Hawaii Community
Development Authority

DRAFT

KALAELOA MASTER PLAN

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Hawaii Community Development Authority

Master Planner - Torti Gallas + Partners
Neal Payton, FAIA, FCNU Principal-in-Charge
Rogelio Huerta
Betina Sason
Ludubica Gonzalez

Community Outreach – Townscape, Inc
Bruce Tsuchida
Lillie Makaila

Table of Contents

List of Figures

1 Setting the Stage

2 Kalaeloa Vision

3 The Master Plan

List of Acronyms and Abbreviations

BOQ	Bachelor Officer Quarters
BPRC	Barbers Point Redevelopment Commission
BRAC	Base Realignment and Closure
BTU	British thermal unit
BWS	Board of Water Supply
DHHL	Department of Hawaiian Home Lands, State of Hawai‘i
DNL	Day-night average sound level
DOE	Department of Education, State of Hawai‘i
DP	Development Plan
DPP	Department of Planning and Permitting, City and County of Honolulu
DPR	Department of Parks and Recreation, City and County of Honolulu
EDA	U.S. Economic Development Administration
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HART	Honolulu Authority for Rapid Transportation
HFD	Honolulu Fire Department
HDOT	Department of Transportation, State of Hawai‘i
HDOT-A	Department of Transportation-Airports Division, State of Hawai‘i
HECO	Hawaiian Electric
HIANG	Hawai‘i Air National Guard
HNG	Hawai‘i National Guard
HPHA	Hawai‘i Public Housing Authority
HRS	Hawai‘i Revised Statutes
HCDA	Hawai‘i Community Development Authority
JCIP	James Campbell Industrial Park
JRF	John Rodgers Field (Kalaeloa Airport)
KCDD	Kalaeloa Community Development District
KLHF	Kalaeloa Legacy and Heritage Foundation
KWC	Kalaeloa Water Company
MCAS	Marine Corps Air Station
mgd	million gallons per day
MW	megawatt
MOA	memorandum of agreement
NASBP	Naval Air Station Barbers Point
NAVFAC	Naval Facilities Engineering Systems Command
NZE	net zero emissions
OR&L	Oahu Railway and Land
R-1	reclaimed (or recycled) water
RMTC	R. M. Towill Corporation
ROW	Right-of-way
RPZ	Runway Protection Zone
SHPD	State Historic Preservation Division
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
USPS	U.S. Postal Service
VA	U.S. Department of Veterans Affairs
WWTP	Wastewater Treatment Plant

1 Chapter 1
Setting the Stage

1.0 Plan Overview

1.0.1 Background of the Master Plan Amendment

In June 2002, Governor Benjamin Cayetano signed into law Senate Bill 2702 (becoming Act 184) which transferred responsibility for Kalaeloa from the Naval Air Station Barbers Point (NAS Barbers Point) Redevelopment Commission to the Hawai'i Community Development Authority (HCDA). Pursuant to Act 184, the Kalaeloa Community Development District (KCDD) was established, comprising approximately 3,700 acres of land that included all of the land within the former NASBP (see Figure 1-1).

Hawai'i Revised Statutes (HRS) Chapter 206E required that a master plan be developed following establishment of the KCDD and the original Kalaeloa Master Plan (Plan) was adopted by the Authority in 2006. The Plan recognized a unique opportunity to redevelop the former NAS Barbers Point based on a strategic vision of Kalaeloa as a "Center for Excellence" or Wahi Ho'okela within the 'Ewa region of O'ahu. To implement this vision, the HCDA adopted a set of core values and principles to guide the redevelopment of Kalaeloa. This planning framework, written into the 2006 Plan, remains valid and is reiterated in this amended Master Plan.

In adopting the 2006 Plan, there was full acknowledgement that the redevelopment process would be complex, including the likelihood of successes and setbacks along the way and unpredictable events and fluctuating market cycles. Since then, the rail line is under construction with operations underway in the western half of the system; major housing and commercial projects have been completed throughout the 'Ewa Plain even as the high cost of housing remains a top concern; and stewardship of cultural resources has moved forward with establishment of the 'Ewa Plain Battlefield Memorial and Kalaeloa Heritage Park.

This Master Plan Amendment has been undertaken with particular attention to the following objectives:

- Identify relevant changes from 2006 to the present within and surrounding the KCDD
- Identify favorable and detrimental conditions to redevelopment in the KCDD
- Refresh the information and data in the Master Plan and coordinate with the emandment of the Administrative Rules
- Update the Regulating Plan which establishes the pattern of land uses within the KCDD and serves as the official land use map to be implemented by the Administrative Rules
- Reevaluate priorities to inform public investments over a 20-year planning horizon

1.0.2 The Kalaeloa Master Plan

In 2020, the HCDA began the process of amending the 2006 Plan to respond to current and anticipated challenges facing redevelopment and chart an economically feasible and realistic course over a 20-year timeframe.

The planning team reviewed the 2006 Plan and Urban Design Guidelines along with ancillary plans, studies, and other reference documents completed during the intervening period. The planning team also conducted interviews with stakeholders, met with government agencies, and held community workshops to receive feedback on various planning concepts.

The amended Master Plan was written to distill this information into a planning document that provides an overview of the opportunities and vision for Kalaeloa and explains how they are linked to the implementing Administrative Rules. In this regard, the Master Plan is organized in the following manner:

- **Setting the Stage - Understanding the Pieces: Chapter 1** reviews the history of Kalaeloa beginning with the closure of NASBP and past planning efforts. Chapter 1 also includes a description of the current setting of Kalaeloa in terms of land ownership, land uses, schools, transit, infrastructure, physical characteristics, protected species and

habitat, cultural environment, and regional economy.

- **Kalaeloa Vision: Chapter 2** describes the conceptual framework for developing the land use plan through an overview of the major opportunities at Kalaeloa, including creating social value; providing new economic development and employment opportunities; balancing development; addressing regional traffic congestion; protecting open space and cultural and natural resources.
- **The Master Plan: Chapter 3** describes and illustrates the proposed land uses in Kalaeloa and summarizes the various areas for mixed use, airport, light industrial, military, institutions, open space, parks, and recreation.
- **Implementation: Chapter 4** summarizes the issues surrounding the successful implementation of the Master Plan, including infrastructure improvements, public services, financing, and governance.

Core Values and Guiding Principles

- **Embrace and strive for excellence.**
- **Respect the places of Kalaeloa, throughout Kanehili from the plain of Kaupeʻa to the shores of Kualakaʻi.**
- **Pursue a balance of preservation and restoration of cultural and natural resources, the creation of public and recreational areas, and the development of economic enterprises.**
- **Embrace the values of diligence, resourcefulness, and innovation held by native Hawaiians who first inhabited Kalaeloa and incorporate these values into the redevelopment and uses within the District.**
- **Acknowledge existing Federal, State of Hawaiʻi, City and County of Honolulu, and private land owners within Kalaeloa and respect the importance of their missions, plans, responsibilities, and interests.**
- **Support the multiplicity of uses at Kalaeloa and encourage the achievement of excellence in many fields of endeavor, including: education, research, technology, environment, defense, commerce, sports, culture, and the arts.**
- **Focus redevelopment resources to create both social and economic value by emphasizing community needs for education, open space, recreational facilities, and quality careers and jobs.**
- **Understand that realization of Kalaeloa as a Center for Excellence requires a sound fiscal strategy of public-private partnerships for the creation of successful businesses, meaningful careers, increased land values, and an increased tax base.**
- **Recognize that the vision for Kalaeloa cannot be achieved without meaningful community involvement and commit to integrate community needs and interests into the redevelopment process.**

Figure 1-1: Kalaeloa Community Development District

1.1 Kalaeloa Background and History

The area known for two centuries as Barbers Point takes its name from the wreck of the Arthur, a ship captained by Henry Barber in a hurricane in 1796. Barber and several of his crew struggled ashore near the site then known as Kalaeloa. Known as the legendary birthplace and burial ground of Hawaiian kings, this event indelibly linked his name to this part of the island. Some seventy years later, James Campbell purchased the land as part of his larger purchase of 41,000 acres of flat land in the ʻEwa district to be used in the production of sugar cane. Campbell, in turn, leased the land to Oʻahu Sugar Company, which began the association of this area with sugar cane.

The Navy's association with the area began in 1925 with the leasing of 150 acres from the Campbell estate. Around 1935, the Navy began the construction of ʻEwa Field adjacent to plantation housing for the nearby Ewa sugar mill. On December 7, 1941, as part of the attack on Pearl Harbor, ʻEwa Field was hit resulting in significant damage and loss of life. Thus, this battlefield site is an important landmark and in 2016 the ʻEwa Plain Battlefield was listed in the National Register of Historic Places.

In 1940 the Navy purchased approximately 3,500 acres of land at Barbers Point allowing it to expand ʻEwa Field as the Marine Corps Air Station (MCAS) and to construct the NASBP. The attack on Pearl Harbor preceded any construction on this site, but by 1943, NASBP became operational, quickly becoming a pivotal facility in servicing carrier-borne aircraft which was a critical component in the Navy's effort to project air power in the Pacific theater as the "Crossroads of the Pacific."

1.1.1 Base Closure and Reuse Process

Despite its strategic importance throughout WWII and in the four decades that followed, in 1993, the U.S. Congress authorized the Department of Defense's recommendation to close the NASBP. The base realignment and closure (BRAC) process followed proscribed steps requiring the Navy to first identify lands for retention, then offer excess lands to other federal agencies, then dispose of the remaining surplus to the State, City, and private parties.

When NASBP formally closed on July 2, 1999, the Navy retained roughly 1,055 acres, designated approximately 457 acres of excess land for transfer to various federal agencies, and designated roughly 2,180 acres of the remaining land as surplus.

In 1994, the Hawaiʻi State Legislature established the NASBP Redevelopment Commission. As the Local Reuse Authority, the Commission was responsible for preparing a plan for the conveyance and subsequent reuse of the surplus land at Kalaeloa.

1.1.2 Past Planning Efforts - Community Redevelopment Plan

On October 8, 1996, the NAS Barbers Point Redevelopment Commission adopted a Community Redevelopment Plan that identified State and City agencies interested in receiving lands and designated proposed uses of the surplus land. The Community Redevelopment Plan further served as the principal guiding document to coordinate the conveyance of surplus lands and prepare an Environmental Impact Statement (EIS) for the disposal and reuse of the surplus land. The Community Redevelopment Plan was amended five times between 1997 and 2001 in response to new site conditions and changes in the interest of government agencies designated to receive surplus land.

1.1.3 Hawaiʻi Community Development Authority (HCDA)

In July 2002, Act 184 of the 2002 Hawaiʻi State Legislature transferred redevelopment responsibility for Kalaeloa from the NASBP Redevelopment Commission to the HCDA.

The HCDA assumed responsibility for the redevelopment of Kalaeloa, overseeing remaining conveyances, contract administration, promulgation of administrative rules, and other tasks relating to redevelopment.

Pre 1700's

Early Hawaiian

Kalaeloa (Long Point) the name describing the shape of the shoreline of this part of the ‘Ewa Plain, is known as the legendary birthplace and burial ground of Hawaiian kings. It is the site of several Hawaiian and Tahitian coastal settlements which are in turn connected to other communities extending from Puuloa to Ko Olina.

1700-1800's

1796

Arthur Shipwreck

The “Arthur” sinks during a hurricane causing Henry Barber and other survivors to wash up near Kalaeloa, permanently linking Barber’s name to this part of the island.

1848

Mahele ‘Aina

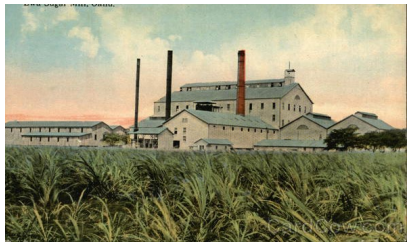
High Chiefess Keahikuni Kekauonohi claims Kalaeloa during Mahele ‘Aina or land privatization.

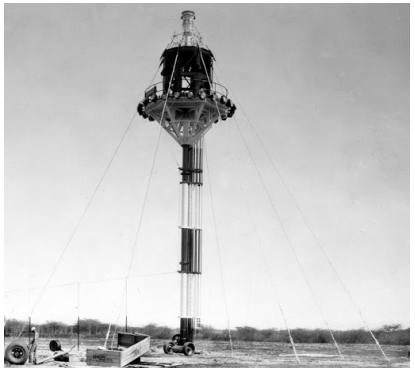
Remnants of the ala hele in Kalaeloa, also known as the Malden Trail.

1877

Sugar Era Begins

James Campbell moves from Maui to O‘ahu and purchases Kalaeloa as part of his larger purchase of 41,000 acres of flat land in the ‘Ewa district to be used in the production of sugar cane. Finding an abundance of artesian wells, Campbell, in turn, leases the land to the O‘ahu Sugar conglomerate and begins the 100-year era of sugar on O‘ahu.





Mid 1900's

1930

Navy Development

Navy begins building ‘Ewa Field adjacent to plantation housing for the nearby ‘Ewa sugar mill.

1940's

Navy Expansion

Navy purchases approximately 3,500 acres of land, allowing it to expand ‘Ewa Field as the MCAS and to construct Barbers Point Naval Air Station.

1941

Date of Infamy

On December 7th, the Ewa Field was the first site to be struck during Japan’s attack on Pearl Harbor, resulting in considerable damage and loss of life.

Marines defending Ewa Field on December 7, 1941

Late 1900's

2000's

1942

Barbers Point Commission

April 15. NASBP is commissioned and becomes operational a year later, quickly becoming a pivotal facility in servicing carrier-borne aircraft and an important base of operation in the Pacific during World War II.

1944

Barbers Point Expansion

NASBP expands to accommodate the servicing of up to four carrier air groups simultaneously.

1949

Coast Guard

The Coast Guard begins air operations at Barbers Point. The facility itself is designated Coastal Guard Air Station Barbers Point in 1965.

1952

MCAS Closure

'Ewa Field (MCAS) is officially closed as the runways are deemed too short for jet aircraft.

1993

BRAC and BPRC

Upon the recommendation of the Base Realignment and Closure Commission (BRAC) to close Barbers Point NAS the State of Hawai'i establishes the Barbers Point Redevelopment Commission (BPRC) to facilitate the transition of the property on a state level. Among its recommendations is the establishment of the Kalaeloa Heritage Park to conduct research, preserve and document the remains of the cultural landscape of the ancient community that once lived on the site.

1999

Barbers Point Closure

NASBP closes and is renamed Kalaeloa. Lands not retained by the Navy are conveyed to other federal, state, or local government agencies such as the Department of Hawaiian Home Lands (DHHL), the Hawai'i Department of Transportation (which operates Kalaeloa Airport) or sold to private landowners.

2002

Hawai'i Community Development Authority

Oversight of Kalaeloa is transferred to the HCDA.

2006

Kalaeloa Master Plan

The HCDA adopts the Kalaeloa Master Plan.

2012

Administrative Rules

The administrative rules that govern development in the Kalaeloa Community Development District are adopted in September 2012.

2020

Master Plan and Rules Update

HCDA commences the update process for- the Kalaeloa Master Plan and Administrative Rules.

1.1.4 Historical Cultural Landscape

The Master Plan seeks to ensure the long-term protection of Kalaeloa's historic sites and cultural landscapes which tell the story of its rich heritage. In recognition of each era's significant contributions, the planning effort endeavors to assimilate the educational and stewardship opportunities into its long-term objectives. The appreciation of its past will inspire Kalaeloa's creation of its own sense of place.

1.1.4.1 Pre-Contact Archaeological Cultural Landscape

Land Use: Early agricultural practices followed the konohiki farming and land management system. The karst caves and sinkholes formed within the limestone terrain served as sources of fresh water, wells, cultivation, and habitation.

Circulation Systems: Mapped in 1825 , the Malden Trail was a significant ancient Hawaiian trail (alaloa or alahele) that established both cultural and agricultural connections on the Ewa Plain.[1] "Leina a Ka'uhane (meaning "leap of the spirit") was a sacred place and spiritual pathway to the afterlife in Hawaiian culture.[2]

Natural Resources: The 'ulu' (breadfruit) and 'wiliwili' plants were among indigenous vegetation integral to the Hawaiian culture. Native birds such as themo'o, and 'i'iwi were sources of food and feathers.

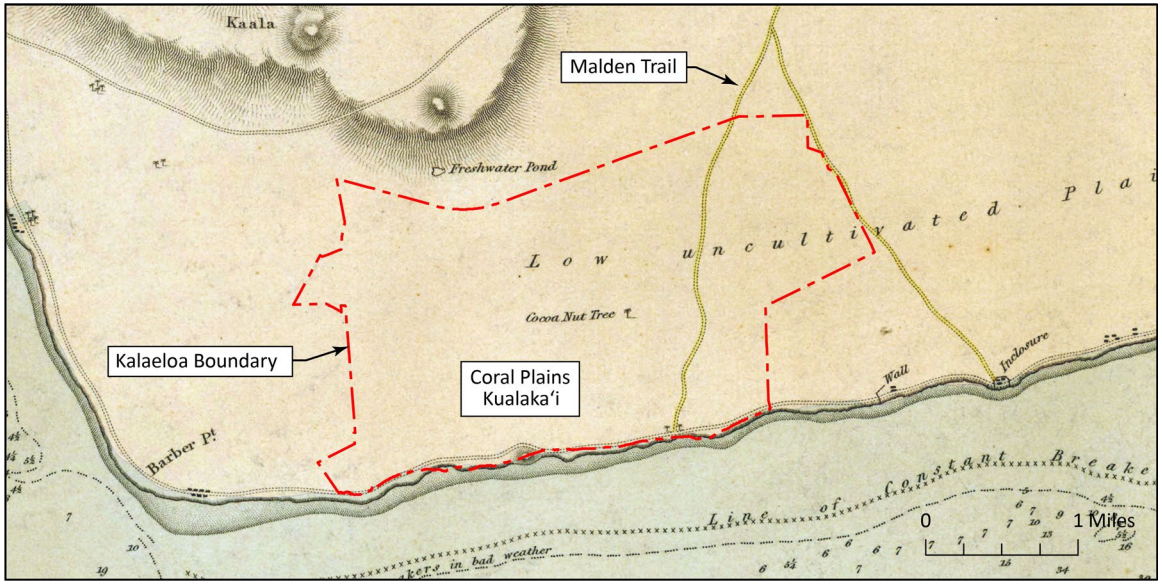


Figure 1-2: 1825 map showing the Malden Trail. Source: South coast of Woahoo [Oahu] and Honorurou [Honolulu] Harbour / surveyed by Lieut. C.R. Malden, R.N., 1825 ; J. & C. Walker, Sculp.

Buildings and Structures: Malden's 1825 map shows small clusters of houses. Evidence of settlement in Kualaka'i was found in 1855 to 1888 tax annals. Archaeological surveys have found remnants of small coral houses surrounded by walls.

Small-scale Features: Agricultural examples were stone mounds, sinkholes with ti leaf plant sprouts, and shallow bedrock depressions that held drinkable water.

Views and Vistas: Geographic views and vistas of pre-contact Kalaeloa such as the Pohukaina Cave can be found in the Kalaeloa Heritage Park.

Archaeological Resources: Karst caves were regarded as 'wahi pana' (sacred places) and served as sacred burial sites. There was the presence of markers of stone and logs which lead to ancient sites .

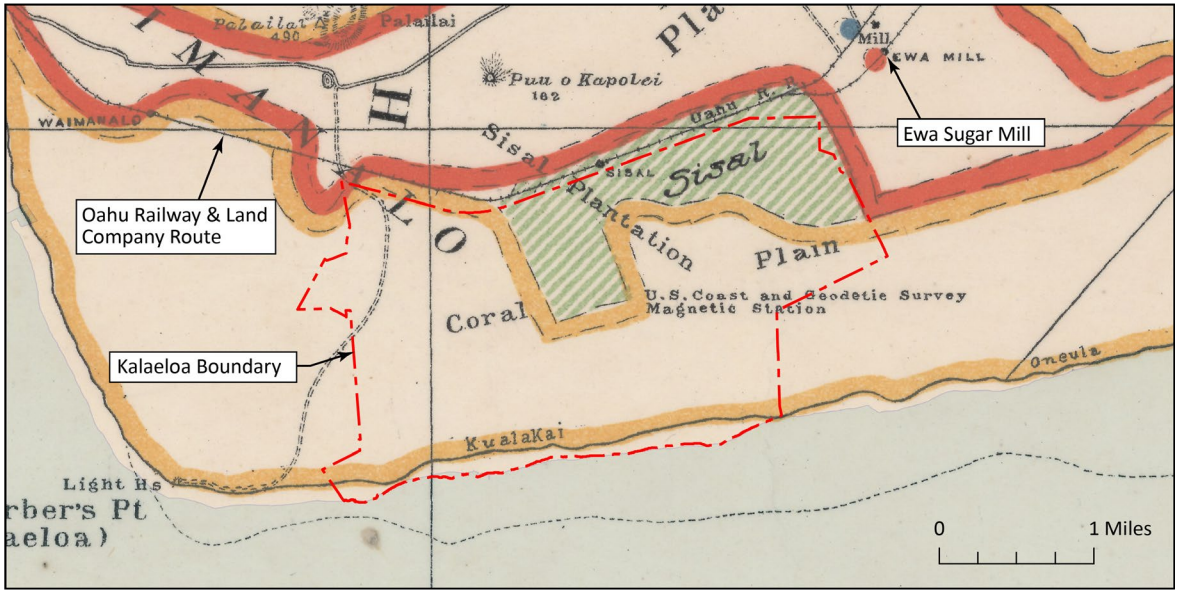


Figure 1-3: 1902 map showing sisal plantation and OR&L alignment. Source: Hawaii Territory Survey, Walter E. Wall and John M. Donn, 1902. Wall, Walter E.

1.1.4.2 Post-Contact Cattle Ranching and Plantation Agriculture (1850-1924)

Land Use: Cattle ranching and plantation agriculture flourished between 1850 to 1924 on the Ewa Plain. Prior to the growth of the sugar industry, raising cattle for consumption was prevalent. The transition to the sugar industry era began in 1889. Kalaeloa's barren landscape was unsuitable for sugar cane and spurred the development of the sisal industry.[3]

Circulation Systems: In 1890, the Oahu Railway and Land Company (OR&L) was the primary means for hauling cane and sugar. The first use of narrow-gauge railways was conducted by Ewa Plantation in 1902. The narrow-gauge rail system and dirt roads provided access to the sisal fields. Pedestrian trails linked Ewa Plantation with coastal villages such as One'ula.

Natural Resources: During the 1850s, the cattle and livestock industries spurred the introduction of the kiawe plant serving as animal feed. The kiawe scrub spread throughout the areas surrounding the sisal plantation. The sisal fields were abandoned in 1925 when the industry shifted to sugar cane.

Buildings and Structures: Wooden structures associated with the sisal operations were built such as a two-story building with a windmill.

Small-scale Features: A continuous rock wall was constructed to encircle the 700 acres of the sisal plantation to protect the sisal from cattle and provide the border between sisal and sugar cane fields.

Views and Vistas: Views within the flat terrain were blocked by thick vegetation yet maintained views to the Wai'anae and Koolau mountains.

Archaeological Resources: An ancient coral reef that roughly follows the rock wall surrounding the sisal plantation has the been identified.

1.1.4.3 Military Presence in the Pacific - World War II

Land Use: Military presence at Kalaeloa was driven by the establishment of the U.S. Navy Rigid Airship Program between 1919-1935. Ewa Field was established as the Ewa Field Mooring Mast in 1925. In 1939, it became the Ewa Mooring Mast Field and used as a temporary training field for Marine aviators. It was subsequently upgraded and became the Marine Corps Air Station Ewa (MCAS Ewa) on February 3, 1941. In 1942, the Naval Air Station Barbers Point (NASBP) was completed and commissioned to be the largest naval air station in the Pacific arena.

Circulation Systems: The OR&L rail system and roadways provided access to Ewa Field. The single-track, narrow-gauge railroad would transport building materials, equipment, and fuel. Informal pedestrian paths in the coral terrain connected the enlisted and officers to various parts of the compound.

Natural Resources: The largely flat terrain at the Ewa Mooring Mast Field was suitable for the rigid airships based at the air station. However, the limestone and sand coral shelf made construction difficult.

Buildings and Structures: The Marines set up the temporary camps with tents followed by barracks, a storehouse, recreational facility, and dispensary.

Figure 1-4: Map of Ewa Field in 1941.

Small-scale Features: The flagpole located at the installation's main gate was designed with coral rock borders and walkways to signify the the entry to the base.

Views and Vistas: The modified remnant of the First Ewa Mooring Mast was a focal point for the base. The tall smokestacks of the Ewa Plantation and views to the Wai'anae mountains were predominant vistas.

Archaeological Resources: Historical archaeological sites relate to the build-up of the installation, the day of December 7, 1941, and post-1941.

Aerial view of Ewa Field looking makai, June 2, 1942.

1.1.5 Respecting Kalaeloa's Cultural Landscape and Hawaiian Sense of Place

In traditional Hawaiian beliefs, nature and culture are regarded as one, and all natural, physical, and spiritual universes are interrelated. This affinity forms the basis for the respect embracing both nature and humankind. The health of the environment is fundamental to the health of the population.

Natural resources such as rock precipices, a small mound, stream of water, fauna, and native wildlife are respected as cultural properties. Perpetuating the "traditions of place" through oral histories are important to ensure that traditional cultural values are preserved and not forgotten. Although, Kalaeloa has experienced multiple changes over time, the absence of visible evidence does not discount the cultural landscape of 'place'.

"Hawaiian history is a reflection of the belief that humans and their living environment share a familial relationship. By learning and becoming familiar with mo'olelo Hawaii, one becomes aware of the cultural attachment Hawaiians have to their environment and begins to see that the Hawaiian landscape is a storied landscape and a living landscape. As we learn the histories and traditions of the land and make sure that these stories live on in our minds, we create a space where present and future generations are able to feel the cultural attachment to the land they inhabit."[4]

"Native Hawaiian Culture is grounded in the 'āina and the places in which traditions and customs are formed and practiced. In a very general sense, Hawaiian culture is a sense of place that comes with a deep attachment to the land itself and its many resources that is both ancestral and familial.

The environment in which Native Hawaiians exist is living and embued with the manifestations of gods and ancestors that

make up the physical world around us. Hawaiian culture is therefore connected to ideas of sustainability, conservation, and preservation, in that the ʻāina and the natural world must come first.

Hawaiians believe in the manaʻo, "He aliʻi ka ʻāina, he kauā ke kānaka" (the land is the chief and man is its servant). The idea of mālama ʻāina (caring for the land) and aloha ʻāina (love for the land) are integral to Hawaiian culture; a large part of being a steward to the ʻāina is knowing the stories and the names of those places".[5]

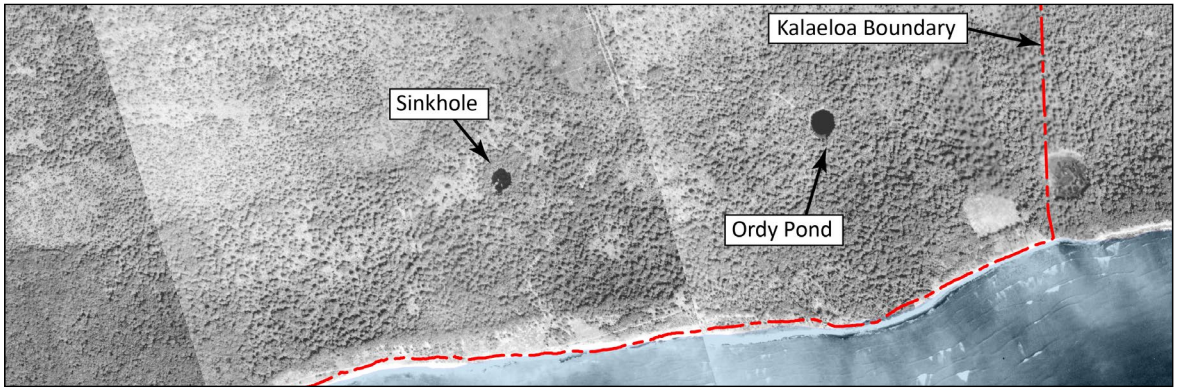
The present and future development of Kalaeloa is grounded in this Hawaiian sense of place which requires deference for the traditions and values of past eras.

Storied Landscape

Archaeologist and ethnographer Ulukoa Duhaylonsod, shares his insights into the landscape of Kalaeloa through storytelling.

"After Hilo One is the point of Kalaeloa, and then starts the western coast of Oʻahu. The name Hilo One translates as the "Twisting, Spinning Sands," and it reflects the convergence of currents from Honouliuli's south shore and its west shore causing the sands to twist and spin.

Along the [immediate] western coastline it is entirely rocky except for a small sandy cove



Aerial imagery of the Kalaeloa coast taken in 1927-1928 by the Photo Section of the U.S. Army Air Corps at Luke Field (Ford Island, Pearl Harbor). Source: https://guides.library.manoa.hawaii.edu/aerials/digital

which interestingly corresponds with the area of today's Kalaeloa Harbor... Both Uncle Glen [Kila] and Aunty Nettie [Tiffany][6] as well as the original families of Honokaihale[7] all recall an unusually huge sinkhole between Honokaihale and the Kalaeloa coast. It was used as a swimming hole by the community kids, and its water had a depth of 40 feet or more. Unfortunately, it was destroyed during the construction of the harbor. This large sinkhole was a window into the underground waterway leading to the fishery of Hāniʻo.

Uncle Glen Kila[8] likens the Kalaeloa subterranean water flow to the same geological/hydrological occurrence at Kamaile in Waiʻanae moku. At Kamaile, it is called Ala Uka, referring to a waterway connected to the uplands. At Kalaeloa, Beckwith records "Hāniʻo" as the name of the fishing grounds, which translates as "A Sluice Gate or Ditch to the Mountaintop," and like Ala Uka, the name of Hāniʻo encapsulates the natural waterway".[9]

1.1.6 Diverse Community

During the period of rapid plantation growth, the demand for workers spurred immigration of laborers from many countries to Hawai'i. Laborer shortages compelled plantation owners to attract the needed work force by building housing, schools, and healthcare facilities. These communities were intended as homes and settlements rather than transient work camps. And the villages became an element of the Hawaiian landscape. The ʻEwa region evolved to become a diverse community possessing a shared heritage that was grounded and interpreted as a Hawaiian sense of place.[10]

1.1.7 Commemoration

"During the Korean War, it (Kalaeloa) was used as a critical staging area and would later become home to the Rainbow Fleet—a squadron used to track Soviet submarines. Today, the vestiges of early Hawaiian stacked coral dwellings and agricultural features, religious structures, modified sinkholes, and trail markers still exist. Traditional Hawaiian burials may also be present. In addition, 20th century habitation, ranching, and sisal cultivation sites are located alongside World War II military components."[11]

1.1.8 Encouraging a Hawaiian Sense of Place at Kalaeloa

A Hawaiian sense of place at Kalaeloa may be cultivated with supportive planning and design elements.

Sense of Community

- Develop spaces that support social interaction and cultural practices
- Promote awareness of Kalaeloa's unique qualities through education and community-building activities
- Encourage activities that bring kupuna and keiki together and celebrate generational diversity
- Ensure that public spaces are accessible to people of all abilities

Landscaping

- Use native plant species to landscape residential, commercial, and civic properties, such as 'ahinahina, koali'ai, kupala, and ilima
- Expand on Kalaeloa Heritage Park's relationship with the University of Hawai'i West Oahu's Botany program
- Install and maintain shade trees along roads, paths, and bike facilities to encourage walking and bicycling

Environmental

- Design facilities powered by renewable energy, such as using solar panels to light parking lots, bus shelters, and neighborhood paths

Open Spaces

- Provide usable green spaces, such as parks, athletic fields, and playgrounds, throughout the District
- Connect open, green spaces between neighborhoods
- Preserve natural features of the terrain

Architecture

- Design community facilities that take advantage of natural ventilation
- Incorporate traditional motifs and patterns in building facades and ornamentation

References

[1] Synthesis of Cultural Resource Studies of the 'Ewa Plain, H. David Tuggle, PhD., M.J. Tomonari-Tuggle, M.A., International Archaeological Research Institute, Inc., October 1994.

[2]Kalaeloa Heritage Park; Leina Kauhane - Wikipedia

[3] Synthesis of Cultural Resource Studies of the 'Ewa Plain, H. David Tuggle, PhD., M.J. Tomonari-Tuggle, M.A., International Archaeological Research Institute, Inc., October 1994.; Ewa Field Cultural Landscape Assessment Final Report, February 2016, U.S. Navy.

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[6] Personal communication, 2015

[7] Duhaylonsod, Young, Seno; personal communication, 2016

[8] Personal communication, 2021

[9] Duhaylonsod 2021: 26, 27. Akana, C.L. 2004 The O'ahu Exploits of Kamapua'a: The Hawaiian Pig-god. Bishop Museum Press, Honolulu. Beckwith, M. 1970 Hawaiian Mythology. UH Press, Honolulu. Duhaylonsod, D. 2021 An Ethnohistorical Report About Pala'ila'i and its Greater District of Honouliuli. UH Manoa, Honolulu. Handy, E.S.C., E.G. Handy, and M.K. Pukui. 1991. Native Planters in Old Hawaii: Their Life, Lore, and Environment. Bernice P. Bishop Museum Press, Honolulu. Kane, S.S. 2011 Cultural Kapolei. Kane, Kapolei.

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1.2 Existing Conditions

1.2.1 Regional Setting

Kalaeloa is situated within the ʻEwa plain on the island of Oʻahu and is bounded by residential development to the north and east, and by Campbell Industrial Park to the west. Communities in the region, consisting of predominantly single-family residences, include Kapolei, Makakilo, Honokai Hale, ʻEwa Beach, ʻEwa by Gentry, ʻEwa Villages, Ocean Pointe, Hoakalei, and others. Commercial areas, schools, and parks support these residential neighborhoods.

The northeastern corner of Kalaeloa is adjacent to the City's Honouliuli Wastewater Treatment Plant. The State's Kalaeloa Deep Draft Harbor and Ko Olina Resort are located west of Campbell Industrial Park. The University of Hawaiʻi's West Oʻahu campus is located north of Kalaeloa in east Kapolei.

The nine-acre Wai Kai water activity center and 52-acre lagoon, which opened in 2023, are part of the Hoakalei development located adjacent to the southeastern boundary of Kalaeloa. Figure 1-5 shows the urban land use map in the City's ʻEwa Development Plan, as amended in 2020.

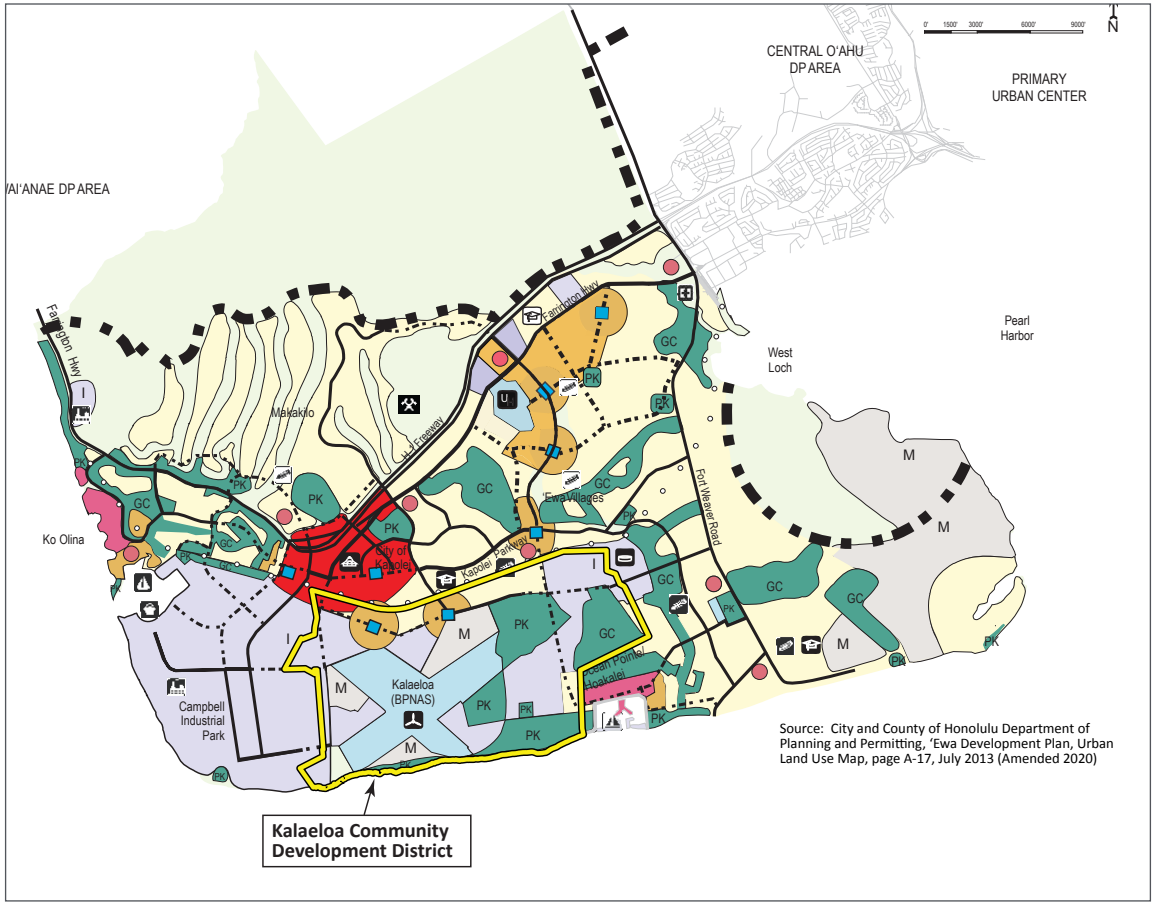


Figure 1-5: Ewa Development Plan, 2020

1.2.2 Land Ownership, Land Use, and Status of Conveyances

The conveyance and ownership of land in Kalaeloa has evolved over the course of the BRAC process and will continue to evolve. Government interest in land has fluctuated, with certain agencies withdrawing interest and others expressing interest. Federal legislation allows the Navy to sell or lease portions of its retained lands to support redevelopment at Ford Island. Land transferred pursuant to this legislation has since been sold to private entities. Landowners within the District are shown in Figure 1-6. A description of each of the current and interested landowners is provided in the sections below. Some parcels are encumbered by covenants and stipulations that must be accommodated.

1.2.2.1 Federal Government

1.2.2.1.a U.S. Navy

When the federal government designated NASBP for closure, the Navy retained approximately 1,055 acres for housing, recreation, operational, and community support services. In April 2000, the Navy announced plans to fund development of its lands at Ford Island in Pearl Harbor. Special federal legislation (10 United States Code 2814, Special Authority for the Development Ford Island, Hawai'i) authorized the sale or lease of approximately 675 acres of Navy-retained land in Kalaeloa. These so-called "brokered lands" included the majority of land along Roosevelt Avenue and select parcels throughout downtown Kalaeloa between Midway and Enterprise Streets. Among the Navy-retained lands that are not part of the Ford Island development are the Barbers Point Golf Course and adjacent horse stables, White Plains Beach, Nimitz Beach, Landfill, and other facilities.

1.2.2.1.b U.S. Coast Guard

The U.S. Coast Guard (USCG), based at Kalaeloa since 1949, is responsible for maritime and recreational boating safety, law enforcement, environmental protection, and homeland security. Search and rescue is a primary mission in Hawai'i and the Pacific region, including the Marianas, Caroline, and Marshall Islands. The 58-acre site at Kalaeloa accommodates maintenance facilities for the USCG's C-130 transport aircraft and HH-65 helicopters.

1.2.2.1.c Federal Aviation Administration

The Federal Aviation Administration (FAA) received 18 acres of land where two navigational aids are located. One aid is an outer marker for Runway 08L at Daniel K. Inouye International Airport and the other is a nondirectional beacon that serves Kalaeloa Airport and Wheeler Army Airfield. Both aids

Table 1-1: Kalaeloa Land Ownership Summary

Landowner	Land Area (acres)	Percent
Federal*	995.7	26.9%
State of Hawaii	1,552.3	42.0%
City and County of Honolulu**	415.6	11.2%
Right-of-way (various)	179.5	4.9%
Private Landowners**	552.5	15.0%
Total Land Area	3,695.7	100.0%

* Include lands to be transferred to unidentified parties
** Includes pending Federal lands to be transferred

Table 1-2: Kalaeloa Land Ownership Detail

Landowner	Land Area (acres)	Percent
Federal		
Federal	782.7	21.2%
Federal (pending transfer to unidentified parties)	213.0	5.8%
State of Hawaii		
Department of Hawaiian Home Lands	552.5	15.0%
Department of Education	14.5	0.4%
Department of Transportation - Airports Division	808.7	21.9%
Hawaii Community Development Authority	161.9	4.4%
Hawaii Public Housing Authority	12.3	0.3%
University of Hawaii	2.4	0.1%
City of County of Honolulu		
Board of Water Supply	20.0	0.5%
Department of Parks and Recreation	395.6	10.7%
Various		
Right-of-way	179.5	4.9%
Private Landowners		
Aloha Properties Unlimited	0.9	0.0%
Eagle River Investors Hawaii LLC	9.5	0.3%
Gentry Kalaeloa LLC	21.3	0.6%
Hawaii Conference of 7th-Day Adventists	1.2	0.0%
Henkels and McCoy Inc	2.0	0.1%
Hunt Communities Hawaii (includes pending transfers)	396.1	10.7%
Kaimana Kalaeloa Owner LLC	17.7	0.5%
Kalaeloa Water Company LLC	3.7	0.1%
Mahana Kalaeloa Owners LLC	15.9	0.4%
Makai Kalaeloa Owner LLC	44.5	1.2%
U.S. VETS	5.1	0.1%
VA Aloha LLC	9.5	0.3%
Wakea Garden Apartments LLC	25.0	0.7%
Total Land Area	3,695.7	100.0%

Data as of 4/30/24; Source: City and County of Honolulu GIS

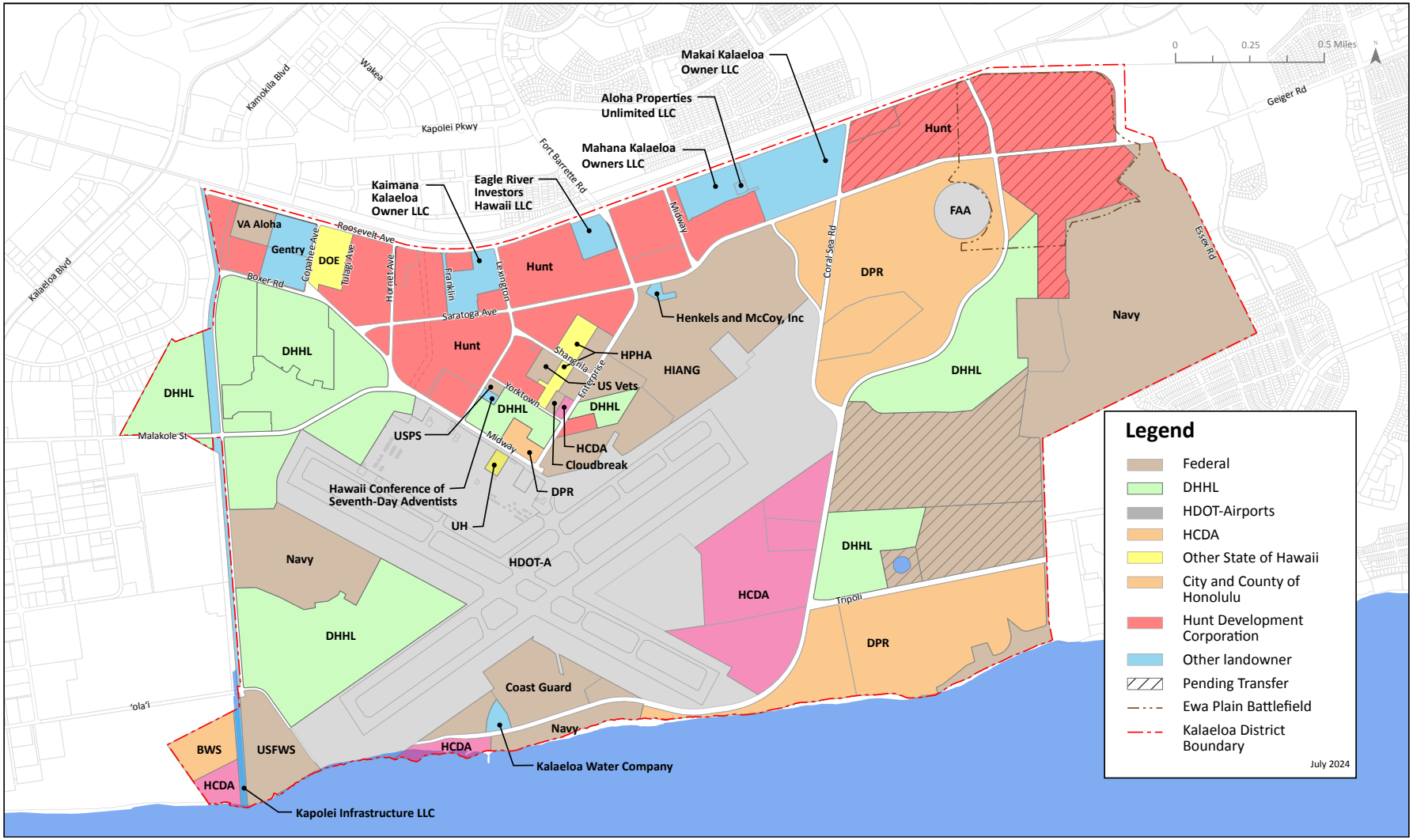


Figure 1-6: Kalaeloa Land Ownership, 2024

are co-located in the center of the 18-acre parcel and surrounded by a 500-foot radius clear zone to protect radio signals transmitted from the instruments.

1.2.2.1.d Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) received 37 acres in the southwestern portion of Kalaeloa for incorporation into the Pearl Harbor National Wildlife Refuge. This undeveloped parcel is situated between the end of Runway 4R, the ocean, and the Campbell Industrial Park drainage channel and contains the endangered plant species Achyranthes splendens var. Rotundata, also known by its Hawaiian name ʻahinahina.

1.2.2.1.e Department of Veterans Affairs

The U.S. Department of Veterans Affairs (VA) received two parcels of land that encompass an area of approximately seven acres on Shangrila Street and Yorktown Street. Through a lease agreement with U.S. Vets, Inc., three buildings on these sites were renovated and now provide housing and social services for veterans.

The VA is also present in an 89,000-square foot clinic named the Daniel Kahikina Akaka Community-based Outpatient Clinic that was constructed on Hunt-owned property in the northwestern area of the District, makai of Roosevelt Ave and adjacent to the newly extended Kamokila Boulevard. The Clinic opened in the spring of 2024 and will provide thousands of Hawaiʻi veterans with specialized health care and support services.

1.2.2.1.f U.S. Postal Service

The U.S. Postal Service (USPS) received a one-acre parcel of land in the downtown area. The post office currently serves the Kalaeloa area and is an alternative postal center for the Kapolei and ʻEwa communities.

1.2.2.2 State Government

1.2.2.2.a Hawaiʻi National Guard—Headquarters and Youth Challenge Hawaiʻi

The Hawaiʻi National Guard (HNG) received three parcels totaling approximately 148 acres. The 29th Separate Infantry Brigade is the largest unit in the Hawaiʻi Army National Guard. Units of the Separate Infantry Brigade at Kalaeloa include its Headquarters and Headquarters Company, the 229th Military Intelligence Company, and the 29th Support Battalion. The Hawaiʻi Air National Guard also has a presence at Kalaeloa as the 297th Air Traffic Control Squadron. In addition, the HNG Youth Challenge Program at Kalaeloa provides “at risk” teens a chance to earn their high school diplomas through a mentored, military-based education program.

1.2.2.2.b Department of Education Barbers Point Elementary School

The Barbers Point Elementary School property was conveyed to the State Department of Education (DOE) under a public benefit conveyance of surplus land. Located on Boxer Road, the school had an enrollment of approximately 500 students in kindergarten through fifth grade during the 2021-2022 academic year. The students are primarily from Kalaeloa, including those living in the Onelauʻena and Onemalu emergency and transitional shelters for families. Some students reside in more distant communities, such as Honokai Hale/Nanakai Gardens, Kahe Point, Ko Olina, parts of Makakilo, and the subdivision near the Kroc Center.

1.2.2.2.c Department of Hawaiian Home Lands

Fourteen parcels totaling approximately 555 acres were part of a settlement agreement under the Hawaiian Home Lands Recovery Act (Public Law 1-4-42) conveyed to the Department of Hawaiian Home Lands (DHHL). These parcels, ranging in size from 1 to 130 acres, are located on the west side of the District, south of Boxer Road; north of the airport, and east of Coarl Sea Road on the east side of the District. DHHL is currently leasing portions of these lands and appurtenant facilities to approximately 20 tenants for various commercial and industrial purposes.

1.2.2.2.d Hawai‘i Public Housing Authority

Pursuant to the McKinney Homeless Assistance Act (P.L.100-77), the State of Hawaii received a conveyance of two parcels , totaling 12 acres, for homeless assistance services. These parcels contain four buildings that have been renovated and leased to Holo Loaa to coordinate and provide housing services for people experiencing homelessness. Current facilities include the Onemalu Transitional Shelter, the Onelau‘ena Emergency Shelter Program, Ka Pa‘alana preschool, Hale Ulu Pono Steadfast Housing, and the Kama‘okū Kalaleoa Kauhale.

1.2.2.2.e Department of Transportation

The Kalaeloa Airport—also known as John Rodgers Field (JRF)—is located on a 798-acre parcel in the center of Kalaeloa. It was conveyed to the Hawai‘i Department of Transportation (HDOT) under a public benefit conveyance. The airport has two parallel runways (4R-22L and 4L-22R) and a crosswind runway (11-29). Runway 4R-22L is 8,000 feet; Runway 4L- 22R is 4,500 feet; and Runway 11-29 is 6,000 feet. Retention of the crosswind runway benefits the local community by maximizing takeoffs and landings over water, thus reducing noise impacts. In addition, Runway 11-29 provides backup capability during periods when Runway 4R-22L is closed for maintenance. Kalaeloa Airport also includes a 100-acre ramp area that houses the air-traffic control tower and attached administration building, two large hangars, and

Kalaeloa airport control tower

two large aircraft parking aprons for use as tie-down space, future hangar expansion, and lease lots.

The designated use of the airport is to serve as a general aviation airport and reliever airfield for Daniel K. Inouye International Airport. In 2023, the latest year for which published statistics are available, Kalaeloa Airport saw 173,931 general aviation operations and 16,609 military operations. Relative to all airports statewide, Kalaeloa Airport had a 49% share of general aviation operations and 36% share of military operations.

1.2.2.2.f Hawai‘i Community Development Authority

In addition to its role of facilitating and regulating the District’s redevelopment, HCDA is also a landowner of approximately 157 acres. The largest area is approximately 141 acres in size and located between Coral Sea Road and Runways 22L and 29. Portions of this area are leased to the Kalaeloa Heritage Park and a solar energy farm.

Two smaller parcels are located along the coastline. There are no firm plans for the use of these lands which are constrained by relative remoteness and nearby airport operations.

1.2.2.2.g University of Hawaii

The University of Hawaii owns Hanger 111 and adjacent parking area. It was orginally conveyed to the University of Hawaii (UH) by the U.S. Department of Education for educational purposes, but the UH Board of Regents authorized these restrictions to be abrogated and released in 2020. The Solar Impulse 2 aircraft was stored in Hanger 111 for about 10 months between 2015-2016 during its historic circumnavigation of the Earth. The 105,000-square foot hanger is eligible for listing on the National Register for Historic Places.

1.2.2.3 City and County of Honolulu

1.2.2.3.a Board of Water Supply – Desalination Facility

The Honolulu Board of Water Supply (BWS) acquired 21 acres of land in the southwest corner of Kalaeloa through a public benefit conveyance for the purpose of developing a reverse osmosis desalination plant to supplement O'ahu's potable water supply. The BWS has entered into an agreement to design, build, operate, and maintain a facility that will deliver 1.7 mgd of potable water. An adjoining 10-acre parcel has also been identified for transfer to the BWS.

1.2.2.3.b Department of Parks and Recreation

During the BRAC process, the City expressed interest in receiving approximately 485 acres through a public benefit conveyance for the establishment of beach parks, community parks and other recreation facilities. The park areas include one parcel in the downtown area, four parcels east of the airport runway and six parcels along the coastline. Conveyances of all of these parcels are pending. The Department of Parks and Recreation is currently under a licensing agreement with the Navy for two baseball parks (at Pointer Field) and one beach park in Kalaeloa.

1.2.2.4 Private Entities

1.2.2.4.a HUNT Companies - On Station Housing

Hunt Companies currently has—or is expecting transfer of—fee interest in approximately 396 acres in Kalaeloa, making it the single largest private developer within the Kalaeloa District, and second only to DHHL with approximately 552 acres of developable land. The Hunt properties form a swath across the northern edge of the District and span the District's eastern and western boundaries. Many of the parcels front Roosevelt Avenue and/or Saratoga Avenue, two major thoroughfares. Because Hunt's holdings comprise large, contiguous parcels of land, future development and redevelopment offers the potential for holistic planning and design. To date, Hunt has developed the Kalaeloa Professional Center and VA Clinic, which are major employment centers, and retrofitted several Navy-built structures for residential, commercial, and recreational uses.

1.2.2.4.b Blackstone Group (Kaimana Kalaeloa Owner) - Orion, Makai, and Orion Park Housing

In April 2016, Blackstone Group acquired the fee interest in three housing areas at Kalaeloa, including: Orion, Makai, and Orion Park. Orion encompasses a 13-acre site that contains 116 multi-family units. Makai covers a 43-acre parcel and contains 280 multi-family units. Orion Park housing is a 16-acre parcel and contains 120 multifamily units.

1.2.2.5 Unallocated Land

During the BRAC process, several government agencies withdrew their interest in receiving lands in Kalaeloa. The U.S. Fish and Wildlife Service (USFWS) withdrew interest in three of the four parcels it was designated to receive. These parcels, totaling approximately 200 acres, are relatively undeveloped and contain wetlands and habitat for endangered plant and bird species and archaeological sites. The HDOT-Airports and the University of Hawai'i expressed interest in receiving a parcel, leaving the third and largest parcel (about 146 acres) unallocated.

Similar undeveloped parcels in the eastern portion of Kalaeloa, totaling 135 acres were previously designated for public benefit conveyance to the State Department of Land and Natural Resources (DLNR) to be used as a heritage park. However, the State later withdrew their interest. Two of the parcels were previously used by the Navy as skeet and trap ranges. As a result, the surface soils were heavily contaminated with lead and were subsequently removed and encapsulated in the Navy's landfill parcel in the western portion of Kalaeloa. These parcels also contain numerous archaeological sites and features.

1.2.3 Existing Infrastructure

This section describes conditions of existing infrastructure and challenges to the development of Kalaeloa.

1.2.3.1 Streets

There are more than 20 miles of existing roadways at Kalaeloa in various states of repair, many lacking sidewalks. Through a Memorandum of Agreement (MOA) between the former Barbers Point Redevelopment Commission, the State DOT, and the City, the major roadways within Kalaeloa were transferred from the Navy as shown in Figure 1-7 and form the backbone of the District.

1.2.3.2 Public Transportation

Public transportation in the ‘Ewa region is primarily provided by the City’s “TheBus” system of fixed routes (trunk, local, and express), transit hubs, and the HandiVan special services (see Figure 1-8).

A transit hub to the north of Kalaeloa in Kapolei is connected by TheBus to the transit hub in ‘Ewa, with a limited number of transit stops along Roosevelt Avenue in Kalaeloa. The current terminus of the Skyline rail transit line is at Kualaka‘i - East Kapolei, which is roughly 1.5 miles from the northern boundary of the District.

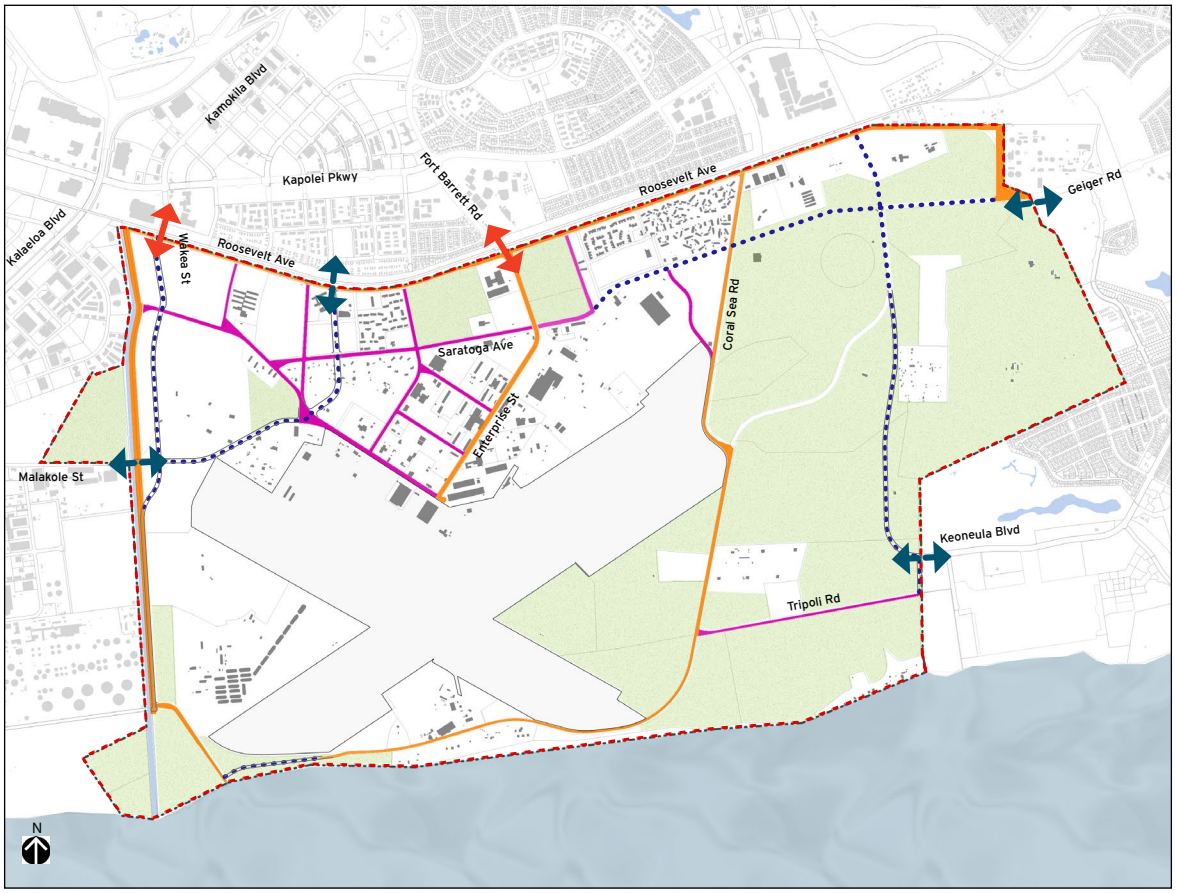


Figure 1-7: 2006 Master Plan Existing and Proposed streets

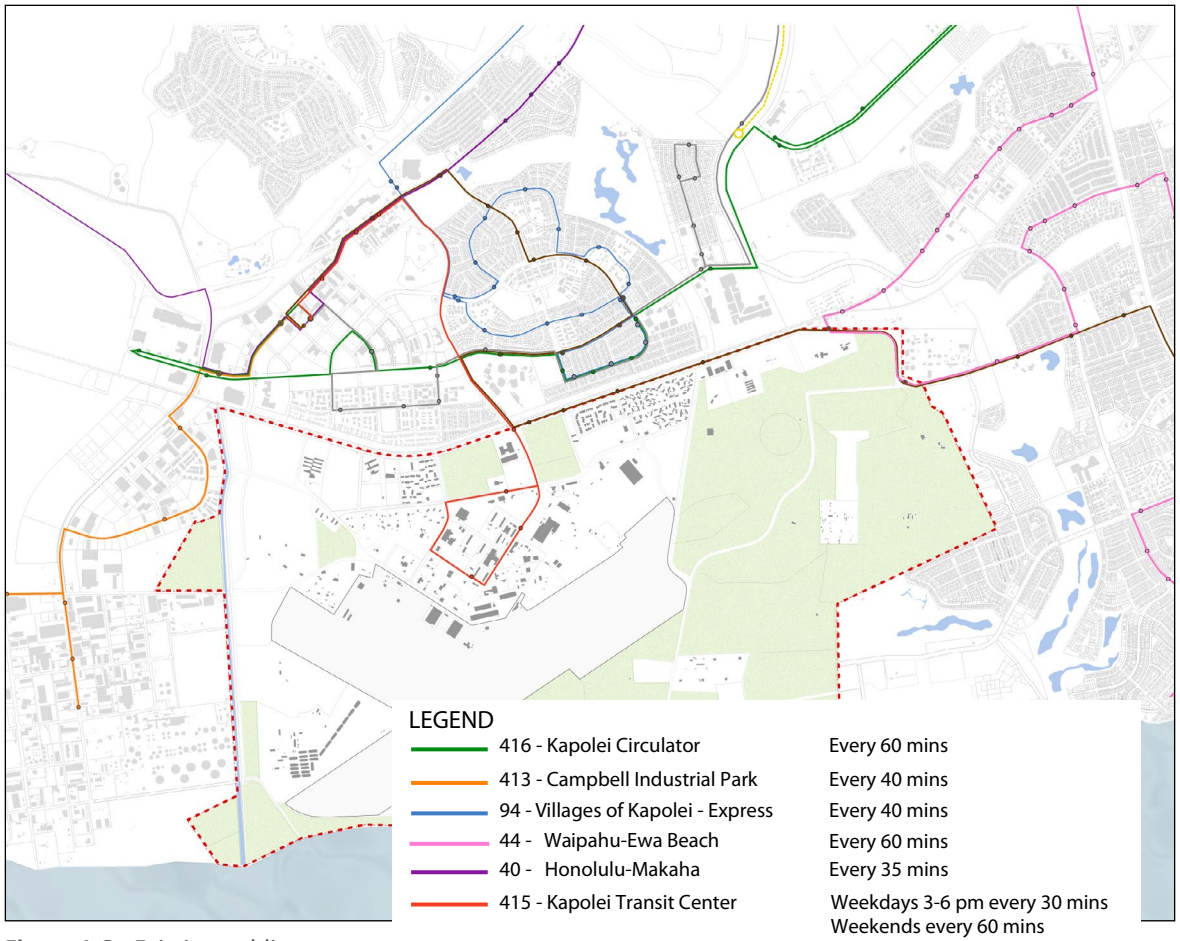


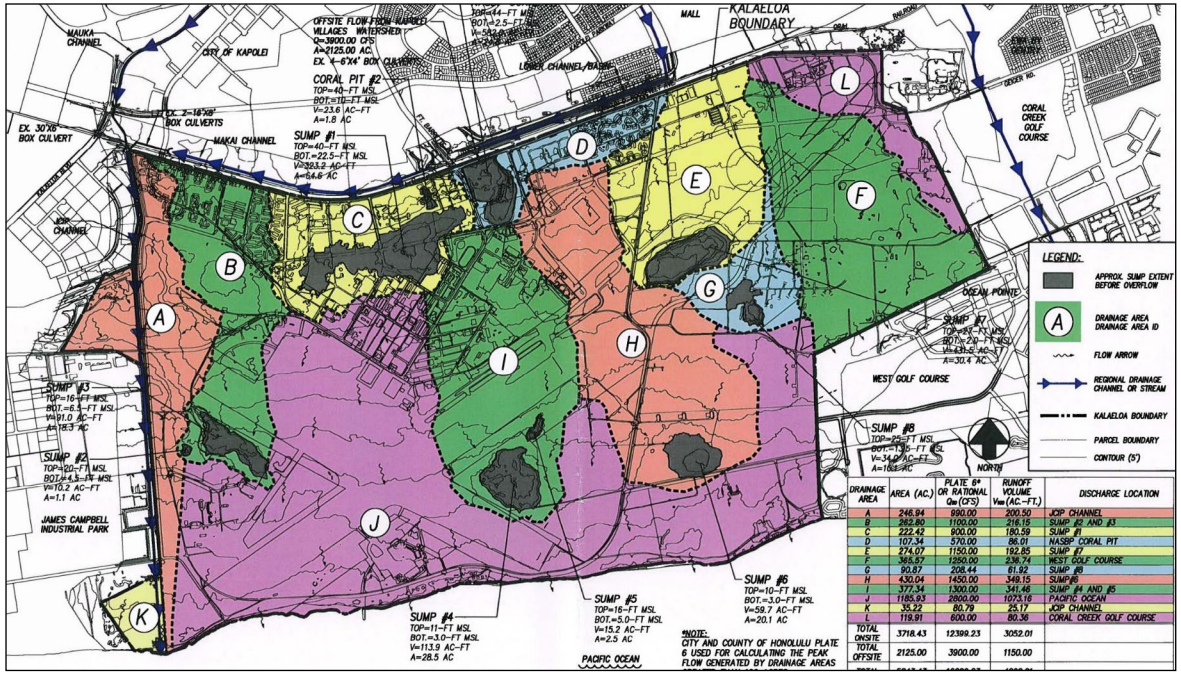
Figure 1-8: Existing public transit network

1.2.3.3 Drainage

In 2017, a Drainage Report was prepared by R.M. Towill Corporation (RMTC). Although a draft report, it remains the most thorough assessment that has been done in Kalaeloa to date. The information in this section is based on that report.

Kalaeloa partially falls within the City of Kapolei watershed and the Kaloi Gulch watershed. The lower limit of the Kapolei Village watershed is the NAS Barbers Point coral pit, located makai of Roosevelt Avenue and east of Enterprise Street on land owned by Hunt Development Corporation. This facility receives all excess runoff not retained in the watershed. Some of the runoff conveyed to this facility was accounted for and approved as the region developed, and some of the drainage is not. The regional watershed boundaries and the limits of Kalaeloa are illustrated in Figure 1-9.

Previous development of Kalaeloa was mainly intended for the Navy's use and the existing drainage system and roadways were not constructed in accordance with State or City standards. The existing drainage system consists of 253 drywells that were located around Navy facilities and permitted by the State Department of Health (DOH), Safe Drinking Water Branch and Underground Injection Control (UIC) Program. The existing capacity of the drywells is unknown, and



DRAINAGE AREA	AREA (AC.)	PLATE 6* OR RATIONAL Qm (CFS)	RUNOFF VOLUME Vm (AC.-FT.)	DISCHARGE LOCATION
A	246.94	890.00	200.50	JCIP CHANNEL
B	282.80	1100.00	216.15	SUMP #2 AND #3
C	222.42	900.00	180.59	SUMP #1
D	107.34	570.00	86.01	NASBP CORAL PIT
E	274.07	1150.00	192.85	SUMP #7
F	365.87	1250.00	236.74	WEST GOLF COURSE
G	90.87	208.44	61.82	SUMP #8
H	430.04	1450.00	349.15	SUMP#6
I	377.34	1300.00	341.46	SUMP #4 AND #5
J	1185.93	2800.00	1073.16	PACIFIC OCEAN
K	35.22	80.79	25.17	JCIP CHANNEL
	119.91	600.00	80.36	CORAL CREEK GOLF COURSE
TOTAL ONSITE	3718.43	12399.23	3052.01	
TOTAL OFFSITE	2125.00	3900.00	1150.00	

Figure 1-9: Existing drainage network. Source: Draft Kalaeloa Drainage Report, R.M. Towill Corporation, June 2017.

maintenance has not been done since the closure of the base in 1999, so they are assumed to be nonfunctional.

Runoff generated in Kalaeloa generally sheet flows across the site in a southerly direction towards the ocean. The majority of onsite runoff flows to one of the ten sumps in Kalaeloa and infiltrates into the ground. The NAS Barbers Point coral pit and existing sump #1 are able to hold runoff from the 100-year, 24-hour storm, but the other existing sumps overflow during 100-year, 24-hour storms.

In particular, existing sumps #2-#6 and #8 do not have the capacity to retain the runoff volume generated by a 100-year storm event with a 24-hour recurrence interval. During such an event, excess runoff will overflow from these sumps and sheet flow to the ocean. A portion of the Kalaeloa Airport and a light industrial area are located downstream of sumps #2-#5; however, no adverse impacts from flooding were determined in previous drainage reports. The remainder of the onsite runoff flows to the coral pit, the James Campbell Industrial Park (JCIP) channel, the Coral Creek Golf Course, the Hoakalei Golf Course, and the Pacific Ocean.

1.2.3.4 Water Supply

In 2016, a draft Kalaeloa Potable Water Master Plan was prepared by RMTC. Although a draft report, it remains the most thorough assessment that has been done in Kalaeloa to date. Portions of that plan were used for this section.

In 2020, ownership of Kalaeloa's water system transferred to the Kalaeloa Water Company (KWC), a private water company and a subsidiary of Hawaii Water Service and the California Water Service Group. The majority of Kalaeloa's water system is assumed to have been built in the early 1940s at about the time the NASBP was being established. The water system was constructed according to Navy design standards and does not comply with Honolulu Board of Water Supply (BWS) standards.

Water for Kalaeloa is provided by existing wells and reservoirs located 3 miles north of Kalaeloa. According to the 2015 data from the flowmeter at the wells, the estimated average daily flow is approximately 2.2 mgd. The

water meter readings are closer to 1.0 mgd. Further investigation is underway to determine the cause of this discrepancy or location of system leakage. Most of the existing water demand is generated in the northern housing area, the downtown industrial area located north of Midway Street, and the golf course. Water from the two wells is conveyed by a 24-inch transmission main which terminates in a vault mauka of Roosevelt Avenue across from the northern housing area. From there, distribution is split and water to the northern housing area, golf course, Coast Guard and beach areas is from an 18-inch main and water to the downtown, airport and western industrial areas and school is from a 24-inch main.

The Kalaeloa water system is also connected to the BWS transmission line on Fort Weaver Road. A pressure booster pump located on Geiger Road, at the southern perimeter of the Honouliuli Wastewater Treatment Plant (WWTP), is operated when there is a need to use the BWS water source. The use of BWS water occurs only during emergencies.

Water to the downtown area and Kalaeloa Airport is distributed by a 24-inch waterline and a system of 12-inch and 8-inch distribution mains. Water to the eastern portion of Kalaeloa, the Coast Guard station and beach areas is from an 18-inch waterline with 12-inch and 8-inch distribution lines. Figure 1-10 shows the major water lines of the existing water system.

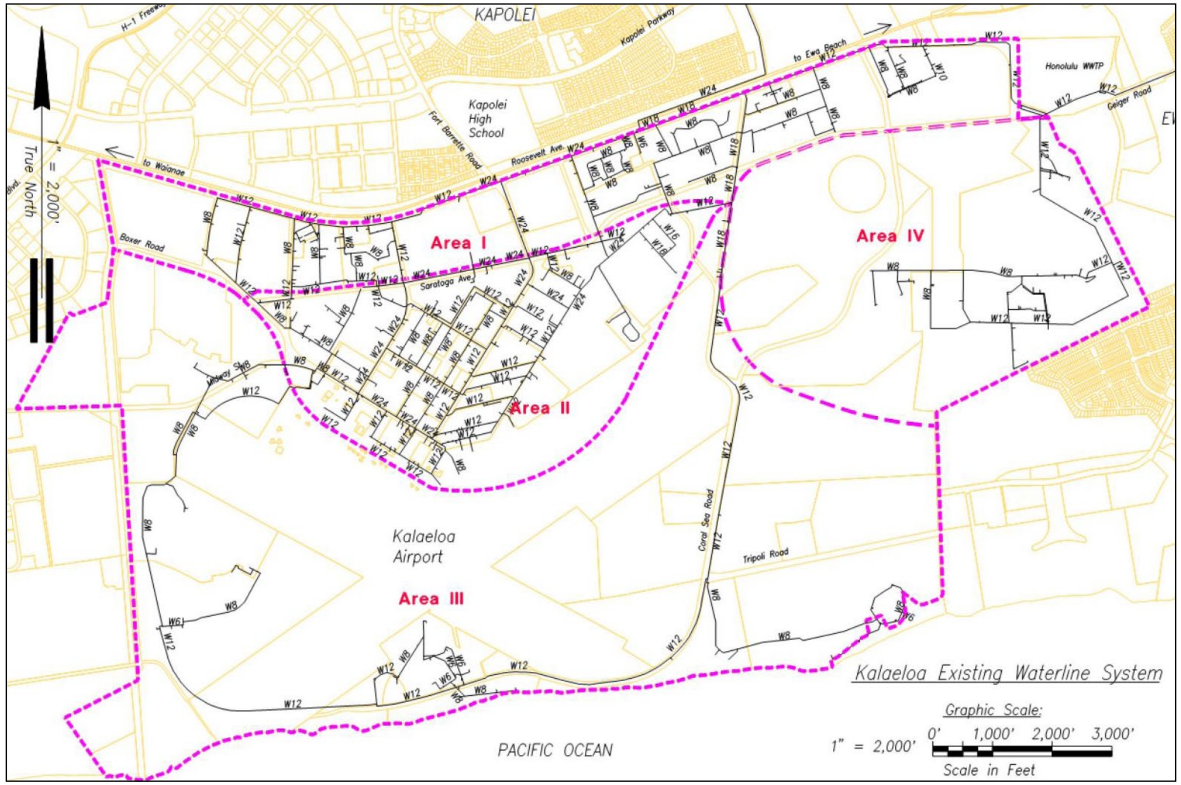


Figure 1-10: Existing Water Supply Network. Source: Draft Kalaeloa Potable Water Master Plan, R.M. Towill Corporation, June 2016.

There are two reservoir sites each with one underground reservoir. One reservoir site includes the wells and the other site has only a reservoir. While each reservoir has a capacity of 1 mgd and are nearly identical in size, due to terrain of these sites the reservoirs were built with a 5-foot elevation difference. Each reservoir is 10-feet high. Therefore, with a 5-foot difference in elevation, one reservoir has only half of its capacity as the system is presently operated so that upper reservoir

is only half full. A 24-inch transmission main connects the two reservoir sites along Farrington Highway.

1.2.3.5 Non-Potable Water Supply

In 2017, a draft Kalaeloa Non-Potable Water Plan was prepared by RMTC. Although a draft report, it remains the most thorough assessment that has been done in Kalaeloa to date. Portions of that plan were used for this section.

Non-potable water is typically for irrigation use and supplied in or described as "purple pipe" water. The BWS entered the water recycling business in 2000 by purchasing the Honouliuli Water Recycling Facility, also known as the BWS Water Reclamation Facility. Water recycling is one element of a broader BWS strategy to protect O'ahu's aquifers and conserve water resources by reducing water use and developing new supplies. The facility is now irrigating golf courses that once used brackish water, including West Loch, 'Ewa Villages, Hawai'i Prince, and Coral Creek.

The reclamation facility currently has a capacity of 12 million gallons per day (mgd) and produces two grades of recycled water. R-1 water is used for irrigational uses, and Reverse Osmosis (RO) for industrial uses. The facility is currently capable of producing up to 10 mgd of R-1 water, which is the highest level of treatment as designated by the Hawai'i DOH for reuse. R-1 water is currently used throughout the state of Hawai'i for golf course irrigation, landscaping, and agriculture. This recycled water begins with secondary-treated effluent from the Honouliuli WWTP. RO is also produced at the facility and is potable. R-2 is the grade of RO water that is distributed to JCIP.

With an increase in potable water demand, the BWS encourages the use of R-1 water to conserve groundwater. As a result of this, BWS is willing to meet the potable water demand if R-1 water is used. R-1 water is available along the northern boundary of Kalaeloa, as shown in Figure 1-11. Use of such reclaimed water within Kalaeloa, however, will require additional (dual) non-potable service lines to designated areas in Kalaeloa.

1.2.3.6 Sewer System

In 2016, a pre-final Kalaeloa Sewer Master Plan was prepared by RMTC. Although a draft report, it remains the most thorough assessment that has been done in Kalaeloa to date. The information in this section is taken from that report. The majority of Kalaeloa's

Figure 1-11: Ewa-Kapolei Recycled Water Distribution. Source: Board of Water Supply, City and County of Honolulu, March 2021

sewer collection system is assumed to have been built in the early 1940s at about the time the NASBP was being established. The collection system was constructed according to Navy design standards and most likely does not comply with City standards. The wastewater collection system is currently owned and operated by Kalaeloa Water Company (KWC), a private entity. After taking ownership of the existing sewer system, KWC repaired some of the leaks that existed in 2016.

Most of the existing wastewater flows are generated in the northern housing areas and downtown industrial area, located north of Midway Street. Sewage from this area is collected into one of two main sewer lines along Midway Street before converging north of Kalaeloa Airport into a 30-inch gravity pipe which then conveys flows beneath the airport runways into a pump station near the southern shoreline. This station conveys sewer flows through a forced main along Coral Sea Road and subsequently discharges into the City's sewer system on Roosevelt Avenue. Wastewater is treated at this facility and is either disposed of through the ocean outfall or conveyed to the BWS Water Reclamation Facility for further treatment and reuse.

Figure 1-12 shows the major sewer lines of the existing gravity sewer system as well as the existing sewer system wastewater pump stations and flow mains.

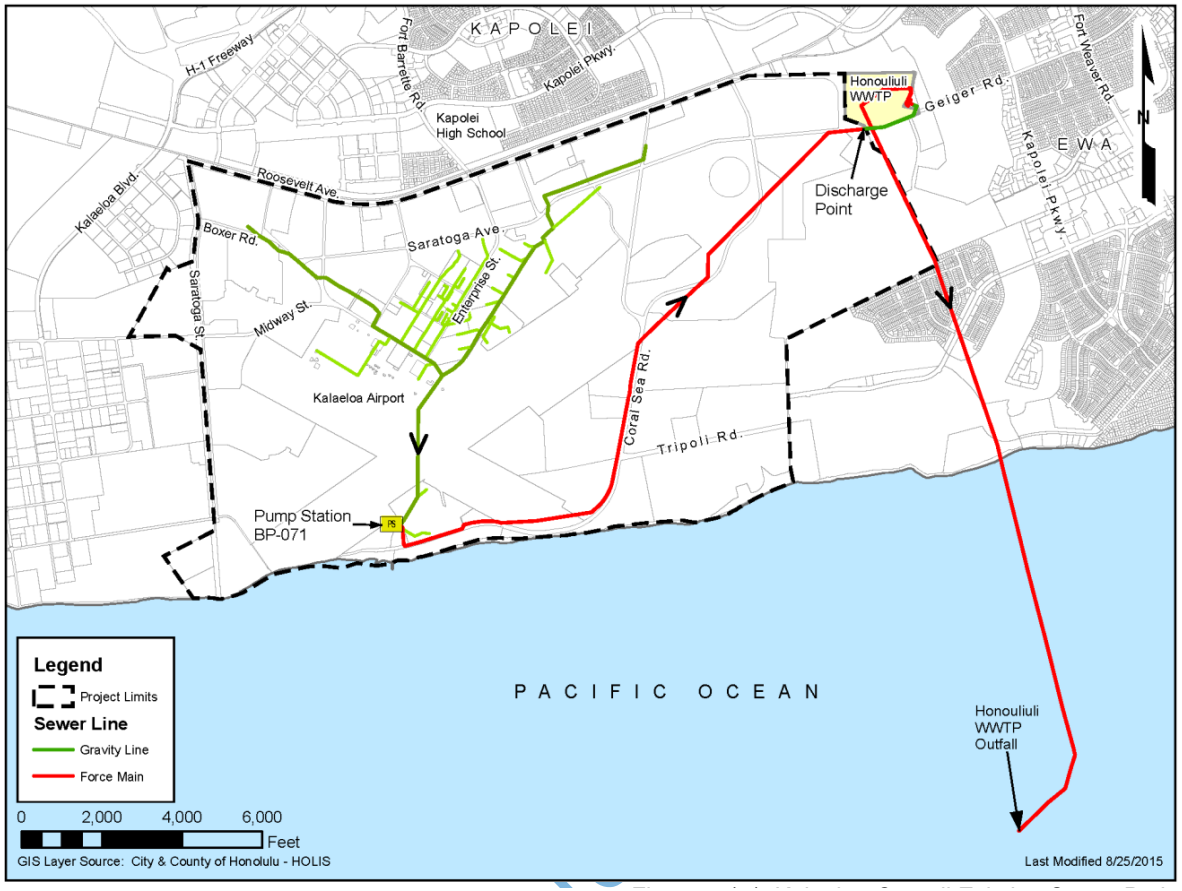


Figure 1-12: Existing Sewer Network. Source: Draft Kalaeloa Potable Water Master Plan, R.M. Towill Corporation, July 2016

Due to Kalaeloa's flat terrain, there are several areas within Kalaeloa that require sewer pump stations (lift stations) for conveyance to the Honouliuli WWTP. There are 12 existing pump stations in Kalaeloa. These stations are the most significant components of the sewage system that do not meet City standards.

1.2.3.7 Electrical System

1.2.3.7.a Existing Distribution System

Most of the existing electrical distribution system in Kalaeloa is owned and operated by the Navy.

Community members in Kalaeloa have experienced extended and frequent power outages for the past decade. The five-year average System Average Interruption Duration Index (SAIDI), which measures expected outage time per year per customer, for Kalaeloa is 569 minutes. This is more than 5 times the national average of approximately 110 minutes. The System Average Interruption Frequency Index (SAIFI), which measures the expected number of outages per year per customer, also exceeds the national average of 1.0 with a current five-year average of 1.8. Poor performance in both indices is a result of minimal funding to maintain and upgrade the electrical distribution system following base closure.

The Navy-owned system is served by three substations, which connect to the District near Roosevelt Avenue. The Navy is responsible for distribution and other ancillary services including billing. The distribution system for Kalaeloa is a combination of 12-kV and antiquated 4.16 kV circuits, both overhead and underground (see Figure 1-13). The dilapidated electrical system has been a barrier to redevelopment, private investment, and job development in Kalaeloa. The Navy no longer has an active mission in the District, and no longer has the funding to upgrade or maintain the system. The HCDA is part of a stakeholder working group, which includes the Navy, Hawaiian Electric (HECO), Hunt Companies, NAVFAC Hawai'i, and the U.S. Coast Guard. The stakeholder working group aims to improve the electrical system in the District and transfer it from Navy ownership.

Since 2018, two 12-kV electric distribution corridors have been built to serve Kalaeloa. These are located at Enterprise Street and Coral Sea Road, and are built to electric system standards accepted by HECO.

Thus far, HECO has been unable to accept the existing onsite Navy system due to concerns regarding the condition and compliance of the infrastructure, and potential environmental liability associated with the system. HECO is the primary electrical utility provider on O'ahu, and any future electrical system at Kalaeloa will likely be an extension of HECO's generation, transmission, and distribution grid.

Figure 1-13: Electric Distribution Systems. Source: Electrical Distribution System Review (Draft Final), C.H. Guernsey Col., April 2020

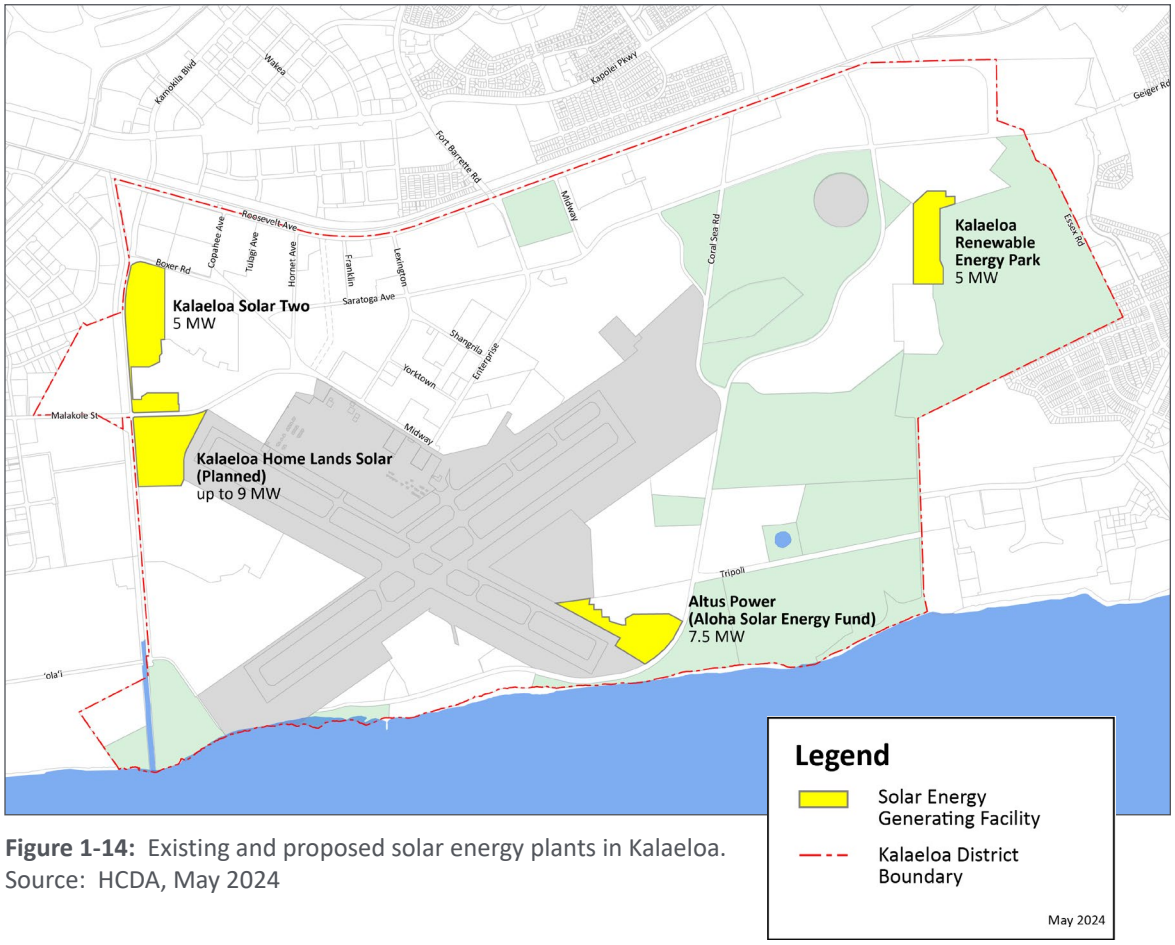


Figure 1-14: Existing and proposed solar energy plants in Kalaeloa.
Source: HCDA, May 2024

1.2.3.7.b On-Site Energy Generation

There are several solar generation facilities within Kalaeloa, see Figure 1-14. The newest is the 5MW Aloha Solar Energy Fund II (ASEF) solar facility, located at the southern end of Coral Sea Road. This generation facility is part of the 12 kV distribution upgrade connecting to the HECO network along Coral Sea Road.

The Kalaeloa Renewable Energy Park is a 5MW generation facility, on 20 acres, completed in 2013.

The Kalaeloa Solar Two is a 5MW generation facility on 36 acres of land leased from DHHL, completed in 2013.

1.2.3.8 Telecommunications

The telephone and communications cable system in Kalaeloa is currently owned by the Navy Computer and Telecommunications Area Master Station. Service is provided to Kalaeloa customers through an agreement with Hawaiian Telcom. Telecommunication service to all DHHL parcels is provided by Sandwich Isles Communication.

1.2.3.9 Airport Zoning

The Kalaeloa Airport and its operations affects the feasibility of certain types of development in Kalaeloa. Incompatible land uses around an airport can affect the safe and efficient operation of aircraft.

Examples of potentially incompatible land uses include:

- Wildlife-attracting land uses such as wetlands and landfills;
- Cellular towers and antennae transmitting signals that interfere with radio transmissions or navigational aids;
- Glare from solar energy photovoltaic panels;
- Lights that may be disorienting to a pilot; and
- Obstructions that may impact an airport's airspace such as tall trees and structures including towers and construction cranes.

Annoyance from aircraft noise levels also limits the compatibility of certain land uses within around the airport. Within an airport's noise impact areas, residential uses and public facilities such as schools, churches, public health facilities, and concert halls are typically sensitive to high noise levels.

Land uses compatible with airport operations include most commercial and industrial uses, especially those associated with air transportation and are appropriately located adjacent to an airport. Land uses where the airport creates demand, such as motels, restaurants, warehouses, shipping agencies, and aircraft-related industries also benefit from convenient access, but may require designs that mitigate proximity effects.

Figure 1-15: Airport Noise Map. Source: JRF 2020 Noise Exposure Map, Alternative 17, HDOT-A, November 1998

Figure 1-15 illustrates the estimated aircraft noise exposure levels at the Kalaeloa airport in terms of a day-night average sound level (DNL). The DNL metric reflects the cumulative sound exposure in A-weighted decibels over a 24-hour period, but also adds an additional penalty to account for increased sensitivity to operations at night.

Most of the Kalaeloa Community Development District lies outside of the 60- or 55-DNL, which is typical for an urban or suburban residential area.[8]

Runway protection zones (RPZs) and height restrictions along the path of aircraft landing and takeoff strips also limit vertical development. Figure 1-16 shows the FAA height restrictions around the Kalaeloa airport that are intended to preserve safe air navigation. The maximum zoning height limit under T5 Transect is 90' and is well under the horizontal surface height restriction around the airport, which is 150-feet above ground level or 174' above sea level.

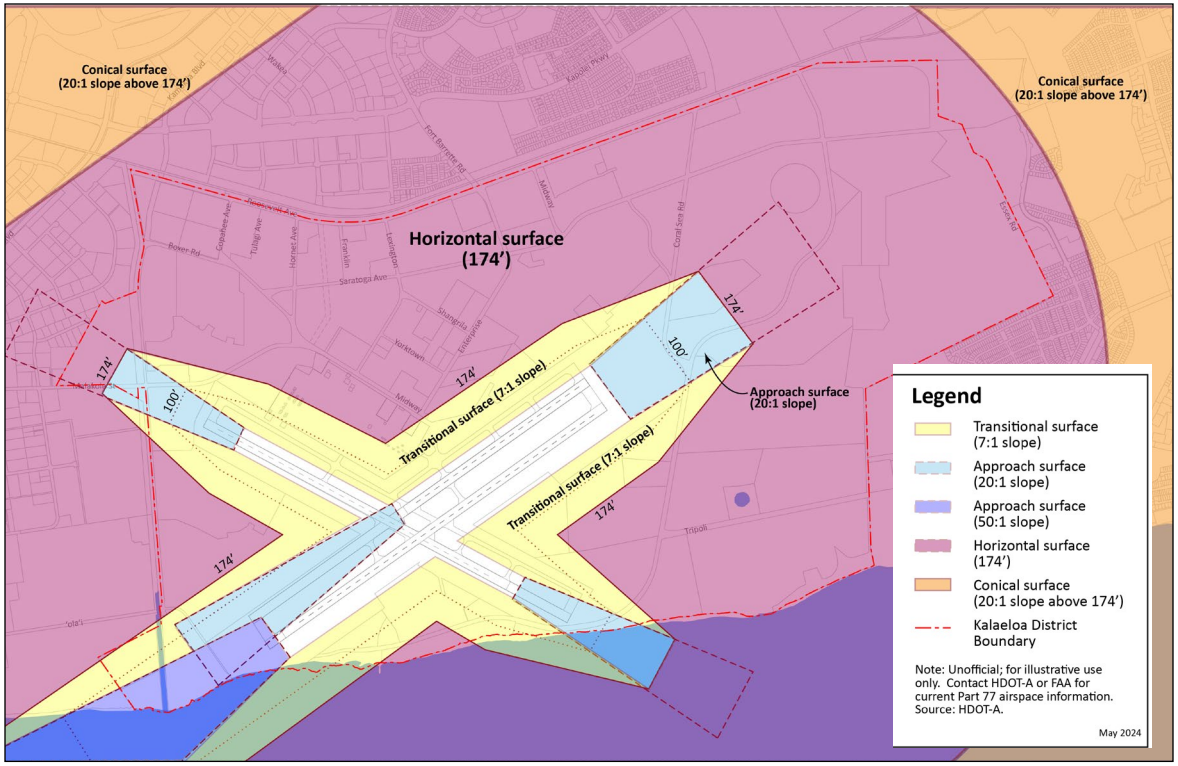


Figure 1-16: Kaleloa airport height restrictions (unofficial). Source: HCDA and HDOT-A, May 2024

[8] https://www.faa.gov/regulations_policies/policy_guidance/noise/community

1.2.4 Existing Structures and Recent Development

Figure-ground diagrams are drawings that illustrate the relationship between the built and the unbuilt environment within the study area. Land coverage of buildings is visualized as grey solid mass (figure), while public spaces formed by streets, parks and plazas are represented as voids (ground). Such diagrams are used to explore built form patterns and the continuity of open space (see Figure 1-17).

Development in Kalaeloa has been relatively slow since the adoption of the 2006 Master Plan, presumably due to proximity to the various military uses, inadequate infrastructure, and airport land-use considerations. Meanwhile, neighboring areas, namely Kapolei to the north and Hoakalei to the east have seen significant development. The 2020 figure ground diagram illustrates the "grain" and scale of new development at that time, of which the most significant was the FBI Field Office, meant to serve as a gateway and catalyst for new construction in the area.

Since 2020, the pace of development and redevelopment has picked up. Figure 1-18 provides an overview of major assets within the District. The Kalaeloa Professional Center on Shangrila Street provides almost 50,000 SF of Class A office space for financial, medical, and other professional services, and includes a wing for the Warrior Ohana medical facility.

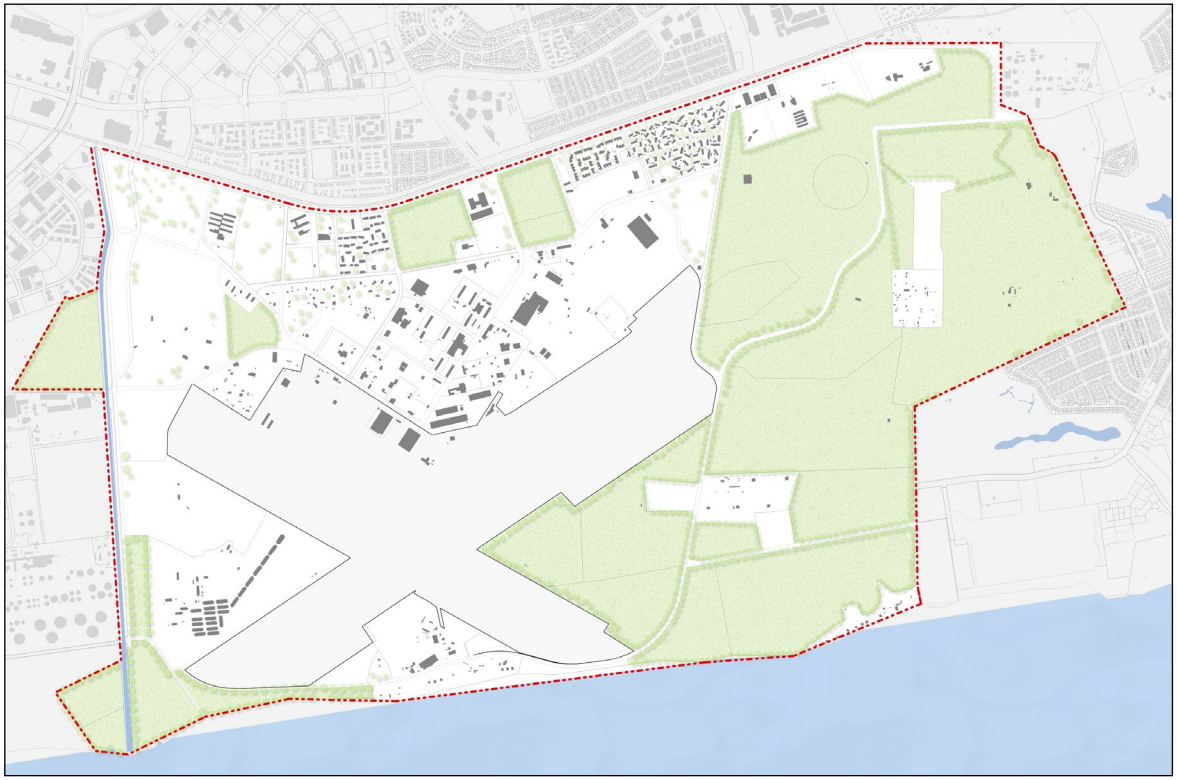


Figure 1-17: Kalaeloa figure ground diagram. Source: HCDA, 2020

A former Navy Exchange furniture store was redeveloped and now houses Five Star Transportation, a large distribution company.

Also redeveloped was the former Navy Bachelor Officer's Quarters (BOQ) which currently provides 100 affordable rental units. The BOQ mess hall was transformed into an educational facility for DreamHouse Public Charter School. Other building renovations have resulted in upgraded spaces for the convenience store and gas station and bowling alley.

New construction includes the Daniel K. Akaka VA Outpatient Clinic with approximately

90,000 SF for specialty medical services and veteran support. The facility began operations in 2024. As part of this construction, Kamokila Boulevard was extended makai-ward and utility improvements were installed on Roosevelt Avenue, Boxer Road, and Copahee Avenue. East of the VA Clinic, Gentry Homes is constructing some 400 units on 30 acres, including single family detached and multifamily attached units. Twenty percent of the floor area is being set aside in accordance with the HCDA's reserved housing rules. The first homes were delivered in 2024.

Kalaeloa provides the foundation for an equitable, livable, and locals-serving community.

The Daniel K. Akaka Department of Veterans Affairs Clinic opened in April 2024.

The Wakea Garden Apartments provides 100 units in the former Bachelor Officers Quarters (BOQ).

The former NEX furniture store was renovated for use as a transport and distribution business.

The Kalaeloa Professional Center

Kalaeloa Key Assets

Employment Centers

- FBI Hawai'i Field Office
- Hawai'i Army National Guard
- Kalaeloa Airport
- Veterans Affairs Clinic
- Kalaeloa Professional Center

Cultural and Historic Resources

- Kalaeloa Heritage Park
- 'Ewa Plain Battlefield
- Ordy Pond
- Historic Buildings and their adaptive reuse

Education and Learning Resources

- Barbers Point Elementary School
- DreamHouse Charter School
- American Renaissance Academy
- Corvid Academy
- Ulu Ae Learning Center
- Kalaeloa Youth Challenge Academy
- Barbers Point Flight School

Parks and Recreation

- White Plains Beach
- Eisenhower Beach
- Nimitz Beach
- Pointer Fields
- Barbers Point Bowling Alley
- Coral Crater Adventure Park

Figure 1-18: Kalaeloa Major Site Assets. Source: HCDA, May 2024

1.2.5 Physical Environment

1.2.5.1 -Topography and Soil

Kalaeloa is relatively flat, with an average slope across the site of about 0.5 percent. The ground surface slopes gently southward from a maximum elevation of approximately 65 feet above mean sea level at the northern boundary to mean sea level at the shoreline (see Figure 1-19).

Soil cover across nearly the entire site consists of a thin layer of friable, red material present in cracks and crevices on coral outcrop. Mamala stony silty clay loam is found along the northern, western, and eastern boundaries. This soil type is moderately permeable, with slight to modern erosion potential. Beach sand is found along the south shore, and the airfields are situated on filled land.

The geology and soils of the coastal plain area of the ‘Ewa district of O‘ahu, including Kalaeloa, consist of limestone and limestone-derived “coral” soils. The coral and limestone were created when sea levels were as much as 250 feet higher than present day elevations.

Coral reefs developed in these coastal ocean areas and much of the coral deposits were transformed to limestone through natural geologic processes.

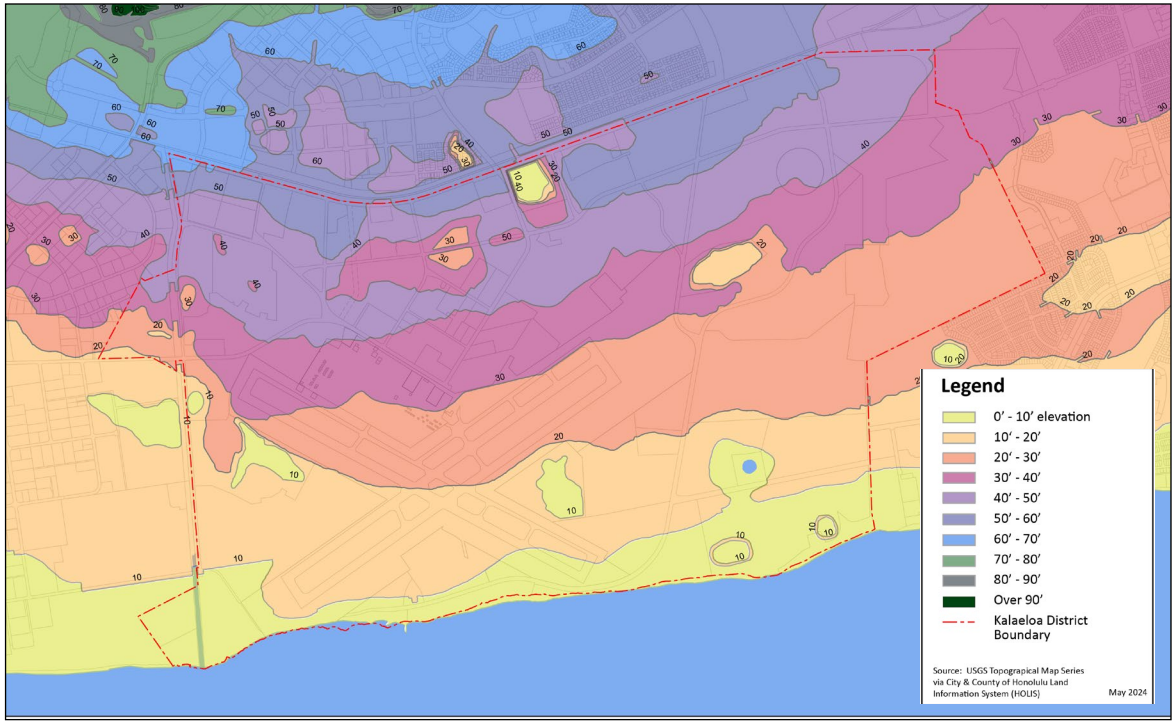


Figure 1-19: Topography

1.2.5.2 Flood Hazards

Per the Federal Emergency Management Agency’s 2011 Flood Insurance Rate Maps (FIRM), the shoreline at Kalaeloa along with the canal at the southwestern edge of the site are the only areas within a Special Flood Zone Area, as seen in Figure 1-20. The developable areas of Kalaeloa have not been determined to be within flood zones.

Figure 1-21 shows areas vulnerable to tsunami. The vast majority of the developable area in the District is in the tsunami “Safe Zone.” The southern half of the District, most of which is not suitable for large-scale urban development, is in the “Extreme Tsunami Evacuation Zone”—this is the extent to which wave run-up is projected to occur in an extreme tsumani event. The Kalealoa

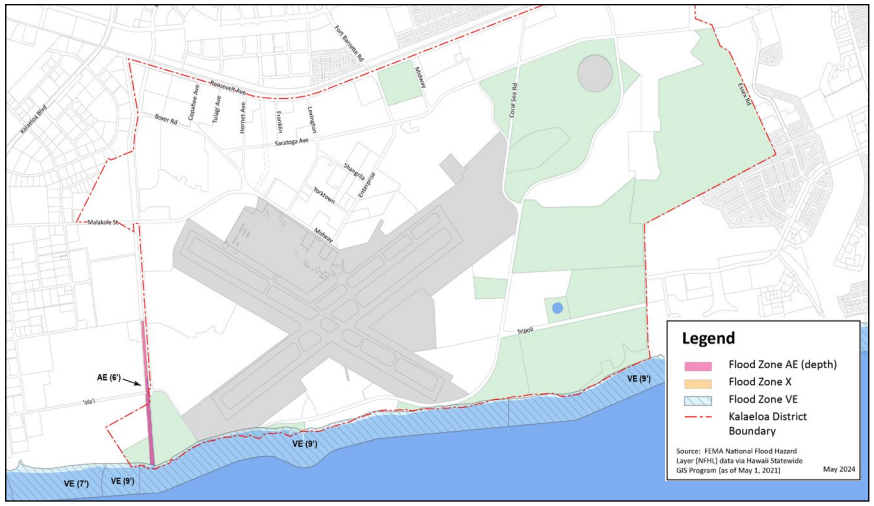


Figure 1-20: Flood hazard zones

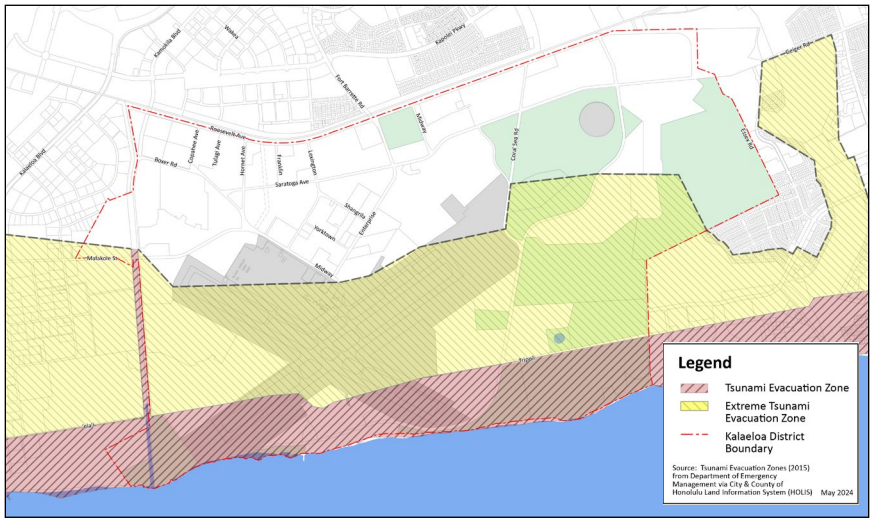


Figure 1-21: Tsunami evacuation zones

Figure 1-22: 3.2-Foot Sea Level Rise Exposure Area

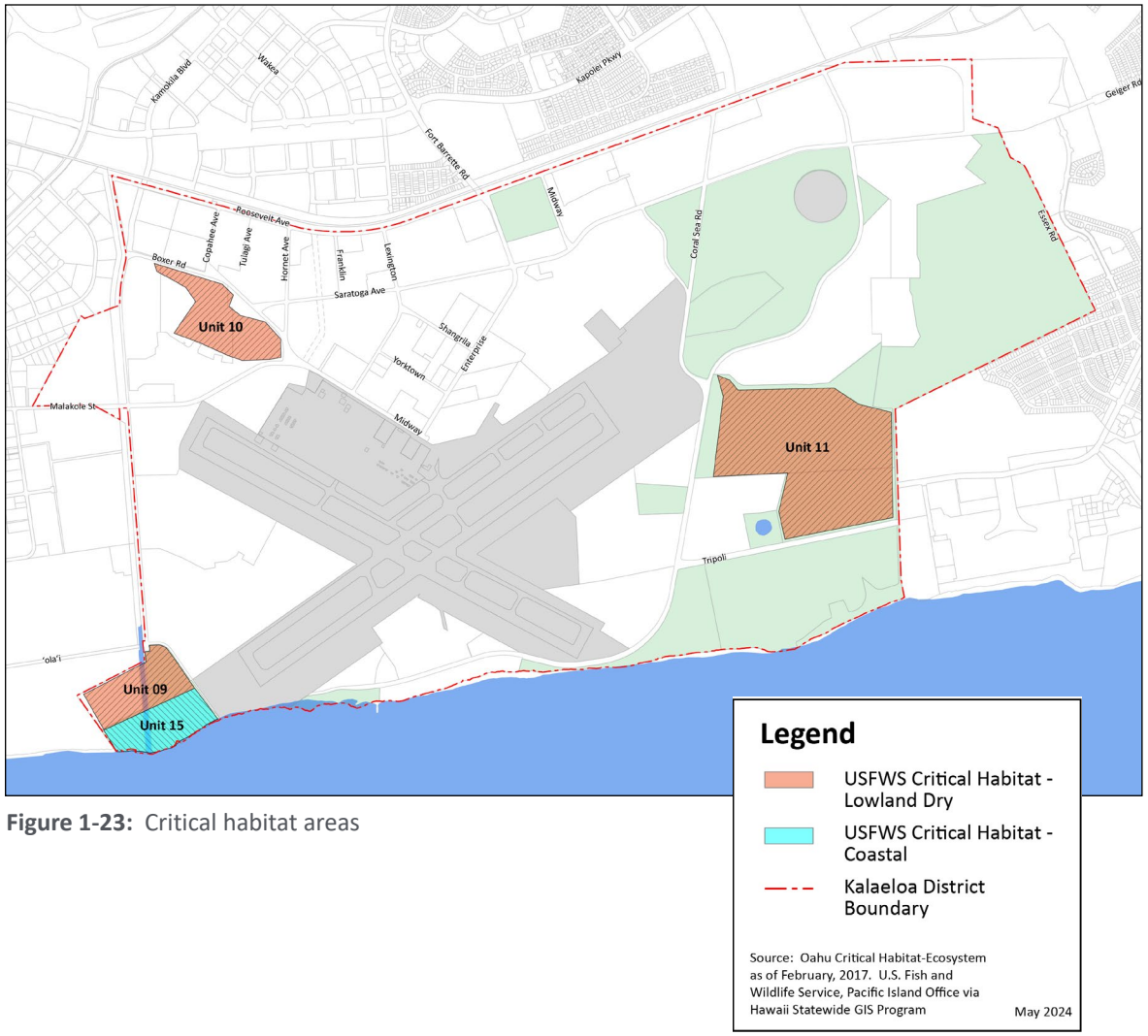


Figure 1-23: Critical habitat areas

shoreline and Campbell ditch are located in the "Tsunami Evacuation Zone."

Global climate change and projected increases in sea level are expected to affect the District's coastal area. Figure 1-22 shows portions of the shoreline that would be inundated with a 3.2-foot rise in sea level by the year 2050. In addition to beaches and coastal land, models of sea-level rise also project inundation occurring around sinkholes (such as Ordy Pond) as rising groundwater spills over.

1.2.5.3 Protected Species and Habitat

Two federally-listed endangered plant species exist at Kalaeloa. The endemic 'akoko shrub (Chamaesyce skottsbergii var. skottsbergii) occurs in at least three separate locations, including the area east of the airfield. The USFWS has established a critical habitat area for this species which is shown in Figure 1-23. A single colony of endemic round-leafed chaff-flower shrubs or ewa hinahina (Achyranthes splendens var. rotundata) is found at the southwest corner of Kalaeloa. In addition, pua pilo (Capparis sandwichiana var. zoharyi), an endemic shrub federally listed as a species of concern, is known to exist in the same area as the Achyranthes splendens var. rotundata.

Ordy Pond (an anchialine pond east of the airfield), the coastal salt flats between Runway 4R-22L and Taxiway K, as well as the western boundary of Kalaeloa are frequented by the

federally listed endangered Hawaiian black-necked stilt (Himantopus mexicanus knudseni) and other migratory bird species. The state-listed endangered Hawaiian short-eared owl (Asio flammeus sandwichensis), federally listed as a species of concern, may occur or range over Kalaeloa.

The threatened green sea turtle (Chelonia mydas) is known to frequent the area immediately offshore of Kalaeloa.

1.2.5.4 Climate

Climate conditions of the region are fairly constant and relatively dry. Long-term climatic data at Kalaeloa indicate mean daily maximum and minimum temperatures of 81 and 69 degree Fahrenheit, respectively; mean annual rainfall of 20.3 inches on the ʻEwa Plain with slightly higher figures for the upland area; and prevailing winds from the northeast at 9 knots. Also, solar insolation data for Kalaeloa show that the area produces approximately 1,800 BTUs per square foot or 5.8 peak sun hours, making it among the highest in the state for solar radiation. Any locale that receives 4 peak sun hours or more is considered a good site to produce useful amounts of solar energy.

1.2.5.5 Ground Water

The groundwater under Barbers Point is within aquifers that are part of the ʻEwa aquifer system of the Pearl Harbor aquifer sector. A confined aquifer in a deep layer of basalt, as well as a shallow unconfined aquifer in the overlying caprock, are present under Kalaeloa.

The groundwater in the confined aquifer is brackish with a chloride content ranging from 250 to 1,000 milligrams per liter and considered too deep to be contaminated from the surface. According to the Federal Safe Drinking Water Act, this aquifer qualifies as a source of drinking water. The State, however, has a more stringent standard for salinity and does not consider this aquifer a source for potable water use.

The shallow aquifer at Kalaeloa is brackish with chloride content ranging from 1,000 to 5,000 milligrams per liter; the water is not suitable for consumption or irrigation without desalination. This aquifer is at approximately 50 feet below ground surface along the northern boundary and at sea level along the shoreline. The aquifer is susceptible to contamination and no production wells have been developed.

1.2.6 Regional Economy

The sections below provide information on historical trends that have shaped the ʻEwa region, market trends to assist in projecting demand for particular land uses that could be located at Kalaeloa, and long-term trends associated with the growth of the island and regional economy that can create demand for new products and activities.

1.2.6.1 Population

Prior to the closure of the ʻOahu Sugar Company in the early 1990s, much of the ʻEwa region was dedicated to sugar cane cultivation. During the 1990s, the cane fields yielded to newly constructed homes. Growth for the second city started along Kamokila Boulevard, a new commercial spine, with residential development east of Fort Weaver Road, between Farrington Highway and North-South Road (subsequently Kualakaʻi Parkway). In recent years, new communities, such as Hoʻopili and Hoakalei/Ocean Pointe, are filling in the lands between Kapolei and ʻEwa Beach to create a continuous urban swath across the ʻEwa Plain.

The region's rapid growth is reflected in demographic statistics and forecasts. According to data reported by the Honolulu Department of Planning and Permitting (DPP), in 1990, the ʻEwa Development Plan (DP) Area had a population of 42,931 or 5% of total population on Oahu (Annual Report on the Status of Land Use on Oahu, Fiscal Year 2021). By 2020, population in the ʻEwa DP Area had grown to 127,480 or 13% of the island-wide total. Thus, in the 30 years between 1990 and 2020, the region's population increased by almost 200%. Looking forward to 2045, the ʻEwa region is projected to have 180,300

residents or a 17% share of total population on Oahu.

Kalaeloa together with James Campbell Industrial Park (JCIP) form a single geographic subarea in DPP's Annual Report. If JCIP is assumed to have a negligible residential population, the 2,421 persons in the subarea reported in the Fiscal 2021 Annual Report can be considered residents of Kalaeloa. In comparison, the 1999 BRAC FEIS reported that NASBP had a population of 2,152 comprising persons living in family housing. (The count excluded personnel living in bachelor quarters.)

1.2.6.2 Housing

In 2020, the ʻEwa DP area had some 38,724 housing units or a 10% share of the island-wide housing stock. By 2045, the number of housing units in ʻEwa is projected to increase to 78,100 which would constitute 19% Oahu's inventory. In other words, almost 1 out of every 5 housing units would be located in the ʻEwa region.

DPP reported that the Kalaeloa subarea had an estimated 822 housing units in the 2020 timeframe. Of these, 664 units were occupied and 158 were vacant. All occupied units were rentals.

In line with the lack of homeownership, median household income is relatively low in Kalaeloa. For the period 2016-2020, annual median income in Kalaeloa was estimated to be $62,939. In contrast, annual median income was $107,841 in the ʻEwa region and $87,772 across Oahu.

DPP's residential assessment identified a housing shortage through 2027 (the last year for which data were available for analysis), but a shortfall is likely to extend well beyond. The shortage is primarily for affordable units, particularly for households earning 80% of the median or below. Within the ʻEwa region, the Kalaeloa subarea has one of the highest capacity for new housing development.

1.2.6.3 Employment

In 2020, an estimated 37,700 jobs were located in the ʻEwa region. The employment base is diverse: spread across the industrial, commercial, retail, and government sectors. By 2045, ʻEwa is projected to experience 77% growth in employment reaching some 66,800 jobs.

The outcome would be a shift in ʻEwa's share of Oahu employment from 6% to 9%.

1.2.6.4 Economic Forecast

Oʻahu's planners and political leaders have long intended the Kapolei area to become the secondary urban center on the island. Plans for regional development have emphasized a diversity of land uses, with space for residential, commercial, and industrial activities. Significant investments have been made in public facilities, including schools and parks, major arterials and interchanges, and the rail system linking Kapolei and Downtown Honolulu.

While Oʻahu as a whole is anticipated to have stable and consistent economic growth over the planning horizon of this master plan, the ʻEwa region is likely to see growth that is equal to, or greater than, the rest of the island. The Kalaeloa District is primed to participate in these economic changes.

An additional incentive for industrial, commercial, and residential investment in Kalaeloa is its designation as a federal Opportunity Zone. Kalaeloa is one of 25 census tracts in Hawaiʻi participating in a community development program established by Congress in the Tax Cuts and Jobs Act of 2017. The intent of this program is to encourage entrepreneurship and expand capital for economically distressed areas through federal tax benefits. The Opportunity Zone program is currently slated to run through the end of 2026.

1.3 Stakeholder Engagement

1.3.1 Site Visit and Charrette

The community engagement effort was originally envisioned as a five-day charrette for the project team to meet onsite with local stakeholders and members of the public to talk story and collaborate. However, due to the COVID-19 pandemic, the bulk of community interaction and design workshopping was modified to charrettes at the Barbers Point Bowling Center and the Kalaeloa Professional Center over two and a half days between June 29 to July 1, 2021. The sessions focused on discussions of Kalaeloa's future, including proposals for development and feedback. Tours of the District and neighboring communities allowed the project team to experience the local context and assess the feasibility of Master Plan goals.

Given the world-wide health emergency, there were few opportunities to collaborate in-person. Regardless, the project team was committed to a robust community engagement process. Through virtual meetings with stakeholders and members of the community, the team received valuable input that would help shape its assessment of the District and influence community design.

1.3.2 Community Meetings

A virtual public presentation in July 2021 provided an overview of the District, site analyses, land use programming, and an introduction to the design and development teams. Break-out sessions enabled community members to receive more information and discuss the strengths, shortcomings, wants and needs for development in Kalaeloa. Community feedback focused on housing affordability, open space access, and neighborhood identity. Participants emphasized a need for residential development that is economically accessible to existing residents. They highlighted the need for recreational opportunities such as parks and beach access. Community members also spoke of a desire for Kalaeloa to reflect the existing character of the area, including its cultural, natural, and military histories, as well as their values such as family-oriented neighborhoods and communal responsibility.

1.3.3 Permitted Interaction Group

The Kalaeloa Community Development District Master Plan and Rules Amendment Permitted Interaction Group (PI Group) was established in 2021. Composed of Authority members and volunteer members, the PI Group provided guidance to the HCDA staff and consultant in a series of meetings through 2023. The PI Group reviewed and commented on early drafts and provided recommendations to the Authority.

1.3.4 Stakeholder Meetings

Engagement with local stakeholders began before the charrette and continued throughout the planning process. Meetings with local agencies, landowners, and interested parties informed and guided the master plan update. Talk stories were a part of stakeholder outreach to better understand important Kalaeloa assets and learn more about community issues and concerns.

1.3.4.1 Public Entities

1.3.4.1.a FBI Honolulu Field Office

The FBI Field Office is a government-leased property that was intended to be a catalytic gateway project for future development in Kalaeloa. Employees mentioned right-sized infrastructure and desire for a multi-modal transportation network.

1.3.4.1.b Hawai'i Army National Guard

Major military construction projects are currently in the pipeline for the National Guard to increase capacity and readiness. Guard personnel commented that there is no on-site mess hall to serve the large employee population and better connectivity to the surrounding area would be mutually beneficial.

1.3.4.1.c Department of Hawaiian Home Lands

DHHL holds a sizeable amount of land in Kalaeloa, the majority of which is used for light Industrial uses, notably short-term leases for trucking and storage and longer-term leases

for solar projects. A deterrent to residential development is the inadequate state of existing infrastructure.

1.3.4.1.d Honolulu Board of Water Supply

Kalaeloa's potable water needs are currently being met by Hawaii sWater Company, a private company. Although BWS has no plans to take over water supply, it is planning to construct a desalination plant within the District that is expected to be completed by approximately 2028 and operate for at least 20 years.

1.3.4.1.e Kalaeloa - Hawai'i Department of Transportation

Kalaeloa Airport is a resource for businesses, training, and recreational aviation activities. It plays a critical role improving safety and efficiency at Honolulu International Airport by accommodating many of the general aviation operations that would otherwise occur there. Statewide, the airport supports emergency activities, such as U.S. Coast Guard marine search and rescue as well as Hawaii National Guard rapid deployment from their Kalaeloa facilities. Because Kalaeloa Airport is recognized as an important asset for the state's aviation system, the Kalaeloa Airport Development Plan identifies ongoing and future safety and security enhancements and capital improvement projects.

The DreamHouse Academy is located in rehabilitated former Bachelor Officer Quarters (BOQ) mess hall.

1.3.4.1.f Honolulu Authority for Rapid Transportation (HART)

Given changes in the rail project's construction timeline, it is premature to designate a specific route for the rail extension into Kalaeloa. Regardless, a pedestrian-friendly environment would bolster future transit developments by rail and/or bus.

1.3.4.1.g Honolulu Fire Department (HFD)

The HFD does not have a station at Kalaeloa at present, but will require one in the future. The department has identified what it considers an ideal site, adjacent to the FBI facility, which would provide land for a new station, indoor classrooms, storage, and a large outdoor training facility.

1.3.4.1.h Barbers Point Elementary School

Barbers Point Elementary School has a capacity for 700 students, but the facility is outdated and needs refurbishment. Off campus, surrounding streets lack continuous sidewalks and there are no streetlights. Development of safe pedestrian and bike routes to and from the school would greatly benefit the students.

1.3.4.1.i DreamHouse Academy Public Charter School

DreamHouse Academy opened in July 2020 in a leased building adjacent to Wakea Apartments. The school will be moving in 2024 to a permanent facility in Kapolei which will allow expanded enrollment.

1.3.4.1.j Kapolei High School

Although Kapolei High School is located outside the CDD, it is an important local stakeholder in planning for Kalaeloa. In 2021-22, there were slightly over 2,000 students enrolled in grades 9 through 12. Kapolei High School will experience enrollment pressures as residential growth continues in the school's catchment area. The high school itself is located within a 20-minute walk of most areas slated for residential development in Kalaeloa and is within a 30-minute bicycling area of almost the entire District. There are opportunities to develop safe routes to school for both modes, including a safe crossing through the nearby intersection of Roosevelt Avenue and Enterprise/Fort Barrette Road.

1.3.4.2 Private Entities

1.3.4.2.a Hawaiian Electric (HECO)

The electrical grid in Kalaeloa is owned by the Navy, run by a subcontractor, and powered by a HECO substation. HECO is interested in acquiring ownership of the grid. Climate-change-induced sea level rise is not projected to affect existing electrical infrastructure.

1.3.4.2.b Hunt Companies Hawai'i

Hunt owns the majority of developable land in Kalaeloa and frequently produces planning studies to guide development on their parcels. Hunt's insights and community comments

Ka'ulu by Gentry single detached homes.

from previous outreach efforts have helped inform this Master Plan amendment.

1.3.4.2.c Ka Makana Alii Shopping Center

Ka Makana Alii Shopping Center, the region's largest retail complex, is located on the mauka side of Roosevelt Ave, across from the District on the eastern side. The Center's management has indicated expansion plans to develop along Roosevelt Avenue. Egress and ingress issues are a top concern given the historic railroad easement and the status of the Kualakai Parkway extension.

1.3.4.3 Neighborhood Boards

Neighborhood board members expressed concerns about traffic and infrastructure capacity. Roadways, utilities, and public spaces should be appropriately designed to meet the needs of proposed development. Comments were also received about the need to carefully consider housing typologies.

1.3.4.4 Community Members

Individual community members provided input on the future of Kalaeloa throughout the planning process. The following reflect their mana'o and issues of concern:

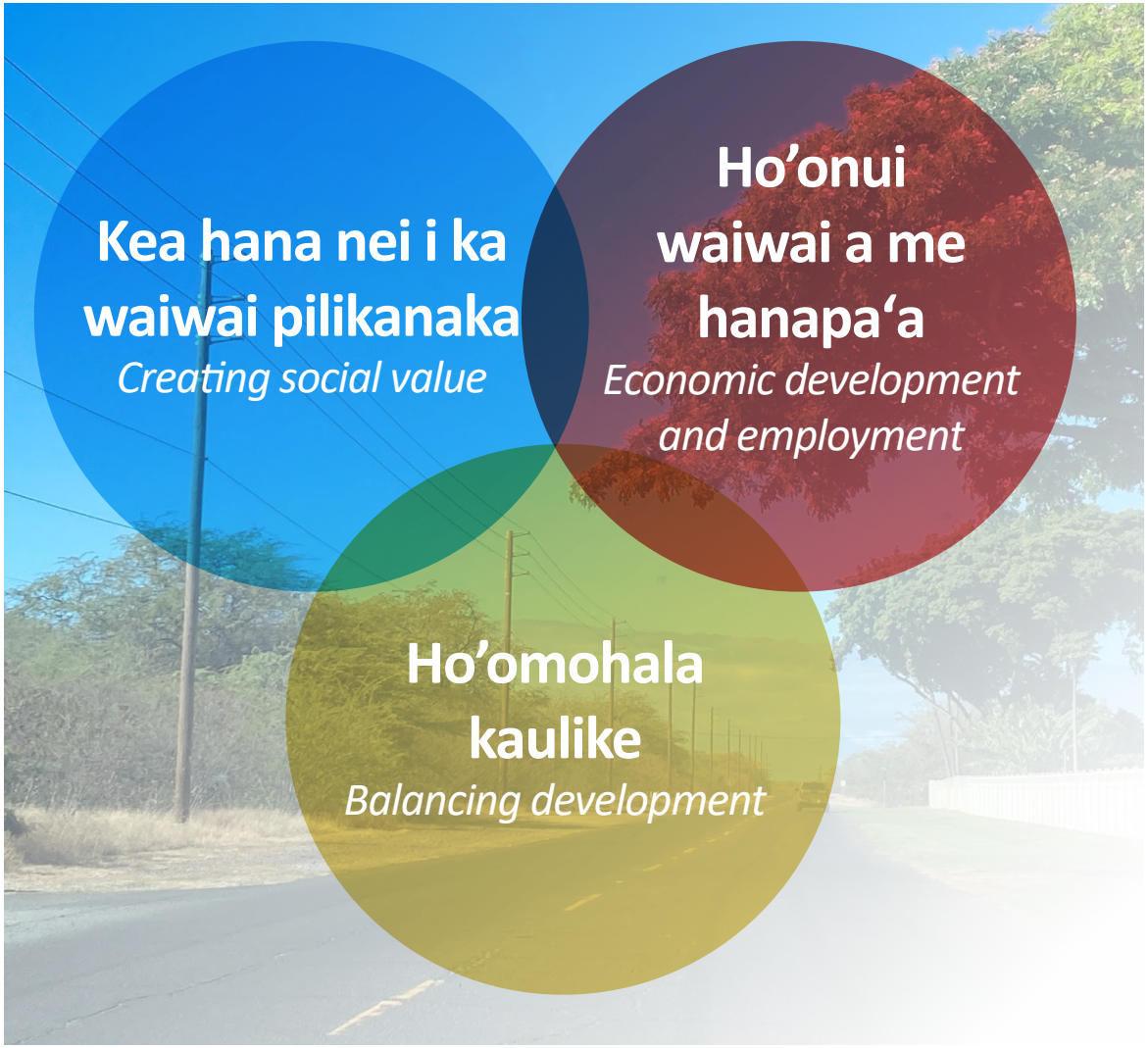
- Future uses and potential development must look at what is needed versus what is wanted.
- Development and redevelopment need to be mindful of the impacts on natural resources and the environment.
- Long-term planning should consider whether there are sufficient local government resources.
- Current uses in Kalaeloa seem to be mostly for recreation. Walkable, open market, and retail spaces can support small, local businesses. There is a need for retail and warehouse spaces for small local businesses, and this need should be taken into account for future uses in Kalaeloa.
- Land use for solar farms in Kalaeloa and other renewable energy sources are very important for the island, as is local food security.
- There are opportunities to incorporate cultural and agricultural uses in Kalaeloa.
- There are many cultural and historic sites throughout Kalaeloa, especially on the Diamond Head end. The areas with the sensitive sites are along Coral Sea Road.
- Kualaka'i Trail was a historic mauka to makai trail and it was well used into the 1920s.
- Archaeological studies from the 1960s and earlier are not comprehensive enough in their review of cultural or sensitive sites. Once this information is gathered, potential uses can be reviewed for suitability.
- Kalaeloa was known as a great place for marine resources, body boarding, and surfing.

Kalaeloa's beaches, including Nimitz Beach, Eisenhower Beach, and White Plains Beach, are popular recreational areas.

2 Chapter 2
Kalaeloa Vision

The vision for Kalaeloa as a center for excellence, as first articulated in the 2006 Master Plan and refined in this amendment according to stakeholder and community input, provides the context for developing the land use plan, called the Regulating Plan, that is discussed in Chapter 3. The sections below present an overview of the major opportunities at Kalaeloa, including:

- Creating social value;
- Providing new economic development and employment opportunities;
- Balancing development with addressing regional traffic congestion and protecting open space, and cultural and natural resources.



2.0 Kalaeloa Vision

Kalaeloa is a Wahi Hookela (Center for Excellence) within the ‘Ewa region.

Kalaeloa is a community where Hawai‘i’s people can gather to share cultural knowledge and develop technical expertise, invest in a brighter future while faithfully protecting the area’s living history.

This is an independent, but highly accessible Center, providing for the health of its residents and newcomers with a functional and resilient infrastructure, the careful use of water resources, renewable energy technologies, affordable homes, and local food security.

This is a place of restored natural environment and generational connection to the earth - utilizing, preserving, and enjoying the resources of the land and sea.

Through the pursuit of excellence in all aspects of living, Kalaeloa strives to be a model for achievement and self-sufficiency for surrounding communities and beyond.

2.1 Creating Social Value

Quality of life is vital to a community. Although defined on a variety of levels based on an individual's or family's needs, quality of life is often reflected in housing, education, recreation and open space, among others. A community that supports a high quality of life creates social value. Kalaeloa presents an opportunity to do this for residents in the 'Ewa region.

Consistent with the City's vision for a secondary urban center in the 'Ewa region, Kalaeloa is uniquely situated to create a model sustainable urban environment where people can live, work, learn, play, and celebrate. This can be achieved through planning that accommodates and locates appropriate land uses, as described below:

- Creating housing with an affordable component in mixed-use neighborhoods that include home offices, live-work, and commercial spaces, built at densities that reflect market realities and can support buildout of the City's public transit system;
- Developing new housing with multi-modal connectivity and family-friendly amenities, such as low-speed streets with tree-lined sidewalks, and nearby parks and playgrounds at various scales;
- Enabling new learning facilities that are integrated with neighborhoods through safe routes that will serve the needs of Kalaeloa families.
- Establishing a network of open space and recreation facilities that serve to connect neighborhoods while also providing access to the shoreline and cultural and natural resources on the outskirts and in more remote areas. Included in this network is a potential regional park whose function is both recreational and restorative;
- Celebrating Kalaeloa's rich history through planning that acknowledges the District's past and provides continuity for posterity - in particular with the 'Ewa Plain Battlefield and further expansion of the Kalaeloa Heritage Park.

Ewa MCAS Memorial

Multifamily Housing, Janies Garden, Sarasota, FL

2.2 Economic Development

Given the amount of developable land, a functioning airfield and location within the growing ʻEwa region, Kalaeloa embodies strong opportunities for economic development. These include aviation-related industries, alternative energy production, and technology research and development.

2.2.1 Aviation-Related Industries

In its current capacity, the Kalaeloa Airport is relatively limited in its ability to support aircraft operations. Although the potential exists for expanding airport operations to include other uses, such as commuter or air cargo operations, they are currently outside the scope of HDOT-Airports Master Plan for Kalaeloa. Infrastructure and amenity upgrades are necessary to spur next-level development and activity at Kalaeloa Airport.

2.2.2 Technology Research and Development

Technology research and development in Kalaeloa offers the potential to diversify Hawaiʻi's economy, create educational opportunities, and offer quality, high paying jobs for area residents. Kalaeloa's unique location, airfield, and available land can support technology sectors such as alternative energy, biotechnology, aquaculture, neutraceuticals, digital media, remote sensing, hyperspectral imaging, homeland security, and military research, among others. Realization of these industries, however, requires close coordination and partnerships with other government agencies, the University of Hawaiʻi, and technology development corporations.

Of particular note is the development of restorative systems and procedures that replenish and revitalize the local flora and fauna to combat the manmade environmental degradation of the landscape and the adjacent ocean resources. These could include:

- Comprehensive approach to managing rainwater to replenish the aquifer and to help restore the native and edible limu;
- Restoration of native coral colonies;
- Re-establishment of appropriate agricultural production in designated areas to allow growth of native species, such as ʻulu (breadfruit);

Partnerships with organizations already practicing similar efforts in Hawaiʻi could provide Kalaeloa with the capacity to flourish environmentally in the years to come.

2.2.3 Infrastructure

In order to unlock the opportunities of the District, Kalaeloa must have the supporting infrastructure necessary for the Plan's realization, including a network of "complete streets," transit opportunities, and reliable, properly sized utilities for potable and non-potable water, sewer, electricity, and telecommunications services.

Haven Square in New York City is an example of a complete street

2.2.4 Alternative Energy or Ecologically Sustainable Development

Given the continued escalation in fossil fuel environmental impacts, interest in renewable energy resources is increasing. The large tracts of flat, undeveloped land located near HECO's transmission network at Campbell Industrial Park, relatively high levels of solar exposure, and proximity to the ocean, offer the potential to develop alternative resources aimed at reducing Hawaiʻi's dependence on non-

renewable sources. Industries such as solar or hybrid energy generation, biomass conversion, bio-filtration, seawater desalination or other such technologies have development potential in Kalaeloa.

Currently, there are three solar farms in Kalaeloa, generating a combined total of over 15 megawatts with the potential for more throughout the region. While these are horizontal applications that require significant land area, vertically-mounted photovoltaic systems should also be considered for compact sites and land conservation.

In 2012, HCDA funded the design of a new prototype for community development, "Kalaeloa Net Zero Emissions (NZE) Community," that embraced energy efficient systems and sustainable practices. This conceptual study was prepared by Van Meter Williams Pollack in partnership with National Renewable Energy Laboratory (NREL). It envisioned a net zero community that is compact, affordable, and sustains a net zero approach to energy, wastewater, and stormwater management. Although the community was not constructed, the lessons learned through this study remain relevant and should serve as a model for new development in Kalaeloa.

Kalaeloa NZE Community

A New Prototype for Hawai'i Community Development

Designer:
Van Meter Williams Pollack LLP
National Renewable Energy Laboratory

The Kalaeloa Net Zero Emissions (NZE) community is designed to sustain a net zero approach to energy, wastewater, and stormwater on an 18-acre site.

The community includes 389 units in a mix of stacked flats, townhouses, and carriage houses. A central civic hub incorporates commercial spaces, environmental facilities, a community center, post office, and public plaza.

All energy would be generated on-site with rooftop PV panels. Stormwater is harnessed and filtered completely on-site. A natural wastewater treatment facility is also integrated into the site design.

Steward farms, edible landscaping, and an aquaponics greenhouse supports local food production, including fresh vegetables and fish. Compost and recycling facilities are integrated throughout the community.

GREEN FEATURES

- Natural ventilation and daylighting
- Shading of exterior windows & walls
- Building insulation
- Light exterior colors
- Energy star appliances
- Rain screen exterior systems
- Modular/panelized construction
- Roof-mounted photovoltaic and solar hot water systems
- Rain water reuse system
- On-site waste treatment facility

2.3 Balancing Development: The 20-Minute City

The City"s ʻEwa Development Plan promotes the creation of a new urban center situated in Kapolei as a "garden city" of walkable streets and open promenades that will provide jobs, housing, and services for residents in the ʻEwa region. To this end, the Kalaeloa Master Plan adds the concept of the "20-minute city", essentially the geographic scale that allows most human needs and many desires to be located within a travel distance of 20 minutes. In the 20-minute city, automobiles are accommodated but do not determine its scale or urban form.

The HCDA has planning jurisdiction in Kalaeloa and has established land use entitlements, coordinated with land owners, and considered the possible relocation of various land uses within the District to improve the balance of land uses in the ʻEwa region in a manner that supports a reimagined urban environment. With this coordinated planning authority and in collaboration with state and local entities tasked with employing sustainable and equitable policies, achieving many of the goals of the 20-minute city.

2.3.1 The 20-Minute City

Achieving the 20-minute city has several positive implications:

- It is socioeconomically equitable—those without a car could easily access all their needs.
- The need for automotive transportation is reduced and therefore there is a reduction in traffic congestion and a reduction in fuel, which in turn mitigates global warming.
- It promotes walking, biking, and human-powered transportation that improves health. The physical health, social, and environmental sustainability benefits of integrated regional mobility and non-auto-oriented urban design are greater than one compact neighborhood alone could provide.
- The convenient location of services, accessible by multiple modes, saves time and improves quality of life.

The 20-minute city comprises three levels of catchment areas or "sheds": the 5-minute walk shed, 20-minute walk shed, and 20-minute bicycle shed.

Beyond a certain minimum density, a walkable urban fabric is necessary to make the 20-minute city work. That implies a connected network of thoroughfares (streets, passages, paths) and small blocks knitting together the neighborhoods. However, given the presence of the large airport itself, as well as the Army National Guard facility, the Kalaeloa network will have interruptions and places of discontinuity. These discontinuous patches will create what the famed urban planner, Jane Jacobs called, "border vacuums"— where urban life on the adjacent blocks is a bit stunted. Recognizing this inevitability, these imperfections can be an opportunity for more industrial uses, or even areas of restored cultural or natural landscapes.

2.3.2 Project District Approach

The redevelopment of Kalaeloa needs to provide immediate as well as long-term economic value. As such, the HCDA recognizes the need to preserve flexibility in its entitlement efforts to respond to market demands and opportunities as they emerge. To achieve this, a land use regulatory system, based on a cross-section of human settlement known as the "transect of urbanism" replaced the typical parcel-by-parcel zoning

classifications within a larger area orientation called a Project District.

The Project District delineates the boundaries of an area, in this case, the entire Kalaeloa District, and identifies a comprehensive list of permissible land uses, the maximum allowable densities, and an overall infrastructure pattern. It does not, however, require that individual development lots be zoned to a specific use prior to actual development, except for special districts - designated for industrial development or airport-related uses. Rather, the Project District system identifies a conceptual land use pattern to guide development. The advantage to this approach is that it provides flexibility for development to respond to contemporary market conditions within an established land use theme.

2.3.3 Interim Uses

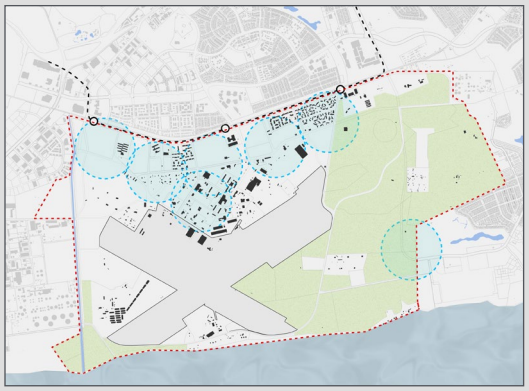
Interim land uses, such as storage and maintenance facilities, are temporary, acceptable land uses that do not preclude the intended long-term, preferred land uses from occurring. Allowing interim land uses offers short- to medium-term benefits to Kalaeloa while reserving maximum benefit for future uses. Interim uses shall be reviewed and coordinated with landowners in Kalaeloa for appropriateness, ability to align with the strategic goals and objectives, and ease of redevelopment to the preferred land use. Thus, interim uses that do not contribute

Why the "20-Minute City?"

The 20-minute city is the key concept that will help Kalaeloa become a Center for Excellence by:

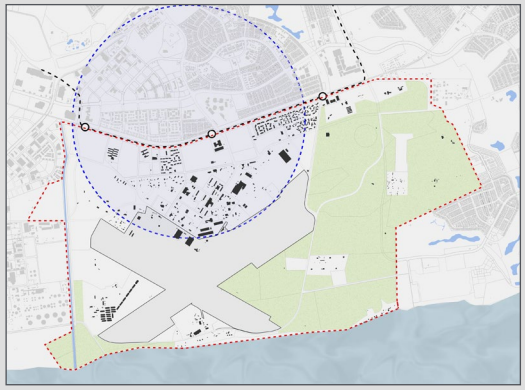
- Placing emphasis on what people love about cities: their vibrant streets and neighborhoods, and their convenience. Shorter travel times mean more time for recreation and family, and more money saved.
- Improving the quality of life and promoting equality and diversity by enhancing accessibility to services.
- Fostering healthy lifestyles by encouraging human-powered transportation, such as biking and walking, which have proven health benefits. The 20-minute city enhances walkability which results in fewer pedestrian and vehicular crashes and can also help alleviate loneliness by making it easier to meet and interact with neighbors.
- Relying on less pollution-emitting and less carbon-intensive forms of mobility, which have proven environmental benefits. Sprawling urban development is very energy intensive whereas a compact urban form thrives on accessible, multimodal transportation options.

Cities as disparate as Portland, Oregon and Melbourne, Australia have already been working on "20-minute neighborhoods" that employ these very concepts. And in recent years, the market has been sending a clear signal: homes in walkable neighborhoods are at a premium. Smart Growth, a U.S. advocacy group, argues this indicates that there is not nearly enough supply. 20-minute cities produce livable, equitable, healthier and environmentally-friendly benefits - all befitting a Center for Excellence.



5-Minute Walk Shed:

The 5-minute walk shed, a quarter-mile from center to edge, defines an individual neighborhood. Each quarter-mile shed should meet ordinary daily needs, a range of housing types, and a center (generally a public square, green, or neighborhood commercial street).



20-Minute Walk Shed:

A 20-minute walk shed is approximately three-quarters of a mile from the center to edge and is considered the maximum distance most people are likely to walk. Within this shed there will be a broader mix of uses, such as a grocery store, pharmacy, general merchandise retailers, public or charter schools, and district parks.

Major employers, such as the existing FBI facility and newly completed VA Clinic, can provide jobs alongside smaller retailers, eating places, and service providers. Future rail stations would also be located within the 20-minute walk shed, providing access to the regional transportation network.

20-Minute Bicycle Shed:

The 20-minute bicycle shed extends over a radius of 3 miles or the equivalent of a 20-minute bike ride. It provides access to regional cultural, medical, and educational facilities, as well as larger shopping and entertainment centers. The Kalaeloa bicycle shed covers much of the ʻEwa plain, including the growing Kapolei government center and University of Hawaii West Oʻahu campus.

to the appropriate mixture of land uses or immediate benefit of the community shall be restricted.

2.3.4 Potential Relocations

Another opportunity to facilitate and enhance redevelopment is the potential relocation of existing uses. While many existing uses are encumbered by deed restrictions placed at the time the properties were conveyed, possibilities exist for the HCDA to work with landowners and the federal government to optimize land use within Kalaeloa over the course of the redevelopment period. Existing land uses and potential relocation sites need to be evaluated for their consistency with the overall redevelopment goals and objectives. Further, relocations should not be considered unless there are direct benefits associated with the relocation and there are no impacts to existing uses or services. Examples of unsuitable land uses include municipal waste facilities, heavy industrial factories, and battery and other hazardous materials recycling centers.

Open spaces are crucial for creating sustainable communities

2.3.5 Protecting and Enhancing Open Space and Cultural and Natural Resources

Per HCDA standard practice, development within the District must receive the appropriate approvals from SHPD and other relevant agencies and abide by all Federal and State laws and requirements. Some parcels yet to be conveyed are encumbered with special covenants and are subject to certain requirements and standards therein.

The growth towards a balanced and sustainable community requires the purposeful protection of its surrounding environs. The Master Plan seeks to embrace the integration and preservation of Kalaeloa's many cultural and natural resources.

2.3.5.1 Open Space

When NASBP closed in 1999, the community was afforded new access to the shoreline and recreational areas previously restricted for military use. Development projects surrounding Kalaeloa have little to no direct public access to the shoreline and are constrained in the availability of lands for public recreation. An opportunity exists to provide enhanced value to the larger public through the preservation of open space, shoreline access, and recreational areas. These could include creating a continuous beachfront park along the Kalaeloa shoreline from White Plains Beach to Nimitz Beach, a large central open space/park east of the airport, and a series of linear open spaces and smaller parks that promote bicycle and pedestrian access, allow for storm water retention, and provide for the utility connections through dedicated easements.

The Honolulu Department of Parks and Recreation (DPR) already operates Kalaeloa Beach Park at Eisenhower Beach, which includes 13 campsites and a comfort station. Appropriate site upgrades and improved public access should be further developed. While beyond the scope of this Master Plan update, it is recommended that a Parks and Open Space Master Plan be commissioned to develop an open space network and implementation strategy in line with the 'Ewa Development Plan.

The Parks and Open Space Master Plan should include active and passive recreation facilities, athletic fields and sports courts, the relocation or improvement of existing open spaces, and appropriate connections to planned or existing cultural and bicycle trails. A bicycle path along Essex Road could be developed as a shared

multi-modal roadway, from Barbers Point Golf Course to White Plains Beach, and would provide a much-needed recreation corridor for many existing and future residents along the east side of the District. DPR will undertake the master planning process for future parks once the parcels are conveyed. Parks and recreation facilities will be informed by community input and the current Statewide Comprehensive Outdoor Recreation Plan (SCORP) which is prepared on a 5-year cycle.

Although dedicated open spaces and corridors are vitally important for passive and active recreation, a community's street network should also be enhanced to provide public amenities. Shade, either from trees or structures, should always be incorporated to not only foster walkability, but also help reduce the heat island effect. Shared paths and cycle tracks provide mobility options, but also active transportation options that promote healthy lifestyles. Public art can provide additional interest and expressions of local meaning in the streetscape. Street networks are usually a city's biggest landholding, and so present the greatest opportunities for equitable public access to shade, recreation, mobility, and civic aesthetics.

2.3.5.2 Cultural Resources - Kalaeloa's Living Heritage

Kalaeloa and the broader 'Ewa region are rich in cultural history and significance. The presence of archaeological sites, endangered species, and native plants on relatively open land in proximity to the Kalaeloa coastline presents an opportunity to revisit the native Hawaiian cultural traditions that existed in the region prior to Western contact and to educate the greater community about the 'Ewa region's rich history.

Early Native Hawaiian Period

Cultural and archaeological sites of Ewa Plain's earliest inhabitants have been conserved and protected through the collaborative efforts to establish the Kalaeloa Heritage Park (KHP). The HCDA partnered with the Kalaeloa Heritage and Legacy Foundation (KHLF) to establish the 77-acre site. Through KHLF's stewardship, the park is a remarkable living heritage site which represents an authentic educational setting and medium for the preservation of Hawaiian cultural traditions and practices. KHP's programs actively engage the community with hands-on participation through its service and work-study opportunities. One of its educational programs with the University of Hawaii West O'ahu's Botany program, has resulted in the cultivation and reforestation of native plants such as 'ahinahina o 'Ewa.

Ewa Plantation Era

The extant tracks within the historic OR&L railroad right-of-way along the northern boundary of Kalaeloa are owned by the State of Hawaii and managed through the dedicated stewardship of the Hawaiian Railway Society (HRS). The collaboration between HRS and the government agency is crucial for the education and appreciation of the rail system's contributions at Kalaeloa. The HCDA recognizes the importance of stakeholders' participation in the decision-making processes for the future development of this viable mode of transportation at Kalaeloa.

Military in the Pacific and World War II

The period of military presence at Kalaeloa played an important role to bolster the United States' defense capabilities during the period of tension evolving in the Pacific.

On May 2016, Ewa Field was placed on the National Register of Historic Places (NRHP) as the Ewa Plain Battlefield. Proposed renovations and new work shall conform to the Secretary of the Interiors Standards for Rehabilitation and Guidelines for the Treatment of Cultural Landscapes. The commemoration of these hallowed grounds is essential to recognize the bravery and sacrifices of those who served during this period in American history. Kalaeloa's pivotal role during World War II must be acknowledged by thoughtful remembrance through preservation, education, and commemoration.

2.3.5.3 Natural Resources

According to the Division of Forestry and Wildlife under the State's Department of Land and Natural Resources, Hawai'i is home to more than 1,400 native vascular plant taxa, 90% of which are not found anywhere else. This combination of diversity and endemism makes the natural ecosystems of Hawai'i unique, but also puts those endemic species at a great risk.

In 2016, the Navy submitted a Biological Assessment of parcels that contain the endangered 'akoko plant to the US Fish and Wildlife Service. The assessment detailed biological resources and mitigation recommendations for future use of the parcels including appropriate conservation and management strategies. Any development within the District, including these parcels, must comply with applicable Federal and State guidelines and statutes regarding endangered species.

2.3.5.3.a Native and Urban Forests

The native forest ecosystems of the Hawaiian Islands have been largely destroyed by the large-scale ranches and the sugar and pineapple plantations of the 19th and 20th century and more recently by sprawling suburban and resort developments. Feral ungulates – pigs, goats, cattle, and axis deer – that were introduced by Europeans and Americans have proliferated on the islands and continue to destroy thousands of acres of upland forests annually. Remnants of native forest ecosystems still exist on the highest elevations of the mountains of Hawai'i Island, Kauai, Maui and Molokai, and to a small degree on O'ahu. During the past two decades, there has been some attempt to preserve and restore native forest ecosystems on the Hawaiian Islands, primarily by installing fencing to keep out feral ungulates, but these preservation efforts are still limited by a lack of adequate funding and are often opposed by local communities who claim their rights to traditional subsistence hunting are being taken away. There has also been some recent interest in "urban forestry" – some community organizations are advocating planting more trees along streets to increase shade and enhance habitat.

Forestry Concepts for Kalaeloa could include the following:

- Identify and protect areas of Kalaeloa that have rare/endangered and/or important endemic or indigenous plants, such as wiliwili trees and the 'akoko shrub.
- Work with Kalaeloa land owners and businesses to form a "Kalaeloa Conservation Corps" that will plan and implement programs for land restoration and afforestation of large

Akoko Plant

Miyawaki Method

A New Prototype for Urban Afforestation

The Miyawaki method was developed by Akira Miyawaki, a Japanese botanist and plant ecologist. The Miyawaki method— "native forests by native trees" —is based on the traditional Japanese concept of "Chinju-no-mori" (the act of cultivating forests indigenous to the region around shrines and temples) along with ecological science to add trees to a depleted area—afforestation.

This method of afforestation aims to create urban forests that take direct inspiration from the complex ecosystems already existing in nature. This is achieved by utilizing species native to the region in an effort to restore the ecosystems indigenous to these respective regions. The Miyawaki method can be resource intensive, and planting areas are often limited in size. Nevertheless, there is space within Kalaeloa to adopt different strategies to encourage a balance between urban development and the natural world.

areas of Kalaeloa that are not planned for commercial or residential development for the foreseeable future. Plans should include partnering with the Honolulu Board of Water Supply (BWS) to provide recycled "R-1" quality water for the irrigation of newly planted areas. Stormwater runoff from developed areas of Kalaeloa could be conveyed to forested areas for irrigation.

- For areas of Kalaeloa that are planned for urban development, include urban forestry elements in the development plans to achieve a high level of tree cover for streets, parks, and public spaces – ideally an overall tree canopy coverage of at least 30 percent for the urbanized areas of Kalaeloa.
- Incorporate permaculture design principles into land managment programs by prioritizing whole-systems thinking.
- Consider creating a Miyawaki forest as an alternative to a 135-acre city park or on other sites as appropriate.

2.3.5.3.b Agriculture, Farming, and Ocean Foods

Native Hawaiians of the pre-contact era developed sophisticated systems for the cultivation of taro and other land crops, including sweet potatoes, breadfruit and various edible and medicinal plants and herbs,

and fisheries and fishponds that provided protein-rich food. Older Kalaeloa community members have shared their memories of abundant schools of fish that were once found along the Kalaeloa coast.

Limestone soils of the type underlying much of Kalaeloa are generally not productive for agricultural or forestry. However, areas characterized by relatively poor soils can still be managed to incorporate food and forestry concepts into their development. Also, Kalaeloa – and the ʻEwa district in general – has a high level of annual solar radiation which means beneficial year round growing conditions.

General concepts for agriculture and farming for Kalaeloa thus include the following:

- Intensive forms of agriculture, including greenhouses, vertical farming, and aquaponics, would be well suited to Kalaeloa. The previously noted high level of solar radiation in this region of Oʻahu is a favorable factor for this type of agriculture. The growing population of the "Second City" of Kapolei and the overall ʻEwa district provides a large market for quality fresh fruits and vegetables.
- Greenhouses and aquaponics farms could be relatively small in scale and could blend in with future plans and developments for light industrial and related land uses in Kalaeloa. These forms of intensive agriculture do not require large volumes of irrigation water – a plus factor for farms in the hot, dry ʻEwa district.

Programs should be developed for the restoration of Kalaeloa coastal fisheries and limu. Limu is a form of ocean algae that was traditionally an important source of nutrition for native Hawaiian people. Limu restoration programs would have cultural, educational, and food value.

2.3.6 Addressing Regional Traffic Congestion

Due to increased development and the necessity to commute to school and work, traffic on existing arterial roadways and the H-1 Freeway is congested on a daily basis. Roadways such as Farrington Highway, Roosevelt Avenue, and Geiger Road provide some relief in the east-west direction but are also frequently congested. Construction of Kualakaʻi Parkway and completion of the Kapolei Parkway have improved ingress and egress; however, additional measures are necessary to reduce regional traffic congestion. One of these measures is the development of Kalaeloa according to the principles of the 20-minute city. In addition, increasing roadway connectivity, and seeking a mode of mass transit will be critical.

Consistent with the principles of the 20-minute city, another approach to reducing regional traffic congestion is to increase employment opportunities in the ʻEwa region, thereby reducing the necessity for area residents to commute outside the region to work.

2.3.6.1 Streets & Roadways

Improvements to the street network within and adjacent to Kalaeloa present an opportunity to enhance regional connectivity both east-to-west and north-to-south and improve vehicular traffic flow within the ʻEwa region. In addition to current regional transportation plans and ongoing road improvement projects, several new improvements are proposed (Refer to Figure 2-1). Any streets crossing historic resources, such as the Historic Hawaiian Railway at Renton Road, must receive the appropriate approvals from SHPD and other relevant agencies and abide by all Federal and State laws and requirements.

- Develop Saratoga Avenue as the major urban corridor through Kalaeloa. The alignment should avoid the ʻEwa Plain Battlefield Memorial.
- Enhance vehicular circulation and connectivity on Fort Barrette Road, including refinements to intersection operations at Roosevelt Avenue and Fort Barrette/Enterprise Roads.

The historic Oahu Railway and Land Company (OR&L) tracks run along the mauka boundary of Kalaeloa.

- Extend Wakea Street into Kalaeloa to provide a direct link to the H-1 Freeway interchange.
- Develop a roadway connection to Campbell Industrial Park and Kalaeloa Harbor via Malakole Street.

In 2016, the City of Honolulu released the Complete Streets Design Manual to ensure that public streets and surrounding spaces serve everyone's transportation needs, whether by car, bike, bus, rail, or foot. New streets in Kalaeloa should reflect this vision and be built to such standards. Additional street standards are part of the City and County of Honolulu's Subdivision Rules and Regulations and apply to construction plans needing review by the Department of Planning and Permitting.

2.3.6.2 Bicycle Trails

The flat topography of Kalaeloa renders the area an ideal location for encouraging the use of bicycles as an alternative to motorized vehicles. Routing of bike paths should provide for connectivity within Kalaeloa, access to the beaches along the ʻEwa shoreline, and connections to existing and proposed regional paths such as the Pearl Harbor Historic Trail and the Leeward Bike Path.

The 2019 Oʻahu Bike Plan Update built upon the previous Kalaeloa Master Plan bicycle tails in the area with an expanded network for improved connectivity and efficiency. This Master Plan recognizes these regional efforts and incorporates them accordingly:

- Leeward Bike Shared Use Path (Phase 1): Waipio Point Access Road to Hawaiian Railroad Society Train Station
- Leeward Bike Shared Use Path (Phase 2): Lualualei Naval Road to Hawaiian Railroad Society Train Station
- Boxer Road Bike Lane: Roosevelt Avenue to Midway Street
- Coral Sea Road – Saratoga Avenue Shared Use Path: Around Kalaeloa Airport
- Roosevelt Avenue Bike Lane: Renton Road to Geiger Road
- Eisenhower Road Shared Use Path: Coral Sea Road to Tripoli Road
- Enterprise Street Bike Lane: Renton Road to Saratoga Avenue
- Enterprise Street Shared Roadway: Saratoga Avenue to Midway Street
- Essex Road Shared Roadway: Geiger Road to White Plains Beach
- Hornet Street Bike Lane: Leeward Bikeway to Saratoga Avenue (Realignment Necessary to Wakea Street Extension)
- Midway Street/Mumba Street/Saratoga Avenue Bike Lane: Boxer Street to Malakole Street
- Olai Street Shared Roadway: Coral Sea Road to Barbers Point Beach Park
- Keoneula Boulevard Extension Shared Use Path: Coral Sea Road to Kamakana Street
- Kualakai Parkway Shared Use Path Extension: Kapolei Parkway to Tripoli Road (Realignment necessary due toʻEwa Plain Battlefield)
- Saratoga Avenue (Extension) Bike Lane: Boxer Road to Geiger Road (Realignment necessary due to ʻEwa Plain Battlefield)

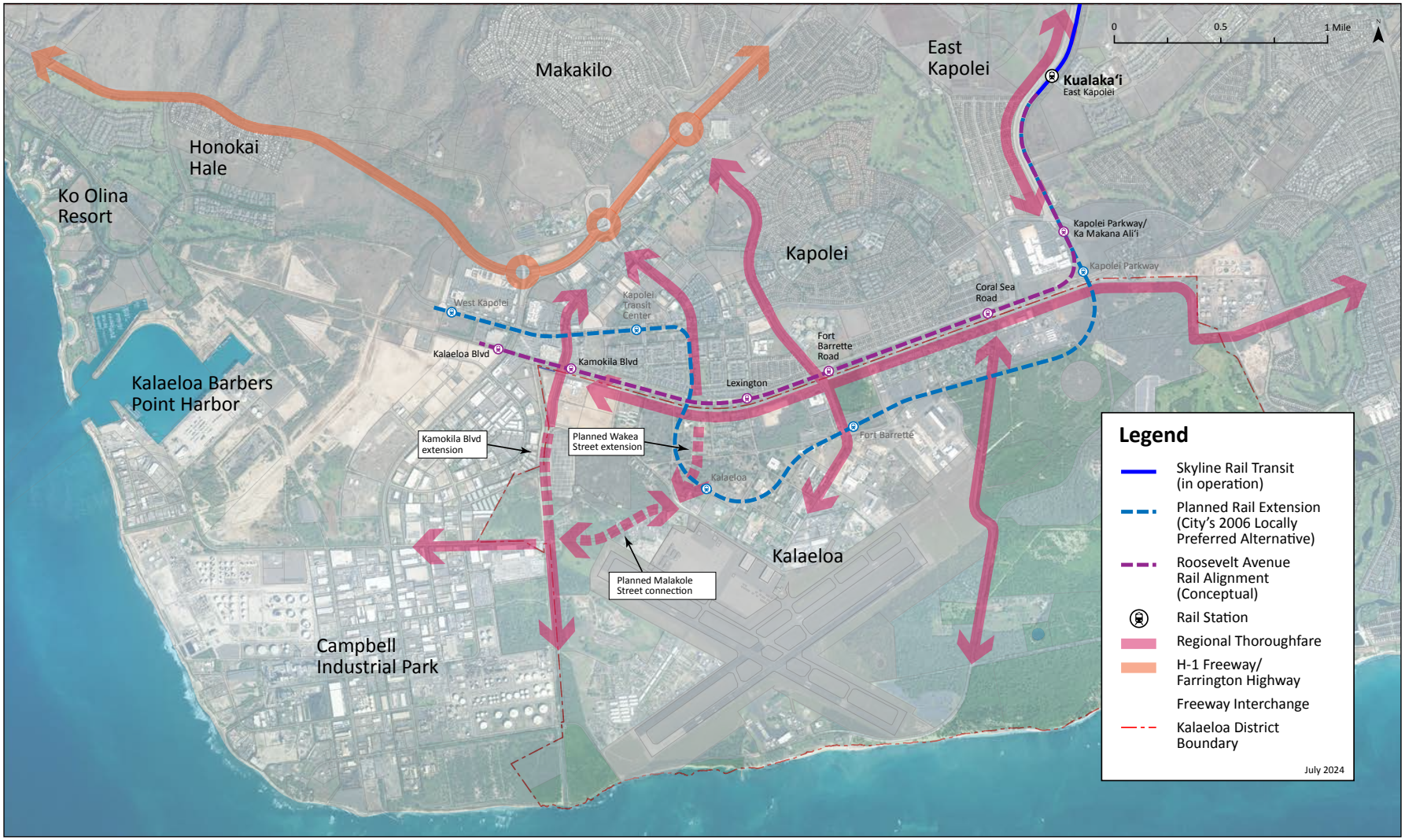


Figure 2-1: Regional connections

2.3.6.3 Historic Railroad

Kalaeloa also provides an opportunity to support future initiatives and the expansion of operations of the Hawaiian Railway Society, which uses tracks within the Oʻahu Railway and Land Company right-of-way (ROW), under State jurisdiction. The historic rail alignment lies north of the Kalaeloa District boundary (mauka of Roosevelt Avenue), and continues past Campbell Industrial Park, through Ko Olina to Kahe Point on the leeward coast. The presence of this historic ROW should not prevent making the necessary mauka-makai street connections that would strengthen Kalaeloa's connection to surrounding areas. However, because the mauka-makai streets require crossing the tracks, the HCDA should continue to work with HDOT, the City, and the Hawaiian Railway Society to ensure safety of the rail crossings and efficient intersection operations.

2.3.6.4 Integrating Mass Transit

There is a reemergence in interest to identify transit-oriented solutions to mitigate traffic congestion, especially in the ʻEwa region. The City's ʻEwa Development Plan and the Kapolei Area Long Range Master Plan both indicate transit corridors on Farrington Highway, Kualakaʻi Parkway, and extending to the west along Kapolei Parkway with a termination proximate to Kalaeloa Harbor.

The Hōʻaeʻae (West Loch) rail station serves as a mobility hub and is integrated into the urban fabric of Waipahu.

A long-term opportunity exists to align the continuation of the rail transit corridor at the edge of Kalaeloa along Roosevelt Avenue. Such a routing could provide access to both Kalaeloa and Kapolei while also increasing land values and the marketability of properties along this corridor. The land use densities typically associated with transit-oriented development further suggest that multi-family housing development presents an attractive alternative to the extensive single-family lot development throughout ʻEwa.

Moderate density multi-family residential development also presents opportunities for rental units with a potentially significant percentage in the affordable category. Robust rail-bus transit corridors would provide an efficient means of transporting the workforce population in and out of Kalaeloa, thereby reducing dependence on high-cost personal motor vehicle transportation.

Chapter 3

The Master Plan

This chapter outlines the strategies and tactics necessary to implement redevelopment of Kalaeloa in physical form.

Chief among these strategies is the mixing of land uses and housing types across the entirety of developable area. This will allow many of life's daily activities to be within walking or biking distance of residents and members of the local work force, resulting in a vibrant public realm. Supporting that strategy is a set of mixed-use neighborhoods that differ in scale and building density, but are linked to support a greater whole. Rather than conventional zoning to codify these ideas, the land use system is regulated across a cross-section of urbanism called the "transect" which regulates primarily by scale and density, and not by use (for the most part). This will allow a range of businesses, housing types, and services to locate in proximity to each other thus supporting the accessibility, walkability, and neighborly interactions that result from the full implementation of the 20-minute city.

The street network also plays a vital role in achieving the walkable and bikeable environment required by the 20-minute city. Creating streets that provide as much deference to the pedestrian as they do to the car is called "complete streets" and is critical to making Kalaeloa healthier, safer, and greener.

3.0 A Mixed-Use Community

The diminishing supply and relatively high value of land on O'ahu necessitates the serious and practical consideration of intensifying land uses, especially when viewed from a long-term perspective. As growth of the 'Ewa region continues, mixed-use and compact development patterns are essential strategies in creating a walkable and bikeable community.

The Master Plan allows and encourages the development of higher density housing within mixed-use parcels. Rather than relying solely on low density single-family development with segregated commercial areas, which is the prevailing pattern of residential development in other 'Ewa neighborhoods, the Master Plan expands residential opportunities, from small-lot houses and townhouses to apartments. The mixed-use parcels identified in the Regulating Plan integrate housing and commercial uses, allowing retail and other employment uses within the same block and even the same building. For multi-story buildings, mixed-use could include retail or commercial on the ground floor with apartments or office space on second, third, and fourth floors.

Walkability and connectivity are key attributes of the 20-minute city. Buildings designed to the moderately higher densities associated with mixed-use development enhance the pedestrian experience for residents and employees when developed along a fine-grained street network.

The mixed-use areas identified in the Regulating Plan are generally characterized by a mix of retail and commercial activities, airport-related businesses, warehouses for storage and distribution, offices, service and support functions, and residential uses.

Geographically, the mixed-use area of Kalaeloa is located on the mauka side of the airport and encompasses approximately 900 acres. The historic focal point of NASBP was the airfield and the adjacent downtown which provided nearby spaces for administrative offices, supply and logistics operations, and maintenance support. Also located downtown were public services, such as the post office, that benefited from a central location. The historic downtown is roughly bounded by Midway Street with Enterprise Street serving as a central spine. The street pattern reflects the layout of the airfield with streets angled to fit within the crook of the crossing runways. The historic downtown continues to provide ample opportunities for infill development to enrich the mix of land uses.

Beyond the historic downtown, however, the Regulating Plan envisions the mixed-use area expanding northward to Roosevelt Avenue. Indeed, the Plan designates a cluster of blocks in the most intense land use category—T5 Urban Center—in the central part of the District: framed by Enterprise Street on the east, Yorktown Street on the south, Lexington Street on the west, and Roosevelt Avenue on the north. Crossing through the urban center is the east-west thoroughfare, Saratoga Avenue. A long-term redevelopment objective is to upgrade Saratoga into a linear, promenade type mixed-use area. This objective is supported by the land use category called the Saratoga Frontage Zone to promote development that will activate and enliven the street scene.

A primary objective for the mixed-use area, or downtown Kalaeloa, is to create a physical environment that supports the evolution of the 20-minute city. To that end, this area will be a place where:

- Residents can walk or bike to work, school, the local transit station or mobility hub, or to the essential services needed for day-to-day life as well as to enjoy the cultural amenities of the Kalaeloa community.
- A variety of mobility options allow for ease of movement within the area and connections to the region at large.
- Neighborhood streets are valued beyond their ability to carry traffic, but as significant urban places in and of themselves, because they are where neighbors, friends and colleagues meet and socialize. They are supported by streets with sidewalk cafes, lively plazas, and restful parks.

3.1 Neighborhoods

The mixed-use neighborhood is the building block of the 20-minute city, in which many of life's daily needs are a 20-minute walk, bike, or bus-ride away, and a key to supporting walkable urban places. This, in turn, will support economic development by helping to attract new employers and employees, to live, work, shop and play in Kalaeloa neighborhoods.

Four key strategies will be critical in realizing the vision for Kalaeloa as a community of neighborhoods. These include:

- **Saratoga Avenue** and other framework streets are key to linking neighborhoods to each other. Serving as Kalaeloa's new main street, Saratoga has the potential to become the area's signature main street - an iconic and memorable place. Pedestrian-friendly building frontages and wide sidewalks are particularly important along Saratoga, as with the primary thoroughfares linking neighborhood centers to one another.
- **Multi-modal connectivity** between neighborhoods and activity centers is key to unlocking the value of mixed-use infill developmentand offering convenient access to nearby jobs, housing, recreation and commercial amenities. Bus routes will need to be reconfigured to connect these neighborhoods, while region-wide transit, such as an extension of the rail transit line, should be prioritized for the future.
- **Placemaking** is a planning concept that carefully links the circulation and open space network (core elements of the public realm) with existing and new private development. Making great places is the payoff for connected, mixed-use development, as each increment adds value to surrounding properties. On top of this, great places arise as new developments contribute to the distinctive character of an area.
- **Pedestrian-friendly design** can bring daily necessities within an easy walk of many residents, stimulating economic activity while reducing the stress on transportation systems. Thus, neighborhoods should be limited in size to the distance a pedestrian can walk in

Outdoor restaurant seating can help activate the urban environment

five minutes—roughly 1/4 mile from the center of a neighborhood to its edge—as well as provide a street network that prioritizes pedestrian safety and comfort. Local streets should be woven into the network to create walkable block-sizes

Building design should reinforce the pedestrian orientation of the neighborhoods by gently framing the streets and public spaces to provide visual delight that makes walking a joy. General development standards that are part of the Kalaeloa Administrative Rules contain prescriptions as to building type, frontage type, building placement, building form, architectural standards, and landscaping to promote consistent, quality urban environments in the respective transect zones. In general, development standards seek to accomplish the following objectives:

- New development should always front streets with human-scale, pedestrian-oriented frontages, an ensemble that is tailored to specific street types and includes sidewalks, curbs, planters, bicycle facilities, and street trees that provide shade.
- Design should emphasize the continuity of public frontages with buildings or landscape edges while discouraging large surface parking lots and blank walls.

Figure 3-1: Conceptual activity centers

Figure 3-2: Illustrative conceptual neighborhood (East Saratoga)

To accomplish these objectives, the plan identifies several conceptual neighborhoods that are sized according to the five-minute walk, as shown in Figure 3-1. Five are centered along Boxer Road and Saratoga Avenue, and the existing downtown makes up another neighborhood. Along Saratoga, in particular, a mix of uses is encouraged to create an active ambience at the ground level. The land-use mix can occur within buildings; for example, a vertical mix of apartments over a ground-floor cafe, or horizontally within neighborhoods; for example, a row of townhouses with a convenience store at the corner of the block. This pattern is compatible with bus stops located near the center of each neighborhood, resulting in a high degree of multi-modal connectivity between adjoining neighborhoods and activity centers.

While each neighborhood will have its own set of characteristics, each will include a range of densities to allow new development to meet varying market conditions. Typically, this range of density will be graduated, with the densest and most diverse areas being in the center (where the center sits along Saratoga Avenue). The neighborhoods will also feature a diverse mix of uses, with places to work, live, learn, shop and play -- all within a walkable area.

Each neighborhood will be supported by a new local street network that complements the existing framework of public streets, as shown in the conceptual illustration of a Kalaeloa neighborhood in Figure 3-2. The insertion of this local street network results in the creation of smaller blocks and higher intersection density than in typical suburban development.

Broader views of the existing Kalaeloa landscape compared to an illustrative view of Kalaeloa at build-out may be seen in Figures 3-4 and 3-5 (makai perspective) and Figures 3-6 and 3-7 (mauka perspective).

Illustrative Conceptual Buildout

Figure 3-3: Existing conditions - makai view

Figure 3-4: Illustrative build out - makai

Figure 3-5: Existing conditions - mauka view

Figure 3-6: Illustrative build out - mauka

Figure 3-7 Parks and Open Space Plan illustrates the publically-accessible open space network. An equitable distribution of open spaces in neighborhood centers and within the fabric of the neighborhood itself will ensure a livable and lively public realm. These spaces will be fronted by streets and buildings ensuring “eyes on the park.” Public spaces in neighborhood centers are generally hardscaped to easily accommodate various activities, such as farmers markets and festivals.

Alternatively, public spaces within the neighborhood fabric are generally landscaped for recreation, such as sports fields, parks, and playgrounds. An area of approximately 220 acres along Saratoga Avenue, tentatively known as Kalaeloa Regional Park – Mauka, has the potential to provide significant space for active sports fields, such as baseball and soccer, play courts for basketball and tennis, dog park, and a swimming center, passive recreational facilities and open areas for picnicking and public events.

Another assemblage that includes the existing Kalaeloa Beach Park, and a future Kalaeloa Regional Park - Makai, bracket both sides of Tripoli Road. The campground could be expanded to include enhanced bathroom and shower facilities, as well as additional camp sites. New parking areas and connecting lanes (for example, the completion of Eisenhower Road) would allow enhanced access by the

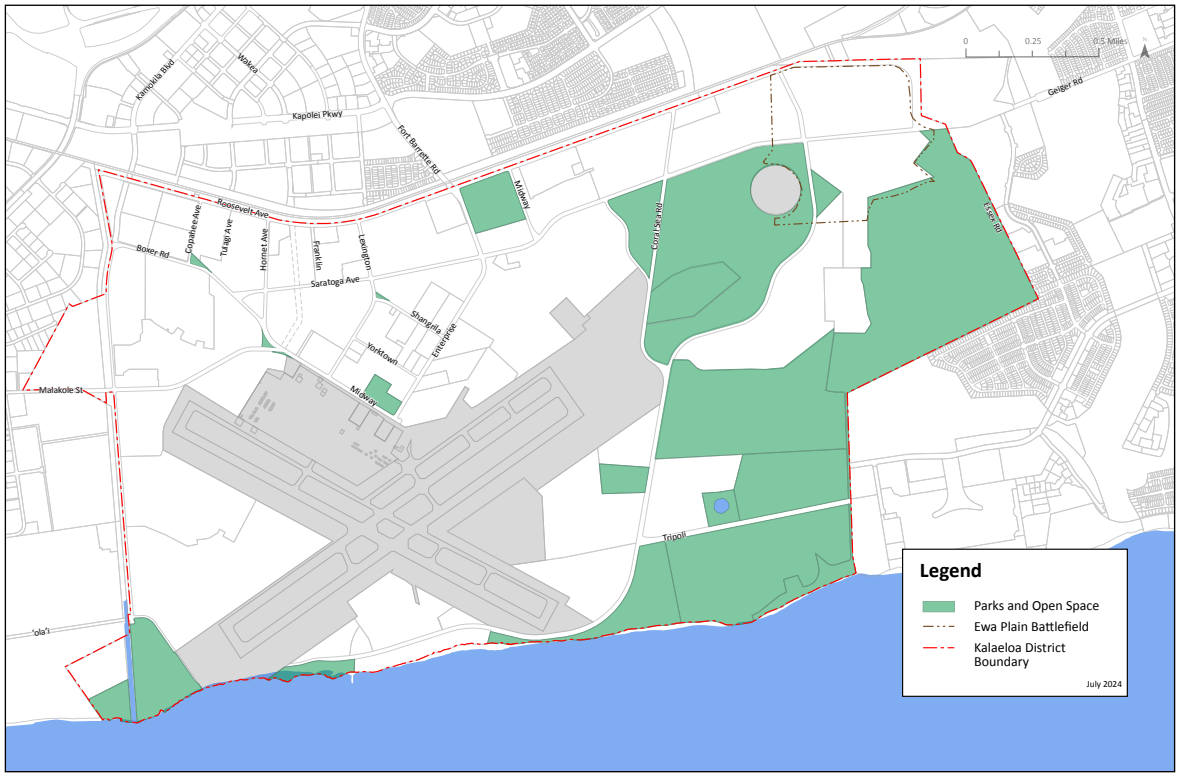


Figure 3-7: Conceptual parks and open space plan

general public. Other facilities could include picnic/shade pavilions, restrooms, pedestrian trails, playfields, multi-purpose open spaces for casual sports community events, shade trees, and an ocean educational center are all possible uses, as well as open lawns for storm water management. The Department of Parks and Recreation will undertake the master planning process for future parks after the parcels are conveyed.

Each neighborhood should accommodate a shaded bus stop providing frequent service to the Kapolei Transit Center and the Kualaka'i Skyline rail station. Figure 3-8 shows how the Kalaeloa community might be served by buses in the future. The Plan proposes increasing the frequency of the existing Route 415 to the Kapolei Transit Center along with the addition of two new routes: one along Saratoga Avenue and another along Coral Sea and Tripoli Roads. Future bus routes will be developed at the discretion of the Department of Transportation Services.

In the future, small autonomous shuttles carrying up to a dozen passengers could potentially provide accessible, on-demand services to connect the district to nearby commercial centers, regional transit services, and rail stations. While the trend in shared transportation is toward individualized services, one or more mobility hubs could be established as part of neighborhood activity centers.

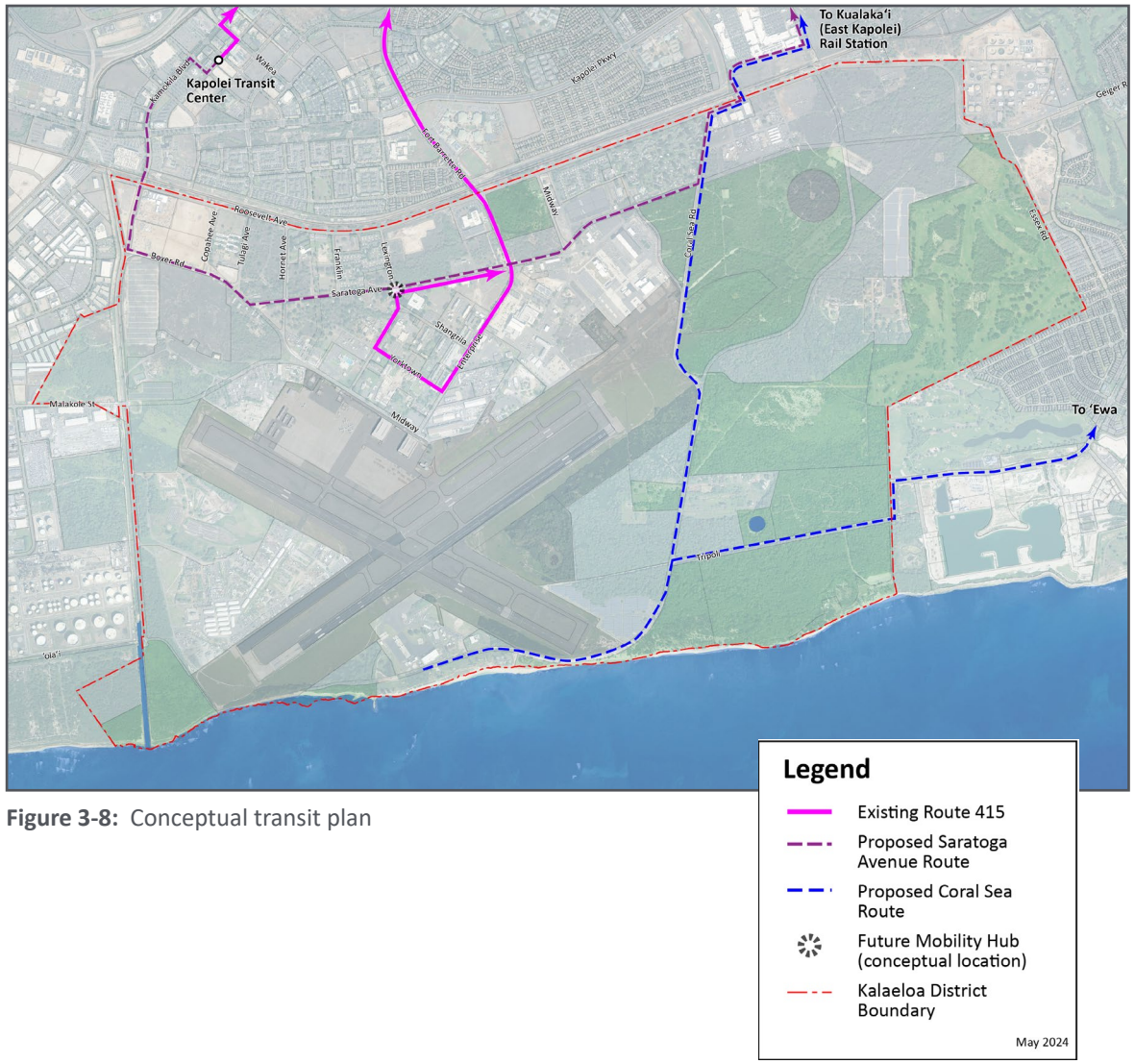
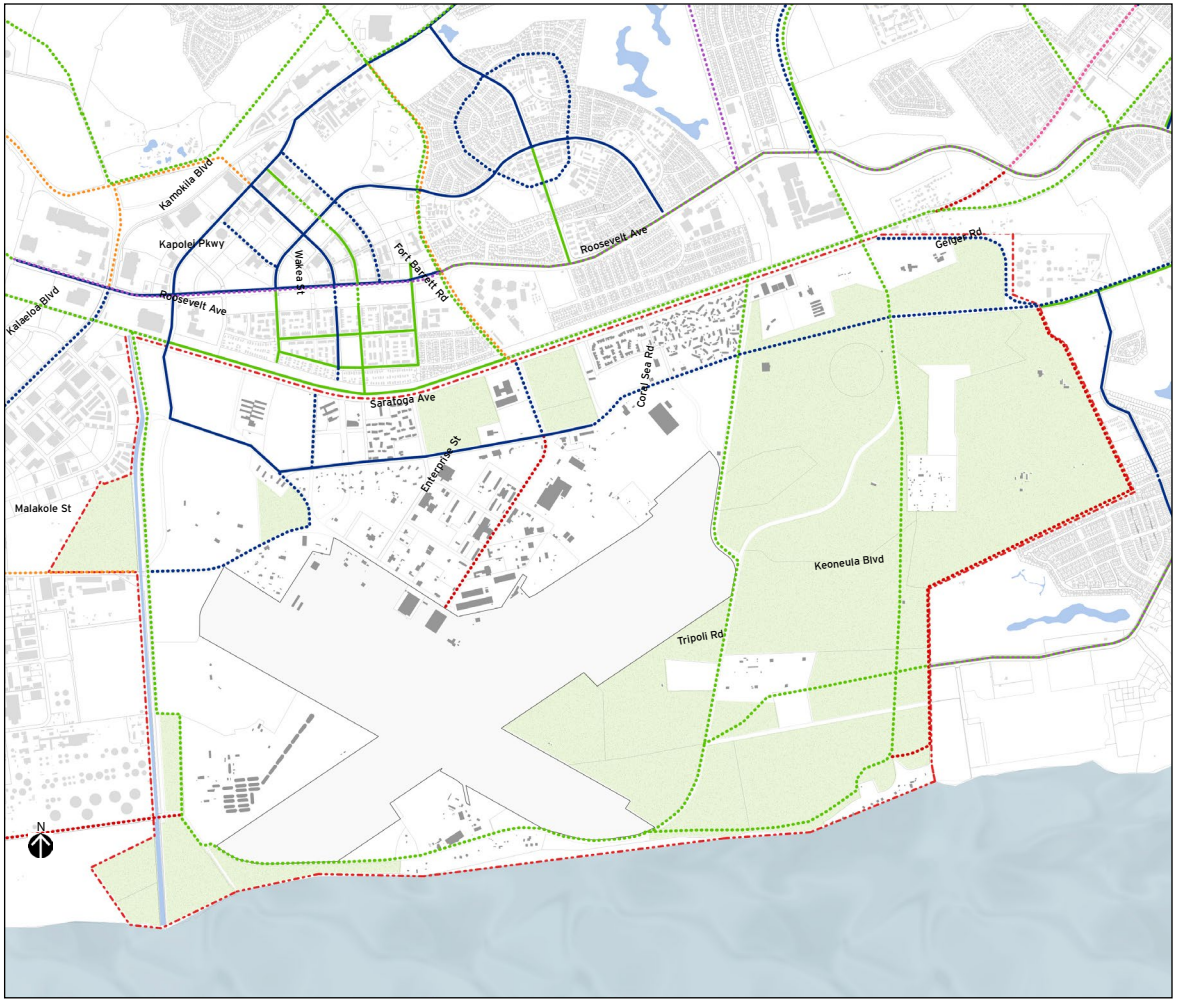


Figure 3-8: Conceptual transit plan

Figure 3-9 shows the existing and proposed network of bicycle facilities, based on the 2019 O'ahu Bike Plan. Corridors for separate and shared bicycle facilities will help to determine where additional curb-to-curb width may be needed as the profiles of Kalaeloa roads take their finished form.



LEGEND

Existing and Proposed Bicycle Facilities

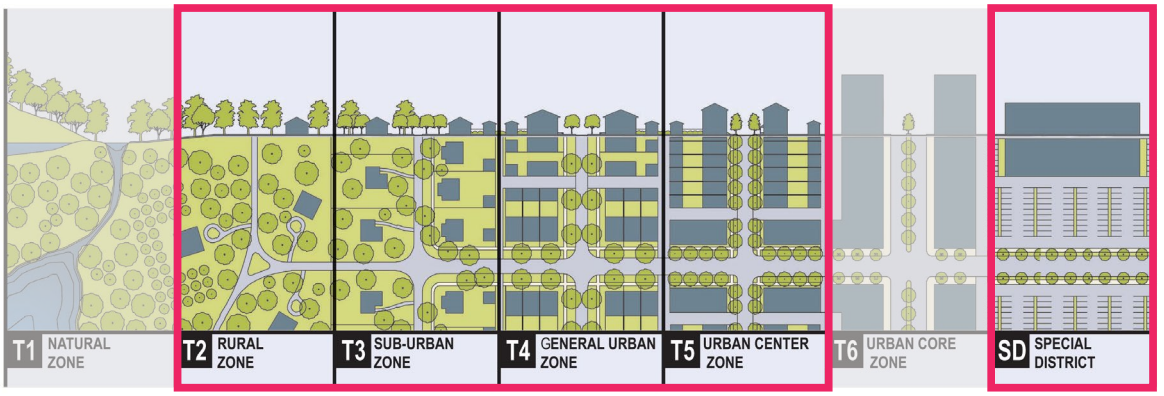
- Shared Use Path
- Bike Lane
- Shared Roadway
- Buffered Bike Lane
- Shoulder Bikeway
- Protected Bike Lane

Figure 3-9: 2019 O'ahu Bike Plan - Existing and Proposed facilities

3.2 The Transect of Urbanism

The mixed-use areas of Kalaeloa allow for a range of housing and commercial densities, so that new development reinforces the proposed neighborhood structure and can meet varying market conditions.

The range of permitted densities are calibrated on a graduated scale from the center of a neighborhood to its edge, which is known as the "transect of urbanism." Each section along this scale is called a transect. The transect of urbanism is a conceptual cross-section of human activity that transitions from undeveloped natural areas (T1) to the dense urban core (T6).



The Rural-Urban Transect - Courtesy of Duany Plater-Zyberk & Company

Transects form the basis of allowable development types and densities represented in the Regulating Plan, Figure 3-10. The Master Plan designates transect zones, special districts, and district overlays to provide the framework for a fine-grained, diverse, and sustainable Kalaeloa.

The aim is not to create a density mix similar to a downtown Honolulu or Kakaako, but to reimagine the typical low-density, single-use suburban neighborhood with a densified neighborhood pattern to achieve more units per acre, greater walkability and lower allocation of space for parking.

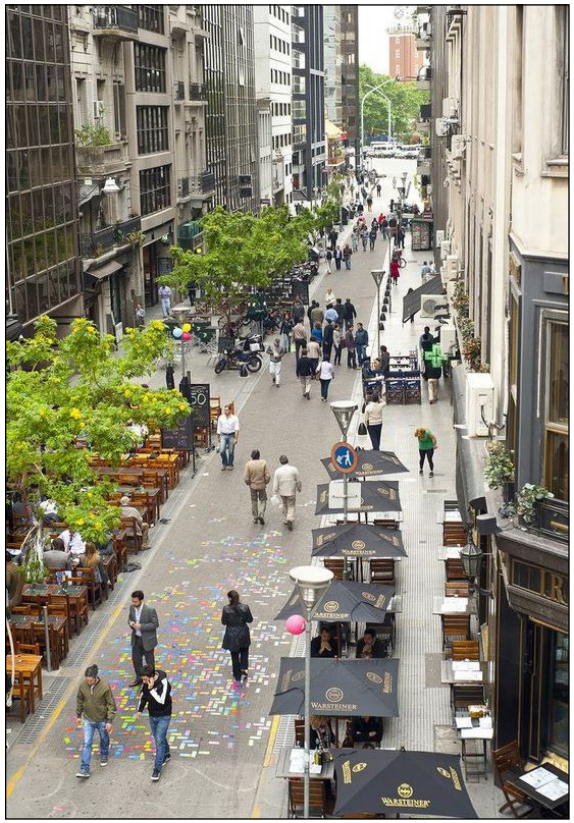
In lower intensity employment centers, for example those in T3 zones through T4 zones, surface parking lots are the norm as densities do not justify the increased cost of building parking garages. However, surface lots often destroy the sense of enclosure within the public realm, disallowing "civic rooms" by their lack of spatial definition. For economic reasons, surface lots are also rarely implemented with a level of detail that befits a public plaza. Therefore, in walkable urban environments it is advisable to separate parking lots from primary street frontages by buildings and for these parking lots to be screened from secondary street frontages with screening devices such as fences, walls or hedges when buildings are not feasible along those edges.

In higher intensity areas, such as T4 zones through T5 zones, parking is normally placed in above-ground garages. Such garages should be screened and out of view from primary streets and be lined with active uses to enhance the pedestrian experience.

Not all portions of the transect are applicable to all areas. In fact, Kalaeloa is imagined as including T2 through T5 zones with a mix of live-work and amenities of different densities and heights to respond to the characteristics of each transect zone, such that the result is a repeating pattern of neighborhoods resulting in a vibrant, attractive community for a variety of residents and businesses. The overlap between zones in building intensity and form is intentional and, allows for a coherent and built environment with gradual transitions.

The presence of the airport, the military, and lands owned by the Department of

Hawaii Home Lands means that much of Kalaeloa is not subject to zoning according to the transect model. These areas, known as “special districts,” serve single purposes and are subject to separate regulations and rules, due to primacy of federal jurisdiction. This will be the basis for zoning regulations governing these areas.



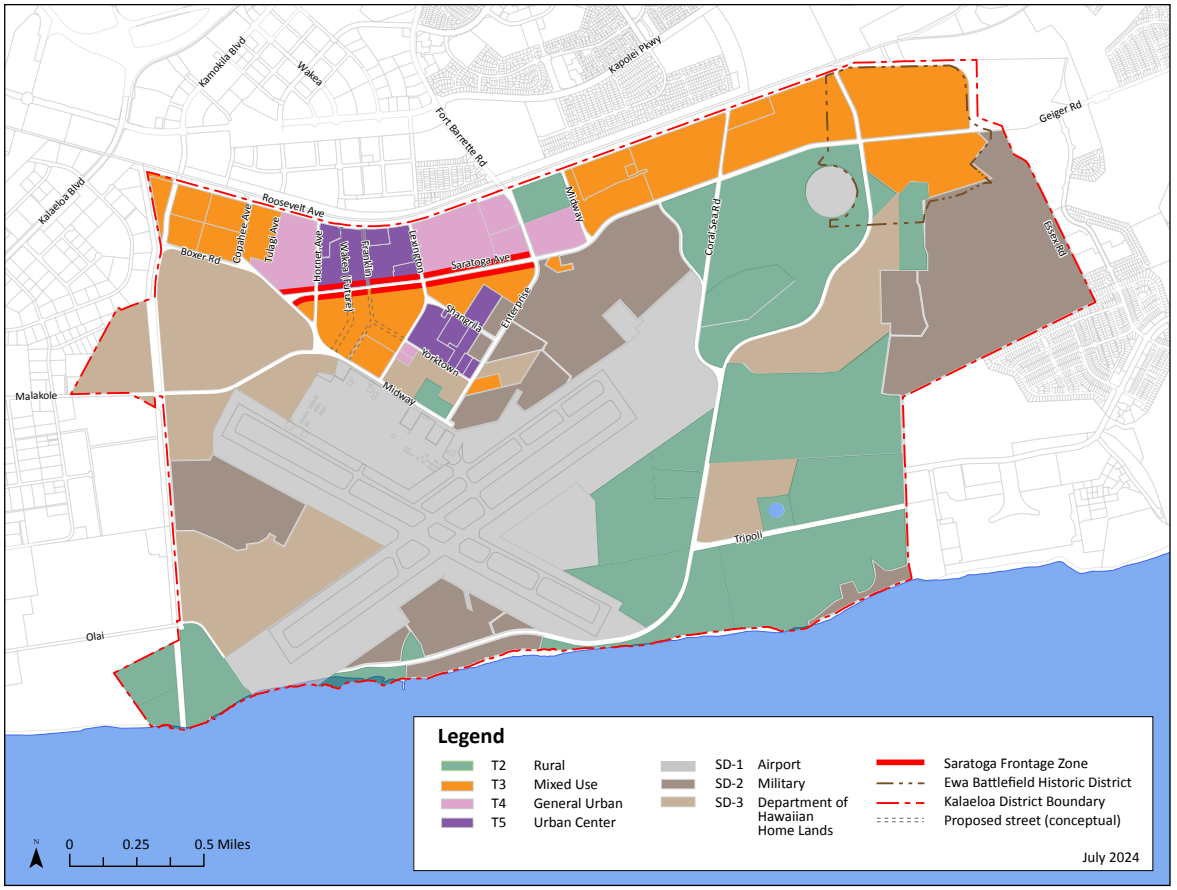


Figure 3-10: Regulating plan

3.2.1 Transect Zones

3.2.1.1 T2 Rural Zone

The T2 zone is comprised of large lots with natural landscapes, beaches, developed and undeveloped park areas, pedestrian and bicycle trails and limited agricultural use. The T2 zone consists primarily of lots along the ocean, lots reserved for regional parks or open space. Cultural, archaeological, and environmental uses and sites, such as the Kalaeloa Heritage Park and the ʻEwa Plain Battlefield, are located within the T2 zone. Properties located within the T2 zone may also contain civic and community uses, such as museums, libraries, fire stations, aquatic centers, playfields and the like, as well as associated parking for these activities.

Properties in T2 also include “eco-industrial” uses defined as environmentally-compatible industries that benefit the island-wide population. Industries such as solar or hybrid energy generation, bio filtration, hydroponic farming and other such sustainable technologies are compatible in these parcels. These industries require large land areas and can be located within the airport’s runway protection zones (RPZ) where height restrictions limit development or, in some areas, where noise contours resulting from airport activities exceed 65 day-night average sound levels (DNL). Any occupied structures built within these areas must comply with FAA requirements for development within RPZs.

3.2.1.2 T3 Mixed Use Zone

The T3 Mixed Use Zone is characterized by lower density development with a wide mix of activities. Some areas may be predominantly residential, characterized by single-family homes, duplexes, townhomes, and small apartment buildings. These areas may also include live-work spaces, home-offices, studios, and bed and breakfast inns. Limited local-serving retail and commercial uses, such as health care providers, neighborhood cafes, and small office buildings, are also permitted in the T3 zone.

Generally, buildings would not be taller than three stories and surface parking would be provided on the side or rear of the lot. Residential densities are expected to range from 8 to 20 dwelling units per acre and commercial uses are not to exceed a floor area ratio (FAR) of 1.0.

Other T3 areas may contain a mix of uses that skew more prominently to commercial and light industrial. Such uses could include professional offices, logistics and warehousing, and commercial recreation. The objective of the T3 zone is to meet an array of community and economic needs, while maintaining healthful levels of air and noise impacts and visual compatibility with surrounding development.

Where commercial and light industrial development results in larger-sized blocks or buildings are set back farther from the street, sidewalks will need to be designed to maintain a pedestrian friendly quality. Vegetative screening is required to wrap large areas of parking, loading, or buildings with blank walls. Sites with large surface parking lots are opportunities for incorporating photovoltaic panels, both as a source of renewable energy and to reduce the heat island effect.

3.2.1.3 T4 General Urban Zone

The T4 General Urban zone contains a diverse mix of uses at higher intensities than T3. Residential building types generally include townhomes and urban apartment buildings, as well as live-work spaces. Retail, hotel, and office uses are permitted.

Generally, buildings are not taller than five stories and may have a mix of garage and/or surface parking in the rear of the lot or the middle of the block, screened from view. Residential densities would range from 16 to 40 dwelling units per acre and commercial uses do not exceed 2.0 FAR.

3.2.1.4 T5 Urban Center Zone

The T5 Urban Center Zone includes a diverse mix of uses at higher intensities than T4 with the highest allowable density and height, containing a mix of retail, office buildings, civic uses, and residential. The T5 zone is the vibrant and bustling heart of Kalaeloa. Buildings are set close to the sidewalks to activate street life and sidewalks are wider to accommodate outdoor dining and public street furniture. Buildings are generally not taller than seven stories and will have garage parking screened from view along primary streets. Residential densities range from 40 to 100 dwelling units per acre and commercial uses do not exceed 5.0 FAR. Civic spaces include urban parks, plazas and squares. Tree-lined streets include curbs, sidewalks and landscaping on smaller-sized blocks and traffic-calming techniques implemented throughout.

3.2.2 Single-Use Special Districts

3.2.2.1. Special District 1 (SD-1) - Airport

The Airport Zone is located at the center of the District, where Kalaeloa Airport is the largest active land use in this zone. The airport is an economic driver, creating jobs and providing services as population in the ʻEwa region continues to grow. The Hawaiʻi Department of Transportation identifies Kalaeloa Airport as a general aviation airport and as reliever to the Daniel K. Inouye International Airport. An 18-acre circular parcel in the northeastern portion of Kalaeloa is the site of existing Federal Aviation Administration (FAA) navigational aids.

All parcels located within the Airport Zone are designated for their aviation, navigation, or military function. The entire land area within the Airport Zone is governed by applicable FAA standards

3.2.2.2 Special District 2 (SD-2) - Military

Many parcels are held by various Federal and State military agencies, including the Navy, U.S. Coast Guard, and the Hawaiʻi National Guard, and these lands are collectively designated as Special District 2 - Military. Agency development on these parcels is regulated by the respective rules and procedures.

3.2.2.3 Special District 3 (SD-3) – Department of Hawaiian Home Lands (DHHL)

DHHL owns approximately 224 acres of land within the Kalaeloa District. Because it may exempt itself from State and County land use regulations, DHHL lands are classified in a separate special district. In 2014, DHHL prepared the Oʻahu Island Plan which designated all Kalaeloa properties for industrial use. This land use designation encompasses alternative energy, industrial base yards, commercial operations, stabling, office space, public service uses, and recreation.

3.2.3 Special Overlay Zones

3.2.3.1 Saratoga Main Street Frontage Zone

The Saratoga Main Street Frontage Zone extends along Saratoga Avenue from the Boxer Road in the west to Enterprise Street in the east. This zone is intended to promote active ground-floor commercial and other uses on both sides of the street. Properties within the Saratoga Frontage Zone are subject to the regulatory requirements of the underlying transect zone, plus additional architectural façade and urban design standards intended to ensure a lively, pedestrian-scaled streetscape.

3.2.3.1 Ewa Plain Battlefield Overlay Zone

The Ewa Plain Battlefield overlay zone is intended to promote the protection and interpretation of the historical landscape of the Ewa Plain Battlefield. It reinforces Federal and State regulations and any covenants or associated agreements which protect these historic resources.

3.2.4 Parking and the Transect

Understanding the physical requirements and constraints of parking through the entire rural-to-urban transects affects the design of Kalaeloa community. For example, the sheer land area required to meet parking requirements on-site are often too great to right-size the blocks and create a walkable urban environment. Large-block dimensions resulting from "doughnut" solutions may affect street connectivity and walkability. In the case of parking, more is not necessarily better—in fact, it is often just the opposite.

One option to counter this, is the use of tartan street grids that intersperse larger blocks with smaller ones. Alternatively, if the financial resources are available, in T-4 and T-5 zones, a large deck surrounded with liner buildings containing active uses can be built at the outset of a project. Located at the center of a project, it can be used to handle overflow parking from neighboring blocks.

Robotic parking systems are another option to reduce the land area required for parking lots. Robotic parking systems consist of large computer-controlled, horizontal and vertical elevators that eliminate the space required for drive aisles and ramps thereby reduce the space required for parking.

Illustrative photo of examplary parking area integrated into a pedestrian plaza or woonerf.

3.3 Connectivity

The Plan envisions new streets to be woven into the existing grain of framework streets, as shown in Figure 3-11. Proposed new regional thoroughfares, including the extension of Wakea Street and connection of Saratoga Avenue to Coral Sea Road, would greatly increase connectivity within the district.

Given the listing of the ‘Ewa Plain Battlefield on the National Register of Historic Places in 2016, however, the planned City and State roadways east of Coral Sea Road need to be re-evaluated. Instead of continuing Saratoga Avenue east to Geiger Road, for example, it could be connected mauka to Roosevelt Avenue outside of the Battlefield. The future extension of Kualaka‘i Parkway also needs to be reconsidered to avoid the historic elements of the ‘Ewa Field which are to be preserved. The City- and State-owned rights-of-way through the ‘Ewa Field could potentially be exchanged for alternative alignments or other uses.

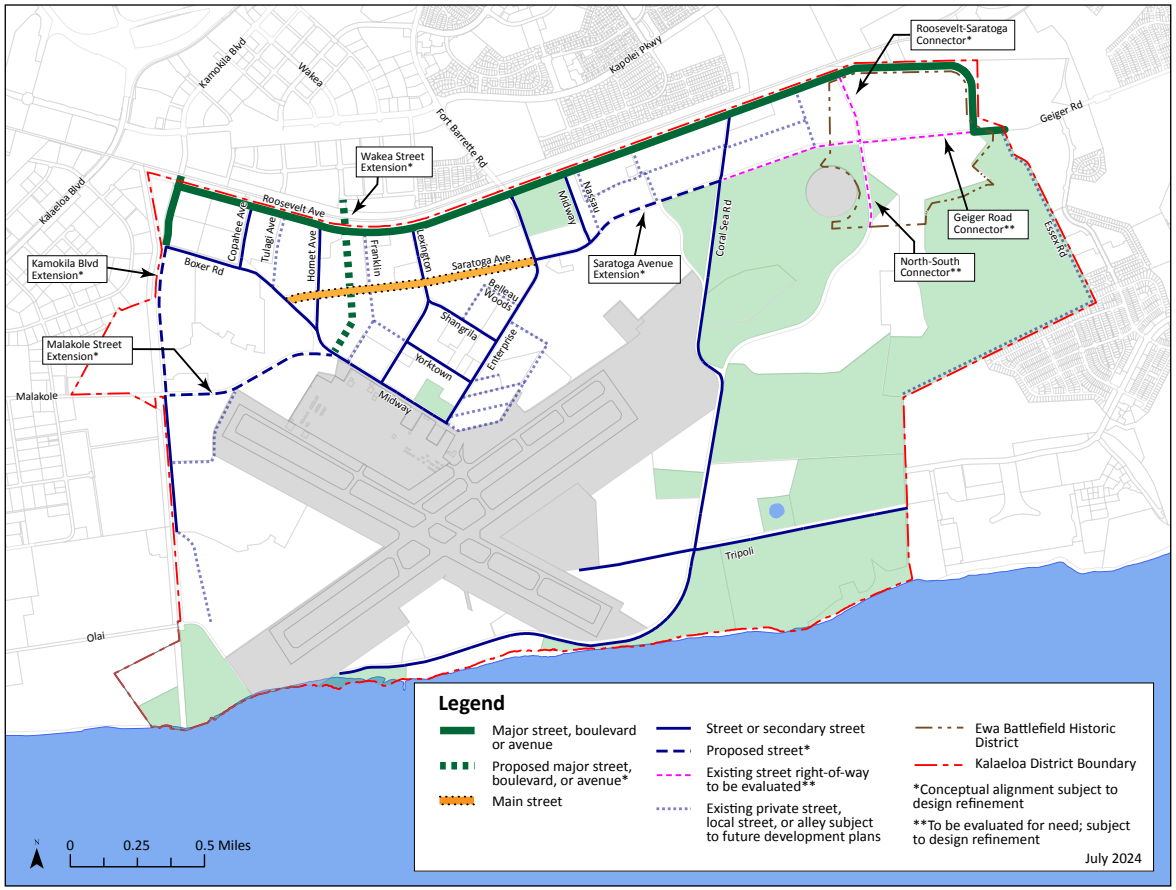


Figure 3-11: Conceptual thoroughfare Plan

3.3.1 Street Grid

The map depicted in Figure 3-11 is conceptual in nature. As each parcel is developed, streets are expected to be added, subtracted, or moved from where they are shown on this map. The street network can be viewed as an arrangement of blocks defined by their perimeters or the sum of all sides. In general, block sizes decrease as area land uses diversify

and/or intensify. As such, block-size perimeters generally should not exceed 3,000 ft in T3 Zones; 2,500 ft in T4 Zones; and 2,000 ft in T5 Zones. Within blocks, service roads, such as alleys, lanes, and driveways, as well as pedestrian and bicycle-only passageways may be provided.

Future development should be designed such that new streets terminate at other streets forming a network or street-grid. Streets in new developments should connect to existing streets in existing development where possible. Cul-de-sacs should be minimized and used to accommodate specific site conditions only.

Private streets and other internal thoroughfares should also form part of the street grid. Drive aisles in parking lots should be designed to meet City street standards (with appropriate sidewalks and tree plantings) so that parking fields can be converted to blocks with the drive aisles as streets.

3.3.1.1 Large Lots

It is anticipated that some development will occur on large blocks or lots with one or more large format type buildings as part of the ensemble, particularly in areas used for logistics or light industrial. These blocks may exceed the recommended maximum block-size perimeter. In some situations, internal thoroughfares including private streets and parking lot drive aisles could be designed to form part of the street grid. The diagrams in Figure 3-13 illustrate potential layouts.

3.3.1.2 Alleys

Alleys provide access to mid-block garages and service areas, thereby avoiding negative impacts of accessing garages and service areas directly from a street. Alleys are encouraged in all areas to eliminate the visual impact of garage doors, parking structures, and service areas along public streets. Alleys are required: (1) where traffic volumes on streets that abuts a lot exceeds 3,000 average daily trips ADT (and curb cuts should be avoided), and (2) where development will front directly onto preserves, parks, and parkways (with no intervening street).

3.3.1.3 Transit

Transit is an integral vision of the Kalaeloa Master Plan. Bus stops will be integrated into the major streets in Kalaeloa through clearly articulated curb bulb-outs, no parking zones, and unified street furniture. Bus stops should provide shade, seating, lighting, and trash and recycling receptacles. Photovoltaic (PV) panels

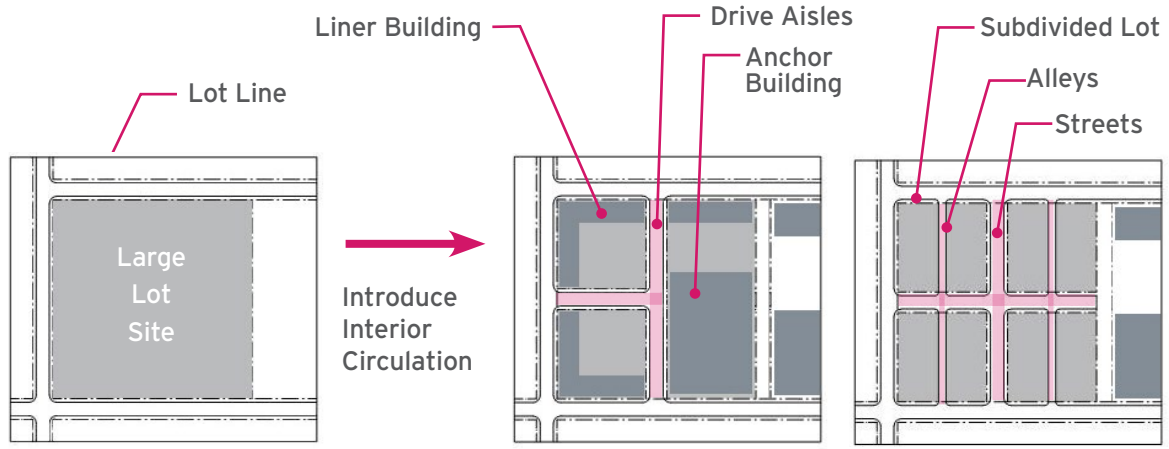


Figure 3-12: Large Lot Development Diagram

should be considered for incorporation on bus shelter roofs to provide clean power.

On- or off-street neighborhood mobility hubs could also be developed to facilitate transit connectivity. Centralized mobility hubs in Kalaleoa could integrate a range of transportation modes, such as bicycle storage, micro-mobility and shared-ride services, and electric vehicle charging. Services such as convenience retail, daycare services, or package delivery lockers could also be located at such hubs in order to improve the attractiveness and utility of transit services. In the near future, autonomous shuttles could also provide on-demand first- and last-mile connectivity between mobility and residential developments.

A multi-year demonstration project in Fairfax County, Virgina utilized an autonomous shuttle to connect the Dunn Loring Metrorail Station with the Mosaic District, a 31-acre urban mixed-use retail development.

3.3.2 Thoroughfare Standards for Complete Streets

All new and upgraded thoroughfares should be designed under the City of Honolulu's "Complete Streets" policy. Streets should generally consist of vehicular lanes and public frontages. Bicycle lanes will also be appropriate on some streets. Public frontages contribute to the character of the Transect Zone, and should include the types of sidewalks, curbs, planters, bicycle facilities, and street trees that contribute to a walkable, multimodal thoroughfare. Streets should be designed in context with the urban form and desired design speed of the Transect Zones through which they pass. Streets may include vehicular lanes in a variety of widths for parked and for moving vehicles, including bicycles. Within Transect Zones T3 through T5, pedestrian comfort shall be a primary consideration of street design.

Design conflicts between vehicular and pedestrian movement generally shall be decided in favor of the pedestrian. To discourage fast, cut-through traffic, traffic calming measures should accompany the interconnected street network called for in these standards. A large measure of traffic calming would be provided through the use of appropriately dimensioned travel and parking lanes. (Excessive street width has been identified as a major contributor to higher vehicle speeds and a higher incidence of severe injuries). Additional techniques may be employed to calm traffic further, for pedestrian safety and convenience.

3.3.2.1 Articulated Crosswalks

At crosswalks, visual and physical articulation signal the special needs of pedestrians to motorists. Articulation can be created through the use of special pavers and textured or colored concrete. Like speed humps, raised

Achieving **Pedestrian Comfort** through **Intersection Density**

A pedestrian is any person walking, skateboarding, using a wheelchair or other mobility device, or any other form of human-powered transportation other than a bicycle. Motorized wheelchair users are also considered pedestrians. Many of these modes primarily travel on sidewalks and other walking facilities.

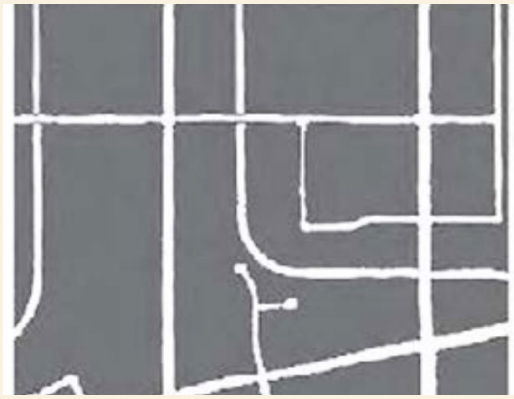
Pedestrians and bicyclists are often referred to as vulnerable users of roads because they do not have the protection provided by an automobile, though this can be improved by off-street trails or on-street separated bikeways. This is especially true for children, seniors, and those with disabilities, who may require additional time or unique information to use and cross roads safely. Creating places with enhanced pedestrian comfort is an important strategy in achieving the 20-minute city.

Intersection density is the number of intersections in an area. It corresponds closely to block size - the greater the intersection density, the smaller the blocks.

Small blocks correlate with pedestrian comfort and walkable urban places because the short block size provides walkers with numerous opportunities to vary their route, to investigate interesting activities or features, and to shorten or lengthen their walk without retracing their steps along the same roads. In contrast, in hierarchical street networks with curvilinear streets and cul-de-sacs, walkers have fewer route options as opportunities to change direction are farther apart (and often out of sight around curves). In addition, such loop and cul-de-sac patterns typically require travel on an arterial road to reach geographically close locations. Though intersection density is just one facet of walkability, it is an important one.

Studies have found increased traffic collisions in neighborhoods with large arterial roadways. These designs are more dangerous for motorists as well as pedestrians and cyclists, when compared to pedestrian-oriented street networks, where frequent cross traffic encourages slower and more cautious driving.

Block Size Comparison



15 Intersections per Square Mile

150 Intersections per Square Mile

A study of 24 medium-sized California cities found that safer cities—those with 1/3 the traffic fatalities of less safe cities—had double the intersection density. Moreover, they had larger percentages of people walking, biking and using transit than less safe cities.

Intersection density also seem to play a role within a city not just between different cities. An analysis of Davis, CA showed that areas of town with the highest intersection densities, had half as many traffic fatalities as those areas with the lowest densities.

Research has shown that of all the built environment measurements, intersection density has the largest effect on walking — more than population density, distance to a store, distance to a transit stop, or jobs within one mile. Intersection density also has large effects on transit use and the amount of driving. In other words, intersection density is the most important factor for walking and one of the most important factors for increasing transit use and reducing miles driven.

Finally, research indicates that higher street intersection density has environmental benefits. People living in neighborhoods with higher street intersection density tend to drive less and walk and take transit more, all the hallmarks of the 20-minute city.

	Safer Cities	Less Safe Cities
Population		
Population	**56,719**	59,845
Population Density	**5,736 per sq. mi.**	2,673 per sq. mi.
Intersection Density	**106 per sq. mi.**	63 per sq. mi.
Mode Share		
Driving	**84.1%**	95.8%
Walking	**5.4%**	1.7%
Biking	**4.1%**	0.7%
Transit	**6.6%**	1.7%
Safety		
Total Road Fatalities per 100,000 Population	**3.2 per year**	10.5 per year

intersections change the vertical plane and force motorists to slow down. Crosswalks that are placed at the same level as abutting sidewalks signal that pedestrians take precedence.

3.3.2.2 Bulbouts

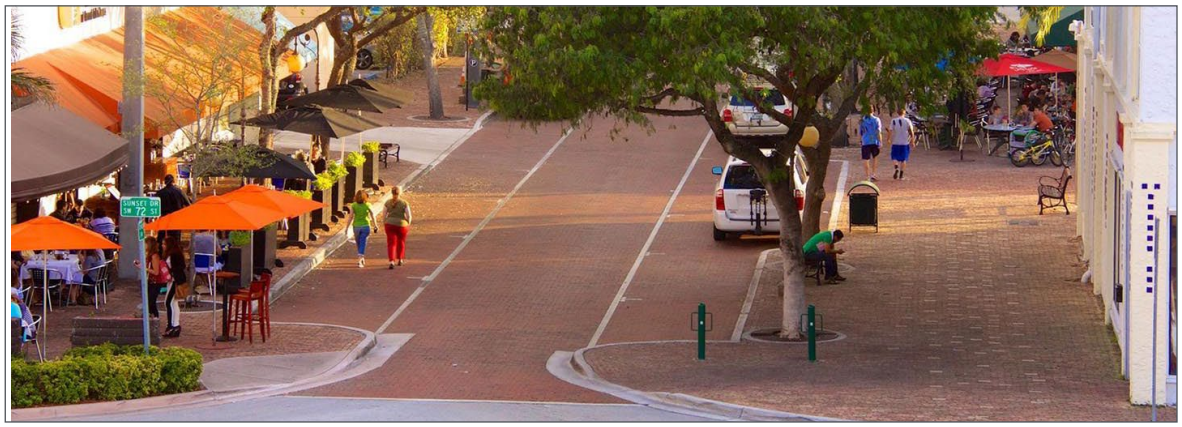
Bulbouts extend curbs and replace portions of the parking lane. They are especially warranted at intersections and other pedestrian crossings, where they slow motorists, provide a pedestrian refuge, and reduce pedestrian crossing distances.

3.3.2.3 Curb Radii

To slow traffic and reduce pedestrian crossing distances at intersections, curb radii should not be more than 25 feet at intersections between boulevards and in industrial areas, 15 feet at intersections between lanes, and 20 feet at all other intersections.

3.3.2.4 Circles

Traffic circles slow traffic while offering capacities for turning movements that usually exceed conventional four-way intersections. Circles can be small enough to be placed in the middle of typical intersections; though all circles should be designed to accommodate emergency response vehicles Roundabouts can also be large enough to accommodate multiple travel lanes and complex intersection geometries. Such a solution, for example, may be ideal for intersection of the potential future extensions of Wakea Street and Malakole Street at Midway Street, Boxer Road, and Hornet Avenue.Landscaping and lighting contribute to pedestrian comfort and a positive community identity.



Bulbouts provide safety for pedestrians

3.3.2.5 Offset Intersections

Travel routes that force turns because of offset intersections, slow traffic and discourage cut-through traffic. For safety, intersections should be offset by at least 150 feet (offset intersections also provide special vista opportunities for parks, civic buildings, building entries, monuments, or exceptional architecture).

3.3.2.6 Landscaping and Lighting

Landscaping, lighting, and public art contribute to pedestrian comfort, a positive and distinctive community identity, and opportunities to engage with the urban environment. An objective of the Kalaeloa Master Plan is to activate the public realm and streetscape elements can contribute to greater activity and use of public spaces. It is anticipated that some development will occur on large blocks or lots with one or more large format type buildings as part of the ensemble, particularly in areas used for logistics or light industrial. These blocks may exceed the recommended maximum block-size perimeter. In some situations, internal thoroughfares including private streets and parking lot drive aisles could be designed to form part of the street grid. The diagrams in Figure 3-12 illustrate potential layouts.

4 Chapter 4
Implementation

This chapter outlines four key components to the successful implementation of the Kalaeloa Master Plan (Master Plan): infrastructure, public services, financing, and governance.

4.0 Implementation Overview

The original Kalaeloa Master Plan was issued in 2006 and included a robust program of Implementation. Since that time, incremental progress toward buildout has occurred with the construction of the FBI regional headquarters in 2013, the Kalaeloa Professional Center in 2020, and most recently the Veterans Administration Outpatient Clinic (VA Clinic), which opened in 2024. Several residential neighborhoods have been renovated and new residential construction has resulted in Ka‘ulu by Gentry with future increments in design.

A range of educational institutions, including DreamHouse Public Charter School, Corvid Academy, American Renaissance Academy, and the Hawaii National Guard Youth Challenge Academy have found their home in Kalaeloa. Rights-of-way for several thoroughfares have been acquired. Initial electrical infrastructure upgrades have been undertaken including the development of an Electrical Energy Report in 2018, the construction of the Enterprise Energy Corridor, and multiple solar farms with a combined capacity of up to 15 megawatts by various landowners. Off-site, downtown Kapolei and numerous neighborhoods have blossomed. The first phase of Skyline, the rail service with an interim terminus roughly 1.5-miles from the Kalaeloa District, began operations in 2023.

Despite these successes, the bulk of what was expected to be developed within the District by 2025 has yet to begin construction. There are several reasons for the delays, including lack of landowner coordination in governance and implementation and inadequate infrastructure investment. Updating the Kalaeloa CDD Master Plan and Rules is intended to support continued development in the district. Updates to infrastructure master plans are underway, and preparation of a programmatic environmental impact statement is also being considered.

4.1 Infrastructure

4.1.1 Public Dedication

The Master Plan anticipates that all future utility systems at Kalaeloa will be operated by local utility providers such as HECO, Kalaeloa Water Company, BWS, City Department of Environmental Services, Hawaiian Telcom, and others. New roads, drainage, water supply, and wastewater systems will need to be designed to the standards of the organizations or agencies with jurisdiction.

4.1.2 Thoroughfares

The Master Plan identifies the classification for each existing and proposed thoroughfare of the Master Plan. All thoroughfares, (except for private streets) are intended to be constructed to City of Honolulu standards; however, some existing thoroughfare rights-of-way at Kalaeloa do not conform to existing standards and will require the transfer of additional land to governmental entities to expand the ROWs. The HCDA will lead the coordination of the construction of these thoroughfares with costs being borne by both the public and private sectors. In accordance with City Ordinance Section 33A-1.3, traffic impact fees would be assessed on developers within Kalaeloa to provide regional transportation improvements.

4.1.3 Public Transit

There are two primary types of public transit proposed for Kalaeloa: expanded bus service and rail connection.

4.1.3.1 Bus Service

Bus service should be enhanced to link downtown Kapolei to the Kapolei Transit Center and the Kualaka‘i (East Kapolei) Skyline rail station in order to provide high quality connections to downtown Honolulu and other locations. This would potentially include improving existing route 415 of TheBus to 15-minute headways, as well as adding two routes: one that runs the length of Saratoga Ave and another that runs along Coral Sea Road, both with 15-minute headways during peak periods.

4.1.3.2 Rail Service

Direct rail service to Kalaeloa could be developed as part of an extension of the Skyline rail transit system from the Kualaka‘i (East Kapolei) station to a terminus in West Kapolei. The City and County of Honolulu’s Locally Preferred Alternative (LPA) that was adopted in 2006 included an alignment with stations near Saratoga Avenue at North-South Road, Fort Barrette Road, and Wakea Street. This alignment through Kalaeloa, however, does not follow the existing streets or block patterns and requires extensive new rights-

of-way. To minimize impacts to existing and planned development, an alternative alignment could follow Roosevelt Avenue or the parallel drainage channel. Because such an alignment could serve both Kalaeloa and Kapolei, it could potentally have higher ridership than the 2006 LPA.

A rail station and interim terminus at the Ka Makana Ali‘i shopping center integrated with a transit center and a park-and-ride facility would also improve transit service to Kalaeloa.

Note that the 2006 Kalaeloa Master Plan originally envisioned the rail transit extension running in a center median along Saratoga Ave. This would be appropriate as an at-grade light rail transit (LRT) or bus rapid transit system, and could be designed to enhance a pedestrian-oriented urban community. Future transportation planning efforts will have to revisit the potential safety, cost, ridership, and technology aspects of these and other potential alternatives for providing direct transit service to Kalaeloa.

4.1.4 Drainage

Managing drainage during implementation of the Master Plan is two-fold: regional drainage from the mauka watershed that flows into Kalaeloa and run-off within Kalaeloa. In June 2017, the R.M. Towill Corporation (RMTC) produced a drainage report of Kalaeloa that was commissioned by the Hunt Development Corporation that addressed both of these issues. The recommendations below represent key elements of the 2017 drainage report.

4.1.4.1 Regional Drainage

RMTC recommended regional drainage improvements to channel offsite runoff from the Kapolei Village watershed and prevent flooding within Kalaeloa during large storm events.

The existing four 6-feet x 4-feet box culverts that convey offsite flows from the lower channel/basin to the NASBP coral pit under Roosevelt Avenue were proposed to be demolished and upgraded to three 9-feet x 10-feet box culverts. The proposed box culverts would be designed to accommodate a peak flow rate of 3,900 cubic feet per second (cfs) entering Kalaeloa from the Kapolei Village watershed. The proposed box culverts would provide adequate freeboard to meet City Storm Drainage Standards and alleviate the flooding that currently occurs in the vicinity.

The NASBP coral pit is an integral part of the regional drainage system design for Kalaeloa because it captures and disposes of all offsite runoff from the Kapolei Village watershed and there is no outlet to the Pacific Ocean. A total runoff volume of 1,150 acre-feet enters the coral pit from the Kapolei Village watershed and onsite areas within Kalaeloa. The volume of runoff from the Kapolei Village watershed and areas within Kalaeloa under the proposed condition is not expected to change. The resulting excess capacity of the NASBP coral pit is estimated to remain at approximately 243 acre-feet. Any future use of the NASBP coral pit must receive all appropriate permits and clearances.

4.1.4.2 On Site Drainage

RTMTC recommended that drainage areas within Kalaeloa continue to follow the existing drainage patterns during large storms exceeding the capacity of the proposed onsite drainage facilities and no other regional type of drainage facilities are required.

The storm drainage system within Kalaeloa was broken up into three basic areas: 1) large existing sump areas, 2) developable parcels, and 3) areas within the proposed HCDA/City of Honolulu right-of-way.

- Existing Sump Areas. The large existing sump areas would remain in place, with the exception of one, which is proposed for development but would be replaced by two drainage basins. Proposed City roadways and parcels would be served by a backbone drainage collection system consisting of roadway catch basins and underground drain culverts that convey runoff to existing sumps or proposed retention basins located in Kalaeloa. Existing parcels not planned for development would be served by the backbone drainage collection system where possible. The remaining existing parcels would continue to follow the existing drainage patterns. The environmental advantage of maintaining the sump areas as part of the drainage plan is that using the existing sumps as percolation/retention basins to hold the 100-year, 24-hour storm event would exceed the City of Honolulu storm water quality standards.

- Developable Parcels. Parcels not accommodated by the proposed backbone drainage collection system would be required to provide private drainage systems to collect and retain all runoff increases generated within the parcel from development. Existing parcels not planned for development would continue to follow the existing drainage patterns.
- Rights of Way. Proposed City roadways not accommodated by the backbone drainage collection system should be collected by roadway curb cut drain inlets and discharged into drywells onsite. However, at present, the City does not have a standard that allows curb-cut inlets being routed to rain gardens and if a roadway is built with curb cuts, it would be owned and maintained by an association. In instances where curb cut inlets are being utilized, the runoff collected by the curb cut inlets should be routed to rain gardens in the roadway shoulder that would serve as a best management practice (BMP) for treating the collected storm water. This is a key component for sustainability. The types of BMPs recommended for the roadway drainage system are summarized as follows:
- Rain Gardens: provide treatment of the standard 1-inch design storm - including effective sediment and refuse removal, while reducing peak flows and alleviating runoff volumes through infiltration. The rain gardens would be fed by curb cut inlets. Maintenance requirements are fairly low and could be performed by a landscape crew. After the vegetation establishment period, it typically consists of bi-annual removal of debris and mulch replacement.
- Sediment Manholes: protect the long-term function of dry wells (see below), by providing effective sediment and debris removal from runoff during larger storm events (greater than 1-inch). The manholes collect bypass and overflow from the rain garden, via curb inlet. Treated runoff is then conveyed to a dry well via an overflow pipe at a higher invert. Maintenance is similar to standard catch basin maintenance requiring a vac-truck to remove debris from the manhole, as needed.
- Dry wells: retain and infiltrate anticipated runoff generated in the right-of-way during a 10 year, 1-hour design storm. The dry wells receive treated stormwater runoff directly from the sediment manhole. Inspection should be conducted during routine maintenance of sediment manholes to ensure that there is no sediment build up. If the sediment manhole is functioning and maintained correctly, no maintenance is expected within the drywell.

Rain gardens capture and treat stormwater while providing attractive landscaping in urban settings.

4.1.5 Potable Water

In September 2016, RMTC prepared the Draft Kalaeloa Potable Water Master Plan. This master plan identified the need for Kalaeloa's water system to be improved and expanded to meet BWS standards and accommodate anticipated future water demands, the latter of which was projected to triple over current usage to 3.266 million gallons per day (mgd). This increase in demand was predicated on new housing units being constructed at Kalaeloa, but mitigated by the HCDA's mandate to utilize reclaimed or non-potable water for irrigation. The RMTC plan assumed a buildout that was less than the maximum buildout that would be allowed. Demand for potable water was derived by applying a land utilization factor to parcels to account for site conditions such as topography and previously identified areas of cultural or biological significance which limited development to less than maximum permitted densities.

It is important to reassess those buildout assumptions to ensure that the demand estimates in the 2016 RMTC plan are still applicable. It is also recommended that the 2016 plan be reviewed and updated as necessary to reflect any other changes in existing conditions, updated assumptions, or operational issues that have been made since the system was acquired by the Kalaeloa Water Company (KWC), which is a subsidary of Hawaii Water Service Company, Inc.

The RMTC plan (2016) stated that:

> *The anticipated 3.226 mgd demand is higher than the present 2.337 mgd water allocation for the Barbers Point Wells. Additional water source of 0.930 mgd must be requested from the BWS in order to accommodate the increase in water demand for ultimate development. Another option would be to petition the Commission on Water Resources Management to increase the Barbers Point water allocation. (p. 8-1)*

The RMTC plan also advised that the "request for 0.930 mgd of average daily flow is sizeable" and requests for water service should be made by the HCDA after approval of the Kalaeloa Master Plan amendment. While the water may not be required immediately, the request will allow KWC to evaluate their water resource situation and determine if water can be made available from the existing system or if additional water wells need to be drilled and permitted. If additional wells need to be drilled and permitted, the request for water may require negotiation between the HCDA and BWS. Development and operation of the potable water system will be under the auspices of KWC in accordance with the Honolulu BWS standards. Major components of the system will include source, storage, and transmission.

It is proposed that none of the existing Navy lines be incorporated into the water system on a permanent basis, primarily because these lines are about 50 years old and are generally too small to service the planned densities. Indeed, the RMTC plan (2016) stated that:

> *With the exception of the 24-inch line from the wells to Kalaeloa and along Roosevelt and Enterprise and the 18-inch line along Roosevelt and Coral Sea, most of the existing water lines in Kalaeloa do not have sufficient capacity to meet existing and projected fire flow requirements and are proposed to be removed or abandoned. (p. 8-1)*

For full buildout of the Kalaeloa Master Plan to be realized, water will need to be obtained from KWC, who will only provide service to portions of the water system where the water lines have been upgraded to meet BWS standards. It should be noted that since assuming ownership of the water system, KWC has made significant improvements to the existing water lines, reducing water loss by half. In order to receive additional permanent water allocation, KWC will require the payment of facilities charges and a commitment to discontinue the use of potable water that is used for irrigation when non-potable water becomes available. This

will require the construction of a separate non-potable water system as the water system is upgraded to meet BWS standards. Developers at Kalaeloa will be required to pay Hawai‘i facility charges prior to connecting to the water system. KWC will also award “credits” to the HCDA for water infrastructure improvement expenditures.

The RMTC plan stated that the existing water wells are in good condition, but the existing reservoirs would need to be renovated and additional reservoir capacity of 3.75 million gallons would be required. The existing water well and reservoir site is the preferred location for the new reservoir. Due to site constraints, this location must be thoroughly investigated.

KWC has agreed to provide interim water to the Kalaeloa area from a master meter off Kamokila Boulevard to facilitate the development of parcels located between Roosevelt Boulevard and Saratoga Avenue. As the water distribution system is brought up to BWS standards, additional parcels can receive KWC service. During the conversion from the original system to BWS standard water lines, the water systems may have to be operated separately. Fire protection for industrial parcels would have to be provided by the original system during the transition.

For existing Kalaeloa developments that disconnect from the Navy water system and connect to the proposed KWC system, either master meters or individual building meters could be installed, depending on the situation. If master meters are used, the owner of the system served by the meter would be responsible for billing individual users and paying the KWC for water supplied through the master meter.

4.1.6 Reclaimed (Non-Potable) Water for Irrigation

The BWS has been providing a supply of reclaimed (or R-1) water for irrigation use. BWS owns the R-1 recycling facility and distribution system (referred to as the “purple pipe”). Secondary effluent from the Honouliuli wastewater treatment plant is delivered to the recycling facility for tertiary treatment. The supply of R-1 water is currently available to the edge of Kalaeloa. Although R-1 is flowing, it is estimated to be approaching capacity.

To take advantage of R-1 water to irrigate parks and landscaped areas, non-potable water lines will need to be extended to individual parcels within the District. This can be achieved after the City increases R-1 supply.

In December 2016, RMTC prepared a Draft Kalaeloa Non-Potable Water Master Plan, based on buildout projections at the time. The RMTC plan concluded that there would be an increase in demand for reclaimed water to 1.583 mgd or 2.5 times current usage (which, at the time, was limited to the Barbers Point Golf Course) to support the full development of Kalaeloa. However, the RMTC plan assumed a buildout that was less than what was allowed, based on parcel-specific land utilization factors.

The RMTC plan asserted that the existing Kalaeloa non-potable water system would require significant improvements to meet BWS standards and accommodate anticipated future water demand of an additional 0.983 mgd of non-potable water for ultimate development. The most appropriate source is the BWS R-1 reclaimed water system. RMTC proposed to use as much of the existing system when the lines are replaced. Non-potable R-1 water is presently available but new developments are likely to require the generation of additional R-1 water supply.

The BWS currently produces reclaimed water that exceeds its current commitments (including full buildout of the City of Kapolei) by 2.7 mgd. This capacity is expected to increase when the City improves its secondary treatment capacity at the Honouliuli Wastewater Treatment Plant (scheduled completion in 2025) and the BWS expands its reclaimed water facility. Most of the current supply is allocated to existing developments.

The preliminary R-1 projection of 0.983 mgd average daily flow is sizeable and requests for non-potable water service should be made by the HCDA after approval of the Kalaeloa Master Plan update. While the non-potable water may not be required immediately, the request would allow the BWS to evaluate their non-potable water resource situation and work with the City on the expansion to the Honouliuli WWTP, to determine when additional non-potable water can be made available to the existing system or if new users must wait until additional water reclamation facilities are constructed.

The BWS has agreed to provide R-1 non-potable water when it is available. For a private system, the R-1 non-potable water will be provided by a meter off Kamokila Boulevard, where Roosevelt Avenue meets Geiger Road. As KWC brings the potable water distribution system up to current standards, it would be most cost-effective if the non-potable system were upgraded at the same time so that additional parcels can receive KWC potable and BWS non-potable water. During the conversion from the original system to KWC standard water lines, the dual water systems may have to be operated separately.

The replacement of the existing water lines as identified in Section 4.1.5, above, may provide the opportunity to rehabilitate the existing lines for non-potable water distribution. With the exception of the 24-inch line from the wells to Kalaeloa, along Roosevelt Avenue and Enterprise Street and the 18-inch line along Roosevelt Avenue and Coral Sea Road.

Most of the remaining existing water lines in Kalaeloa may be used for the non-potable water system if these pipes fall within the future road rights-of-way. The Navy has stated that these pipes are cast or ductile iron and it may be possible to rehabilitate these pipes. However, because these pipes are currently owned by KWC, their rehabilitation and reuse would have to be coordinated with KWC.

4.1.7 Sewer

In July 2016, RMTC prepared a Pre-Final Kalaeloa Sewer Master Plan. The plan concluded that Kalaeloa's sewer system will require modifications and upgrades to accommodate anticipated future sewage flows. Like the potable water system, the sewer system is owned and operated by KWC.

Full development of Kalaeloa would significantly increase the average wastewater daily base flow from 0.35 mgd to 3.1 mgd. However, as in other utility reports prepared by RMTC, buildout was assumed to be less than what was allowed based based on parcel-specific land utilization factors. It is important to reassess those buildout assumptions to

ensure that the demand estimates in the 2016 sewer plan are still applicable. It is also recommended that the 2016 sewer plan be reviewed and updated as necessary to reflect any other changes in existing conditions, updated demand assumptions, or operational issues since that time.

As part of the plan, a hydraulic analysis of the existing sewer system was undertaken and concluded that, except for one pump station located south of the airport's runways, the existing pump stations in Kalaeloa do not have sufficient capacity to meet projected wastewater flow requirements and are proposed to be removed or abandoned.

One proposed change to the existing sewage flow pattern is to discontinue the use of the 30-inch gravity line which conveys flow from the east and west sewer lines beneath the runways. Due to air traffic at the airport, access to the sewer line is restricted and limited; therefore, the RMTC plan proposed that wastewater from the east and west sewer lines converge at the same location north of the airport, then pumped northward towards Independence Road where it would be discharged into a 30-inch gravity line and conveyed east to the Honouliuli wastewater treatment plant.

All new sewage facilities including pumping stations and lines would be designed in accordance with KWC and City standards. Pumping stations would require a large concrete dry pit for housing the pumps, a building over the pit for ancillary equipment, and a separate room for a standby generator. Where such stations are visible to the public, they should be heavily screened with landscaping or provided with design details that relate to the architecture of the area. Developers at Kalaeloa will be assessed sewer facility charges by the City for offsite wastewater transport, treatment, and disposal. Therefore, it is recommended that any sewer master plan be submitted to the City for approval.

Recognizing the arid climate of Kalaeloa and the value of water as a resource, the RMTC plan recommended the recycling of water

from wastewater treatment facilities for beneficial reuse in irrigation, industrial reuse, groundwater recharge, and indirect potable reuse. To that end, RMTC recommended use of a scalping plant, which is a smaller decentralized wastewater treatment facility which extracts wastewater from a trunk sewer and removes solids and impurities to produce reclaimed water for reuse. A scalping plant is capable of providing comparable treatment (secondary or tertiary levels) to centralized wastewater treatment plants (WWTP) within a smaller facility and might be considered on lands owned by the HCDA that are otherwise not suitable for significant development.

4.1.8 Electrical

The existing electrical system in Kalaeloa will need to be upgraded given the scope of this Master Plan. An agreement with HECO is recommended to assure that improvements to the electrical distribution system serve future development in Kalaeloa. As detailed planning for each development project occurs, specific power requirements will be identified that can allow HECO to determine the work required to provide electrical service. Developers will be required to:

- Complete their own infrastructure design to show what infrastructure is needed to supplement or expand HECO's system. HECO must approve the developer's design plans before installation can begin.
- While the developer is designing their construction plans, the developer must also reimburse HECO when they design what is needed to provide service for the project. Developers are responsible for coordinating HECO's design. HECO's design amount hovers around 20% of their overall project cost.
- The remaining 80% is to reimburse HECO for installing their service. This includes installing cables, transformers, switch pads, and appurtenant equipment. It is then energized and provides actual service.

The 5-megawatt Aloha Solar Energy fund solar facility

4.2 Public Services

4.2.1 Municipal Services

Police, fire, emergency medical services, and other typical municipal services have transitioned to the City.

The Honolulu Fire Department has identified a need for a new fire station in Kalaeloa. Standard development procedures will ensure that a suitable location and facility are provided as Kalaeloa grows in the future.

4.2.2 Education

There are currently four schools in the Kalaeloa: Barbers Point Elementary School, DreamHouse Public Charter School, American Renaissance Academy, and Corvid Academy. Adjacent to Kalaeloa in Kapolei, there are two more elementary schools, a middle school, and a high school with several other schools further afield but close to the CDD. Given the existing constraints at Barbers Point and Hookele Elementary Schools, the Department of Education has stated that one new elementary school or possibly a middle school may be necessary to meet the projected needs of the District.

Design enrollment guidelines for new elementary schools are eight to 15 acres of usable land and provide capacity for 400 to 750 students. Standard development procedures will ensure that a suitable location and facility are provided.

Design enrollment guidelines for new elementary schools are eight to 15 acres of usable land and provide capacity for 400 to 750 students. Standard developement procedures will ensure that a suitable location and facility are provided.

4.2.3 Parks

Several parcels totaling 388.6 acres were transferred to the City's Department of Parks and Recreation (DPR) in 2024. One of them is an assemblage of approximately 220 acres along Saratoga Ave, tentatively known as Kalaeloa Regional Park - Mauka, which could someday have an array of active recreational facilities, such as basketball and tennis courts, baseball and soccer fields, and swimming pools.

Another assemblage includes the existing Kalaeloa Beach Park and Regional Park – Makai, bracketing both sides of Tripoli Road. DPR should undertake a master planning process for all future park properties with a robust community engagement component to properly plan for this extraordinary asset. Such a planning effort would identify regional needs for developed, programmed park spaces that provide sports courts, athletic fields, play structures, and aquatic facilities.

4.2.4 Trails

The HCDA is in a prime position to facilitate trails master plan by a local entity to guide the development of a trail network in Kalaeloa. An historic trails plan should specifically be undertaken to provide public information on the cultural, historical, and environmental assets within Kalaeloa and provide public access to them, where culturally appropriate. A trails plan should also connect cohesively to existing trails in the broader 'Ewa region.

4.3 Financing

In the implementation of the Master Plan, private developers will finance new development for their projects and public agencies will finance new improvements on their lands. The remaining piece of financing is for the construction of new infrastructure and utility systems to serve public and private sector developments.

4.3.1 Grant Sources

The U.S. Department of Commerce's Economic Development Administration (EDA), through its Public Works and Economic Development Facilities Assistance Program, provides funds for infrastructure improvements that promote economic development. Total EDA awards at other former military bases show that bases which attracted the most funding each received between $8 and $11 million.

Major roadways and improvements that support transit use or alternative modes of transportation may be eligible for other funding sources, particularly the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law, enacted in 2021. These funds are typically provided through regional metropolitan planning organizations (MPOs). The HCDA will work with the O'ahu MPO to secure available funds.

4.3.2 Bond Financing

The remaining cost of infrastructure improvements will need to be financed through bond issuances that, depending upon the type of bond, will be repaid either from assessments on property owners or tax revenues generated by new development at Kalaeloa. A range of bond tools can be used, but since repayment is based on new development, their use will be limited to infrastructure serving new development projects.

Financing for infrastructure improvements on lands owned by public agencies could be accomplished through state-issued general obligation bonds.

4.3.3 Hawai'i Community Development Authority Special Assessment Bonds

The HCDA, subject to authorization by the Legislature, may issue and sell bonds to provide funds to finance public facilities that are backed by assessment on benefitting landowners. The salability of these bonds would likely be based upon the bond market's confidence that the landowners directly affected by the improvements would be able to cover bond payments, regardless of the timing of new development.

4.3.4 Community Facilities District Bonds

The State has provided counties with the authority to issue Community Facilities District bonds that can be used to finance infrastructure improvements (HRS §46-80.1). Community Facilities District bonds are paid through assessments on future property owners and are thus backed by the property rather than the City. Community Facilities District bonds also require that the financed improvements be dedicated to the City.

One limitation of Community Facilities District bonds is that they tend to slightly reduce the sale prices and value of new development, in order to offset the additional assessments that property owners must pay. These bonds are backed by the bond market's confidence in market conditions and the proposed development project, and thus may not be saleable until developers are selected.

4.3.5 Federal Infrastructure Funds

In 2021, President Biden signed the Infrastructure Investment and Jobs Act "to authorize funds for Federal-aid highways, highway safety programs, and transit programs, and for other purposes." This Act and other subsequent funding legislation may

provide opportunities to help finance certain infrastructure projects in Kalaeloa.

4.3.6 Tax Increment Finance Bonds

The State has authorized counties to issue Tax Increment Finance bonds that can be used to finance infrastructure improvements (HRS §46-101 et. seq.). A tax increment district is first established for an area to be redeveloped. As new development occurs, the incremental additions in property tax revenues that are generated (after deducting the costs of new municipal services such as public safety, public works, etc.) can be used to finance bonds.

This technique does not result in an increase in property tax rates, nor does it impact activities that are currently funded by existing property tax revenues in the tax increment district. Because Tax Increment Finance bonds are repaid from property taxes that new property owners have to pay, there is no potential impact on property values as there is with Community Facilities District financing.

The limitation of Tax Increment Finance bonds is that there must be an existing tax increment flow to finance bonds. This means that Tax Increment Finance bonds may be more appropriate in later phases in Kalaeloa's development.

4.4 Governance

At present, at least 16 public agencies and two private entities either own land or are designated to receive land in Kalaeloa once the base closure conveyance process has been completed. In base reuse efforts that involve multiple jurisdictions, having an effective governing authority and an efficient process for decision making that can bind all participants is essential for the success of the redevelopment effort.

Through its statutory authority, the HCDA has the ability to accelerate reuse through development entitlements, pursue the issuance of bonds to finance improvements, and assess properties as needed to fund Kalaeloa's management. As the successor to the former Local Reuse Authority (Barbers Point NAS Reuse Commission); the HCDA has standing to work with the Navy on remaining base reuse issues.

Therefore, in 2012, the HCDA enacted Chapter 215 of Title 15, Hawai'i Administrative Rules, entitled "Kalaeloa Community Development District Rules" and Chapter 216 of Title 15, Hawai'i Administrative Rules, entitled "Kalaeloa Reserved Housing Rules." These effectively act as the zoning for the areas under its authority. As part of this Kalaeloa Master Plan amendment process, an update to the administrative rules has been authored, requiring approval by the Small Business Regulatory Review Board and the Governor.

Street trees fronting Hawaii National Guard facility along Enterprise Street.

However, given the multi-jurisdictional nature of Kalaeloa, the HCDA cannot solely rely upon its statutory authority but must coordinate with the various entities within Kalaeloa in a manner that can facilitate implementation of the Master Plan. The federal government and State agencies own and operate many properties throughout the District and the HCDA acknowledges their regulatory supremacy.

Two other State agencies, in addition to the HCDA, have significant land holdings in Kalaeloa. The Hawaii Department of Transportation Airports Division (HDOT-A) owns and operates the airport. All development within 20,000 feet of the runways at JRF require HDOT-A and FAA review.

The Department of Hawaiian Home Lands (DHHL) owns numerous parcels constituting approximately 550 acres. Per the State Constitution, the Hawaiian Homes Commission's land use authority is not subject to the counties or other State agencies' land use powers.

As stated in Section 1.2.2, other entities also control significant land holdings and

interagency coordination is critical if the Master Plan is to be successfully implemented.

There are several ways in which this coordination can occur, which involve varying degrees of formality. At the most informal level, agency-to-agency contact through meetings and written correspondence on a frequent basis can address many of the coordination issues involved in development planning and project implementation. When specific property maintenance or development agreements are necessary, more formal means of coordination are required.

Depending upon the circumstances, a formal Memorandum of Agreement or contract between parties may be warranted and can be negotiated in such a manner that conditions of the agreement are binding upon the parties.

Another method is the creation of a Kalaeloa Redevelopment Leadership Group consisting of the HCDA, DHHL, HDOT-A, and the Navy to seek major infrastructure development funding from federal and State sources. The funding and implementation of significant projects by this Leadership Group will incentivize further investment by other Kalaeloa landowners, catalyzing development in the District.

Led by the HCDA, the Leadership Group would meet regularly to do the following:

- Explore the implementation challenges to create shared problem framing. These challenges might involve changing the status quo.
- Reconnect the long-term and short-term. This group would be asked to create specific tactics for moving forward, (e.g., solving the electrical grid hookup), identify fundamental changes and corresponding actions needed to reach the envisioned future.
- Engage and anchor the vision of the Master Plan with relevant agencies, departments, and landowners thereby relating it to their own objectives and practices.

The third, and most formal, mechanism for coordination is through the enactment of legislation. Depending upon the circumstances and the parties involved, legislation could be sought at the federal, State, or City level. Legislation should be considered when seeking funding or when there are structural changes in the authority or relationships between parties. Since such actions are subject to public debate and policy making, uncertainties exist in the process. Further, the timing required for the passage of legislation may adversely impact development phasing and implementation.

DRAFT

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