



KALAELOA MASTER PLAN



STATE OF HAWAII

HAWAII COMMUNITY DEVELOPMENT AUTHORITY



MARCH 1, 2006



KALAELOA VISION STATEMENT

Kalaeloa is a Wahi Ho'okela
(Center for Excellence)
within the 'Ewa region.

Kalaeloa is a center
where Hawai'i's people come together
to share knowledge, develop expertise,
and advance themselves
while remaining respectful of past and place.

Through the pursuit of excellence,
Kalaeloa is a model for achievement
to surrounding communities,
the islands of Hawai'i, and the world.

Adopted by the Hawai'i Community Development Authority in May 2005.

CORE VALUES & GUIDING PRINCIPLES

Embrace and strive for excellence.

Respect the places of Kalaeloa, throughout Kanehili
from the plain of Kaupe'a to the shores of Kualaka'i.

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 Hawai'i, City & 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.

Adopted by the Hawai'i Community Development Authority in May 2005.

The Kalaeloa Master Plan was prepared under the direction and guidance of the Hawai'i Community Development Authority (HCDA). The HCDA was established under the State Legislature in 1976 to supplement traditional community renewal methods by promoting and coordinating public and private sector community development.

HCDA plans for and revitalizes urban areas in the State that have been identified by the Legislature to be in need of timely redevelopment. Its legislative mandate empowers HCDA with comprehensive planning, regulation, and development responsibilities.

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ACRONYMS AND ABBREVIATIONS

BRAC	Base Realignment and Closure
BWS	Board of Water Supply (City and County of Honolulu)
City	City and County of Honolulu
DHHL	Department of Hawaiian Home Lands (State of Hawai'i)
DOE	Department of Education
DOT	Department of Transportation (State of Hawai'i)
DOT Airports	Department of Transportation-Airports Division (State of Hawai'i)
EDA	Economic Development Administration
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
HCDA	Hawai'i Community Development Authority
HECO	Hawaiian Electric Company, Inc.
HNG	Hawai'i National Guard
HRS	Hawai'i Revised Statutes
MG	million gallons
MOA	Memorandum of Agreement
NAS	Naval Air Station
psi	pounds per square inch
ROW	right-of-way
State	State of Hawai'i
USCG	United States Coast Guard
WWTP	Wastewater Treatment Plant

1.0 OVERVIEW

1.1 INTRODUCTION— THE KALAELOA STRATEGIC PLAN

There is a unique opportunity to redevelop Kalaeloa. Within its approximately 3,700 acres, Kalaeloa—the former Naval Air Station (NAS) Barbers Point, holds the potential to respond to the desires of the community, the aspirations of the City and County of Honolulu (City), the goals of the State of Hawai‘i (State), as well as the needs of the United States (U.S.). New job opportunities, educational institutions, mass transit, regional connectivity, recreation, affordable housing, resource protection, new industries, economic growth, and national defense can occur in Kalaeloa.

In May 2005, the Hawai‘i Community Development Authority (HCDA) recognized this opportunity through the adoption of a Strategic Plan that established a vision for Kalaeloa as a “Center for Excellence” or Wahi Ho‘okela within the ‘Ewa region of O‘ahu. This vision is founded on a set of core values aimed at striving for excellence in multiple disciplines, respect for the past, creating social and economic value, and community involvement. Therefore, Kalaeloa is seen as becoming a center for Hawai‘i’s people to share knowledge, develop expertise, and advance themselves while remaining respectful of past and place. Through the pursuit of excellence, Kalaeloa can become a model for achievement to surrounding communities, the islands of Hawai‘i, and the world.

Realization of this potential and fulfillment of the vision for Kalaeloa are not simple tasks nor will they be accomplished within a period of months or even a few years. The redevelopment of Kalaeloa is an

extraordinarily complex undertaking that will occur over the course of a generation or more. Throughout this time, many events will happen that may affect the redevelopment in terms of market demand, economic cycles, governance policy and timing. It is important however, that through these events, the vision and the core values of Kalaeloa remain constant.

1.2 THE KALAELOA MASTER PLAN

HCDA has prepared this Kalaeloa Master Plan (Master Plan) to navigate through the challenges facing redevelopment and to chart an economically feasible and realistic course toward the vision of Kalaeloa as a Wahi Ho‘okela.

The Master Plan, upon adoption and necessary approvals, is intended to serve as an amendment to the existing Kalaeloa Community Redevelopment Plan, prepared as part of the U.S. Navy’s Base Realignment and Closure (BRAC) process. Doing so will allow the Kalaeloa Community Redevelopment Plan to retain its statutory function as the principal policy and planning document for HCDA’s use in coordinating with federal, state, and county government agencies, developers, private landowners, and the community.

For the Master Plan, the planning team conducted a concentrated and concerted planning effort that involved the review of previous plans, studies, and other reference documents, followed by the preparation of a regional economic analysis, infrastructure analysis, cash-flow model, noise study, urban design guidelines,

and assessment of the impacts to Kalaeloa posed by the homeporting of an aircraft carrier strike group at Pearl Harbor. Additionally, the planning team conducted interviews with stakeholders, met with government agencies, and held workshops with the community and the HCDA to receive clarification and feedback on the direction and concepts being developed. The result of this planning process resulted in the assemblage of a considerable amount of relevant and detailed information on a multitude of subject matters.

The Master Plan was written with the intent of distilling this information into an understandable planning document that offers the reader a cogent overview towards the realization of the opportunities and vision for Kalaeloa. In this regard, subsequent chapters of the Master Plan are organized in the following manner:

- *Starting Points—Understanding the Pieces:*
Chapter 2 reviews the history of Kalaeloa pertaining to the closure of NAS Barbers Point and past planning efforts. This is followed by a description of the current setting of Kalaeloa in terms of land ownership, conveyance status, land uses, infrastructure, physical characteristics, protected species and habitat, cultural environment, and regional economy.
- *Planning for Opportunity:*
Chapter 3 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, and integrating the possibility of military reuse.

- *Land Uses and Design Guidelines:*
Chapter 4 describes and illustrates the preferred land uses in Kalaeloa and summarizes the various areas for mixed use, airport, light industrial, eco-industrial, military, institutions, open space, parks, and recreation. This is followed by an overview of the design guidelines that will give form to all new development projects.
- *Implementation:*
Chapter 5 summarizes the issues surrounding the successful implementation of the Master Plan, including phasing, infrastructure improvements, public services, financing, and governance.

Attached to the Master Plan is a series of technical appendices that provide additional details and specific information as follows: economic analysis, infrastructure analysis, cash-flow model, design guidelines, noise study, and carrier strike group assessment.

2.0 STARTING POINTS, UNDERSTANDING THE PIECES

This chapter summarizes the various elements or “pieces” necessary to better understand and identify development opportunities and constraints at Kalaeloa. Among the important starting points is the BRAC process and prior planning efforts resulting in the NAS Barbers Point Community Redevelopment Plan described below. Additional “pieces” that need to be understood include the role of the HCDA, regional setting, establishment of the Kalaeloa Community Development District, current status of land ownership and uses, as well as existing natural and cultural resources, infrastructure, and regional economic conditions.

2.1 BASE CLOSURE AND REUSE PROCESS

In 1993, the U.S. Congress authorized the Department of Defense’s recommendation for the closure of the NAS Barbers Point (Kalaeloa). During the closure process, federal real property disposal regulations required the U.S. 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 other private parties.

When NAS Barbers Point formally closed on July 2, 1999, the U.S. 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 Hawai‘i State Legislature established the NAS Barbers Point 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.

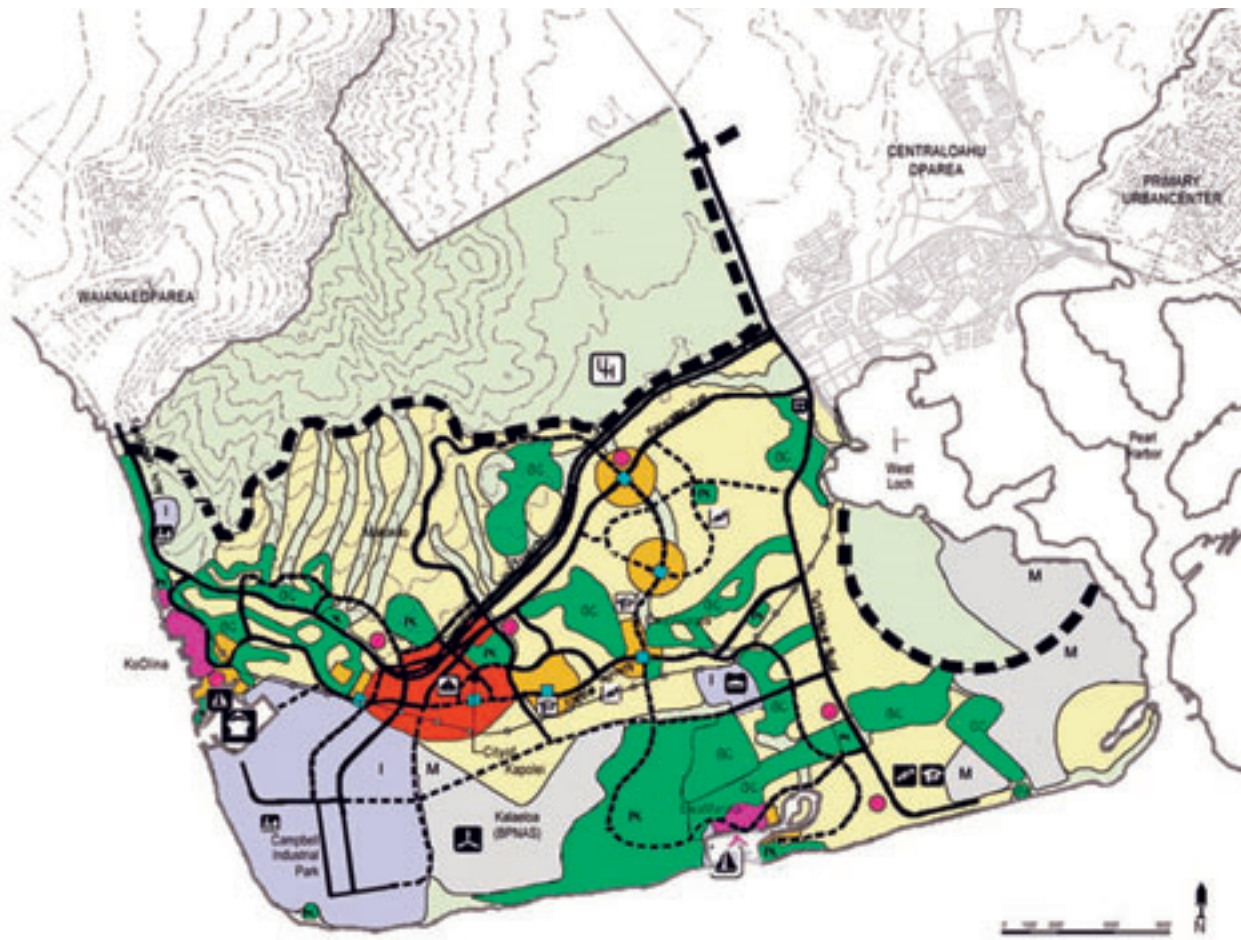
2.1.1 Past Planning Efforts—Community Redevelopment Plan

On October 8, 1996, the NAS Barbers Point Reuse 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 in the preparation of an Environmental Impact Statement (EIS) for the disposal and reuse of the surplus land. Since its adoption, the Community Redevelopment Plan was amended five times between 1997 and 2001 to respond to new site conditions and changes in interest of government agencies designated to receive surplus land. (Refer to Figure 2-1)

2.1.2 Hawai‘i Community Development Authority

In July 2002, Act 184 of the 2002 Hawai‘i State Legislature (SB 2702, SD2, HD2, CD1) transferred redevelopment responsibility for Kalaeloa from the NAS Barbers Point Redevelopment Commission to the HCDA. The State Legislature created the HCDA in 1976 to supplement traditional community development methods and revitalize economically depressed or blighted urban areas in the State. HCDA assumed responsibility for redevelopment of Kalaeloa, overseeing remaining conveyances, contract administration, promulgation of administrative rules, and other tasks relating to the Redevelopment Commission.

FIGURE 2-2 'EWA DEVELOPMENT PLAN



Urban Land Use Map

- | | |
|--|---|
| | Low and Medium Density Residential |
| | High Density Residential |
| | Community Commercial Center |
| | City of Kapolei (High Density Residential and Commercial) |
| | Resort/Recreation Area |
| | Industrial |
| | Military |
| | Public Institution |
| | Agricultural and Preservation |
| | Parks and Golf Courses |
| | Transit Node (High Density Residential and Commercial) |
| | Urban Growth Boundary |

EXISTING FUTURE

- | | | |
|--|--|------------------------------------|
| | | Civic Center |
| | | Electric Power Plant |
| | | Wastewater T.P. |
| | | Intermediate School |
| | | High School |
| | | U.H. West Oahu |
| | | Hospital |
| | | Small Boat Marina |
| | | Commercial Harbor |
| | | Airfield |
| | | Highways, Arterial & Major Streets |
| | | Historic Railway |

Source: 'Ewa Development Plan, City and County of Honolulu, August 1997.

2.3 KALAELOA COMMUNITY DEVELOPMENT DISTRICT

Act 184 of the 2002 Hawai'i State Legislature not only transferred redevelopment responsibility to the HCDA, it also redefined the boundaries of the Kalaeloa Community Development District to include the entirety of the former NAS Barbers Point. As such, the Kalaeloa Community Development District includes the lands retained by the U.S. Navy, the excess lands conveyed to other federal agencies, and the surplus lands designated for disposal.

2.4 LAND OWNERSHIP, LAND USE, AND THE 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. New federal legislation has emerged allowing the Navy to sell or lease portions of its retained lands in support of redevelopment at Ford Island in Pearl Harbor. Land transferred pursuant to this legislation has since been sold to private entities. Furthermore, within the past three years, pending conveyances to government agencies have been suspended until a decision is made regarding the possible homeporting of an aircraft carrier strike group.

The following table provides a current listing of existing and interested landowners at Kalaeloa and the status of conveyance. At present, 25 percent (929 acres) of Kalaeloa is being retained by the U.S. Navy; 44 percent (1,621 acres) has been transferred or conveyed to other government and private parties; and 31 percent (1,146

acres) is pending conveyance to government agencies or unallocated.

A description of each of the current and interested land owners is also provided in the sections below.

2.4.1 U.S. Government

2.4.1.1 U.S. Navy

When the U.S. government designated NAS Barbers Point for closure, the U.S. Navy retained approximately 1,055 acres for housing, recreation, operational and community support services. In April 2000, the U.S. 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 Road and in select parcels throughout the downtown area. Navy retained lands that are not part of the Ford Island development include the Barbers Point Golf Course and adjacent horse stables, White Plains Beach, Nimitz Beach, Landfill, Public Works Center, and Defense Reutilization and Marketing Office facilities.

2.4.1.2 U.S. Coast Guard—Airwing Headquarters

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,

TABLE 2-1: KALAELOA LAND CONVEYANCE STATUS

Table 2-1: Kalaeloa Land Conveyance Status (in acres)

Entity	Landowner	Retained	Conveyed	Pending	Subtotal
Federal	Navy – Golf Course, Horse Stables, 2 Beaches, Landfill, Public Works Center, & DRMO	437			437
	Navy (To be brokered for Ford Island development)	492			492
	U.S. Coast Guard – Airwing Headquarters		44		44
	Federal Aviation Administration – Navigational Aid Beacon		18		18
	Fish & Wildlife Service – Pearl Harbor National Wildlife Refuge		37		37
	Veterans Affairs – Homeless Assistance & Social Services		7		7
	U.S. Postal Service		1		1
State	Hawai'i National Guard – Headquarters & Youth Challenge Hawai'i		148		148
	Department of Education – Barbers Point Elementary School		14		14
	Department of Hawaiian Home Lands		278	278	555
	Department of Transportation – Kalaeloa (John Rodgers) Airport		752	53	805
	Department of Transportation – Various Roads		91		91
	Housing & Comm. Dev. Corp. of Hawai'i – Holo Loa'a Shelter		12		12
	U.H. - School of Ocean & Earth Science & Tech.			9	9
	U.H. – Honolulu Community College – Pacific Aerospace Training Center		6		6
City & County of Honolulu	Board of Water Supply – Reverse Osmosis Facility		20	11	31
	Department of Transportation Services – Various Roads		66		66
	Department of Parks & Recreation – Parks & Sports Center			485	485
	Department of Environmental Services – Wastewater System			4	4
Private	Ford Island Housing LLC – On-Station Housing		53		53
	Carmel Partners – Orion, Makai, and Orion Park Housing		73		73
Open	Unallocated - Parcels			281	281
	Unallocated - Roads & Easements			26	26
	Total Acreage:	929	1,621	1,146	3,695

including the Marianas, Caroline, and Marshall Islands. The site at Kalaeloa accommodates maintenance facilities for the USCG's C-130 transport aircraft and HH-65 helicopters.

2.4.1.3 Federal Aviation Administration—Navigational Aid Beacon

The U.S. Federal Aviation Administration (FAA) received 18 acres of land for the location of two (2) navigational aids. One instrument is an outer marker for Runway 08L at Honolulu International Airport and the other is a nondirectional beacon that serves Kalaeloa Airport and Wheeler Army Airfield. Both aids are co-located in the center of the 18-acre parcel and surrounded by a 500-foot clear zone to protect the radio signals from the instruments.

2.4.1.4 Fish & Wildlife Service—Pearl Harbor National Wildlife Refuge

The U.S. Fish and Wildlife Service 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 the airport runway, the ocean, and the Campbell Industrial Park drainage channel and contains the endangered plant species—*Achyranthes splendens* var. *rotundata*.

2.4.1.5 Veterans Affairs

The U.S. Department of Veterans Affairs received two parcels of land designated as excess to the Navy's needs. These parcels encompass an area of approximately seven acres. Through a lease agreement with U.S. Vets, Inc., three buildings on these sites have been renovated

and are now providing housing and social services for veterans.

2.4.1.6 U.S. Postal Service

The U.S. Postal Service received a one-acre parcel of land in the downtown area. The post office currently services the Kalaeloa area and is an alternative postal center for the Kapolei and 'Ewa communities.

2.4.2 State of Hawai'i

2.4.2.1 Hawai'i National Guard—Headquarters and Youth Challenge Hawai'i

The Hawai'i National Guard (HNG) received three parcels totaling approximately 148 acres. The 29th Separate Infantry Brigade is the largest unit in the Hawai'i 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 Hawai'i Air National Guard also has a presence at Kalaeloa as the 297th Air Traffic Control Squadron, operating the airport's air traffic control tower. In addition, the HNG Youth Challenge Program at Kalaeloa provides "at risk" teens a second chance to earn their high school diplomas through a mentored, military-based education program.

2.4.2.2 Department of Education—Barbers Point Elementary School

The Barbers Point Elementary School was conveyed to the State Department of Education (DOE) under a public benefit conveyance as a part of the disposal of surplus land at Kalaeloa. The elementary school currently has an enrollment of approximately 535 students from

kindergarten through sixth grade. The students are from Kalaeloa, Honokai Hale and Upper Makakilo areas.

2.4.2.3 Department of Hawaiian Home Lands

Fourteen parcels totaling approximately 555 acres were designated for conveyance to the Department of Hawaiian Home Lands (DHHL). These parcels, ranging in size from 1 acre to 130 acres, are located in three distinct areas: west of the airport, downtown, and east of the airport runways. Lands designated for transfer to DHHL were part of a settlement agreement under the Hawaiian Home Lands Recovery Act (P.L. 1-4-42).

To date, approximately 50 percent of the 555 acres have been conveyed to the DHHL. DHHL is currently leasing portions of these lands and appurtenant facilities to approximately 20 tenants for various commercial and industrial purposes.

2.4.2.4 Department of Transportation—Kalaeloa (John Rodgers) Airport

The Kalaeloa Airport, located on a 752-acre parcel in the center of Kalaeloa, has been conveyed to the State Department of Transportation (DOT) 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 (one is currently owned by the University of Hawai'i, see Section 2.4.2.7), and 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 Honolulu International Airport. Additionally, Kalaeloa Airport is used as a training center for students and instructors to practice landings, takeoffs, and touch-and-go training. However, extensive use of the airport is limited and DOT Airports Division (DOT Airports) is in the process of improving Kalaeloa's infrastructure to attract general aviation tenants. In addition to offering aviation gasoline fuel service, DOT Airports will be installing an instrument approach landing system at Kalaeloa.

A major \$10.6 million renovation program currently underway at Kalaeloa Airport includes runway and taxiway improvements, installation of new lights and signs, and other repairs. Funding of these improvements by the FAA is subject to grant assurances which require the DOT Airports to continue operating Kalaeloa as an active airfield. Also, in order to support the development of fixed-base operator facilities at Kalaeloa, DOT Airports has configured three one-acre fixed-base operator parcels as well as seven 10,000-square-foot parcels for other aviation tenants.

Regarding the aircraft noise environment at Kalaeloa, the 2004 noise contours are relatively small, with

aircraft noise from Honolulu International Airport having a negligible effect. Noise contours do not enclose residential or other noise sensitive land uses, so they are considered to be compatible with land uses in the immediate environs of the airport. (Note: For a more detailed discussion of aircraft noise impacts at Kalaeloa, see Appendix E.)

2.4.2.5 Housing & Community Development Corporation of Hawai'i

Pursuant to the McKinney Homeless Assistance Act (P.L.100-77), the Hawai'i Housing Authority (predecessor to the Housing and Community Development Corporation of Hawai'i) received conveyance of two parcels totaling 12 acres for homeless assistance services. These parcels contain four buildings that have since been renovated and leased to Holo Loa'a to coordinate and provide housing services for the homeless.

2.4.2.6 University of Hawai'i, School of Ocean & Earth Science and Technology

The University of Hawai'i had expressed interest in 2002 in a 9-acre parcel that included Ordy Pond and its immediate surroundings, intending to use this parcel as a field station for scientific research on wetland plant and animal species. The parcel remains in open space and the conveyance is pending.

2.4.2.7 University of Hawai'i, Honolulu Community College—Pacific Aerospace Training Center

The University of Hawai'i received conveyance of a 6-acre parcel within the airport. This parcel houses a large aircraft hangar and is used by the Pacific Aerospace Training Center (jointly operated by Honolulu Community

College and the University of North Dakota). The training center is a FAA-approved (Part 141) program that provides students with a career path into the field of professional aviation. The curriculum meets training requirements for commercial air carriers. Graduates are prepared to continue in aviation academic fields to obtain baccalaureate training, to seek employment as flight instructors, or to obtain entry level pilot positions.

2.4.3 City and County of Honolulu

2.4.3.1 Board of Water Supply—Reverse Osmosis 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 desalination plant to supplement O'ahu's potable water supply. An adjoining 10-acre parcel has also been identified for transfer to the BWS. The conveyance is pending.

2.4.3.2 Department of Parks & 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 a Pacific International Sports Complex. 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 & Recreation is currently under a licensing agreement with the U.S. Navy for two baseball parks and one beach park in Kalaeloa.

2.4.4 Private Entities

2.4.4.1 Ford Island Housing LLC—On-Station Housing

Ford Island Housing LLC currently has the fee interest in a 53-acre housing area in Kalaeloa. This housing area, referred to as On-Station Housing, consists of 28 single-family residences and was the former officers' housing area when NAS Barbers Point was operational. Most of the residences are 50 years or older and many are currently without utility services. There are about 11 units that are being made available as market rentals.

2.4.4.2 Carmel Partners—Orion, Makai, and Orion Park Housing

In May 2005, Carmel Partners 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 multi-family units.

2.4.5 Unallocated Land

During the BRAC process, several government agencies withdrew their interest in receiving lands in Kalaeloa. The U.S. Fish and Wildlife Service withdrew interest in 3 of the 4 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 State DOT-Airports and the University of Hawai'i have since expressed interest in each 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 to be used as a heritage park. However, the State later withdrew interest. Two of the parcels were previously used by the U.S. 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.

2.5 EXISTING INFRASTRUCTURE

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

2.5.1 Roadways

There are more than 20 miles of existing roadways at Kalaeloa. The existing roadways do not meet State or City standards and are in varied states of repair. 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 U.S. Navy as described below:

2.5.1.1 Department of Transportation-Highways Division

Roads that were transferred to the State DOT include Franklin D. Roosevelt Road, West Perimeter Road, Enterprise Road, Coral Sea Road, and a right-of-way for a future connection with the North-South Road.

2.5.1.2 Department of Transportation Services

The roads transferred to the City Department of Transportation Services include: Saratoga Road, Independence Road, Tripoli Road, Yorktown Road, Shangri-La Road, Midway Road, Lexington Road, Hornet Road, Copahoe Road, Boxer Road, and several right-of-ways for road extensions.

2.5.2 Public Transportation

The segment of Fort Barrette Road between Farrington Highway and the main gate serves the growing Villages of Kapolei residential area. Geiger Road west of Fort

Weaver Road also serves portions of the 'Ewa by Gentry residential development, and the clubhouse for the Coral Creek Golf Course.

Public transportation in the 'Ewa region is primarily provided by the City's "TheBus" system of fixed routed (trunk, local, and express), transit hubs, and the HandiVan special services. A transit hub has been created to the north of Kalaeloa in Kapolei. The transit hub in Kapolei is connected by TheBus to the transit hub in 'Ewa, with a limited number of transit stops along Roosevelt Road in Kalaeloa. Additionally, a transit route currently serves the downtown area in Kalaeloa with a stop at Yorktown and Enterprise Road. Service however is infrequent and limited to one stop in the morning and one stop in the evening.

2.5.3 Drainage

Drainage from areas mauka of the northern boundary is allowed to overflow into a Kalaeloa coral pit near the intersection of Roosevelt Road and Fort Barrette Road from an infiltration/detention canal north of the railway alignment parallel to the northern boundary. During extreme precipitation events, the capacity of the overflow pipes from the infiltration/detention canal to the coral pit is inadequate and the canal overflows across the railway alignment to Roosevelt Road. Such events result in localized flooding at several locations between Fort Barrette Road and the northeast corner of Kalaeloa. The drainage received by the infiltration/detention canal and the overflow to the coral pit comes from the Villages of Kapolei, the Kapolei Golf Course,

and a mauka tributary area above the H-1 freeway. This is the sole means of drainage for this watershed. Conversations with City personnel indicate that the planned DHHL development north of Kalaeloa between Kapolei Golf Course and 'Ewa Villages needs a reliable means for disposal of drainage runoff.

West of Fort Barrette Road, runoff from Kapolei City is intercepted by an open channel, north of the railway alignment and parallel to the northern boundary that discharges to a drainageway along the west property line between the Kalaeloa planning area and Campbell Industrial Park. This drainageway, which is outside of Kalaeloa, ends in a permitted discharge to the ocean near the southwest corner of Kalaeloa.

Stormwater runoff within Kalaeloa is discharged into an extensive system of more than 250 drywells, most of which are located in the downtown area. These drywells, though permitted through the State Department of Health, do not currently conform to City standards. There are no permitted discharges to surface waters within Kalaeloa. Runoff is also allowed to pond in various locations, where it eventually infiltrates into the coral underlayer. Localized flooding closes Coral Sea Road and Tripoli Road during large storm events.

Areas along the shoreline have various flood hazard designations according to the Flood Insurance Rate Maps. Any planned development within designated flood zones is limited by and needs to comply with the constraints of the specific flood zone designation.

2.5.4 Water Supply

The water distribution system in Kalaeloa is currently owned and operated by the U.S. Navy and currently serves all existing facilities at Kalaeloa. Anecdotally, the Navy water supply system is in a relatively poor state of repair and has been subject to significant water losses. Within Kalaeloa, the capacity of the Navy water infrastructure is not adequate to support the planned development. Additionally, the Navy has indicated that it will not increase its current water usage at Kalaeloa, due to aquifer draft limitations at the Navy's Halawa Shaft. The Navy's responsibility is provision of water to federal agencies. New development by non-federal entities will require installation of new water infrastructure that meets current BWS standards.

Mauka of the northern boundary, the BWS's East Kapolei 215-foot elevation water system is being constructed; portions of the system will be constructed and/ or funded by the DHHL.

- The primary transmission main along the pending North-South Road is planned for completion within the next decade. This main is planned to end at the northern Kalaeloa boundary. However, this main is sized to supply fire flow demand to Kalaeloa (at 20 pounds per square inch [psi] at the hydrant) based on the planned (future) land use scenario performed in previous master planning done in the Year 2000. To support development of Kalaeloa proposed in this Master Plan, peak hourly demand requires

higher in line pressures (40 psi) to Kalaeloa, and fire service lines will require upgrading to meet BWS standards.

- Additional reservoir storage will be needed to handle the planned development of Kalaeloa.

Non-potable water (typically for irrigation use) is also available along the northern boundary of Kalaeloa in the form of reclaimed water from the BWS's Honouliuli Wastewater Treatment Plant. Use of such reclaimed water within Kalaeloa will require additional (dual) non-potable service lines to designated areas in Kalaeloa.

2.5.5 Sewer System

The existing sewer system in Kalaeloa is currently owned by the U.S. Navy and operated, under license, by the City Department of Environmental Services. The sewer system is currently in the process of being conveyed via a Public Benefit Conveyance to the City. The Honouliuli Wastewater Treatment Plant (WWTP) is in close proximity, and it appears to have adequate capacity for the redevelopment of Kalaeloa, generating an ultimate flow of approximately 12 million gallons per day of wastewater. Due to ongoing development within the service area of the Honouliuli WWTP, the availability of treatment capacity will be dependent upon the timing of planned capacity increases at the plant.

The existing sewer system is in various stages of disrepair and the integrity of currently unused portions of the sewer system is unknown. The system does not meet City standards, with the existing pumping

stations being the major non-standard components. All new pumping stations constructed in conjunction with implementation of the Master Plan will be required to meet City standards.

2.5.6 Electrical System

The existing electrical distribution system in Kalaeloa is currently owned and operated by the U.S. Navy. The Hawaiian Electric Company, Inc. (HECO) has, thus far, expressed an unwillingness to accept the existing on-site Navy system due to concerns regarding the condition and compliance of the infrastructure and potential environmental liability associated with the electrical system. Since HECO is the primary electrical utility provider on O'ahu, any future electrical system at Kalaeloa will likely be an extension of HECO's generation, transmission, and distribution grid.

2.5.7 Telecommunications

The telephone and communications cable system in Kalaeloa is currently owned by the U.S. 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.

2.6 PHYSICAL ENVIRONMENT

2.6.1 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.

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 long 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.

2.6.2 Climate

The climate of the region is 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 'Ewa Plain with slightly higher figures for the upland area; and prevailing winds from the northeast at 9 knots. Also, solar insolation data for Kalaeloa shows 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 potential.

2.6.3 Groundwater

The groundwater under Barbers Point is within aquifers that are part of the 'Ewa 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, is present under Kalaeloa.

This 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.

2.7 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. A single colony of endemic round-leafed chaff-flower shrubs (*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, and also the western boundary of Kalaeloa are frequented by the federally listed endangered Hawaiian black-necked stilt (*Himantopus mexicanus knudseni*) and 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.

2.8 CULTURAL ENVIRONMENT

2.8.1 Cultural Background

Kalaeloa, like many places throughout the Hawaiian Islands, is a place with traditions and cultural attachments that span generations, from Hawaiian antiquity to the modern day.

Ka-lae-loa is literally translated as, “the-distant-point”. This is descriptive of the point as seen when walking the ancient foot trail across the ‘Ewa plain between the Wai‘anae and Kona Districts of O‘ahu.

Under the system of traditional land management, Kalaeloa is a place within the ahupua‘a of Honouliuli. Several places in the vicinity of Kalaeloa are documented in native traditions as being associated with the activities of akua and kūpua (gods and supernatural beings). Among the storied places on the Kalaeloa landscape are the following localities:

Pu‘u o Kapolei. This was the home of Kamuluaniho, the deified grandmother of Kamapua‘a, a child possessed of human, pig and other natural body-forms. In the time of Kamuluaniho, the fields around Pu‘u o Kapolei were cultivated in ‘uala (sweet potatoes). While the kula (plains) lands were arid, and noted for scattered dry land agricultural activities, the areas inland of Pu‘u o Kapolei, the watered lands of Honouliuli, were noted for extensive lo‘i kalo (taro pond-fields).

A heiau (temple) atop Pu‘u o Kapolei marked the movements of the sun in the heavens above. By these movements ancient Hawaiians noted the changing seasons between Kau (summer) and Ho‘oilo (winter).

Pu‘u o Kapolei and other localities on kula lands extending out to Kalaeloa, are praised in traditional mele (chants) as well. Through such mele, we learn something of the nature of the place in ancient times. In 1867, native historian S.M. Kamakau provided readers with mele that tell of the land and its storied places:

Ke kula of Peekaua;
The kula [plain] of Pe‘ekāua;

A o kona oliliko ana e ulili haamalule ana i
Puuokapolei,
And Pu‘uokapolei which shimmers in the daylight;

A ua kolilii koliliko kona wailiula i ke kaha o Kanehili
ka hele o ka wiliwili me ka lau o ka maomao
It is on the arid flat lands, of Kānehili, with the mirage forming waters, that the wiliwili and maomao grow, with their leaves scattered in the wind

Me he kanaka la ka ohai o Kaupea,
People are like the ohai blossoms of Kaupea

Ka wiliwili haoe kaune i ka la,
The wiliwili appear to stagger in the sun

Kulolia i ke kaha i Kanehili,
Stricken on the plain of Kānehili

I ke kaha kahakai o Kaolina—e,
At the shore of Ka-‘olina (Ko‘olina),

He wahi oline na ka la i Puuloa...
There is a place of joy [reprieve] from the sun
at Pu‘uloa

[Kamakau, in Nupepa Kuokoa, August 10, 1867:3; Maly, translator]

O Hiiaka ka wahine,
Hi‘iaka is the woman

Ke ako la i ka pua o Hoakalei,
Who picked the flowers of Hoakalei,

Ke kui la, ke uo la i ka manai
And with a needle strung and made them into

Eha ka lei, ka apana lei lehua A ka wahine la, kuu pokii.
four garlands, the sectioned lei of the woman,
O my younger sibling.

Kuu pokii mai ke ehu makani o lalo.
My younger sibling who came from the place
where the dusty wind rises from below.

Lulumi aku la i ke kai o Hilo one.
Overturned in the sea of Hilo-one,

No Hilo ke aloha,
The aloha is for Hilo,

Aloha wale ka lei—e.
Love for the lei.

[S. Desha, et al., in Ka Hoku o Hawai‘i, February 22, 1927; Maly, translator]

Kaupe‘a. Between Pu‘u o Kapolei and Kalaeloa are found the arid—and less hospitable kula lands—called Kaupe‘a. This region was also described as the “ao kuewa” a land over which spirits roamed in an effort to depart this world to the next. But even with such a tradition of Kaupe‘a, the people of old still found beauty in the landscape and praised it in traditional mele—

O-u o lea ka manu o Kaupea,
The ‘Ō‘ū is the joyful bird of Kaupe‘a,

Ka O-o manu leo lea o Puuloa,
The joyful voiced ‘Ō‘ō is of Pu‘uloa,

E hoonaeele ana i ka pua o ka Wiliwili,
Softening the blossoms of the Wiliwili,

Inu iaola i ke koena wai lau noni
Drinking the drops of nectar from the noni,

Inu ka manu ano kunewa...
The birds drink and pass time...

[M. Manu in Nupepa Ka Oiaio, May 10, 1895:1; Maly, translator]

Hilo One and the Spring of Hoakalei. Near the shore of Kalaeloa were once found places of fame in the traditions of Hi‘iaka-i-ka-poli-o-Pele, youngest sister of the Pele clan, who traveled across the Kalaeloa lands while on her return trip to Hawai‘i Island, from Kaua‘i. While traveling along the shore between Kalaeloa and Kualaka‘i, Hi‘iaka was adorned with blossoms of the lehua trees which grew in the vicinity. At the place called Hilo One, she found the spring Hoakalei, where she stopped and looked at the water. Upon looking in the water, she saw her own reflection, adorned with the lei of lehua blossoms, thus the name Hoakalei

(reflections of the garland). These places of Kalaeloa are commemorated in the lines of the following mele—

Ke ako la i ka pua o Hoakalei,
Who picked the flowers of Hoakalei,

Ke kui la, ke uo la i ka manai
And with a needle strung and made them into

Eha ka lei, ka apana lei lehua A ka wahine la, kuu pokii.
four garlands, the sectioned lei of the woman,
O my younger sibling.

Kuu pokii mai ke ehu makani o lalo.
My younger sibling who came from the place
where the dusty wind rises from below.

Lulumi aku la i ke kai o Hilo one.
Overturned in the sea of Hilo-one,

No Hilo ke aloha,
The aloha is for Hilo,

Aloha wale ka lei—e.
Love for the lei.

[S. Desha, et al., in kahakō Hawai‘i, February 22, 1927; Maly, translator]

The spring of Hoakalei was still known to kama‘āina of the region through the early 1900s. It had been covered over as a result of development at Barbers Point, in the period around World War II.

Native historian S.M. Kamakau recorded in the late 1860s, the circumstances around the renaming of Kalaeloa to Barbers Point. He reported that in 1796, the ship Arthur, under the command of Captain Henry Barber, ran aground at Kalaeloa (the northern section of the point). This being the first foreign vessel to wreck on Hawaiian shores, the name of Captain Barber was

noted on the charts of other foreign vessels. (cf. S.M. Kamakau, 1961:174).

By the late 1840s, when native tenants of the land were allowed to make claims for private property rights, no claims were made for property in the vicinity of Kalaeloa. While the important fisheries of the Kalaeloa region remained important to Hawaiians—and have been used regularly through the present—it was the inland section of Honouliuli, with its watered taro pond-fields and fishponds, that was sought out by native tenants.

In the 1880s, the lands of the Kaupe‘a-Kalaeloa region were being turned over to cattle grazing. This use of the land continued through the early 1900s. Additional activities in the early 1900s included radio communications facilities, the expansion of sugar cultivation, and the transport of water and soil to the near shore flats. In the years leading up to World War II, the importance of the Kalaeloa region for military operations and its association with Pu‘uloa (Pearl Harbor) led to the closing of public access and development of the NAS Barbers Point.

2.8.2 Archaeological Sites

A complete inventory of archaeological sites was previously conducted at Kalaeloa, the former NAS Barbers Point. A total of twenty-four (24) Historic Site Resource Areas were delineated. They contain sixty-two (62) archaeological sites and sixty-four (64) historic structures eligible for listing on the National Register of Historic Places. The identified archaeological sites

contain at least 746 features including habitation complexes, agricultural complexes, sink hole complexes, and historic structures. Fifty-two (52) of the archaeological sites are considered to be significant or potentially significant. The remaining ten (10) sites are so thoroughly disturbed that very little of their original components and qualities remain intact. Each of the significant sites retains sufficient data, informational value, and research potential to address questions of local and regional prehistory and history.

2.8.3 Historic Buildings

A complete inventory of historic buildings identifies two potential historic districts and sixty-four (64) individual historic buildings considered eligible for nomination to the National Register of Historic Places. The two potential districts are the World War II Housing Area and the Marine Corps Air Station 'Ewa area. Three individual buildings at the Kalaeloa Airport have been placed on the National Register. They include the air traffic control tower and two large hangars (Hangars 110 and 111). Kalaeloa is not within or adjacent to any National Historic Landmarks.

2.9 REGIONAL ECONOMY

Provided in the sections below is a summary of a regional economic analysis that details: (a) historical trends that have shaped the 'Ewa region; (b) market trends to assist in projecting demand for particular land uses that could be located at Kalaeloa; and (c) long-term trends associated with the growth of the island and regional economy that can create demand for new products and

activities. A copy of the Regional Economic Analysis report is contained in Appendix A.

2.9.1 Population

Prior to closure of the O'ahu Sugar Company in the early 1990s, much of the 'Ewa region was dedicated to sugar cane cultivation. During the 1990s, the cane fields yielded to newly constructed homes. Much new development occurred east of Kalaeloa along Fort Weaver Road. The region is now home to approximately 70,000 people, while the larger Leeward O'ahu area ('Ewa, Central O'ahu, North Shore and Wai'anae) contains nearly 300,000 residents.

As the 'Ewa region is developed into a new urban center, it is the location on O'ahu most likely to accommodate population growth. While the O'ahu-wide population increase is forecast at 1.6 percent annually, 'Ewa could see a 3.6 percent average annual growth rate. Of the 200,000 additional residents expected on O'ahu (between 2000 and 2025), about 30 percent are expected to live in the 'Ewa region. The City's 'Ewa Development Plan contemplates a resident population in the year 2020 to be almost 125,000.

2.9.2 Housing

Surveys suggest that about a third of 'Ewa's adult residents work in the region. The low rate of in-region commuting is to be expected, since most 'Ewa residential areas were recently built. However, over time, more residents will find work nearby if jobs relocate to the region along with workers.

In the early 1990s, the State strongly supported the idea of mixed-income communities, planning the Villages of Kapolei to accommodate families with incomes ranging from 80 percent of the County median household income and above. Affordable housing regulations ensure that developers are building housing for sale to moderate income households. Very little rental housing is being built. Housing surveys show large and growing demand from households earning 50 to 80 percent of the median income (approximately \$35,000 to \$55,000 in 2005).

2.9.3 Employment

In 2000, about 15,000 jobs were located in the ‘Ewa region. Employment has largely been in the industrial, commercial, and retail sectors. Campbell Industrial Park is O‘ahu’s leading industrial area, and the nearby Kapolei Business Park is also attracting buyers of largely custom-built industrial and commercial properties. Retail areas in the center of Kapolei have been largely built out. The City’s ‘Ewa Development Plan estimates employment within ‘Ewa to rise to over 64,000 in 2020.

2.9.4 Economic Forecast

O‘ahu planners and political leaders have long intended Kapolei to become another city. Plans for regional development have emphasized diversity of uses, including residential, commercial, and industrial space, along with key public facilities. Planning for the City of Kapolei has emphasized a “garden city” ambiance, with open promenades surrounded by mid-rise development.

To date, however, office and commercial buildings have been built in isolation, surrounded by parking lots, and residential areas consist largely of detached single-family homes. Several new projects currently being planned and developed in the ‘Ewa region may help provide the catalyst for higher density urban development, including:

- Residential, and eventually, marina development at Ocean Pointe, abutting the eastern boundary of Kalaeloa;
- Additional residential development along Fort Weaver Road and in the central ‘Ewa region;
- Large residential projects at Makaiwa Hills and West Kapolei;
- Hotel, timeshare, and attractions development at Ko Olina; and
- Development of the University of Hawai‘i West O‘ahu campus and the DHHL parcels along the North-South Road corridor. Both of these are likely to include housing and large-lot commercial spaces.

Therefore, while the island of O‘ahu as a whole is anticipated to have stable and consistent economic growth over the next few decades, the ‘Ewa region is likely to see growth equal to, or greater than, the rest of the island. Residential, commercial, and industrial growth will be focused in the ‘Ewa region.

3.0 PLANNING FOR OPPORTUNITY

The vision for Kalaeloa as a center for excellence and the various “pieces” presented in previous chapters provide the context for assembling a conceptual framework for developing the land use plan discussed in Chapter 4. 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, addressing regional traffic congestion, protecting open space and cultural and natural resources, and integrating the possibility of military reuse.

3.1 CREATING SOCIAL VALUE

The 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, accessibility, 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.

In keeping with the City’s vision for a new urban center in the ‘Ewa region, Kalaeloa is uniquely situated to create a sustainable urban environment where a community can live, work, learn, and play. 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 can support and increase

ridership on the City’s planned public transit system;

- Capitalizing on emerging technologies, research, ecologically sustainable development, and aviation-related industries as a means of creating new jobs and economic developments (see Section 3.2);
- Designating new schools that are embedded in neighborhoods rather than remote from them; and
- Establishing a network of open space and recreation facilities that can connect the community and provide access to the shoreline and cultural and natural resources. (see Section 3.5)

3.2 PROVIDING NEW ECONOMIC DEVELOPMENT AND EMPLOYMENT OPPORTUNITIES

Many of the uses proposed by the current Community Redevelopment Plan were highly speculative and have not produced significant redevelopment of Kalaeloa or a sustainable employment base. A recent report by the U.S. General Accounting Office indicated that Kalaeloa has seen only 100 new jobs created after 618 jobs were lost when the base closed in 1999. Only six other bases out of the 73 closed bases nationwide created fewer jobs. The new urban center in Kapolei envisioned by the City is projected to provide 30,000 jobs and homes for 7,000 people by 2020. An opportunity exists for Kalaeloa to recover lost jobs and contribute to the development of the urban center in Kapolei.

Kalaeloa, given its relatively large amount of developable land and a functioning airfield as well as its location within the ‘Ewa region, presents several opportunities for new economic development in addition to other commercial, retail, and office activities. These include aviation related industries, alternative energy production, and technology research and development.

3.2.1 Aviation-Related Industries

In its current capacity, the Kalaeloa Airport is relatively limited in its ability to support aircraft operations. However, as the State DOT-Airports completes improvements to the airfield; greater use of the airport can be achieved allowing for use of the surrounding lands for aviation related development. Such industries include: fixed based operators, training centers, and other general aviation related activities. 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 DOT-Airports Master Plan for Kalaeloa.

3.2.2 Alternative Energy or Ecologically Sustainable Development

Given the continued escalation in fossil fuel energy prices, interest in renewable energy resources is increasing. Senate Bill 2474, also known as Act 95, was adopted in 2004 and mandates that the State’s utility companies establish a renewable energy portfolio standard showing 8 percent renewable energy sales by 2005, 10 percent by 2010, 15 percent by 2015 and 20 percent by 2020.

The large tracts of flat, undeveloped land located near HECO’s transmission network at Campbell Industrial Park and the relatively arid climate and proximity to ocean, offer the potential for alternative energy development or industries aimed at reducing Hawai‘i’s dependence on fossil fuels. Industries such as solar or hybrid energy generation, bio-mass conversion, bio-filtration, seawater cooling or other such technologies may have development potential in Kalaeloa.

3.2.3 Technology Research and Development

Technology research and development in Kalaeloa offers the potential to diversify Hawaii’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, nutraceuticals, 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 Hawai‘i, and technology development corporations.

3.3 BALANCING DEVELOPMENT

The City, in its ‘Ewa Development Plan, envisions 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 ‘Ewa region. Despite this vision, however, development projects throughout the ‘Ewa region have largely been in response to market demand and

are typified by single-family detached and multi-family residential projects. While some projects have set aside lands for commercial development and public facilities, the region is largely a bedroom community to the primary urban center in Honolulu. (Refer to Figure 2-2)

HCDCA has the planning jurisdiction over all lands at Kalaeloa, including base closure lands conveyed and awaiting conveyance, the Navy's retained lands, and the so-called brokered lands intended for sale by the Navy. As a result, HCDCA can establish land use entitlements, coordinate with land owners, integrate interim land uses, and consider the possible relocation of various land uses within Kalaeloa to improve the balance of land uses in the 'Ewa region in a manner that supports a new urban environment.

3.3.1 Project District Approach

The redevelopment of Kalaeloa needs to provide immediate as well as long-term economic value. As such, HCDCA 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 that is presently utilized in Hawai'i County and Maui County, but not on O'ahu, is proposed. This system replaces 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. 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 theme.

A conceptual land use pattern based on the alignment of regional roadway connections can be defined by integrating existing plans and policies such as the 'Ewa Development Plan and the O'ahu Regional Transportation Plan. The properties bounded by these roadway alignments become "bulk lots" that may eventually be subdivided into smaller parcels. Design guidelines provide the desired character of these bulk lots, both in terms of uses and densities, and the Master Plan presents a phasing plan to ensure that the development of new infrastructure is timed for successful implementation.

Since a Project District approach has not been implemented on O'ahu, coordination with the City is imperative. Presently, the City's 'Ewa Development Plan identifies Kalaeloa as a Special Planning Area, subject to a Special Area Plan that replicates the original Community Redevelopment Plan adopted in 1996. HCDCA will likely need to amend the Special Area Plan with the Project District plan described herein.

3.3.2 Navy Brokered Lands

In April 2000, the U.S. Congress authorized special legislation to allow the Navy to sell several properties at Kalaeloa to fund the redevelopment of Ford Island. Referred to as brokered lands, these parcels are unencumbered by conditions of conveyance imposed by the base closure process and offer the potential to jump-start redevelopment of Kalaeloa. The brokered lands encompass most of the area along the northern boundary of Kalaeloa and are ideally situated to stimulate development given the close proximity to Kapolei, existing regional infrastructure connections, and the relative absence of airport-related development restrictions. Close coordination and joint planning between the Navy and HCDA are necessary for both parties to realize their objectives.

3.3.3 Interim Uses

Interim land uses are temporary, acceptable land uses that do not preclude the intended long-term, preferred land uses from occurring. Allowing interim land uses offers the potential for short- to medium-term benefits to Kalaeloa while reserving maximum benefit for future uses.

Interim uses need to be reviewed and coordinated with landowners in Kalaeloa for their appropriateness, ability to align with the strategic goals and objectives, and ease of redevelopment to the preferred land use. Consequently, interim uses that do not contribute to the appropriate mixture of land uses or immediate benefit of the community may need to be restricted.

3.3.4 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 HCDA to work with the landowners and federal government to optimize land use within Kalaeloa over the course of the redevelopment period. Existing land uses and potential relocations 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.

3.4 ADDRESSING REGIONAL TRAFFIC CONGESTION

There are only three regional roadway connections within the 'Ewa region to the H-1 freeway: Ft. Weaver Road, Fort Barrette/Makakilo Drive, and Kalaeloa Boulevard. Due to increased development and the necessity to commute to school and work, traffic on these roadways and the H-1 Freeway is congested on a daily basis. Roadways such as Farrington Highway, Roosevelt Road, and Geiger Road provide for some relief in the east-west direction but are also frequently congested. Construction of the North-South Road and completion of the Kapolei Parkway are expected to improve ingress and egress; however, additional measures are necessary to reduce regional traffic congestion. These measures include increasing roadway connectivity, reducing dependence on motor vehicle transportation,

FIGURE 3-1 POTENTIAL ROADWAY IMPROVEMENTS



and seeking a mode of mass transit. Kalaeloa has the potential to accommodate each of these measures.

An additional approach to reducing regional traffic congestion is by increasing employment opportunities in the 'Ewa region, thereby reducing the necessity for area residents to commute outside the region to work (see Section 3.2 above).

3.4.1 Roadways

Improvements to the road 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 'Ewa region. In addition to current regional transportation plans and ongoing road improvement projects, several new improvements are proposed. (Refer to Figure 3-1)

- Create a new Keoneula Connector Road from the southern terminus of the North-South Road through Kalaeloa to Keoneula Boulevard at the west end of Ocean Pointe to provide direct access from the eastern portions of Kalaeloa to the H-1 Freeway, and relieve traffic congestion on Fort Weaver Road.
- Create a major east-west spine road within Kalaeloa by realigning and connecting portions of the existing Saratoga Road from Geiger Road in the east to the proposed western connection to Kalaeloa Boulevard.
- Provide multiple vehicular access points from Roosevelt Road north to Kapolei Parkway in the area between North-South and Fort Barrette Roads.
- Enhance vehicular circulation and connectivity with Fort Barrette Road, and connections from Kalaeloa to the H-1 Freeway.
- Coordinate with the development of Mehana at Kapolei to provide a roadway connection to the planned Wakea Street and the planned new interchange with the H-1 Freeway.
- Support the extension of Kamokila Boulevard from the City of Kapolei into Kalaeloa.
- Support implementation of an extension of Roosevelt Road west to Kalaeloa Boulevard.
- Seek a major western access from Kalaeloa via Lauwiliwili Street to Kalaeloa Boulevard to increase access to the H-1 Freeway and provide east-west access from Kalaeloa to Campbell Industrial Park, Kapolei Business Park, and Kalaeloa Harbor. This will also allow timely response from the Kapolei Fire Station on Lauwiliwili Street.
- Connect internal circulation roads within Kalaeloa to the eastern end of Malakole Road to improve connection with the Campbell Industrial Park and provide direct roadway access to the Kalaeloa Harbor.
- Review the need for connection from Kalaeloa to Campbell Industrial Park via Olae Street.
- Improve access to White Plains and Nimitz Beaches by providing a new roadway linked directly to the North-South Road extension to Ocean Pointe.
- Improve vehicular access to Essex Road on the east and south sides of the existing Navy Golf Course, and facilitate discussions with the Navy to increase connectivity with the Ocean Pointe and 'Ewa by Gentry developments.

3.4.2 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 'Ewa shoreline, and connections to existing and proposed regional paths

FIGURE 3-2 POTENTIAL BICYCLE TRAILS



such as the Pearl Harbor Historic Trail and the Leeward Bike Path. (Refer to Figure 3-2)

3.4.3 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 O'ahu Railway and Land Company right-of-way. The historic O'ahu Railway and Land Company railroad tracks about the northern property boundary of Kalaeloa,

and continue past Campbell Industrial Park, through Ko Olina to Kahe Point on the leeward coast. The railroad is also part of the Pearl Harbor Historic Trail.

3.4.4 Integrating Mass Transit

There is a reemergence in interest to identify a transit-oriented solution to resolve traffic congestion, especially in the 'Ewa region. Recent approvals by the State Legislature and City Council have paved the way for an alternatives analysis and draft environmental impact

FIGURE 3-3 POTENTIAL TRANSIT CONNECTIONS



statement for a preferred transit alignment from Kapolei to Honolulu. At present, the City's 'Ewa Development Plan and the Kapolei Area Long Range Master Plan both indicate potential transit corridors on Farrington Highway, North-South Road, and extending to the west along Kapolei Parkway with a termination proximate to Kalaeloa Harbor. (Refer to Figure 3-3)

A unique and timely opportunity exists to align a transit corridor through Kalaeloa or a transit loop that connects Kalaeloa with the City of Kapolei. Such a routing would substantially increase land values and the marketability of properties along the corridor. The land use densities typically associated with transit-oriented development further suggest that multi-family housing development in the form of townhouses and walk-up apartments presents

an attractive alternative to the extensive single-family lot development throughout 'Ewa. Further, moderate density multi-family residential development presents an opportunity to provide significant opportunities for rental units with a high percentage in the affordable category. A transit corridor would also provide an efficient means of transporting workforce employees in and out of Kalaeloa, thereby reducing dependence on personal motor vehicle transportation.

Additionally, given the relative scarcity of available suitable land between Kapolei and Honolulu, Kalaeloa presents an opportunity for the establishment of the transit system corporation or maintenance yard. Such a facility in Kalaeloa would be in close proximity to the Kalaeloa Harbor, whereby equipment and transit vehicles could be transported a short distance for assembly. Depending upon the ultimate alignment and mode of transit, the location of a transit maintenance yard in Kalaeloa may also help reduce overall operating and maintenance costs. In addition, a maintenance facility would serve as a source of employment for area residents, thereby reducing out-of-district commuting.

3.5 PROTECTING OPEN SPACE AND CULTURAL AND NATURAL RESOURCES

When NAS Barbers Point 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 community 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.

Additionally, as referenced in Section 2.8, Kalaeloa as well as the broader 'Ewa region are rich in cultural history and significance. The presence of large concentrations of archaeological sites, endangered species, and native plants on relatively undisturbed land in close proximity to the Kalaeloa coastline presents an opportunity to reexamine 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.

To that end, the location of a Native Hawaiian Cultural Center in Kalaeloa may provide a means to spark educational and cultural activities that would attract Hawaiian organizations statewide. The center would also provide an opportunity to develop long-term stewardship programs with government agencies, school groups, and other organizations that focus on restoring and protecting archaeological sites, re-establishing native plant ecosystems, protecting endangered species, and managing ocean resources.

3.6 INTEGRATING THE POSSIBILITY OF MILITARY REUSE

The preparation of this Master Plan comes at a time when the U.S. Department of Defense (DOD) is considering, but has not yet decided upon, the possible homeporting of an aircraft carrier strike group (CSG) at Pearl Harbor. The DOD has been considering this option as a part of the overall National defense strategy in responding to current and emerging threats.

In 2004, the DOD initiated a study to review Navy fleet operations and expenditures. The following year, in a report to Congress, the Overseas Basing Commission recommended stationing a CSG in the Pacific to increase naval presence in the region. Hawaii was acknowledged as a likely site for the CSG; Guam has also been mentioned as a potential CSG homeport.

In February 2006, the DOD released the 2005 Quadrennial Defense Review (QDR) which outlines the DOD's plans for transforming the military to better respond to existing and emerging threats to the U.S. and its allies. Part of QDR notes the importance of having an increased presence in the Pacific, including adjustments to Naval force posture and basing to provide "at least" six operationally available and sustainable carriers and 60 percent of its submarines in the Pacific. However, the QDR stops short of stating where these aircraft carriers will be located.

Corresponding to the QDR, the President also released to Congress in February 2006, the Fiscal Year 2007 Department of Defense Budget. In review of the DOD's budget, particularly the sections pertaining to the Navy,

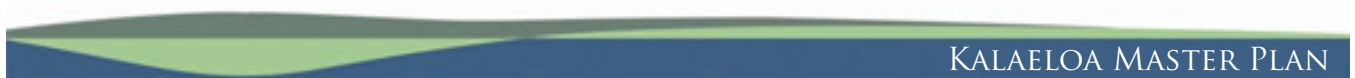
there appears to be no affirmative statement for the relocation of a CSG to Pearl Harbor or funding for such an action for Fiscal Year 2007. This, however, does not necessarily preclude such a relocation from occurring in future years.

The absence of such information or funding, however, does not necessarily preclude such a relocation from occurring in future years. Therefore, an assessment of relocating one of the Navy's 12 aircraft carriers to Pearl Harbor is included as part of the Kalaeloa Master Plan (see Appendix F).

The homeporting of a CSG at Pearl Harbor would result in the need for an airport to accommodate the carrier's air wing, as well as the associated needs for operational activities, administration, and military housing. These needs and land uses were evaluated in comparison to the land uses contained in the Kalaeloa Master Plan and it appears that such actions would impact the redevelopment of Kalaeloa.

If the Navy eventually decides to homeport a CSG at Pearl Harbor, the Navy's potential reuse of Kalaeloa presents an opportunity for federal investment. In effect, the Navy's interest would not be dissimilar from that of HCDA. Both are interested in optimizing the use and the value of the Navy's property, and both recognize that improvements to the aging infrastructure system are essential to achieving that outcome. Where appropriate, opportunities also exist for coordinated planning and joint developments that not only provide

for Navy needs but support new industries as well as commercial, office, and retail activities.





4.0 LAND USES AND DESIGN GUIDELINES

This chapter describes in detail the preferred land uses and summarizes the Kalaeloa Design Guidelines (refer to Appendix D) which will guide implementation of the Kalaeloa Master Plan (Master Plan). HCDA will use these guidelines to maintain consistent physical form and to preserve the quality of open space throughout the Master Plan area.

4.1 LAND USES

Following is a discussion of the conceptual land uses presented in the Master Plan. To facilitate better understanding of the plan, each of the bulk lots has been given an alpha-numeric code. (Refer to Figure 4-1)

4.1.1 The Mixed-Use Concept

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 will be an increasingly appropriate strategy to accommodate a wide range of land uses while requiring less land and resources. The inclusion of mixed-use maximizes the highest use of developable land.

The Master Plan encourages the development of non-traditional higher density housing within the mixed-use parcels. Low density single-family homes with segregated commercial areas are the prevailing pattern of residential development in 'Ewa. The Master Plan offers increased choices of residential products from small-lot townhouses to apartments. The mixed-use parcels identified in the land use 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 on second, third, and fourth floors.

By its very nature, the moderately higher densities associated with mixed-use development enhance pedestrian connectivity for residents and employees. Walkability and connectivity are key attributes to generate high levels of transit usage.

The mixed-use areas identified in the land use plan are generally characterized by a mix of airport-related businesses, warehouses for storage and distribution, offices, service and support functions, retail and commercial activities, and residential uses. The Master Plan includes several mixed-use categories discussed below.

4.1.1.1 Mixed-Use High Intensity

Mixed-Use High Intensity refers to a moderately high density of mixed-use activities. This land use type is situated in a large U-shaped area extending from the west side of "Main Street" (the southern terminus of Fort Barrette Road), along both sides of the realigned Saratoga Road, and then mauka along both sides of the proposed Wakea Street extension. It includes portions of parcels 1I and 2E and all of parcels 2D, 2G, 3D, and 3E. The Mixed-Use High Intensity area along the south side of Saratoga is depicted with a hashed line, which indicates that the emphasis in this area is mixed uses including airport-related uses. (Refer to Figure 4-2)



FIGURE 4-2 MIXED-USE HIGH INTENSITY



The Mixed-Use High Intensity areas accommodate storefront uses on the ground floor and commercial or residential uses above. In order to promote an active street, the Mixed-Use High Intensity category supports compatible and complementary retail, office, and residential activities. These areas take advantage of proximity to the proposed transit corridor along Saratoga Road, as well as the entry avenues of Fort Barrette Road and Main Street.

4.1.1.2 Mixed-Use High Intensity Commercial

This land use is typified by a high concentration of commercial and retail uses in one- to four-story structures. The Mixed-Use High Intensity Commercial area is a 13-acre parcel (2C), located at the east facing intersection of Main Street and Saratoga Road. (Refer to Figure 4-3)

4.1.1.3 Mixed-Use Moderate Intensity

The Mixed-Use Moderate Intensity areas are situated between Roosevelt Road and Saratoga Road. They include parcels 1B, 1D, 1E, 1F, 2B, 4A, and 4B at the northeastern portion of Kalaeloa, and parcels 4C, 2F,

FIGURE 4-3 MIXED-USE HIGH INTENSITY COMMERCIAL



and 1I, 1L, and a portion of 2E and in the northwestern portion of Kalaeloa. These areas are encouraged to have storefront uses on the ground level and residential uses above. The moderate intensity mixed uses extending to each side of the Wakea Street extension are intended to function as transitional uses between the high-density mixed use and the identified institutional uses (schools). A 16-acre Mixed-Use Moderate Intensity area is also proposed at parcel 3A, adjacent to the North-South Road extension where it enters Ocean Pointe. (Refer to Figure 4-4)

FIGURE 4-4 MIXED-USE MODERATE INTENSITY





FIGURE 4-1
KALAELOA MASTER PLAN
PREFERRED LAND USES

4.1.1.4 Airport/Mixed-Use Moderate Intensity

The Airport/Mixed-Use Moderate Intensity land uses are identified on portions of four parcels (1R, 2M, 1Q, and 3F). Buildings and land uses in these areas will evolve from their proximity to the airport. The Master Plan encourages the development of smaller footprint buildings within the context of commercial, retail, office, and residential uses on the north side of Saratoga Road. Larger footprint buildings associated with the airport-related mixed uses would occur on the south side of Saratoga Road. (Refer to Figure 4-5)

FIGURE 4-5 AIRPORT/MIXED-USE MODERATE INTENSITY



4.1.2 Airport

Located at the center of the property and identified as parcel DOT-A, Kalaeloa Airport is the largest active land use. The parcels immediately north are comprised of airport-related uses, as are the military designated parcels to the west. The airport is envisioned as a prime economic driver, creating jobs and providing services

as population in the 'Ewa region continues to grow. (Refer to Figure 4-6)

FIGURE 4-6 AIRPORT



The State Department of Transportation identifies Kalaeloa Airport as a general aviation airport and as reliever to Honolulu International Airport. The term “general aviation” describes a wide range of aviation activities, excluding commercial air carriers, regional commuter airlines, and military. General aviation activities usually include flight training, pleasure flying, business/corporate flying, and emergency medical services. General aviation aircraft range from one-seat single-engine piston aircraft to long-range corporate jets, and also include gliders, ultra-light aircraft, and kit-built aircraft.

An 18-acre circular parcel in the northeastern portion of Kalaeloa is the site of the existing FAA navigational aids serving Honolulu International Airport.

The Airport-related land uses are identified on portions of three parcels (1R, 2M, and 3F). Buildings and land uses in these areas will evolve from their proximity to the airport. Larger footprint buildings associated with the airport-related uses would occur on the south side of Saratoga Road immediately adjacent to the airport.

4.1.3 Light Industrial

The Light Industrial areas identified in the land use plan are generally situated in the extreme northwest and northeast corners of Kalaeloa (parcels 1A and 1M). Because of their relative proximity to Campbell Industrial Park and Honouliuli Wastewater Treatment Plant, respectively, these areas are best suited for a high concentration of industrial activities. (Refer to Figure 4-7)

FIGURE 4-7 LIGHT INDUSTRIAL



The Master Plan recommends reserving these areas for light industrial activities to support the adjacent industrial activities and/or accommodate short-to long-term industrial demand. Light Industrial uses can include manufacturing, warehousing, and distribution, as well as compatible and complementary office and retail uses. Light Industrial lands are also intended to accommodate businesses associated with technologically oriented research and development, including component manufacturing, storage, and distribution. Recommended uses include research and development oriented activities and the office and warehousing services needed to support them.

Parcel 1Q is identified for Light Industrial/Eco-Industrial use. This 35-acre parcel is considered to be a feasible and appropriate location for a base yard serving the proposed transit corridor alignment.

4.1.4 Eco-Industrial

For the purposes of the Master Plan, Eco-industrial uses are defined as environmentally compatible industries that benefit the entire population of O‘ahu. Potential industries such as solar or hybrid energy generation, bio-filtration, or other such technologies are compatible in these parcels. These industries require large land areas and are located within the airport’s accident potential zones where height restrictions limit development. (Refer to Figure 4-8)

FIGURE 4-8 ECO-INDUSTRIAL



The Master Plan identifies several bulk-parcels that are considered to be appropriate for alternative energy research and production facilities: parcels 1G, 1H and 2A totaling 180 acres on the eastern side, and parcels 1N, 1O, and 1P totaling 160 acres on the western side. These parcels are specifically intended to contribute to resolving the State's continuing dependence upon fossil fuels. It is noted that Senate Bill 2474 (also known as Act 95), adopted in 2004, mandates that the State's utility companies establish a renewable energy portfolio standard showing 8 percent renewable energy sales by 2005, 10 percent by 2010, 15 percent by 2015, and 20 percent by 2020. The identified Eco-Industrial lands at Kalaeloa present a unique opportunity to foster research and the hands-on application of alternative or hybrid energy production. Advantages include: close

proximity to existing power plants at Campbell Industrial Park and to electrical transmission lines serving the region, as well as a large number of sunny days each year and relatively stable diurnal range.

Parcels 1G, 1H, and 2A are given an Eco-Industrial/Open Space designation because they have been previously slated for recreational/open space, and it is uncertain whether the Navy will entertain their use for solar energy development without requiring preparation of a document supplementary to the 1999 EIS for disposal and reuse of surplus land at the former base.

Parcels BWS-1 and BWS-2 are designated as eco-industrial to accommodate a BWS desalination plant.

4.1.5 Military

For the purposes of the Master Plan, Military uses are defined as areas that have operation critical uses, including lands retained by the Navy (2K) and U.S. Coast Guard. Where close proximity to the runways is required for operational reasons, military uses are included in Airport related uses: Navy and Hawai'i National Guard (4D (HNG)) Continued retention and use by these entities is anticipated in the foreseeable future. Retained by the Navy, the golf course and White Plains and Nimitz Beaches (OS-1) are designated as open space and recreation uses. (Refer to Figure 4-9)

FIGURE 4-9 MILITARY



FIGURE 4-10 PUBLIC FACILITIES



4.1.6 Institutional and Public Uses

Institutional, public uses, and civic facilities are primary elements of the Kalaeloa community. The Master Plan strives to provide ample land dedicated to community services and facilities. This section describes planned sites for schools and a potential Hawaiian Cultural Center. (Refer to Figure 4-10)

4.1.6.1 Schools

The Master Plan proposes three school locations within the mixed-use area north of Saratoga Road (parcels 1J, 2H, and 1C). These sites have been scaled to match existing requirements by grade level for elementary and middle school campuses supplied by the State DOE. Further negotiations will take place with the DOE to confirm the precise campus configurations and facilities to best meet student and community requirements.

The DOE has rigorous campus planning and design guidelines that would typically be followed in developing

each school site. However, consideration will be given to modifying these guidelines to reflect a more sustainable planning and design response. The Punahou School's recently opened Case Middle School in Honolulu represents an example of the use of sustainable design features. This facility features green-building technologies, including self-regulating lights, waterless urinals, and school lockers made out of recycled milk cartons. The school estimates that these added approximately 5 to 7 percent to construction costs yet will more than pay for themselves in energy and other savings over the lifetime of the building.

Barbers Point Elementary School Potential Relocation. Barbers Point Elementary School (parcel 1J) is to be retained in its current location. However, consideration should be given to upgrading or replacing the school with a facility that better meets the demands of the new population at Kalaeloa and provides a greater public

outreach program. The Barbers Point Elementary School (facility and property) has been conveyed to the DOE. Current DOE plans call for its use as a relief school to accommodate student loads from other nearby schools. It is noted, however, that the school site's proximity to Campbell Industrial Park may expose it to hazardous air pollutants under certain worst-case conditions. Therefore, the Master Plan proposes the relocation of Barbers Point Elementary to a more central location (parcel 2H), adjacent to a major open space area and within walking distance of the largest anticipated population center at Kalaeloa. A new elementary school is also proposed as part of the Mehana development at Kapolei, west of Fort Barrette Road, and immediately north of the former main gate.

Potential Kalaeloa Middle School. A location suitable for a middle school is established central to the mixed-use area (parcel 2H), immediately north of the Kalaeloa great park. This approximately 24-acre site provides good access to the park for joint-use recreation facilities. Parcel 2H is also identified for the potential relocation of Barbers Point Elementary School. The Master Plan recommends that the middle school be built here if the elementary school is not relocated.

Potential East Kalaeloa Elementary School. A location suitable for development of an additional elementary school is established in the northeast quadrant of the Kalaeloa Mixed-Use area (parcel 1C). This approximately 12-acre site provides good access to the park and

trail facilities, promoting easy pedestrian access and potential joint use of recreation facilities.

4.1.6.2 Hawaiian Cultural Center

The Master Plan proposes a site for a public institution at the southeast extremity of Kalaeloa (parcels 3B and 3C), immediately adjacent to White Plains Beach, the major cultural and archaeological areas, and Ocean Pointe. This site benefits from a unique mix of qualities that together could function as a center for Native Hawaiian cultural activities, providing access to the existing archaeological and cultural sites. With its proximity to the North-South Road connection to Ocean Pointe, the site has good connectivity with the future University of Hawai'i West O'ahu campus and the Ocean Pointe Marina. Close proximity to the beach would enable the center to offer culturally-oriented shoreline activities. It is expected that the cultural center would share parking with the beach parks.

4.1.7 Open Space, Parks, and Recreation

Open space and recreational-oriented park space would continue as a principal focus for Kalaeloa. (Refer to Figure 4-11) White Plains Beach and Nimitz Beach are invaluable assets for the entire 'Ewa region. The Master Plan proposes to improve access to the beaches through a combination of a new, more direct vehicular route and new bicycle routes.

4.1.7.1 Open Space

The largest dedication to open space is provided by the preserve/cultural park situated to the east of Kalaeloa Airport (parcels OS-3 and OS-5). The parcels contain

FIGURE 4-11 OPEN SPACE



a relatively high density of cultural and archaeological sites, which to some extent limit redevelopment for active recreational uses. However, the area functions well for passive open space opportunities. The northern portion of OS-3 contains a coral pit that has been identified as a regional drainage asset. A large open space/park area (parcels OS-10 and OS-11) would serve the central mixed-use area. Limited-access open space is provided by two parcels at Kalaeloa (parcels OS-10 and OS-11). These parcels contain coral pits that assist in capturing regional storm water flows. Parcel OS-1 encompasses all of the coastal lands of Kalaeloa and includes Navy retained lands at Nimitz and White Plains Beaches. Parcel OS-2 encompasses open space at the end of the airport runway that is constrained by a navigational easement.

4.1.7.2 Natural Area Preserves

Natural area preserves set aside for their exceptional environmental or cultural value are situated at the

southeast corner of Kamokila and Saratoga Boulevards, west of North-South Road and east of the airport's runways, and at the shoreline immediately north of Nimitz Beach.

These preserves include some combination of the following: high-value wetlands, coral/cultural sinks, and archaeologically significant sites. In general, new structures would avoid and be set back 1,000 feet from these sensitive features, notwithstanding ancillary or accessory uses such as the proposed Hawaiian Cultural Center.

4.1.7.3 Parks and Trails

The Master Plan requires that parks be distributed throughout the planning area in such a way that most residents would not have to cross a boulevard or industrial area to gain access. Parks should be designed to protect valuable natural and cultural features and to communicate their importance through interpretive signage and overlooks. Where practical, parks and streets should be arranged in a way that creates regional vistas (or directed view) from streets towards the mountains and/or other scenic features. The following types of parks would be included in the phased development of Kalaeloa:

Community Parks. Community parks are at least 15 acres in size and should contain active and passive-oriented features that meet the larger needs of Kalaeloa and the 'Ewa region. Appropriate features include multiple playing fields and tennis courts, swimming pools, indoor gymnasias, group picnic areas, amphitheaters, and

unique play structures. Features requiring floodlights or prone to a high level of noise should be sited away from residential uses. The proposed elementary school and adjacent community park complex between Saratoga Road and Roosevelt Avenue represent a joint-use opportunity.

Neighborhood Parks, Pocket Parks, and Plazas. These types of parks meet the “Community Open Space” requirements noted in the mixed-use guidelines (see Appendix D). Mixed-use areas bounded by boulevards and/or avenues should contain one neighborhood park. Neighborhood parks are between two and eight acres and should include a playfield or multi-purpose lawn suitable for “pick-up” soccer or softball, as well as play equipment for small children and nearby picnic tables. Pocket parks, between one-half and two acres, can be distributed throughout neighborhoods more easily to bring recreation closer to each resident. Plazas can also meet Community Open Space acreage requirements, providing shaded hardscapes with seating and other passive recreation opportunities.

Parkways and Trails. Parkway are depicted on the land use plan along the east edge of North-South Road and along the eastern edge of the avenue that ends at the northwest corner of the cultural park. Parkway programming and landscaping should occur in concert with the design of adjacent parcels.

4.1.8 Land Use Overlays

Overlays have been described in the plan where conveyance and ultimate use is still under negotiation, and to aid implementation of the Kalaeloa Design Guidelines.

4.1.8.1 Eco-Industrial (Open Space Overlay)

Parcels 1G, 1H and 2A were previously designated as regional open space, and there remains a potential that all or part of these parcels may be accepted by the City and County of Honolulu for use as a regional park. The plan accommodates this potential.

4.1.8.2 Airport Related (Mixed-Use Overlay)

Parcels 1R, 2M and 3F include are designated as airport related. In order to develop a uniform street frontage along Saratoga Road, Mixed-Use Design Guidelines should be used where development is adjacent to Saratoga Road.

4.1.8.3 Recreational (Eco-Industrial Overlay)

Parcel 2L is owned by DHHL and they have been in discussions with a private developer for the establishment of a motor sports complex within the parcel. However, the outcome of these discussions is uncertain and an alternative eco-industrial use can be accommodated in the plan.

4.2 DESIGN GUIDELINES

The “Kalaeloa Design Guidelines” presented in Appendix D are intended to foster a vibrant urban center built upon a lively mix of residential and commercial uses. These guidelines set careful and coherent controls on building form, while employing more flexible parameters relative to building use and density. This greater emphasis on physical form will produce safe, attractive, and enjoyable public spaces (good streets, neighborhoods, and parks), complemented with a healthy mix of uses.

The Kalaeloa Design Guidelines are comprised of the following components: (1) Urban Design Framework, which consists of Street and Landscape Design Guidelines; and (2) Site Development Guidelines, consisting of Mixed-Use, and Industrial Development Guidelines. These components are summarized below and detailed in Appendix D.

4.2.1 Urban Design Framework

The Urban Design Framework for the Kalaeloa Master Plan area is comprised of a set of design principles to: (1) enhance the quality of design and construction of all public areas; and (2) provide overall guidance in executing a consistent yet dynamic design of all public areas.

4.2.1.1 Street Design Guidelines

The Street Design Guidelines seek to create streets that are pedestrian and bicycle friendly, while also meeting the demands of motorists and emergency vehicles. Walkable districts are the basic building block for more livable and environmentally sustainable cities.

An arrangement of complementary land uses paired with inviting streets influence the extent to which people walk to local destinations and use transit. Pedestrian-friendly streets are foundational to transit-oriented development and the creation of alternatives to driving for daily needs.

In deciding to walk or bike instead of drive, pedestrians and bicyclists must feel that an environment is safe and comfortable. Fast, unmitigated traffic presents a major deterrent. Serious pedestrian and bicycle injuries are significantly reduced when vehicle speeds are about 25 miles per hour. The use of modest travel lane widths and traffic-calming devices slows traffic, while adding very little to motorist travel times.

Pedestrians also feel more comfortable when on-street parking and trees are placed between roadways and sidewalks, and when street crossing distances are reduced. Street trees reduce temperatures by as much as ten degrees—an important advantage on hot days. On-street parking is critical to attracting street-facing shops.

Pedestrian comfort and safety are influenced by the relationship between abutting uses and streets. Streets lined by rear yard fences, garage doors, or parking lots are unwelcoming, and have been shown to attract more crime than streets lined by building entries and windows. Traffic must be kept to modest volumes yet encourage street-facing buildings in most settings. An interconnected street network plays a critical role in

keeping traffic volumes to appropriate levels. Street connectivity also reduces pedestrian travel distances to local destinations, and integrates the many functions and activities of a city center.

Besides mobility, streets can also address other issues. Their design character—width, landscaping, lighting, and signage—can help establish an immediate sense of place, especially when joined with quality architecture. Streets also hold most public utilities. Paired with vegetated swales and other storm water infiltration tools, streets can play an essential role in filtering pollutants from urban run-off and improving water quality. The design and arrangement of streets are at the intersection of many urban challenges.

The Street Design Guidelines establish parameters for the subdivision of bulk lots for the developers of those parcels. Specifically, the Street Design Guidelines describe articulation of the street network, street connectivity, block sizes, and specific street design elements with the goal of establishing a uniform public realm that will become identifiable as Kalaeloa.

4.2.1.2 Landscape Design Guidelines

The Landscape Design Guidelines are intended as a framework to maintain consistency of landscape character throughout Kalaeloa, and provide a unifying, engaging, and interesting element to public areas. The design objectives are to:

- Achieve a compatible design character with existing regional uses that reflect Kalaeloa's

unique history as a Hawaiian historical and cultural area and as a Naval Air Station.

- Promote a coherent vision of the future of Kalaeloa as it evolves into a vibrant urban core.
- Develop a pedestrian-oriented downtown area that becomes a focal point for the community and serves the needs of both residents and daytime users.
- Enhance existing landscape patterns and preserve existing trees by incorporating them into the design of public areas and development parcels.

The Landscape Design Guidelines will also guide the landscape design of individual bulk lots and open space areas. They seek to clearly describe the unifying elements that will give Kalaeloa a distinctive image and character, and address views, open-space planning and design, plant selection, street furniture, lighting and signage design. Sustainable design features are also addressed.

4.2.2 Site Development Guidelines

The Site Development Guidelines for the Master Plan include: (1) Mixed-Use Development Guidelines, (2) Industrial Development Guidelines, and (3) Sustainable Design Guidelines.

4.2.2.1 Mixed-Use Development Guidelines

The Mixed-Use Development Guidelines will ensure critical dimensions for accomplishing a healthy and attractive urban environment, while allowing enormous



flexibility with regard to style and use. While many features remain constant, specific guidelines distinguish between the following: “Mixed-Use High Intensity” where greater height and intensity is desirable because of proximity to regional transit and to storefront conveniences such as retail, professional offices, and personal services; “Mixed-Use Moderate Intensity,” where the flexibility and conveniences offered by mixed-use development is desirable but at moderate intensities; and “Mixed-Use Airport-Related” appropriate for industrial and commercial uses that take advantage of the airport as a unique opportunity.

The Mixed-Use Development Guidelines define allowable land uses, critical elements of building planning and design that will give Kalaeloa an identifiable architectural character, and site development standards.

4.2.2.2 Industrial Development Guidelines

The Industrial Development Guidelines provide land use, design, and site development standards for those areas deemed appropriate for a range of industrial and commercial activities. Industrial areas avoid exposing residential areas to inappropriate risks and protect against the loss of industrial jobs and activities. These guidelines provide a high degree of flexibility, while also enhancing the image and identity of Industrial areas.

4.2.2.3 Sustainable Design Guidelines

The Sustainable Design Guidelines promote active inclusion of current and future best-practices in all site planning, building, and landscape design. Rather than being prescriptive, this section addresses general

principles and elements to benefit both Kalaeloa as a whole, as well as individual developments. Features discussed include shading, heating and cooling equipment, passive solar design, storm water disposal, and alternative energy generation techniques that may be used by individual developments.



5.0 IMPLEMENTATION

This chapter outlines five key components to the successful implementation of the Kalaeloa Master Plan (Master Plan): development phasing, infrastructure, public services, financing, and governance. An additional consideration for the implementation of the Master Plan is the U.S. Navy's possible reuse of portions of Kalaeloa lands to support an aircraft carrier strike group at Pearl Harbor. Discussion of this issue is contained in Appendix F.

5.1 DEVELOPMENT PHASING

Implementation of the Kalaeloa Master Plan is projected to occur in three overlapping phases of approximately seven years each through the year 2025. Development is expected to continue beyond the 20-year planning horizon, and this is discussed narratively but not included in the cash-flow model analysis. The timing of the development phases was established to reflect the potential absorption of new development, the evaluation of current regional economic conditions, and projected future market opportunities. The locations for each of the development phases were based largely on the availability of land, the opportunity to integrate development with other projects adjacent to Kalaeloa, and the connections with regional infrastructure systems. The overlapping of phases is intended to provide flexibility in responding to the size and scope of various development projects, as well as policy and administrative changes over the development period. Descriptions of the three development phases are provided below.

5.1.1 Phase 1: 2007 to 2015

Phase I focuses upon the commencement of infrastructure improvements to facilitate development. Drainage and utility improvements will be installed as street improvements are made, so that properties served by the improved streets and drainage facilities will also have water, sewer, power, and telecommunications services available. Phase 1 also includes the start of the realignment of Saratoga Road to provide for a transit corridor and the broader implementation of the Master Plan. (Refer to Figure 5-1)

Phase I includes land use improvements in the northeastern and northwestern corners of the Kalaeloa property. Beginning at the northeastern corner, Phase I includes the initial development of a 79-acre light industrial bulk lot (parcel 1A), 60 acres of Mixed-Use Moderate Intensity development (parcels 1B, 1D, 1E, 1L, and a 12-acre portion of parcel 1F), approximately 116 acres of eco-industrial development at parcels 1G and 1H, and an elementary school site at parcel 1C. At the northwestern corner, Phase 1 includes light industrial development on parcel 1M, the transit corridor base yard (parcel 1Q), moderate and high intensity mixed use along the western side of the Wakea Street extension (parcel 1I), approximately 144 acres of eco-industrial development at parcels 1N, 1O and 1P, and a 30-acre airport-related industrial parcel (1R). The specifics regarding the number and type of residential units and floor area of commercial, office, and light industrial space for Phase I are provided in Table 5-1.

TABLE 5-1 DEVELOPMENT PHASING SUMMARY

Development Phasing Summary				
Use	Phase 1	Phase 2	Phase 3	Total Project
Residential – dwelling units	2,636	2,204	1,512	6,352
Commercial – square feet	116,583	0	0	116,583
Office – square feet	195,203	244,698	285,127	725,028
Light Industrial – square feet	683,211	728,394	407,783	1,819,388
Light Industrial Mixed Use – square feet	0	257,080	213,356	470,436

Source: BAE, 2005.

It is anticipated that municipal water and sewer services will initially be available in the vicinity of the northeastern corner of Kalaeloa. The provision of these services to this component of Phase 1 may require the construction of connecting water and sewer pipelines across the northern portion of Kalaeloa in advance of roadway improvements or the construction of temporary facilities to serve the northwestern component of Phase 1.

5.1.2 Phase 2: 2012 to 2020

Phase 2 focuses on infilling mixed-use development between Phase 1 development areas, including completion of the Saratoga Road realignment and surrounding open space, parks, and middle school. It also includes expansion of the eco-industrial development at the east end of the airport runway and expansion of airport-related uses south of Saratoga. The extension of the North-South Road connection to Ocean Pointe would also be completed. Major components of new roadway, drainage, and utility infrastructure would be completed during Phase 2. The specifics regarding the number and type of residential units and floor area of

commercial, office, and light industrial space for Phase 2 are provided in Table 5-1. (Refer to Figure 5-2)

5.1.3 Phase 3: 2015 to 2025

Phase 3 focuses on continuing the infill of mixed-use development along the central portion of the realigned Saratoga Road and completion of the great park (parcel 3F). Phase 3 also includes development of the Hawaiian Cultural Center on parcels 3B and 3C and an adjacent mixed-use development on parcel 3A. Minor components of new infrastructure, extending from major backbone components constructed in Phases 1 and 2, would be installed during Phase 3. The specifics regarding the number and type of residential units and floor area of commercial, office, and light industrial space for Phase 3 are provided in Table 5-1. (Refer to Figure 5-3)

5.1.4 Beyond 2025

Infill development would be completed along Saratoga Road, especially on the south side. It is assumed that existing housing in parcels 4A, 4B, and 4C would be redeveloped to replace units that will be over 40 years old by 2025. (Refer to Figure 5-4)



FIGURE 5-1 KALAHEO MASTER PLAN
PHASE 1: 2007 TO 2015

LEGEND

Mixed Use

- Moderate Intensity
- High Intensity
- High Intensity/Commercial

Industrial

- Eco-Industrial
- Eco-Industrial (Open Space Overlay)
- Light Industrial

Military

- Military

Open Space/ Recreation

- Foreshore Protection
- Recreation/ Cultural
- Recreation
- Recreation (Eco-Industrial Overlay)

Public Facilities

- Institutional: School/ Cultural Center

Airport

- Airport + Navigation
- Airport Related
- Airport Related (Mixed Use Overlay)

Transit

- 'Ewa Development Plan Transit Corridor
- Kalaeloa Transit Loop
- Kalaeloa Community Development District Boundary



FIGURE 5-2 KALAELOA MASTER PLAN
PHASE 2: 2012 TO 2020



FIGURE 5-3 KALAELOA MASTER PLAN
PHASE 3: 2015 TO 2025



FIGURE 5-4 KALAELOA MASTER PLAN
BEYOND 2025

5.2 INFRASTRUCTURE

5.2.1 Public Dedication

The Master Plan anticipates that all future utility systems at Kalaeloa will be operated by local utility providers such as HECO, BWS, City Department of Environmental Services, Hawaiian Telcom, and others. Roads, drainage, water supply, and wastewater systems that are constructed will need to be designed to City standards as they will ultimately be conveyed to the City.

5.2.2 Roadways

City standards call for a 50-foot right-of-way (ROW) for minor streets and cul-de-sacs, a 60-foot ROW for business/industrial/collector streets, and a 120-foot ROW for boulevards. However, on a case-by-case basis, some of the business/industrial/collector streets may be required to have either a 74-foot or 78-foot ROW, and boulevards may be required to have a ROW width between 124-feet to 128-feet. It should be noted that existing ROWs at Kalaeloa conveyed to the City do not conform to these City standards, and thus transfer of additional land to the City to expand the ROWs would be required. City personnel have proposed that New Saratoga Road (Geiger Road to Malakole Street) be a boulevard. The North-South Road, a major connection to H-1 and Kapolei Parkway, should also be a boulevard for its full length (from the northern boundary to Ocean Pointe). In accordance with City ordinance, traffic impact fees would be assessed on developers within Kalaeloa to provide regional transportation improvements.

5.2.3 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.

An analysis of the existing regional drainage channel and the box culverts that discharge into the coral pit near the intersection of Fort Barrette Road and Franklin D. Roosevelt Road conclude it is inadequate to handle runoff from a modeled 100-year storm event. Not only do the existing box culverts limit flow into the coral pit (causing flooding over the railway alignment and onto Franklin D. Roosevelt Road during extreme precipitation events), but the infiltration capacity of the coral pit is inadequate to handle the peak flow of a 100-year event. Given this situation, it is recommended that the HCDA engage in discussions with the City and affected land owners and developers to propose a solution to manage regional drainage.

Within Kalaeloa, existing drywells installed by the U.S. Navy, although permitted by the State Department of Health, do not conform to City standards. It is recommended that HCDA pursue with the City the establishment of a special drainage district within Kalaeloa to allow the use of drywells, swales, and retention basins for disposal of drainage within City and State rights-of-way.

5.2.4 Water

Development of a water system in accordance with the Honolulu BWS standards will be required for implementation of the Master Plan. Major components of the system will include source, storage, and transmission. Source can be provided by development of wells for dedication to the BWS, or by payment of source fees, if agreed to by the BWS. Storage will require siting and construction of a new 215-foot elevation 5.0-MG (million gallon) reservoir to handle the demand projected for implementation of this Master Plan. A primary transmission main will be needed to transmit water from the 215-foot reservoir to Kalaeloa. This main could be installed in parallel to an existing water main that is currently planned for installation along the North-South Road alignment.

A water master plan will need to be submitted to the BWS for approval prior to constructing the water system. Water master plan approval may require a water system that loops back to a large water main in Kapolei, either along Kamokila Boulevard or Fort Barrette Road. Looped water transmission systems are more reliable and provide greater operational flexibility than systems fed by a single main.

For water lines within Kalaeloa, 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. There will be two primary east-west “backbone” water lines between

the North-South Road and Kamokila Boulevard, aligned along Roosevelt Road and Saratoga Road. All lines serving development of the northern half of Kalaeloa will branch off of these backbone lines. There will also be a loop line that runs approximately along the eastern, southern, and western property lines.

Developers at Kalaeloa will be required to pay BWS facility charges prior to connecting to the water system. The BWS will also award “credits” to HCDA for water infrastructure improvement expenditures.

For existing Kalaeloa developments that disconnect from the Navy water system and connect to the proposed BWS 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 BWS for water supplied through the master meter.

A dual water system within Kalaeloa will need to be constructed to provide non-potable water for irrigation of parks and other common landscaped areas. The details of this system will be described as part of the water master plan.

5.2.5 Sewer

Within Kalaeloa, much of the existing sewer system will have to be replaced to handle the proposed densities and new roadway alignments and development areas. Also, in some of the proposed development areas, sewer

lines do not exist. Further, most of the existing sewer lines are not aligned in accordance with the proposed roadway alignments.

A sewer master plan will need to be submitted to the City for approval. In general, a major collector sewer will run along the northern edge of the runway to a proposed new master pumping station to the east, which will pump sewage to the Honouliuli Wastewater Treatment Plant. A southwestern pumping station will not be required; the cost of collection and transport for Parcel 2N will be borne by the DHHL.

Similarly, a new south pumping station will not be required; the existing south pumping station is to remain in service, because no additional loads are planned to be added to this pumping station. The developers or owners of parcels 2L, 3B, and 3C will have to provide pumping stations to transport sewage to the proposed new master east pumping station.

The proposed new master east pumping station would be designed in accordance with City standards, which require a large concrete dry pit for housing the pumps, a vertical building over the pit for ancillary equipment, and a separate room to house a standby generator.

Developers at Kalaeloa will be assessed sewer facility charges by the City for offsite wastewater transport, treatment, and disposal. Therefore, it is recommended that a sewer master plan be prepared and submitted to the City for approval.

5.2.6 Electrical

Given the scope of the Master Plan, the existing electrical system in Kalaeloa will need to be upgraded. An agreement with HECO is recommended to assure that improvements to the electrical distribution system serve the increased development in Kalaeloa. As the 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. An installation charge for necessary improvements and service will be assessed to the developer of each parcel.

5.3 PUBLIC SERVICES

Public services, including police, fire, emergency medical, and other typical municipal services, are currently limited at Kalaeloa and divided between the City and the U.S. Navy, largely because the land conveyance process from the Navy to other entities has not yet been completed. This overlap in jurisdiction and ambiguity in land ownership creates difficulties in responding to public safety incidents and providing necessary municipal services. The situation needs to be resolved prior to the commencement of large-scale new development.

The preparation of a fiscal impact study is recommended as a near-term implementation action to identify public services that are needed pursuant to the Master Plan in both the near- and long-term, sources and amounts of property tax and other public revenues, and any resulting fiscal gap.

5.4 FINANCING

In the implementation of the Master Plan, private developers will finance new development and public agencies will finance new improvements on their lands. The remaining piece of needed financing is for construction of new infrastructure and utility systems to serve public and private sector developments. The estimated cost for this new infrastructure, based on the cash flow model described below, is approximately \$470,000,000, including all needed improvements within Kalaeloa and external to Kalaeloa. This value includes water, sewer, and traffic impact fees (facilities charges) of approximately \$281,000,000, but does not account for potential credits that may be awarded for construction of water and sewer system facilities. This value also does not include electrical or telecommunications improvements, because these services would be provided by private companies with whom any charges for capital improvements related to system expansion into Kalaeloa are negotiable.

5.4.1 Feasibility Analysis

A detailed 20-year cash flow model of the Master Plan was prepared in order to assess its financial feasibility. The model consists of a linked series of spreadsheets that shows the potential build-out of various types of residential and commercial real estate, sale prices and the value of completed projects, and total development costs, including impact fees and other required developer contributions. The model allows the testing of various alternative assumptions, as well as identification of the impacts of changes in major assumptions, such

as sale prices, interest rates, or construction costs. An important purpose of the model is to determine whether proposed development is feasible, or if there are any “feasibility gaps” that require public assistance before new development can occur. The details of the cash flow model are contained in Appendix C.

The model is based on current market prices and rents for residential, commercial, office, and industrial buildings in the Kapolei area. No increases in prices are projected over the life of the Master Plan in order to avoid overstatement of potential revenues. The model assumes that at least 30 percent of all new residential units will be affordable, as set forth in the City’s affordable housing rules. The potential cost for developer purchases of parcels in Kalaeloa is included in the model. The model also includes all required impact fees and assessments for new utilities, as well as those required under the ‘Ewa Regional Transportation Plan. Construction costs, based on local estimates, include all hard costs as well as soft costs for architecture, engineering, project finance, and developer profit. Costs for a new “backbone” infrastructure system to serve parcels in the new development area of Kalaeloa are included.

Table 5-2 summarizes the results of the cash flow model analysis of the Master Plan:

TABLE 5-2 SUMMARY OF KALAELOA MASTER PLAN DEVELOPMENT REVENUES, COSTS, FEASIBILITY GAP

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Total</u>
REVENUES FROM DEVELOPMENT				
Net Sale Proceeds ("Value")				
Residential	\$ 1,100,359,950	\$ 855,884,727	\$ 465,945,207	\$ 2,422,189,883
Commercial	76,510,042	52,295,120	60,935,319	189,740,481
Industrial	<u>92,323,009</u>	<u>148,852,483</u>	<u>96,951,932</u>	<u>338,127,424</u>
Net Sale Proceeds	\$ 1,269,193,000	\$ 1,057,032,330	\$ 623,832,457	\$ 2,950,057,788
Lease Revenues	\$ 61,392,269	\$ 70,791,004	\$ 48,615,466	\$ 180,798,739
Total Revenues	\$ 1,330,585,269	\$ 1,127,823,334	\$ 672,447,924	\$ 3,130,856,527
EXPENSES OF DEVELOPMENT				
Development Costs (a)	\$ 1,348,301,041	\$ 1,082,497,338	\$ 703,235,931	\$ 3,134,034,310
Return to Investors (b)	<u>74,637,613</u>	<u>104,676,787</u>	<u>38,359,905</u>	<u>217,674,305</u>
Total Costs	\$ 1,422,938,654	\$ 1,187,174,124	\$ 741,595,836	\$ 3,351,708,614
"FEASIBILITY GAP" (c)	\$ (92,353,385)	\$ (59,350,790)	\$ (69,147,912)	\$ (220,852,088)
(Revenues - Expenses)				

- (a) Includes land, all construction, and all infrastructure.
 (b) Return on equity needed to attract private investment.
 Based on current market rates of return for real estate investment.
 (c) Represents the revenue shortfall needed to achieve feasibility,
 without public / other support in this amount development will not happen.

Source: BAE, 2006.

Highlights from the analysis are as follows:

- Total development cost is estimated at \$3.3 billion over three phases spanning a 20-year-plus period.
- Based on current market values and required developer returns, there is an approximate \$221 million "feasibility gap," whereby the value of completed development is less than the cost to build it. Unless addressed, this will limit developer interest.

TABLE 5-3 SUMMARY OF KALAELOA MASTER PLAN PUBLIC FINANCE ALTERNATIVES

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Total</u>
FEASIBILITY GAP (a)	(\$92,353,385)	(\$59,350,790)	(\$69,147,912)	(\$220,852,088)
PROPOSED FINANCING SOURCES				
<u>State Obtained Sources</u>				
Grant Funds (b)	\$15,000,000	\$0	\$0	\$15,000,000
State Gen'l Obligation Bonds (c)	<u>86,250,000</u>	<u>69,000,000</u>	<u>80,500,000</u>	<u>235,750,000</u>
Total Funds	\$101,250,000	\$69,000,000	\$80,500,000	\$250,750,000

Note: Financing sources show larger amount than feasibility gap because of bond underwriting costs and reserve requirements.

(a) Amount by which total costs of development exceed revenues from completed projects.

Negative number means costs exceed revenue, without public / other support project will not be built.

Use of bond financing to close gap increases costs due to underwriting, bond reserve requirements.

(b) Projected U.S. EDA, FAA bonds for infrastructure projects.

(c) Requires approval by Legislature.

Source: BAE, 2006.

The identification of a feasibility gap led to evaluation of alternative financing tools to address this challenge. Alternatives include grants, state-issued general obligation bonds, Community Facilities District bonds issued by developers, and Tax Increment Finance bonds issued by the City (as described elsewhere in this section). A description of these financial options is provided below.

5.4.2 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.

Another funding source is the FAA’s Military Airport Program. This funding source is for military airfields closed pursuant to the BRAC process. These funds can be used for airfield improvements as well as utilities, access roads, airside infrastructure improvements, or other improvements that make the airport’s infrastructure independent of other portions of the former base. This is a significant funding source that can provide \$7 to \$10 million per year; however, its use would be limited to those improvements directly benefiting Kalaeloa Airport.

Major roadways and improvements that support transit use or alternative modes of transportation may be eligible for other funding sources, particularly the pending legislation in Congress to replace or reauthorize TEA-21 funding. These funds are typically provided through regional metropolitan planning organizations. HCDA will work with the O’ahu Metropolitan Planning Organization to secure available funds.

No other state grant sources are assumed to be available for Kalaeloa infrastructure improvements.

5.4.3 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 new 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 the new development enclave.

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

5.4.4 Hawai’i Community Development Authority Special Assessment Bonds

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 cover bond payments, regardless of the timing of new development.

5.4.5 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.

5.4.6 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 needed 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 could not be used until Phase 2 or later in Kalaeloa's development.

5.4.7 Caveats and Limitations

The information used for the feasibility analysis is based on current market information. It should be considered illustrative rather than definitive. Financial analysis addresses whether development can profitably occur,

but does not address whether there is sufficient market demand to sell or lease the proposed project.

Markets are dynamic, and a plan with a 20-year timeframe will experience multiple economic cycles. Interest rates, sales prices and lease rates, material costs, and other parameters will vary greatly during future economic cycles, and have a profound impact on project feasibility. Evaluation of project feasibility will need to occur throughout implementation of the Master Plan, and the eventual amount of any feasibility gap at any particular time may vary significantly from what has been projected here.

Cost assumptions, including those for land, infrastructure, and construction, are conceptual in nature. As further planning and development occurs, these costs may increase or decrease significantly from what has been modeled to date. More detailed implementation planning, with supporting financial analysis, will be needed.

5.5 GOVERNANCE

At present, there are at least 16 public agencies and two private entities at Kalaeloa that either own land or are designated to receive land 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, HCDA has the ability to accelerate reuse through development entitlements, pursue the issuance of bonds to finance improvements, and assessment of properties as needed to fund Kalaeloa's management. As the successor to the former Local Reuse Authority (Barbers Point NAS Reuse Commission); HCDA has standing to work with the U.S. Navy on remaining base reuse issues.

However, given the multi-jurisdictional nature of Kalaeloa, HCDA cannot solely rely upon its statutory authority but must develop the capacity to coordinate with the various entities within Kalaeloa in manner that can facilitate implementation of the Master Plan. There are several ways in which this coordination can occur that 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 MOA 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.

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 needs to be considered when seeking funding, specific actions that cannot be accomplished through other less formal means, or structural changes in the authority or relationships between parties. Since such actions are subject to public debate and policy making, uncertainties exist in final content and ultimate passage. Further, the timing required for the passage of legislation may adversely impact development phasing and implementation.



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