiki ⁽¹⁾	✓			Peak Express	4:45 AM	6:23 PM	15	--	20	--	20	20
202	Waipahu-Waikiki ⁽¹⁾	✓			Peak Express	5:00 AM	5:55 PM	20	--	25	--	30	30
203	Kalihi-Waikiki	✓			Peak Express	5:47 AM	5:05 PM	30	--	30	--	30	30

¹⁾ Route operates on Nimitz Highway.

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B APPENDIX

**Kalihi Neighborhood Transit Oriented Development Plan
Appendix B-1
Local Bus Service With Implementation Of The HHCTCP**

ROUTE	STATIONS			SERVICE CHARACTERISTICS				
				Service Coverage		Average Service Frequencies		Routing Description (with Project)
	Middle Street	Kalihi	Kapalama	Current	Proposed with the Project	Current	Proposed with the Project	
A	✓			Connects Waipahu with UH Manoa	Modified to operate between Kalihi Transit Center and UH Manoa	15 minutes in peak and midday periods	10 minutes in peak and 15 minutes in midday periods	Route A will provide limited stop service between Kalihi Transit Center and UH Manoa. The route will operate its current alignment between Kalihi Transit Center and the University.
B	✓			Connects Kalihi with Waikiki	Combined with Route 2 schedule	15 minutes in peak and midday periods	8 minute peak and 12 minute midday service	No change in alignment.
1	✓			Connects East Honolulu with Downtown Honolulu and Kalihi	No change to route	No change to route	No change to route	No change to route
2	✓			Connects Kalihi with Waikiki	Combined with Route B schedule	11 to 12 minute peak and 15 minute midday service	8 minute peak and 12 minute midday service	No change in alignment.
19	✓			Connects Waikiki with the Honolulu International Airport and Hickam Air Force Base	Restructured route will connect Waikiki with Honolulu International Airport	30 minute peak and 40 minute midday service	15 minutes in peak and midday periods	Westbound from Waikiki, the route will follow its current alignment to the Airport Station. The route returns via the same routing with the exception that the route does not circle Ala Moana Center instead staying on Ala Moana Blvd.
40/40A	✓	✓	✓	Connects Makaha with Ala Moana via Kapolei	Connects Makaha with Ala Moana via Kapolei	30 minute peak and midday service	15 minutes in the peak periods between West Loch Station and Waianae with 20 minute midday service. 20 service between West Loch and Ala Moana	Two minor changes in alignment. Route 40 will not provide service to the Hawaiian Waters Adventure Park. That service will be provided by new Route 419. Route will directly serve Iwilei Station via Kaaahi to King Street.
52	✓	✓	✓	Connects the North Shore, Wahiawa and Mililani with Downtown Honolulu	Connects the North Shore, Wahiawa and Mililani with Downtown Honolulu	30 minute service	No change to route	Minor alignment change from Dillingham, route will directly serve Iwilei Station via Kaaahi to King Street.

Kalihi Neighborhood Transit Oriented Development Plan
Appendix B-2
Local Bus Service With Implementation Of The HHCTCP

ROUTE	STATIONS			SERVICE CHARACTERISTICS				
				Service Coverage		Average Service Frequencies		Routing Description (with Project)
	Middle Street	Kalihi	Kapalama	Current	Proposed with the Project	Current	Proposed with the Project	
85/85A	✓	✓		Connects Kailua and Kaneohe with Downtown Honolulu and UH Manoa	Modified to serve Kalihi Station	Peak period service only	Peak period service only	Route is modified to serve Kalihi Station via Likelike Highway to Kalihi, right on Dillingham and right on Middle Street to the TC.
86/86A	✓	✓		Connects Kaneohe with Pearl Harbor	Modified to serve Kalihi Station	Peak period service only	Peak period service only	Route is modified to serve Kalihi Station via Likelike Highway to Kalihi, right on Dillingham and right on Middle Street to the TC.
New Route 301	✓			No change to route	Route 301 will provide service between the Kalihi Transit Center and Salt Lake, Foster Village and Makalapa.	No change to route	15 minutes in the peak and 30 minutes in the midday periods	The route provides service between the Kalihi Transit Center and the Aloha Stadium Transit Center serving Mapunapuna, Salt Lake, Foster Village and Makalapa neighborhoods.
New Route 302		✓		No change to route	The route will serve the Airport, Kalihi Transit Center, Fort Shafter, Moanalua Gardens, the Veterans Affairs Office and Tripler Medical Center	No change to route	30 minutes in the peak and midday periods	Starting from the Kalihi Transit Center, the route will travel to and return from the Tripler Medical Center via the current Route 31 alignment. The route will continue from the Transit Center via Middle Street to the H-1 entrance and airport exit serving the Airport Station returning to the Kalihi Transit Center via H-1.
New Route 303	✓			No change to route	Route 303 will provide a direct connection for Kalihi Valley homes to the Kalihi Transit Center.	No change to route	15 minutes peak and 30 minutes midday periods	The alignment along with Route 305 is part of a revised current Route 7. Route 303 connects Kalihi Valley homes with the Kalihi Transit Center serving Middle Street, Kamehameha IV and Kalena returning to the TC along the same alignment.
New Route 304	✓			No change to route	Connects Alewa Heights, Pauoa and Palama with Kalihi Transit Center	No change to route	15 minutes peak and 30 minutes midday periods	Eastbound from the Kalihi Transit Center, the route travels Middle Street, to N. King, to left on Houghtailing continuing to Alewa Heights along the current Route 10 alignment. The route returns to Kalihi Transit Center along the same alignment.
New Route 305	✓	✓		No change to route	Connects Kalihi Valley and Kalihi Kai with Kalihi Transit Center	No change to route	15 minutes peak and 30 minutes midday periods	Eastbound from the Kalihi Transit Center the route travels Middle Street to Kamehameha/Dillingham, right on Mokauea, left on Auiki, left on Kalihi to Kalihi and Ahuahu returning along the same alignment.
New Route 306	✓			No change to route	Connects Mapunapuna and Lagoon Drive with Kalihi Transit Center and Lagoon Drive Station	No change to route	60 minutes peak and midday periods	Northbound from Lagoon Drive and Palekona route travels Lagoon Drive serving Lagoon Drive Station, crosses Nimitz Highway to serve Mapunapuna continuing to Kalihi Transit Center. Same alignment in opposite direction.

Source: Adapted from Honolulu High-Capacity Transit Corridor Project Environmental Impact Statement; by the United States Department of Transportation Federal Transit Administration and the City and County of Honolulu Department of Transportation Services; June 2010; Appendix D.

C APPENDIX

**Kalihi Neighborhood Transit Oriented Development Plan
Appendix C-1
Existing Bus Passenger Characteristics**

RIDER CHARACTERISTICS	ROUTE									SYSTEM TOTALS
	A	B	C	1	2&13	7	9	10	16	
Licensed driver	35.1%	45.3%	51.0%	39.4%	59.7%	30.2%	44.8%	32.1%	13.8%	42.6%
Had a vehicle available for trip	59.1%	17.7%	25.0%	19.0%	28.8%	47.5%	20.9%	12.2%	9.8%	33.5%
Student	30.8%	16.9%	18.7%	39.5%	27.2%	29.6%	24.7%	30.7%	9.3%	28.1%
Employed Full-time	31.8%	53.4%	56.2%	35.3%	48.5%	18.1%	53.8%	42.1%	58.6%	43.8%
Visitor or tourist	0.4%	4.1%	1.0%	1.7%	6.8%	0.2%	1.3%	0.2%	0.0%	7.3%
18 years of age or younger	32.2%	14.5%	13.5%	26.2%	13.4%	39.2%	19.4%	21.7%	7.9%	14.2%
65 years of age or older	11.8%	10.3%	7.8%	13.7%	14.9%	25.0%	10.9%	29.2%	13.2%	13.1%
Riding bus for 15 years or more	2.1%	11.7%	30.6%	28.6%	28.8%	22.0%	35.9%	18.1%	3.6%	19.2%
Rate TheBus as being good or better	90.2%	83.2%	80.5%	72.2%	76.6%	92.8%	75.5%	89.1%	90.6%	80.6%
On a work trip	23.4%	52.9%	55.9%	35.3%	53.6%	12.8%	49.7%	33.7%	60.0%	37.5%
On a school trip	30.4%	12.2%	10.7%	25.1%	20.5%	28.5%	19.5%	29.4%	6.6%	19.1%
On a shopping trip	21.0%	15.5%	12.7%	8.4%	6.0%	28.2%	7.1%	9.4%	25.0%	10.4%

Source: Transit Rider Database and Bus Route Profiles Project; prepared for The City and County of Honolulu
Department of Transportation Services; prepared by Weslin Consulting Services, Inc.; February 2006.

**Kalihi Neighborhood Transit Oriented Development Plan
Appendix C-2
Existing Bus Passenger Characteristics**

RIDER CHARACTERISTICS	ROUTE										SYSTEM
	19&20	31	32	40	42	43	52&62	201	202	203	TOTALS
Licensed driver	64.8%	38.3%	32.8%	43.8%	46.9%	38.1%	53.0%	44.2%	41.9%	19.4%	42.6%
Had a vehicle available for trip	28.4%	22.6%	26.1%	22.8%	26.0%	21.1%	25.2%	46.7%	34.4%	23.3%	33.5%
Student	16.0%	4.4%	33.3%	23.6%	32.0%	17.7%	27.2%	3.2%	2.3%	3.4%	28.1%
Employed Full-time	51.3%	61.6%	33.0%	52.3%	54.3%	50.8%	47.0%	86.2%	91.6%	90.3%	43.8%
Visitor or tourist	26.2%	2.1%	0.5%	3.5%	11.5%	2.0%	8.3%	1.1%	2.3%	3.6%	7.3%
18 years of age or younger	6.7%	6.0%	25.2%	15.3%	22.7%	11.2%	15.2%	2.2%	0.0%	3.4%	14.2%
65 years of age or older	17.6%	21.2%	26.7%	5.4%	5.0%	15.1%	7.5%	1.1%	3.9%	0.0%	13.1%
Riding bus for 15 years or more	19.0%	27.8%	32.7%	22.7%	20.7%	25.0%	26.1%	35.8%	28.6%	35.5%	19.2%
Rate TheBus as being good or better	86.2%	73.2%	84.0%	68.7%	72.8%	87.7%	76.4%	84.9%	88.6%	80.0%	80.6%
On a work trip	47.1%	27.2%	20.3%	46.9%	44.8%	32.0%	45.8%	89.6%	93.0%	74.2%	37.5%
On a school trip	2.6%	1.5%	22.4%	13.5%	16.8%	2.7%	15.9%	2.1%	0.0%	3.2%	19.1%
On a shopping trip	9.8%	30.4%	22.6%	11.6%	8.0%	13.8%	6.9%	0.0%	0.0%	0.0%	10.4%

Source: Transit Rider Database and Bus Route Profiles Project; prepared for The City and County of Honolulu
Department of Transportation Services; prepared by Weslin Consulting Services, Inc.; February 2006.
Note: Route 94 was not in service at the time of the Transit Rider Database and Bus Route Profiles Project

D APPENDIX

**Kalihi Neighborhood Transit Oriented Development Plan
Appendix D-1
Existing Sidewalk Characteristics In 2011 By Sidewalk Width
Within One Quarter Mile Of The Middle Street Transit Center Station**

STREET SEGMENT DESCRIPTION					CURB LENGTH	SIDEWALK LENGTH BY EFFECTIVE WIDTH (feet)						NUMBER OF CROSSWALKS
Segment	Street	Side	From	To		none	1 to 2	3 to 4	5 to 6	7 to 8	9+	
1	Kamehameha Highway	North	West TOD line	East TOD line	2,650	1,890	0	0	0	10	750	2
2	Kamehameha Highway	South	West TOD line	East TOD line	2,650	2,640	0	0	0	10	0	1
3	Nimitz Highway	North	West TOD line	East TOD line	2,300	2,070	0	0	0	230	0	0
4	Nimitz Highway ⁽¹⁾	South	West TOD line	East TOD line	2,300	0	0	190	710	1,400	0	0
5	Middle Street ⁽²⁾	East	Kamehameha	North TOD line	1,430	0	0	700	0	530	200	0
6	Middle Street ⁽³⁾	West	Kamehameha	North TOD line	1,430	30	0	0	0	0	1,400	0
7	Kaluapalena	North	West TOD line	East TOD line	550	0	0	0	550	0	0	0
8	Kaluapalena	South	West TOD line	East TOD line	550	0	0	0	550	0	0	0
9	Laumaka	East	Kamehameha	Kaluapalena	200	0	0	0	0	200	0	1
10	Laumaka	West	Kamehameha	Kaluapalena	200	0	0	0	200	0	0	0
11	Bannister	North	end of road	East TOD line	200	200	0	0	0	0	0	0
12	Bannister	South	end of road	East TOD line	200	200	0	0	0	0	0	0
13	Puu hale Place	East	Kamehameha	East TOD line	1,300	1,300	0	0	0	0	0	1
14	Puu hale Place	West	Kamehameha	East TOD line	1,300	1,300	0	0	0	0	0	0
Totals					14,260	6,630	0	890	2,010	2,380	2,350	5
Percent by category:						46%	0%	6%	14%	17%	16%	Average of 1.25 crosswalks per intersection.
Notes: 1. The south side of Nimitz Highway was an asphalt pathway directly adjacent to high speed traffic on the north side and a six foot high continuous chain link fence on the south side portion in the 7 to 8 foot width category. 2. The east side of Middle Street is an asphalt pathway. 3. The west side of Middle Street was under construction at the time of the inventory in February 2011. Table reflects actual conditions at the time, not what will exist after construction.												

**Kalihi Neighborhood Transit Oriented Development Plan
Appendix D-2
Existing Sidewalk Characteristics In 2011 By Sidewalk Width
Within One Quarter Mile Of The Kalihi Station**

STREET SEGMENT DESCRIPTION					CURB LENGTH	SIDEWALK LENGTH BY EFFECTIVE WIDTH (feet)						NUMBER OF CROSSWALKS
Segment	Street	Side	From	To		none	1 to 2	3 to 4	5 to 6	7 to 8	9+	
1	Dillingham Boulevard	North	West TOD line	East TOD line	2,520	0	0	1,920	600	0	0	2
2	Dillingham Boulevard	South	West TOD line	East TOD line	2,520	0	0	1,920	600	0	0	2
3	Nimitz Highway	North	West TOD line	East TOD line	1,040	1,040	0	0	0	0	0	1
4	Ashford Street	North	Mokauea Street	East TOD line	530	530	0	0	0	0	0	1
5	Ashford Street	South	Mokauea Street	East TOD line	530	530	0	0	0	0	0	1
6	Waterhouse	North	Puuhale Road	West TOD line	240	240	0	0	0	0	0	0
7	Waterhouse	South	Puuhale Road	West TOD line	240	240	0	0	0	0	0	0
8	Kahanu Street	North	Kalihi Street	Puuhale Road	1,220	1,220	0	0	0	0	0	0
9	Kahanu Street	South	Kalihi Street	Puuhale Road	1,220	1,220	0	0	0	0	0	2
10	Ahuula Street	North	Kalihi Street	Puuhale Road	1,350	1,350	0	0	0	0	0	2
11	Ahuula Street	South	Kalihi Street	Puuhale Road	1,350	1,350	0	0	0	0	0	1
12	Wilcox lane	North	Puuhale Road	West TOD line	490	490	0	0	0	0	0	0
13	Wilcox Lane	South	Puuhale Road	West TOD line	490	490	0	0	0	0	0	0
14	Kaumualii Street	North	East TOD line	end of road	2,440	2,440	0	0	0	0	0	2
15	Kaumualii Street	South	East TOD line	end of road	2,440	2,440	0	0	0	0	0	2
16	Eluwene Street	North	Kalihi Street	end of road	1,980	1,980	0	0	0	0	0	1
17	Eluwene Street	South	Kalihi Street	end of road	1,980	1,980	0	0	0	0	0	1
18	Colburn	North	East TOD line	Puuhale Road	2,110	2,110	0	0	0	0	0	0
19	Colburn	South	East TOD line	Puuhale Road	2,110	2,110	0	0	0	0	0	1
20	Hau Street	North	East TOD line	Puuhale Road	2,100	2,100	0	0	0	0	0	0
21	Hau Street	South	East TOD line	Puuhale Road	2,100	2,100	0	0	0	0	0	1
22	Kalani Street	North	East TOD line	Puuhale Road	1,880	1,880	0	0	0	0	0	2
23	Kalani Street	South	East TOD line	Puuhale Road	1,880	1,880	0	0	0	0	0	2
24	Hart Street	North	East TOD line	Puuhale Road	1,630	1,630	0	0	0	0	0	0
25	Hart Street	South	East TOD line	Puuhale Road	1,630	1,630	0	0	0	0	0	0
26	Puuhale Road	West	South TOD line	North TOD line	2,320	1,300	0	270	750	0	0	1
27	Puuhale Road	East	South TOD line	North TOD line	2,200	1,310	0	140	750	0	0	1
28	Mokauea Street	West	South TOD line	North TOD line	2,340	0	0	1,590	750	0	0	9
29	Mokauea Street	East	South TOD line	North TOD line	2,340	0	0	2,110	230	0	0	8
30	Kalihi Street	West	South TOD line	North TOD line	2,180	0	0	760	1,420	0	0	2
31	Kalihi Street	East	South TOD line	North TOD line	2,180	0	0	760	1,420	0	0	3
Totals					51,580	35,590	0	9,470	6,520	0	0	48
Percent by category:						69%	0%	18%	13%	0%	0%	Average of 1.55 crosswalks per intersection.

**Kalihi Neighborhood Transit Oriented Development Plan
Appendix D-3
Existing Sidewalk Characteristics In 2011 By Sidewalk Width
Within One Quarter Mile Of The Kapalama Station**

STREET SEGMENT DESCRIPTION					CURB LENGTH	SIDEWALK LENGTH BY EFFECTIVE WIDTH (feet)						NUMBER OF CROSSWALKS
Segment	Street	Side	From	To		none	1 to 2	3 to 4	5 to 6	7 to 8	9+	
1	Dillingham Boulevard	North	West TOD line	East TOD line	2,530	0	0	0	2,530	0	0	3
2	Dillingham Boulevard	South	West TOD line	East TOD line	2,470	0	0	0	2,470	0	0	4
3	Colburn	North	East TOD line	Dillingham	680	0	0	680	0	0	0	1
4	Colburn	South	East TOD line	Dillingham	680	0	0	680	0	0	0	0
5	Kaumualii Street	North	Waiakamilo Rd.	Kohou St.	1,010	0	0	1,010	0	0	0	1
6	Kaumualii Street	South	Waiakamilo Rd.	Kohou St.	1,050	0	0	390	0	660	0	1
7	Waiakamilo Road	East	West TOD line	West TOD line	450	0	0	450	0	0	0	1
8	Waiakamilo Road	West	West TOD line	West TOD line	740	0	0	740	0	0	0	2
9	Moowaa	East	Kaumualii St.	North TOD line	920	0	0	920	0	0	0	0
10	Moowaa	West	Kaumualii St.	North TOD line	920	0	0	920	0	0	0	0
11	Kohou Street	East	South TOD line	North TOD line	2,350	0	0	1,480	870	0	0	2
12	Kohou Street	West	South TOD line	North TOD line	2,400	2,400	0	0	0	0	0	0
13	Kokea Street	East	end of road	North TOD line	2,300	2,300	0	0	0	0	0	0
14	Kokea Street	West	end of road	North TOD line	2,300	1,280	0	1,020	0	0	0	1
15	Alakawa Street	East	South TOD line	Dillingham	1,300	0	0	1,300	0	0	0	1
16	Alakawa Street	West	South TOD line	Dillingham	1,300	0	0	1,300	0	0	0	0
Totals					23,400	5,980	0	10,890	5,870	660	0	17
Percent by category:						26%	0%	47%	25%	3%	0%	Average of 0.41 crosswalks per intersection.

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