



AIRPORT AREA Transit-Oriented Development Plan

Existing Conditions Report

August 2015

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ACRONYMS AND ABBREVIATIONS

ADP	Area Development Plans
BWS	Board of Water Supply
City	City and County of Honolulu
DLNR	Department of Parks and Recreation
DNL	yearly day-night average sound level
DPP	City Department of Planning and Permitting
DTS	City Department of Transportation Service
du/ac	dwelling units per acre
EHE-EHMP	Environmental Hazard Evaluation and Environmental Hazard Management Plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
HART	Honolulu Authority for Rapid Transportation
HDOH	Hawaii Department of Health
HDOT	Hawaii Department of Transportation
HFD	Honolulu Fire Department
HPD	Honolulu Police Department
HRTPT	Honolulu Rail Transit Project
IDP	Installation Development Plan
JBPHH	Joint Base Pearl Harbor Hickam
LUO	Land Use Ordinance
LUST	Leaking Underground Storage Tank
NHL	National Historic Landmark
NRHP	National Register of Historic Places
PA	Programmatic Agreement
PIM	Public Infrastructure Map
PUC	Primary Urban Center
SHPD	State Historic Preservation Division
SOEST	School of Ocean Earth Science and Technology
TOD	transit-oriented development
U.S.	United States
UST	underground storage tanks

INTRODUCTION

1.0 INTRODUCTION

The planning, design, and now construction of the Honolulu Rail Transit Project (H RTP) has been ongoing for several years. In conjunction with this process, the City and County of Honolulu (City) Department of Planning and Permitting (DPP) has been creating neighborhood transit-oriented development (TOD) plans for the areas surrounding each of the transit stations. TOD is a pattern of mixed uses surrounding a transit station that takes advantage of the convenience and affordability of transit. Over time, new and different land use patterns often introduce increased housing, jobs, and services to the area.

The City's neighborhood TOD plans completed to date generally recommend more intense uses in the areas immediately adjacent to the rail stations, with progressively lower-density development spreading outward. TOD generally occurs within a ¼-mile to ½-mile radius from a transit stop, as a 5-10 minute walk is considered to be a comfortable walking distance for pedestrians. Important TOD characteristics include increased densities, pedestrian-scale design that is safe and attractive, a diversity of land uses, multi-modal transit opportunities and connections, and social equity in housing and community support facilities. Each neighborhood TOD plan is distinct; what may work in one neighborhood may not be appropriate in another. Therefore, a successful TOD plan needs to consider the unique characteristics of the surrounding area of each rail station, and respond in a specific manner that allows for flexibility for future adjustments.

1.1 BACKGROUND AND PURPOSE

Honolulu Rail Transit Project

The City's Honolulu Authority for Rapid Transportation (HART), in partnership with the United States (U.S.) Department of Transportation Federal Transit Administration, is building the H RTP. The rail corridor will connect residential and employment centers in the west to urban Honolulu. The H RTP is a 20-mile elevated rail line with 21 stations between East Kapolei and Ala Moana Center. Feeder buses will link stations with those

areas not directly served by rail. The H RTP will help moderate traffic in the highly congested east-west transportation corridor and provide fast, reliable public transportation. The anticipated competition date is 2019.

In the Airport area, the H RTP alignment runs eastward past the Aloha Stadium station along Kamehameha Highway, continues to Nimitz Highway, and turns south along Aolele Street toward the Honolulu International Airport. It then follows Aolele Street east to Ualena Street and Waiwai Loop east to reconnect to Nimitz Highway near Moanalua Stream.

Airport Area Transit-Oriented Development Planning

As shown on Figure 1-1, the Airport Area TOD Plan is focused on the areas around the rail stations planned at Pearl Harbor station, Honolulu International Airport, and Lagoon Drive.

These areas embody a mix of current uses including: industrial, commercial, military, recreational, and residential, and it serves as the gateway to the island for arriving air travelers. TOD planning for these areas will address local issues related to land use, circulation, infrastructure, and community character. The final Airport Area TOD Plan will provide a guide, based on a shared vision, for future public and private investment in the areas surrounding each of the three stations.

Purpose of the Existing Conditions Report

This report represents the first major step in the preparation and development of the Airport Area TOD Plan. Its purpose is to describe the existing conditions, opportunities, and challenges related to land use, urban design, transportation, and infrastructure. This report also discusses major topics and themes discussed during stakeholder meetings. An Economic and Market Analysis which is being prepared separately will also inform the Airport Area TOD plan.

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1.2 REPORT ORGANIZATION

This report is organized as follows:

Chapter 1: Introduction of the project, planning area, and description of existing plans, policies, ordinances, and regulations for the Airport area.

Chapter 2: Discussion of the Airport area rail corridor in terms of existing land use, community composition, public safety, transportation, infrastructure, and environmental factors.

Chapter 3: Discussion of station area character, pedestrian facilities, station access, and potential opportunity sites for each of the three stations.

Chapter 4: Discussion of stakeholder interviews, major themes discussed, and an overview of the public participation planned throughout the process.

Chapter 5: Discussion of issues and opportunities that developed from this analysis that will be addressed by the planning team, the Advisory Committee, and community members through this planning process.

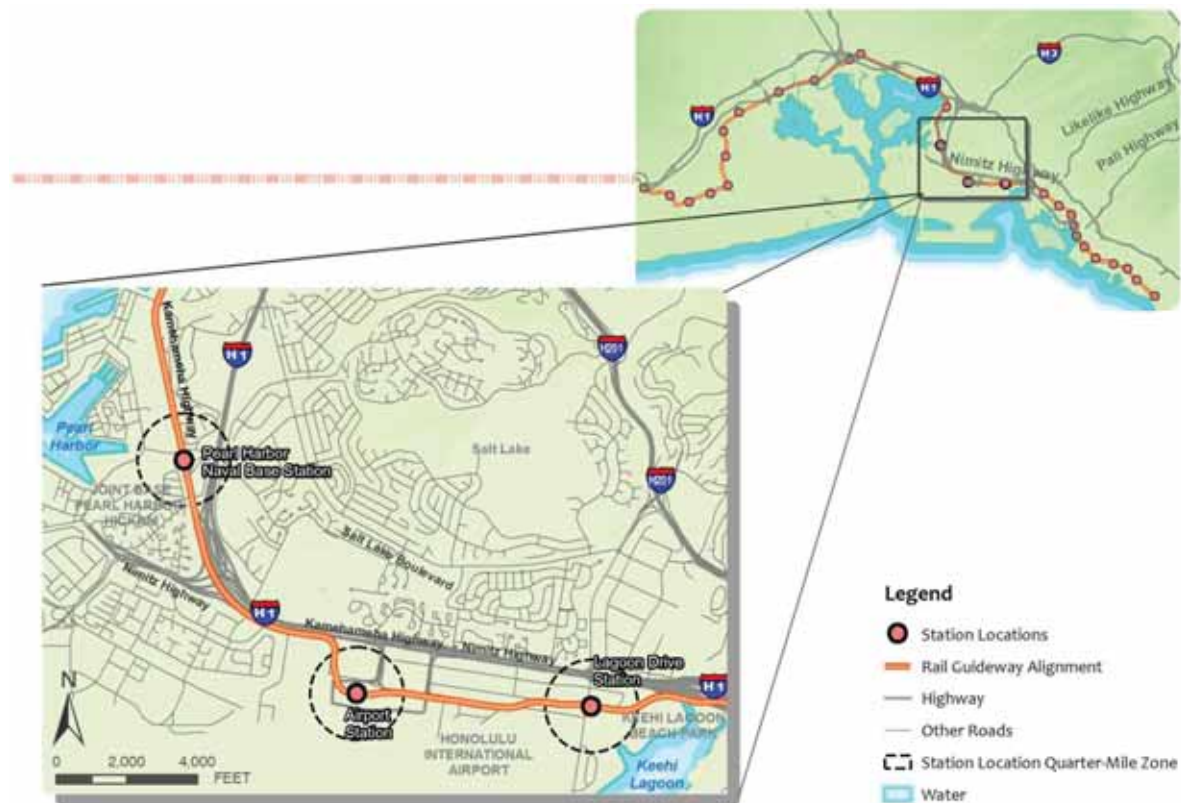


Figure 1-1: Regional Location with Transit Corridor and Stations

INTRODUCTION

1.3 LOCATION AND PLANNING AREA

The Airport area stations are located in the Primary Urban Center (PUC) in metropolitan Honolulu, spanning from the Joint Base Pearl Harbor-Hickam (JBPHH) to the Honolulu International Airport and Lagoon Drive industrial area, as shown in Figure 1-2. The TOD planning area generally focuses on a ¼-mile radius around each transit stop, and can go up to a ½-mile radius, depending on location. These are the primary areas assessed for their existing conditions and relevant planning implications in this report. In addition, Figure 1-2 illustrates other applicable planning areas based on the unique character of the neighborhoods as are described below:

Region of Influence – This extended area has few transit-related destinations, but with a high quantity of residential units has significant potential to act as a ridership origin; it is expected that the majority of everyday, commuter-type riders beginning their trip at these three stations will originate from this larger area. Since none of the stations are designated as park-and-ride stations, riders are expected to access the stations by bus, bike, on foot, or be dropped off. Although the majority of this larger area is beyond a standard pedestrian walkshed of a ¼- mile to ½-mile, it is within the Federal Transit Administration defined 3-mile bikeshed.

Ridership will depend heavily upon the availability and efficiency of 'first and final mile' station connections, first mile being the starting location of the transit rider and last mile being the final destination.

Airport and Lagoon Drive TOD Area – The focus of this area is on the similarities and synergy between the Airport and Lagoon Drive stations. Because of the proximity of the stations and complimentary land uses between them, this area makes up a unique third-tier planning area and zone of high influence on the TOD plan.

Half-Mile Radius Area – This area is expected to act as both a ridership origin and destination. This is the secondary planning area and a zone of significant influence on the TOD plan; although heavily influenced by the connectivity of the street system, the half-mile radius is generally considered to be a 10-minute walk, which is the approximate distance that an average individual is willing to walk to access rail transit.

Quarter-Mile Area – This is the primary planning area and the zone of highest influence on the TOD Plan; although heavily influenced by the connectivity of the street system, the quarter-mile radius is generally considered to be a 5-minute walk and is well within what is considered a 'reasonable' walk for the average pedestrian accessing premium (in this case fixed rail) transit.

1.4 EXISTING PLANS AND POLICIES

The Airport Area TOD Plan will incorporate a number of current plans and policies, specifically those that promote and support transit-related development. In conjunction with the current policies, the Airport Area TOD Plan will create new policies, as appropriate, to promote TOD and may propose changes to existing policies in order to meet new goals. A summary of existing plans and policies is provided below.

The City follows a tiered approach to planning and the implementation of planning objectives, policies, principles, guidelines, and regulations. At the broadest level is the Oahu General Plan, which establishes concise objectives and policies to guide island-wide development. The next tier is made up of the Development Plans (and Sustainable Community Plans) that focus on the eight Oahu regions. Ordinances and regulations makeup the third tier and are the primary method of implementing the City's plans. Therefore, they must be consistent with the Oahu General Plan and applicable Development Plans.

INTRODUCTION

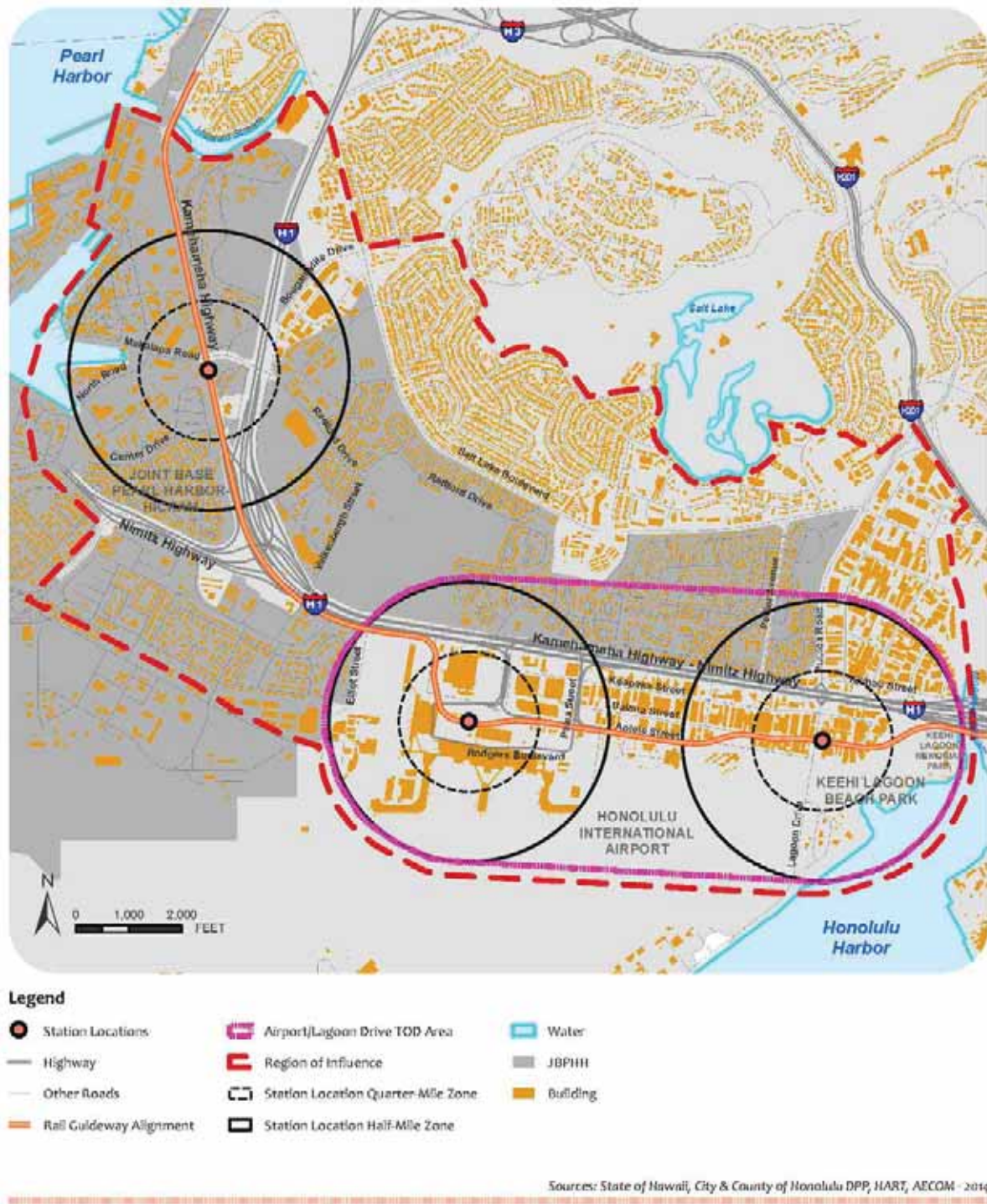


Figure 1-2: Region of Influence and Planning Areas

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Oahu General Plan

The City's General Plan provides the long-range aspirations of island residents and shapes the strategies and actions required to achieve them. The General Plan is a guide for government, the private sector, and citizens. It provides the City's general policy on subjects ranging from growth and development issues (e.g., transportation and utilities) to lifestyle concerns. An update to the Plan is currently underway that will add more focus on TOD and sustainability (CCH, 2002).

Primary Urban Center Development Plan

The 2004 PUC Development Plan is the regional plan applicable to the three Airport area stations. It provides a vision for the PUC's future development, which consists of policies, guidelines, and conceptual schemes that will serve as a policy guide for more detailed zoning maps and regulations, and informs public and private sector investment decisions. The PUC Development Plan promotes the development of rapid transit and supports TOD development (CCH, 2004).

Figure 1-3 shows the PUC Development Plan land use designations for the Region of Influence surrounding the Airport area stations. The ½-mile area surrounding the Pearl Harbor station is primarily adjacent to "Medium and High Density Residential/Mixed Use," "Lower Density Residential," and some "Industrial" and "Open Space". The Airport/Lagoon Drive stations TOD Area is primarily "Industrial," and some "Lower Density Residential" (mostly mauka [inland] of Kamehameha/Nimitz Highway) and "Major Parks and Open Space" (i.e., Keehi Lagoon Beach Park).

Land Use Ordinance

The purpose of the City's Land Use Ordinance (LUO) is to regulate land use and encourage orderly development in accordance with adopted land use policies, including the Oahu General Plan and regional development plans, and to promote and protect the public health, safety, and welfare.

It is also referred to as the zoning code or Chapter 21 of the Revised Ordinances of Honolulu. Its intent is to provide reasonable development and design standards for the location, height, bulk, and size of structures, yard areas, off-street parking facilities, and open spaces, and the use of structures and land for agriculture, industry, business, residences, or other purposes (ROH 2014). Figure 1-4 shows the zoning designations for the Region of Influence surrounding the Airport area stations and the zoning height limitations. Figure 1-5 shows the runway protection zone and building height limitations, based on additional restrictions due to glideslope height limits from the Federal Aviation Administration (FAA).

The ½-mile area surrounding the Pearl Harbor station is composed of the following zoning districts:

Federal and Military (F-1): This district permits the full range of military or federal government activities.

Restricted Preservation (P-1): This district designates areas where all uses, structures, and development standards shall be governed by the state Department of Land and Natural Resources (DLNR).

Industrial Mixed Use (IMX-1): This district allows a mix of industrial and commercial uses intended to create a diversity of business types and employment opportunities. Limited residential uses are allowed. Maximum floor to area ratio (FAR) value is 2.5. The height limit for the area is 60 feet.

Residential (R-5): This district allows areas for residential development where lot size is 5,000 square feet, maximum height is generally 25 feet, and permitted uses include: single-family, duplexes, and multi-family homes.

The Airport/Lagoon Drive TOD Area is composed of the following zoning districts:

Federal and Military (F-1): See above.

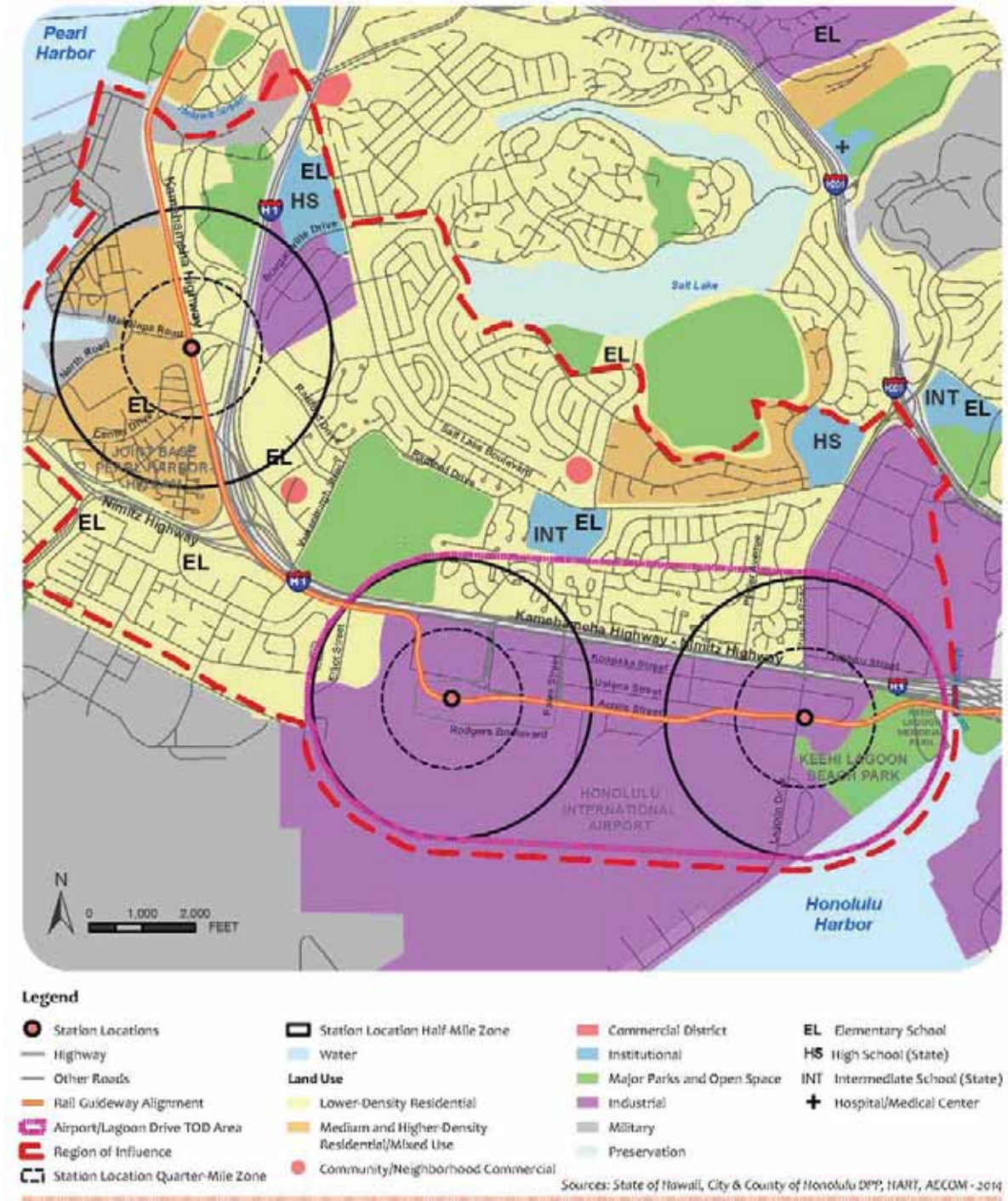


Figure 1-3: Primary Urban Center Development Plan Land Use Designations

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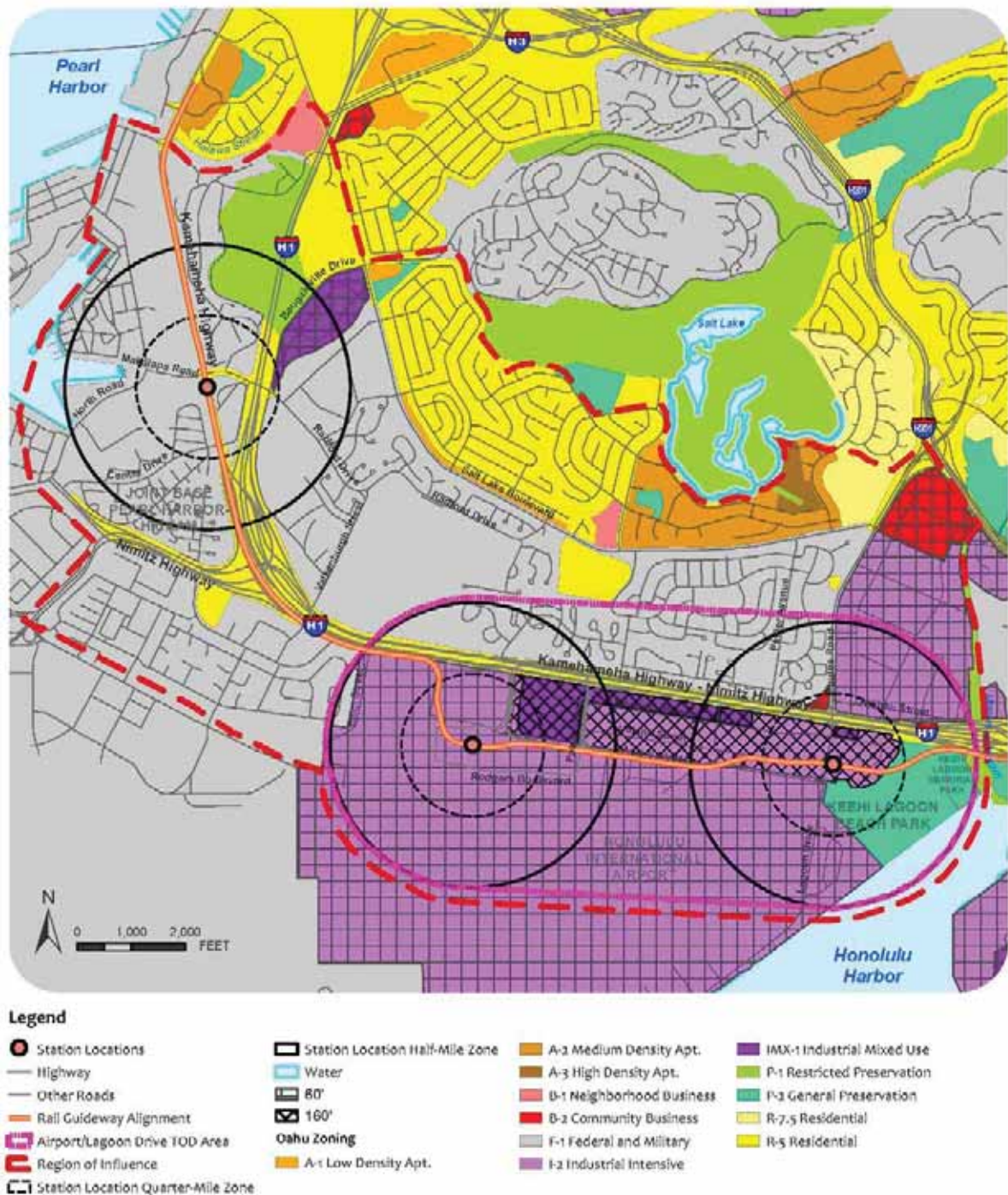


Figure 1-4: Zoning Designations and Zoning Height Limitations

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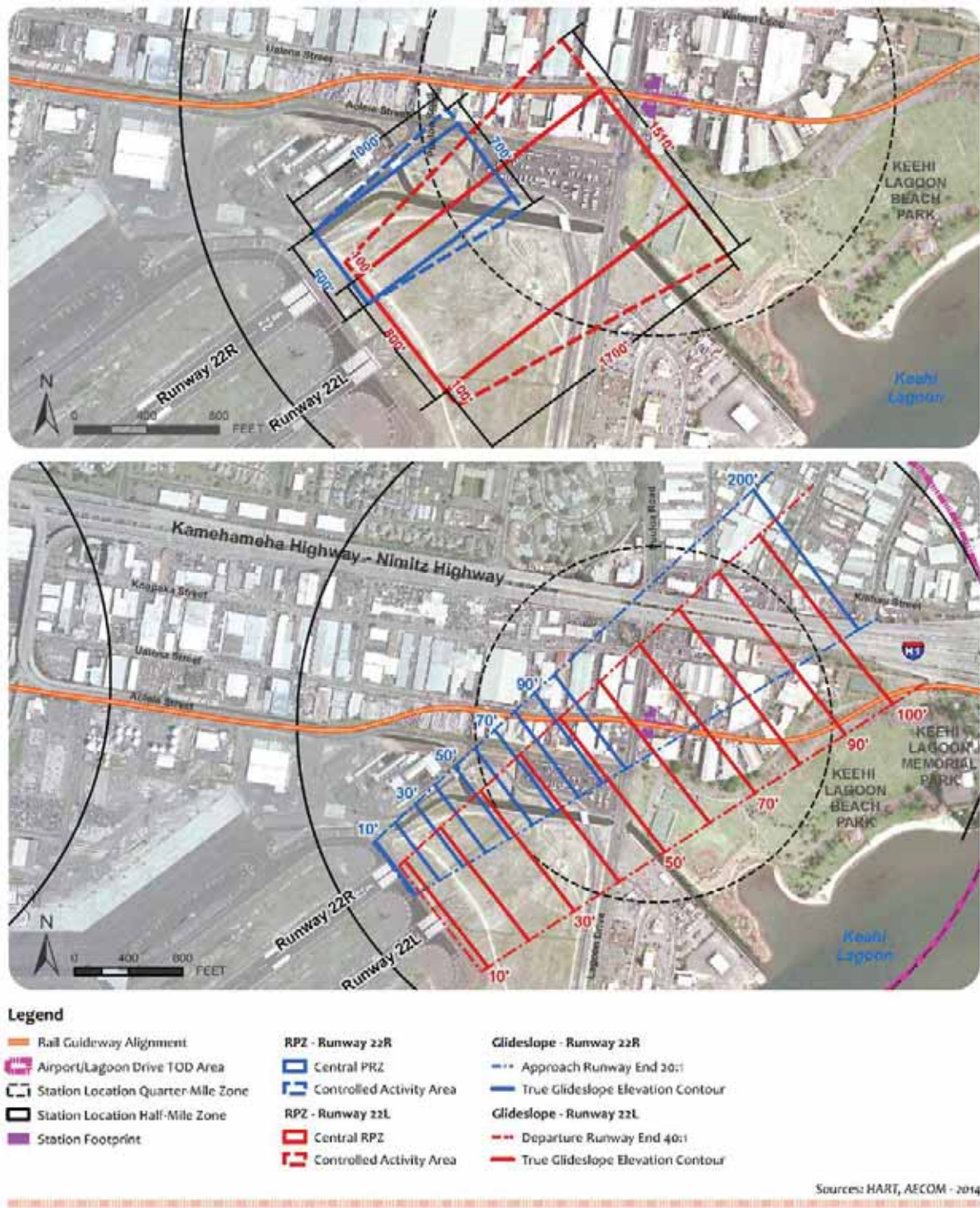


Figure 1-5: FAA Runway Protection Zone and Glideslope Height Limits

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Community Business (B-2): B-2 zoning provides areas for community-wide business establishments serving several neighborhoods and offering a wider range of services than is permitted in B-1 districts. Maximum allowable height is for this area is 60 feet.

Industrial Intensive (I-2): This district allows for the full range of industrial uses necessary to support the city. It is intended for areas with necessary supporting public infrastructure, near major transportation systems, and with other locational characteristics necessary to support industrial centers. Maximum FAR value is 2.5. Maximum height for this area is 60 feet.

Industrial Mixed Use (IMX-1): See above. Maximum height for this area is 160 feet.

General Preservation (P-2): This district designates open space for recreation that affords outdoor space for public use and enjoyment.

Transit-Oriented Development Ordinance

The City has adopted zoning provisions in the LUO to allow for the establishment of special districts known as TOD zones. The ordinance allows the creation of TOD development regulations to foster and encourage TOD and redevelopment within the zones. The ordinance also calls for the preparation of TOD plans to serve as the basis for the creation or amendment of a TOD Zone and TOD development regulations. TOD plans must address the following:

1. Overall economic revitalization, neighborhood character, and unique community historic and other design themes. Objectives shall summarize the desired neighborhood mix of land uses, general land use intensities, circulation strategies, general urban design forms, and cultural and historic resources that form the context for TOD.
2. Recommend parcels to be included in the TOD Zone, taking into account natural topographic barriers, extent of market interest in redevelopment, and the benefits of transit including the potential to increase transit ridership.

3. Recommend zoning controls, including architectural and community design principles, open space requirements, parking standards, and other modifications to existing zoning requirements, or the establishment of new zoning precincts, as appropriate, including density incentives.
4. Preservation of existing affordable housing and potential opportunities for new affordable housing, and as appropriate, with supportive services.
5. Avoid gentrification of the community.
6. Implementation of recommendations, including: the phasing, timing and approximate cost of each recommendation, as appropriate and new financing opportunities that should be pursued.

Transit-Oriented Development Planning Framework

The City has provided the following basic planning principles for TOD plans:

- Seamlessly integrate the roadway, transit, and trail network
- Have a defined role within the overall regional transit corridor
- Encourage land uses that increase transit ridership
- Create a framework of affordable communities
- Foster vibrant, mixed-use communities where the automobile is truly an option and not a necessity
- Integrate new development with existing communities
- Promote community sustainability

Public Infrastructure Maps

The Public Infrastructure Map (PIM) for each of eight Oahu regions show proposed major public infrastructure facilities projects, such as roads, wastewater, and drinking water facilities for that region. Prior to approving the appropriation of funds for project acquisition, the projects must be found to be consistent with the General Plan and, in the case for the Airport station planning areas, the PUC development plan.

The projects on PIM show desired long-term future investments and more immediate

INTRODUCTION

priority projects of importance. For the Airport station planning area, the following features are denoted on the PIM:

- Rapid Transit Corridor
- Arterial Roadway
- Federal Fire Station on JBPHH

Airport Modernization Plan

The Hawaii Department of Transportation (HDOT) Airports Division is currently undertaking major improvements at the Honolulu International Airport. The multi-year modernization program will transform the aging airport to be able to accommodate the increasing volume of commercial and private air traffic, meet heightened security requirements, and improve the passenger experience. The major components include:

- Mauka concourse
- Diamond Head commuter terminal
- Consolidated rental car facility
- Aloha Air cargo facility
- Hawaiian Airlines cargo/maintenance facility
- Widening of aircraft taxi lanes
- New employee parking lot (Hawaii Airports Modernization Project, 2008)

Oahu Bike Plan 2012

The Honolulu Department of Transportation Service's (DTS) Oahu Bike Plan includes provisions to ensure that the rail transit stations are integrated into the regional bikeway network. Goals include:

- Increase bicycle trips
- Enhance compatibility between roadway users
- Encourage and promote bicycling as a safe, convenient, and pleasurable means of travel
- Attain designation as a Bicycle-Friendly Community by the League of American Bicyclists (DTS, 2012)

Bike Plan Hawaii Master Plan

Bike Plan Hawaii outlines how the State intends to accommodate and promote bicycling through existing and future bicycle facilities, policies, and programs to ensure a successful bicycle network.

CORRIDOR

2.0 CORRIDOR

The Airport area H RTP corridor (“corridor”) consists of three stations: Pearl Harbor Naval Base (“Pearl Harbor”), Honolulu International Airport, and Lagoon Drive.

2.1 LAND USE

This section provides an assessment of the existing pattern of land uses within the corridor. Major areas along the corridor are Lagoon Drive, Mapunapuna, Honolulu International Airport, Camp Catlin Naval Housing, JBPHH, Navy Exchange and Commissary (“The Mall at Pearl Harbor”), the area mauka of the Mall at Pearl Harbor (i.e., light industrial area), and the Salt Lake neighborhood (“Salt Lake”). The following sections describe, and Figure 2-1 shows, the current land use and development pattern in the corridor.

Existing Land Uses

Pearl Harbor Station Area

Kamehameha Highway and the H1 Freeway partition this area into relatively distinct east/west segments. The majority of the land within the ½-mile zone is restricted military property. The remaining land is composed of roadway facilities, and the Salt Lake light industrial area.

The ¼-mile zone around the Pearl Harbor station is enveloped on both sides by components of the JBPHH installation, including: single-family housing, commercial uses (including retail, office, and minor industrial), community facilities (schools and churches), and open space. The City does not control JBPHH in terms of zoning and infrastructure. Although confined by the installation boundary, whereby access and use of functions are limited to installation personnel and dependents, JBPHH is comprised of a diversity of land uses (i.e., single and multi-family residential, institutional, commercial, and industrial), as military bases are essentially a microcosm of a standalone community. These uses are found in greater proportions within the ½-mile zone of the station area. Additionally, there are heavy industrial uses on the makai side of JBPHH. The zone also includes commercial-

industrial facilities, including the Salt Lake light industrial area located north and mauka of the station site, and the Mall at Pearl Harbor located southeast of the station site. Just beyond the ½-mile zone (within the Region of Influence and adjacent to the Mall at Pearl Harbor) is the Moanalua commercial district.

Airport/Lagoon Drive TOD Area

The elevated H-1 Freeway and on-grade Nimitz Highway partition this area into relatively distinct north/south segments. Approximately half of the land within the area is restricted airport property. The remaining land is composed of roadway facilities, a mix of airport-related functions and businesses, light industrial uses, housing, and park and open space areas.



Photo 2-1: Airport operation and airplane maintenance at Honolulu International Airport

The ¼-mile zone around the Airport station is composed of medium intensity industrial uses, such as airport and airplane maintenance, cargo logistics, surface and elevated parking garages, and commercial uses catering to the airport patrons. Airport tenants include state and federal agencies, airline companies, car rental agencies, and other airport vendors. Similar uses are present in the ½-mile zone makai (seaward) of Nimitz Highway, with the addition of a limited amount of commercial businesses (food outlets and airport hotels). A portion of the Camp Catlin Naval Housing and the Navy-Marine Golf Course are located on the mauka side of Nimitz Highway within the ½-mile zone. Open spaces buffer the residential areas at Camp Catlin and the Earhart Village (west of the airport). These land uses are shown as industrial, commercial, park-open space, and residential on Figure 2-1.

CORRIDOR

Lagoon Drive and its vicinity connecting the Airport and Lagoon Drive stations is comprised of corporate offices for local industries, warehouses, and commercial functions such as car dealerships and restaurants. The “front” of the Lagoon Drive area along Nimitz Highway includes car dealerships, rental car operations, and small airport hotels, while the “back” streets, such as Aolele Street, tend to feature heavier (i.e., industrial in nature) facilities. Warehouses built to observe minimal setback lines are prevalent, and although sidewalks are present on many streets, there are very few features that encourage pedestrian activities. For example, there are very few breaks along the east-west directional streets (i.e., Koapaka, Ualena, and Aolele Streets); little to no trees providing shade or relief; a lack of clearly marked pedestrian crossings or dedicated multi-modal paths; very few commercial-retail operations; and no pedestrian gathering places. Camp Catlin Naval Housing is located on the mauka side of Nimitz Highway, see Figure 2-1.



Photo 2-2: Warehouses dominate the streetscape in the Lagoon Drive industrial area. Note there are no crosswalks at this intersection.

The ¼-mile zone around the Lagoon Drive station is similar to the area in-between the Airport and Lagoon Drive stations described

above, with the addition of a portion of Keehi Lagoon Beach Park (shown as open space on Figure 2-1). The land use composition is heavily commercial-industrial, reflecting the dominant characteristics of the Lagoon Drive business complex and the adjacent Mapunapuna industrial area located across Nimitz Highway to the mauka and inside of the ¼-mile zone, see Figure 2-1. There is a stark contrast and no transition zone between the predominantly industrial character of the Lagoon Drive complex and the open space of the park. In addition to these land uses, Camp Catlin Naval Housing and a commercial-neighborhood use (B-2) zone featuring retail and a food outlet are located in both the ¼-mile and the ½-mile zones of the Lagoon Drive station area. With the exception of a handful of uses (e.g., rental car, airport hotel), the majority of uses along Nimitz Highway pertain to car sales.



Photo 2-3: Airport Honolulu Hotel located within minutes from the Honolulu International Airport

Land Ownership

Major landowners in the ½-mile zone around the Pearl Harbor station and the Airport/Lagoon Drive TOD Area are both described below and shown on Figure 2-2.

CORRIDOR

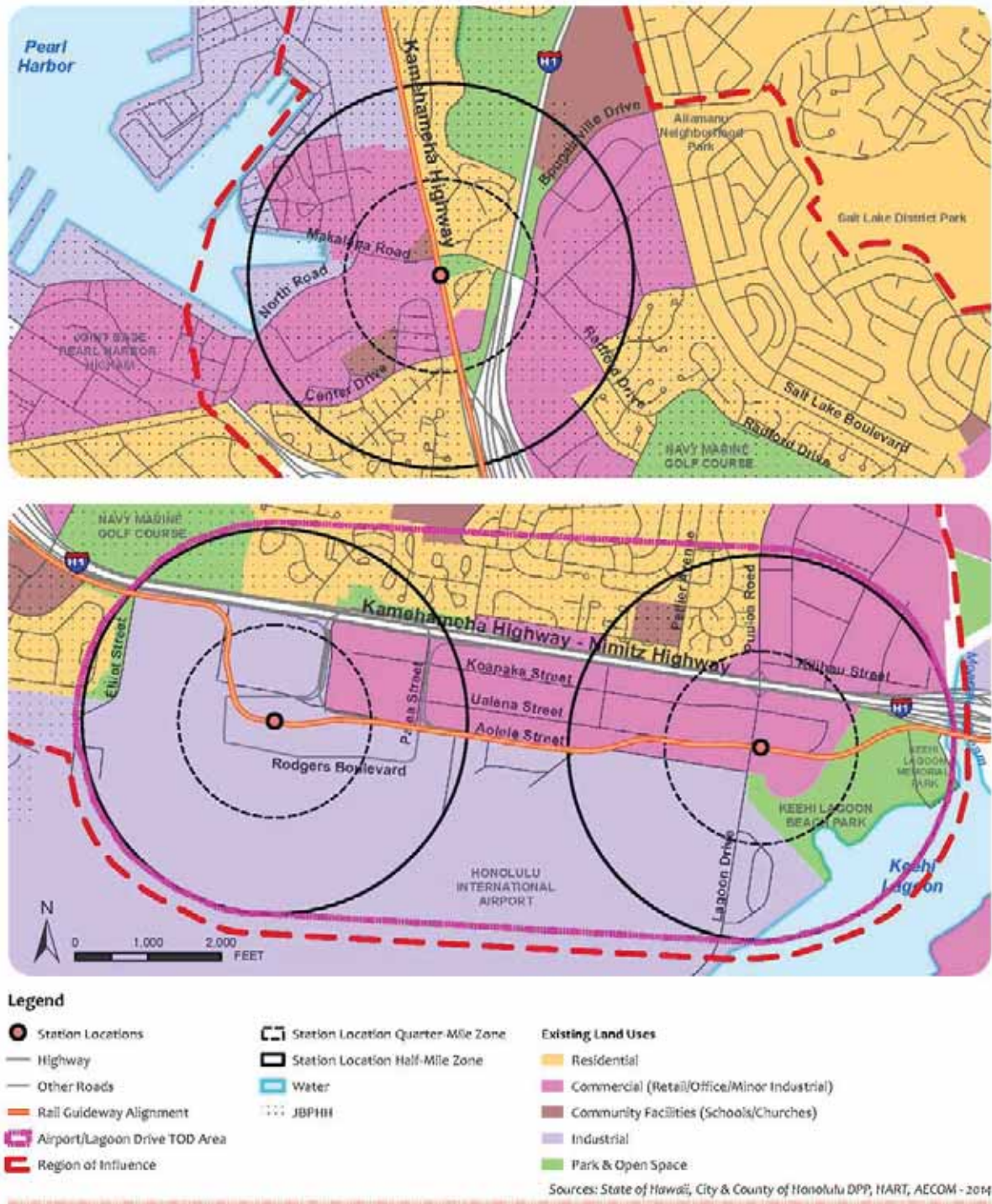


Figure 2-1: Existing Land Use

CORRIDOR

Pearl Harbor: The dominant landowner is the Federal government (JBPHH); State of Hawaii which has a small landholding within JBPHH; the City; Kamehameha Schools (the Salt Lake Target and adjacent light-industrial uses); and the Queen Emma Foundation (abutting Kamehameha Schools landholding).

Airport/Lagoon TOD Area: The major landowners in the area include the State of Hawaii (Airport) and the federal government (JBPHH, Camp Catlin Naval Housing). The majority of Lagoon Drive and Mapunapuna business complexes are individual landowners. Mauka of Lagoon Drive, landowners include: the State of Hawaii (Honolulu International Airport, Keehi Lagoon Beach Park, and the portion of land east of Mapunapuna); Department of Hawaiian Home Lands (east of Mapunapuna); and the federal government.

Community Facilities and Civic Institutions

Community-based facilities and civic institutions include public and private entities. The military also provides community support facilities that are restricted to military personnel and their dependents. Community-based facilities and civic institutions in the area include schools, libraries, post offices, places of worship, hospitals, public housing, social services, parks, community centers, gardens, golf courses and other open space. There are no higher education institutions within the Region of Influence. These facilities and institutions are shown on Figure 2-3 and described in the following sections.

Primary and Secondary Schools

Primary and secondary public schools in the Region of Influence, which encompasses the corridor and its adjacency, are grouped geographically under the State of Hawaii Department of Education's Aiea-Moanalua-Radford Complex Area (State of Hawaii, Department of Education, 2014). The following public and private schools are located in the Region of Influence and shown in Figure 2-3.

Elementary Schools: Aliamanu Elementary School, Salt Lake Elementary School, Pearl Harbor Elementary School (military), Pearl

Harbor Kai Elementary School (military), Shafter Elementary School (military), Makalapa Elementary School (military), Mokulele Elementary School (military), Chester W. Nimitz Elementary School (military), Hickam Elementary School (military), Navy Hale Keiki School, Saint Philomena Early Learning Center (private), Holy Family Catholic Academy (private), and Assets School (private).

Middle Schools: Aliamanu Middle School, Holy Family Catholic Academy (private), and Assets School (private).

High Schools: Moanalua High School and Radford High School, and Assets School (private school for gifted and dyslexic children).

Radford High School, Navy Hale Keiki School, Pearl Harbor Kai Elementary, and Pearl Harbor Elementary are all within the Pearl Harbor station ½-mile zone; there are no schools within the ¼-mile zone. There are no schools located within the Airport Area ½-mile zone or Airport/Lagoon TOD Area.

Parks and Open Space

The primary parks and open space in the Region of Influence: the green space on JBPHH located between Kamehameha Highway and H1 Freeway near the station, Navy-Marine Golf Course, and Keehi Lagoon Beach Park. Keehi Lagoon Beach Park and the green space at JBPHH are located within the ¼-mile zone of Lagoon Drive and Pearl Harbor stations, respectively.



Photo 2-4: Keehi Lagoon Beach Park

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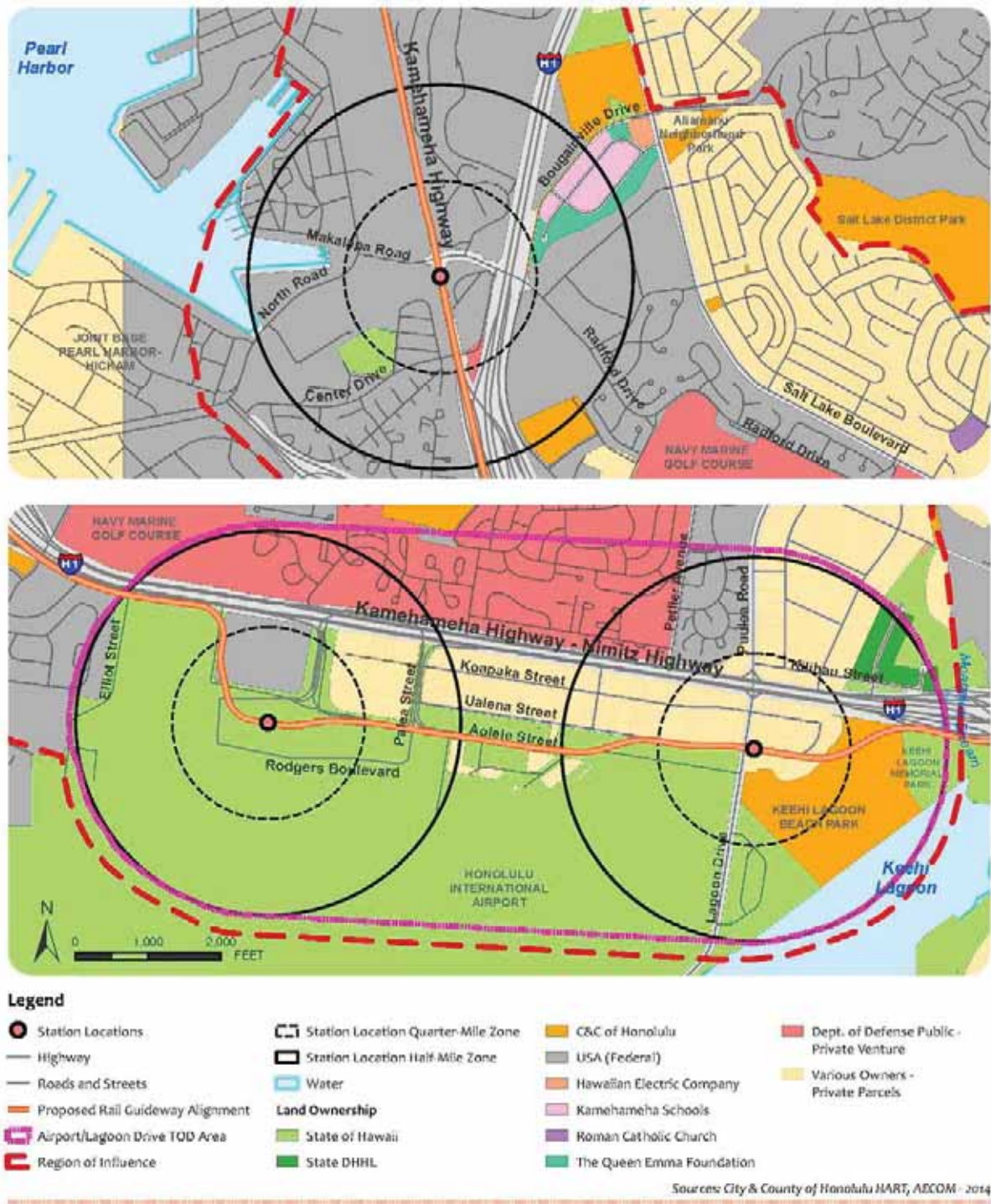


Figure 2-2: Land Ownership

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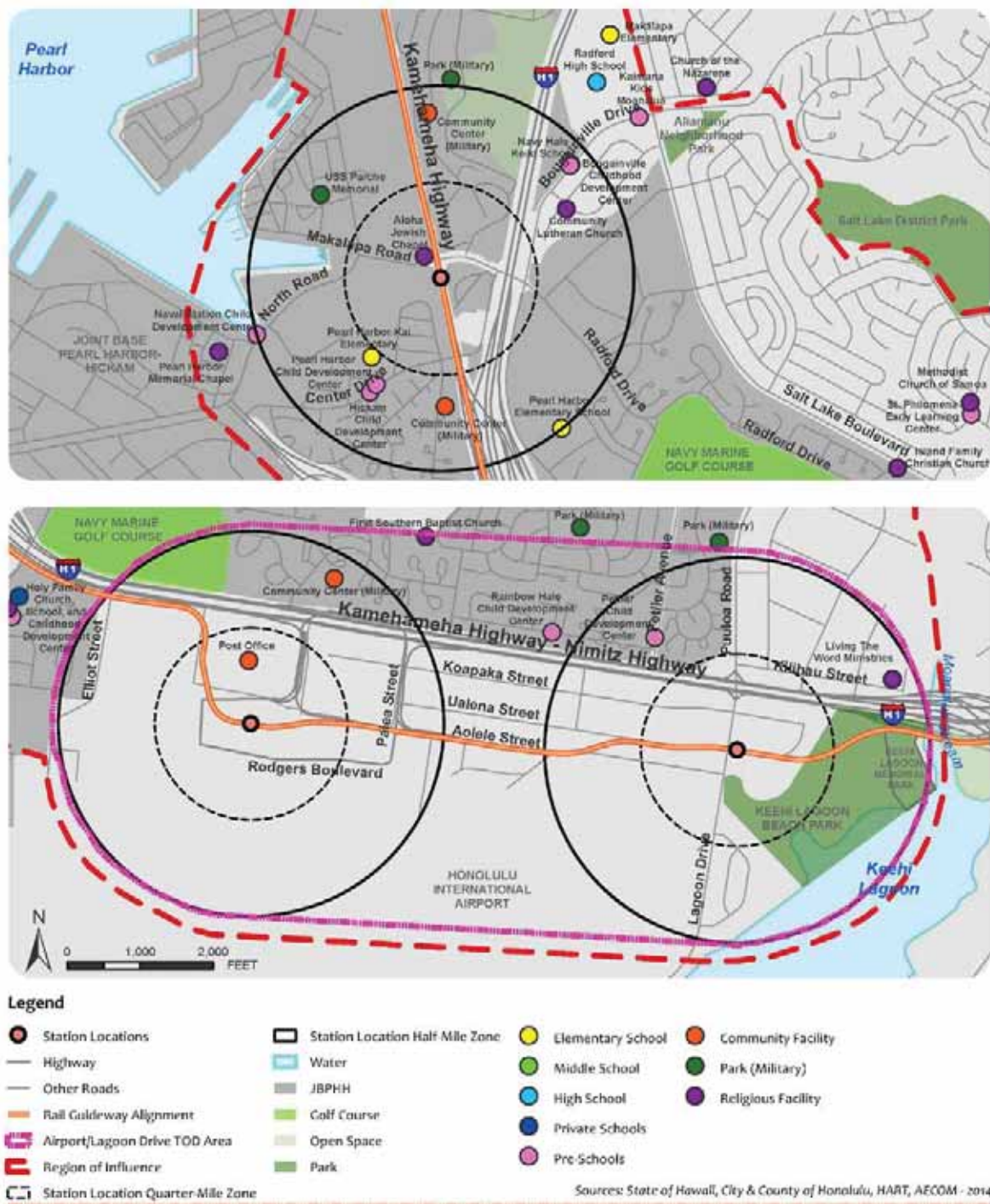


Figure 2-3: Community Facilities and Civic Institutions

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Public Housing

Outside of the Airport/Lagoon Drive TOD Area, but within the Region of Influence (i.e., the Salt Lake neighborhood) is a public housing complex (2907 Ala Ilima Street) that provides 28 one-bedroom units.

Social Services

Social services are available in the form of United Service Organization (commonly known as USO) at the Airport; other social services geared towards military servicemen are available at JBPHH. For the civilian population, Goodwill Industries of Hawaii is located within the Lagoon Drive ½-mile zone mauka of Nimitz Highway. Offices of licensed social workers are located in the Lagoon Drive business complex in the Airport/Lagoon Drive TOD Area.

Density and Intensity

Density and intensity refers to the amount of development dictated by building height, bulk, and mass.

Existing Building Heights

Existing building heights and footprints are described below both for the ½-mile zone around the Pearl Harbor station and for the Airport/Lagoon Drive TOD Area, and are shown on Figure 2-4.

The lighter shading shows surface parking, vacant lots, and open space. The darker shading varies according to building heights, from light (30 to 45 feet), medium (45 to 60 feet), and dark (60-160 feet).

Pearl Harbor Station: Buildings found within the ¼-mile zone around the Pearl Harbor station pertain to the JBPHH. Building types found include one-story single-family residences to multi-story structures found in the administration complex on JBPHH west of the station. As shown on Figure 2-4, existing building heights range from 20 feet to 160 feet high, though most are in the lower height

range. Within the ½-mile zone the types of buildings include industrial facilities on the dock-side of JBPHH, the Mall at Pearl Harbor (commissary and the Navy exchange), and single-family residences, all found in the height range of 20 feet to 160 feet. These buildings generally depict a single-story to medium height structure. The buildings in the ½-mile zone are also on the lower end of the 20 feet to 160 feet range.

Airport/Lagoon Drive TOD Area

Buildings found within the ¼-mile zone around the Airport and Lagoon Drive stations are primarily low-level in height, such as one-story single-family residential structures and multi-story warehouses in the Lagoon Drive business complex and Mapunapuna areas, with a height range of 20 feet to 60 feet. An exception is a single building with a height of 160 feet. Closer to the Airport, the buildings are of medium height, reaching five to six stories. These buildings, shown with a height range of 60 feet to 160 feet on Figure 2-4, are directly related to airport operations (e.g., passenger terminals, parking garages, corporate offices). The composition of building types and the height range overall is essentially the same as inside of the ½-mile zone.



Photo 2-5: Interisland Terminal at the Honolulu International Airport

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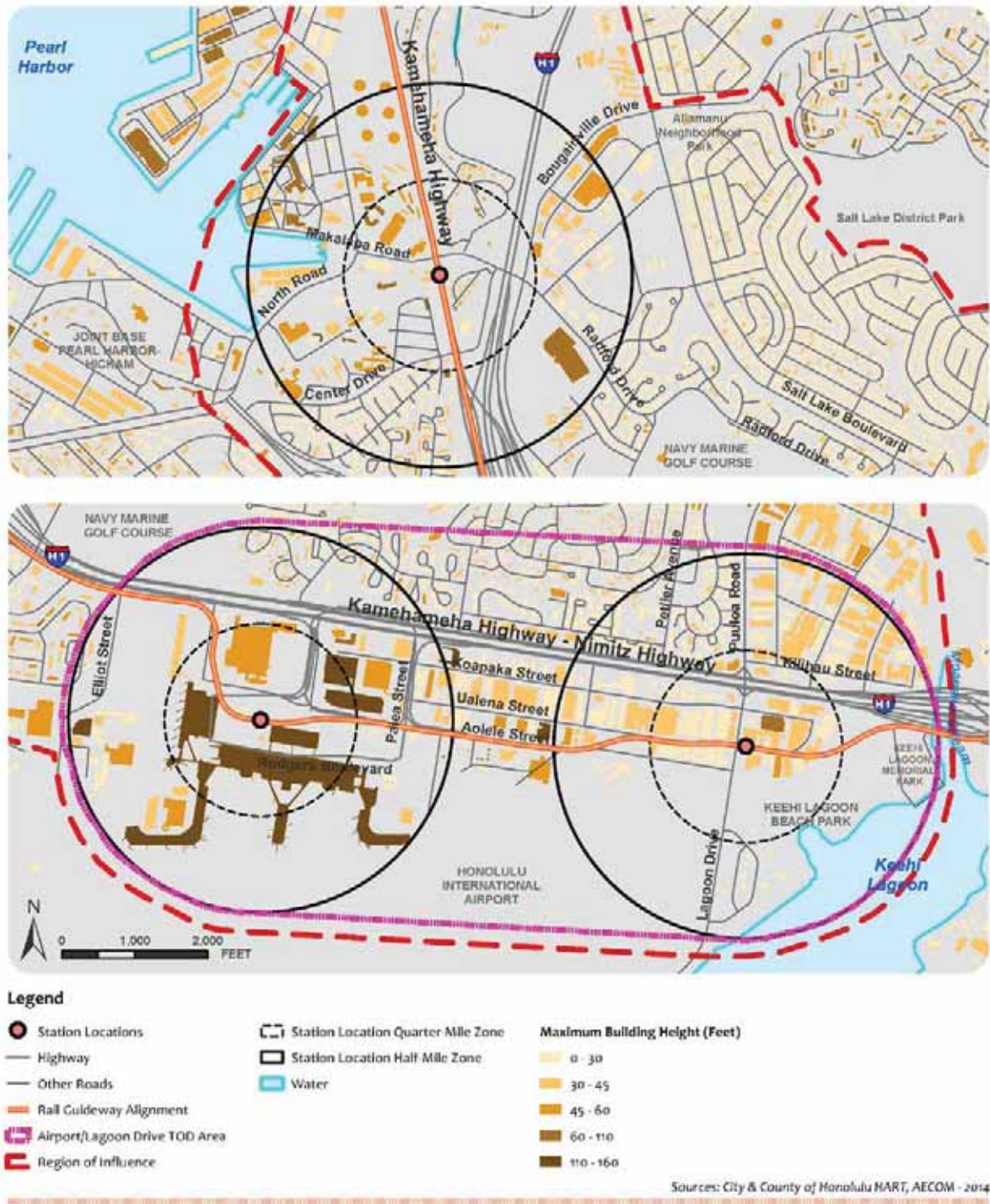


Figure 2-4: Existing Building Heights and Footprint

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Non-Residential Development Intensity

Non-residential development intensity is generally described and measured using floor area ratio (FAR). FAR measures the ratio of gross building square footage to size of lot. Approximate FARs are shown on Figure 2-5 and described below for the ½-mile zones.

Pearl Harbor Station: The majority of this area is military property (JBPHH) but the City (HART) is currently under negotiations to purchase the station property from the Navy. Information regarding the development characteristics of JBPHH is not publicly available. Based on an analysis of available aerial photography and walking surveys, intense uses such as maintenance and mission-critical work are performed along the seaward edge of the installation. Other than family housing, the area abutting the makai side of Kamehameha Highway to the mission-related facilities along the harbor edge includes operational facilities, barracks, community support facilities, and fuel tanks. The area has pockets of buildable open space, but is subject to military planning and policies including the JBPHH Master Plan.

Other than family housing, the area abutting the mauka side of Kamehameha Highway includes The Mall at Pearl Harbor and nearby military support buildings. This area is nearly built out, including a large parking lot, all built at low density.

Outside of JBPHH, the Salt Lake light industrial area features intense uses on industrial lots (i.e., built out facilities) and the Target big box retail store. The existing FAR ranges from 0.5 to 2.0.

Airport/Lagoon Drive TOD Area: The Airport/Lagoon Drive TOD Area is comprised of parcels along Koapaka Street, Ualena Street, and Aolele Street, and bounded by the Airport to the west and Waiwai Loop to the

east. The dominant form of development entails warehouses built to minimal setback lines from street fronts. The existing FAR ranges from 0.5 to 2.0. The makai side of Nimitz Highway features single-story structures and generally lends a feeling of openness. The development on the adjacent streets (i.e., between Koapaka and Aolele Streets) are two-stories and built to the minimum setback lines. This is where the FAR tends to be higher since all available floor space has been maximized for industrial uses.

The Airport is comprised of the placement of medium height (five to six stories) structures with generous distance between each structure, and flanked by a network of elevated roadways. Similar to the Lagoon Drive business complex, the existing FAR ranges from 0.5 to 2.0, with the International Terminal and the Overseas Parking structure being the denser development. Vast surface parking provides available area for development.

Residential Development Intensity

Residential density is the number of people or housing units in a given area. It is usually measured in terms of housing or dwelling units per acre (du/ac). The only housing in the immediate station areas is military housing in various locations around JBPHH.

Pearl Harbor Station: JBPHH housing within the Pearl Harbor station ½-mile zone makai of Kamehameha Highway has a density of approximately 10 du/ac. The historic housing on the mauka side of Kamehameha Highway within this zone has a density of approximately 2 to 4 du/ac.

Airport/Lagoon Drive TOD Area:

JBPHH housing within the Airport/Lagoon Drive TOD Area ½-mile zone mauka of Nimitz Highway averages between 12-14 du/ac.

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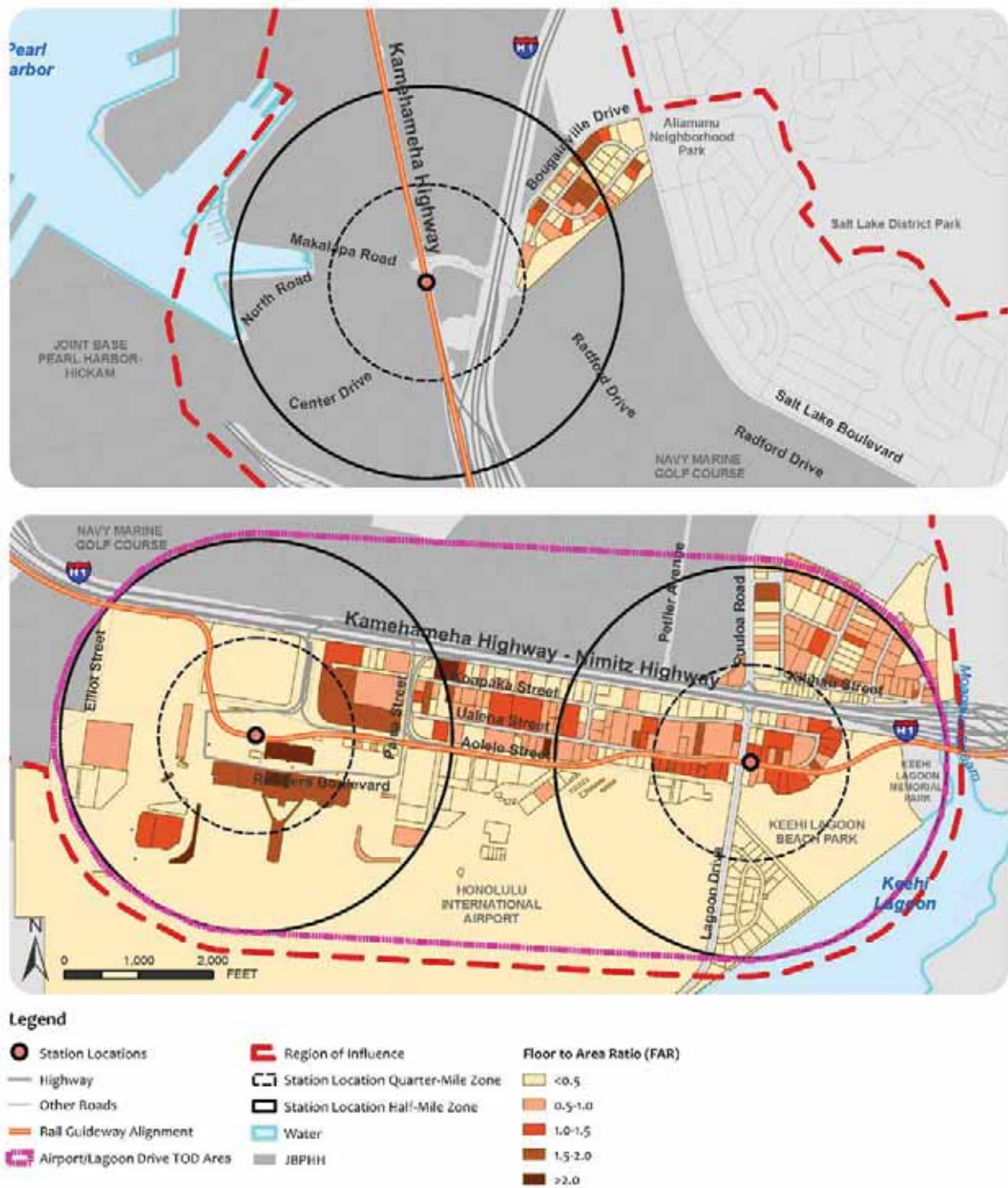


Figure 2-5: Non-Residential Development Intensity

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Major Development Projects

Airport Modernization Plan

As discussed in Section 1.4 of this report, a multi-year airport modernization program is being implemented in response to the ever increasing volume of air travel and security requirements, and seeks to provide an improved passenger experience. Affected components include: the mauka concourse, Diamond Head commuter terminal, consolidated rental car facility, cargo facilities (Aloha and Hawaiian Airlines), maintenance facility, taxi lanes widening, and new employee parking lot. The project could have a synergistic effect by creating an improved and updated Airport station area.

Salt Lake Boulevard widening ("Salt Lake Boulevard Complete Street Project")

The current effort by the City to widen Salt Lake Boulevard is to widen the one mile stretch of road between Maluna and Ala Liliko Streets. The City is currently in the process of preparing a draft environmental assessment for the project. Although Salt Lake Boulevard is on the fringe of the Region of Influence, the resultant widening of the major arterial road and the availability of an alternate form of travel in rail transit could be used to ease the burden of commuters in the area.

JBPHH Installation Master Plan and Area Development Plans

Completed in August 2013, the JBPHH Installation Development Plan and Area Development Plans (IDP/ADPs) are planning documents intended to guide and shape development across the entire 28,000-acre installation, to include all of the outlying annexes that are part of JBPHH. The Plan's vision is to "create secure mission areas and walkable neighborhoods with interconnected streets and landscaped boulevards. These compact districts will have sustainable facilities and infrastructure, accessible open spaces, appropriate parking, and they will reflect our visible historic character."

The JBPHH IPD is divided into 11 ADPs, three of which are located within the Airport Area. The Southside ADP is located south of Makalapa Gate on the makai side of Kamehameha Highway. The Northside ADP is

located north of Makalapa Gate on the makai of Kamehameha Highway, and the Makalapa ADP is located mauka of Kamehameha Highway.

The IPDs show User Location Plans that outline the location of potential future JBPHH uses. The plans show preferred locations where users can best collaborate and function; however, the sites may change based on future installation needs.

The Southside ADP does not show any projects within the TOD planning boundaries.

Northside ADP shows two projects within the TOD planning area:

- Pedestrian Turnstile Access to HART rail line
- Public Light Rail Connection

The Makalapa ADP has several planned projects adjacent to the rail station and within the TOD planning area.

- Fire-Fighting Training and Staging
- Pass ID and Info Center
- Fed Fire Ops Center

Asset School Rezoning and Redevelopment

Assets School, located west of the Airport, purchased the former Academy of the Pacific campus in Alewa Heights. Planning efforts are currently underway to determine the use and appropriate redevelopment of both facilities. The plan moves the high school out of TOD planning area and rebuilds the campus for the kindergarten to eight grade facilities.

2.2 COMMUNITY CHARACTER

The community character within the station areas is described in the following sections.

Community Structure

A community's structure is largely defined by its physical nature and arrangement of the various elements within it. These are shown on Figure 2-6 and described below for the Pearl Harbor station ½-mile zone and the Airport/Lagoon Drive TOD Area. They include primary land uses, key intersections, major roads, and important views.

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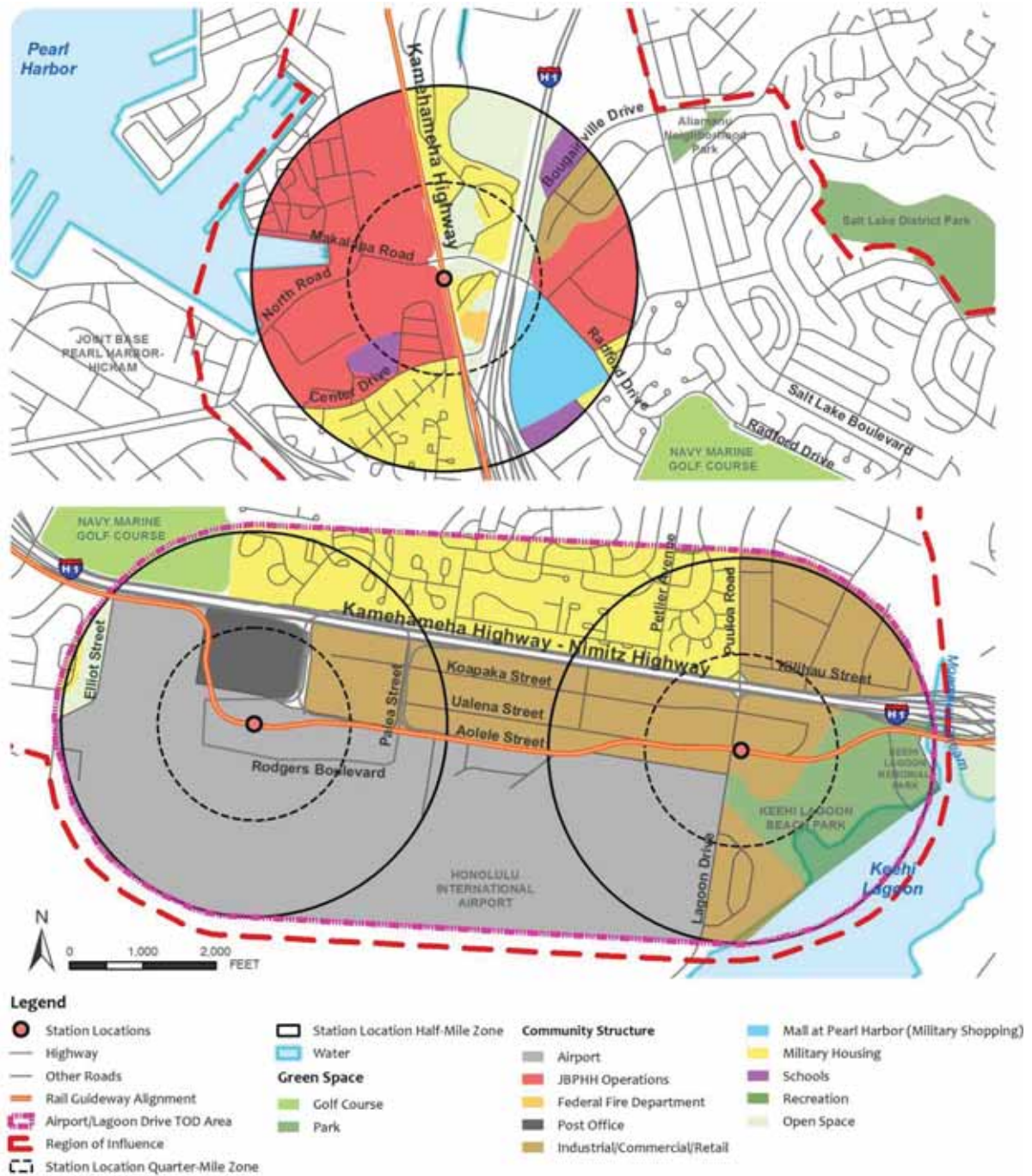


Figure 2-6: Community Structure

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Pearl Harbor Station: Views along Kamehameha Highway near the Pearl Harbor station are at grade and primarily of the existing urban development in the surrounding area. The Pearl Harbor station location is the congregating point for job commuters and installation personnel of JBPHH, and military shoppers of the Mall at Pearl Harbor. Key community assets include visitor attractions (i.e., historical sites such as the Arizona Memorial) and commercial-retail opportunities available to the general public in the Salt Lake vicinity.

The community structure within the Pearl Harbor planning area is comprised primarily of military and residential uses. Military operation facilities encompass majority of the planning area. Retail/commercial establishments including the Mall at Pearl Harbor, Target, Flooring Superstore, and miscellaneous retail and commercial businesses are located mauka of the station along Radford Drive and its surrounding local roads. Three elementary schools are located within the planning area and a federal fire department building is located at the corner of Kamehameha Highway and Center Drive. Military housing within the Makalapa Navy Housing area, located mauka of Kamehameha Highway and north of Radford Drive, can be described as a single family home neighborhood connected by local streets. The neighborhood provides a community pool and several open park-like areas. The military housing located makai of Kamehameha Highway and south of Center Drive is more densely developed with less open space. The former military housing known as Little Makalapa was closed (due to poor conditions and not meeting housing codes) and no public access is allowed. A significant amount of open space surrounds the Little Makalapa area and future rail station.

Airport/Lagoon Drive TOD Area: Panoramic views of Diamond Head, Punchbowl, Aiea-Pearl City, the Koolau and Waianae Ranges, and the ocean are visible while driving along the elevated portion of the H1 freeway near the airport. Nimitz Highway, which runs under the Airport Viaduct near the Lagoon Drive station, is at grade and primarily lends views of the existing urban development in the surrounding area.

The community structure within the Airport station's planning area is comprised primarily of airport operations and mixed industrial, commercial, and retail structures. The military housing located mauka of Nimitz Highway is densely developed and offers a golf course west of the housing area. On the east end of the planning area is Keehi Lagoon Beach Park, which provides a large open grass field and is actively used for recreational purposes (e.g., cricket, tennis, and softball), and the Keehi Lagoon Memorial Park. Both parks offer views of Keehi Lagoon and Honolulu Harbor.

The Airport station is located within a major employment area. The Airport is also the state's preeminent gateway to the islands for visitors and neighbor island commuters alike. The airport features inter-island, mainland, and international terminals. Key community assets include the concentration of employment, and more prominently, the function of the Airport as a place of congregation for travelers. The Lagoon Drive station, including lower Mapunapuna, is also a job center. Key community assets include the prominence of the location as a job center, a wide variety of commercial and industrial businesses serving the entire island, and the Keehi Beach Lagoon Park.

Historic and Cultural Resources

The National Register of Historic Places (NRHP) is the United States Federal government's official list of districts, sites, buildings, structures, and is the official list of the country's cultural resources. Properties are added to the National Register automatically when they become administered by the National Park Service. Properties are also added based on nomination by State and Federal agencies. For acceptance to the National Register, properties must be 50 years or older and meet one or more of the NRHP criteria as defined in 36 CFR 60.4. The Hawaii Historic Preservation Division (SHPD) of Department of Parks and Recreation (DLNR) is the official keeper of the Hawaii Register of historic places.

As part of the H RTP Section 106 process, a Programmatic Agreement (PA) was established between the City, U.S. DOT Federal Transit Administration, State Historic

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Preservation Division, the U.S. Navy, and the Advisory Council on Historic Preservation (CCH DOT 2011). The study corridor The H RTP PA states that the TOD Ordinance cannot preempt applicable state and federal historic preservation laws such as Hawaii Revised Statutes Chapter 6E, *Historic Preservation*, and Section 106 of the NHPA.

Although properties within the ¼- mile to ½-mile planning areas may be 50 years old or older and meet the criteria to be eligible for the State or National Register, the following summary includes properties currently listed or determined eligible in the H RTP PA.

Pearl Harbor Station: There are several sites in the Pearl Harbor station ½-mile zone that are designated as historic or eligible for NRHP listing, as shown in Figure 2-7 and Table 2-1.

The following stipulation from the PA applies to the Pearl Harbor station, as it is located across Kamehameha Highway from the U.S. Naval Base Pearl Harbor National Historic Landmark and between the Potential Little Makalapa Navy Housing Historic District and the Potential Makalapa Navy Housing Historic District.

PA Stipulation IV.A: Design Standards. For stations within the boundary of or directly adjacent to an eligible or listed historic property, the City shall comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68), and will make every reasonable effort to avoid adverse effects on historic properties.

The sites below are recommended for listing on the National Registry and have required actions per the PA.

Pearl Harbor, National Historic Landmark (NHL): Pearl Harbor contributed to the rise of the U.S. as a major world power in the Pacific. Pearl Harbor's mission is support of the fleet, and for most of this century it has sheltered, armed, and repaired naval ships, submarines, and aircraft. Construction for the base began in 1902 and has been regularly modernized to maintain its responsibilities for national defense. The naval base was attacked by aircraft of the Imperial Japanese Navy on

December 7, 1941, an action which caused the U.S. to enter World War II. Some properties within the NHL also constitute a portion of the World War II Valor in the Pacific National Monument, including the Arizona Memorial and Visitor Center (all are outside the H RTP Area of Potential Effect and the TOD planning area).

The PA includes the following mitigation measures for the Pearl Harbor NHL:

- Station design following guidance of the Design Language Pattern Book
- Historic American Building Survey/Historic American Engineering Record/Historic American Landscape Survey documentation
- Completion of NRHP nomination amendment for NHL, with emphasis on resources closest to the APE not previously documented, (plus CINPAC HQ bldg. NHL, Ossipoff's Aloha Chapel, SMART Clinic, and Navy-Marine Corps Relief Society)
- Development and implementation of Educational Interpretive Program for stations

Makalapa Navy Housing: The Makalapa Navy Housing was built circa 1941 and consists of 14 types of single-family and duplex houses. It is eligible under NRHP Criterion A for its association with the effort to build officers' housing prior to the onset of WWII; under Criteria B for its association with Admiral Chester Nimitz (who lived in the housing for much of WWII); and Criterion C as an example of military residential housing.

The PA includes the following mitigation measures for the Makalapa Neighborhood:

- An addendum to the existing Historic American Buildings Survey
- NR nomination forms to National Park Service

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Table 2-1 summarizes historic properties are within the Pearl Harbor planning area (½ mile radius).

Table 2-1: Historic Sites in Pearl Harbor Station Area

Historic Site	NRHP	Eligible
Potential Makalapa Navy Housing Historical District		Yes
Potential Little Makalapa Navy Housing Historical District		Yes
United States Navy Base, Pearl Harbor National Historical Landmark	Yes	
Ossipoff's Aloha Chapel, SMART Clinic, and Navy-Marine Corps Relief Society – Facility 1514 (built 1975)		Yes
Navy Upper Tank Farm (fuel storage)		Yes
Navy WWII Splinterproof Shelter – Facility S-51		Yes
Navy Rehab Center/Former Fire Station – Facility 199		Yes
Commander-in-Chief Pacific Fleet (CINCPACFLT) Headquarters – Facility 250, National Historical Landmark (built in 1942)	Yes	

Source: (HDOT 2009)

Airport/Lagoon Drive TOD Area: There are no listed cultural or historic sites within the Airport/Lagoon Drive TOD Area; however, there is one eligible site, the Hawaii Employers Council building constructed in 1961, Figure 2-7.

2.3 PUBLIC SAFETY

Police and Fire Facilities

Police service is provided by the Honolulu Police Department (HPD), which carries out law enforcement services for the Island of Oahu and provides safety to residents and businesses. The Pearl Harbor study area is located within HPD District 3, Pearl City (Sector 3, Aiea, Pearl Kai, and Foster Village). JBPHH has a uniformed Military Police force that patrols the base and surrounding areas. The Airport/Lagoon Drive TOD Area is located within HPD District 5, Kalihi (Sector 1, Airport, Aliamanu, and Salt Lake).

The fire controls and operations in Hawaii are operated by the Honolulu Fire Department (HFD). The HFD has 5 battalions, or districts, and 42 individual fire stations. HFD, Mokulele

Fire Station (Station 8), is located in between the two TOD planning areas at the corner of Valkenburgh Street and Paine Circle, makai of Nimitz Highway. HFD's Charles H. Thurston Training Center is located next to Station 8. The Honolulu International Airport Aircraft Rescue Fire Department is located at 400 Rodgers Boulevard, Suite 700. JBPHH is served by the Federal Fire Department located inside the base at 850 Ticonderoga Street.

Crime

According to HPD statistics, theft and unauthorized entry into a motor vehicle are the primary calls to police within the TOD planning areas (HPD 2014).

Homelessness is a major concern for the entire Airport Area, specifically near the Airport and Lagoon Drive stations and surrounding communities. While many people feel safe during day time hours, the same cannot be said at night. In particular, a large homeless community camps under the H-1 freeway directly adjacent to Keehi Lagoon Memorial Park. Community stakeholders interviewed for this project expressed concern regarding safety issues, especially noting the lack of lights in the area. Several stakeholders from the Lagoon Drive area reported the regular occurrence of break-ins and destruction of property in the area.

Motor Vehicle Collisions

The State tracks pedestrian and bicyclist collisions with motorized vehicles. Figure 2-8 shows the collisions that have occurred near the Pearl Harbor Station and Airport/Lagoon Drive Station Areas between 2009 and 2014. There have been several pedestrian collisions documented throughout the Salt Lake area and near the Pearl Harbor station. There were reported bicycle collisions along Salt Lake Boulevard and near Aliamanu Neighborhood Park, but none were near the Pearl Harbor station. In the combined Airport/Lagoon Drive TOD Area, there were several pedestrian and bicycle collisions documented. Most of these collisions are centered along Nimitz Highway and on intersections along Paiea Street.

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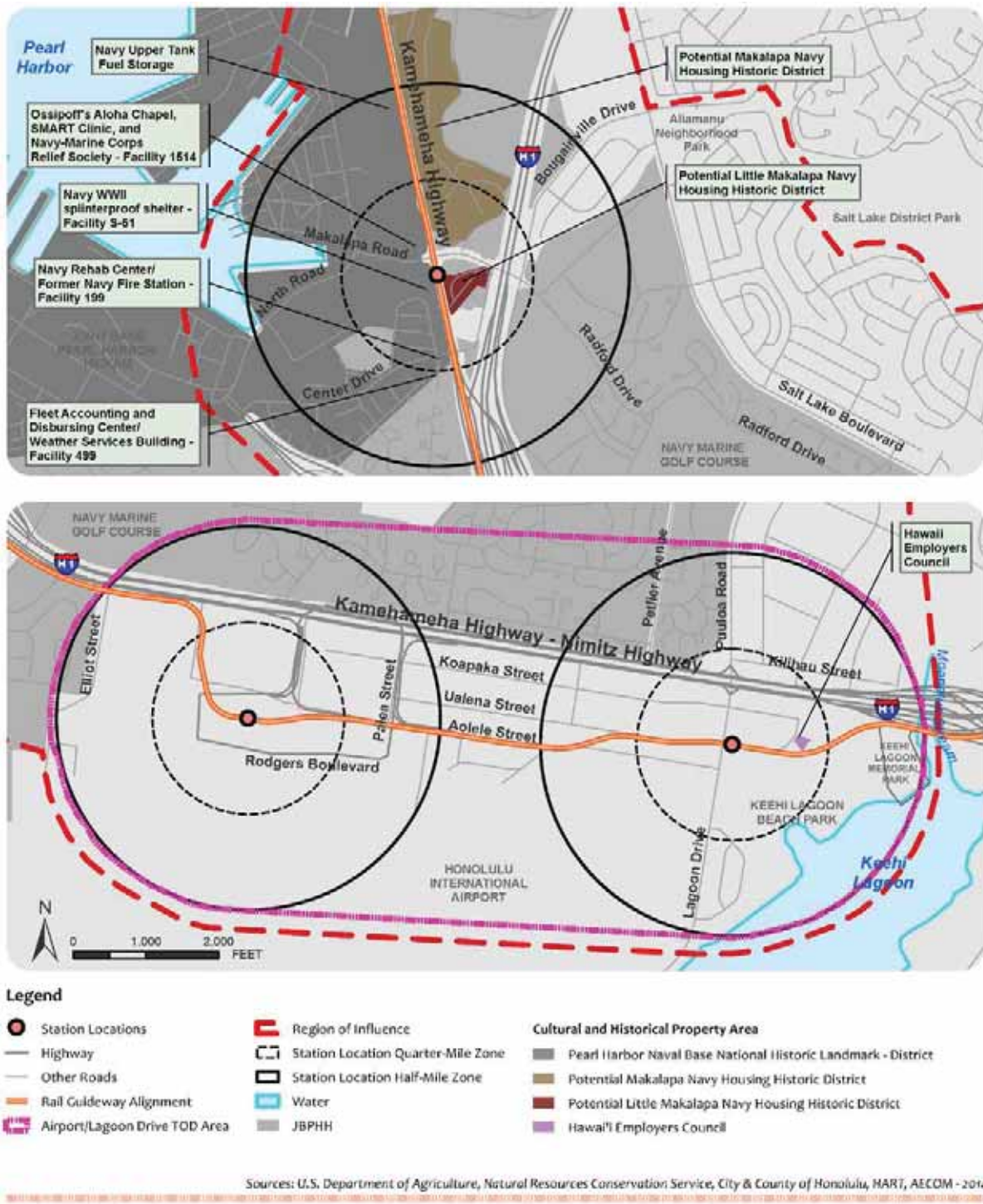


Figure 2-7: Cultural and Historic Properties

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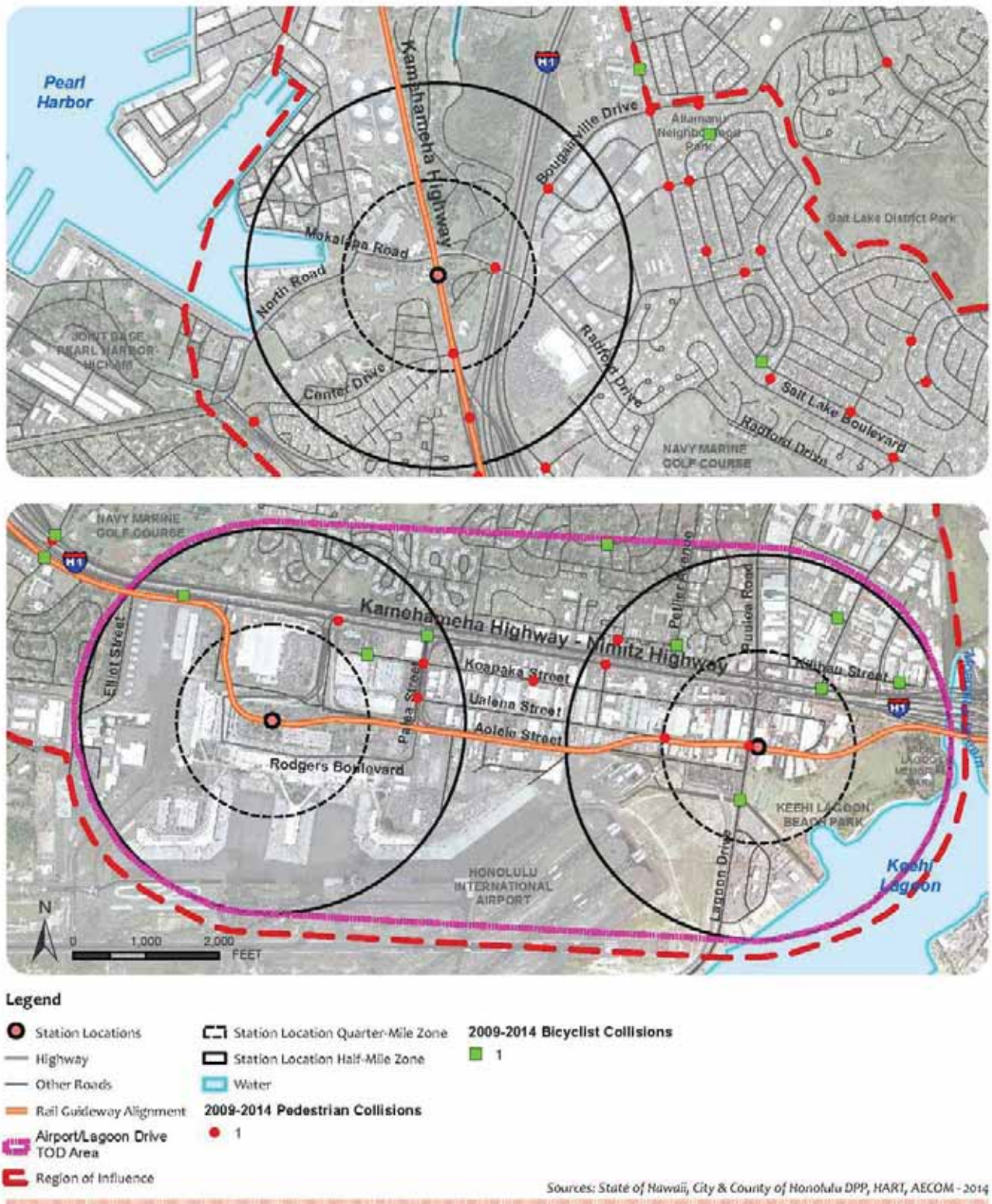


Figure 2-8: Motor Vehicle Collisions Map

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2.4 TRANSPORTATION

Public Transportation Services/Facilities

Transportation facilities within JBPHH are under Federal jurisdiction. The Hawaii Department of Transportation (HDOT) is responsible for planning, constructing, operating, and maintaining State facilities in all modes of transportation (i.e., air, water, and land), including transportation facilities with the Honolulu International Airport (HDOT-Airports Division).

The City Department of Transportation Service (DTS) is responsible for public transportation services (planning, operation, and maintenance) on City streets. Oahu Transit Services, Inc. operates *TheBus* and *TheHandi-Van* under contract to the City. Several bus routes operate within the study corridor and are available seven days a week, including holidays. *TheBus* passenger amenities include bus stop shelters, benches, and route information signs. The buses are equipped with bicycle racks and are ADA assessable. Public transit also includes paratransit service (*TheHandi-Van*) that is available 24-hours a day within the study corridor. *TheHandi-Van* provides curb-to-curb demand response service.



Photo 2-6: Typical bus stop along Kamehameha Highway

Pearl Harbor Station: Figure 2-9 shows the bus routes operating in the vicinity of the Pearl Harbor station. Multiple bus routes (primarily routes 9, 11, 20, 40, 42, and 62) provide service within the ½-mile radius of the Pearl Harbor station. Bus routes also provide service within JBPHH (residential and places of employment) and to the Mall at Pearl Harbor. Bus routes stop primarily along

Kamehameha Highway, Center Drive, North Road, Radford Drive, and Bougainville Drive. The closest existing bus stop to the future rail station is located at the northeast corner of Kamehameha Highway and Radford Drive, less than 500 feet away.

In addition to the bus routes shown on Figure 2-9, *TheBus* operates Pearl Harbor express buses (routes PH1-PH6) that bring people from residential centers around the island (i.e., Hawaii Kai, Mililani Town, and the windward side) to Pearl Harbor; these routes are commonly used by commuters working at the base and the military.

Airport/Lagoon TOD Area: Figure 2-9 shows the bus routes operating in the vicinity of the Airport and Lagoon Drive stations. Multiple bus routes (primarily routes 19, 20, 31, 40, 42, and 62) provide service within the ½-mile radius of the Airport and Lagoon Drive stations. Bus routes stop along Nimitz Highway, Elliott Street, Rodgers Boulevard (airport terminals), and Lagoon Drive and provide service to the airport, surrounding local businesses, and residential areas mauka of Nimitz Highway.

Existing bus services are currently being reviewed by the City to determine how to make the transfers between buses and rail seamless and better connect the surrounding neighborhoods to the transit system.

Pedestrian/Bicycle Facilities

The extent and quality of existing pedestrian and bicycle infrastructure vary by location throughout the study corridor; however, these facilities are often narrowly sized and/or not continuous.

Figure 2-10 and Figure 2-11 show the inventory of pedestrian facilities adjacent to the Pearl Harbor, Airport, and Lagoon Drive Station Areas. The figures highlight the “pedestrian focus areas,” which include the areas projected to be most frequented by pedestrians once the train is operational. One important segment of missing sidewalk is located close to the Pearl Harbor station along the makai side of Kamehameha Highway between Radford Drive and Center Drive. A paved pathway, separated from vehicle lanes

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by a guardrail or curb that serves both pedestrians and bicycles, is located along Bougainville Drive fronting the Mall at Pearl Harbor and then transitions to a 3 to 4 foot sidewalk on the south side of Radford Drive.

The Airport and Lagoon Drive Stations have connecting sidewalks, although the sidewalk network around the Airport Station is mostly disjointed and difficult to navigate. Most Airport Station sidewalks are narrow, which will not be able to accommodate pedestrians with luggage. A paved pedestrian pathway is located on the north side of the busiest street, Nimitz Highway, and a 3 to 4-foot sidewalk runs on the south side.

Three primary bikeway types constitute the bicycle infrastructure, as defined by the *Oahu Bike Plan* (DTS 2012):

- *Bike Route/Signed Shared Roadway*: any roadway open to both motor vehicles and bicycles
- *Bike Lane*: a section of a roadway (designated by stripping, signing, and/or pavement markings) for the preferential or exclusive use by bicyclists

- *Shared-Use Path*: route open to bicyclists and pedestrians and separated from motorized vehicular traffic by an open space or barrier

Pearl Harbor Station: Designated bike paths within the Pearl Harbor station planning area are limited to a bike lane along Kamehameha Highway that ends just south of the Kamehameha Highway and Radford Drive intersection, and a paved shared-use path located along Bougainville Drive, south of Radford Drive (Figure 2-12).

The bike lane along Kamehameha Highway is a very short segment of a designated bike lane and is not connected to other bike facilities west of the station. All of the roadways on JBPHH are shared roadways and bicyclists are commonly seen. The Oahu Bike Plan (DTS 2012) proposes bike lanes along Kamehameha Highway and Radford Drive that would connect via Valkenburgh Street and a bike lane along Bougainville Drive, north of Radford Drive to connect to Salt Lake Boulevard. The H RTP Pearl Harbor station will include bike storage facilities.

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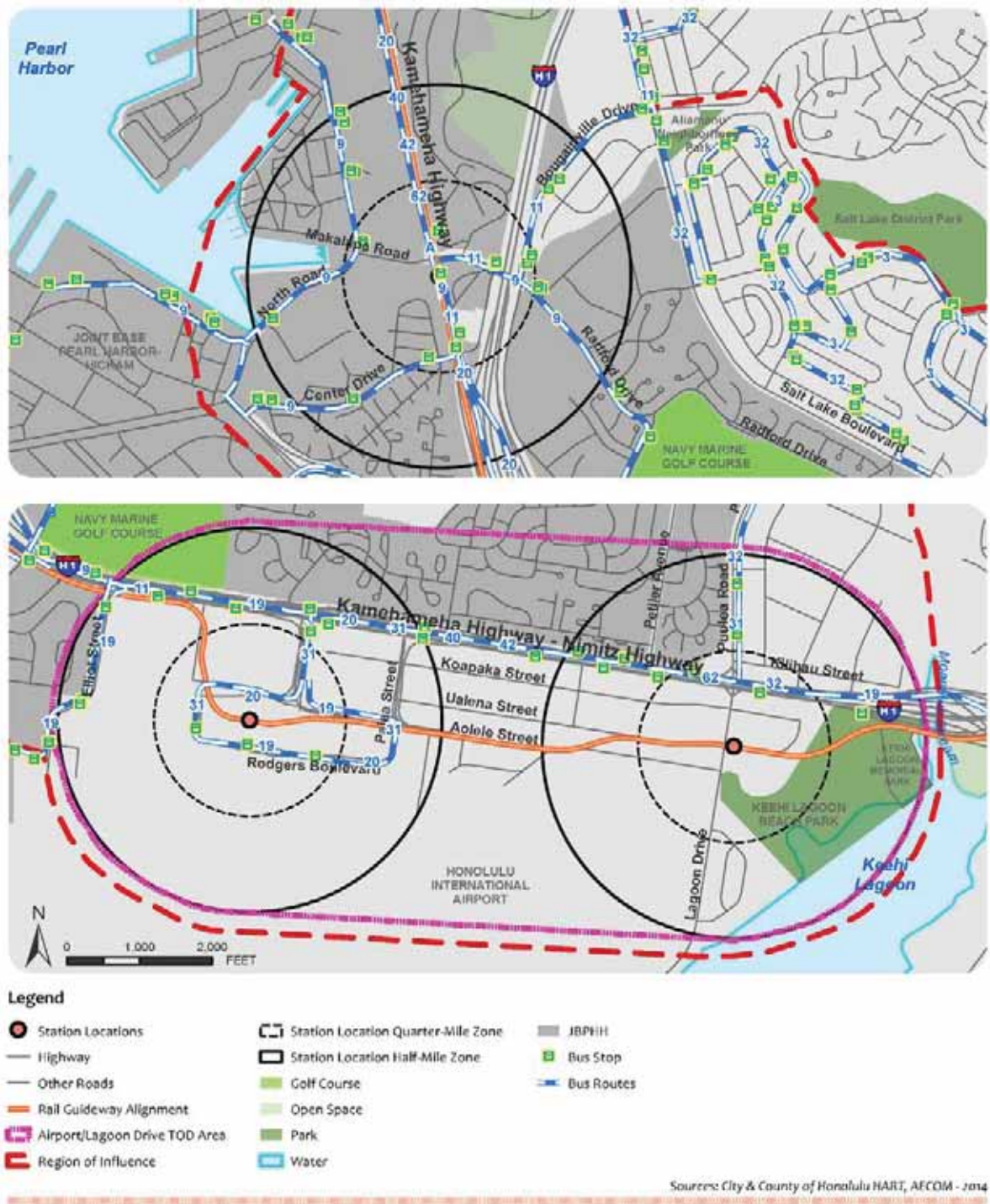


Figure 2-9: Transit Routes and Stop Locations

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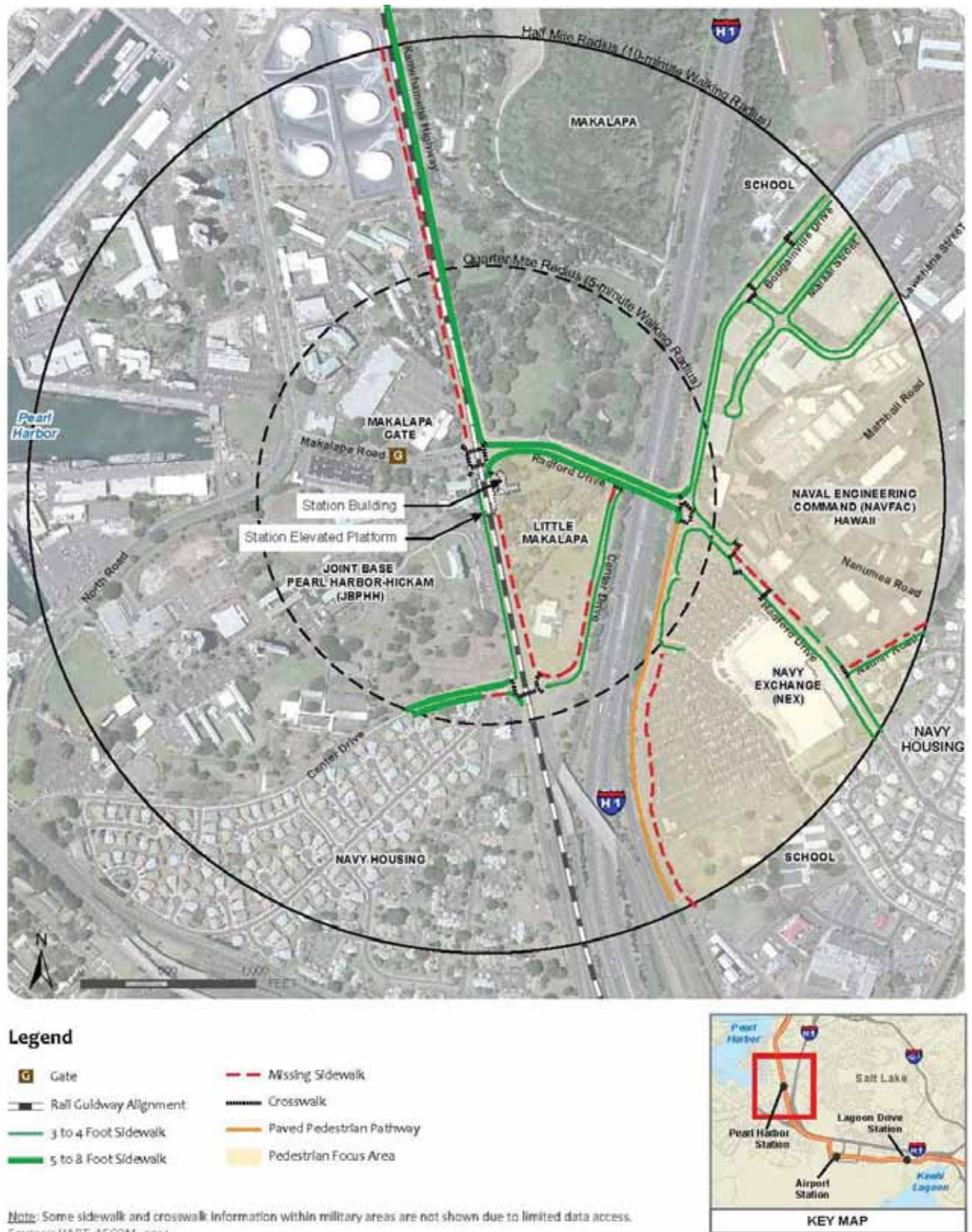


Figure 2-10: Pearl Harbor Station Sidewalk Inventory Map

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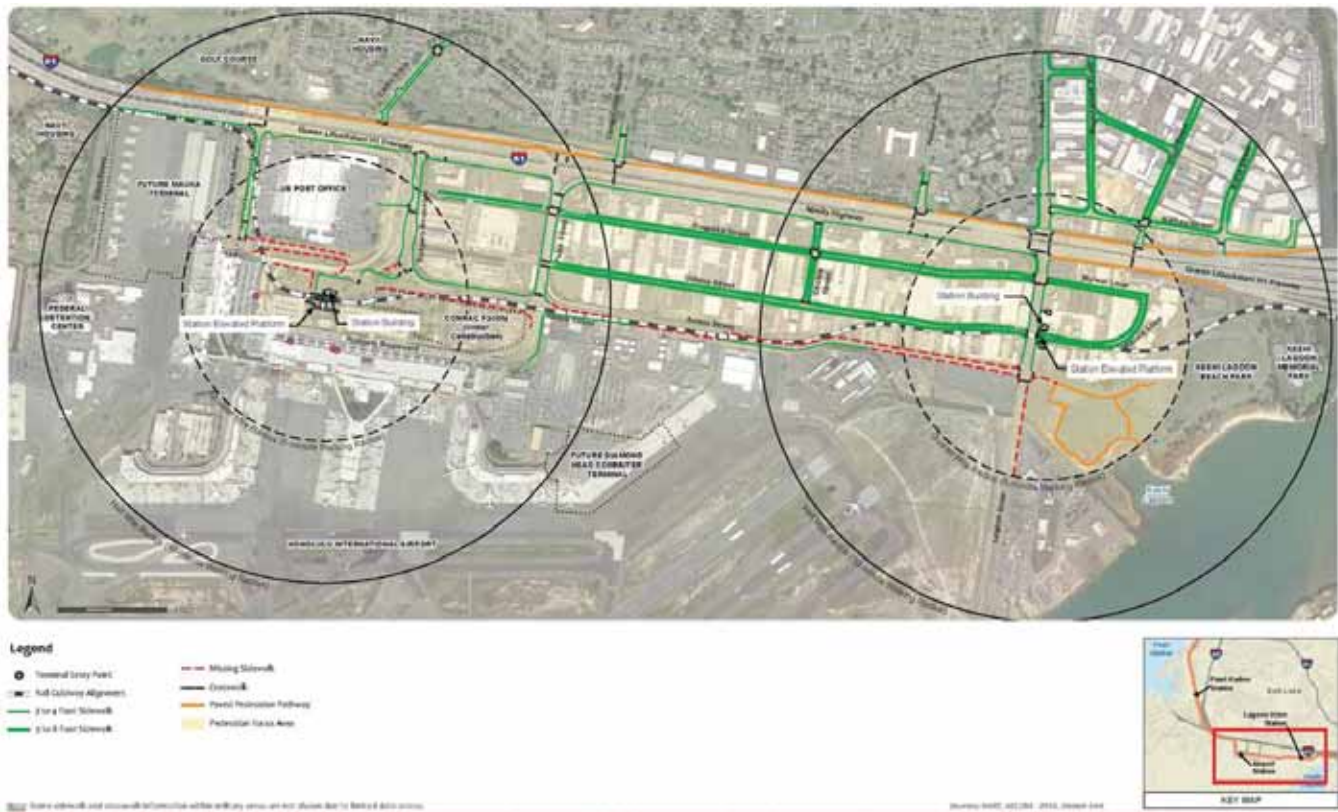


Figure 2-11: Airport/Lagoon Drive TOD Area Sidewalk Inventory Map

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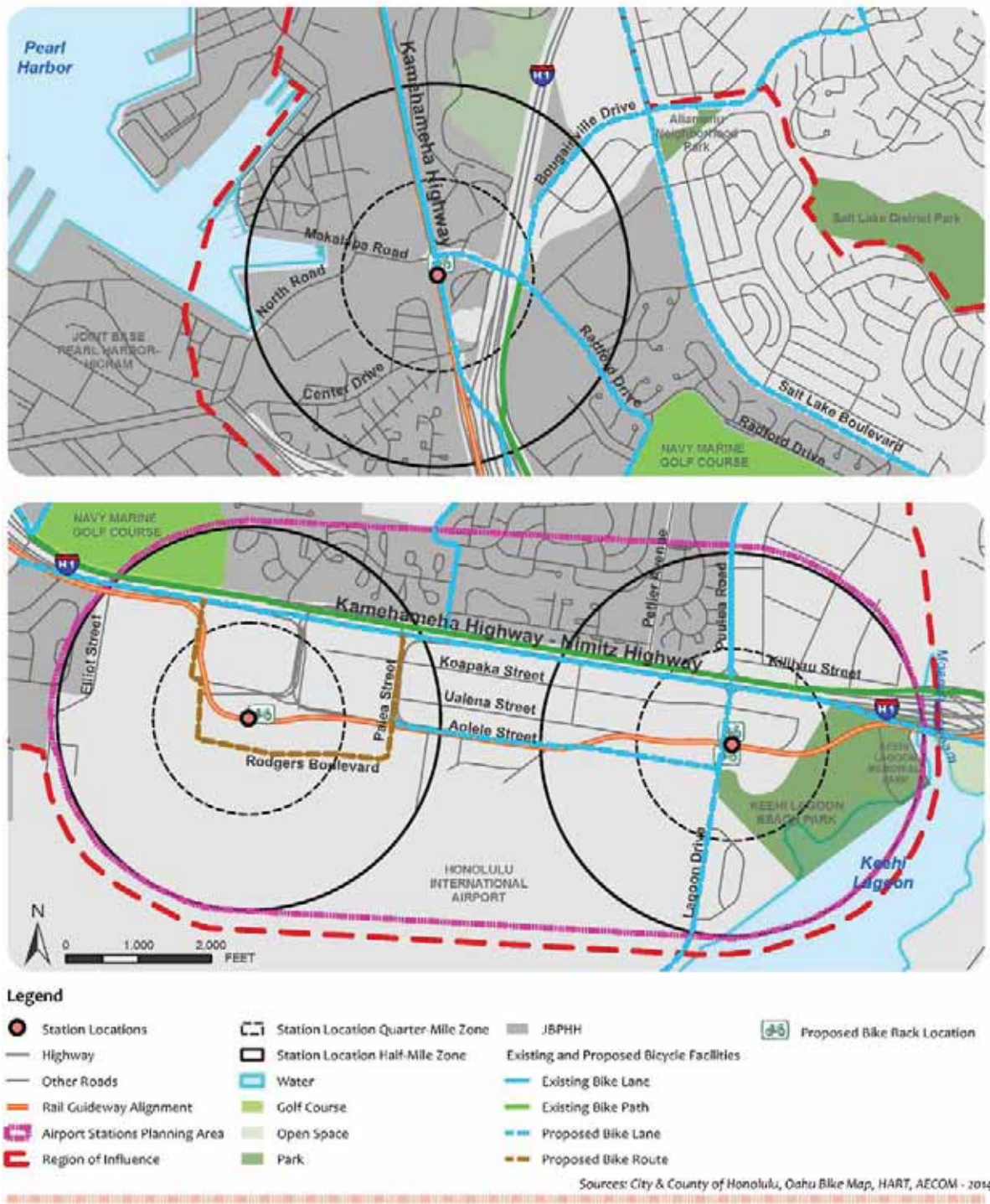


Figure 2-12: Existing and Proposed Bicycle Facilities

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Airport/Lagoon Drive TOD Area: Designated bike paths within the Airport/Lagoon Drive TOD Area include a shared-use path along the mauka side of Nimitz Highway and an existing bike lane along Puuloa Road (Figure 2-12). The *Oahu Bike Plan* (DTS 2012) proposes bike lanes along the makai side of Nimitz Highway, along Lagoon Drive south of Nimitz Highway, and along Aolele Street between Paiea Street and Lagoon Drive. The *Oahu Bike Plan* also proposes a bike route (shared roadway) for Paiea Street and the Rodgers Boulevard (airport terminals). The H RTP Airport and Lagoon Drive stations will include bike storage facilities.

Roadway Facilities

Roadways in the planning area can generally be described according to the following four categories:

- *Freeways:* high capacity, regional mobility roadways; connect the TOD planning area corridor to other parts of the island
- *Arterials:* sub-regional to regional mobility; connect freeways with collectors and provide for high volumes of traffic
- *Collectors:* sub-area mobility and circulation; connect local roads to arterials
- *Local Roads:* circulation and access for residents and businesses; connect residents and business to the collectors

Freeways, arterials, collectors, and local roads are the basic transportation network elements responsible for the movement of people within the planning area corridor and surrounding communities. HDOT and the City Department of Facility Maintenance maintain these existing roadway facilities.

The H-1 Freeway, Kamehameha Highway, Nimitz Highway, and Salt Lake Boulevard are the major roadways within the planning areas. Traffic congestion occurs along these

roadways during peak travel hours (residents commuting to and from work), affecting personal vehicles and transit operations. As part of roadway management, HDOT operates a counter-flow lane during morning rush hour (zipper lane) along the H-1 Freeway; the zipper lane occupancy requirement is three or more persons per vehicle and allows for traffic in one direction.

The inventory of arterials, collectors, and local roads focuses on existing conditions within the ½ mile radius and are summarized in Figure 2-13.

2.5 INFRASTRUCTURE

Both public and private utilities, and associated infrastructure exist within or adjacent to the planning area corridor. Typically, overhead utility lines and buried conduits and pipelines follow the existing roadways and are within the public right-of-way.

Water

Unlike other islands, Oahu relies solely on water from underground sources. Rainfall is the primary water resource for groundwater supply. The Honolulu Board of Water Supply (BWS) oversees and operates the water system with the planning areas, except the existing water system within JBPHH which is owned, operated, and maintained by the Navy. The Navy has their own water sources; Waiawa Shaft and Red Hill Shaft. Underground water supply lines are sized based on the land uses in the area. The surface structures include fire hydrants, water meters, and control valves.

The water infrastructure is well developed in the planning area, with major roads containing interconnected distribution lines. For individual TOD projects, the procedure to obtain City water will be initiated at the building permit processing phase of construction.

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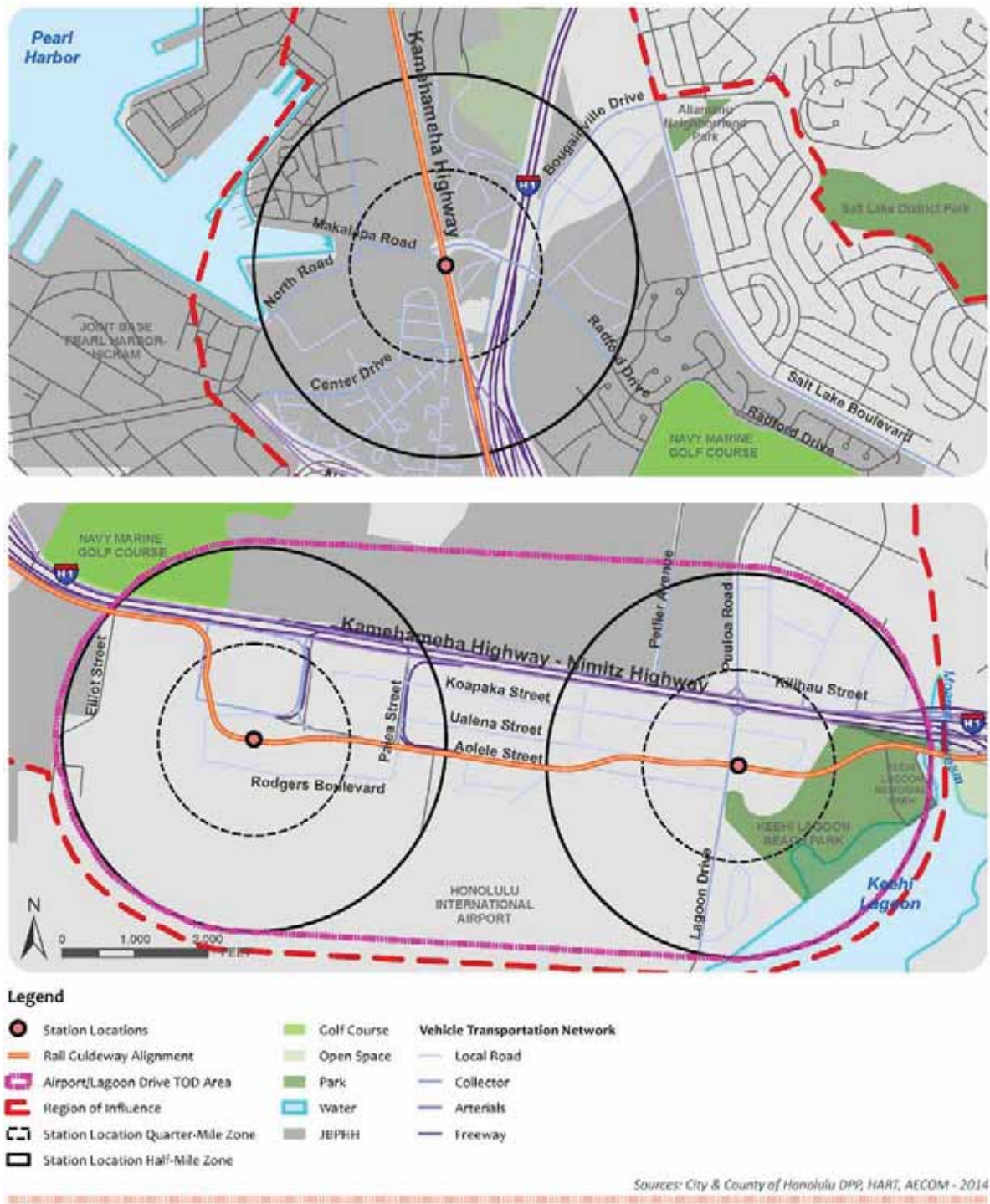


Figure 2-13: Roadway Network

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The BWS has acquired lands for the Kapolei brackish and Kalaeloa seawater desalination plants and has conducted pilot testing of ultra-filtration and reverse osmosis membranes at both sites. The desalination plants are feasible, but are on hold because water conservation efforts have extended Oahu's groundwater supplies. The BWS encourages conservation for existing and future water users. Conservation methods include, but are not limited to leak detection in plumbing, xeriscape systems (a style of landscape design requiring little or no irrigation or other maintenance, used in arid regions), and water saving practices, both indoor and outdoor.

Sewer

The City's Department of Environmental Services provides sewer service to the area. Similar to water, the Navy provides and maintains the sewer system on JBPHH. Based on the Navy's response to early plans for the H RTP to connect to their sewer system at the Pearl Harbor station, the size of existing sewer system on JBPHH is at capacity and cannot handle additional flows at this time. The Pearl Harbor station restroom will be connected to a cesspool system until their system can handle additional flows.

The City's sewer system within the Pearl Harbor planning area includes lines along Kamehameha Highway and the commercial area between Bougainville Drive and Marshall Road. Two pump stations are located outside of the Pearl Harbor station ½-mile zone along Salt Lake Boulevard. The City sewer system with the Airport/Lagoon Drive TOD Area includes lines along the roadway facilities. IT is assumed that the majority of the Airport/Lagoon Drive TOD Area sewer system is sized for light industrial and/or commercial uses; therefore, residential development in this area may require additional wastewater capacity.

The small diameter lines provide services to residential areas and the larger diameter lines (36-48 inches) convey wastewater to the pump station located between H-1 and Keehi Lagoon Park. Wastewater is pumped to and treated at the Sand Island Wastewater Treatment Facility. The sewer system includes manholes and sewer cleanouts along

the buried pipe network. The existing sewer system is depicted in Figure 2-15.

New connections to the wastewater system are processed by the City's DPP-Wastewater Branch. A Sewer Connection Application identifies the anticipated sewer flows, which are evaluated for adequacy or inadequacy of the existing sewer system. If the system is deficient, improvements are identified and the project is required to design and install the new infrastructure.

Drainage

The stormwater drainage systems throughout the planning areas include facilities owned by the City, U.S. Navy, and HDOT. Runoff percolates into the ground in landscaped areas and excess runoff from impervious areas flows into drainage structures, including catch basins, and grated inlets. Drain inlets collect surface runoff and pipe it to underground drain lines. The stormwater drainage systems discharge into nearby waters, as depicted in Figure 2-14.

Pearl Harbor Station Planning Area

The Pearl Harbor planning area is relatively flat with gently rolling slopes and contains a combination of pervious and impervious surfaces. In general, surface runoff along Kamehameha Highway and other major streets typically sheet flows toward the outside curb-and-gutters and into the existing drainage system via roadside catch basins, grated inlets, or other drainage structures. The stormwater drainage systems discharge into Halawa Stream, Pearl Harbor East Loch, and Manuwai Canal, as depicted in Figure 2-14.

The existing condition of the Pearl Harbor station location is undeveloped with grass and trees. A steep hill borders the south side (including a retaining wall), with grades sloped gently towards the intersection of Kamehameha Highway and Radford Drive. Existing runoff within the lot that does not percolate into the ground is intercepted by the catch basin in the right-turn lane from westbound Kamehameha Highway onto Radford Drive.

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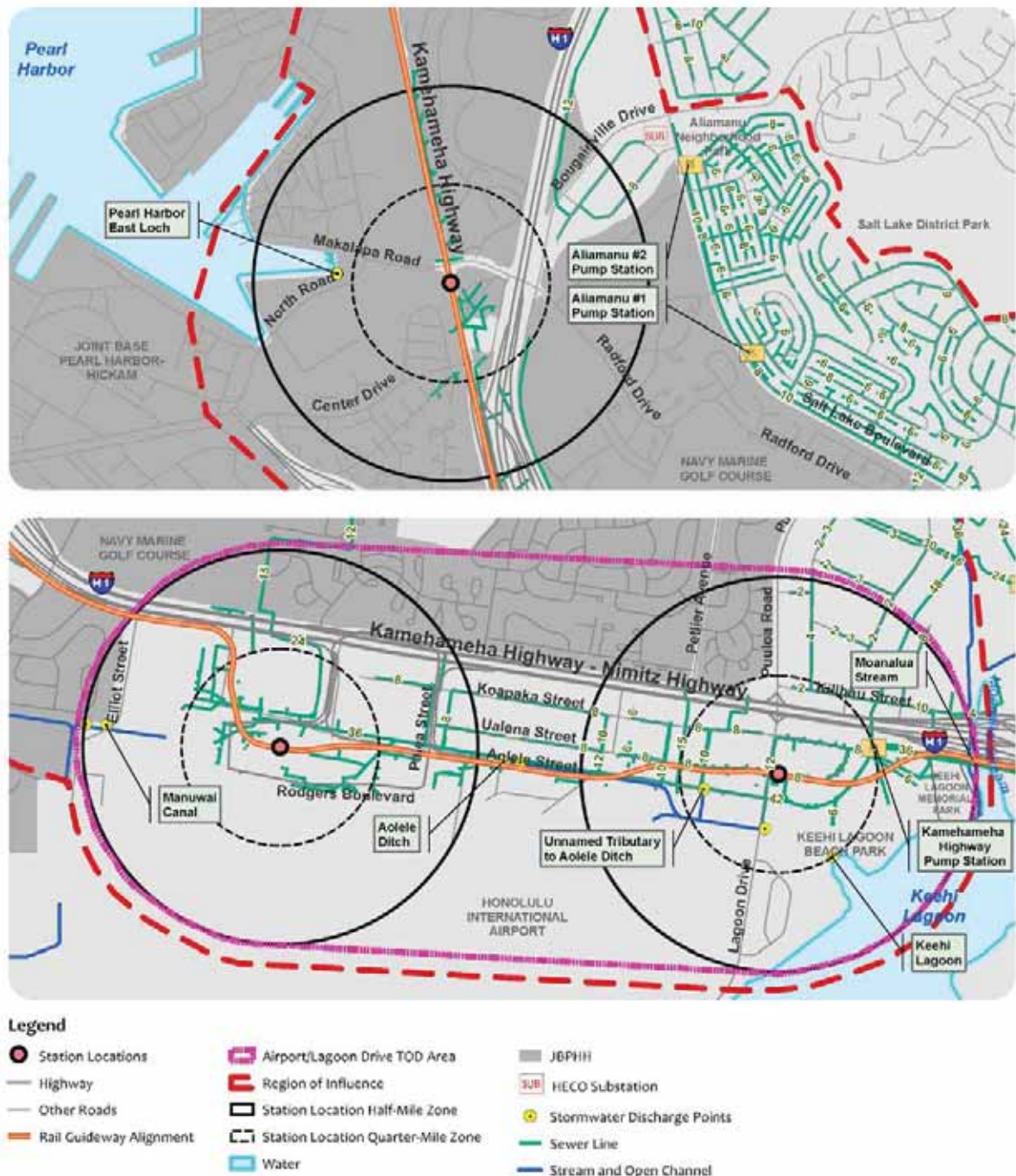


Figure 2-14: Existing Sewer Systems and Stormwater Discharge Points

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Airport/Lagoon Drive TOD Area

The Airport/Lagoon Drive TOD Area contains a combination of pervious and impervious surfaces. The slopes vary from gentle slopes along the roadways to some steeper slopes in the landscaped areas. The Airport property is an urbanized industrial area that is primarily impervious. The Honolulu International Airport station site is within a paved parking lot with generally flat grades. Existing drain inlets take in surface runoff and pipe it north into a drain culvert along Aolele Street. Surface runoff from Aolele Street and Ualena Street generally flows into the existing drainage structures including curb-and-gutters, catch basins, and grated inlets. The runoff is collected and discharged into Aolele Ditch, which eventually empties into Keehi Lagoon Beach Park.

The Lagoon Drive station will be located on the eastern side of the Lagoon Drive and Waiwai Loop intersection. The north-east corner of the intersection consists of an existing parking lot which currently sheet flows into the roadway drainage system. The south-east corner consists of the old Chevron gas station parking lot where the surface runoff also sheet flows into the roadway drainage system. Existing drain inlets collect surface runoff and pipe it to an underground drain line along Waiwai Loop. Station development will result in less impermeable surfaces in the immediate station area since the H RTP will include landscaping and site drainage improvements.

Waiwai Loop currently does not have a drainage system in place, and heavy rains frequently result in flooded streets due to the low-lying elevations and lack of drainage outlets. The Keehi Lagoon Beach Park and Keehi Lagoon Memorial Park contain pervious areas including landscaped areas and grassy fields and impervious (paved) parking lots. Existing gradual slopes across the parks allow runoff to drain to the surrounding landscaped areas and grassy fields where the water percolates into the ground or flow into the lagoon.

The lower Mapunapuna industrial area has existing drainage and flooding problems. Most of the area is below mean sea level which results in flooded streets during high-tide (water enters the street from drainage inlets) and heavy rain events. Vehicles can pass through the streets during these events but the water levels reach up to several inches high.

The stormwater drainage systems discharge into Aolele Ditch, Keehi Lagoon, and Moanalua Stream, as depicted in Figure 2-14.

H RTP Impacts to the Drainage System

The H RTP road and median widening to allow for guideway pier construction will require improvements to the existing drainage facilities. Catch basins and drainage inlets will be relocated to maintain existing drainage patterns. The relocated drainage system will be designed in accordance with current HDOT and City drainage standards. Downspouts will be provided within the guideway column to discharge storm runoff from the guideway structure onto landscaped and hardscaped areas, curb gutters, drainage ditches, or into the underground storm drain system. Permanent best management practices will be installed as part of the H RTP to address stormwater quality before water is discharge in to streams or storm drain systems. Low impact development features (e.g., vegetated buffer strips or bioswales) will be utilized to provide a natural, low-maintenance, sustainable approach to manage stormwater. Bio-infiltration areas or inline downspout filters will be provided where necessary to protect water quality of existing streams and water bodies. Guideway discharge outfall locations will be positioned to maintain the existing drainage pattern of the project site. Due to the nonpoint nature of the runoff from the guideway structure, the capacity and performance of the existing drainage system is not expected to be compromised as a result of the construction of the H RTP transit system.

Other Utilities

Hawaiian Electric Company provides electricity service to residential and non-residential customers. Most of the island's power is generated on the west side of Oahu and delivered to other areas via two main transmission corridors to distribution substations, and then to customers. Above ground utility poles exist throughout the planning areas. The Gas Company is the sole supplier of natural gas; underground gas service is widely available throughout the planning areas. Other public utility services are provided by Oceanic Time Warner Cable and Hawaiian TelCom and include TV service, broadband internet, and telephone service. Service requests must be made with the applicable utility provider.

2.6 ENVIRONMENT

This section discusses environmental conditions and constraints in the Airport area that may impact the applicability of future development and/or that will need to be preserved or protected. Potential environmental hazards are described below and will help inform the selection of development opportunities and preparation of appropriate policies or best management practices.

Existing and Potential Hazards

The Hawaiian Islands are seasonally affected by Pacific hurricanes and tropical storms from the late summer to early winter months, when ocean waters around the state are at their warmest. These storms generally travel toward the islands from a southerly or southeasterly direction and can deposit large amounts of rain with high winds on all the islands. The storms generally exacerbate localized stream flooding and coastal storm surges. Sites in tsunami evacuation zones or official Federal Emergency Management Agency (FEMA) flood zones would be most impacted by these events, although areas outside these zones could be impacted based on the severity of the event, elevation, shoreline topography, and nearshore geology.

The eastern section of the Lagoon Drive station planning area is contiguous to Honolulu Harbor and contains areas at or just

above sea level, all at potential risk for tsunami, hurricane, tropical storm, and associated flood damage. Figure 2-15 shows these environmental hazards in the Region of Influence. The station itself would not be affected from major flood events or tsunamis. However, approximately one third of the Lagoon Drive station area (¼-mile) would be inundated in the case of a 100-year flood event and increase to nearly half of the area during a 500-year storm event. About half of Keahi Lagoon Beach Park is within the tsunami evacuation zone.

Flooding

Flooding in Hawaii is mostly associated with marine storm surge activity triggered by atmospheric conditions such as tropical storms and by terrestrial rivers or drainage way flooding triggered by these same types of storm events. Hawaii's flood dangers are primarily related to flash flooding of streams and flooding related to storm-generated coastal surges, as discussed in the following section. Those potential areas most affected by flooding are those areas located in an official FEMA flood zone, Figure 2-15.

During stakeholder meetings, one stakeholder described past flooding events on Ahua Street in the lower Mapunapuna area. During high tide and heavy storm events, the area would flood, making several streets impassable. The issue has since been addressed, as a pump was installed to pump water out before flooding occurs. However, there are community concerns about the long-term effects of the flooding, regarding the integrity of building structures due to possible side effects of sea level rise.

Soils and Erosion

Figure 2-16 describes soil types and erosion potential in the station areas. Most of the land surrounding the Pearl Harbor station is predominantly fill land and Makalapa soil type. Rock outcrop and Kokokahi are present mauka of the station. The land surrounding the Airport and Lagoon Drive stations is predominantly fill land and Makalapa soil. A small area of Mamala soil is present west of the Airport station. The Lagoon Drive station is located on an area of Ewa soil.

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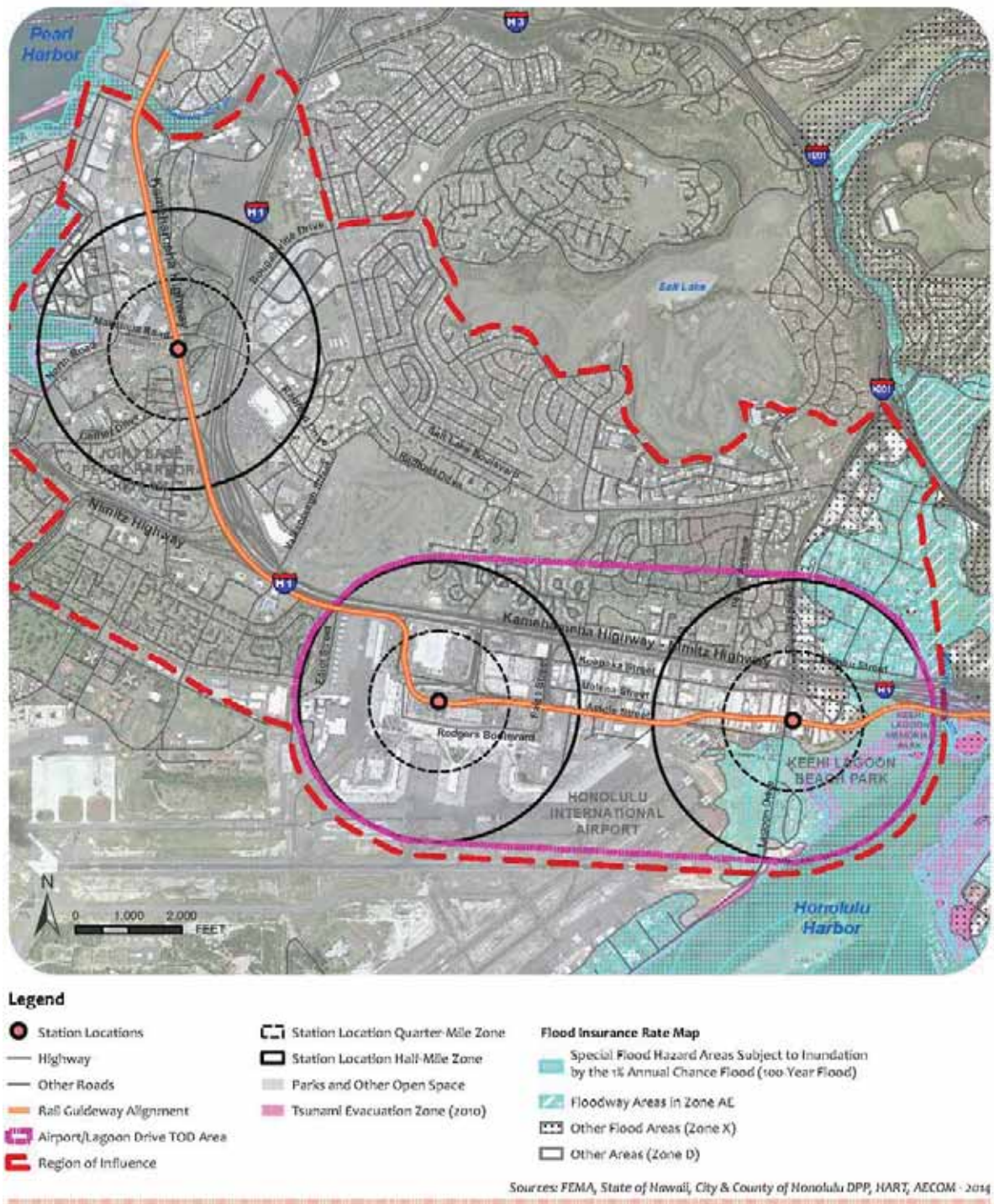


Figure 2-15: Environmental Hazards

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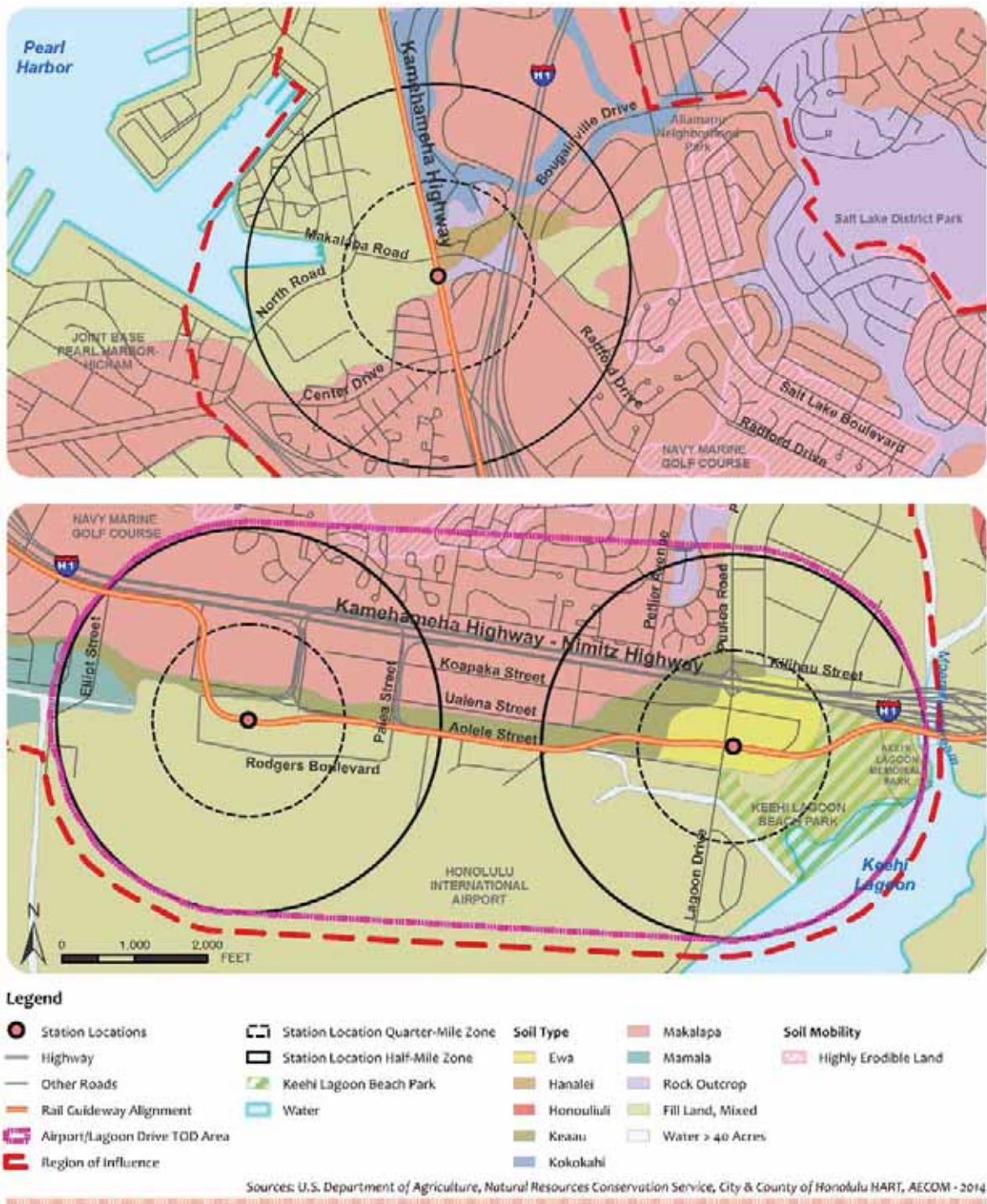


Figure 2-16: Soil Types

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A thin strip of Keaau runs parallel to the rail guideway through both stations.

Areas where erosion is possible, though limited, are located mauka of the Pearl Harbor station near Salt Lake Boulevard and north of the Airport and Lagoon Drive stations. 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 Material

The planning area consists of commercial, residential, military, and industrial land uses, including Pearl Harbor and the Honolulu International Airport. Large portions of the planning area soil are composed of fill material. The airport industrial area is dominated by airport/airline support activities (tank farms and maintenance facilities), car dealerships, rental car agencies, warehouses, and light industrial activities. The long history of industrial activities in the airport industrial area increases the chance that soils or groundwater on individual properties will contain residual contaminants of potential concern.

Under Federal and State laws and regulations, the developer is ultimately responsible for proper handling of contaminated materials and environmental media, reporting releases where encountered, preventing migration of existing contamination, and ensuring compliance with the law. A project-specific Environmental Management Work Plan establishes procedures and provides guidance for proper management, handling, and disposal of contaminated media that may be encountered during redevelopment.

There are a number of sites of concern near the proposed rail guideway alignment. Most of these sites are associated with fuel storage, military activity, and localized industrial activity (including Honolulu International Airport and automobile dealerships/repair shops). The most likely contaminants associated with these uses are primarily petroleum hydrocarbons (gasoline, diesel, and oil), pesticides, herbicides, metals, and solvents.

There are isolated areas where residual petroleum impact is believed to be present and there is the possibility that residual petroleum is present throughout the project corridor.

An Environmental Hazard Evaluation and Environmental Hazard Management Plan (EHE-EHMP) was prepared for HART contractors performing construction activities on the H RTP. This plan provides guidance to HART contractors for managing contamination when it is encountered along the H RTP corridor during preconstruction and construction activities. EHE-EHMP focuses on the technical work needed to protect human health and the environment and provide guidance on the implementation of protocols and procedures for reporting a release. The EHE-EHMP does not provide guidance for thorough characterization or remediation of contaminated sites. Appendix A of the EHE-EHMP, Known or Suspected Contaminated Sites, provides the current listing of sites within a 150-meter (0.09 mile) buffer on either side of the proposed rail corridor. An overview of known or suspected contaminated sites documented in the H RTP EHE-EHMP near the planning area is provided below:

- Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response Sites
- Numerous underground storage tank (UST) sites were identified along the route. UST sites are listed in the HDOH UST and Leaking Underground Storage Tank (LUST) databases. Because of the large number of UST sites along the pipeline route, known or suspected contaminated sites were limited to LUST sites.
- HART Release Sites during Geotechnical Investigations

The EHE-EHMP document is a programmatic approach for HART contractors. The document may be utilized as a reference for existing conditions along the rail corridor; however, it does not relieve private contractors of preconstruction due diligence responsibilities (Phase I Environmental Site Assessment and/or HDOH reporting requirements).

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The City received brownfield funding from the U.S. Environmental Protection Agency to investigate potentially contaminated properties. The grant provides funding for Phase I Environmental Site Assessments (ESAs), which include a thorough investigation of property history and determine the likelihood of environmental contamination. The grant also includes funding for Phase II ESAs, which include sampling and laboratory analysis to confirm the presence of hazardous materials, and the development of cleanup plans.

Air Quality

Air quality in Hawaii continues to be one of the states with the best air quality in the nation due to the traditional trade winds that move pollutants away from the area. Criteria pollutant levels remain well below state and federal ambient air quality standards (HDOH 2011). Air pollution levels in Hawaii are generally low due to its small size, isolation of the state, and limited emission sources. Consistent with this trend, the existing air quality in the vicinity of the project area is assumed to be relatively good because of the low levels of light industrial development and exposure to consistent winds which help disperse any air pollutant emissions. The main source of air pollutants emissions with the project area are associated with fuel combustion emissions from vehicles on the nearby surface streets and military operations.

The Airport/Lagoon Drive TOD Area also is subject to “urban heat island effect”. This means as a highly developed, impermeable area in comparison to more rural areas, the temperature are warmer. Exposed urban surfaces such as roofs and paved roads trap heat from the sun and produce temperatures higher than the air. Increasing shaded areas and permeable surfaces can reduce this effect.

Noise

Aircraft noise is a common occurrence in the Airport Area. The FAA has established general “Land Use Compatibility Guidelines” for aircraft noise based on the yearly day-night average sound level (DNL); however, the FAA allows local authorities, such as

HDOT, to establish aircraft noise land use compatibility guidelines based on local conditions. HDOT Airports Division has developed a set of guidelines that account for Hawaii’s unique local conditions, including natural ventilation and year-round outdoor living, which can increase noise exposure (HDOT 2010).

The Hawaii guidelines were developed in 1981 and are included in the 1981 “Honolulu International Airport and Airport Environs Master Plan Study.” The guidelines were revised in 2010 and are part of the “Honolulu International Airport FAR Part 150- Noise Compatibility Program Update” (HDOT 2010).

In the 2010 update, the acceptable exterior DNL level for residential housing was decreased from 65 to 60 DNL. A house in Hawaii has an Outside-to-Inside Noise Reduction factor approximately five to 15 decibels less than a mainland type house. Therefore, HDOT Airports Division recommends that housing and noise-sensitive buildings be built in areas with noise levels below 60 DNL. However, if housing is allowed in areas with aircraft noise impacts between 60 and 65 DNL, noise mitigation measures are required. Noise mitigation measures must achieve an interior noise level of 45 DNL or less. HDOT Airports Division also recommends that no housing or noise-sensitive buildings be built in areas with a noise exposure greater than 65 DNL (HDOT 2010).

Figure 2-17 shows DNL noise contours for the Planning Area. The majority of land makai of Nimitz Highway, which includes the Honolulu Airport and Lagoon Drive Stations, is within an area exposed to DNL of 65-70. Therefore, housing in this area is not recommended by HDOT Airports Division (HDOT 2010). The Pearl Harbor Station is located within a DNL lower than 60.

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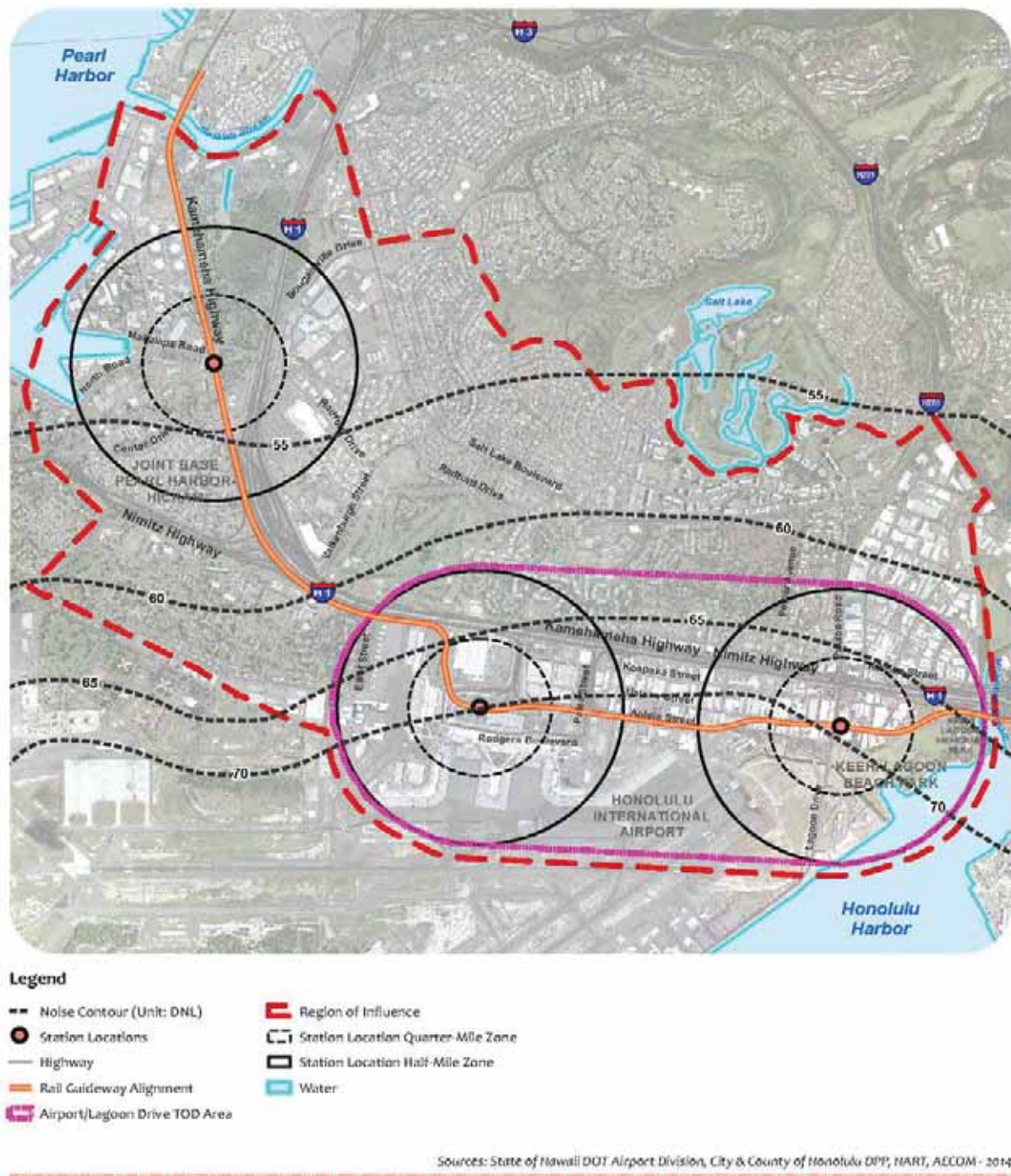


Figure 2-17: Noise Contours

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Global Climate Change/Sea Level Rise

Climate change is a long-term change in the statistical distribution of weather patterns over periods of time that range from decades to millions of years. It may be a change in the long-term average weather conditions or a change in the distribution, frequency, or intensity of weather events.

Greenhouse gases trap heat within the surface and the lowest portion of the earth's atmosphere, causing heating at the surface of the earth. Scientific evidence indicates a trend of increasing global temperature over the past century due to increasing greenhouse gas emissions from human activities. The heating effect from these gases is considered the probable cause of the rising temperatures observed over the last 50 years. The climate change associated with this increase in global temperatures is predicted to produce negative economic and social consequences across the globe. Although greenhouse gas emissions occur locally, the potential effects of greenhouse gas emissions are by nature global in scale, and they accumulate geographically and over time.

Coral bleaching, ocean acidification, changes in weather patterns, rising sea level, and associated potential for coastal inundation are attributed to greenhouse gas emissions.

The University of Hawaii School of Ocean Earth Science and Technology (SOEST) reports that sea level in Hawaii has risen 1.5 millimeters per year over the last century and predicts a rise of 3 feet by 2100 (2008). This amount of sea level rise could inundate parts of the Airport area, including portions of the Honolulu Airport and Pearl Harbor Naval Base. Over the long-term, this rise in sea level can lead to severe flooding and erosion along the coast, due to extreme tides. Sea level rise threatens public health and safety as well as the built environment (such as a rail system). SOEST categorizes the physical effects of sea-level rise in four ways: inundation, erosion, salt intrusion, and drainage problems. As described above, the lower Mapunapuna area is already experiencing drainage issues during high tide (SOEST, 2008).

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STATIONS

3.0 STATIONS

Each station within the corridor has unique land use characteristics, as well as shared commonalities. All three rail stations share the same “Major Destination/Employment Center” typology as each is a place with a single-use facility or high concentration of jobs (CCH 2013). This chapter evaluates the existing character, pedestrian connections/facilities, and future station access at each of the three stations. An analysis of the general character of the area surrounding each of the stations helps to identify elements of each station area that should be maintained and enriched, or redeveloped and modified.

Pedestrian connections, including sidewalks, pedestrian-only paths, and designated crosswalks are described and shown with associated photographs. In contrast, they also describe existing barriers to walking to and from the stations, including inadequate sidewalks and obstacles created by freeways and major roads. The City conducted a Walk Audit in February 2014 at the three of the Airport area stations. The focus of the audit was on station access to the rail stations by foot, bicycles, bus transit, and drop-off/pick-up. The draft results of the audit were presented in June 2014 and are summarized in the sections below, as applicable.

3.1 PEARL HARBOR NAVAL STATION

Station Character

Land use in the area is primarily military, lower-density residential, and light industrial, with some medium and higher-density residential/mixed use. JBPHH main base is located makai of the station. Military housing, industrial facilities, and retail/commercial establishments including the Mall at Pearl Harbor, Target, Flooring Superstore, and miscellaneous retail and commercial businesses are located mauka of the station along Radford Drive and surrounding local roads.

The Pearl Harbor station will provide access to nearby military uses, including employment and housing. Visitors to the Pearl Harbor Historic Sites (e.g., Arizona Memorial) are more likely to use the Aloha Stadium station; although visitors will have to walk

approximately 1 to 1.5 miles to reach the historic sites from either station. Access to the Pearl Harbor station will be located on the mauka side of Kamehameha Highway on the existing open space area across from the JBPHH Makalapa Gate. The Navy plans to create a mixed-use node on-base near the station as well.

The existing open space area has several large mature trees in its interior and is lined with mature street trees along Radford Drive. It is surrounded by Radford Drive, Kamehameha Highway and the Navy's unoccupied Little Makalapa housing areas. The Little Makalapa housing area is situated about 15 to 20 feet above the station and open space area. The housing area contains 30 units in 15 buildings. It is fenced, gated and in a state of disrepair; however, due to its age it is potentially eligible for listing on the national historic register.



Photo 3-1: Unoccupied and dilapidated Little Makalapa Navy home above Pearl Harbor station site

The Navy's Makalapa housing area is located across Radford Drive from the station location and has similar characteristics to the station's open nature. It contains historic homes within a fenced park-like setting composed of open fields and large, mature canopy trees. There is a secured pedestrian access gate into the housing area for residents and sidewalk along Radford Drive across from the station.

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Photo 3-2: Pearl Harbor station site, showing the station facilities within the existing open space area and surrounding Navy facilities



Photo 3-3: Pearl Harbor station site with open space and mature trees seen from the makai side of Kamehameha Highway south of Makalapa Gate (looking mauka)



Photo 3-4: Pearl Harbor station site seen from the makai side of Kamehameha Highway north of Makalapa Gate (looking mauka and east)

JBPHH's Makalapa Gate is located makai of Kamehameha Highway at its intersection with Radford Drive (Radford Drive becomes Makalapa Road once inside the gate). Located just south of the gate and directly across from the station is a three-story Navy barracks building within JBPHH. A covered

bus stop is located outside of JBPHH in front of the barracks building adjacent to Kamehameha Highway.

The Aloha Chapel/Community Support Facility is located on the opposite corner from the station within JBPHH and borders

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Kamehameha Highway and the north side of Makalapa Road. This building has distinct historic value due to its age and that it was designed by well-known Hawaii architect Vladimir Ossipoff. With its coved arches, this is a recognizable and unique building along Kamehameha Highway.

Station Access and Pedestrian Facilities

Station Access

The Pearl Harbor station entrance will be located on the mauka side of Kamehameha Highway and Radford Drive. Stairs and elevators will provide access to the elevated station platforms. Pedestrians will access the single station entrance from the southeast corner of Radford Drive and Kamehameha Highway. No parking will be provided and drop-off/pick-up areas will be limited. Parking for 20 bicycles will be provided at this station, with space provided for an additional 30 bicycles in the future. The station entrance plaza and adjacent sidewalks will be designed to ensure adequate capacity, safety, and comfort for transit passengers.



Photo 3-5: Pearl Harbor station entrance and pedestrian walkway to the elevated rail system

Recalibrated signalized crosswalks will allow pedestrians to access the station from JBPHH on the makai side of Kamehameha Highway. Many riders will likely travel with bicycles so they can more easily and quickly access the base from the station. The Navy is considering connector shuttles between the station and base. As discussed in Section 2.4, a bike lane is present along Kamehameha Highway that ends just south of the Kamehameha Highway and Radford Drive intersection, and there is paved shared-use path located along Bougainville Drive, south of Radford Drive. All of the roadways on JBPHH are shared

roadways under Federal jurisdiction, and bicyclists are commonly observed.

There are 19 bus stops within the ½-mile planning area, many with shelters. Because of this, it is common to see homeless people camping out at these bus stops making it uninviting for bus riders. Seven bus routes provide service to the planning area, including seven buses that provide access onto JBPHH. See Section 2.4, Figure 2-9. The City's Walk Audit reported that existing bus stops are too far away from the station and pullouts are needed. The Audit also suggested the need for an off-street pick-up/drop-off area for *TheHandi-Van* and kiss-and-ride within the rail station site.

Pedestrian Facilities

Paved sidewalks are located adjacent to the station site along both sides of Kamehameha Highway and Radford Drive. The sidewalk along Kamehameha Highway comes to an abrupt end at its juncture with the Little Makalapa retaining wall. The sidewalk on Radford Drive provides access to access other Navy facilities, including the Mall at Pearl Harbor, Navy Credit Union, as well as non-military retail and commercial facilities. The Mall at Pearl Harbor operates a complimentary shuttle bus that transports military members from JBPHH to the shopping area.

According to the City's Walk Audit, participants commented that the sidewalks and crosswalks on Kamehameha Highway are well marked but very narrow and end near the station area. As transit riders will need to cross Kamehameha Highway to access JBPHH, intersection improvements, such as wider crosswalks on Radford Drive and across Kamehameha Highway, will be necessary with the expected increase in the number of pedestrians.

The sidewalk on Radford Drive is wide and nicely shaded by large trees. These trees create a park like setting near the station that will be maintained. Better lighting is needed in this area.

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Photo 3-6: Kamehameha Hwy with Pearl Harbor station site in foreground, showing existing bus stop and JBPHH barracks in background



Photo 3-9: Typical sheltered bus stop within the planning area - bus Stop along Kamehameha Highway makai of Pearl Harbor station site



Photo 3-7: Typical unsheltered bus stop within the planning area- bus stop along Radford Drive mauka of Pearl Harbor station site



Photo 3-10: Example of underutilized land - unoccupied homes in the Little Makalapa housing area



Photo 3-8: Existing crosswalk near Makalapa Gate, Pearl Harbor station site to the left



Photo 3-11: Example of existing commercial retail in the planning area (showing The Mall at Pearl Harbor at the intersection of Radford Drive and Bougainville Drive)

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Photo 3-12: Example of existing commercial retail in the planning area (showing Target and other businesses)



Photo 3-13: Abrupt end to the existing sidewalk adjacent to Pearl Harbor station along Kamehameha Hwy



Photo 3-14: Existing sidewalk adjacent to Pearl Harbor station along Radford Drive near intersection with Kamehameha Highway

3.2 HONOLULU INTERNATIONAL AIRPORT

Station Character

Land use in the area is primarily industrial and lower-density residential. Airport-related facilities, including two multi-story parking structures, lei stands, and a future consolidated rental car facility (CONRAC) encompass the immediate area surrounding the station. On the mauka side of the station there is a large U.S. Postal Service facility and mixed industrial, commercial, and retail businesses along Koapaka Street, Ualena Street, and Aolele Street. There is a low-density military housing area west of the airport (near Elliot Street) and mauka of Nimitz Highway. While a lot of the housing there is housing on the mauka side of the H-1 Freeway/Nimitz Highway is within the ½-mile planning area, there are major barriers to pedestrian access from these residences to the station.

The Airport station will serve travelers and airport employees. The area is primarily paved and includes the USDA offices, a small dog park, and open landscaped area between the two parking structures.

Large trees, including monkeypod and rainbow shower trees currently provide shade within the immediate area and palm trees and shrubs make up the surrounding landscaping.



Photo 3-15: Existing open space and dog park near the Airport station location

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Photo 3-16: Honolulu International Airport station site, showing the station facilities within the existing open space area

Ground level views from the Airport station are limited to the immediate area due to the large parking structures and elevated roadways surrounding the terminals. The lei stands are located northwest of the station and will be easily accessible by rail patrons. The lei stand buildings are also surrounded by tropical landscaping.

Station Access and Pedestrian Facilities

Station Access

Given its proximity to Honolulu International Airport, walking will probably be the dominant mode of access to the station. Bike racks will be provided to accommodate 20 bicycles near the station entrance, and space will be set aside for up to 40 additional bike racks in the future if needed.

The Airport station will be elevated and located within the existing economy parking lot between the international and overseas parking structures. The station entrance will be located at-grade. The station entryway and entry plaza will have an at-grade connection to a new bus stop along Ala Onaona Road. The station is designed with a concourse level to accommodate pedestrian bridges to the

overseas and international parking structures. Patrons may also access the Interisland and Overseas Terminals by using the existing at-grade pedestrian access.



Photo 3-17: Airport station entrance and pedestrian walkway to the parking garage and elevated rail system

There are 19 bus stops (Figure 2-9) within the ½-mile planning area, many with shelters. Three bus stops are located along Rodgers Boulevard and provide pedestrian access to the airport terminals. The airport is patrolled by security making these three bus stops safe for travelers and less attractive to homeless people. The bus stops and sidewalks along Nimitz Highway tend to be more questionable at night and demonstrate common problems

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associated with sparse lighting, potential crime, and homeless people. Local bus service will continue to provide access to the station. Ala Onaona Road will be widened to accommodate buses and TheHandi-Van in front of the existing open parking mauka of the station site.



Photo 3-18: Sidewalk and landscaping along Aolele Street



Photo 3-19: Bus stop in airport along Rodgers Boulevard



Photo 3-20: Bus stop along Elliot Street

Pedestrian Facilities

The existing pedestrian paths are used primarily to transport travelers in and out of the airport. There are four existing pedestrian access ways to the Airport station site: 1) Airport ingress/egress point on Aolele Street to Nimitz Highway; 2) the Interisland Terminal to the Interisland Terminal Parking

Garage, ending at the International Parking Garage; 3) the International Arrivals Building to the International Parking Garage across Rodgers Boulevard, ending at the pedestrian bridge near Ala Auana Street; and 4) the Baggage Claim at the Overseas Terminal to the Overseas Terminal Parking Garage across Rodgers Boulevard, ending at the aforementioned pedestrian bridge. The economy parking lot located adjacent to the station site also provides pedestrian access to the lei stands.

Retail operations are located inside of the terminals for use by gate-checked travelers and Airport staff. Outside, there are no commercial-retail operations along the pedestrian paths for the general public.

The existing sidewalks are not connected to adjacent areas outside of the airport, and despite crosswalks being marked; there is room for improvement to increase safety and pedestrian access (Draft Walk Audit 2014). Contributing factors include vehicle traveling at high speeds to avoid missed flights, and fundamental reliance on vehicle travel to the Airport.

3.3 LAGOON DRIVE

Station Character

Land use in the ½-mile planning area is a major employment center and commercial destination. The character is primarily industrial and lower-density residential, with parks and open space at the eastern edge of the planning area. The area includes mixed industrial, commercial, and retail businesses along Nimitz Highway, Koapaka Street, Ualena Street, Aolele Street, and Waiwai Loop. Most of the land around the station is privately owned. Camp Catlin Naval Housing, a lower-density residential area is located on the mauka side of Nimitz Highway. While there is housing on the mauka side of the H-1 Freeway/Nimitz Highway, there are major barriers to pedestrian access from these residences to the station.

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Photo 3-21: Lagoon Drive station site, showing the station facilities within the existing open space area

The Lagoon Drive station will serve as the main stop Salt Lake residents, for commuters who work in the area, and for rail patrons accessing Keehi Lagoon Beach Park. Lagoon Drive terminates near the Reef Runway and serves as the primary transport access for cargo shipments arriving by airplane. This station will also provide customer access to the commercial and retail businesses within the planning area. The station area is dominated by short but densely developed parcels and surface parking lots. The surrounding area has very few trees with the exception of those within Keehi Lagoon Memorial Park, which is nicely landscaped throughout the property. Keehi Lagoon Beach Park also has very few trees and lacks the larger shade-providing trees typically seen in parks.

Lagoon Drive is the entry point to Keehi Lagoon Beach Park, which hosts large community events, such as Samoan Heritage Day and numerous canoe regattas, including the Hawaiian Canoe Racing Association Championships that draw significant numbers of people from around the State. In addition, the Keehi Lagoon Memorial Park, which is accessed from both Nimitz Highway and through the Keehi Lagoon Beach Park, is used frequently for community gatherings. Visitors are generally from outside of the area

and do not remain after park use. Both parks are open from 9am to 5pm daily.

A substantial portion within the $\frac{1}{4}$ to $\frac{1}{2}$ -mile of the planning area is affected by the runway protection zone (RPZ) of the Runway 22R (arrival runway) and 22L (departure runway) at the Honolulu International Airport. A RPZ is a trapezoidal area beyond the runway intended to enhance the safety and protection of the people and property on the ground. A glideslope associated with a RPZ provides vertical guidance by ensuring that the aircraft is following the glide path to remain above obstructions and reach the runway at proper touchdown point.

The Runway 22R RPZ begins from the edge of the runway to the distance of 1,000' towards the Lagoon Drive station area; from the bird's eye perspective (looking below), the left side terminates on private property between Ualena and Aolele Streets (see Figure 1-5). The right side ends on the Airport property to the south of the parking structure. The glideslope of the Runway 22R terminates in lower Mapunapuna. The glideslope for the approach runway is 20:1, meaning, for every 200', as measured from the runway, the area affected by the RPZ rises by 10'. The affected area within the Lagoon Drive station area begins at about 1,200' from the edge of the

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runway, with a height restriction ranging from 70' to 160'.

The Runway 22L RPZ begins also begins from the edge of the runway and projects 1,700' in the northeasterly direction. The left edge of the RPZ terminates on private property between Koapaka and Ualena Streets; the right side terminates on the baseball field at the Keehi Lagoon Beach Park. The glideslope of the Runway 22L extends to lower Mapunapuna on the left side, and terminates on Nimitz Highway on the right side. The glideslope for the departure runway is 40:1. The Lagoon Drive station area is approximately 1,600' from the edge of the runway, with a height restriction ranging from 50' to 100'.



Photo 3-22: Lagoon Drive station site and looking toward Waiwai Loop



Photo 3-23: Lagoon Drive station site to the right looking toward Ualena Street intersection (looking mauka)



Photo 3-24: Lagoon Drive station site to the left looking toward Aolele Street intersection (looking makai)



Photo 3-25: Lagoon Drive and Koapaka intersection looking east



Photo 3-26: Lagoon Drive looking west from station site

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Photo 3-27: Keehi Lagoon Beach Park



Photo 3-28: Canoes at Keehi Lagoon Beach Park



Photo 3-29: Entrance to Keehi Lagoon Memorial Park from Beach Park

Station Access and Pedestrian Facilities

Station Access

With the exception of Nimitz Highway, the entire planning area surrounding the Lagoon Drive station is currently devoid of bus stops. Three bus stops are proposed along Lagoon Drive, two on the mauka side and one on the makai side of the station. Most pedestrians and bicyclists are expected to access the station entrance from Lagoon Drive. Area improvements include station access enhancements and select opportunities for

new infill development and connections to the Keehi Lagoon Beach Park and the waterfront. The station will include 20 bike racks. Space is set aside for 10 bike racks in the future. The station entrance plaza and adjacent sidewalks will be developed to ensure adequate capacity, safety, and comfort for passengers.



Photo 3-30: Lagoon Drive station entrances and pedestrian walkway to the elevated rail system

Pedestrian Facilities

Current street design and traffic make the area around the station difficult for pedestrians and bicyclists. A significant source contributing to the uncomfortable and potentially unsafe pedestrian environment are vehicles, particularly trucks traveling to/from the cargo terminals and businesses. Elongated lots in the mauka to makai configuration and long street blocks without frequent breaks contribute to creating an uninviting pedestrian environment.

A new traffic signal will be installed as part of the H RTP to provide better pedestrian access to the station. To encourage ridership, a new kiss-and-ride drop off is planned to the south of the station that would provide short-term parking and a loading zone for rail patrons. Considering that additional parking facilities would not be constructed as part of the H RTP, monitoring of the existing parking facilities in the area may need to be conducted to prevent unpermitted uses (e.g., employees using the Keehi Beach Lagoon Park parking lot). New bus stops and a *TheHandi-Van* stop will be added: *TheBus* #31 will be rerouted to stop along either side of Ualena Street/Waiwai Loop and a new route #306 will be added along either side of Lagoon Drive to the mauka side of the station.

PUBLIC PARTICIPATION

4.0 PUBLIC PARTICIPATION

A comprehensive public participation process will spell out the perceptions, viewpoints, and opinions of community members and relevant organizations. To develop an effective vision for the Airport Area TOD Plan, it is critical to conduct public participation in a way that promotes broad-based understanding between the City and the affected communities, creates confidence in the planning process, builds community support for the project, and results in a plan that reflects the interests and needs of the community.

A range of public participation activities will occur throughout the project to ensure as many community voices as possible are heard, in ways that are meaningful and convenient.

Stakeholder meetings were conducted in March 2014 for various stakeholders to communicate directly with the City regarding their concerns and perspectives related to development in the Airport area. The objective of these small group meetings was to learn about major issues, ideas, and critical concerns related to development around the rail transit stations. The major stakeholders included individuals representing a variety of interests and organizations including: commercial and retail tenants, military staff, Airport staff, representatives of public agencies, community organizations, elected officials, and major land owners in the area. These meetings enabled individuals to be more candid and in-depth than they otherwise might have been in a larger community forum. These stakeholders were identified by the City.

4.1 MAJOR THEMES

The following major themes were consistently raised by stakeholders:

- Access to rail stations from the surrounding neighborhoods
- Bus system efficiency, schedule, reliability
- Convenient and safe pedestrian access to and around stations
- On-going road construction projects in the area

- Parking
- Safety concerns including lack of lighted areas and homeless issues
- Creating a new vision of the industrial area around Lagoon Drive
- Need to involve a wide-variety of stakeholders and encourage participation from the public

4.2 DISCUSSION TOPICS

Bus Connectivity/Efficiency and Vehicle Parking

Overall, stakeholders supported development of rail and new and revitalized uses around the rail stations. Stakeholders envision that residents, and those who work in the area, will use the rail system. However, this will only be successful if station areas are well designed, pedestrian paths are safe and convenient, and bus and shuttle connections are efficient and convenient. Stakeholders expressed much concern over access to the Airport and Lagoon Drive rail stations, especially since the alignment of the rail system will no longer travel down Salt Lake Boulevard. Stakeholders reported that residents in the community still have resentment about the alignment change and some are unhappy with the current route. Many stakeholders are under the impression that the current bus system will stay “as is” when the rail is operational, and are unaware of the on-going plans to change and improve bus routes and provide bus connectors to surrounding neighborhoods. Efficient bus connectors will be vital to getting people from the Region of Influence to the rail stations. While bus connections to rail will be important, other stakeholders expressed the desire to drive to the rail stations and park their vehicle. Many are unsure how the logistics of this would work as none of the stations in the Airport area will have park and ride facilities, and parking in the area is severely limited.

Road Congestion and Parking

Multiple stakeholders expressed frustration about the status of the on-going Salt Lake Boulevard expansion project. The expansion project has been in progress for over 30 years, and residents are anxious to see its completion. The construction causes traffic

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delays in an already busy area. Stakeholders reported that parts of Salt Lake are very congested, especially in the morning and afternoon when schools start and let out. There is currently more school traffic than in previous years because fewer parents allow their kids to walk to school due to safety concerns. School drop offs block the through ways for other traffic. Specifically, a bottleneck occurs daily at Kahuapaani Street due to vehicles getting off the highway to turn right on Salt Lake Boulevard. The need exists for two right turn lanes, but there is currently only one. Traffic congestion is also a major issue on Arizona Road near Aliamanu Elementary and Middle Schools.

Multiple stakeholders brought up concerns surrounding Arizona Road. The road is owned by the Navy, but there is an agreement with the City for public use. The road is poorly maintained as there seems to be a dispute over who is charged with maintaining it. Due to lack of maintenance, several safety issues exist in this area. School children from the surrounding military housing use this road to walk to and from school, but no sidewalk exists. Pedestrians walk on the edge of the roadway, but the grass is often.

Lack of parking was identified as a concern by a multitude of stakeholders. Many off-base residents in the area have multi-generational families living in a house and are limited to street parking. Businesses in the area do not have enough parking for patrons and employees, and therefore charge expensive rates for parking privileges.

Safety

Safety was highlighted as a key concern during the interviews. While the Airport area is generally considered safe during the day, many people do not feel the same sense of security at night. The area lacks efficient lighting and dark spots are common, especially in the Airport and Lagoon Drive areas.

Homelessness is a major issue in the area. Homelessness has been identified as a key barrier to achieving TOD and greater integration between public space and development. Stakeholders reported that

thefts and destruction of property in the area are common place. Many worry that the development of rail will attract a larger homeless population. A large homeless community camps under the bridge across from Keehi Lagoon Memorial Park. The State clears the area out once a month for clean-up, but the area is occupied again immediately afterwards.

Development Opportunities

TOD opportunities are available at each of the three Airport area sites Stakeholders identified deficient uses such as retail, industrial, and hotels especially in the Airport and Lagoon Drive area. Several stakeholders discussed the need and desire for a brand name hotel in the area. Stakeholders are frustrated by the lack of gas stations in the area. There used to be four gas stations, but all have been closed as properties have been acquired for rail construction. This causes issues for businesses in this heavily industrialized area and also for rental car returns.

Keehi Lagoon Park was identified as a highly underutilized area The Park is highly utilized during events and then can be virtually vacant when events are not taking place. Many stakeholders reported that the park is perceived as unsafe due to lack of lighting (copper wire for lighting continues to be stolen) and a large homeless population. The park also lacks shaded area and other amenities that would make it more attractive for use.

Participation

One set of stakeholder interviews have taken place, see Table 4-1 for participants. Overall, stakeholders were intrigued about the idea of development opportunities in the area. Many see the area as holding a lot of potential, but also want to ensure that development does not negatively impact quality of life to existing neighborhoods (specifically military communities). However, developing an effective TOD Plan will only be achieved with a wide variety of stakeholders and participation from the surrounding community. This area has residential, business owners, tenants, landowners, and a transient military community (change over every 2-4 years on

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average) who have various needs and desires. Participation from everyone will be vital.

Table 4-1: Stakeholder Interview Participants

Interviewee Name	Organization
Lennard Pepper	Neighborhood Board 18
Larry Nagayama	Hawaiian National Bank- Airport Branch
Cathy Luke	Loyalty Enterprises, Ltd./KJL Associates
Evan Mau	Loyalty Enterprises, Ltd./KJL Associates
Wes Choy	NAVFAC, PRP 12, Asset Management Branch
Janice Fukawa	NAVFAC Region HI/NAVFAC HI
Victor Flint	NAVFAC
Sandra Tanoue	NAVFAC Pacific
Lee Unten	NAVFAC Facility Planning
Kalani Fukuda	NAVFAC AM2 Facility Planning
Will Boudra	Forest City Military Communities Hawaii
Billy Lawson	Forest City Residential Group
Tatiana Quong	Forest City Residential Group
Stephanie Nojima	Airport Honolulu Hotel and Best Western Plaza Hotel
William Crowley	MidPacific Asset Advisors, LLC
Dean Nakagawa	DOT Statewide Transportation Planning Office
Norren Kato	DOT Statewide Transportation Planning Office
Monita McLaurin	DOT Statewide Transportation Planning Office
Guy Ichinotsubo	DOT Airports Division
Mike Auerbach	DOT Airports Division
Ross Smith	DOT Airports Division
Representative Linda Ichiyama	Hawaii State House of Representatives
Rosalind "Roz" Young	Department of Parks and Recreation
Inga Kamae	Keehi Lagoon Memorial Park
Cappy Fasi	Keehi Lagoon Memorial Park
Catherine Camp	Kamehameha Schools
Ryan Kusumoto	Goodwill Industries of Hawaii, Inc.
Joanne Brinich	Aliamanu Middle School
Bryant Petty	United States Postal Service

4.3 NEXT STEPS

Preparation of the Airport Area TOD Plan is proceeding with an integrated community outreach and technical analysis process. The input gathered during the stakeholder interviews will be combined with other outreach efforts described below to inform the plan:

Project Advisory Committee (PAC) Meetings: a committee, made up of 15-20 members, will be established from a balanced representation of residents, businesses, community organizations, agency representatives, elected officials, and property owners. Meetings will occur at key stages of the project to identify issues, concerns, and potential opportunities; review key findings and relevant analysis; present work products and solicit input on materials and agendas; refine community vision and goals; and discuss the purpose and outcomes of the community workshops. The PAC will meet four times during the TOD process.

Community Workshops: workshops are intended to be engaging, hands-on events where all community members can learn about the project and provide their perspectives on the project vision, potential opportunities, policies, programs, and plans. A variety of techniques will be employed to engage participants, maximize opportunities for discussion, and incorporate community feedback. Final meeting agendas and activities will be developed in consultation with the City and the PAC. Up to three community workshops will be held during the TOD planning process. Each workshop will cover all three Airport Neighborhood station areas.

Infrastructure Meeting: One meeting will be conducted with representatives from CCH and State agencies to review the Preferred Plan and obtain comments on its impact to public facilities and services planned or provided by the respective agencies.

Community Needs Assessment Survey: The survey will ask current residents about their perspectives on their communities, with a focus on the rail transit line. This will include both positive and negative aspects of the community, and the priorities of residents for

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public and private improvements. Needs and opinions will relate to housing, pedestrian, bicycle, and streetscape environments, new development, higher densities, park/open space, and community facilities. Findings will assist the City and the PAC to develop a plan that reflects these needs and values, while balancing needs of prospective residents and businesses. The findings will inform land use and urban design plans, recommended transportation investments, public facilities improvements, and prioritization of plan components.

Business Outreach: The City will engage with business owners and groups directly by walking door to door in commercial/industrial areas, talking with business owners about TOD, and their ideas and concerns. As the City becomes aware of business groups or organizations that meet regularly, they will schedule to attend these meetings to discuss the project. In addition, the City will conduct a business needs assessment survey that will include a survey for both employers and employees.

These outreach efforts are complemented by technical analyses that will, together, result in the following documents:

- *Vision, Guiding Principles:* using community and stakeholder input, vision statements and guiding principles will be created for the Airport Area. Depending on similarities or differences amongst the station areas, a single vision statement and set of guiding principles for the entire planning area may be prepared or a statements and principles for each station may be more appropriate.
- *Station Area Alternatives:* Up to two station Area Alternatives for each station will be prepared. The alternatives will encapsulate broad choices related to land use and development intensities and will take into consideration the context of each station as well as the Planning Area as a whole.
- *Preferred Transit-Oriented Development Plan:* this document will summarize the preferred plan for each station area, including the vision and character,

concepts for circulation, land uses, development controls and urban design elements, and building massing.

- *Draft Transit-Oriented Development Plan:* This report will summarize the project process and resulting plans. The report will be organized by station area, preceded by a general project introduction and background chapter. This organization allows each station area chapter to function as a standalone document, and makes it easy for stakeholders to quickly find information of interest to them.
- *Final Transit-Oriented Development Plan:* the final report will summarize the community outreach activities and interim reports described above. It will go to the decision makers for review and ultimately for implementation.

OPPORTUNITIES AND CONSTRAINTS

5.0 OPPORTUNITIES AND CONSTRAINTS

This chapter describes the primary issues, constraints and opportunities associated with and occurring at the three Airport area stations. This discussion was derived from information in the previous chapters, including a review of existing documents, analysis of each location, and early stakeholder input. A Site Features figure accompanies the discussion and is provided for each station area that shows the key challenges and potential opportunities for TOD at these locations.

Vacant and underutilized sites can provide strategic opportunities to create new uses, meet community needs, and capitalize on access to rail transit. Potential opportunity sites are based on the following:

- Vacant sites or sites currently occupied by surface parking lots;
- “Other Opportunity Sites” that have been identified as potential opportunities by stakeholders, landowners, City staff, or consultants.

5.1 SITE CONSTRAINTS AND POTENTIAL OPPORTUNITIES

Pearl Harbor Naval Base Station

As shown on Figure 5-1, the Pearl Harbor station is entirely surrounded by the JBPHH military installation. With the exception of the public roads, the federal fire station, and the site itself, all land around the station is fenced and access is restricted to military personnel. This leaves limited private sector development possibilities at this location; although there is some undeveloped land near the station should the situation change in the future.

On-base, JBPHH recently completed its IDP/ADP process and has identified several areas of opportunity for TOD; two of the Navy’s proposed Harbor Line Route stations are located within the ¼- mile to ½-mile planning area of the Pearl Harbor station.

The H-1 Freeway located approximately 700 feet mauka of the station location is a major division of the land within the ¼-mile zone. Land uses mauka of H-1 and Bougainville

Drive, and within the ½-mile zone are primarily related to the military, including the Naval Facilities Engineering Command – Hawaii headquarters and associated public works facilities, and the Mall at Pearl Harbor (military shopping area). Commercial and business facilities occupy a portion of privately held land to the north and present potential redevelopment opportunities.

Pedestrian amenities at the Radford Drive/Kamehameha Highway intersection are inadequate for future levels of use the area will see when the station is operable. Crosswalks are narrow and pedestrian islands are too small for the number of people that are expected to use them when walking to/from JBPHH. Moreover, the inadequate signal timing for pedestrians crossing the road exacerbates the need for changes in this area once the station is operable. The Center Drive/Kamehameha Highway intersection lacks a crosswalk across the north side of Kamehameha Highway. Most of the section between Radford Drive and Center Drive on the mauka side of Kamehameha Highway lacks pedestrian access with no sidewalk present. This is also the case for most of the makai side of Center Drive between Radford Drive and Kamehameha Highway, which lacks pedestrian access with no sidewalk present. These pedestrian amenity inadequacies are also safety concerns that potential redevelopment of nearby sites can address.

Bus stops are located throughout the area and served by a variety of different transit routes. The number and location of bus stops is generally adequate to serve the Pearl Harbor station. However, with the potential for increased ridership and use, the bus stops on each side of Kamehameha Highway closest to the station have inadequate rider amenities (i.e., large enough shelters, seating, and trash/recycle receptacles). Similar to the inadequate pedestrian amenities, potential TOD can also address the need for higher capacity bus stop facilities.

There is a strong likelihood that riders will get picked up/dropped off at the Pearl Harbor station. However, there is currently no accommodation in the station design for any drop-off/pick up at this station.

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Accommodating drop-off/pick up within or adjacent to the site would alleviate congestion problems and potential safety issues on Kamehameha Highway and Radford Drive. It would also afford riders with disabilities to access the station in a more convenient and safe manner.

The station site itself is open, grassy with large-canopy shade trees giving it a park-like atmosphere. This is similar to the look and feel north and south of the station --- i.e., the Makalapa and Little Makalapa Navy housing areas (although these are fenced military properties). The park-like setting presents potential opportunities to develop a small park adjacent to the station between Radford Drive and the Little Makalapa housing area that would be in keeping with its surroundings and be an amenity to transit users and area residents.

While potentially eligible for listing on the national register of historic places, the five-acre, unoccupied and deteriorated Little Makalapa Navy housing area and the two-acre area between it and the Federal Fire Station offer the most significant redevelopment opportunity adjacent to this station location. Major challenges include its current military ownership, potential eligibility for nomination in the historic property registry status, and possible need to clean-up of the sites.

Stakeholders reported during the early interviews that food establishments in this area are limited, and it often takes more than the allotted lunch break to drive to a lunch site, wait in line, eat, and return to work. A café with convenience retail amenities (coffee, snacks, etc.) and outside seating could be created adjacent to the station. Transit riders could utilize these facilities when entering or exiting the station, along with workers from the surrounding area. Currently on base at JBPHH, there are similar type uses in the form of national franchises (e.g., McDonald's and Pizza Hut) and a mini convenient store just outside of the ½-mile planning area. Closer to the planned rail station are "dine in" food establishment types (e.g., a country-themed bar, "Chief's Club") that serve as a more expensive alternative to "grab and go" types. According to the JBPHH IDP, several

mixed-use commercial-residential (i.e., barracks) developments are planned outside of the ½-mile planning area in the Northside (i.e., makai of the rail station area north of Makalapa Road and west of Kamehameha Highway).

The JBPHH IDP/ADP also shows that a transit network is proposed to connect different IDP planning districts throughout the base. Currently, there are city bus stops and off-base transfer stops nearby. In addition to the bus service, on-base transit stops for the proposed Harbor Line Route, which will connect the riders within the Northside, Makalapa, and Southside districts, are proposed to be within the ¼ to ½-mile planning area of the Pearl Harbor station, on both north and south sides of Makalapa Road. The areas in the vicinity of the two transit stops are potential areas of TOD opportunity.

There are three potential off-installation TOD opportunity sites in close proximity to the Pearl Harbor station, including: (1) the area along Radford Drive abutting the station site; (2) the Little Makalapa Navy housing area; and (3) the area along Center Drive abutting Little Makalapa. The proximity of these sites to the Pearl Harbor station and the lack of any other nearby suitable properties present a unique opportunity for redevelopment of these sites.

Potential TOD opportunity areas within the ½-mile area include redevelopment of the commercial/business area bordered by Bougainville Drive and the large parking lot associated with the Mall at Pearl Harbor (assuming a parking garage took its place).

Airport Station

As shown on Figure 5-2, the ¼-mile radius surrounding the Airport station is entirely surrounded by Airport facilities on State, Federal, and a small parcel of private land. This leaves minimal space for private sector TOD at this location unless done so in coordination with the Airport.

OPPORTUNITIES AND CONSTRAINTS

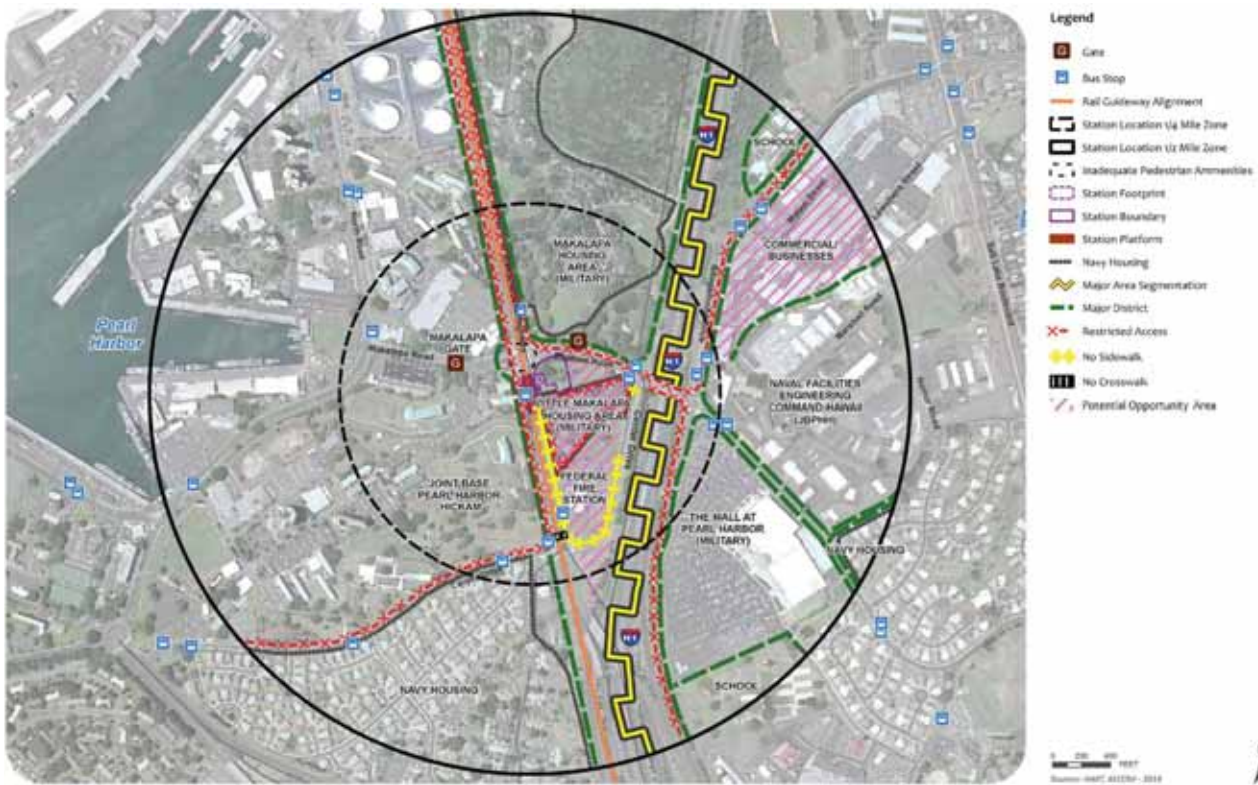


Figure 5-1: Pearl Harbor Station – Site Features

OPPORTUNITIES AND CONSTRAINTS

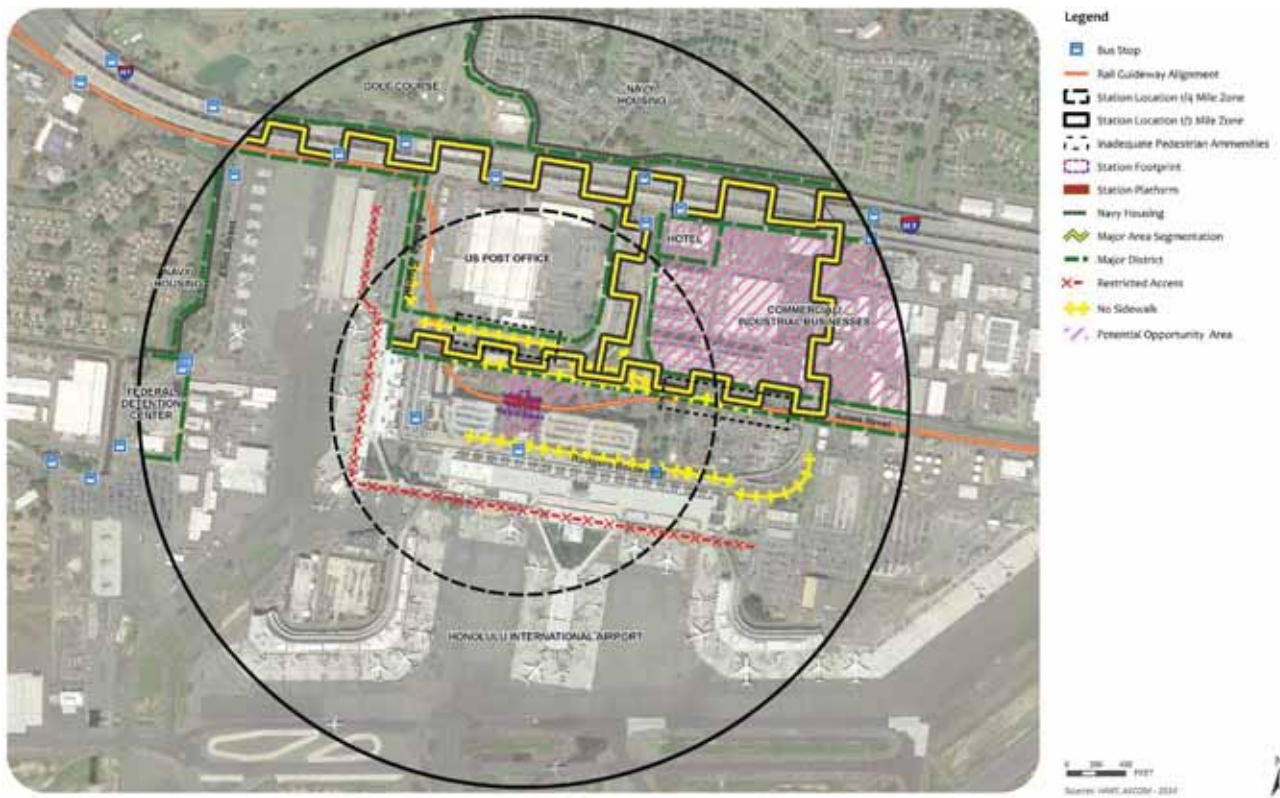


Figure 5-2: Airport Station - Site Features

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Airport-related facilities, including two multi-story parking structures and a future CONRAC encompass the immediate area surrounding the station. Mauka of the station, the USPS facility is located on the west side of Rodgers Boulevard. On the east side of Rodgers Boulevard, the Airport Industrial Park and associated parking is located, along with various mixed industrial, commercial, and retail businesses along Koapaka Street, Ualena Street, Aolele Street, and Waiwai Loop. Pedestrian amenities surrounding the Honolulu International Airport are inadequate for the current use and will be even more so for the expected future levels of use that the area will experience once the rail station is operational. As discussed in Chapter 3, the existing sidewalks are not connected to adjacent areas outside of the Airport and make pedestrian access through airport property impractical and unsafe. In other areas, pedestrian amenities are non-existent. For example, there is currently no pedestrian connection from the Airport Industrial Park to the Airport itself. There is a lower-density military housing area west of the Airport, near Elliot Street and military housing mauka of H-1 Freeway/Nimitz Highway. In addition to the military housing being gated, limiting access to the residents, Nimitz Highway presents a major barrier to pedestrian access from these residences to the station. A non-contiguous median is present on the portion of Rodgers Boulevard that fronts airport check in and drop off. However, there is no safe adequate sidewalk for a pedestrian to use, especially if they are carrying luggage.

In addition to inadequate pedestrian amenities, bicycle facilities are also inadequate within the Airport station planning area. A bike path is present along Nimitz Highway but there is no connection to it from the Airport station area. No bike paths are currently present within the ¼-mile radius of the Airport station. New investments could address this issue.

Three bus stops are located along Rodgers Boulevard within the ¼-mile radius and provide pedestrian access to the Airport terminals. Numerous other bus stops and routes are located within the ½-mile radius along Nimitz Highway, Elliott Street, and Lagoon Drive and provide service to the

Airport, surrounding local businesses, and residential areas mauka of Nimitz Highway. The number and location of bus stops is generally adequate to serve the Honolulu Airport station. Local bus service will provide access to the station. Ala Onaona Road will be widened to accommodate buses and *TheHandi-Van* in front of the existing open parking mauka of the station site.

The station is located within the Airport's economy parking lot between the international and overseas parking structures. The area is primarily paved and includes a small dog park and open landscaped area between the two parking structures. Large trees currently provide shade within the immediate area and palm trees and shrubs make up the surrounding landscaping. It is anticipated that existing trees and landscaping (excluding the dog park) impacted by the construction of the station and associated guideway will be replaced with high canopied trees and low groundcovers. This area is unique to the surrounding area as it offers one of the only landscaped and shaded areas in this vicinity. This area presents potential TOD opportunities.

The Airport station has limited private sector development opportunities in close proximity to the station itself, given that much of the surrounding land is State-owned airport property. Design of the Honolulu International Airport station is largely influenced by site characteristics, environmental conditions, adjacent utilities, and security issues related to the airport.

Because persons picking-up passengers are discouraged from lingering at airport terminal drop-off points, a common practice is the utilization of the adjacent USPS parking lot as a "cell phone lot" to minimize the wait of a passenger due for arrival. The need demonstrated by "cell phone lot" users can be addressed and transferred over to the Airport station TOD.

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Potential TOD opportunity sites in the vicinity of the Airport station include: (1) the ground level beneath the Airport station, particularly mauka of the platform area; (2) the existing economy parking lot; (3) a section under the viaduct near the employee parking; and (4) incorporating TOD into the existing parking structures and future pedestrian bridges.

Potential TOD opportunities within the ½-mile area include redevelopment of the commercial/business area south of Aolele St. Better connectivity is another opportunity area for pedestrians and bicyclists trying to get from the area mauka of Nimitz Highway to the Airport station, particularly via Catlin Drive and Camp Catlin Road.

Lagoon Drive Station

As shown on Figure 5-3, Nimitz Highway contains five access points that lead to the Lagoon Drive business area: Puuloa Street/Lagoon Drive, Ohohia Street, Paiea Street, Rodgers Boulevard, and Aolele Street. Nimitz Highway also links the mauka area of lower Mapunapuna and Camp Catlin Naval Housing through Camp Catlin Road, Catlin Drive, Peltier Avenue, and Lagoon Drive/Puuloa Road. Within the Lagoon Drive business area, the internal network of three streets (Koapaka, Ualena, and Aolele Streets) that run parallel to Nimitz Highway provide circulation to the businesses located throughout the area. While serving as the connector to the mauka-makai areas within the Lagoon Drive station area, Nimitz Highway inadvertently segregates the areas due to its 12-car lanes. The area has dimly lit roads and vehicles travel at high speeds. An elevated viaduct constructed on Nimitz Highway runs along it in the general same direction north of the Airport as part of the H1 Freeway, a segment frequently referred to as the “Airport viaduct.” While the H1 Freeway provides an unobstructed panoramic view of Honolulu, the portion of Nimitz Highway underneath the Airport viaduct is a series of concrete arches that create an ill-lighted roadway, albeit with well-maintained landscaping.

Lagoon Drive is the gateway to the Lagoon Drive station and the important connector of the mauka-makai districts in the station

planning area. The four-lane road contains sidewalks, but in some instances, the sidewalks are used as extensions of driveway aprons so pedestrians have to walk around obstructions encroaching onto the street. This issue is prevalent on all streets throughout the area. The westbound Aolele Street, which transitions to Nimitz Highway is a part of the Interstate Highway. Consequently, at the intersection with Aolele Street, the sidewalk taper off on both sides of Lagoon Drive. Keehi Lagoon Beach Park is adjacent to the east side of Lagoon Drive and there is only one bus stop at the far edge of the Park. The vast majority of Park users arrive by vehicle. Lagoon Drive terminates on the makai side of the Airport along the cargo terminal.

TOD and the Lagoon Drive station is expected to invite transit users from the mauka side of the station area (the residents of Camp Catlin and lower Mapunapuna job commuters) to the area surrounding the station and its recreational resources. The CCH Department of Parks & Recreation has expressed interest in exploring ideas to revitalize the Keehi Lagoon Beach Park (CCH 2014).

The intersection of Ualena Street/Waiwai Loop and Lagoon Drive, where the station is proposed, currently lacks intersection lights or traffic slowing mechanisms to caution approaching drivers; however, this intersection will be signalized as part of the H RTP project. Although there are crosswalks connecting the mauka-makai portions of Ualena Street/Waiwai Loop, the crosswalks are in need of improvement (e.g., restriping) to enhance their effectiveness. There are no crosswalks in west-east travel at the intersection; the nearest access is at the intersection of Koapaka Street/Waiwai Loop and Lagoon Drive. Although this intersection contains a west-east crosswalk, it is in need of improvement; moreover, similar to the Ualena Street/Waiwai Loop location, there are no signals or visible features to alert the approaching traffic to the possible presence of pedestrians. The problem is enhanced since Lagoon Drive contains six vehicle lanes (including turning lanes), and vehicles include large delivery trucks. The condition at Aolele Street and Lagoon Drive intersection is similar to the other intersections discussed except it

OPPORTUNITIES AND CONSTRAINTS

provide west-east pedestrian access by way of a marked crosswalk.

There are very few, if any, features encouraging pedestrian travel within the station planning area (¼ mile). Besides the lack of continuous sidewalks, there is an absence of bus shelters (due to the lack of bus routing in the area), adequate pedestrian islands on medians, and street trees. A pedestrian is exposed to the elements (inclement weather and vehicle traffic) and is not provided with relief—shade, a place to rest, or shortened travel time through the availability of helpful pedestrian facilities.

When the rail station is constructed, the station area and the major intersections at Ualena Street/Waiwai Loop-Lagoon Drive and Aolele Street-Lagoon Drive will likely experience an influx of multi-modal users, including transit riders comprised of pedestrians and bicycle riders, and the uninviting pedestrian environment will be amplified unless addressed. The addition of three bus stops near the station area is also expected to increase the number of pedestrians in the area. Potential improvements include: installation of additional intersection lights; widening or improving the existing roadway medians; striping/restriping the crosswalks; planting street trees; improving street lighting; installation of multi-modal lane on both sides of Lagoon Drive; and constructing adequate bus shelters for new bus routes.

The immediate station area is currently an office-warehouse on the mauka side of the Ualena Street/Waiwai Loop intersection and a former gas station (recently closed due to the H RTP) on the makai side. The station platforms will be attached to the guideway over Waiwai Loop and the street will remain in use. With the exception of small landscape stripes found on private property, there are no landscaped areas or street trees around the station area. The median in the street near the station is narrow, nearly at-grade, and can only accommodate a single pedestrian at most. Across the street is a warehouse built close to the edge of the sidewalk and a former gas station. Throughout the street, this pattern of office-commercial/retail-industrial use is prevalent. The land use pattern in the lower

Mapunapuna business district bears resemblance to the station planning area, although the latter is geared more towards airport use. Moreover, streetscapes composed of warehouses, is the norm within lower Mapunapuna.

By incorporating features to promote pedestrian safety, such as multi-modal lanes, clearly marked crosswalks, and added street lighting, existing links to different districts in the area can be strengthened. Whereas non-vehicular travel to Keehi Lagoon Beach Park is largely nonexistent due to the lack of bus access or pedestrian-friendly road features, bus and transit access could encourage out-of-area residents to better utilize the park. Along the way to/from the park, uses that cater to park visitors, such as gear shops or mini-marts (retail-commercial) could be provided along Lagoon Drive near the bus stop areas and the rail station. Features such as a food concession stand at the Park (e.g., Ala Moana Beach) could incentivize visitors to extend their time spent at the Park.

The effort to making Lagoon Drive safer could be extended beyond the reach of Nimitz Highway to the three mauka-makai connector roads. Currently, the roads that connect the housing area and lower Mapunapuna to Lagoon Drive via Nimitz Highway (mainly Peltier Avenue and Puuloa Road), do not serve a purpose other than a thoroughfare in the mauka-makai direction. Although there are pedestrians that cross Nimitz Highway after getting off at bus stops, pedestrian travel, especially at night, is intimidating and potentially unsafe. To draw rail and TOD users from the mauka side of Nimitz Highway, it will be crucial to make the crosswalks safer, include a multi-modal lane on Nimitz Highway and Lagoon Drive, and lighting the area with even street lighting.

The rail station and its ridership use, combined with the amount of private land surrounding the Lagoon Drive station presents some of the highest level of TOD opportunities between the three Airport Area stations.

OPPORTUNITIES AND CONSTRAINTS

Of the three airport area stations, the Lagoon Drive station likely has the most potential for TOD. The prevailing image of the Lagoon Drive planning area as a commercial-light industrial job center with nearby recreational facilities presents the opportunity for commercial, retail, hotel, and residential development in the area. There are existing retail operations, but most are located outside of a comfortable walking distance from the rail station (i.e., in excess of the ¼-mile, 5 minute walk). In addition, the lack of pedestrian-oriented amenities, such as street trees, widened medians and islands, frequent blocks along elongated Koapaka, Ualena, and Aolele Streets, further exacerbate the pedestrian-travel experience along the street network. Of the three stations assessed in this report, the Lagoon Drive station consists of the highest volume of private landholdings by a small number of landowners. Stakeholder interviews revealed that redevelopment of the area is generally favored by the would-be affected landowners.

Potential TOD opportunity sites in the vicinity of the Airport station include: (1) areas directly mauka and makai of the station; (2) intersection of Ualena Street and Lagoon Drive; and (3) area surrounding Keehi Lagoon Beach Park access road.

The areas directly mauka and makai of the station and near the intersection of Ualena Street and Lagoon Drive could be developed to enhance commercial-retail functions that create jobs and address secondary needs of the job commuters and visitors (e.g., food and beverage operations and retail, including in-street vendors that would also activate the street). To establish a link between the park and the Lagoon Drive station planning area, a connection could be established under the rail guideway since existing buildings would be removed as part of the H RTP project. The open space along Lagoon Drive could be developed to accommodate commercial-retail operations that meet the needs of the park users (e.g., restaurants, convenient stores, beach gear shops). Strengthening the link between the park and the rest of the community by adding pedestrian-inviting features, such as tree-lined streets, marked pedestrian crossings, and food and beverage

and retail provides a greater incentive to remain in the area after park use.

5.2 AIRPORT AND LAGOON DRIVE STATION AREA

The commercial/industrial business district between the Airport and Lagoon Drive stations are very similar. This district is primarily composed of car rental lots, new/used car dealerships, airport-related commerce and warehousing, and miscellaneous small businesses. TOD around these two stations (and Lagoon Drive in particular) presents potential opportunities to extend redevelopment beyond the ½ mile areas between the two stations. Early feedback from the stakeholder meetings indicated the desire for a name-brand hotel, such as a Marriott Residence Inn.

OPPORTUNITIES AND CONSTRAINTS

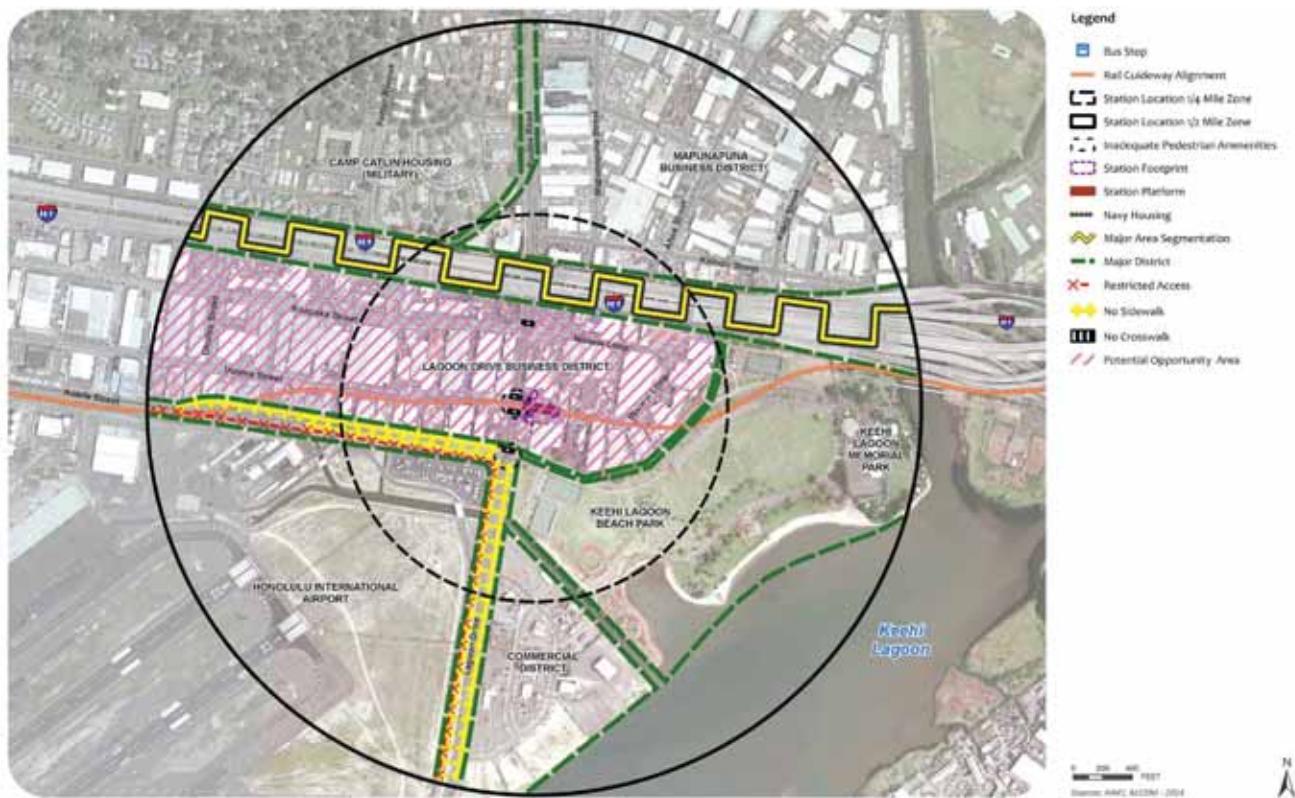


Figure 5-3: Lagoon Drive – Site Features

OPPORTUNITIES AND CONSTRAINTS

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OPPORTUNITIES AND CONSTRAINTS

5.3 SUMMARY

Based on the information in this report, initial stakeholder input, and the outcome of the market analysis, the TOD plan will initially focus on:

- Transit Connectivity and Efficiency
- Station Accessibility and Pedestrian Connections
- Public Safety and Security
- Development Possibilities

Depending on the particular challenges and opportunities that may exist in each of the locations, the emphasis on each station will vary for each of these focus areas. Additional focus areas may be added or priorities shifted depending on continued community and stakeholder input. The development of TOD alternatives may also play a role in evolving these topics as planning proceeds.

Development Constraints

The following development constraints were identified for the three rail station areas:

- **Limited private sector development (Pearl Harbor and Airport Stations):** The Federal and State agencies are major landowners and there are limited private development opportunities.
- **Inadequate pedestrian/(non-vehicle) rider amenities (all three stations):** All three station sites are found to contain incomplete features--disconnected/absent sidewalks; crosswalks that need upkeep; undersized pedestrian islands; street trees; bike racks; bus shelters; interspersed street lighting. The aggregate of these features significantly contribute to creating a hostile environment for pedestrians.
- **Barrier to mauka-makai link—Nimitz Highway (Airport and Lagoon Drive Stations):** Nimitz Highway is a major physical barrier that inhibits the mauka-makai linkage due to its form (i.e., series of arches, H1 Freeway above, lack of sunlight).

Development Opportunities

The following features were identified as major development opportunities for the three rail station areas:

- **JBPHH transit network development—opportunity for synergistic TOD (Pearl Harbor Station):** Recently prepared JBPHH master plan identifies transit stations within the ¼ to ½-mile planning area of the Pearl Harbor station. The development of each transit stop/station could have catalytic effect of facilitating the redevelopment of the planning area.
- **Primed setting at the Airport (Airport Station):** The station area is present with existing at-ground pedestrian paths to terminals, parking structures, and a small open space. The enhancement of these features by providing access alternatives (i.e., elevated pathways) can “open up” areas for TOD (e.g., elevated pedestrian path connected from the station platform to an upper floor of a parking structure opens up the possibility of utilizing the portion of the parking structure for potential development).
- **Activating Lagoon Drive (Lagoon Drive Station):** Lagoon Drive is the gateway to the Lagoon Drive rail station, as well as a crucial mauka-makai link to the residential development and the lower Mapunapuna business complex. A carefully thought out TOD can activate the Lagoon Drive thoroughfare and the surrounding uses, while encouraging deliberate mauka-makai multi-modal travel.
- **Major private sector development potential (Lagoon Drive):** Unlike other station areas, the Lagoon Drive station area is comprised of major landholdings by a small number of landowners. Through stakeholder consultations, the landowners have expressed general enthusiasm and support for redevelopment, and continue to stay actively engaged in the TOD planning process.

OPPORTUNITIES AND CONSTRAINTS

Transit Connectivity and Efficiency

Rail system ridership is heavily dependent on convenient, reliable and safe transit to/from the rail stations, particularly at stations with no park and ride facilities and minimal drop-off/pickup areas. This is the case for all three of the Airport station sites, making transit connectivity and efficiency of primary importance in this planning effort. DTS is developing strategies to change and improve bus routes and provide efficient bus connectors to the rail stations with the surrounding neighborhoods, including the population within the Region of Influence.

Station Accessibility and Pedestrian Connections

Pedestrian accessibility at the stations and barrier-free connectivity to the surrounding areas is important to facilitating easy, safe and efficient movement around and to/from the stations. Key factors in providing good pedestrian accessibility and connectivity are: improving or making new linkages, providing good signage and wayfinding, and providing pedestrian-related amenities at and surrounding the stations.

Public Safety and Security

People need to feel and be safe at, near, and getting to/from the stations. Pedestrian movement to/from and around the stations should aim to minimize potential conflicts between pedestrians and vehicles. People also need to feel comfortable and secure from personal harm and harassment.

Development Possibilities

There are development possibilities at each of the stations and differ in quantity, type and scale. A market analysis is being prepared and will dovetail with and augment the findings in this report, with the goal informing the capacity, supply demand and feasibility of (re)-development at each station.

REFERENCES

6.0 REFERENCES

- City and County of Honolulu (CCH). 2014. *Rail Station Area, Walking Audit, Station Group 3: Pearl Harbor Naval Base, Honolulu Airport, Lagoon Drive, and Middle Street Stations, Survey Results and Recommendations*. Draft. June.
- City and County of Honolulu (CCH). 2002. *General Plan*. Adopted 1997. Amended October 3, 2002.
- City and County of Honolulu (CCH). 2004. Department of Planning and Permitting. *Primary Urban Development Center Development Plan*. June.
- City and County of Honolulu (CCH). 2008. *Hawaii Airports Modernization Project*. Accessed June 27, 2014. Available: <http://www.hawaiiairportsmodernization.com>.
- City and County of Honolulu (CCH). 2010. *Honolulu High-Capacity Transit Corridor Project. Final Environmental Impact Statement*. June.
- City and County of Honolulu (CCH). 2013). *TOD Planning Framework*. July.
- City and County of Honolulu Department of Transportation Services (CCH DOT). 2011. *Honolulu High-Capacity Transit Corridor Project Final Programmatic Agreement*. Rapid Transit Division. January.
- Department of Transportation Services (DTS). 2012. City and County of Honolulu. *Oahu Bike Plan. A Bicycle Master Plan*. August.
- Hawaii Department of Health (HDOH), 2011. *State of Hawaii. Annual Summary of the 2010 Hawaii Air Quality Data*. Clean Air Branch. Honolulu. September.
- Honolulu Department of Transportation Services (HDOT). 2009. *Honolulu High-Capacity Transit Corridor Project Historic Effects Report*. Rapid Transit Division.
- Honolulu Department of Transportation Services (HDOT). 2010. *Honolulu International Airport. FAR Part 150- Noise Compatibility Program Update*. December. State of Hawaii Department of Transportation Airports Division.
- Honolulu Police Department (HPD). 2014. *Statistics. District 5, Sector 1 and 3*. May 10-23, 2014. Accessed June 25, 2014. Available: <http://www.honolulupd.org/information/index.php?page=statistics>.
- Revised Ordinances of Honolulu (ROH). 2014. Chapter 21, *Land Use Ordinance*. Reviewed June.
- University of Hawaii School of Ocean Earth Science and Technology (SOEST). 2008. *Sea Level Rise Hawaii. Hawaii's Changing Climate*. Accessed June 30, 2014. Available: <http://www.soest.hawaii.edu/coasts/sealevel/>.
- United States Department of Defense (DoD) 2013. Final Joint Base Pearl Harbor-Hickam Installation Development Plan. August.
- United States Fire Departments (USFD). 2014. *Federal Fire Departments Hawaii*. Accessed June 25, 2014. Available: <http://usfiredept.com/federal-fire-department-hawaii-7927.html>.

REFERENCES

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Appendix A

Economic and Market Analysis

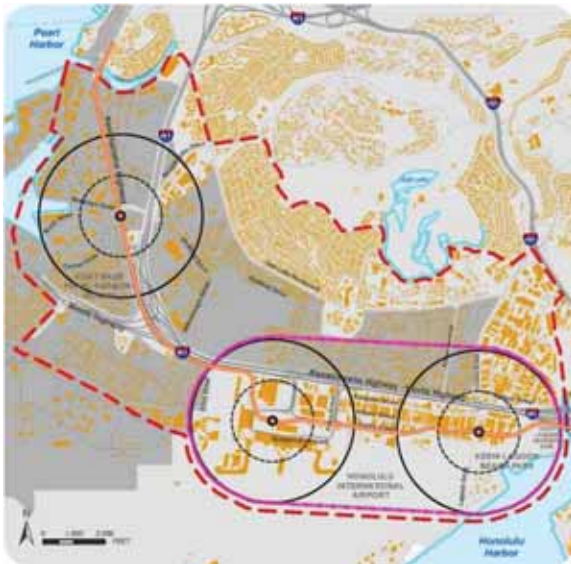
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APPENDIX – ECONOMIC AND MARKET ANALYSIS

1.1 INTRODUCTION

The purpose of this chapter is to establish an economic outlook for the Pearl Harbor, Honolulu Airport, and Lagoon Drive station areas, in order to identify potential long range TOD opportunities. The chapter reviews planning forecasts and prevailing real estate conditions for the region and the Trade Area to arrive at demand projections for housing, commercial, and accommodation uses for the Planning Area by year 2035 (20 years). For purposes of this chapter, “Station Areas” are defined as the area within a half mile of one of the stations. “The Planning Area” is referred to in this chapter as the sum of the three Station Areas. As shown in Figure 1, the “Trade Area” represents the larger Region of Influence as described in the Existing Conditions Report. It is shown in Figure 1 as the area within the dashed red line.

Figure 1: Trade Area, Planning Area and Station Areas



Source: City and County of Honolulu, AECOM- 2014

The analysis proposes development program recommendations for the three Station Areas based on a comparison of their development potential. The chapter closes with preliminary

recommendations for the types of users that could occupy new commercial development within the Station Areas.

1.2 REGIONAL AND STATION AREA PLANNING FORECASTS

As part of the process for estimating residential and commercial demand within the Planning Area, the project team considered regional employment and population forecasts prepared as part of the Oahu Regional Transportation Plan (ORTP) – 2035. Finalized in 2011, the ORTP projects growth regionally and within specified transportation analysis areas (TAAs) from 2007 to 2035 (Table 1). It is projected that Oahu will gain nearly 100,000 households during the study period, reflecting an average annual growth rate of less than 1% per year. The three TAAs partially contained by the Trade Area—Iwilei-Mapunapuna-Airport, Hickman-Pearl Harbor, Moanalua-Halawa—are forecast to grow at a slower rate than the region overall. Of these TAAs, Iwilei-Mapunapuna-Airport is projected to experience the highest growth in households, with an annual growth rate of 0.74%, which is still behind the region overall. Employment within the Trade Area is expected to grow at an even slower pace, with growth rates for the TAAs all assumed to be below 0.25% per year. This is likely a reflection of the lack of available undeveloped land rather than potential demand. It is possible that given available zoned capacity for additional housing combined with construction of enhanced transit service, the Trade Area could grow at the same pace as Oahu overall (i.e. 1% per year).

In this scenario, housing demand would be considerably higher than those estimated by ORTP. As such, this market analysis considers both scenarios to understand the consequence of station area planning that may further intensify uses around the airport stations.

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Table 1: Growth Projections for Trade Area and Oahu Overall (2007-2035)

	2007	2035	CAGR ⁽¹⁾
<i>Population</i>			
Iwilei-Mapunapuna-Airport	16,300	19,800	0.70%
Hickam-Pearl Harbor	18,500	18,600	0.02%
Moanalua-Halawa	54,000	54,400	0.03%
Trade Area Subtotal	88,800	92,800	0.16%
Oahu Total	905,600	1,113,600	0.74%
<i>Households</i>			
Iwilei-Mapunapuna-Airport	4,800	5,900	0.74%
Hickam-Pearl Harbor	5,500	5,700	0.13%
Moanalua-Halawa	17,600	18,300	0.14%
Trade Area Subtotal	27,900	29,900	0.25%
Oahu Total	311,000	405,900	0.96%
<i>Employment</i>			
Iwilei-Mapunapuna-Airport	76,900	81,700	0.22%
Hickam-Pearl Harbor	26,800	27,700	0.12%
Moanalua-Halawa	16,500	17,700	0.25%
Trade Area Subtotal	120,200	127,100	0.20%
Oahu Total	556,900	693,300	0.79%
<i>Visitor Units (Hotel/Vacation Units)</i>			
Iwilei-Mapunapuna-Airport	660	1,030	1.6%
Hickam-Pearl Harbor	n/a	n/a	n/a
Moanalua-Halawa	n/a	n/a	n/a
Trade Area Subtotal	660	1,030	1.6%
Oahu Total	33,770	39,620	.4%

Source: ORTP 2011

Note: ¹ Compound Annual Growth Rate

Notwithstanding the potential change in allowed development, the Trade Area's existing industrial uses show strong market fundamentals that require substantial shifts in

the real estate market to justify their redevelopment.

The Honolulu TOD Study (2013) forecasts slower household and employment growth at the regional scale than the ORTP projections summarized in Table 1 but uses a longer study period, through 2050 (Table 2). Forecasts by TAAs were not provided. Long-term projections are typically more conservative and are generally less reliable than mid-term projections since they introduce greater uncertainty regarding major shifts in market dynamics.

Table 2: Oahu Growth Estimates (2010-2050)

	2010	2050	CAGR ⁻¹
Population	955,790	1,145,450	0.5%
Jobs	561,680	744,430	0.7%
Housing Units	340,910	445,450	0.7%
Multifamily	146,100	196,850	0.7%
Single Family	194,810	248,600	0.6%

Source: Honolulu TOD Scenarios Study 2013

1.3 PREVAILING REAL ESTATE CONDITIONS

Prevailing real estate conditions help frame the development potential within the Trade Area.

Residential home and condo prices in the Trade Area have not kept pace with the region overall (Table 3). Asking rents and home sale prices both remain below regional averages. Multifamily rental housing makes up the bulk of the supply within the Planning Area. Despite lower rents than the region, the area has low vacancy rates and is poised to experience rent escalation due to the lack of available new supply. For Honolulu's apartment market overall in the fourth quarter of 2013, apartments were at approximately 4% vacancy with a year over year growth of approximately 6%. According to Colliers

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International, the 6% rent growth ranked 10th among 105 U.S. Metropolitan Areas (Colliers International 2014).

Table 3: Prevailing Residential Real Estate Conditions in Trade Area Compared to Region

	Trade Area	Oahu
Residential Sales Conditions		
Single-Family	\$613,000	\$700,000
% change over prior 12 month period	-3.1%	3.2%
Condo	\$307,000	\$360,000
% change over prior 12 month period	4.6%	9.6%
Rental Conditions		
1 BR asking rent	\$1,820	\$2,030
Rental Households As Share of Total Households	61% (planning area)	42%

Source: Colliers International 2014, Claritas 2014, Honolulu Board of Realtors 2014.

Note: Trade Area data includes broader Salt Lake/Moanalua area. Asking prices reflect 2014 averages through the second quarter of the year.

Industrial real estate market conditions are tight in the Trade Area, reflective of low vacancy rates across the region (Table 4). Industrial flex space is the predominant product type in the Trade Area. The sound fundamentals of industrial real estate, with land prices ranging from \$90 to \$125 per square foot and vacancy rates below 3%, pose significant constraints to industrial conversion. Colliers International projects increasing lease terms for industrial properties within the study area due to the limited inventory of industrial space and limited availability of additional industrial land to accommodate the growing demand for industrial warehouse space. Based on a basic static pro forma analysis, apartment rents would need to exceed \$3.40 per square foot or \$2,500 for a 1 bedroom—a nearly 40% increase over current asking rents—to make redevelopment of industrial feasible.

The **Airport office market** (including the Trade Area) is one of the smaller submarkets in Oahu, comprised of roughly 700,000 square feet of office buildings, with roughly 250,000 square feet of office space within a half mile from one of the three Station Areas. Department of Defense and other government contractors are the major occupiers of existing space. While vacancy rates are on par with Honolulu overall, asking lease rates for office are roughly half of Honolulu's average, and are well below levels that would justify significant speculative construction.

The **retail offering** within the Trade Area shows healthy lease rates (roughly \$40 per square foot/triple net per year) and virtually zero vacancy. Much of the existing retail supply is concentrated in car-oriented commercial strip malls and shopping centers, rather than in mixed use, transit-oriented settings. As a result, new retail development along the Station Areas is anticipated to be constructed in a very different format than surrounding retail buildings with more focus placed on impulse, restaurant, and neighborhood-serving goods.

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Table 4: Prevailing Office, Retail and Industrial Real Estate Conditions in Trade Area Compared to Region

	Lease rates	Vacancy rates	Inventory
<i>Office</i>			
Planning Area	\$15.42	6%	248,700
Honolulu Overall	\$30.88	6%	24,133,100
<i>Retail</i>			
Planning Area	n/a	0%	816,600
Honolulu Overall	\$39.84	2%	23,064,200
<i>Industrial</i>			
Planning Area	\$13.54	3%	4,760,700
Honolulu Overall	\$13.49	2%	22,967,500

Source: Costar 2014.

Note: Retail lease terms are expressed as triple-net (NNN), office is expressed as gross rent, industrial is mixed. Inventory figures rounded

1.4 MARKET DEMAND ASSESSMENT

Overview of Findings

In consideration of projected employment and population growth in the Trade Area and prevailing real estate conditions, we forecast that by 2035, approximately 830 net new housing units, 58,000 net new square feet of retail, 51,000 net new square feet of office, and 150 to 250 net new hotel rooms within the Planning Area will be required to satisfy local demand (Table 5).

Assuming the higher annual growth rate of 11% per year, Planning Area demand would increase to approximately 1,230 housing units, approximately 64,000 square feet in retail demand, and approximately 90,000 square feet in office demand, assuming a single large employer locates within one of the Station Areas.

Table 5: Market Demand Projections for Residential, Commercial and Accommodation Uses in Planning Area under Low and High Growth Scenarios (2013 – 2035)

	Net New – 2035 (Low)	Net New – 2035 (High)
Multifamily Housing	830	1,230
Rental (mostly military housing)	500	730
For Sale (condominium)	320	470
Retail Space	58,000 sf	64,000
Office Space	51,000 sf	90,000 sf
Hotel	150 rooms	250 rooms

Source: Colliers International and AECOM 2014.

Note: Totals may not sum due to rounding.

Analysis

Projections of new development are based on unique demand drivers for each land use. Retail development is driven by the spending potential of transit riders, residents, workers, and visitors. Office development is driven by growth in office employment. Residential development will respond to household growth near the Planning Area. Finally, hotel development will respond to growth in tourist and business visitors. The process for projecting market demand and corresponding supply for each land use is summarized below.

Retail

Growth in the resident and workforce population within a half mile of the three Station Areas is estimated utilizing ORTP transit area forecasts customized to the Planning Area. Projected retail demand by 2035 is then estimated according to consumer expenditure data for households and workers. In addition to measuring resident and worker expenditures, the final estimate of retail demand also considers growth in rail passengers and airport travelers (also based

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on ORTP forecasts), who will generate additional retail spending in the Planning Area. The implied need for retail space is derived according to typical sales per square foot ratios for inline shopping center spaces in Oahu. Finally, net needed retail supply is implied by subtracting the projected need from the current retail supply to arrive at nearly 60,000 square feet of net new retail development in the Planning Area over the next 20 years.

Housing development will inform the future share of retail demand. If the Station Areas are able to grow by 1% per year, then another 5,200 square feet of neighborhood-serving retail demand will be required. Spending by rail passengers is expected to drive most of the need for retail space within a half mile of the Station Areas (Table 6). As such, the nature of the retail demand will be smaller impulse and neighborhood serving items, such as coffee, bakery, restaurant, dry cleaning, drug store, small grocery, and other items that can be readily purchased on the way from or to the passenger's final destination. Retail types not amenable to the transit customers are home repair and houseware goods, large general merchandise stores, and auto retail.

Table 6: Net New Retail Need by Source of Demand

Demand Segment	Net New Retail Demand (Square Feet)
Light Rail Passenger Estimated Demand	40,500
Resident Demand (conservative – aggressive)	3,600-8,800
Air Passenger Arrival Demand (2035)	4,100
Employee Demand (2035)	10,200
Total Retail Demand	58,000 - 64,000

Source: Colliers International and AECOM 2014.

Note: Totals rounded to the nearest thousand.

Office

Net new demand for office space is based on projected growth in office employment for the Planning Area. Baseline office employment is estimated in relation to countywide office employment, as reported by the State of Hawaii Department of Business, Economic Development and Tourism. It is assumed that the Planning Area's share of countywide office employment is equivalent to its share of occupied office inventory, which implies 4,400 office jobs in the Planning Area. Office employment is projected to increase at an average annual growth rate of 0.35%, which is slightly above the ORTP's forecasts for total employment growth within the Trade Area. The corresponding need for office space is calculated as 140 square feet per office worker to arrive at the estimate of 51,000 square feet of net new office space. While this density ratio could be considered conservative by historical standards, it reflects current ratios in the Oahu market as well as the overall trend toward reduced office space requirements.

This demand does not account for the *potential* for a single office user that might consider proximity to the Honolulu Airport an important location amenity. In a review of major employers within the Planning Area, there are approximately four businesses that employ over 150 people. There is the possibility that another major employer in Honolulu may choose to locate their commercial offices at either the Airport or Lagoon Stations. As such, it is recommended the TOD plan accommodate the capacity for a single user office building of up to 40,000 square feet. This would allow a single office user with approximately 200-250 employees to relocate their offices within the two Station Areas.

Residential

Net new demand for residential units in the Planning Area is based on household growth and trends in household income composition,

APPENDIX – ECONOMIC AND MARKET ANALYSIS

as well as existing lease/sale preferences. As illustrated above, by 2035, ORTP forecasts the addition of 2,000 households to the three TAAs that are partially contained by the Trade Area. Approximately half of this growth is assigned to the Planning Area based on its approximate share of the existing housing stock in the three TAAs, resulting in an estimate of approximately 1,000 new households to the Planning Area. Based on current demographic patterns in household income and homeownership, it is assumed that approximately 800, or 80%, of households will demand multifamily rental or condo units. New single family homes are not considered further in this analysis since low-density housing does not conform to the City's TOD.

By applying the ORTP regional Oahu forecast of 1.1% growth per year to the Trade Area, housing demand jumps considerably to approximately 3,000 new housing units, of which 1,500 could be accommodated within the three Station Areas. Apportioning the demand from rental and condominium, based on Honolulu area income distribution, would provide a total demand estimate of approximately 730 condominiums and 470 rental housing units. These demand estimates assume available zoned capacity and associated infrastructure needs are available to accommodate the regional housing demand. As stated earlier, industrial real estate market conditions are strong, and conversion to residential will require significant shifts in underlying real estate conditions to justify redevelopment.

Considering the prevailing rents for residential development, it is anticipated that new residential product in the Planning Area is most likely to take the form of mid-rise residential (i.e., 4 to 6 stories with interior structured parking that is not part of the residential structure). Sites with sufficient depth and width (i.e., normally corner parcels with over 60 feet of frontage and 120 feet of

depth) will present the best near-term opportunity considering the need to limit complex and more expensive parking configurations. Also, it is recommended that one parking space per unit would be sufficient given the proximity to the transit stations.

Hotel

According to ORTP forecasts, Oahu is projected to add approximately 5,900 visitor units (including hotel rooms and vacation rentals) by 2035 to accommodate growth in visitor stays. Waikiki's hotel market in 2014 demonstrated strong market conditions with an overall occupancy of approximately 88% compared to 80% occupancy for all other areas in Oahu. Revenue per room has increased from approximately \$177 to \$187 since 2013. Hawaii's overall hotel market is relatively strong as June of 2014, ranking second among the top 25 U.S. hotel markets in averaged daily rate and revenue per room (Hospitality Advisors 2014). Current occupancy rates in Oahu, above 85%, indicate an undersupply of hotel rooms. The Planning Area is projected to support demand for an additional 370 visitor units, according to the same ORTP forecast. With the potential project under consideration for a 250-room Courtyard by Marriott proximate to the Honolulu Airport, the net hotel demand would be reduced to 120 rooms based on the ORTP forecast. However, due to the undersupply in the wider market, the project team considers it fair to assume that the Planning Area can support an additional 150 to 250 rooms for business or leisure travel over the long term, which is generally a single mid-sized hotel or two smaller hotels.

1.5 STATION AREA DEVELOPMENT PROGRAM

Station Area Development Potential

The development potential of the three station areas was assessed to determine each Station Area's capture of Planning Area

APPENDIX – ECONOMIC AND MARKET ANALYSIS

demand and ultimately arrive at the development program for the Planning Area.

Table 7 presents a demographic profile of the Station Areas. In general, residents of the three Station Areas are significantly younger than Honolulu overall and live in predominately renter-occupied housing. Station areas also serve as employment centers, primarily for the armed forces (at the Pearl Harbor and Airport Stations) and the transportation and warehousing sectors (at the Airport and Lagoon Stations).

At the Airport and Lagoon Stations, households earn above the Honolulu median income. But for all three stations, per capita incomes lag behind the regional average due to larger household sizes.

While the Station Areas share some demographic similarities, each has a different market orientation and potential for capturing new development, discussed below.

Table 7: Station Area Overview

	½ mile radius			Regional Comparison	
	Pearl Harbor	Airport Station	Lagoon Station	Airport Area	Honolulu
Population	3,042	1,915	2,750	58,263	341,903
Households	627	527	686	17,437	131,622
Household with Children	NA	383	587	8,147	32,770
Average Household Size	4.0	3.5	3.9	3.2	2.5
Household Income	\$45,989	\$60,040	\$68,930	\$67,736	\$55,179
Per Capita Income	\$17,783	\$18,038	\$17,926	\$23,275	\$30,077
Median Age	23	25	23	33	42
Projected Daily Boardings (2035)	5,400	6,300	3,100	14,800	116,300
Place of Work Employment ⁽¹⁾	17,434	8,322	7,618	33,374	283,990

Source: Claritas 2014. Census Transportation Planning Products 2010.

Note: ¹ Place of work employment is based on data for Traffic Analysis Zones, which intersect station areas but may extend beyond a half-mile radius

APPENDIX – ECONOMIC AND MARKET ANALYSIS



Photo 1: Existing Conditions around the Pearl Harbor Station

Pearl Harbor

The Pearl Harbor Station, located outside the entrance to the State's largest military operation and employing a sizeable civilian and military workforce, is surrounded by land owned by the Navy.

Several shopping centers are located within the Trade Area serving military families and nearby residents. Popular retail centers in the area include Target, the Mall at Pearl Harbor, and Moanalua Shopping Center (a Public Private Partnership of the Navy and

MacNaughton Group). With a resident population that is comprised of military families from throughout the United States, successful retailers include a number of national chains and fast food operators. Retail brokers indicated that "local" eateries that cater to residents (plate lunch and unique Asian ethnic foods) have not been as successful as those that serve an "American" fare. Demographics indicate a younger resident population with more white and black ethnicities. See Pearl Harbor Station Fact Sheet in Attachment A.

APPENDIX – ECONOMIC AND MARKET ANALYSIS



Photo 2: Airport Station Area Existing Conditions

Airport

The Airport Station, surrounded by State lands, has very few civilian residents in the area. See Airport Station Fact Sheet in Attachment B. Retail is limited to on-site retail operations at the airport and small retail eateries at the Airport Industrial Park. Few properties would be available for redevelopment unless supported by the State of Hawaii. The airport's new consolidated rental car facility will consolidate the rental car operations, which will allow for expansion of additional airport uses closer to the airport.

The Loyalty Group, a major landowner near the Airport has a mid-term interim plan to upgrade their industrial properties and integrate more car dealerships to the area. Car dealerships are generally not considered a transit-friendly use and the City will need to balance the economic contribution of additional car dealerships with more transit friendly uses that increase ridership. This site also has a long-term opportunity to accommodate a single use office building at the station or near the Lagoon Drive station. Finally, intensification of the industrial uses should be considered with reduced importance placed on accommodating parking and set-backs.

APPENDIX – ECONOMIC AND MARKET ANALYSIS



Photo 3: Lagoon Drive Station Area Existing Conditions

Lagoon Drive

The Lagoon Drive Station has the greatest potential for redevelopment considering the other Station Areas have limited privately held land. The area is comprised of primarily industrial zoned properties that are principally warehouse users. The area also includes Keehi Lagoon Park, which has ocean front views of Keehi Lagoon, Honolulu Harbor, and Diamond Head in the distance. This station area could be considered an opportunity for mid-rise residential development (condo or rental), but within context to the flight height restriction of the Honolulu International Airport. High demand for warehouse properties and elevated rental rates may make redevelopment difficult for existing landlords. Retail will grow in tandem with intensification of the Station Area as housing and commuter traffic increases in the area.

The demand for retail is expected to be relatively small in scale with the majority of format of less than 10,000 square feet to accommodate convenience and impulse item retail. See Lagoon Drive Fact Sheet in Attachment C.

APPENDIX – ECONOMIC AND MARKET ANALYSIS

1.6 STATION AREA PROGRAM RECOMMENDATIONS

Tables 8 and 9 present the program recommendations for the three station areas. The lower growth scenario (Table 8) is based on the projected planning area growth rate; the higher growth scenario (Table 9) summarizes the lower growth scenario assumes the regional 1% annual growth rate.

Due to its proximity to hotels and the airport workforce, the Airport Station is assigned the largest share of retail growth. With excellent views and proximity to recreation, the Lagoon Drive Station is well-positioned to accommodate the largest share of new private housing development in the Planning Area; the remainder of housing units are assumed to be developed by government agencies and located proximate to the Joint Base Pearl Harbor Hickam. Due to the constraints to private development at Pearl Harbor, Pearl Harbor is not assigned a share of private residential units, nor new office development.

Office development is assumed to be split between the Lagoon and Airport Stations. Understanding that office development will respond to a regional market and attracted by the proximity to the airport, a specific split is not proposed in needed supply between the two stations. Rather, the potential for office can be considered “up to” 51,000 square feet for both stations and up to 250 hotel rooms.

Note that the demand estimates are allocated to the Station Areas but the real estate markets do not vary dramatically across each station, especially for the Lagoon and Airport stations. As such, Station Area planning can consider consolidating housing, hotel, office, and retail demand to one station should it create a more livable transit oriented neighborhood than thinly spreading demand across multiple station areas.

Table 8: Program Recommendations for Each Station (2035) (Low Growth Scenario)

	Airport	Lagoon	Pearl Harbor	Total
Housing Units	0	230	600	830
Private	0	230	0	230
Public	0	0	600	600
Retail	24,000 sf	14,000 sf	20,000 sf	58,000 sf
Office	**	**	0	51,000 sf
Hotel Rooms	**	**	0	150

Source: Colliers International and AECOM 2014. Numbers may not add due to rounding.

** Note: Total demand can be applied to either station area as the Lagoon and Airport Stations are essentially a single real estate market for office and hotel uses. It also assumes no new office or hotel demand would be accommodated at the Pearl Harbor Station.

APPENDIX – ECONOMIC AND MARKET ANALYSIS

Table 9: Program Recommendations for Each Station (2035) (Higher Growth Scenario)

	Airport	Lagoon	Pearl Harbor	Total
Housing Units	0	630	600	1,230
Private	0	630	0	630
Public	0	0	600	600
Retail	24,000 sf	19,000 sf	20,000 sf	64,000 sf
Office	**	**	0	90,000 sf
Hotel Rooms	**	**	0	250 rooms

Source: Colliers International and AECOM 2014. Numbers may not add due to rounding.

**** Note:** Total demand can be applied to either station area as the Lagoon and Airport Stations are essentially a single real estate market for office and hotel uses. It also assumes no new office or hotel demand would be accommodated at the Pearl Harbor Station.

APPENDIX – ECONOMIC AND MARKET ANALYSIS

1.7 MARKET OPPORTUNITIES

The project team considered market opportunities that could accelerate absorption in the Planning Area, starting with the users.

Near-Term Development Opportunities

Data from Claritas, a demographic analysis firm, shows that existing residents of the Planning Area are spending approximately \$35 million on drug and health stores and \$52 million on groceries and other foods outside the Trade Area (Table 10). This presents an opportunity to locate a small pharmacy or convenience store close to the Lagoon Drive or Airport Station Area.

Other near-term opportunities could include the development of a specialty sporting goods (canoes, paddle, surfboard) store, which could complement recreation visitors to nearby Keehi Lagoon Park. In addition, an arcade or compact “Fun Factory”-type entertainment center could appeal to the large number of families and children who live in the Planning Area. As stated above, the challenge to these uses will be the financial feasibility of industrial reuse in the Planning Area.

Table 10: Retail Gaps in the Planning Area

Retail Category	Retail Gap
Drug and Health Stores	\$35 million
Groceries and Other Foods	\$52million
Clothing Stores	\$43million

Source: Claritas 2014.

Other Development Recommendations

The predominant existing uses around the station areas are not traditional transit-oriented uses with high proportion of industrial warehouse space, fenced off military housing and office uses, and airport facilities. This observation is especially the case within the ¼

mile radius of the Station Areas. As such, the Station Areas would require significant enhancements to the existing public realm and pedestrian amenities in order to promote a more walkable, high-density community. Examples of these types of enhancements would include improvements to the on-street environment to improve pedestrian and bicycle connections, as well as highly amenitized public open space to attract and accommodate more residents. Other TOD-supportive changes would include larger, aggregated parcels that could accommodate multi-family housing products and begin to build a sense of a residential neighborhood.

Therefore, focusing vertically and horizontally mixed-use development within a single Station Area or sub-area is likely to create more successful TOD than introducing smaller amounts of isolated mixed-use development across the entire Planning Area.

Parking Standards

Generally, developments become more feasible by reducing parking standards, as long as tenants are willing to accept less parking. Parking standards along transit stations can be significantly lower, with ratios averaging below one space per unit and 1.5 spaces per 1,000 for non-residential uses. For the Airport Area, a standard of 1 space per residential unit and 2 spaces per 1,000 square feet is recommended to accommodate demand. A parking standard is not typically recommended as developers will independently consider the demand for parking and build accordingly.

Intensifying Industrial Uses

Considering the overall health of the industrial real estate market and the need to supply affordable warehouse and manufacturing space to support Oahu's economy, it is not recommended to require additional parking for the intensification of industrially zoned uses within the ½-mile radius of the Station Areas. Further expansion would encourage higher intensity employment to the extent on-street parking and public transit could accommodate the growth in the local workforce. Relaxed

APPENDIX – ECONOMIC AND MARKET ANALYSIS

development standards would allow industrial property owners to further intensify their building footprint without considering expensive parking solutions.

1.8 REFERENCES

Census Transportation and Planning Products. 2010. 2006-2010 Five-Year Data Set: Part 2 (Workplace).

Claritas. 2014. Demographic Data Report for Trade Area.

Colliers International and AECOM. 2014. Analysis prepared for Airport Area TOD Existing Conditions Report Appendix – Economic and Market Analysis.

Costar. 2014. Office and Residential Market Data Report for Trade Area.

Honolulu Board of Realtors. 2014. Annual Residential Resales Data for Oahu.

Hospitality Advisors. 2014. Hawaii Hotel Flash Report. June.

Oahu Metropolitan Planning Organization. 2011. Oahu Regional Transportation Plan 2035 Technical Report. April.

Pacific Resource Partnership. 2013. Honolulu Transit-Oriented Development (TOD) Scenarios Study. February.

APPENDIX – ECONOMIC AND MARKET ANALYSIS

Attachment A Pearl Harbor Station Fact Sheet

PEARL HARBOR STATION



STATION AREA LAND USE MAP



0.5 MILE STATION AREA DEMOGRAPHICS

STATION AREA		HONOLULU COMPARISON			
3,042	POPULATION	341,903			
627	HOUSEHOLDS	131,622			
N/A	HOUSEHOLDS WITH CHILDREN	32,770			
3.96	AVERAGE HOUSEHOLD SIZE	2.5			
AGE					
1,035	0-19 YEARS	66,453			
1,914	20-64 YEARS	211,869			
19	65+ YEARS	63,585			
23.4	MEDIAN AGE	41.7			

HOUSING

STATION AREA		HONOLULU COMPARISON			
14 (2%)	OWNER OCCUPIED	55,615			
612 (88%)	RENTER OCCUPIED	76,006			
INCOME					
\$45,989	HOUSEHOLD INCOME	\$17,783			
\$55,179	PER CAPITA INCOME	\$30,077			

EMPLOYMENT

17,434	TOTAL EMPLOYMENT				283,990
STATION AREA	PRIMARY EMPLOYMENT SECTORS				HONOLULU COMPARISON
3,875	22%	PUBLIC ADMINISTRATION	6%	23,465	
2,795	16%	MANUFACTURING	3%	8,210	
5,310	30%	ARMED FORCES	3%	7,615	

RETAIL OPPORTUNITIES

HEALTH & PERSONAL CARE STORES	GROCERIES AND OTHER FOODS	CLOTHING STORES
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STATION OVERVIEW

Pearl Harbor Station is located in Northeast Hawaii proximate to the Queen Liliuokalani Freeway and Joint Base Pearl Harbor-Hickam. Pearl Harbor Station is projected to average 5,400 weekday boardings by 2030.

Approximately 3,000 residents belonging to 630 households live within a half mile of the station. Residents of the trade area are significantly younger than Honolulu overall and live in predominately renter-occupied housing.

The station area also serves as a major regional employment center supporting approximately 17,000 jobs within a half mile radius, including 5,000 members of the armed forces. Several shopping centers are located within the trade area serving military families and nearby residents. Commercial lease rates are higher than the city and vacancy rates reflect Honolulu's tight commercial real estate conditions.

Over the next 20 years, the population within the station area is projected to increase by more than 2,300; another 400 jobs will be added. Population and employment growth will create demand for an additional 17,000 square feet of retail space.

PROJECTED 20 YEAR GROWTH (TO 2035)

2,300	730	17,000 sf
POPULATION	HOUSEHOLDS	RETAIL

PROJECTED DAILY BOARDINGS (2030)

5,400	116,300
STATION AREA	SYSTEMWIDE

SOURCES: CLARITAS 2014 / COLLIERS 2014 / CENSUS TRANSPORTATION PLANNING PRODUCTS (CTPP) 2008-2010

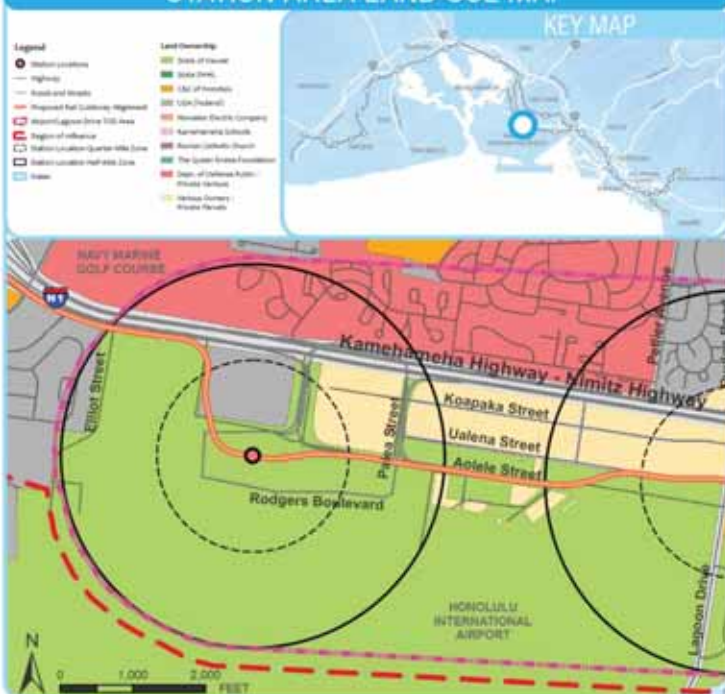
APPENDIX – ECONOMIC AND MARKET ANALYSIS

Attachment B Airport Station Fact Sheet

AIRPORT STATION



STATION AREA LAND USE MAP



0.5 MILE STATION AREA DEMOGRAPHICS

STATION AREA		HONOLULU COMPARISON	AGE	HONOLULU COMPARISON
1,915	POPULATION	341,903	751	0-19 YEARS
527	HOUSEHOLDS	131,622	1,136	20-64 YEARS
383	HOUSEHOLDS WITH CHILDREN	32,770	28	65+ YEARS
3.5	AVERAGE HOUSEHOLD SIZE	2.5	24.5	MEDIAN AGE

HOUSING

STATION AREA		HONOLULU COMPARISON
3 (1%)	OWNER OCCUPIED	55,615 (58%)
525 (99%)	RENTER OCCUPIED	76,006 (42%)

INCOME

STATION AREA		HONOLULU COMPARISON
\$60,040	HOUSEHOLD INCOME	\$18,038
\$55,179	PER CAPITA INCOME	\$30,077

EMPLOYMENT

STATION AREA		TOTAL EMPLOYMENT	HONOLULU COMPARISON
8,322		283,990	
834	10%	23,465	8%
1,671	20%	21,370	8%
1,830	22%	7,615	3%

RETAIL OPPORTUNITIES

HEALTH & PERSONAL CARE STORES	GROCERIES AND OTHER FOODS	CLOTHING STORES
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STATION OVERVIEW

Airport Station is located in Northeast Hawaii close to the Queen Liliuokalani Freeway and the Honolulu International Airport. Airport Station is projected to average 6,320 boardings by 2030.

Approximately 1,900 residents belonging to 530 households live within a half mile of the station. Households in the trade area are primarily families with children who live in rental housing. Most households earn above the Honolulu median income but larger household sizes result in a per capita income below the Honolulu average.

The airport, transportation and warehousing establishments, and other nearby industries support approximately 8,000 jobs within a half mile of the Airport Station. Members of the armed forces also make up a significant share of workers within the station area. Lease terms and vacancy rates for industrial and retail space are on par with the region overall, reflecting Honolulu's tight commercial real estate conditions.

Over the next 20 years, another 300 jobs will also be added in the station area. Ridership and employment growth will create demand for an additional 20,000 square feet of retail space and up to 50,000 square feet of office space.

PROJECTED 20 YEAR GROWTH (TO 2035)

N/A	N/A	20,000 sf
POPULATION	HOUSEHOLDS	RETAIL

PROJECTED DAILY BOARDINGS (2030)

6,300	116,300
STATION AREA	SYSTEMWIDE

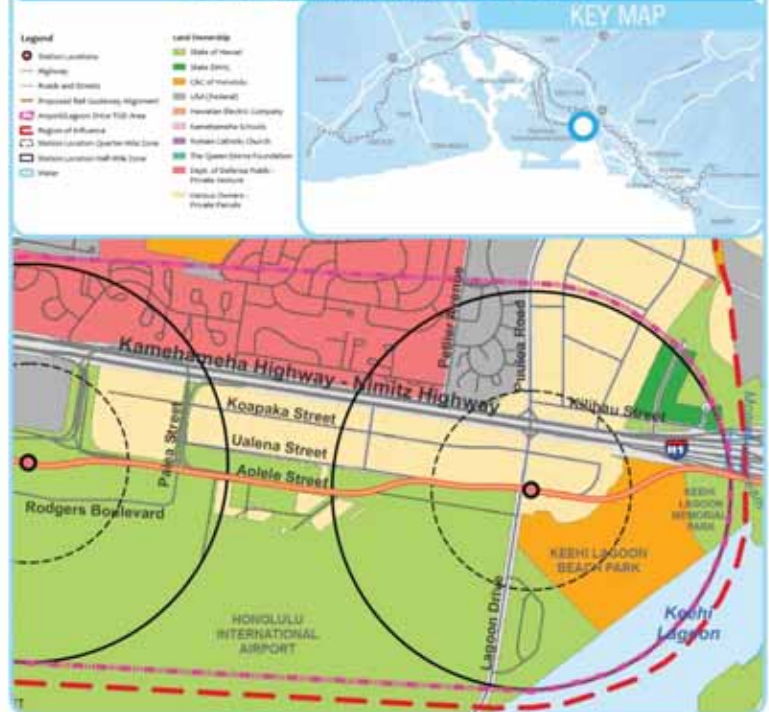
APPENDIX – ECONOMIC AND MARKET ANALYSIS

Attachment C Lagoon Drive Station Fact Sheet

LAGOON STATION



STATION AREA LAND USE MAP



0.5 MILE STATION AREA DEMOGRAPHICS

STATION AREA		HONOLULU COMPARISON	AGE		HONOLULU COMPARISON
2,750	POPULATION	341,903	1,245	0-19 YEARS	66,453
686	HOUSEHOLDS	131,622	1,459	20-64 YEARS	211,869
587	HOUSEHOLDS WITH CHILDREN	32,770	46	65+ YEARS	63,585
3.9	AVERAGE HOUSEHOLD SIZE	2.5	23.1	MEDIAN AGE	41.7

HOUSING

STATION AREA		HONOLULU COMPARISON
4 (1%)	OWNER OCCUPIED	55,615 (58%)
682 (99%)	RENTER OCCUPIED	76,006 (42%)

INCOME

\$68,930	\$17,926
(STATION AREA)	(STATION AREA)
HOUSEHOLD INCOME	PER CAPITA INCOME
(HONOLULU)	(HONOLULU)
\$55,179	\$30,077

EMPLOYMENT

STATION AREA	TOTAL EMPLOYMENT	HONOLULU COMPARISON
7,618	283,990	
PRIMARY EMPLOYMENT SECTORS		
765 10%	TRANSPORTATION	21,370 8%
1,038 14%	RETAIL TRADE	28,595 10%
1,420 19%	CONSTRUCTION	16,795 6%

RETAIL OPPORTUNITIES

HEALTH & PERSONAL CARE STORES	GROCERIES AND OTHER FOODS	CLOTHING STORES
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STATION OVERVIEW

Lagoon Station is located in Northeast Hawaii between the Kēehi Lagoon and the Honolulu International Airport. Lagoon Station is projected to average 3,60.

Approximately 2,800 residents belonging to 690 households live within a half mile of the station. Households in the trade area are primarily families with children who live in rental housing. Most households earn above the Honolulu median income but larger household sizes result in a per capita income below the Honolulu average.

The airport, nearby transportation and warehousing establishments, as well as retail, construction and nearby other industries together support approximately 7,600 jobs within a half mile of Airport Station. Commercial real estate conditions are extremely tight with vacancy rates for commercial space falling below the Honolulu overall.

Over the next 20 years, the population within the station area is projected to increase by nearly 900 residents; another 600 jobs will be added. Population, employment and ridership growth will create demand for an additional 11,000 square feet of retail space and up to 50,000 square feet of office space.

PROJECTED 20 YEAR GROWTH (TO 2035)

900	270	11,000 SF
POPULATION	HOUSEHOLDS	RETAIL

PROJECTED DAILY BOARDINGS (2030)

3,100	116,300
STATION AREA	SYSTEMWIDE