Visual and Aesthetic Resources Technical Report
Honolulu High-Capacity Transit Corridor Project

August 15, 2008

Prepared for:
City and County of Honolulu

Preface

This technical report supports the Draft Environmental Impact Statement (EIS) prepared for the Honolulu High-Capacity Transit Corridor Project. It provides additional detail and information as it relates to:

- Methodology used for the analysis
- Applicable regulations
- Results of the technical analysis
- Proposed mitigation
- Coordination and consultation (as appropriate)
- References
- Model output (as appropriate)
- Other information/data

As described in the Draft EIS, the Locally Preferred Alternative, called the "Full Project," is an approximate 30-mile corridor from Kapolei to the University of Hawai'i at Mānoa with a connection to Waikīkī. However, currently available funding sources are not sufficient to fund the Full Project. Therefore, the focus of the Draft EIS is on the "First Project," a fundable approximately 20-mile section between East Kapolei and Ala Moana Center. The First Project is identified as "the Project" for the purpose of the Draft EIS.

This technical report documents the detailed analysis completed for the Full Project, which includes the planned extensions, related transit stations, and construction phasing. The planned extensions and related construction planning have not been fully evaluated in the Draft EIS and are qualitatively discussed in the Cumulative Effects section of the Draft EIS as a foreseeable future project(s). Once funding is identified for these extensions, a full environmental evaluation will be completed in a separate environmental study (or studies), as appropriate.

Figure 1-3 through Figure 1-6 (in Chapter 1, Background) show the proposed Build Alternatives and transit stations, including the areas designated as planned extensions.

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Acronyms and Abbreviations

CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
City	City and County of Honolulu
DBEDT	Department of Business, Economic Development, and Tourism
DPP	City and County of Honolulu Department of Planning and Permitting
DTS	City and County of Honolulu Department of Transportation Services
EIS	Environmental Impact Statement
ʻEwa (direction)	toward the west (see also Waiʻanae)
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
H-1	Interstate Route H-1 (the H-1 Freeway)
Koko Head (direction)	toward the east
LRT	light rail transit
makai (direction)	toward the sea
mauka (direction)	toward the mountains
NEPA	National Environmental Policy Act
Oʻahu MPO	Oʻahu Metropolitan Planning Organization
OR&L	Oʻahu Railway and Land Company
OTSPC	Oʻahu Transportation Study Policy Committee
PUC	Primary Urban Center
RTD	City and County of Honolulu Department of Transportation Services Rapid Transit Division
SAFETEA-LU	The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
TPSS	traction power substation
UH	University of Hawaiʻi
Waiʻanae (direction)	toward the west (see also ʻEwa)

Summary

This Visual and Aesthetic Resources Technical Report describes the character and quality of the existing landscape in the study area. It discusses the potential visual effects of the Build Alternatives and potential mitigation measures. Mitigation measures include ways to avoid or minimize effects on visual quality and ways to restore or enhance visual quality.

Impacts associated with the Build Alternatives include potential removal or relocation of Exceptional Trees, a change in the setting of a historic or cultural site or Section 4(f) resource, alteration of ʻEwa-Koko Head and mauka-makai views, introduction of project components that are out of scale or character with their setting, moderate to high viewer response to project changes, the introduction of new light sources in sensitive areas, and incompatibility with policy documents.

Methodology

The assessment methodology used for this analysis is adapted from the Federal Highway Administration's (FHWA) Visual Impact Assessment for Highway Projects (Publication No. FHWA HI-88-054). The City and County of Honolulu Department of Planning and Permitting (DPP) and other interested groups (e.g., the Outdoor Circle, Scenic Hawaiʻi, Inc., and the Honolulu Chapter of the American Institute of Architects) were also consulted to obtain data, refine the focus for the visual analysis, and elicit pertinent concerns about safeguarding the aesthetic environment. FHWA methodology was used for the Honolulu High-Capacity Transit Corridor Project (the Project) because it is a linear transportation facility comparable to a highway and with a similar range of issues, and also because the Federal Transit Administration (FTA) has not issued comparable guidance.

The major components of the FHWA's visual assessment process include the following tasks:

1. Establishing the affected environment—this includes identifying visually sensitive resources such as landmarks, significant views and vistas, and view corridors
2. Describing and assessing the affected environment's character and quality
3. Determining major viewer groups that have views to and from the project alignment
4. Evaluating views that would be interrupted by the facility and views from the facility, including viewer response
5. Describing significant visible changes that would occur
6. Developing measures to mitigate the Project's significant impacts

The first three steps listed above establish the affected environment and determine how much of the landscape is visible from outside the study corridor. From this

baseline, potential changes to the visible landscape and likely viewer response to those changes are assessed and described. Visual and aesthetic resources are evaluated for the short-term construction period, the long-term operational period, and for indirect and cumulative effects.

The study corridor was divided into the following four landscape units to evaluate the existing visual environment:

- Landscape Unit 1—Kapolei to Fort Weaver Road
- Landscape Unit 2—Fort Weaver Road to Aloha Stadium
- Landscape Unit 3—Aloha Stadium to Kalihi
- Landscape Unit 4—Kalihi through Iwilei to the University of Hawai‘i (UH) Mānoa and Waikīkī

These landscape units consist of geographic areas where views of the Project would have a similar context or character. These similarities are based on topography, location, the viewers' role, and the landscape's character (natural and constructed). The landscape becomes progressively more urban as the corridor progresses Koko Head from Landscape Unit 1 to Landscape Unit 4.

Existing Visual Environment

The Island of O‘ahu is one of eight major islands that make up the State of Hawai‘i. All of the Hawaiian Islands were originally formed by prehistoric volcanic activity. Additional volcanic eruptions, severe tropical storms, and earthquakes have continued to mold and reshape the Hawaiian Islands into a series of jagged cliffs, steep valleys, and gently sloping flatlands.

The mountain ranges are visible from most of the study corridor along Farrington Highway and Interstate Route H-1 (the H-1 Freeway). The integrity of these landforms and condition of public open spaces are important to visual character and quality.

Within coastal areas, the most scenic views are often captured when looking laterally along the coastline. These views capture the contrast between ocean and land form, usually in a distinctive visual pattern. Views at a strict 90 degrees from the shoreline, such as along roadway corridors, are generally flat and uniform.

The Project's affected environment includes areas that would have a view of the Project and areas visible from the corridor, including from the proposed transit guideway. It also includes views that the Project could affect or create, including from the proposed transit guideway.

Visually sensitive resources in the study corridor include landmarks, significant views and vistas, historic and cultural sites, and Exceptional Trees. These resources are important because of their scenic quality, scale, and prominence within the visual environment. With the exception of Exceptional Trees, visually sensitive resources that could be affected by the Build Alternatives are shown on Figure S-1.

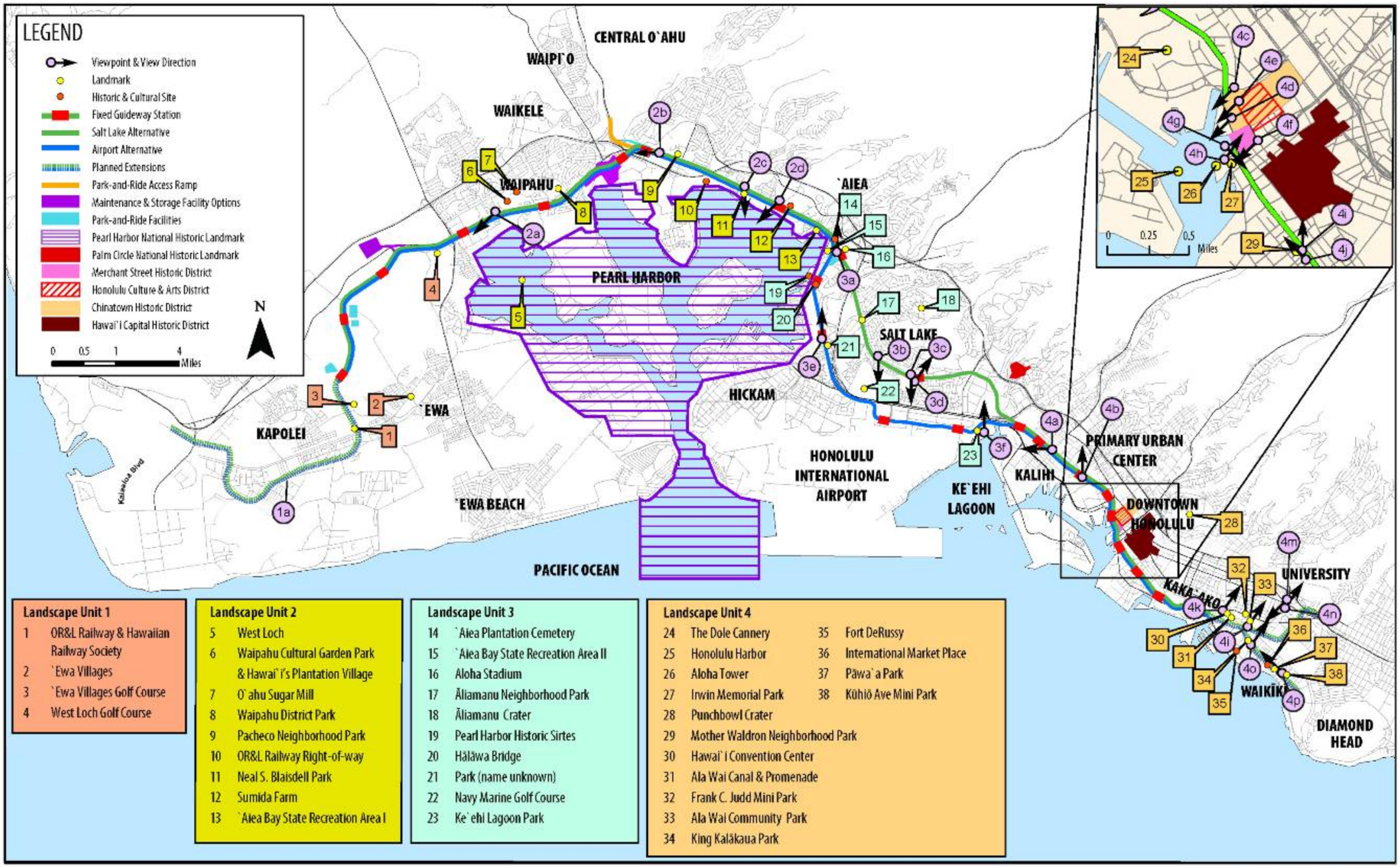

Figure S-1: Study Corridor, Visually Sensitive Resources, and Representative Viewpoints

Viewer groups within the affected environment have been categorized as residents, commuters, business owners, recreationists, and visitors or tourists. These categories indicate who would see changes to the visual environment and under what circumstances. The viewer response to change is analyzed in terms of exposure and sensitivity, or the expectation a viewer would have for a visual experience in a given area. These elements work together.

Visual simulations of the Build Alternatives were developed for 25 representative viewpoints. The locations of these viewpoints are shown on Figure S-1. The simulations serve several purposes: to evaluate visual and aesthetic consequences; demonstrate the potential for mitigation; and provide a means of communicating the findings of the analysis. The simulations depict the guideway and other project elements based on current concepts. For stations, they show a typical prototype without design detail.

Consequences

Visual and aesthetic consequences are defined as changes to the visual landscape and viewer response to those changes. For this assessment, consequences have been categorized as low, moderate, or high as defined below:

- Low visual effects generally occur when transportation elements (such as roadways) are already part of the view, when the view has few or no visually sensitive resources, and when the project would introduce few (if any) noticeable changes. Viewer groups would not likely notice a visual change or expect a scenic viewpoint. Minor changes in light and glare may occur.
- Moderate visual effects occur when changes to the existing view would be noticeable but not substantial, and/or when visually sensitive resources would undergo a noticeable change in view. Viewer groups would be aware and sensitive to visual change. Noticeable changes in light and glare may occur.
- High visual effects occur when substantial changes to existing views would be made, resulting in a greatly changed view and/or when visually sensitive resources would undergo a substantial change in view. Viewer groups would be sensitive to visual change because they would expect attractive views or surroundings. Substantial changes in light or glare would occur.

No Build Alternative

The No Build Alternative would entail an increase in bus fleet size, and therefore, is not expected to result in notable visual changes. No construction would occur, so no effects on the existing visual environment would result.

Build Alternatives

The Build Alternatives would be set in an urban context where visual change is expected and differences in scales of structures are typical. However, the perception

of some viewer groups may be that visual changes associated with the Project are substantial, particularly when considered at a single location.

The fixed guideway and stations would be elevated structures throughout the study corridor. The system's main components include foundations, support columns, the elevated guideway structure, and stations as well as traction power substations (TPSS) and a vehicle maintenance and storage facility.

The guideway for the light rail transit (LRT) would be consistent in bulk and scale throughout the alignment. The support columns would range from 3 to 8 feet in diameter.

All stations would have similar design elements, including platforms that would be between 270 and 300 feet long and a minimum of 10 feet wide. The station height would be about 20 feet taller than the guideway. As a result, the stations would be dominant visual elements in their settings and would noticeably change views. System elements for all technologies being considered would introduce new visual elements that may contrast with the existing environment's scale and character.

Park-and-ride lots would be constructed at several stations, and one parking garage is planned at Pearl Highlands. The parking garage would be four stories or approximately 60 feet high. Additionally, two locations are being considered for the system's maintenance and storage facility: Ho'opili and a vacant site near Leeward Community College. Only one site will be selected. Development of the park-and-ride lots and maintenance and storage facility would include removing vegetation and adding pavement and a number of structures, which would change views and the visual landscape's character.

Support facilities such as TPSS would be located at approximately 1-mile intervals. Because they would require intermittent access for vehicles, these substations would be located near roadways. However, they would be sited to avoid locations that would affect visually sensitive resources. Each substation would be a maximum of approximately 50 feet long, 30 feet wide, and 10 feet high. Although they would noticeably change existing views, most would be located adjacent to roadways where utilities are already part of the view. Therefore, these changes are not expected to be dramatic or substantial.

The Build Alternatives would involve removing and/or trimming street trees in some locations. Potential changes in visual character would vary depending on the setting. Changes would be greatest in areas where mature trees form a canopy over streets or sidewalks and where they are dominant components of a unique visual setting. The general areas where mature trees would be trimmed or removed are noted in this report's discussion of each landscape unit. The Honolulu High-Capacity Transit Corridor Project Street Trees Technical Report (RTD 2008a) evaluates street trees along the alignment. This assessment includes Exceptional Trees.

Light and glare effects would primarily be associated with stations and trains, resulting from interior and safety lighting for the stations and interior lighting and headlights on the trains. For most of the alignment, light and glare associated with

the guideway and trains are not anticipated to have a substantial impact because the guideway would generally be in the existing roadway rights-of-way, which currently produce transportation-related light and glare. In addition, the light intensity from trains is expected to be comparable to existing buildings and vehicles along the alignment.

In areas where the guideway and trains would pass close to office, commercial, and residential buildings, moderate increases in ambient light levels could occur. Glare is expected to be low with a limited level of reflective surfaces, and would be reduced further by appropriate design measures. Overhead site lighting at stations, park-and-ride-lots, and the maintenance and storage facility would be provided for safety and visibility. Night light and increased light and glare in these areas may be considered a nuisance-level visual effect (low visual sensitivity).

The shadow pattern created by the guideway would change throughout the day and seasonally, depending on the alignment's direction, time of day, and time of year. Shadow impacts along the alignment would vary with orientation, station site planning, guideway height, and the height of surrounding trees and local development. Shade and shadow effects are illustrated in the simulated views.

For viewers of the alignment, the guideway, stations, and other project elements would result in noticeable changes to views where the project elements would be near or in the foreground of views. This change would also occur for motorists traveling on roadways along and under the guideway. View changes would be substantial if they are obstructed or blocked.

The viewer response to change would vary with their exposure and sensitivity, and with the alignment orientation, guideway height, and the height of surrounding trees and/or buildings. View changes would be less noticeable where the project elements would serve as smaller components of the larger landscape in a wider vista. For viewers from trains, the elevated alignment would introduce panoramic views of the surrounding mountain ranges and coastline, as well as the Downtown Honolulu skyline and other developed areas. Passengers on trains would have enhanced views of these areas compared to passengers in vehicles, whose views are often obstructed by buildings, vehicles, and commercial signage.

Public views include views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural features, heritage resources and other landmarks, and view corridors between significant landmarks (ROH 1978b). The City and County of Honolulu's general urban design principals and controls state that "(s)uch public views shall be protected by appropriate building heights, setbacks, design and siting controls" and that "(t)hese controls shall be determined by the particular needs of each view and applied to public streets and to both public and private structures." The guideway and some stations would partially block mauka-makai public views from streets that intersect with the alignment.

RTD will coordinate with the City and County of Honolulu (City) to identify the particular needs of each view; however, the Build Alternatives would introduce a new

linear visual element to the corridor and changes to some views would be unavoidable. Depending on the degree of view obstruction or blockage, some view changes would be substantial. Viewers' responses to this change would vary with their exposure and sensitivity and depend on the alignment orientation, guideway and station height, and height of surrounding trees and/or buildings. View changes would be less notable in wider vista or panoramic views where the project elements serve as smaller components of the larger landscape. Generally, the project elements would not be dominant features in these views.

Historic sites are located throughout the study corridor, and the introduction of a new elevated system would change their setting and some views of these sites. For a full discussion of potential effects on historic sites, please refer to the Honolulu High-Capacity Transit Corridor Project Historic Resources Technical Report (RTD 2008b).

For all Build Alternatives, high or substantial visual effects would occur in the following areas, except as noted:

- Kamehameha Highway in the area of Neal S. Blaisdell Park;
- Along Moanalua Stream, where the guideway would substantially change the stream bank's open natural character and the park located Koko Head (with the Airport Alternative, there would be no visual effects in this area);
- Along Dillingham Boulevard in the Kalihi and Kapālama station areas;
- Nimitz Highway Koko Head to Halekauwila Street, which includes several historic districts and other sensitive visual resources;
- Along Halekauwila Street where monkeypod trees would be trimmed and the Dillingham Transportation Building (a historic resource) and Irwin Park are located;
- The Civic Center Station area, near where Mother Waldron Park is located;
- The Ala Liliko'i, Chinatown, Ala Moana, Convention Center, McCully, and Date Street station areas where substantial changes to the visual environment would occur; and
- In the Waikīkī neighborhood where the planned extension would contrast substantially with visually sensitive resources and partially block views.

Viewpoints where visual effects would be high are listed below. These viewpoints are shown on Figure S-1:

- Viewpoint 2c: Kamehameha Highway at Ka'ahumanu Street, looking makai;
- Viewpoint 3c: Ala Liliko'i Street, looking makai (there would be no visual effects in this area with the Airport Alternative);
- Viewpoint 3d: Salt Lake Boulevard looking mauka (there would be no visual effects in this area with the Airport Alternative);
- Viewpoint 4c: King Street Bridge, looking makai;

- Viewpoint 4g: the Nimitz Highway/Fort Street intersection ‘Ewa of Irwin Park, looking Koko Head;
- Viewpoint 4i: Mother Waldron Park, looking mauka;
- Viewpoint 4j: the Halekauwila/Cooke Street intersection, looking ‘Ewa past Mother Waldron Park;
- Viewpoint 4k (planned extension area): Atkinson Drive at the Convention Center area, looking mauka;
- Viewpoint 4n (planned extension area): University Avenue at Kuilei Drive, looking Koko Head; and
- Viewpoint 4p (planned extension area): Kūhiō Avenue toward Lili‘uokalani, looking mauka.

With the Airport & Salt Lake Alternative, the alignments and stations that would serve both the Honolulu International Airport and Salt Lake are the same as those discussed for the Salt Lake Alternative and the Airport Alternative, except that the Aloha Stadium Station would be relocated makai to provide a Pearl Harbor Memorial Station instead of a second Aloha Stadium Station on Salt Lake Boulevard.

Relocating this station would have slightly greater visual effects on views of East Loch and the Pearl Harbor historic sites than with the Airport Alternative, because it would be closer to these resources. In addition, the station’s bulk and scale would be a more noticeable contrast with the surrounding environment’s scale and character. Overall visual effects for this station area under the Airport Alternative would be moderate, which would likely increase to high with the Airport & Salt Lake Alternative.

Construction Effects

During construction of the Build Alternatives, the project area’s visual quality may be altered for all viewer groups (residents, commuters, business owners, recreationists, and visitors or tourists). Construction-related signage and heavy equipment would be visible at, and in the vicinity of, construction sites. Mature vegetation, including trees, may be removed from some areas to accommodate construction of the guideway, stations, and park-and-ride lots, which would degrade or partially obstruct views or vistas. These effects would be greatest at station locations, park-and-ride lots, flyovers (e.g., H-1 Freeway at Salt Lake Boulevard and H -1 Freeway between Moanalua Stream and Kamehameha Highway), and the maintenance and storage facility site.

Temporary lighting may be necessary for nighttime construction of certain project elements or in existing highway rights-of-way (to minimize disruption to daytime traffic). This temporary lighting could affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels.

Construction staging areas would be needed throughout the project area to provide adequate space for construction equipment, construction materials, materials

stockpiling and transfer, parking, and other construction-related activities. Due to the Project's size and complexity and the lack of available land along the alignment, potential staging areas have only tentatively been identified at this point in the process.

Mitigation Measures

Mitigation measures would focus on preserving visual resources and enhancing the project design to comply with applicable policies. The following measures would be included with the Project to minimize negative visual effects and enhance the visual aesthetic opportunities that it would create.

- Integrate transit-oriented development policies and principles with station designs, in consultation with developers and City, County, and State agencies;
- Consider a contextual approach as part of final project design, so project elements are functional as well as aesthetically appropriate to their setting;
- Consult with a multi-disciplined advisory committee regarding an appropriate design theme;
- Use project components to define spaces and create a "sense of place" that is appropriate in scale and character to its setting;
- Consider design components that help create a human-scale and pedestrian-friendly environment;
- Create opportunities for appropriate and sensitive "showcasing" of project components that are too large scale to apply minimizing techniques;
- In highly sensitive settings, use design features with materials and shapes that fit the topography and visual setting;
- Look for opportunities to use materials that reflect the Hawaiian culture and that will minimize the potential for vandalism;
- Incorporate appropriate consultation, monitoring, preservation, and documentation measures to minimize impacts to Section 4(f), historic, cultural, and vegetative resources;
- Pursue cooperative agreements with adjacent property owners to finance and maintain landscaping, artwork, or other design features that would improve the Project's visual quality;
- Where practicable, retain existing street trees along sidewalks and in medians, or plant new vegetation to help soften the visual appearance of project elements (e.g., stations, guideway columns, and TPSSs);

- Use source shielding in exterior lighting at stations and ancillary facilities such as the maintenance and storage facility and park-and-ride lots, to ensure that light sources (such as bulbs) would not be directly visible from residences, streets, and highways, and to limit spillover light and glare in residential areas; and
- Integrate project elements with area redevelopment plans as appropriate, particularly at stations.

Construction-related mitigation measures could include the following:

- Remove visibly obtrusive erosion control devices such as silt fences, plastic ground cover, and straw bales as soon as areas are stabilized;
- Replace removed street trees and other vegetation with appropriately sized vegetation;
- Keep roadways as clean as possible by using street sweepers and wheel washers to minimize off-site tracking;
- During dry periods, apply water to exposed soils to minimize airborne sediment;
- Properly maintain construction equipment to minimize unnecessary exhaust; and
- Locate stockpile areas in less visibly sensitive areas, and whenever possible, situate these areas so that they are not visible from the road or to residents and businesses

1 Background

1.1 Introduction

The City and County of Honolulu Department of Transportation Services Rapid Transit Division (RTD), in cooperation with the U.S. Department of Transportation Federal Transit Administration (FTA), is evaluating fixed-guideway alternatives that would provide high-capacity transit service on O‘ahu. The project study area is the travel corridor between Kapolei and the University of Hawai‘i at Mānoa (UH Mānoa) (Figure 1-1). This corridor includes the majority of housing and employment on O‘ahu. The east-west length of the corridor is approximately 23 miles. The north-south width is, at most, 4 miles because the Ko‘olau and Wai‘anae Mountain Ranges bound much of the corridor to the north and the Pacific Ocean to the south.

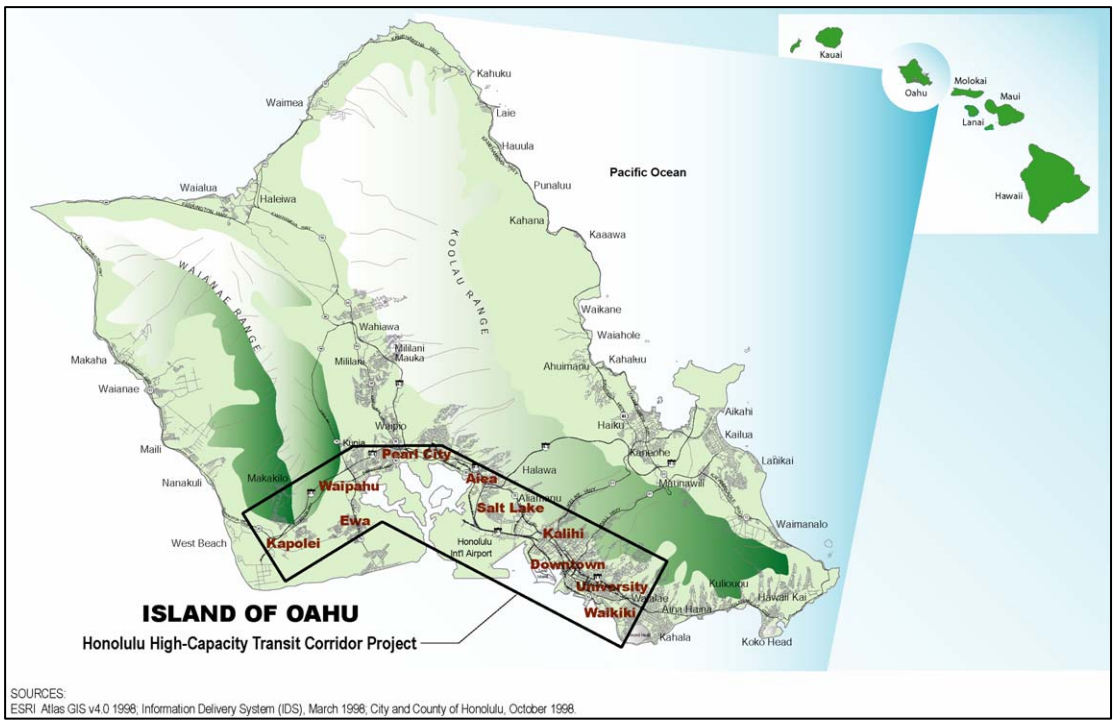

Figure 1-1: Project Vicinity

1.2 Description of the Study Corridor

The Honolulu High-Capacity Transit Corridor extends from Kapolei in the west (Wai‘anae or ‘Ewa direction) to UH Mānoa in the east (Koko Head direction) and is confined by the Wai‘anae and Ko‘olau Mountain Ranges in the mauka direction (towards the mountains, generally to the north within the study corridor) and the Pacific Ocean in the makai direction (towards the sea, generally to the south within the study corridor). Between Pearl City and ‘Aiea, the corridor’s width is less than 1 mile between Pearl Harbor and the base of the Ko‘olau Mountains (Figure 1-2).

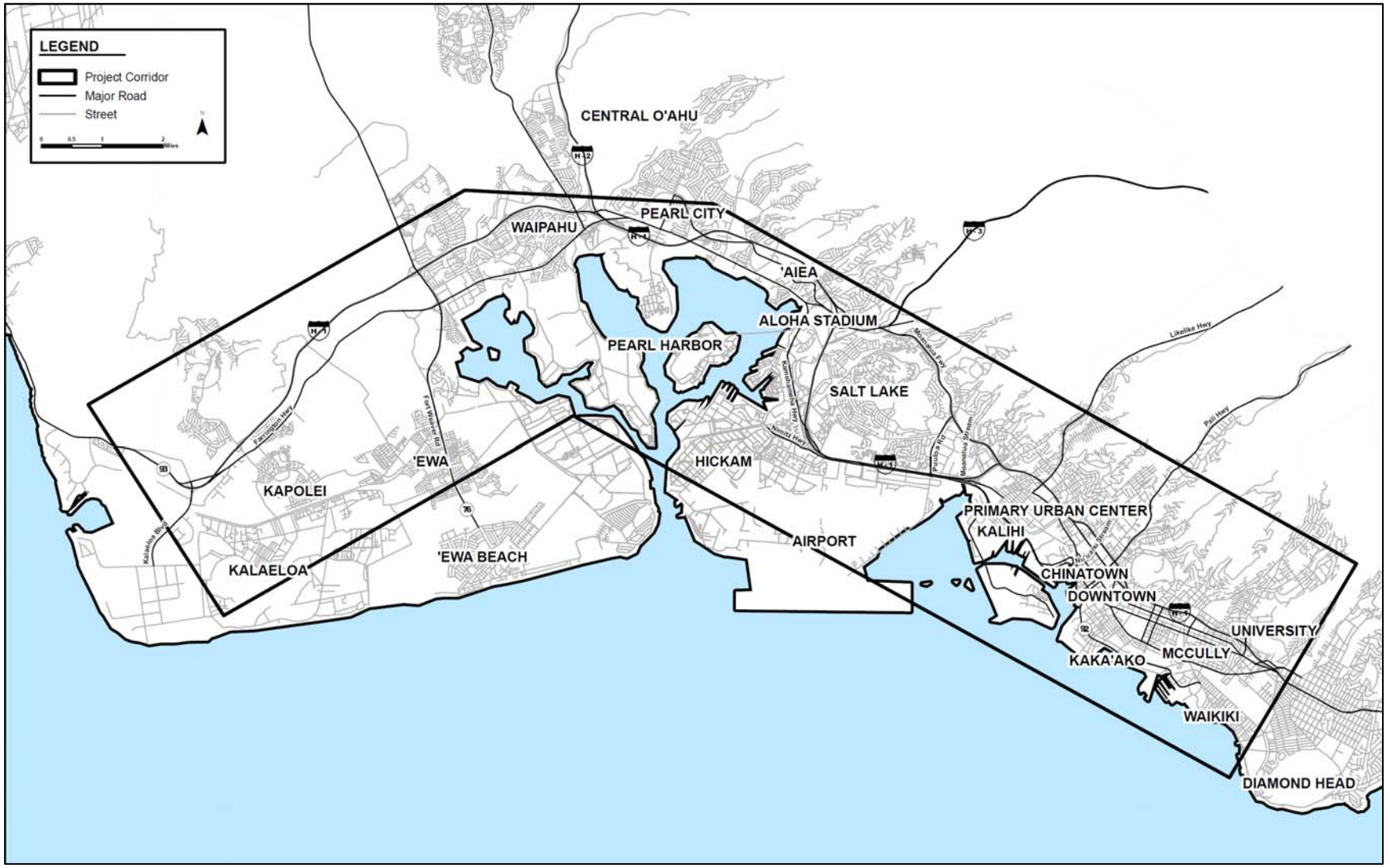

Figure 1-2: Areas and Districts in the Study Corridor

1.3 Alternatives

Four alternatives are being evaluated in the Environmental Impact Statement (EIS). They were developed through a screening process that considered alternatives identified through previous transit studies, a field review of the study corridor, an analysis of current and projected population and employment data for the corridor, a literature review of technology modes, work completed by the Oʻahu Metropolitan Planning Organization (OʻahuMPO) for its *Oʻahu Regional Transportation Plan 2030* (ORTP) (OʻahuMPO 2007), a rigorous Alternatives Analysis process, selection of a Locally Preferred Alternative by the City Council, and public and agency comments received during the separate formal project scoping processes held to satisfy National Environmental Policy Act (NEPA) (USC 1969) requirements and the Hawaiʻi EIS Law (Chapter 343) (HRS 2008). The alternatives evaluated are as follows:

7. No Build Alternative
8. Salt Lake Alternative
9. Airport Alternative
10. Airport & Salt Lake Alternative

1.3.1 No Build Alternative

The No Build Alternative includes existing transit and highway facilities and committed transportation projects anticipated to be operational by 2030. Committed transportation projects are those identified in the ORTP*,* as amended (OʻahuMPO 2007). Highway elements of the No Build Alternative also are included in the Build Alternatives. The No Build Alternative would include an increase in bus fleet size to accommodate growth, allowing service frequencies to remain the same as today.

1.3.2 Build Alternatives

The fixed guideway alternatives would include the construction and operation of a grade-separated fixed guideway transit system between East Kapolei and Ala Moana Center (Figure 1-3 to Figure 1-6). Planned extensions are anticipated to West Kapolei, UH Mānoa, and Waikīkī. The system evaluated a range of fixed-guideway transit technologies that met performance requirements, which could be either automated or employ drivers. All parts of the system would either be elevated or in exclusive right-of-way.

Steel-wheel-on-steel-rail transit technology has been proposed through a comparative process based on the ability of various transit technologies to cost-effectively meet project requirements. As such, this technology is assumed in this analysis.

The guideway would follow the same alignment for all Build Alternatives through most of the study corridor. The Project would begin by following North-South Road and other future roadways to Farrington Highway. Proposed station locations and

other project features in this area are shown in Figure 1-3. The guideway would follow Farrington Highway Koko Head on an elevated structure and continue along Kamehameha Highway to the vicinity of Aloha Stadium (Figure 1-4).

Between Aloha Stadium and Kalihi, the alignment differs for each of the Build Alternatives, as detailed later in this section (Figure 1-5). Koko Head of Middle Street, the guideway would follow Dillingham Boulevard to the vicinity of Ka‘aahi Street and then turn Koko Head to connect to Nimitz Highway in the vicinity of Iwilei Road.

The alignment would follow Nimitz Highway Koko Head to Halekauwila Street, then along Halekauwila Street past Ward Avenue, where it would transition to Queen Street and Kona Street. Property on the mauka side of Waimanu Street would be acquired to allow the alignment to cross over to Kona Street. The guideway would run above Kona Street through Ala Moana Center.

Planned extensions would connect at both ends of the corridor. At the Wai‘anae end of the corridor, the alignment would follow Kapolei Parkway to Wākea Street and then turn makai to Saratoga Avenue. The guideway would continue on future extensions of Saratoga Avenue and North-South Road. At the Koko Head end of the corridor, the alignment would veer mauka from Ala Moana Center to follow Kapi‘olani Boulevard to University Avenue, where it would again turn mauka to follow University Avenue over the H-1 Freeway to a proposed terminal facility in UH Mānoa’s Lower Campus. A branch line with a transfer point at Ala Moana Center or the Hawai‘i Convention Center into Waikīkī would follow Kalākaua Avenue to Kūhiō Avenue to end near Kapahulu Avenue (Figure 1-6).

Salt Lake Alternative

The Salt Lake Alternative would leave Kamehameha Highway immediately ‘Ewa of Aloha Stadium, cross the Aloha Stadium parking lot, and continue Koko Head along Salt Lake Boulevard (Figure 1-5). It would follow Pūkōloa Street through Māpunapuna before crossing Moanalua Stream, turning makai, crossing the H-1 Freeway and continuing to the Middle Street Transit Center. Stations would be constructed near Aloha Stadium and Ala Liliko‘i. The total guideway length for this alternative would be approximately 19 miles and it would include 19 stations. The eventual guideway length, including planned extensions, for this alternative would be approximately 28 miles and it would include 31 stations.

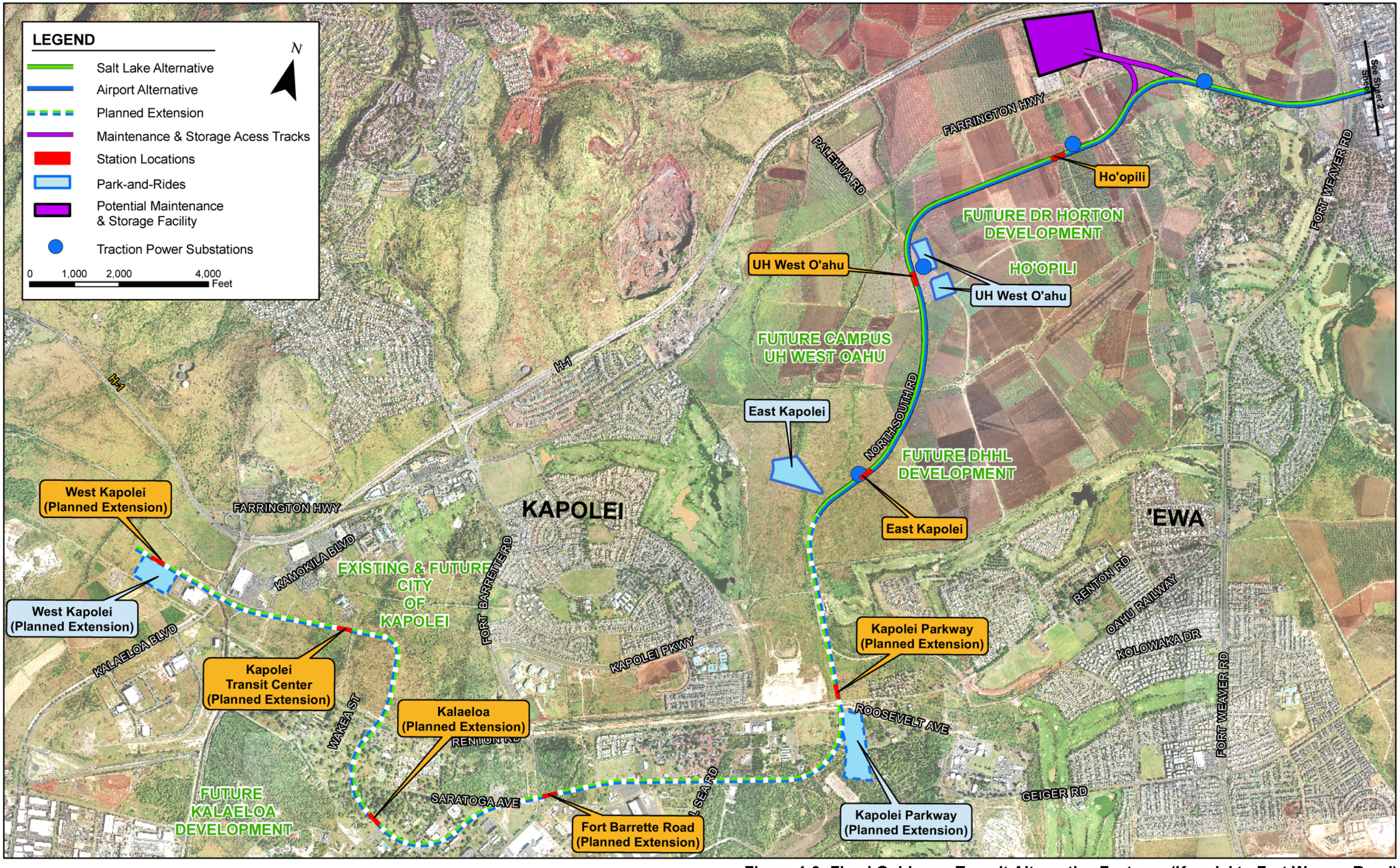

Figure 1-3: Fixed Guideway Transit Alternative Features (Kapolei to Fort Weaver Road)

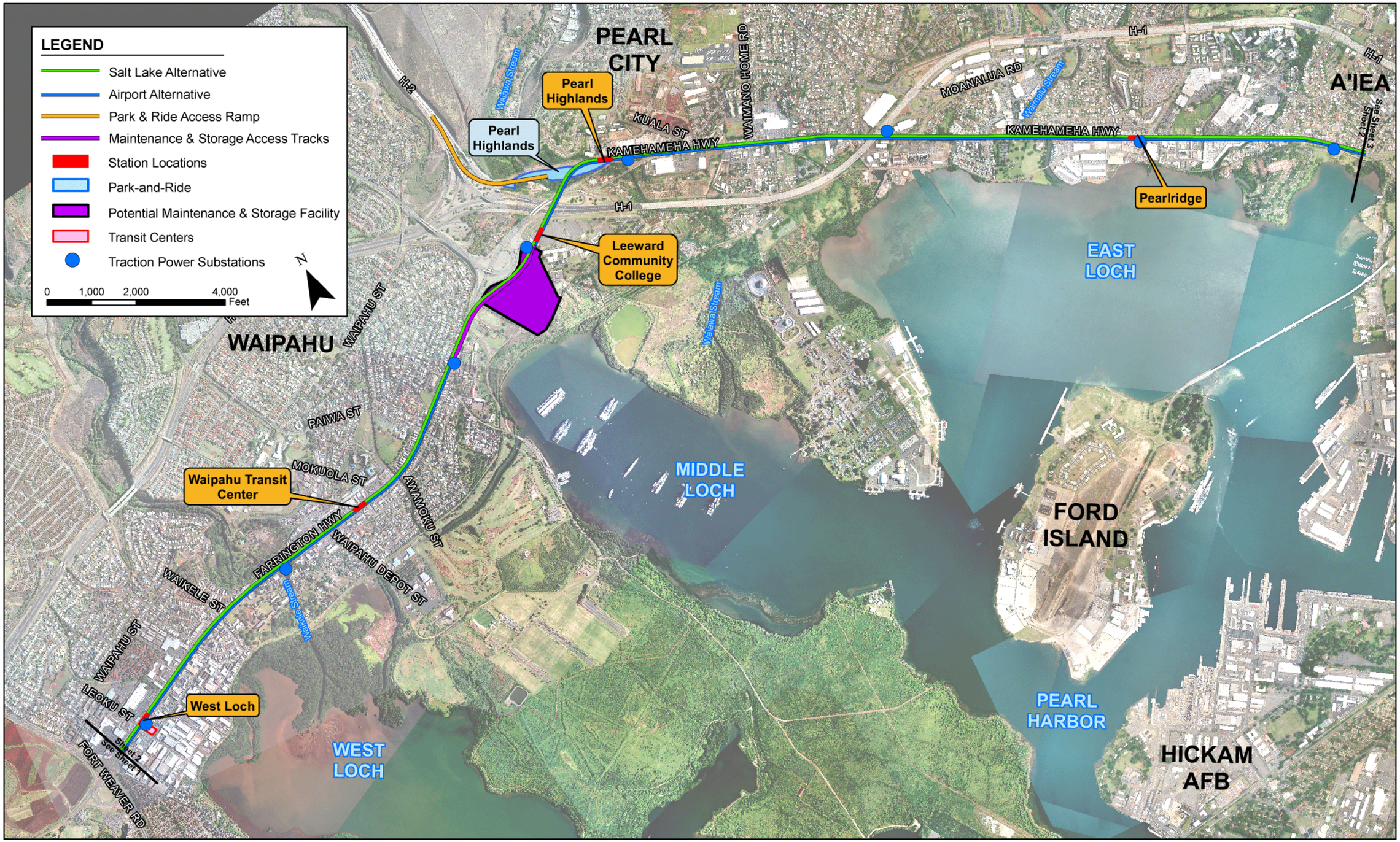

Figure 1-4: Fixed Guideway Transit Alternative Features (Fort Weaver Road to Aloha Stadium)

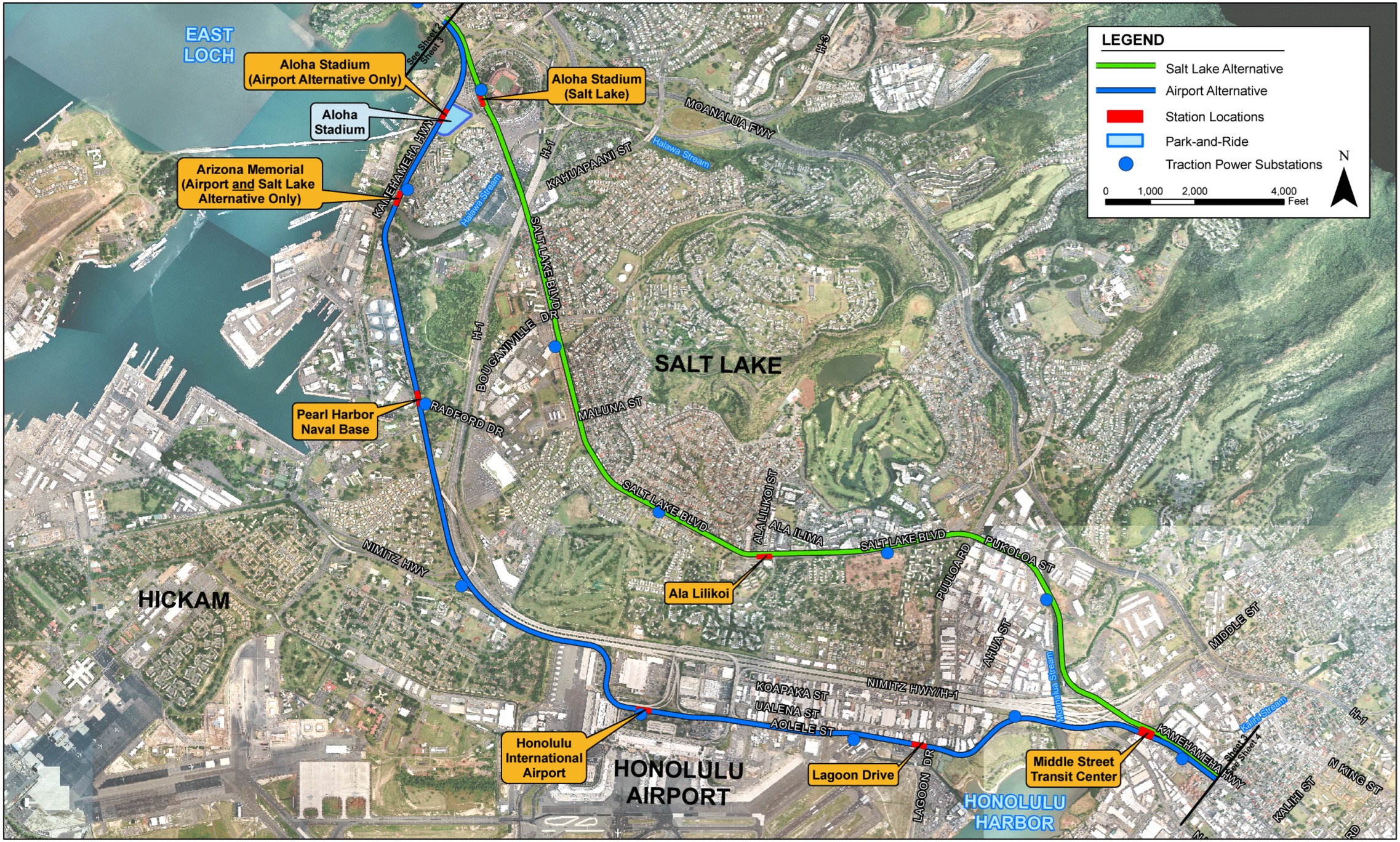

Figure 1-5: Fixed Guideway Transit Alternative Features (Aloha Stadium to Kalihi)

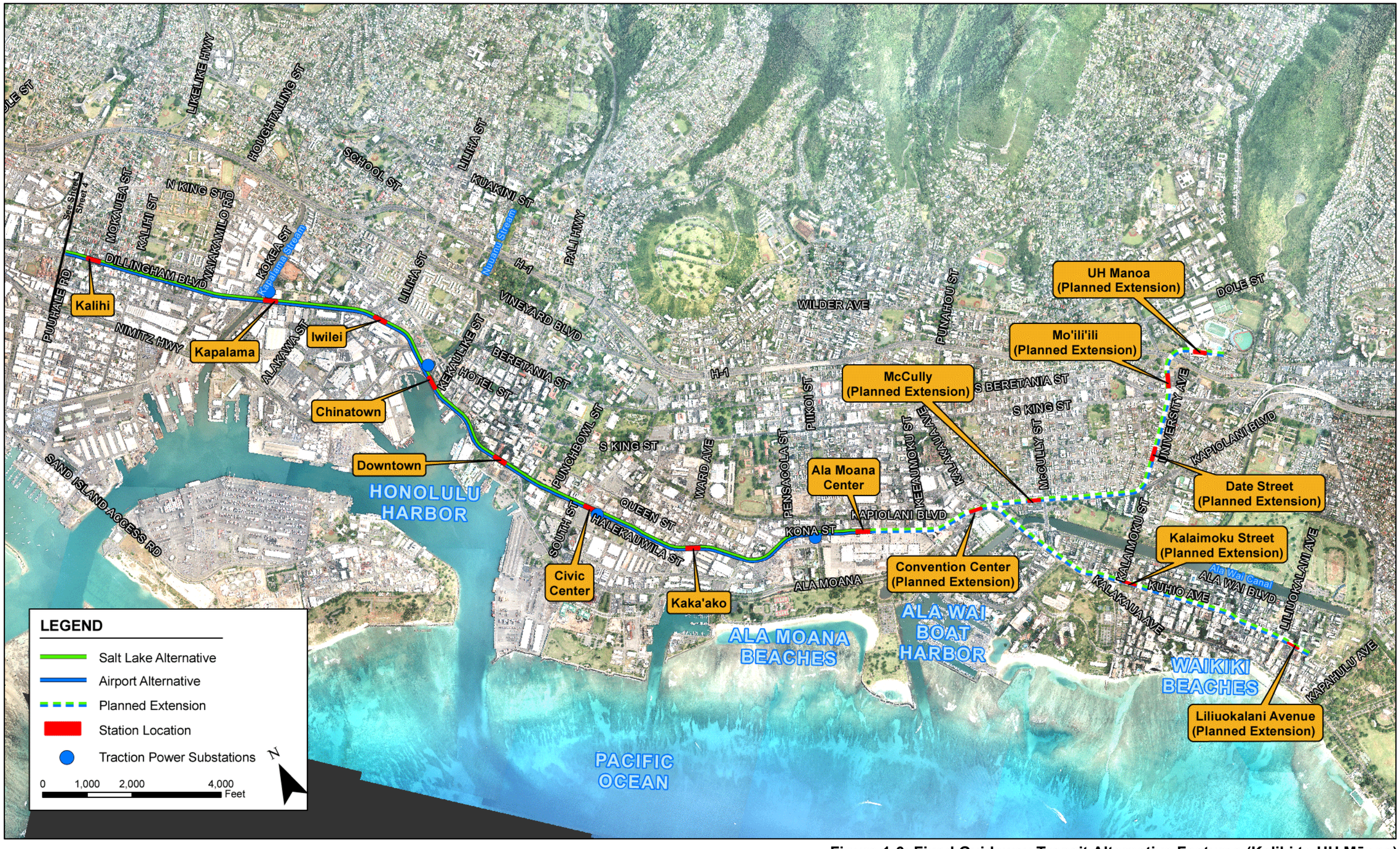

Figure 1-6: Fixed Guideway Transit Alternative Features (Kalihi to UH Mānoa)

Airport Alternative

The Airport Alternative would continue along Kamehameha Highway makai past Aloha Stadium to Nimitz Highway and turn makai onto Aolele Street and then follow Aolele Street Koko Head to reconnect to Nimitz Highway near Moanalua Stream and continuing to the Middle Street Transit Center (Figure 1-5). Stations would be constructed at Aloha Stadium, Pearl Harbor Naval Base, Honolulu International Airport, and Lagoon Drive. The total guideway length for this alternative would be approximately 20 miles and it would include 21 stations. The eventual guideway length, including planned extensions, for this alternative would be approximately 29 miles and it would include 33 stations.

Airport & Salt Lake Alternative

The Airport & Salt Lake Alternative is identical to the Salt Lake Alternative, with the exception of also including a future fork in the alignment following Kamehameha Highway and Aolele Street at Aloha Stadium that rejoins at Middle Street. The station locations discussed for the Salt Lake Alternative would all be provided as part of this alternative. Similarly, all the stations discussed for the Airport Alternative also would be constructed at a later phase of the project; however, the Aloha Stadium Station would be relocated makai to provide an Arizona Memorial Station instead of a second Aloha Stadium Station. At the Middle Street Transit Center Station, each line would have a separate platform with a mezzanine providing a pedestrian connection between them to allow passengers to transfer. The total guideway length for this alternative would be approximately 24 miles and it would include 23 stations. The eventual guideway length, including planned extensions, for this alternative would be approximately 34 miles and it would include 35 stations.

1.3.3 Features Common to All Build Alternatives

In addition to the guideway, the project will require the construction of stations and supporting facilities. Supporting facilities include a maintenance and storage facility, transit centers, park-and-ride lots, and traction power substations (TPSS). The maintenance and storage facility would either be located between North-South Road and Fort Weaver Road or near Leeward Community College (Figure 1-3 and Figure 1-4). Some bus service would be reconfigured to transport riders on local buses to nearby fixed guideway transit stations. To support this system, the bus fleet would be expanded.

2 Studies, Coordination, Regulatory Background, and Policy Documents

2.1 Previous Studies

Previous studies conducted within the project area were used as reference documents in obtaining existing information on identified visual resources. These studies were also used to help characterize the current landscape and views within the study corridor and to identify local concerns about preserving the visual environment's integrity. Referenced plans, ordinances, and studies are cited below:

- *Department of Land Utilization Coastal View Study,* July 1987
- *Honolulu Rapid Transit Final Environmental Impact Statement,* July 1992
- *Nimitz Highway Improvements Visual Impact Assessment,* March 1997
- *Primary Corridor Transportation Project, Final Environmental Impact Statement,* July 2003
- *North South Road Environmental Impact Statement,* September 2004
- *Fort Barrette Road Environmental Impact Statement,* July 2005
- *Honolulu High-Capacity Transit Corridor Project Scoping Report,* April 2006
- *View Corridor Survey,* February 2006
- *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Report,* June 2007

Field surveys were conducted in October and November 2007 to confirm the data obtained from the literature search and consultation. Field surveys also identified potential view corridors along the alignment for use in developing project simulations.

The list of protected view corridors in the 'Ewa, Central O'ahu, and Primary Urban Center (PUC) Development Plan areas of the O'ahu General Plan was obtained from applicable public policy documents. Additional data on view corridors within the study corridor were also obtained from prior studies. Consultation with the City and County of Honolulu Department of Planning and Permitting (DPP) provided current information on protected view corridors.

2.2 Coordination

During the Project's Alternatives Analysis phase, two meetings were held to obtain input from local government and interest groups. These meetings addressed specific areas of concern and interests to be considered in evaluating visual and aesthetic resources and conditions. A meeting with the DPP was also held on February 22, 2006 and included staff from the planning division and urban design branch. The discussion focused on the need to evaluate the potential for impacts to protected view corridors, as identified in the Development Plan areas. The discussion also focused on the importance of public reaction and input into the evaluation of visual and aesthetic quality and impacts.

Meetings were also held with The Outdoor Circle on February 24, 2006 and November 6, 2007. The Outdoor Circle's interests include green space protection, view plane preservation, tree advocacy, and many other issues that impact the quality of life for Hawaiian residents and visitors.

Representatives of the Hawai'i Chapter of the American Institute of Architects were in attendance at the November 6, 2007 meeting. Both meetings included an overview of the Project and the analysis process for visual and aesthetic resources. The Outdoor Circle expressed interest in providing continued input as additional project information becomes available.

2.3 Regulatory Background

Several Federal and State laws regulate visual quality. The following regulatory policies apply to evaluating visual impacts for the Build Alternatives:

- NEPA (42 USC 4321-4345) puts regulatory responsibility on the Federal government to "use all practicable means" to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings."
- The Highway Beautification Act of 1965 (23 CFR- 50) provides controls over outdoor advertising and junkyards to protect public investment, promote safety, preserve natural beauty, and provide enhanced roadside development to accommodate the traveling public.
- The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (PL 2005), Sections 6002–6009, places additional emphasis on environmental considerations such as mitigation, enhancement activities, context-sensitive solutions, and Section 4(f). It advances the idea of coordinating public and agency involvement and promoting the use of visualization techniques to improve stakeholder understanding of proposed plans.
- Section 4(f) of the U.S. Department of Transportation Act protects pubic parklands and recreational lands, wildlife refuges, and historic sites of National, State, or Local significance, which includes preservation of their aesthetic integrity.
- Section 106 of the Historic Preservation Act of 1966 furthers the preservation of historic resources, including resources that any Indian tribe or Native Hawaiian organization considers to be of religious and cultural significance.
- The FTA published Circular 9400.1A, *Design and Art in Transit Projects*, to encourage the use of design and artistic elements in transit projects. The FTA recognizes that specific types of transit projects require an assessment of visual effects. This circular provides guidance on opportunities for incorporating art and design into transit projects.
- The State of Hawai'i Revised Statutes Chapters 6E, 58, and 343 pertain to the quality and preservation of historic resources, Exceptional Trees, and the human environment.

2.4 Policy Documents

Public policy documents and ordinances that are applicable to the study corridor were used as reference documents in obtaining existing information on identified visual resources. These documents also provide insight into the value that local resources have within communities. The objectives, goals, and policies contained in these documents include provisions for the protection, enhancement, and development of resources related to the visual integrity and quality of communities and areas covered by these plans. The following sections discuss these referenced plans, ordinances, and studies.

2.4.1 O‘ahu General Plan (Revised 2002)

O‘ahu is divided into eight General Plan development areas that are intended to guide and influence land use and community character. The Project would affect the areas covered by the following development area plans: the *‘Ewa Development Plan* (DPP 1997b)*, Central O‘ahu Sustainable Communities Plan* (DPP 2002), and *Primary Urban Center Development Plan* (DPP 2004)*.*

The *City and County of Honolulu General Plan (as amended)* (DPP 1997a) is a relatively broad document comprised of objectives and policies intended to shape the future of O‘ahu. The General Plan’s primary focus regarding aesthetic policies is: “the preservation of scenic resources such as mature trees, scenic views and vistas, key landmarks, and historic and cultural features; the use of urban design principles that emphasize aesthetic compatibility while meeting functional standards; and reviewing standards to ensure that the character of older communities is maintained while still allowing for new construction and maintaining older facilities.”

2.4.2 ‘Ewa Development Plan (August 1997)

Aesthetic policies in the ‘Ewa Development Plan promote the consideration of compatible setting to avoid conflicts with historic context, and preserving the physical integrity of historic or cultural sites. Policies are directed at preserving and enhancing public views, which include protected mauka-makai view corridors, panoramic and significant landmark views, natural features, and resources that are part of the area’s heritage.

2.4.3 Central O‘ahu Sustainable Communities Plan (December 2002)

Key aesthetic policies in the Central O‘ahu Sustainable Communities Plan focus on preserving historic and cultural resources. These resources are seen as a community’s historic and cultural roots, which define the area’s unique sense of place. In particular, the protection of visual landmarks, significant vistas, and historic features from the plantation era and earlier periods are identified as key.

2.4.4 Primary Urban Center Development Plan (June 2004)

The key aesthetic policies of the Primary Urban Center Development Plan focus on

preserving historic and cultural sites and panoramic views, including landmarks and the urban skyline. Planning and design, as well as adaptive reuse, are promoted to allow for new uses while preserving historic value. Preservation policies focus on panoramic views that include Downtown Honolulu as a prominent feature and the Koʻolau and Waiʻanae Mountain Ranges, Punchbowl, Diamond Head, and Pearl Harbor as natural landmarks. Views along Pearl Harbor, the shoreline, and the Pearl Harbor Historic Trail toward the mountains, shoreline, and significant landmarks are emphasized as important.

2.4.5 ʻAiea-Pearl City Livable Communities Plan (May 2004)

The ʻ*Aiea-Pearl City Livable Communities Plan* (DPP 2004b) identifies the following aesthetic objectives for Kamehameha Highway: consistent landscaping; reducing visual impacts from overhead lines; preserving and enhancing shoreline views, particularly at key intersections (e.g., Kaonohi, Kaʻahumanu, and Honomanu Streets); protecting shoreline views of Pearl Harbor and other key landmarks (e.g., Sumida Watercress Farm); and enhancing mauka-makai views, particularly along key streets (e.g., Kaonohi Street, Kaʻahumanu Street, and Waimano Home Road), natural drainageways (e.g., the ʻAiea, Kalauao, Waimalu, and Waiawa Streams), and ridgelines.

2.4.6 Waipahu Livable Communities Initiative (May 1998)

The *Waipahu Livable Communities Initiative* (DPP 1998) focuses on maintaining a pedestrian scale within the town core and preserving the historic plantation theme and the area's cultural heritage.

2.4.7 Waipahu Town Plan (December 1995)

The *Waipahu Town Plan* (DPP 1995) focuses on accessibility into and within the town, improving the town's overall appearance, and promoting and preserving Waipahu's plantation and cultural heritage. This plan also integrates a few other methods of transportation for local residents.

2.4.8 Revised Ordinances of Honolulu

Chapter 21, Article 9, Special District Regulations

Special District Regulations include policies that safeguard special features and characteristics of particular districts to allow for their preservation and enhancement. For the Project, affected districts include Hawaiʻi Capitol (Section 21-9.30), Diamond Head (Section 21-9.40), Punchbowl (Section 21-9.50), Chinatown (Section 2-9.60), Thomas Square (Section 21-9.70), and Waikīkī (Section 21-9.80).

Chapter 41, Article 13, Protective Regulations for Exceptional Trees

Protective Regulations for Exceptional Trees include regulations that control the removal, destruction, or alteration of trees designated as "exceptional." These regulations require City Council approval for any actions affecting Exceptional Trees.

3 Methodology

The assessment methodology used for this analysis is adapted from the FHWA's *Visual Impact Assessment for Highway Projects* (Publication No. FHWA HI-88-054). The City and County of Honolulu DPP and other interested groups (e.g., the Outdoor Circle, Scenic Hawai'i, Inc., and the Honolulu Chapter of the American Institute of Architects) were also consulted to obtain data, refine the focus for the visual analysis, and elicit the most pertinent concerns about safeguarding the aesthetic environment. Although not required, FHWA methodology was used for the Project because it is a linear transportation facility comparable to a highway, with a similar range of issues. This methodology was also used because the FTA has not issued comparable guidance.

The major components of the FHWA visual assessment process include the following tasks:

1. Establishing the affected environment, which includes identifying visually sensitive resources such as landmarks, significant views and vistas, and view corridors;
2. Describing and assessing the affected environment's character and quality;
3. Determining major viewer groups that have views to and from the project alignment;
4. Evaluating views that would be interrupted by the facility and views from the facility, including viewer response;
5. Describing significant visible changes that would occur; and
6. Developing measures to mitigate the Project's significant impacts.

The first three steps listed above establish the affected environment and determine how much of the landscape is visible from outside the study corridor. From this baseline, potential changes to the visible landscape and likely viewer response to those changes are assessed and described. Visual and aesthetic resources are evaluated for the short-term construction period, the long-term operational period, and for cumulative effects.

3.1 Establishing the Affected Environment

The affected environment includes areas that would have a view of the Project and areas visible from the study corridor. It also includes views that the Project could affect and create.

3.1.1 Visually Sensitive Resources

The affected environment includes a variety of visually sensitive resources, such as landmarks, significant views and vistas, historic and cultural sites, and Exceptional Trees. These resources are important because of their scenic quality, scale, and prominence within the visual environment.

Field surveys were conducted to photo-document the affected environment, including locations where major project elements and incompatible visual changes would be introduced near visually sensitive resources. Field surveys also helped confirm viewer groups and determine the study corridor's limits.

3.1.2 Visual Character

The affected environment's character was evaluated to establish the relative importance, sensitivity, and visual quality of its various components. An area's visual character consists of a combination of physical, biological, and cultural attributes that make a landscape identifiable or unique. These relationships are typically described in terms of dominance, scale, diversity, and continuity. Character gives an area its "visual and cultural image" and includes patterns, colors, and textures of vegetation; land and water forms; and the built environment.

3.1.3 Visual Quality

Visual quality relates to the relative excellence of a visual experience. The affected environment's visual quality has been evaluated using three criteria: vividness, intactness, and unity. All three criteria must be high for the landscape to be given a high quality rating.

Vividness refers to the visual power or memorability of the landscape components as they combine to form striking and distinctive patterns. *Intactness* refers to the landscape's visual integrity. A low number of encroaching (out-of-character) elements would result in higher visual integrity. *Unity* refers to the landscape's visual coherence and compositional harmony when it is considered as a whole.

3.1.4 Viewer Groups

Viewer groups within the affected environment have been categorized as residents, commuters, business owners, recreationists, and visitors or tourists. These categories indicate who would see changes to the visual environment and under what circumstances. The viewer response to change is analyzed in terms of exposure and sensitivity, or the expectation a viewer would have for a visual experience in a given area. These elements work together.

Viewer exposure refers to the viewer groups' physical location, the relative number of people exposed to the view, and the duration of their view. This includes transit and highway users and people in the surrounding area.

Viewer sensitivity refers to a viewer group's expectations relative to a particular visual setting in a particular area. It is also the extent to which visual elements are important to the viewer group. Viewer sensitivity is affected by a variety of factors, including the activities a viewer is engaged in; the visual context; and their values, expectations, and interests.

3.1.5 Representative Viewpoints and Views

This assessment includes photographs of views from 25 representative viewpoints. Selection of these viewpoints was limited to readily accessible public areas such as parks, sidewalks, streets, and parking lots. A greater emphasis was placed on identifying views toward the Project, because this best represents most viewers and the greater variety of views that would be experienced.

The photographs are intended to accurately represent the structure's scale in relation to other objects. However, they do not reproduce the entire field of view that individuals would perceive. Photographs typically produce a static field of view, but an individual's eyes constantly scan and selectively focus on a scene for content. As a result, photographs often do not show scenic features as prominently as they might appear to individual observers.

Section 4.1.4 describes the existing visual environment for key viewpoints. These views were used to evaluate existing visual quality, impacts to visual resources, and consistency with aesthetic policies. The existing visual quality for each viewpoint was determined using the defined attributes outlined in the FTA's methodology for visual impact assessment. These attributes include the following:

- Vividness—how memorable the view is, as well as its key components
- Intactness—a view's visual integrity and freedom from encroaching elements
- Unity—a view's visual harmony and cohesiveness

The visual quality for each viewpoint was rated as low, moderate, or high. This rating was based on how well the view met visual excellence, as measured by the preceding defined attributes.

A viewpoint that rated high for all three criteria was considered to have high visual quality. If two criteria were met, the viewpoint was rated moderate for visual quality. If none or only one of the criteria were met, the viewpoint was rated low for visual quality.

3.2 Visual and Aesthetic Consequences

Visual and aesthetic consequences are defined as changes to the visual landscape and viewer response to those changes. For this assessment, consequences have been categorized as low, moderate, or high, as defined below:

- *Low* visual effects generally occur when transportation elements (such as roadways) are already part of the view, when the view has few or no visually sensitive resources, and when the Project would introduce few (if any) noticeable changes. With minimal effects, the contrast between the Project's scale or character and the existing environment would be low. Viewer groups would not likely notice a visual change or expect a scenic viewpoint. Minor changes in light and glare may occur.

- *Moderate* visual effects occur when changes to the existing view would be noticeable but not substantial, and/or when visually sensitive resources would undergo a noticeable change in view. With moderate effects, the contrast between the Project's scale and character and the existing environment would be noticeable but not dramatic, and viewer groups would be aware and sensitive to visual change. Noticeable changes in light and glare may occur.
- *High* visual effects occur when substantial changes to existing views would be made, resulting in a greatly changed view and/or when visually sensitive resources would undergo a substantial change in view. With high visual effects, the contrast between the Project's scale or character and the existing environment would be substantial. Viewer groups would be sensitive to visual change because they would expect attractive views or surroundings. Substantial changes in light or glare would occur.

3.2.1 Visual Simulations

Visual simulations of the Build Alternatives were developed for 25 representative viewpoints. The simulations are intended to represent the scale and spatial relationships of project elements to other objects. Some of the simulations are also intended to represent view corridors identified as protected resources in pertinent policy documents. These simulations serve several purposes: they were used to evaluate visual and aesthetic consequences, demonstrate the potential for mitigation, and provide a means of communicating the findings of the analysis. The simulations generally depict the guideway (technology) that would have a comparatively greater visual effect. For stations, a typical prototype is shown.

3.2.2 Changes in Light, Glare, Shade, and Shadow

This analysis also evaluated the Project's effects on ambient light conditions, sources of light and glare, and existing shade and shadow patterns. The elimination, reduction, or introduction of light sources, glare, shade, or shadow were considered to be a visual consequence and evaluated in relationship to the existing light environment.

3.2.3 Compatibility with Existing Visual Policies

Project-related changes were evaluated in relationship to applicable aesthetic policies, special districts, and land use zones. Project-related changes that conflicted with adopted visual policies were considered to have a visual impact.

3.3 Mitigation

A moderate or high negative change to visual quality is deemed to be substantial and would require development of mitigation measures to reduce impacts. Additional coordination efforts with agencies and special interest groups will be conducted as needed, to consider unique and creative solutions to resolve impacts.

4 Affected Environment

This section describes the existing visual context of the Build Alternatives according to visual character, visual quality, and viewer groups as defined in Section 3.

4.1 Existing Visual Environment

The Island of O‘ahu is one of eight major islands that make up the State of Hawai‘i. All of the Hawaiian Islands were originally formed by volcanic eruptions that occurred approximately 70 million years ago. Since that time, additional volcanic eruptions, severe tropical storms (some with hurricane-force winds), and earthquakes have continued to mold and reshape the Hawaiian Islands into a series of jagged cliffs, steep valleys, and gently sloping flatlands.

Two parallel mountain ranges, the Wai‘anae Ridge and the Ko‘olau Ridge, provide a visual landmark that divides the island into two distinct environments. The windward (eastern) side has a lush tropical environment with ferns, tropical plants, and waterfalls. The leeward (western) side, where the Project would be located, has a moderate, drier climate and is more sparsely vegetated.

The mountain ranges and coastline are visible from most of the project alignment along Farrington Highway, Kamehameha Highway, Salt Lake Boulevard, and through Downtown Honolulu to Waikīkī and Mānoa. The integrity of these landforms and the condition of public open spaces are important factors in determining visual character and quality.

Within coastal areas, the most scenic views are often captured when looking laterally along the coastline. These views capture the contrast between ocean and land form, usually in a distinctive visual pattern.

4.1.1 Visually Sensitive Resources

Visually sensitive resources in the study corridor include landmarks, significant protected views and vistas, historic and cultural sites, and Exceptional Trees. These resources are important because of their scenic quality, scale, and prominence within the visual environment. With the exception of Exceptional Trees, visually sensitive resources that could be affected by the Build Alternatives are shown on Figure 4-1 through Figure 4-4. Specific historic sites are identified in the *Honolulu High-Capacity Transit Corridor Project Historic Resources Technical Report* (RTD 2008b).

Landmarks, such as parks or open space, represent unique characteristics of a place or provide great value to local residents and visitors. Landmarks are also places or structures that have a unique style based on their architectural period, artistic merit, and the native qualities of Hawai‘i. Landmarks represent the heart of a community and the people affected by events that occurred. Pearl Harbor is considered a historical landmark because of the part it played in the Island’s history.

Significant protected views and vistas are identified in policy documents that govern the study corridor and include mauka and makai views, as well as views of prominent landmarks.

Historic and cultural sites include pre-1965 resources listed on the National Register of Historic Places or on the Hawai‘i Register of Historic Places. They also include resources officially determined eligible for the National Register of Historic Places and historic districts. These resources can include cultural practices, which are broadly defined as (1) traditional cultural practices being conducted in an urban setting and (2) traditions, beliefs, practices, life ways, and the societal history of a community, including its traditions. Cultural practices include such broad categories as arts, crafts, music, food, dance, physical practices and health arts, museums, flora, religious practices and gathering places, cultural settings, and festivals and ceremonies. Historic and cultural resources in the study corridor are identified in the *Honolulu High-Capacity Transit Corridor Project Historic Resources Technical Report* (RTD 2008b) and the *Honolulu High-Capacity Transit Corridor Project Cultural Resources Technical Report* (RTD 2008c).

Exceptional Trees are defined as “a tree or grove of trees with historic or cultural value, or which by reason of its age, rarity, location, size, aesthetic quality, or endemic status has been designated by the City Council as worthy of preservation” by Revised Ordinances of Honolulu (ROH 1978a; ROH 1990). Exceptional Trees in the study corridor are identified in the *Honolulu High-Capacity Transit Corridor Project Street Trees Technical Report* (RTD 2008a).

4.1.2 Viewer Groups

Major viewer groups within the study corridor include residents, commuters, business owners, recreationists, and visitors. Residents are people who observe the visual environment daily and for extended periods. Residents become familiar with the local environment, take ownership of that environment, and usually have more time to take in surrounding views at a leisurely pace. This viewer group is considered to be highly sensitive to changes in the visual environment.

Commuters are people who frequently travel through an area and are therefore familiar with the existing visual environment. However, this group does not have the same sense of ownership as residential viewer groups, because they do not reside within that environment and only pass through it. Commuters usually see these views as a secondary focus, with their primary focus on navigating the roadway and traffic. This viewer group is considered to be moderately sensitive to changes in the visual environment and to have a moderate to high view exposure. Motorists navigating local traffic would have greater viewer exposure (and/or sensitivity) than commuters, because of their sense of place or identification with local features.

Business owners have a vested interest in the visual environment surrounding their operations. Most business owners are familiar with their surrounding environment and may have a sense of ownership. This viewer group sees the existing visual environment daily and for extended periods. Although not focused on views outside

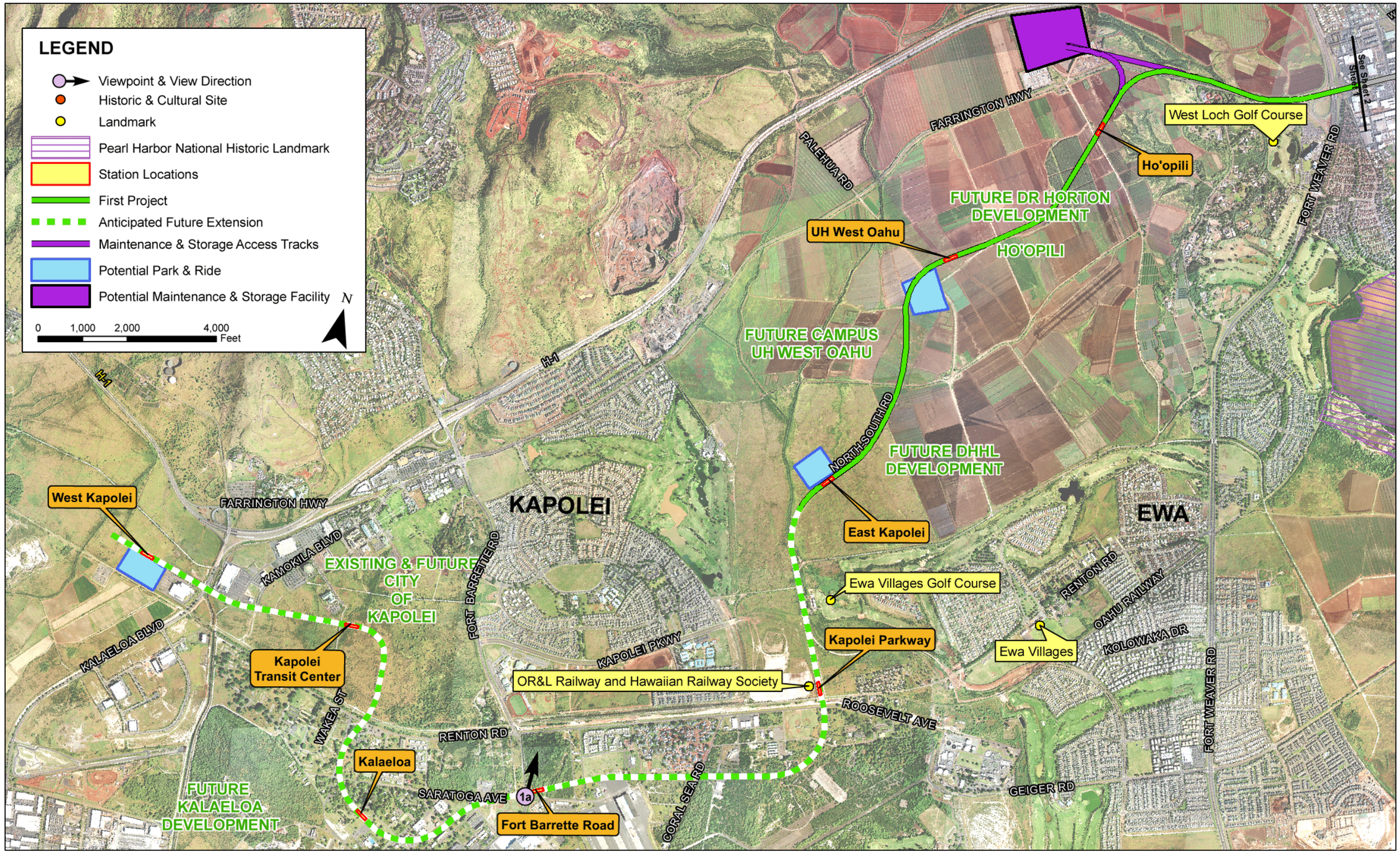

Figure 4-1: Landscape Unit 1—Visually Sensitive Resources and Representative Viewpoints

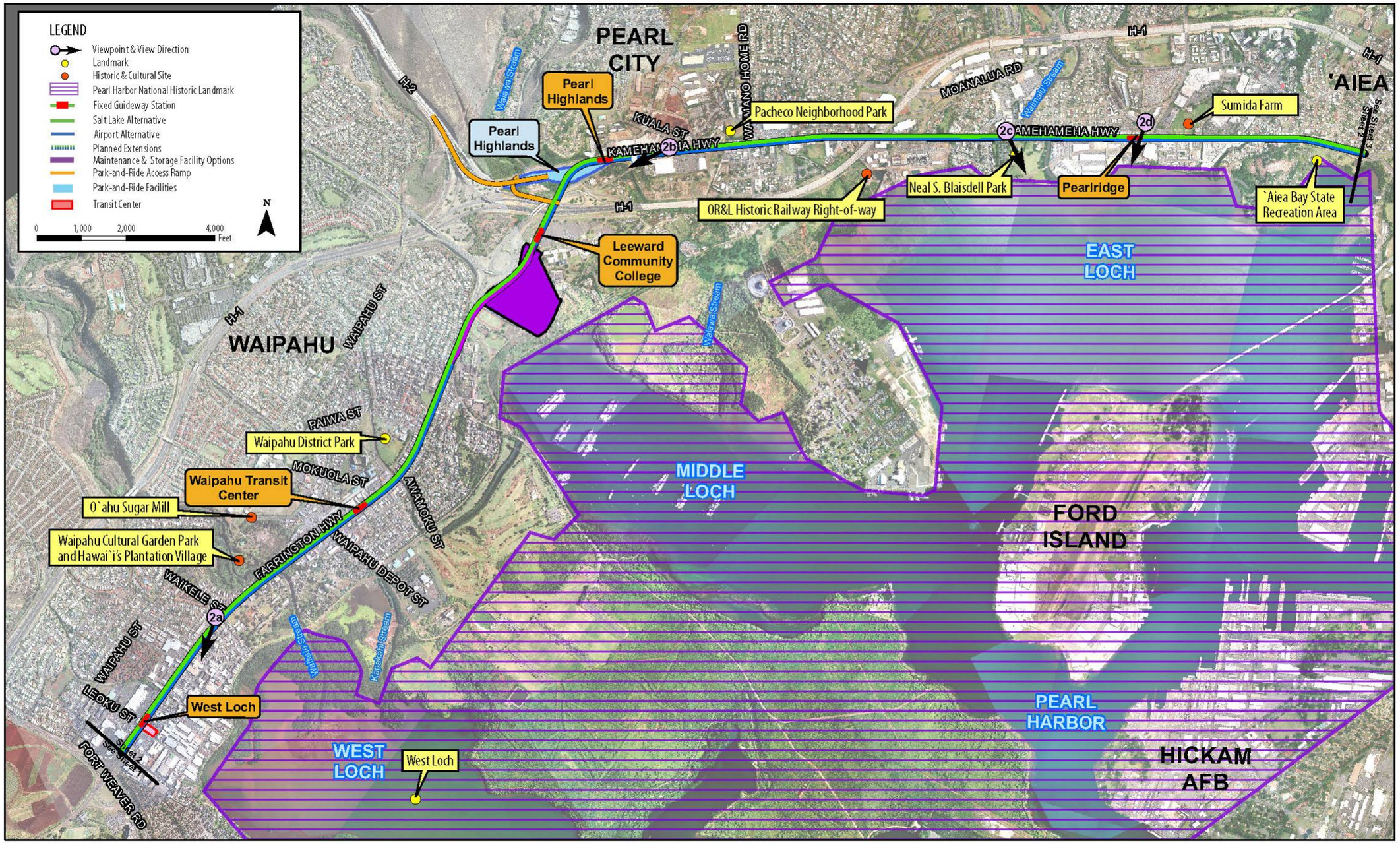

Figure 4-2: Landscape Unit 2—Visually Sensitive Resources and Representative Viewpoints

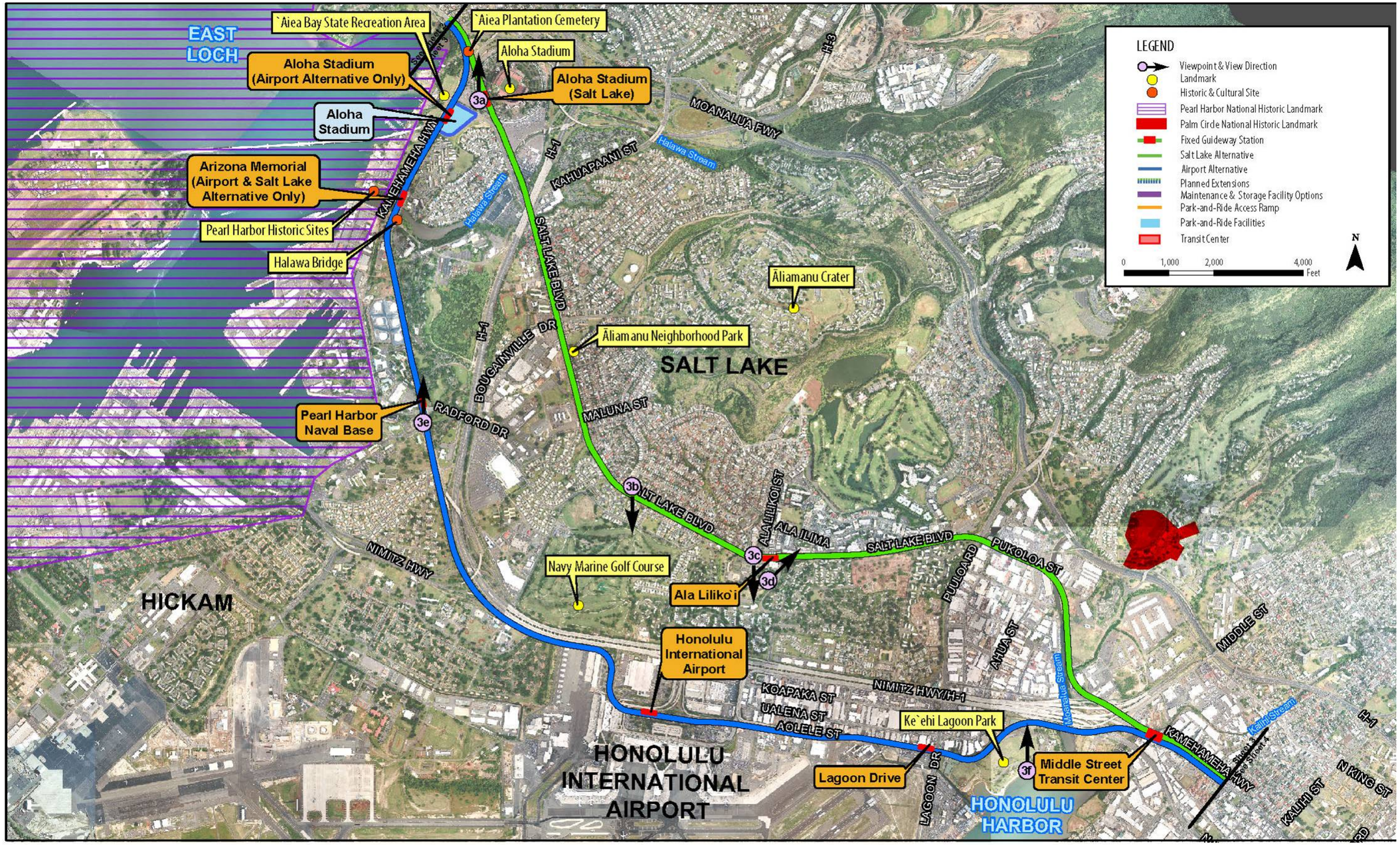

Figure 4-3: Landscape Unit 3—Visually Sensitive Resources and Representative Viewpoints

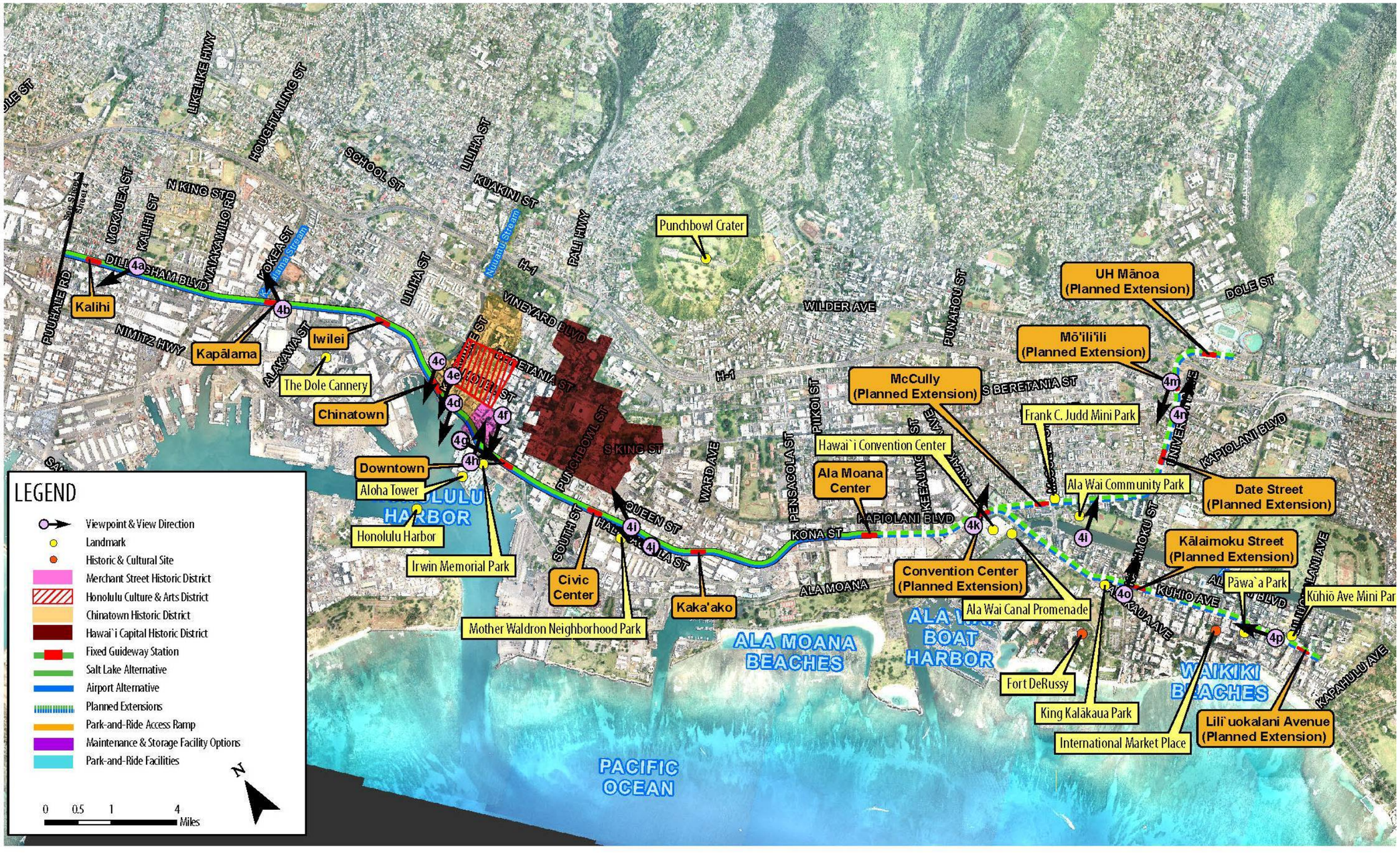

Figure 4-4: Landscape Unit 4—Visually Sensitive Resources and Representative Viewpoints

of their operations, business owners are concerned about any changes to the physical environment that would affect the prosperity of their operations. If they perceive that changes in the visual environment would negatively impact either the image of their business or the area's attractiveness to potential customers, they can become concerned over such visual changes. Business owners are considered to be moderately to highly sensitive to changes in the visual environment.

Recreationists include people who frequent local parks, hiking trails, bikeways, and watercourses. They have definite expectations about the visual environment's condition. For many in this group, the primary focus of their activity is to leisurely enjoy a visually attractive resource. Even for those whose primary purpose is to exercise, their expectation is for the surrounding environment to be pleasant and enjoyable. The recreationist viewer group is familiar with the visual environment surrounding the resources they frequent, and may have a sense of ownership over that environment. However, this is more likely of residents who frequent a local park versus recreationists from various areas who use a regional resource. This viewer group is considered to be moderately sensitive to changes in the visual environment.

Visitors consist of both first-time and repeat visitors to the area. Visitors may consist of tourists, delivery or service personnel, or business employees and customers. This viewer group is less familiar with the existing visual environment's specific details, but they tend to have some sensitivity to and expectation of the surrounding environment. Visitors would observe the visual environment periodically or on a one-time basis, and therefore are anticipated to have a low to moderate sensitivity to changes in the visual environment.

4.1.3 Representative Viewpoints and Views

Using photo documentation from field surveys, information from previous studies, and public input, key viewpoints were selected to represent typical views within the study corridor. The locations of the representative viewpoints are shown on Figure 4-1 through Figure 4-4. These viewpoints are described in this section and shown in Section 5, Consequences.

The viewpoints incorporate a variety of perspectives (e.g., vehicular, pedestrian, and elevated) and a wide range of views.

4.1.4 Landscape Units

The study corridor was divided into four landscape units to evaluate the existing visual environment:

- Landscape Unit 1—Kapolei to Fort Weaver Road
- Landscape Unit 2—Fort Weaver Road to Aloha Stadium
- Landscape Unit 3—Aloha Stadium to Kalihi
- Landscape Unit 4—Kalihi through Iwilei to UH Mānoa and Waikīkī

These landscape units are shown on Figure 4-1 through Figure 4-4. They consist of geographic areas where views of the Project would have a similar context or

character. The similarities are based on topography, location, the viewers' role, and the landscape's character (natural and constructed).

Figure 4-1 through Figure 4-4 also show visually sensitive resources in each landscape unit and the location of the key viewpoints used to evaluate existing visual quality.

Landscape Unit 1: Kapolei to Fort Weaver Road

Kapolei to Fort Weaver Road includes the communities of Kapolei and ʻEwa. This is primarily a low-elevation plain that extends from sea level at the coastline to an elevation of only about 100 feet 3 to 5 miles inland. The central ʻEwa Plain has a moderate temperature that supports tropical plants, trees, and agricultural fields. The ʻEwa region was once one of Oʻahu's prime sugar-cane cultivation areas, but is now experiencing urban growth as both the State and the City and County of Honolulu support development of this region as Oʻahu's secondary urban center. This is further detailed in the *Honolulu High-Capacity Transit Corridor Project Land Use Technical Report* (RTD 2008d). The ʻEwa Development Plan area is a mix of older plantation communities, newer suburban neighborhoods, commercial centers, and open agricultural land.

Much of Oʻahu's current and future population growth is expected to take place in this area, but it is still relatively rural and most of the area currently consists of agricultural cultivation and open space. Views across the ʻEwa Plain are still relatively open, allowing for mountain and ocean vistas as well as distant views of Downtown Honolulu high-rises (Figure 4-5).

Figure 4-5: Farrington Highway, Looking Makai across the ʻEwa Plain

The following significant protected views and vistas in Landscape Unit 1 are identified in the ʻEwa Development Plan (DPP 1997b):

- Views of Nāpuʻu (hills) and makai (ocean)
- Views of the Waiʻanae Range
- Distant vistas of the shoreline
- Views of Central Honolulu and Diamond Head

The assessment of visual quality and identification of viewer groups for the viewpoint in Landscape Unit 1 are shown in Table 4-1. This table is followed by a brief description of this representative view. The viewpoint location is shown in Figure 4-1. The viewpoint view and accompanying simulated view are shown on Figure 5-3 in Chapter 5, Consequences.

Table 4-1: Landscape Unit 1 Viewpoint—Existing Visual Quality and Viewer Groups

Viewpoint	Location	Visual Quality	Viewer Group(s)
Landscape Unit 1: Kapolei to Fort Weaver Road			
1a	Fort Barrette Road station area, looking mauka	Moderate	Visitors, Residents

Viewpoint 1a: Fort Barrette Road Station Area, Looking Mauka

The existing visual quality for Viewpoint 1a is moderate, and visitors and residents are the primary viewer group. Although this view has a coherent composition, it is not highly memorable and includes encroaching elements such as pavement and utility poles.

Viewpoint 1a is intended to represent general Community Plan views within the ʻEwa Sustainable Communities Plan area. The vantage point is looking mauka toward Farrington Highway rather than Waiʻanae toward Makakilo, but is representative of views that include broad expanses of open space within a more natural, country-like setting. This view shows the Fort Barrette Road area where abandoned military buildings and vacant land are prominent in the surrounding area.

Landscape Unit 2: Fort Weaver Road to Aloha Stadium

Fort Weaver Road to Aloha Stadium includes the makai section of the Central Oʻahu Development Plan Area and the ʻEwa portion of the PUC Development Plan Area, which includes the communities of Waipahu, Pearl City, and ʻAiea. This area contains the wide fertile plateau that connects the Waiʻanae and Koʻolau Mountains and was previously in extensive agricultural use. It is now a growing suburban area, with access facilitated by the H-1 Freeway, Kamehameha Highway, and Moanalua Road. The demands of growth and development within the Central Oʻahu area have affected the natural environment, reducing some of its natural assets and replacing them with a built environment. This now suburbanized area consists primarily of residential development and mixed commercial uses.

Waipahu and ‘Aiea originally developed as sugar mill and plantation towns and later became suburban developments, housing many workers from Downtown Honolulu and Waikīkī. Pearl City was Hawai‘i’s first planned city and suburban development and currently consists primarily of residential development, mixed-use commercial, and military housing and facilities. In general, Landscape Unit 2 is characterized by residential neighborhoods with one and two-story residences. Clustered one and two-story businesses are located along the Farrington Highway and Kamehameha Highway corridors. Most businesses are surrounded by parking lots that include large paved areas. Some paved areas include pockets of mature trees and shrubs that make the pavement appear less dominant. Utility poles and overhead utility lines are prevalent along both highway corridors. Figure 4-6 shows utility poles and lines makai of Kamehameha Highway.

Figure 4-6: Kamehameha Highway at Waimano Home Road, Looking Koko Head

Farrington Highway includes a median with mature trees that provide visual interest (Figure 4-7). Mountain and ocean views are still visible from elevated areas, open spaces, and roadways (Figure 4-8).

Figure 4-7: Farrington Highway Median at Leokū Street, Looking Mauka

Figure 4-8: Farrington Highway near Pearl Highlands Center, Looking Mauka

The following significant protected views and vistas in Landscape Unit 2 are identified in the Central O‘ahu Development Plan and the PUC Development Plan:

- Views of Pearl Harbor and Lochs framed by the ocean
- Views of the Central O‘ahu valleys and plains
- Views of the Wai‘anae and Ko‘olau Mountains
- Views of West Loch
- Views of the O‘ahu Sugar Mill and Hawai‘i’s Plantation Village

Assessment of visual quality and identification of viewer groups for the viewpoints in Landscape Unit 2 are shown in Table 4-2. This table is followed by a brief description of each view. The locations of viewpoints are shown on Figure 4-2. Each viewpoint and accompanying simulated view is shown on Figure 5-5 through Figure 5-8 in Chapter 5, Consequences.

Table 4-2: Landscape Unit 2 Viewpoints—Existing Visual Quality and Viewer Groups

Viewpoint	Location	Visual Quality	Viewer Groups[1]
Landscape Unit 2: Fort Weaver Road to Aloha Stadium			
2a	Farrington Highway near Waikele Road, looking ‘Ewa	Moderate	Res, B, V, C
2b	Kamehameha Highway near Acacia Street, looking ‘Ewa	Moderate	C, B, V
2c	Kamehameha Highway at Ka‘ahumanu Street, looking makai	Moderate	Res, B, V, C
2d	Kamehameha Highway at Kaonohi Street, looking makai	Low	Res, B, V, C

[1]Res—Residents C—Commuters B—Business Owners Rec—Recreationists V—Visitors

Viewpoint 2a: Farrington Highway near Waikele Road, Looking ‘Ewa

The existing visual quality for Viewpoint 2a is moderate; residents, business owners, visitors, and commuters are the primary viewer groups. Although this view lacks coherent composition, it is memorable due to the row of trees and plantings in the roadway median. The manicured and landscaped street median, sidewalks, and setbacks create a fairly unified image. Utility poles, associated power lines, and on-street parking detract from this view’s overall intactness.

Viewpoint 2b: Kamehameha Highway near Acacia Street, Looking ‘Ewa

The existing visual quality for Viewpoint 2b is moderate; commuters and business owners are the primary viewer groups. Views of the mountains and open sky are well balanced by Kamehameha Highway and surrounding urban development, creating a fairly vivid image. However, a multi-story residential tower and commercial buildings block views of the mountains and skyline to the right of this viewpoint. Utility poles and associated power lines are scattered throughout the view, and the lack of consistent streetscape enhancements reduces its overall intactness and unity.

Viewpoint 2c: Kamehameha Highway at Ka‘ahumanu Street, Looking Makai

The existing visual quality for Viewpoint 2c is moderate; residents, business owners, and commuters are the primary viewer groups. Views of Neal S. Blaisdell Park and open sky are interrupted by utility poles and power lines that dominate the otherwise vivid image created by the park background. Pavement at the intersection and commercial buildings to the right of this viewpoint contribute to the lack of overall intactness and unity.

Viewpoint 2d: Kamehameha Highway at Kaonohi Street, Looking Makai

The existing visual quality for Viewpoint 2d is low; residents, business owners, and commuters are the primary viewer groups. This view lacks distinctive features, lowering its vividness. The large number of utility poles and power lines reduces its intactness. The overall view is unified, with simple components consisting of an expansive skyline balanced by an expanse of streetscape. Limited views of Pearl Harbor are visible to the center right of this viewpoint.

Landscape Unit 3: Aloha Stadium to Kalihi

Aloha Stadium to Kalihi includes the Salt Lake portion of the PUC Development Plan area, which comprises the communities of Salt Lake, Moanalua, and the airport area. The Salt Lake and Moanalua communities consist primarily of residential neighborhoods of one and two-story residences and supporting commercial uses. The airport area encompasses industrial and commercial service-oriented buildings surrounded by large paved areas. Honolulu International Airport, Pearl Harbor Naval Base, and Hickam Air Force Base are located within Landscape Unit 3. The far ‘Ewa end of the PUC near Pearl City and Pearl Harbor is a mix of residences and various U.S. Navy buildings, including oil tanks. The more central portion encompassing Honolulu International Airport, Ke‘ehi Lagoon, and Sand Island includes residential, commercial, and industrial buildings. Expansive open paved areas surround the airport and U.S. Air Force base and U.S. Navy facilities. Utility poles and overhead utility lines are prevalent along Salt Lake Boulevard and Kamehameha Highway.

Views within Landscape Unit 3 are limited to the immediate surroundings because of dense development and the large scale of the many commercial and industrial buildings. The mountains can be viewed periodically from elevated locations and transportation corridors, such as Salt Lake Boulevard and Kamehameha Highway (Figure 4-9).

Views near the airport are limited because of denser development and mature trees (Figure 4-10).

Figure 4-9: Kamehameha Highway, Looking Mauka

Figure 4-10: Honolulu International Airport, Looking Makai

The following significant protected views and vistas in Landscape Unit 3 are identified in the PUC Development Plan:

- Views of Pearl Harbor and Lochs framed by the Waiʻanae Mountains
- Views of Diamond Head and Honolulu valleys
- Views of Punchbowl Crater
- Views of Āliamanu Crater and Central Oʻahu valleys

The assessment of visual quality and identification of viewer groups for the viewpoints in Landscape Unit 3 are shown in Each viewpoint and accompanying simulated view is shown on Figure 5-25 through Figure 5-30 in Chapter 5, Consequences.

Table 4-3. This table is followed by a brief description of each view. The locations of viewpoints are shown on Figure 4-3. Each viewpoint and accompanying simulated view is shown on Figure 5-25 through Figure 5-30 in Chapter 5, Consequences.

Table 4-3: Landscape Unit 3 Viewpoints—Existing Visual Quality and Viewer Groups

Viewpoint	Location	Visual Quality	Viewer Group(s)1
Landscape Unit 3: Aloha Stadium to Kalihi			
Salt Lake Alignment			
3a	Aloha Stadium, looking mauka	High	Rec, C, B, V
3b	Salt Lake neighborhood at Wanaka Street, looking makai	Moderate	Res
3c	Ala Liliko'i Street/Salt Lake Blvd intersection, looking makai	Moderate	Rec, C, B
3d	Salt Lake Blvd makai of Ala Liliko'i station area, looking mauka	Moderate	Res, B, V
Airport Alignment			
3e	Kamehameha Highway near Radford Road, looking mauka	Low	C, V
3f	Keʻehi Lagoon Beach Park, looking mauka	High	Rec, V

[1]Res—Residents C—Commuters B—Business Owners Rec—Recreationists V—Visitors

Viewpoint 3a: Aloha Stadium, Looking Mauka

The existing visual quality for Viewpoint 3a is high; residents, commuters, business owners, and visitors are the primary viewer groups. From this elevated vantage point at Aloha Stadium, panoramic views of the mountains, urban skyline, and vegetation can be seen for some distance. The expansive sky, interesting mix of urban structures, and carpet of green created by trees in the foreground and middle ground create a distinctly vivid image and a unified view. A limited number of power poles trace through the view but have little effect on its overall intactness or quality.

Viewpoint 3b: Salt Lake Neighborhood at Wanaka Street, Looking Makai

The existing visual quality for Viewpoint 3b is moderate; residents are the primary viewer group. Panoramic views toward Pearl Harbor are visible from this elevated vantage point above Salt Lake Boulevard. The view is striking as the skyline meets

the ground. However, intactness and unity are reduced by the presence of roadway pavement and utility poles and power lines that interrupt the view.

Viewpoint 3c: Ala Liliko‘i Street/Salt Lake Boulevard Intersection, Looking Makai

The existing visual quality for Viewpoint 3c is moderate; residents, commuters, and business owners are the primary viewer groups. Although this view lacks coherent composition, it is memorable due to the trees and plantings that surround the roadway intersection. The manicured and planting areas, sidewalks, and setbacks create a fairly unified image. Utility poles, power lines, and the amount of pavement detract from the view’s overall intactness.

Viewpoint 3d: Salt Lake Boulevard Makai of Ala Liliko‘i Station Area, Looking Mauka

The existing visual quality for Viewpoint 3d is moderate; residents, business owners, and visitors are the primary viewer groups. This view is from the Salt Lake-Moanalua Public Library, looking mauka across the parking lot toward Salt Lake Boulevard. Landscape enhancements, the lack of overhead or street utilities, and the view’s simplicity give this viewpoint a relatively high rating for intactness and unity. However, the lack of distinct or memorable features reduces its vividness.

Viewpoint 3e: Kamehameha Highway near Radford Road, Looking Mauka

The existing visual quality for Viewpoint 3e is low; commuters and business owners are the primary viewer groups. This view is dominated by roadway and street utilities. Large utility poles and associated power lines reduce the view’s intactness, as do the limited enhancements of this primarily utilitarian transportation corridor. The open sky and green band of large, mature vegetation provides some interest, but overall the view lacks distinct or memorable features, reducing its vividness. This view’s openness and simplicity help provide a fairly unified image.

Viewpoint 3f: Ke‘ehi Lagoon Beach Park, Looking Mauka

The existing visual quality for Viewpoint 3f is high; recreationists and visitors are the primary viewer groups. With open views of the mountains, sky, and park, this viewpoint is free from encroaching elements and provides a unified and intact view of the natural surroundings. Several large trees provide interest and character within the open grassy fields in the foreground, increasing the view’s vividness. Nimitz Highway, the elevated roadway in the center of this viewpoint, blends into the foot of the mountains in the distant background. The viewpoint looks mauka versus makai, but is representative of views that encompass both mountain and shoreline resources that are protected by aesthetic policies.

Landscape Unit 4: Kalihi through Iwilei to UH Mānoa and Waikīkī

Landscape Unit 4 comprises a continuous urban corridor and the highest densities of the PUC. Kalihi to Iwilei includes the neighborhood community of Kalihi Pālama, a good portion of which contains waterfront properties that house extensive maritime operations. Business districts with major wholesale and distribution facilities line King Street and Nimitz Highway. Farther Koko Head, this landscape unit encompasses Downtown Honolulu, Kaka'ako, UH Mānoa, and Waikīkī, where large high-rises mix with smaller-scale buildings and residential neighborhoods (Figure 4-11).

Figure 4-11: Kapi'olani Boulevard near Hau'oli Street, Looking Koko Head

The mountains and shoreline that define the mauka and makai edges of Landscape Unit 4 are dominant elements of the landscape. Within the corridor, open space consists of volcanic craters, streams and other water bodies, and larger parks and campuses. The mauka edge includes the Ko'olau Mountain Range and its undeveloped foothills and slopes. The makai edge includes the shorelines and waters of the Pacific Ocean and such landmarks as Pearl Harbor (East Loch), Honolulu Harbor, and Ala Wai Harbor. The Diamond Head and Punchbowl volcanic craters are also prominent features. Regional, beach, and large district parks; golf courses; and large cemeteries and campuses combine with other landmarks and features to create a unique character and scenic setting. These features also act as directional reference points when traveling through the city. Direct views of the mountains and ocean are not common, but the Downtown Honolulu skyline is visible from several areas (Figure 4-12).

Figure 4-12: Dillingham Boulevard, Looking Koko Head

Iwilei to UH Mānoa encompasses the highest-density development and includes seven different communities. The Downtown Honolulu area is densely developed with high-rise office towers and business districts. Views in this area are limited to the ‘Ewa to Koko Head transportation corridors that show Diamond Head, and to the occasional park that allows for extended views to the mountains. The Ala Moana/Kaka‘ako area consists of shopping centers and commercial facilities. Views of the ocean, Diamond Head, and the mountains can be glimpsed periodically among the many buildings and shops and along the transportation corridor. Mānoa consists of well-kept residential neighborhoods with views of the Downtown Honolulu area and surrounding mountains. Waikīkī is densely developed with high-rise condominiums and hotels (Figure 4-13 and Figure 4-14).

Figure 4-13: Kūhiō Avenue at Wahua Street, Looking Koko Head

Figure 4-14: Kūhiō Avenue at Kanekapolei Street, Looking Koko Head

Views are limited to the mauka/makai streets and ʻEwa/Diamond Head streets for mountain, ocean, and Diamond Head views. However, the beachfront area of Waikīkī affords many opportunities for views of the ocean and Oʻahu's shoreline. McCully/Mōʻiliʻili has lower-density residential and commercial buildings, allowing for more frequent views of the mountains and Diamond Head. Diamond Head/Kapahulu/St. Louis Heights are afforded frequent views of the mountains and Diamond Head, as well as islandwide and shoreline views from elevated areas. Significant protected views and vistas in Landscape Unit 4 are identified in the PUC Development Plan and include the following:

Panoramic Views of Natural Features and Landmarks

- Koʻolau and Waiʻanae Mountain Ranges and foothills
- Pacific Ocean, Pearl Harbor's East Loch, Ford Island, Honolulu Harbor, Keʻehi Lagoon, and Kewalo Basin
- Volcanic craters of Lēʻahi (Diamond Head), Pūowaina (Punchbowl), and Āliamanu
- From Ala Wai Canal Promenade toward the Koʻolau Mountain Range
- From Ala Moana Beach Park toward the Koʻolau Mountain Range
- From Kewalo Basin toward Punchbowl and the Koʻolau Mountain Range
- From Punchbowl Lookout toward Koko Head

Mauka/Makai View Corridors

- Bishop Street
- Cooke Street
- Ward Avenue
- Piʻikoi Street
- Keʻeaumoku Street
- ʻĀina Moana Park (Magic Island)
- McCully Street
- Fort DeRussy
- Ala Wai Promenade

Assessment of visual quality and identification of viewer groups for the viewpoints in Landscape Unit 4 are shown in Table 4-4. This table is followed by a brief description of each view. The locations of viewpoints are shown on Figure 4-4. Each viewpoint and accompanying simulated view is shown on Figure 5-9 through Figure 5-24 in Chapter 5, Consequences.

Table 4-4: Landscape Unit 4 Viewpoints—Existing Visual Quality and Viewer Groups

Viewpoint	Location	Visual Quality	Viewer Group(s)[1]
Landscape Unit 4: Kalihi through Iwilei to UH Mānoa and Waikīkī			
4a	Dillingham Boulevard at Kalihi, looking ‘Ewa	Low	Res, C, B, V
4b	Dillingham Boulevard near Honolulu Community College, looking mauka	Moderate	Res, B, V
4c	King Street Bridge, looking makai	Moderate	Res, B, Rec, V
4d	Maunakea Street, looking makai	High	Res, B, V
4e	O‘ahu Market at King Street, looking makai	High	Res, B, V
4f	Fort Street Mall at Merchant Street, looking makai	High	Res, B, V
4g	Nimitz Highway/Fort Street intersection ‘Ewa of Irwin Park and Aloha Tower Market Place, looking Koko Head	Moderate	Res, B, V
4h	Nimitz Highway near Irwin Park and Aloha Tower Market Place, looking mauka	High	Res, B, V
4i	Mother Waldron Park, looking mauka	High	Res, B, Rec, V
4j	Halekauwila/Cooke Street intersection, looking ‘Ewa past Mother Waldron Park	Moderate	Res, B, Rec, V
4k	Atkinson Drive at Convention Center area, looking mauka	Moderate	Res, C, B, V
UH Mānoa			
4l	Ala Wai Boulevard at Niu Street, looking mauka	High	Res, B, Rec, V
4m	University Avenue near Varsity Place, looking makai	High	Res, B, V
4n	University Avenue at Ku‘ilei Drive, Looking Koko Head	Moderate	Res, B, V
Waikīkī			
4o	Kūhiō Avenue/Kālaimoku Street intersection, looking mauka	High	Res, B,V
4p	Kūhiō Avenue toward Lili‘uokalani, looking mauka	High	Res, B, V

[1]Res—Residents C—Commuters B—Business Owners Rec—Recreationists V—Visitors

Viewpoint 4a: Dillingham Boulevard at Kalihi, Looking ‘Ewa

The existing visual quality for Viewpoint 4a is low; residents, commuters, business owners, and visitors are the primary viewer groups. This view lacks distinctive features, lowering its vividness. Signage, utility poles, and power lines reduce the view’s intactness. The view also includes several encroaching elements but is unified by expansive paved areas. This viewpoint is intended to represent the mauka/makai view corridors that are protected by policy documents.

Viewpoint 4b: Dillingham Boulevard near Honolulu Community College, Looking Mauka

The existing visual quality for Viewpoint 4b is moderate; residents, business owners, and visitors are the primary viewer groups. This viewpoint is mauka on Dillingham Boulevard near Honolulu Community College. The low-profile structures allow for skyline views, and the surrounding trees add color and interest, making this viewpoint fairly vivid. The simple structures and landscape enhancements provide a unified image, but the large power lines and communications tower detract from the view’s intactness.

Viewpoint 4c: King Street Bridge, Looking Makai

The existing visual quality for Viewpoint 4c is moderate; residents, recreationists, business owners, and visitors are the primary viewer groups. This viewpoint looks makai across the Nu‘uanu Stream toward Nimitz Highway and Honolulu Harbor. The stream channel and trees create a vivid natural image. However, the utility poles and associated power lines reduce the view’s intactness, as do the encroaching bridge and limited enhancements along Nimitz Highway.

Viewpoint 4d: Maunakea Street, Looking Makai

The existing visual quality for Viewpoint 4d is high; residents, business owners, and visitors are the primary viewer groups. This viewpoint is located on Maunakea Street looking makai. It is representative of views within the Chinatown Historic District. The unique architecture, street trees, colorful awnings, and pedestrian-scale signage create an interesting and vivid image. The neat, well-kept streetscape and consistent street furnishings provide unity and cohesion to the view. No overhead wires, utility poles, or other inconsistent elements are present within this viewpoint, which creates a lively and intact pedestrian experience.

Viewpoint 4e: O‘ahu Market at King Street, Looking Makai

The existing visual quality for Viewpoint 4e is high; residents, business owners, and visitors are the primary viewer groups. This viewpoint is looking makai across North King Street from O‘ahu Market. It is representative of views within the Chinatown Historic District. The open view, lack of overhead utilities, and coordinated street furnishings provide a view that is intact and unified. The paving enhancements, unique architectural treatments, and pedestrian-scale amenities create a vibrant and vivid streetscape.

Viewpoint 4f: Fort Street Mall at Merchant Street, Looking Makai

The existing visual quality for Viewpoint 4f is high; residents, business owners, and visitors are the primary viewer groups. The viewpoint is located on Fort Street Mall makai of Merchant Street. The high-rise structures and mature trees create a unique pedestrian oasis that is further enhanced with pedestrian-scale street furniture, light standards, landscaping, and architectural facades. The consistent building materials and streetscape amenities provide a cohesive and unified image. This viewpoint lacks any encroaching components, which keeps the image relatively intact.

Viewpoint 4g: Nimitz Highway/Fort Street Intersection ‘Ewa of Irwin Park and Aloha Tower Market Place, Looking Koko Head

The existing visual quality for Viewpoint 4g is moderate; residents, business owners, and visitors are the primary viewer groups. This viewpoint is near the Irwin Memorial Park and Aloha Tower Market looking Koko Head on Nimitz Highway. Downtown Honolulu high-rise buildings form the mauka edge of this view, of which the Dillingham Transportation Building’s historic facade is a vivid and unique feature. Mature trees in Irwin Park soften the makai edge of this view, which is dominated by pavement and Nimitz Highway. Palm trees along the highway soften this effect and contribute to the view’s moderate compositional harmony.

Viewpoint 4h: Nimitz Highway near Irwin Park and Aloha Tower Market Place, Looking Mauka

The existing visual quality for Viewpoint 4h is high; residents, business owners, and visitors are the primary viewer groups. This viewpoint is near the Irwin Memorial Park and Aloha Tower Market looking across Aloha Tower Drive mauka toward Nimitz Highway and Fort Street Mall. The high-rise buildings provide a pleasant backdrop to the mature trees and landscaping, creating a vivid image. The pedestrian-scale street furnishings, mid-scale canopy of trees, and large-scale skyscrapers create a balanced and unified view. The area within this view is well kept and free from encroaching elements, keeping the viewpoint intact. This viewpoint is representative of views within the Capitol Historic District.

Viewpoint 4i: Mother Waldron Park, Looking Mauka

The existing visual quality for Viewpoint 4i is high; residents, recreationists, business owners, and visitors are the primary viewer groups. This viewpoint is from Mother Waldron Park in the Kaka‘ako area. The mid-rise buildings provide a backdrop to the more pedestrian scale streetscape along Halekauwila Street. The mature trees and landscaping in the park create a vivid image. Although the low retaining walls, lighting standards, and automobiles are encroaching elements, the large tree canopies and manicured lawn contribute to the view’s overall high visual quality.

Viewpoint 4j: Halekauwila/Cooke Street Intersection, Looking ‘Ewa past Mother Waldron Park

The existing visual quality for Viewpoint 4j is moderate; residents, recreationists, business owners, and visitors are the primary viewer groups. This viewpoint is Koko Head of Mother Waldron Park. The mid-rise buildings on Halekauwila Street define the mauka edge of this street intersection view. Downtown Honolulu high-rise buildings are visible in the background. The mature trees and landscaping in Mother Waldron Park contrast with parked cars and vehicle traffic.

Viewpoint 4k: Atkinson Drive at Convention Center Area, Looking Mauka

The existing visual quality for Viewpoint 4k is moderate; residents, commuters, business owners, and visitors are the primary viewer groups. This viewpoint is mauka on Atkinson Drive in front of the Convention Center. The high profile of the Convention Center and other surrounding buildings block skyline views. However, the tree canopies add color and interest, making this viewpoint fairly vivid. The prevalence of paved surfaces and vehicles detract from the view’s intactness.

Viewpoint 4l: Ala Wai Boulevard at Niu Street, Looking Mauka

The existing visual quality for Viewpoint 4l is high; residents, recreationists, business owners, and visitors are the primary viewer groups. This viewpoint looks mauka across Ala Wai Community Park toward Kapi‘olani Boulevard from a position just Koko Head of McCully Street on Ala Wai Promenade. It is intended to represent one of the significant panoramic views identified in the PUC Development Plan: from Ala Wai Canal Promenade toward the Ko‘olau Mountain Range. The open view across the canal of the urban skyline and mountains creates a vivid image. The balance

between the open expanse of water in the foreground, urban development in the middle ground, and mountain profile against a clear sky creates a well balanced and unified view. The tall sports field lights and utilitarian look of the buildings within Ala Wai Community Park encroach slightly on the view, but these are minor elements in relationship to the large-scale, more striking components within the view, so it remains primarily intact.

Viewpoint 4m: University Avenue near Varsity Place, Looking Makai

The existing visual quality for Viewpoint 4m is high; residents, business owners, and visitors are the primary viewer groups. The viewpoint is located on University Avenue looking makai across Varsity Place. The open and striking views of the Downtown Honolulu skyline, located near this viewpoint and framed by streetscape enhancements, create a vivid image. The neatly kept urban surroundings provide a unified appearance. The large utility poles, overhead power lines, and tall street lights encroach slightly on the view, but they are not out of scale or character in relationship to the dominant urban skyline so do not reduce the image's intactness.

Viewpoint 4n: University Avenue at Ku'ilei Drive, Looking Koko Head

The existing visual quality for Viewpoint 4n is moderate; residents, business owners, and visitors are the primary viewer groups. This viewpoint is located on University Avenue looking Koko Head. A vivid and unified image results from the open and close-proximity mountain views, the UH Mānoa campus with surrounding vegetation, periodic streetscape enhancements, and the colorful but consistent architectural style of the surrounding development. However, utility poles, power lines, and tall street lights reduce the viewpoint's overall intactness.

Viewpoint 4o: Kūhiō Avenue/Kālaimoku Street Intersection, Looking Mauka

The existing visual quality for Viewpoint 4o is high; residents, business owners, and visitors are the primary viewer groups. This manicured and simple image is free of encroaching elements, creating a viewpoint that is unified and intact. This viewpoint is within the Waikīkī area at Kālaimoku and Kūhiō Avenue. The view looks mauka across Kūhiō Avenue and is representative of views within the Waikīkī Special District. The pedestrian-scale streetscape and lush canopy of mature trees set against the urban skyline creates a fairly distinct and vivid image. A clean, manicured, landscaped street scene that is free from encroaching elements provides a unified and intact visual image.

Viewpoint 4p: Kūhiō Avenue toward Lili'uokalani, Looking Mauka

The existing visual quality for Viewpoint 4p is high; residents, business owners, and visitors are the primary viewer groups. This viewpoint is from Kūhiō Avenue looking mauka toward Lili'uokalani Avenue and is representative of views within Waikīkī. The lush vegetation and colorful, pedestrian-oriented building facades and streetscape furnishings framed by high-rise structures create a uniquely distinct pedestrian environment and a unified streetscape scene. No encroaching elements reduce the view's intactness.

5 Consequences

5.1 No Build Alternative

The No Build Alternative's transit component, which includes an increase in bus fleet size, is not expected to result in notable visual changes. No construction would occur, so no effects on visual resources or the existing visual environment would result.

5.2 Build Alternatives

To help evaluate the consequences of the Build Alternatives, the photographs documenting the affected environment were used to create computer simulations that visualize different project elements such as the guideway and stations. Although the simulations are limited in their field of view, the visual analysis considered the entire field of view. These simulations are intended to represent the scale and spatial relationships of project elements to other objects.

The criteria used in determining visual effects for visual and aesthetics analysis differ from those used to analyze historic and cultural resources. Visual and aesthetics analysis uses a gradient from low to high to assess the entire context of the activities within an area. This assessment is based on the synthesis of a set of criteria (vividness, intactness, and unity) that include the viewer's experience, panorama or scenic views, an area's overall quality, and the scale and contrast between elements in the area. The evaluation of historic and cultural consequences is necessarily a more narrow definition, and focuses on whether the view of the resources has been affected. The Project's effect on historic and cultural resources, including changes to their visual setting, is evaluated in more detail in the *Honolulu High-Capacity Transit Corridor Project Historic Resources Technical Report* (RTD 2008b).

5.2.1 Consequences Common to All Build Alternatives

This discussion of consequences begins with a general discussion of the long-term effects of all Build Alternatives. This discussion is followed by an evaluation of expected changes in visual character that would be experienced by most viewers for each landscape unit. The landscape unit discussion addresses significant views and vistas, and includes an assessment of expected changes in visual quality for the representative viewpoints and views. This approach is repeated for each Build Alternative.

Long-Term Effects

The fixed guideway and stations would be elevated structures throughout the study corridor. The system's main components include foundations, support columns, the elevated guideway structure, and stations. Other main components would include a maintenance and storage facility, parking facilities, and TPSSs.

The guideway for the LRT would be consistent in bulk and scale throughout the alignment (Figure 5-1). The columns would range from 3 to 8 feet in diameter.

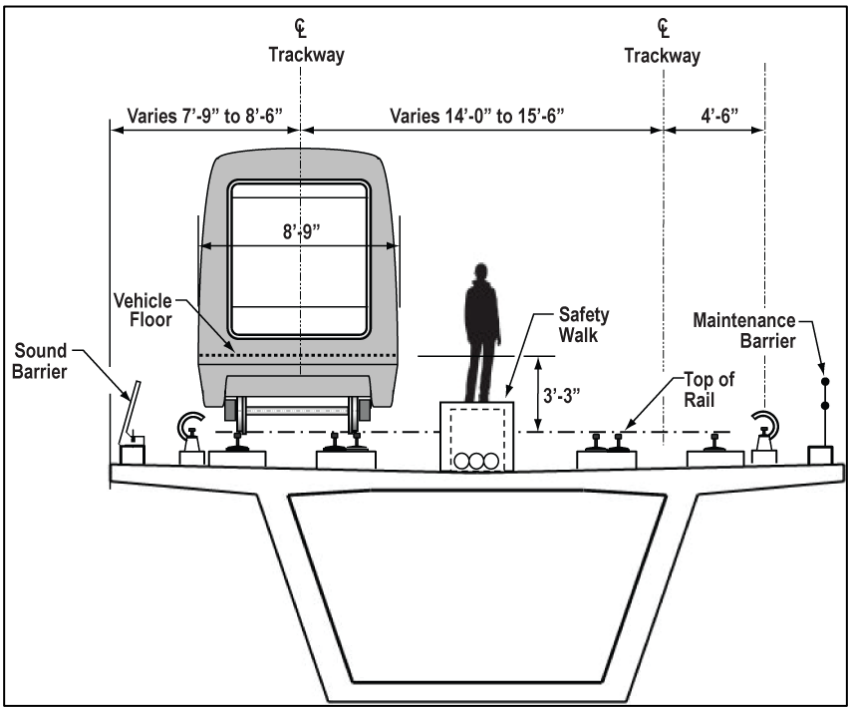

Figure 5-1: Example of LRT Vehicle on Elevated Guideway (Cross-Section)

All stations would have similar design elements, including platforms that are between 270 and 300 feet long and a minimum of 10 feet wide. The station height would be about 20 feet taller that the guideway. As a result, the stations would be dominant visual elements in their settings and would noticeably change views. System elements for all technologies being considered would introduce new visual elements that may contrast with the existing environment's scale and character.

Park-and-ride lots would be constructed at several stations, and one parking garage is planned at Pearl Highlands. This parking garage would be four stories, or approximately 60 feet high. Two locations are also being considered for the system's maintenance and storage facility: Ho'opili and a vacant site near Leeward Community College. Only one site will be selected. Development of the park-and-ride lots and maintenance and storage facility would include removing vegetation, and adding pavement and a number of structures, which would change views and the visual landscape's character.

Support facilities such as TPSSs would be located at approximately 1-mile intervals. Because they would require intermittent vehicular access for service and maintenance, they would be located near roadways. However, they would be sited to avoid locations that would affect visually sensitive resources. Each substation would be a maximum of approximately 50 feet long, 30 feet wide, and 10 feet high. Although they would noticeably change existing views, most would be located

adjacent to roadways where utilities are already part of the view so the change is not expected to be dramatic or substantial.

The Build Alternatives would involve removing and/or trimming street trees in some locations. Potential changes in visual character would vary depending on the setting. Changes would be greatest in areas where mature trees form a canopy over streets or sidewalks, and where they are dominant components of a unique visual setting. The approximate locations where mature trees would be trimmed or removed are noted in the discussion for each landscape unit. The *Honolulu High-Capacity Transit Corridor Project Street Trees Technical Report* (RTD 2008a) evaluates street trees along the alignment. That assessment includes Exceptional Trees.

Light and glare effects would primarily be associated with park-and-ride lots, the maintenance and storage facility, stations, and trains, and include interior and safety lighting for stations and interior lighting and headlights on trains. For most of the alignment, light and glare associated with the guideway and trains are not anticipated to have a substantial effect, because the guideway would generally be located in existing roadway rights-of-way that currently produce transportation-related light and glare. In addition, the light intensity from trains is expected to be comparable to existing buildings and vehicles along the alignment. In areas where the guideway and trains would pass close to office, commercial, and residential buildings, moderate increases in ambient light levels could occur. Glare is expected to be low with a limited level of reflective surfaces, and would be reduced further by appropriate design measures. Overhead site lighting at stations, park-and-ride lots, and the maintenance and storage facility would be provided for safety and visibility. Night light and increased light and glare in these areas may be considered a nuisance-level visual effect low visual sensitivity.

The shadow pattern created by the guideway and stations would change throughout the day and seasonally, depending on the alignment's direction, time of day, and time of year. Shadow impacts along the alignment would vary with orientation, the height of the guideway and stations, and the height of surrounding trees and local development. Shade and shadow effects are illustrated in the simulated views included in this chapter.

For viewers of the alignment, the guideway, stations, and other project elements would result in noticeable changes to views where the project elements would be nearby or in the foreground of views. This change would also occur for motorists traveling on roadways along and under the guideway. View changes would be substantial if they are obstructed or blocked. Viewers' response to change would vary with their exposure and sensitivity, and depending on the alignment orientation, guideway height, and height of surrounding trees and/or buildings. View changes would be less noticeable where the project elements serve as smaller components of the larger landscape in a wider vista. For viewers from trains, the elevated alignment would introduce panoramic views of the surrounding mountain ranges and coastline, as well as the Downtown Honolulu skyline and other developed areas. Passengers on trains would have enhanced views of these areas compared to

passengers in vehicles whose views are often obstructed by buildings, vehicles, and signage.

Public views include views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural features, heritage resources and other landmarks, and view corridors between significant landmarks (ROH 1978b). The City and County of Honolulu's general urban design principals and controls state that "(s)uch public views shall be protected by appropriate building heights, setbacks, design and siting controls" and that "(t)hese controls shall be determined by the particular needs of each view and applied to public streets and to both public and private structures." The guideway and some stations would partially block mauka-makai public views from streets that intersect with the alignment.

RTD will coordinate with the City to identify the particular needs of each view; however, the Build Alternatives would introduce a new linear visual element to the corridor and changes to some views would be unavoidable. Depending on the degree of view obstruction or blockage, some view changes would be substantial. Viewers' responses to this change would vary with their exposure and sensitivity and depend on the alignment orientation, guideway and station height, and height of surrounding trees and/or buildings. View changes would be less notable in wider vista or panoramic views where the project elements serve as smaller components of the larger landscape. Generally, the project elements would not be dominant features in these views.

Historic sites are located throughout the study corridor, and the introduction of a new elevated system would change their setting and some views of these sites. For a full discussion of potential impacts to historic sites, please refer to the *Honolulu High-Capacity Transit Corridor Project Historic Resources Technical Report* (RTD 2008b).

Landscape Unit 1—Kapolei to Fort Weaver Road

The surrounding visual environment in this landscape unit consists mostly of abandoned U.S. Navy buildings, scattered residential development, and open agricultural land. Planned future development includes a high-density, mixed-use community with largely residential uses. A new campus for UH West O‘ahu is planned mauka of North-South Road. New roads and other infrastructure improvements would be constructed to serve future development.

The Build Alternatives would change the visual environment of Landscape Unit 1. However, these changes are expected to occur in a similar timeframe as the planned development described previously. Therefore, the visual effects discussed below are presented in a more general context.

The guideway would introduce an elevated linear structure and more urban elements (e.g., transit stations, park-and-ride lots, and a possible maintenance and storage facility) to what is currently an open, rural, and country-like setting. Figure 5-2 shows the layout for the Ho‘opili maintenance and storage facility. The maintenance and storage facility would require large expanses of pavement to

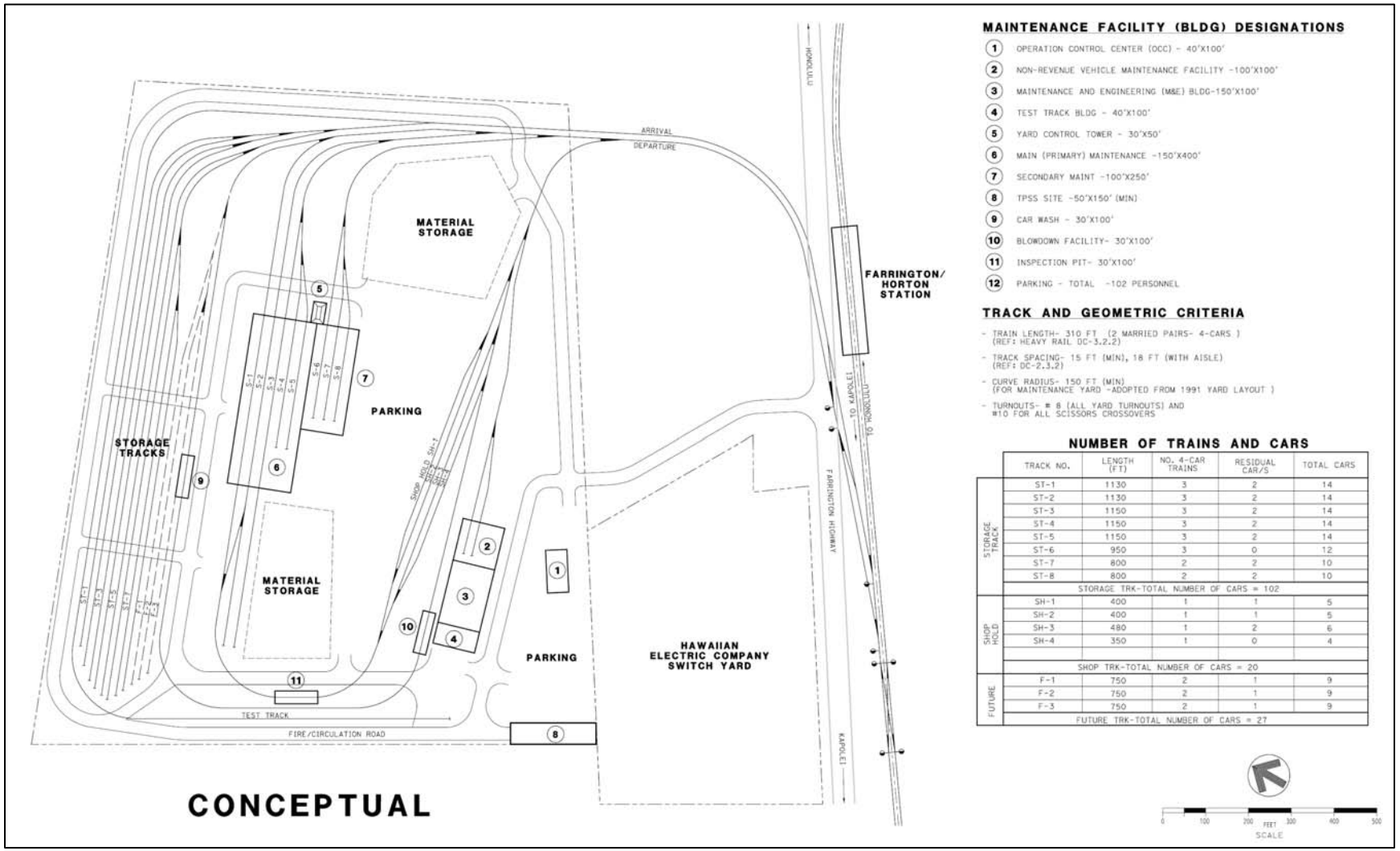

Figure 5-2: Ho‘opili Maintenance and Storage Facility Option Concept

accommodate a number of buildings, including maintenance facilities, a vehicle wash area, storage track, system control center, and employee parking. The proposed 41-acre Hoʻopili site is an open flat agricultural area adjacent to an electrical substation. The maintenance and storage facility at this site would contrast with the open, rural, country-like setting. In addition, the facility buildings would be highly visible from mauka foothill residences. Planned future development near the proposed Hoʻopili site includes light industrial and commercial uses that are expected to occur in a similar timeframe as the Build Alternatives. Development of these uses on surrounding properties would reduce the visual contrast of the maintenance and storage facility. The maintenance and storage facility would result in moderate visual effects.

The guideway would range from 30 to 40 feet high. Stations would be about 20 feet higher than the guideway where it enters the station. The guideway and stations would noticeably contrast with the smaller-scale buildings nearby, such as the U.S. Navy housing. They would also contrast with the open undeveloped character that is predominant in this area. However as mentioned previously, these areas are expected to be developed or re-developed and to become more urban in character in a similar timeframe as the transit improvements. As a result, the contrast would become less noticeable.

Panoramas and distant views of the shoreline, Downtown Honolulu, and Diamond Head would change to include views of the guideway, support columns, and stations. However, panoramic views take in a wider, more expansive landscape and are usually less sensitive to change. Generally, the project elements would not be dominant features in these views. However, large open paved surfaces would be noticeable at the Kapolei Transit Center and the proposed West Kapolei and UH West Oʻahu park-and-ride lots. Views of the ʻEwa Plain from the elevated trains and stations would be enhanced.

As development occurs and the Project is constructed, the visual setting for historic sites and landmarks in this landscape unit would change, such as the U.S. Navy housing, the Hangar historic home, and Honouliuli Bridge. Although changes to the visual environment resulting from the Project would be substantial, they are anticipated to occur along with the planned development and would likely blend in and be in context with future planned development. Therefore, overall visual effects, including the viewer response to change, would be moderate.

Significant Protected Views and Vistas

The potential for the guideway and stations to block protected mauka-makai views and vistas of the features and landmarks would vary throughout Landscape Unit 1. Viewpoints that are not close to the alignment would generally be less sensitive to changes in the visual environment because they take in a longer, more expansive landscape. Landscape Unit 1 also includes several mauka views of Nā puʻu (hills), which are designated significant views under the ʻEwa Sustainable Communities Plan. The project elements would not likely be dominant features in these views or

the significant protected views and vistas listed below, and visual effects would be low:

- Views of the Waiʻanae Mountain Range
- Distant vistas of the shoreline
- Views of Central Honolulu and Diamond Head

Changes in Visual Quality

Viewpoint 1a is the representative viewpoint for Landscape Unit 1 and was used to evaluate changes in visual quality. The visual simulations generally depict the guideway (technology) that would have a comparatively greater visual effect. Where stations would be visible, a typical prototype is shown. The viewpoint location and view direction is shown on Figure 4-1.

The guideway and station would contrast with the surrounding low-profile scattered development and open space. Viewpoint 1a shows existing conditions and a simulated view of the guideway about 40 feet above the roadway intersection (Figure 5-3). The guideway would be a new source of light and glare that would affect the nighttime light environment in this primarily residential area. It would also create new shade and shadow patterns for motorists on streets and planned future development. Visitors and residents are the primary viewer group that would be affected by this view, and visual effects would be moderate.

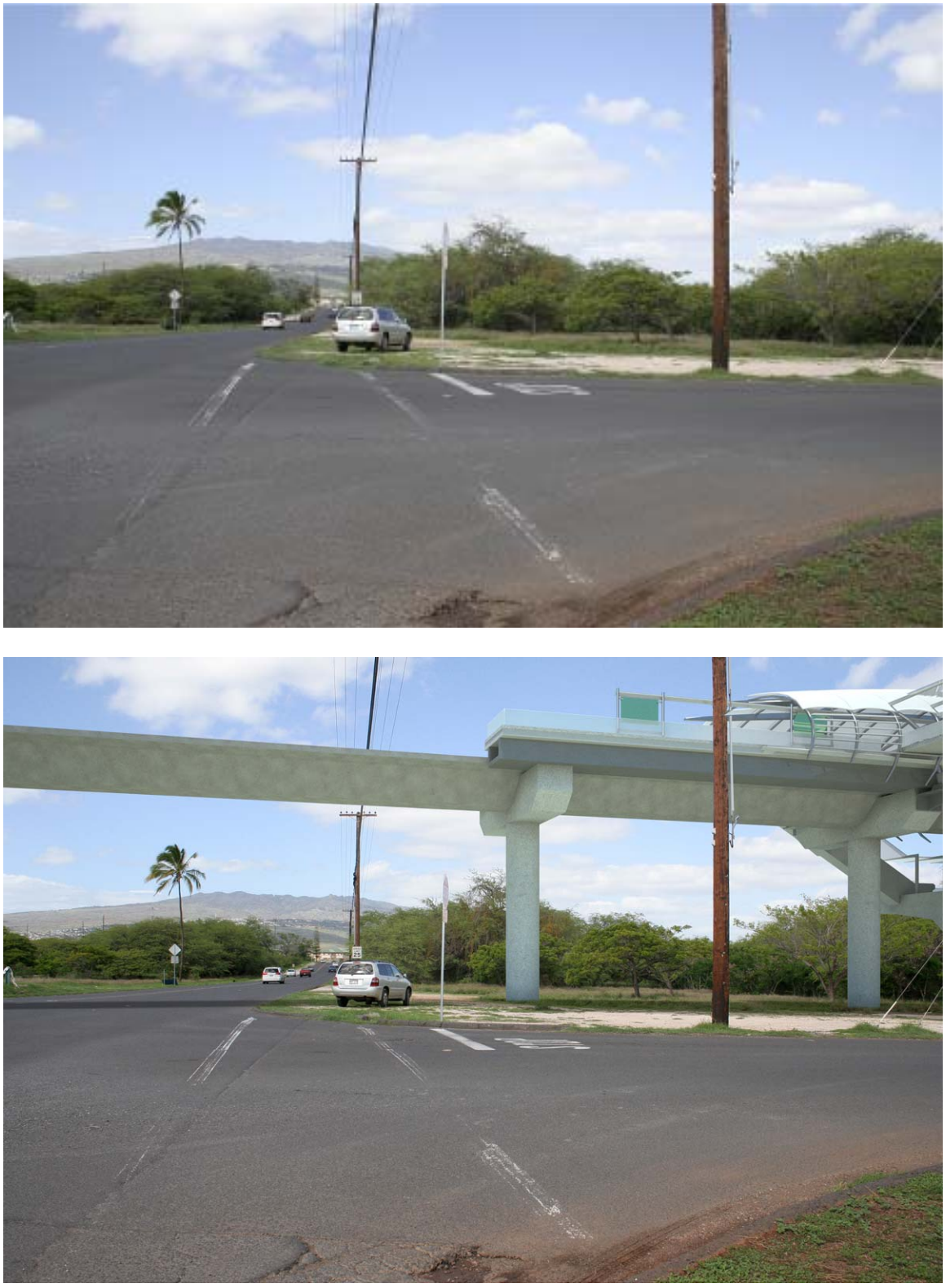

Figure 5-3: Viewpoint 1a Existing and Simulated Views—Fort Barrette Road Station Area near the Intersection of Fort Barrette Road and Saratoga Avenue, Looking Mauka

Compatibility with Existing Visual Policies

Policy documents affecting Landscape Unit 1 include the O‘ahu General Plan (DPP 1997a), the ‘Ewa Development Plan (DPP 1997), and Revised Ordinances of Honolulu (ROH 1978a; ROH 1990). Although generally minor, the Build Alternatives would be incompatible with these policy documents as follows:

- Remove, move, or alter large mature trees and vegetation
  - O‘ahu General Plan, Objective A, Policy 9
  - Revised Ordinances of Honolulu, Chapter 41, Article 13
- Alter or change the integrity of setting of historic resources—O‘ahu Railway and Land Company (OR&L) Railway and Hawaiian Railway Society
  - ‘Ewa Sustainable Communities Plan, Objective 3.4
- Conflict with the existing aesthetic environment (design inconsistent with the existing aesthetic character)
  - O‘ahu General Plan, Objective E, Policies 4, 5, and 9
  - ‘Ewa Sustainable Communities Plan, Objective 3.4

Landscape Unit 2—Fort Weaver Road to Aloha Stadium

From the Fort Weaver Road intersection, the guideway would follow Farrington Highway Koko Head. Farrington Highway is a major transportation corridor through this area. The West Loch Station and respective transit center would blend well with the bulk and scale of the Waipahu Town Center’s densely developed commercial character. However, the guideway and columns along the alignment would be prominent visual features. This is due in part to the long, straight view down Farrington Highway and also to the guideway’s height (about 40 feet), which would be greater than many of the surrounding one and two-story buildings.

Although the guideway at 30 to 40 feet high would obstruct some makai and mauka views across the highway, panoramic views near the alignment and from the Waipahu Cultural Garden Park, Hawai‘i’s Plantation Village, and Waipahu District Park comprise a wider panoramic scene, and therefore, would not be substantially affected. The guideway and columns would change the visual setting of four historic churches makai of Hawai‘i’s Plantation Village, and distant views of some building features could be obscured. In addition, mature trees in Farrington Highway’s median would be removed to accommodate the guideway, reducing the visual interest and memorability of views. Visual effects in this area would be moderate.

The Waipahu Transit Center Station would be farther Koko Head along the alignment. Similar to the West Loch Station, it would blend well with the bulk and scale of the commercial setting that has developed around this section of Farrington Highway. As the guideway continues Koko Head toward Leeward Community College, it would be a more dominant feature that dramatically contrasts with the suburban residential character makai and mauka of the highway. The mass and height of the guideway and columns would block some residents’ views over Middle

Loch to Pearl Harbor. However, many views in this area comprise a wider panoramic scene, and therefore would not be substantially affected. The visual setting of the historic Latter Day Saints Church near Kahualii Street would also change, and views of the facade would be obscured by the guideway. Visual effects in this area would range from moderate to high.

The guideway would shift makai of Farrington Highway at Leeward Community College, which is also the site of a potential maintenance and storage facility. This area is a flat knoll makai of the H-l Freeway/Farrington Highway Interchange. The Leeward Community College Station would be adjacent to a parking lot on the college campus and would be at ground level. The potential maintenance and storage facility would be makai of the interchange. Figure 5-4 shows a conceptual layout for the Leeward Community College maintenance and storage facility. The maintenance and storage facility would require large expanses of pavement to accommodate a number of buildings, including maintenance facilities, a vehicle wash area, storage track, system control center, and employee parking. The proposed 43-acre site near the Leeward Community College is vacant and undeveloped. This site is on a flat knoll makai of the H-1 Freeway/Farrington Highway interchange. The maintenance and storage facility buildings would be highly visible from low-lying areas makai of the interchange and from residences on the foothills above. However, the facility would not contrast substantially with elements of the surrounding visual character, which include the highway interchange, community college buildings, and adjacent parking lots. Visual effects in this area would be moderate.

The guideway would cross over the H-1 Freeway interchange and merge with Kamehameha Highway at Pearl City. The Pearl Highlands Station and park-and-ride structure would be ‘Ewa of the Pearlridge Center and would blend well with the bulk and scale of its commercial character. The guideway would pass by Pacheco Neighborhood Park at Waimano Home Road, where nearby residents mauka and makai of the guideway would experience noticeable changes in their view. Makai views of East Loch and Pearl Harbor from the park and residences near the mauka side of the Waimano Home Road/Kamehameha Highway intersection would include the guideway and columns, and some views beyond the intersection would be blocked. Visual effects would range from moderate to high in this area.

Koko Head of Pu‘u Poni Street, the guideway would cross over the H-1 Freeway and continue above Kamehameha Highway’s median to the vicinity of Aloha Stadium. The H-1 Freeway cross-over would be a dominant feature, visible at great distance. However, this change would be in context with the freeway setting and would not likely be perceived as substantial. Farther Koko Head, the guideway would continue above Kamehameha Highway’s median through residential neighborhoods and mauka of Neal S. Blaisdell Park before crossing over Waimalu Stream. The bulk and scale of the guideway and columns would substantially change mauka and makai views from residences, such as panoramic views through the park toward Pearl Harbor and Downtown Honolulu. Panoramic views would be less sensitive to change because they take in a wider, more expansive landscape. Visual effects would range from moderate to high in this area.

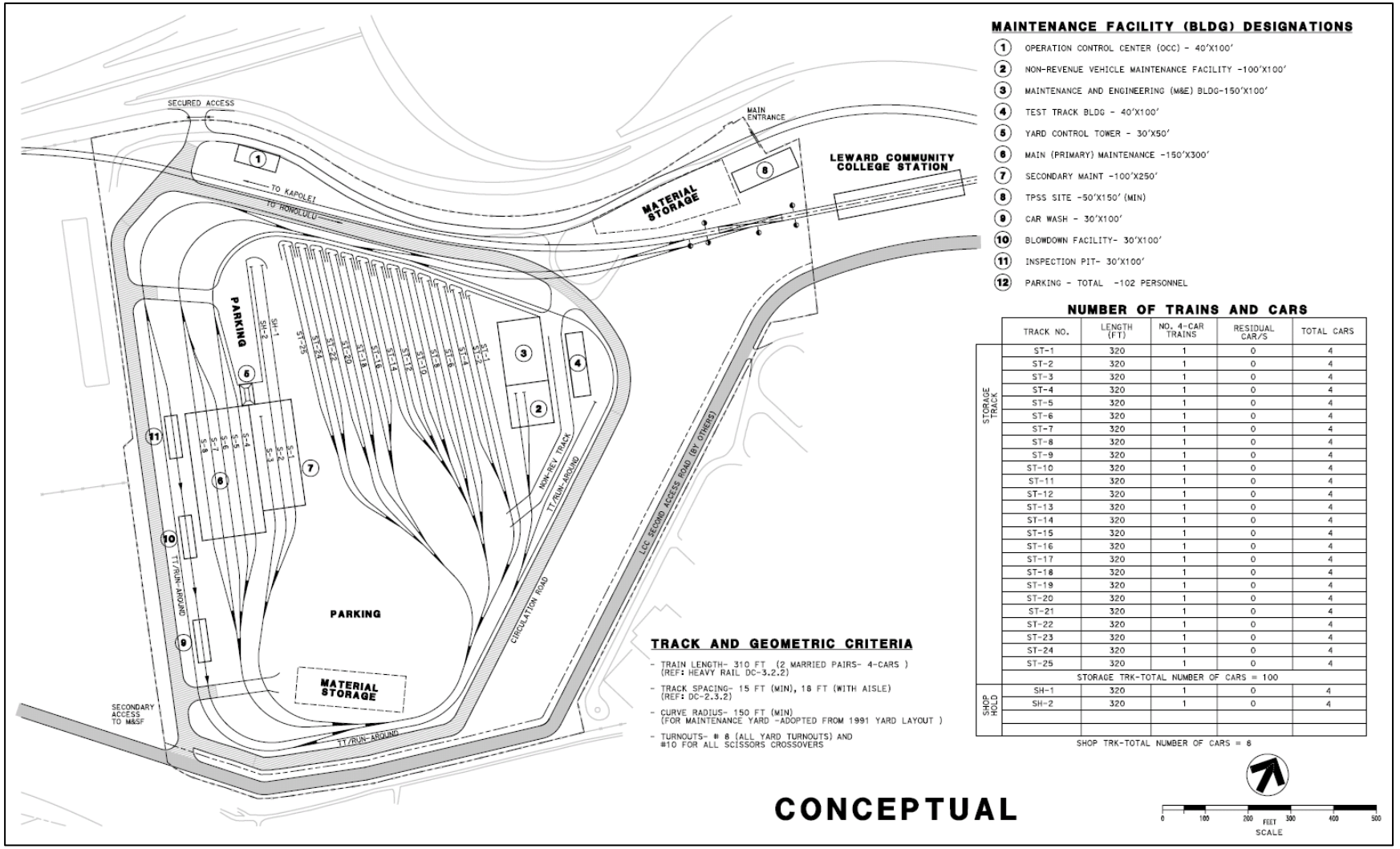

Figure 5-4: Leeward Community College Maintenance and Storage Facility Option Concept

Continuing to the Pearlridge Station and Transit Center, three historic sites, including Sumida Farm, would be mauka of the guideway and station. The elevated station about 40 feet above Kamehameha Highway would be a noticeable change, altering views and contrasting with the scale of these resources and the surrounding environment. Some ‘Ewa and makai views of the skyline from the Sumida Farm would be blocked by the guideway. However, because it is at a much lower elevation than the highway, these views are already confined by the surrounding embankments. Overall visual effects near the station would be moderate because the project elements would blend with the surrounding commercial character, which is a heavily used transportation corridor with one and two-story businesses and warehouses.

From residences on the hillside above Pearlridge, Kamehameha Highway is already a prominent feature in makai views toward the ‘Ewa Plain, East Loch, and Downtown Honolulu. However, the guideway would be a noticeable change. These project elements would also change panoramic views over the ‘Aiea Bay State Recreation Area, where the guideway would be about 30 feet above the Kamehameha Highway/Honomanu Street intersection. Most scenic views from the recreation area are makai and would not be affected. Overall visual effects from Pearlridge to the Aloha Stadium area would be moderate.

Significant Protected Views and Vistas

The potential for the guideway and stations to block protected mauka-makai views and vistas of the following features and landmarks would vary throughout Landscape Unit 2. Viewpoints that are not close to the alignment would generally be less sensitive to changes in the visual environment, because they would take in a longer, more expansive landscape. The project elements would be noticeable but not dominant, features in these views, and visual effects to significant protected views and vistas would be low to moderate. Passengers on trains would have enhanced views of these areas compared to passengers in vehicles whose views are often obstructed by buildings, vehicles, and signage.

- Views of Pearl Harbor and the Lochs framed by the ocean
- Views of Central O‘ahu valleys and plains
- Views of the Wai‘anae and Ko‘olau Mountain Ranges
- Views of West Loch
- Views of the O‘ahu Sugar Mill and Hawai‘i’s Plantation Village

Changes in Visual Quality

Viewpoints 2a, 2b, 2c, and 2d are the representative viewpoints for Landscape Unit 2 and were used to evaluate changes in visual quality. Significant views and vistas were also considered where they would be affected. The visual simulations generally depict the guideway (technology) that would have a comparatively greater

visual effect. Where stations would be visible, a typical prototype is shown. The viewpoint locations and view directions are shown on Figure 4-2.

Viewpoint 2a shows the existing condition and the simulated view in which the guideway would replace the palm trees in the center median of Farrington Highway (Figure 5-5). The structure would be out of scale but in character with the surrounding area, which functions primarily as a transportation corridor. The guideway would not affect existing views of the mountains and would have a limited effect on the area's scenic value. The structure's shadow may affect motorists on the roadway, depending on the time of day and width of the median in relationship to the structure's width. The light and glare associated with the fixed guideway should be similar to existing light and glare conditions along Farrington Highway. The primary viewer groups would be residents, business owners, visitors, and commuters within the surrounding area. Business owners, visitors, and commuters would be less sensitive to changes than residents. Visual effects would be moderate.

Figure 5-5: Viewpoint 2a Existing and Simulated Views—Farrington Highway near Waikele Road, Looking ‘Ewa

Viewpoint 2b shows the existing condition and the simulated view with the guideway above Kamehameha Highway (Figure 5-6). The guideway would affect mauka views from this viewpoint by partially blocking existing distant views of the sky and mountains. The guideway structure would narrow the view corridor, giving it a more tunnel-like appearance. The guideway's scale and height would be in character with the adjacent two-story commercial buildings or the multi-story residential tower seen to the right of this image. Light and glare associated with the guideway should be similar to the light and glare conditions already existing along Kamehameha Highway. The primary viewer groups that would be affected are commuters, business owners, and visitors, who would be moderately sensitive to visual changes. Overall visual effects would be moderate.

Figure 5-6: Viewpoint 2b Existing and Simulated Views—Kamehameha Highway near Acacia Street, Looking ‘Ewa

Viewpoint 2c shows the existing condition and the simulated view, with the guideway above the Kamehameha Highway/Ka‘ahumanu Street intersection (Figure 5-7). The bulk and scale of the guideway and columns would be a dominant feature, obstructing views of the tree canopies and substantially changing views toward the Neal S. Blaisdell Park. Panoramic views under the guideway would be less affected. The light and glare associated with the station and guideway should be similar to the light and glare conditions already existing along Kamehameha Highway. Overall, visual effects would be high.

Figure 5-7: Viewpoint 2c Existing and Simulated Views—Kamehameha Highway at Ka‘ahumanu Street, Looking Makai

Viewpoint 2d shows the existing condition and the simulated view, where the Pearlridge Station and guideway would be located above the Kamehameha Highway/Kaonohi Street intersection (Figure 5-8). Limited views of East Loch would still be visible beyond the intersection. Although changes to the existing view would be noticeable, the simulation shows that the bulk and scale of the project elements would blend with the existing visual environment. The prominent utility lines would also be less visible, increasing the view's intactness. The light and glare associated with the station and guideway should be similar to light and glare conditions that already exist along Kamehameha Highway. The primary viewer groups would be residents, business owners, visitors, and commuters. Visual effects would be moderate.

Compatibility with Existing Visual Policies

Policy documents affecting Landscape Unit 2 include the O'ahu General Plan (DPP 1997a), Central O'ahu Sustainable Communities Plan (DPP 2002), Primary Urban Center Development Plan (DPP 2004a), Waipahu Livable Communities Initiative (DPP 1998), Waipahu Town Plan (DPP 1995), 'Aiea-Pearl City Livable Communities Plan (DPP 2004b), and Revised Ordinances of Honolulu (ROH 1978a; ROH 1990). The Build Alternatives have the potential to be incompatible with these policy documents as follows:

- Affect visual resources and views (partially block views of Pearl Harbor, mountains, and mauka-makai corridor views)
  - O'ahu General Plan, Objective B, Policies 2 and 3
  - Central O'ahu Sustainable Communities Plan, Objective 3.4
  - Primary Urban Center Development Plan, Objective 3.1.2
  - 'Aiea-Pearl City Livable Communities Plan, Objectives 4.5 and 4.6.1
- Alter or change the integrity of setting of historic resources
  - Central O'ahu Sustainable Communities Plan, Policy 3.4
  - Primary Urban Center Development Plan, Policy 3.1.2
  - Waipahu Livable Communities Initiative, Urban Design Guidelines
  - Waipahu Town Plan, Planning Objectives
- Remove, move, or alter large mature trees and vegetation
  - O'ahu General Plan, Objective A, Policy 9
  - Waipahu Town Plan, Urban Design Guidelines
  - Waipahu Town Plan, Planning Objectives
  - Revised Ordinances of Honolulu, Chapter 41, Article 13

Figure 5-8: Viewpoint 2d Existing and Simulated Views—Kamehameha Highway at Kaonohi Street, Looking Makai

Landscape Unit 3—Aloha Stadium to Kalihi

Between Aloha Stadium and Kalihi, the alignment differs for each Build Alternative. Please refer to discussions of the Salt Lake, Airport, and Airport & Salt Lake Alternatives in Sections 5.2.2, 5.2.3, and 5.2.4, respectively.

Landscape Unit 4—Kalihi through Iwilei to UH Mānoa and Waikīkī

From Kalihi Koko Head, the guideway would follow Dillingham Boulevard to the vicinity of Kaʻaahi Street. The canopies of several mature trees along Dillingham Boulevard would be trimmed to accommodate the guideway, and additional trees would be removed at the Kapālama and Iwilei station areas. The guideway and columns would be prominent visual features, due in part to the long, straight view down the boulevard and because the guideway's height (about 40 feet above Dillingham Boulevard) would be slightly greater than many of the surrounding one and two-story buildings. Mauka and makai views would be obstructed from various points. Makai-view obstructions would be greatest from residences on the mauka side of Dillingham Boulevard. Overall visual effects in this area would be moderate.

The guideway could come within 10 feet of some facades along Dillingham Boulevard depending on the setback, and would block views from the upper stories of mixed-use buildings Koko Head of Kalihi Street. Upper-story residences along Dillingham Boulevard would be affected by light and glare from trains traveling on the guideway and from station lighting. Due to the close proximity of the guideway and Kalihi and Kapālama Stations, the visual setting of several nearby historic sites would change and views of their facades would be partially obscured. Visual effects on these resources are expected to be high.

As the guideway turns farther Koko Head to connect to Nimitz Highway near Iwilei Road, it would blend with the bulk and scale of the surrounding one and two-story commercial buildings, including light industrial warehouses and distribution centers. The Iwilei Station would be a noticeable visual change, and some views of building facades would be blocked. However, many viewers would not notice a blockage of views because the surrounding land is used mostly for light industry and offices or is underused. Visual effects in this area would be moderate.

The alignment would follow Nimitz Highway Koko Head to Halekauwila Street. This area of Downtown Honolulu includes several historic districts and other sensitive visual resources, including view corridors. The historic districts and landmarks in this area are shown on Figure 4-4. Historic resources are discussed in the *Honolulu High-Capacity Transit Corridor Historic Resources Technical Report* (RTD 2008b).

Although the Chinatown Station would generally be centered approximately 30 feet above Nimitz Highway, it would be a dominant visual element that contrasts in scale with the pedestrian environment and substantially changes makai views of Honolulu Harbor. However, the Downtown Honolulu Station would not block views of Honolulu Harbor. The guideway and columns would reduce the streetscape's open character, create shade and shadows, and block portions of makai views along the following perpendicular streets: Kekaulike, Maunakea, Nuʻuanu, Bethel, Fort, Bishop, and Richards. Views from the third and fourth-story windows of adjacent offices and

residences would also be blocked. Trains traveling on the guideway would also create light and glare, and the Chinatown and Downtown Honolulu Stations would increase this effect. The guideway and columns would change the streetscape's visual character and substantially affect the visual setting of the Dillingham Transportation Building and Irwin Park. Overall visual effects in this area would be high.

The alignment would leave Downtown Honolulu Koko Head along Halekauwila Street, where it would begin on the makai side of the street and transition to the center near Punchbowl Street. The canopies of several mature monkeypod trees along Halekauwila Street would be trimmed. The guideway and columns would also block views from the third and fourth-story windows of adjacent offices and residences and create additional shade and shadows. Trains traveling on the guideway would increase light and glare. Overall visual effects in this area would be high.

The Civic Center Station area is currently in transition from scattered one and two-story businesses to higher-density taller structures. The proposed station would substantially change views and contrast with the surrounding environment's scale and character. The guideway and columns would block views from the third and fourth-story windows of adjacent offices and residences and create additional shade and shadows. Trains traveling on the guideway would increase light and glare. Mother Waldron Park is located Koko Head at Cooke Street. Views of the park from residences across the street would be obstructed by the columns and guideway. Overall visual effects in this area would be high.

Past Ward Avenue and the Kaka'ako Station, the alignment would transition to Queen Street. The alignment would then cross over to Kona Street. No visually sensitive resources are located in this area. Kaka'ako Station would be noticeable, but would blend with the character of nearby big-box stores and smaller industrial-use buildings. Visual effects would be moderate.

The guideway would run above Kona Street through Ala Moana Center to the Convention Center. Mature trees would be removed from Pi'ikoi Street through the Ala Moana Center Station area, substantially changing the streetscape's character. Although the station and guideway would blend with the mix of surrounding mid-rise and high-rise buildings, its height about 40 feet above the Ala Moana Center parking garage would noticeably change views and block views from some adjacent offices and residences. With the exception of the mature trees near Pi'ikoi Street, visually sensitive resources would not be affected and most views of the mountains, Koko Head, and skyline would not be blocked. Therefore, the guideway, columns, and Ala Moana Center Station are expected to result in moderate to high visual effects. The Ala Moana Center Station would be at the end of the Project.

The future Convention Center Station would change the character of Kapi'olani Boulevard where it intersects with Atkinson Drive. Mature trees would be trimmed and some would be removed where the guideway would cross the boulevard. The streetscape and views toward the Convention Center facade would be substantially changed by the bulk and scale of the guideway and station. The station would block mauka views of the mountains from the Convention Center and some panoramic views of Diamond Head from points 'Ewa of the guideway crossing on Kapi'olani Boulevard. Visual effects in this area would be high.

UH Mānoa Extension

From the Convention Center, the future planned extension would run Koko Head above the mauka side of Kapiʻolani Boulevard. Mature trees would be trimmed and some would be removed to accommodate the guideway and McCully Station. The guideway and station would come within 10 feet of some two to four-story buildings along this section of Kapiʻolani Boulevard, depending on the setback, and would block makai views from some of the upper-story residences and offices. The visual setting of several nearby historic sites would change, and views of their facades would be partially obscured. The project elements would also create noticeable changes in views along the street. The McCully Station and trains traveling on the guideway would increase light and glare. The guideway and columns would create additional shade and shadows. Overall visual effects in this area would be moderate to high.

Leaving McCully Station and passing Ala Wai Community Park, the guideway would transition to the center of Kapiʻolani Boulevard. Mature trees in the median would be removed near the area Koko Head to Isenberg Street. The guideway and columns would reduce the streetscape's open character and block makai views of Ala Wai Community Park and Canal from upper-story windows of offices and residences. The guideway and columns would also block some mauka views of the mountains from the park. However, viewers in the park generally have panoramic views, where the project elements would serve as smaller components of the larger landscape in a wider vista. Visual effects would range from moderate to high in this area.

The guideway would turn mauka above the center of University Avenue to the Date Street Station, where several historic sites are located both ʻEwa and Koko Head of the roadway. The visual setting of these historic sites would change, and views of their facades would be partially obscured. The guideway, columns, and station would be dominant elements that would noticeably change views, reduce the streetscape's open character, and block some views of the mountains and Diamond Head from adjacent buildings and perpendicular streets. Overall visual effects in this area would be moderate.

Continuing mauka on Date Street, the guideway would cross over South King Street to the Mōʻiliʻili Station and cross over the H-1 Freeway to a proposed terminal station in UH Mānoa's lower campus. The Mōʻiliʻili and UH Mānoa Stations, with their connection over the H-1 Freeway, would substantially change views and be dominant features above the UH Mānoa campus. They would be visible at great distance and would also change the visual setting of historic sites ʻEwa of the Mōʻiliʻili Station. The campus streetscape's character would also change. Some panoramic views toward Diamond Head and the mountains would be partially blocked, and some makai views from the campus would change. Visual effects in this area would range from moderate to high.

Waikīkī Extension

From the Convention Center, a future planned branch line with a transfer point at Ala Moana Center or the Hawaiʻi Convention Center would cross over the Ala Wai Canal

on the mauka side of Kalākaua Avenue to the Kālaimoku Street Station and Kūhiō Avenue. The Kalākaua Avenue Bridge over Ala Wai Canal is a historic site, and the bridge's appearance would substantially change to accommodate the guideway and support columns. The visual setting of historic sites mauka of Kūhiō Avenue would also change, and views of their facades would be partially obscured. Mature trees Koko Head of the bridge on Kalākaua Avenue would be removed, affecting the visual setting of the bridge, canal, and streetscape. The canal crossing and the Kālaimoku Street Station would substantially change views from the Convention Center and various locations in Waikīkī. Visual effects in this area would be high.

The guideway would continue along Kūhiō Avenue to the vicinity of Kapahulu Avenue and the Lili'uokalani Avenue Station. Mature trees would be trimmed or removed at various locations. The guideway would contrast in scale with the unique pedestrian environment along Kūhiō Avenue and substantially change mauka views from residences and hotel rooms. The guideway and columns would block views of mostly residences and hotels farther Koko Head along Kūhiō Avenue and create additional shade and shadows. Trains traveling on the guideway would increase light and glare along the entire alignment. In addition, the visual setting of two historic sites on Kūhiō Avenue would change and views of their facades would be partially obscured. The Lili'uokalani Avenue Station would be a dominant feature and a substantial visual change, but would blend with the character of the surrounding urban setting. Visual effects in this area would be high.

Significant Protected Views and Vistas

Panoramic Views of Natural Features and Landmarks

The potential for the guideway and stations to block protected mauka-makai panoramic views of the features and landmarks listed below would vary throughout Landscape Unit 4. Viewpoints that are not located near the alignment would generally be less sensitive to changes in the visual environment because they take in a wider, more expansive, landscape. The project elements would be noticeable but not dominant features in these views, and visual effects on significant protected views and vistas would be low to moderate. Passengers on trains would have enhanced views of these areas compared to passengers in vehicles whose views are often obstructed by buildings, vehicles, and signage.

- Ko'olau and Wai'anae Mountain Ranges and foothills
- Pacific Ocean, Pearl Harbor's East Loch, Ford Island, Honolulu Harbor, Ke'ehi Lagoon, and Kewalo Basin
- Volcanic craters of Lē'ahi (Diamond Head), Pūowaina (Punchbowl), and Āliamanu
- From Ala Wai Canal Promenade toward the Ko'olau Mountain Range
- From Ala Moana Beach Park toward the Ko'olau Mountain Range
- From Kewalo Basin toward Punchbowl and the Ko'olau Mountain Range

Mauka/Makai View Corridors

The Build Alternatives would affect mauka-makai view corridors in the urban core, as described below.

- Bishop Street—the guideway and columns would be dominant elements in makai views between Nimitz Highway and Queen Street, and views of the horizon would be partially blocked. The bulk and scale of the guideway and columns would be compatible with Nimitz Highway, which functions as a major transportation corridor. Mauka of Queen Street, these elements would likely appear less dominant because the vista would take in a longer view and be more expansive.
- Cooke Street—the guideway and columns would be dominant elements in mauka-makai views, respectively, between Pohukaina Street and Queen Street. Views of the horizon would be partially blocked from viewpoints near the alignment, including mauka views from the park at Halekauwila Street and Cooke Street. The bulk and scale of the guideway and columns would conflict with the pedestrian-oriented streetscape.
- Ward Avenue—the guideway and columns would be dominant elements in mauka-makai views, respectively, between Auahi Street and Queen Street. Views of the horizon would be partially blocked from viewpoints near the alignment. The bulk and scale of the guideway and columns would conflict with the pedestrian-oriented streetscape. For mauka views from Ala Moana Boulevard and makai views mauka of Queen Street, these elements would likely appear less dominant because the vista would take in a longer view and be more expansive.
- Pi‘ikoi Street—the guideway and columns would be dominant elements in mauka-makai views, respectively, between Waimanu Street and Kapi‘olani Boulevard. Views of the horizon would be partially blocked from viewpoints near the alignment. Although the bulk and scale of the guideway and columns would conflict with the pedestrian-oriented streetscape, the view includes rows of mature trees, which would reduce this effect.
- Ke‘eaumoku Street—the guideway and columns would run along the mauka side of Ala Moana Center and blend with the bulk and scale of its three and four-story buildings. The Koko Head end of the station would also be visible. Mauka views from upper stories of the shopping center would be partially blocked by the guideway. The guideway and columns would be a noticeable change in makai views from Kapi‘olani Boulevard.
- ‘Āina Moana Park (Magic Island)—the guideway would be noticeable behind Ala Moana Center in mauka views from Magic Island. However, the contrast in bulk and scale would be low because the overall view is dominated by tall buildings and the parking garage.
- McCully Street—the guideway and columns would be dominant elements and block some mauka-makai views in the McCully Street corridor between Ala

Moana Boulevard and Fern Street, respectively. These effects would be most evident from the McCully Street Bridge and Ala Wai Community Park, where the McCully Street Station would also be visible.

- Fort DeRussy—the guideway and columns would not be noticeable in mauka views from Fort DeRussy.
- Ala Wai Promenade—the guideway and columns would be noticeable in views along the Ala Wai Promenade. However, the contrast in bulk and scale would be low because these views generally take in a wider, more expansive landscape. Views along the promenade would not be blocked.

Changes in Visual Quality

Viewpoints 4a through 4p are the representative viewpoints for Landscape Unit 4 and were used to evaluate changes in visual quality. Significant protected views and vistas were also considered. The visual simulations generally depict the guideway (technology) that would have a comparatively greater visual effect. Where stations would be visible, a typical prototype is shown. The viewpoint locations and view directions are shown on Figure 4-4.

Viewpoint 4a shows the existing condition and simulated view at the Dillingham Boulevard/Kalihi Street intersection (Figure 5-9). The simulated view shows that the bulk of the guideway and columns would be out of scale and contrast with existing buildings and would create shade and shadows. However, overhead utility lines are prevalent along Dillingham Boulevard and the project elements would not be out of character. The overall visual effects for this view would be moderate. The primary viewer groups that would be affected are residents, commuters, business owners, and visitors.

Figure 5-9: Viewpoint 4a Existing and Simulated Views—Dillingham Boulevard at Kalihi, Looking ‘Ewa

Viewpoint 4b shows the existing condition and the simulated view near Honolulu Community College (Figure 5-10). The bulk and scale of the guideway and columns would dominate the view and create shade and shadows. They would also limit views of the open sky. The primary viewer groups that would be affected are residents, business owners, and visitors. Overall visual effects would be moderate.

Figure 5-10: Viewpoint 4b Existing and Simulated Views—Dillingham Boulevard near Honolulu Community College and Kapālama Station Area, Looking Mauka

Viewpoint 4c shows the existing condition and the simulated view of the guideway and Chinatown Station over Nu‘uanu Stream and Nimitz Highway (Figure 5-11). The station and guideway would be dominant features and create a vivid image while partially blocking makai views of Honolulu Harbor. The existing view would substantially contrast with Chinatown’s historic character. The primary viewer groups that would be affected are residents, business owners, recreationists, and visitors. Overall visual effects would be high.

Figure 5-11: Viewpoint 4c Existing and Simulated Views—King Street Bridge and Chinatown Station Area, Looking Makai

Viewpoint 4d shows the existing condition and the simulated view looking makai on Maunakea Street toward Nimitz Highway (Figure 5-12). The simulated future condition shows that the guideway would cross over Maunakea Street as it runs approximately 30 feet above Nimitz Highway/Halekauwila through Downtown along the Honolulu waterfront. It would be a prominent feature in makai views of Honolulu Harbor, partially blocking makai views of the sky. The guideway would also affect the light environment from this vantage point. The primary viewer groups would be residents, business owners, and visitors. Visual effects would be moderate.

Figure 5-12: Viewpoint 4d Existing and Simulated Views—Maunakea Street, Looking Makai

Viewpoint 4e shows the existing condition and the simulated view looking makai through the O‘ahu Market (Figure 5-13). The simulated future condition shows that the guideway would cross the makai view down Kekaulike Street in Chinatown’s O‘ahu Market. The structure would introduce a mass that reduces the openness of the view. The guideway’s scale and character would be out of character with the pedestrian-oriented environment created by the O‘ahu Market’s architecture and streetscape. However, the guideway would not impose on views within the market. Some of the taller buildings and palm trees would help the guideway fit into the overall context. The primary viewer groups that would be affected are residents, business owners, and visitors. Because residents and visitors would be more sensitive to change in this view, the overall visual effects are expected to be moderate.

Figure 5-13: Viewpoint 4e Existing and Simulated Views—O'ahu Market at King Street, Looking Makai

Viewpoint 4f shows the existing condition and the simulated view looking makai through the Fort Street Mall (Figure 5-14). The simulated future condition shows that the guideway would cross over Fort Street Mall as it follows Nimitz Highway/Halekauwila Street through the Downtown Honolulu area. Just visible through the trees, the guideway structure would partially block a view of the Aloha Tower. The primary viewer groups would be residents, business owners, and visitors. Because residents and visitors are more sensitive to change in this view, the overall visual effects along the Fort Street Mall are expected to be low. Visual effects would be more noticeable for viewers closer to the Nimitz Highway.

Figure 5-14: Viewpoint 4f Existing and Simulated Views—Fort Street Mall at Merchant Street, Looking Makai

Viewpoint 4g shows the existing condition and the simulated view looking Koko Head on Nimitz Highway (Figure 5-15). The Downtown Station and guideway would be dominant features in views along Nimitz Highway. These project elements would contrast substantially with Irwin Park, street trees along the highway, and nearby smaller-scale office buildings. However, Nimitz Highway is an existing transportation corridor and overall visual effects are expected to be moderate. The primary viewer groups that would be affected include residents, business owners, and visitors.

Figure 5-15: Viewpoint 4g Existing and Simulated Views—Nimitz Highway/Fort Street Intersection ‘Ewa of Irwin Park and Aloha Tower Marketplace, Looking Koko Head

Viewpoint 4h shows the existing condition and the simulated view looking mauka from Irwin Memorial Park near the Aloha Tower Marketplace (Figure 5-16). The guideway would only be slightly visible beyond the trees. However, the bulk and scale of the guideway would contrast with streetscape's more pedestrian-scale character. The primary viewer groups that would be affected include residents, business owners, and visitors. Because residents and visitors would be more sensitive to change in this view, the overall visual effects are expected to be moderate.

Figure 5-16: Viewpoint 4h Existing and Simulated Views—Nimitz Highway near Irwin Park and Aloha Tower Marketplace, Looking Mauka

Viewpoint 4i shows the existing condition and the simulated view from Mother Waldron Park (Figure 5-17). The bulk and scale of the straddle bent guideway and columns would contrast substantially with the scale and character of Mother Waldron Park and the adjacent five story residential building. These elements would also block views of the park from third and forth-story windows of adjacent residences and create additional shade and shadows. The primary viewer groups that would be affected are residents, business owners, recreationists, and visitors. Overall visual effects would be high.

Figure 5-17: Viewpoint 4i Existing and Simulated Views—Mother Waldron Park near Halekauwila/Cooke Street Intersection, Looking Mauka

Viewpoint 4j shows the existing condition and the simulated view Koko Head from the Halekauwila/Cooke Street intersection (Figure 5-18). The bulk and scale of the straddle bent guideway and columns would contrast substantially with the scale and character of Mother Waldron Park and the adjacent five-story residential building. The guideway would introduce encroaching structural elements that reduce the view's intactness. These elements would also block makai views upper-story residences and create additional shade and shadows. The primary viewer groups that would be affected are residents, business owners, recreationists, and visitors. Overall visual effects would be high.

Figure 5-18: Viewpoint 4j Existing and Simulated Views—Halekauwila/Cooke Street Intersection, Looking ‘Ewa past Mother Waldron Park

Viewpoint 4k shows the existing condition and the simulated view on Atkinson Drive in front of the Convention Center (Figure 5-19). The guideway and station would be dominant elements in views from this viewpoint. The Convention Center's visual setting would change with the mass and scale of these project elements and the removal of trees. However, views of expansive paved areas, traffic congestion, and overhead utility lines are already part of the visual environment surrounding the Convention Center. The primary viewer groups that would be affected include residents, commuters, business owners, and visitors. Visual effects are expected to be high.

Figure 5-19: Viewpoint 4k Existing and Simulated Views—Atkinson Drive at Convention Center and Station Area, Looking Mauka

Viewpoint 4I shows the existing condition and the simulated view from the Ala Wai Canal Promenade (Figure 5-20). This viewpoint represents one of the significant views and vistas identified in the PUC Development Plan. The simulated future condition shows that this viewpoint's composition or integrity would not change noticeably. Views of the trees, urban skyline, and mountains would not be affected. From this viewpoint, the guideway's scale and height would have no effect on this view's existing aesthetic character. Light, glare, and shadow associated with the guideway would not affect sensitive visual resources, and are not anticipated to affect evening light conditions due to the existing urban environment surrounding the guideway. The primary viewer groups that would be affected include residents, business owners, recreationists, and visitors. Changes to the existing view would be minor and visual effects would be low.

Figure 5-20: Viewpoint 4I Existing and Simulated Views—Ala Wai Boulevard at Niu Street, Looking Mauka

Viewpoint 4m shows the existing condition and the simulated view on University Avenue looking makai across South King Street (Figure 5-21). The bulk and scale of the guideway and columns would contrast with the streetscape 30 feet below. However, they would fit into the overall context of the view. Set against the high-rise profile of the Downtown Honolulu area, the guideway structure would appear more proportional to the multi-story buildings seen in the background. However, the guideway would partially block views of the urban skyline and produce new shade and shadow patterns that would affect the daytime light environment. Lighting associated with the nearby transit station would affect the nighttime light environment in the surrounding area. The primary viewer groups that would be affected are residents, business owners, and visitors. Visual effects would be moderate.

Figure 5-21: Viewpoint 4m Existing and Simulated Views—University Avenue near Varsity Place, Looking Makai

Viewpoint 4n shows the existing condition and the simulated view on South King Street at Kuʻilei Street looking Koko Head (Figure 5-22). The guideway would affect the mauka view corridor by partially blocking views of UH Mānoa and the mountains. The guideway structure's scale and character would be out of context with the low-profile, modest look of most of the surrounding uses and structures. The height of the structure and transit station would create new daytime shade and shadow patterns and may be a source of glare. The nighttime light environment would also be affected by sources of light from the transit station. The primary viewer groups that would be affected are residents, business owners, and visitors. Visual effects would be high.

Figure 5-22: Viewpoint 4n Existing and Simulated Views—University Avenue at Ku‘ilei Drive near Mō‘ili‘ili Station Area, Looking Koko Head

Viewpoint 4o shows the existing condition and the simulated view in the Waikīkī area at Kālaimoku and Kūhiō Avenue (Figure 5-23). The guideway would cross the mauka view corridor, but from this vantage point the view is already blocked by vegetation and high-rises. The guideway would be out of scale with the surrounding environment, but the lush and colorful character created by the surrounding mature trees would partially screen direct views of the guideway. Several of these trees would be truncated or removed to accommodate the guideway. The guideway would have little effect on the existing light environment because of the number of existing sources of glare, light, shade, and shadow within this area. The primary viewer groups that would be affected are residents, business owners, and visitors. Visual effects would be moderate.

Figure 5-23: Viewpoint 4o Existing and Simulated Views—Kūhiō Avenue/Kālaimoku Street Intersection, Looking Mauka

Viewpoint 4p shows the existing condition and the simulated view from Kūhiō Avenue looking mauka toward Lili‘uokalani Avenue (Figure 5-24). The guideway’s bulk and height would contrast with the streetscape’s scale and pedestrian-oriented context. The guideway’s height would also make the view seem less open. New light, shade, and shadow patterns created by the guideway and columns are not anticipated to have a substantial effect within this area due to the number of existing sources of light, shade, and shadow. The primary viewer groups that would be affected are residents, business owners, and visitors. Visual effects would be high.

Figure 5-24: Viewpoint 4p Existing and Simulated Views—Kūhiō Avenue toward Lili‘uokalani, Looking Mauka

Compatibility with Existing Visual Policies

Dillingham Boulevard—policy documents affecting the Dillingham Boulevard section within Landscape Unit 4 include the O‘ahu General Plan (DPP 1997a), Primary Urban Center Development Plan (DPP 2004), and Revised Ordinances of Honolulu (ROH 1978a; ROH 1990). The Build Alternatives have the potential to be incompatible with these policy documents as follows:

- Alter or change the integrity of setting of historic resources
  - Primary Urban Center Development Plan, Policy 3.1.2
- Remove, move, or alter large mature trees and vegetation
  - O‘ahu General Plan, Objective A, Policy 9
  - Revised Ordinances of Honolulu, Chapter 41, Article 13

Nimitz Highway/Halekauwila Street/Kapi‘olani Boulevard to UH Mānoa—policy documents affecting the Nimitz Highway/Halekauwila Street/Kapi‘olani Boulevard section within Landscape Unit 4 include the O‘ahu General Plan (DPP 1997a), Primary Urban Center Development Plan (DPP 2004), and Revised Ordinances of Honolulu (ROH 1978a; ROH 1990). The Build Alternatives have the potential to be incompatible with these policy documents as follows:

- Affect scenic resources and views (partially block makai views)
  - O‘ahu General Plan, Objective B, Policies 2 and 3
  - Primary Urban Center Development Plan, Objective 3.1.2
  - Revised Ordinances of Honolulu, Chapter 21, Article 9, Section 21-9.60
- Conflict with the existing aesthetic environment (elevated structure out of scale and character with the existing visual environment)
  - O‘ahu General Plan, Objective E, Policies 4, 5, and 9
  - Revised Ordinances of Honolulu, Chapter 21, Article 9, Section 21-9.60
- Alter or change the integrity of setting of historic resources
  - Primary Urban Center Development Plan, Policy 3.1.2
  - Revised Ordinances of Honolulu, Chapter 21, Article 9, Section 21-9.60
- Remove, move, or alter large mature trees and vegetation
  - O‘ahu General Plan, Objective A, Policy 9
  - Revised Ordinances of Honolulu, Chapter 41, Article 13

Waikīkī Alignment—policy documents affecting the Waikīkī alignment within Landscape Unit 4 include the O‘ahu General Plan (DPP 1997a), Primary Urban Center Development Plan (DPP 2004), and Revised Ordinances of Honolulu

(ROH 1978a; ROH 1990). The Build Alternatives have the potential to be incompatible with these policy documents as follows:

- Conflict with the existing aesthetic environment (elevated structure out of scale with the existing visual environment)
  - O‘ahu General Plan, Objective E, Policies 4, 5, and 9
  - Revised Ordinances of Honolulu, Chapter 21, Article 9, Section 21-9.80
- Alter or change the integrity of setting of historic resources
  - Primary Urban Center Development Plan, Policy 3.1.2
- Remove, move, or alter large mature trees and vegetation
  - O‘ahu General Plan, Objective A, Policy 9
  - Revised Ordinances of Honolulu, Chapter 41, Article 13

Construction Impacts

Construction-related visual effects would be common to all Build Alternatives. During construction, the project area’s visual quality may be altered for all viewer groups. Construction-related signage and heavy equipment would be visible at, and in the vicinity of, construction sites. Mature vegetation including trees may be removed from some areas to accommodate construction of the guideway, stations, and park-and-ride-lots, which would degrade or partially obstruct views or vistas. Short-term changes in the visual character of areas adjacent to the alignment could result from introducing the following construction elements:

- Construction vehicles and equipment
- Clearing and grading activities that result in exposed soils until replanting or repaving occurs
- Erosion-control devices such as silt fences, plastic ground covers, and straw bales
- Dust, exhaust, and airborne debris in areas of active construction
- Stockpiling of excavated material
- Staging areas used for equipment storage and construction materials

These effects would be greatest at station locations, park-and-ride lots, flyovers, and the maintenance and storage facility site.

Temporary lighting may be necessary for nighttime construction of certain project elements or in existing highway rights-of-way to minimize disruption to daytime traffic. This temporary lighting could affect residential areas, by exposing residents to glare from unshielded light sources or increasing ambient nighttime light levels.

Construction staging areas would be needed throughout the project area to provide adequate space for construction equipment, construction materials, materials

stockpiling and transfer, parking, and other construction-related activities. Due to the Project's size and complexity and the lack of available land along the alignment, potential staging areas have only tentatively been identified.

5.2.2 Salt Lake Alternative

For the Salt Lake Alternative, the environmental consequences for Landscape Units 1, 2, and 4 would be the same as those discussed previously for all Build Alternatives.

Long-Term Impacts

Landscape Unit 3—Aloha Stadium to Kalihi

The Salt Lake Alternative's alignment would leave Kamehameha Highway just 'Ewa of Aloha Stadium, cross the Aloha Stadium parking lot, and continue Koko Head along Salt Lake Boulevard. Aloha Stadium is at a major freeway interchange and surrounded by parking lots where transportation elements are already part of the view. The contrast between the scale and character of the guideway and columns and the existing environment would be low. As the guideway continues Koko Head to the Aloha Stadium Station, the contrast with the makai residential neighborhood at Kalaloa Street would be more noticeable, and some mauka views would be obstructed by the station, guideway, and columns. The proposed park-and ride lots nearby are not expected to result in a substantial change because large parking lots are already prevalent. Visual effects in this area are expected to be moderate.

As the guideway crosses over the H-1 Freeway and continues beyond through Maluna Street, it would continue 30 to 40 feet above Salt Lake Boulevard. This area is a mix of one and two-story residences mauka and taller buildings that comprise industrial parks and schools makai. The bulk and scale of the guideway, columns, and station would contrast with this character. The guideway, at a height of about 40 feet above the roadway, would also be a noticeable element that obstructs some views across Salt Lake Boulevard. Residents whose homes are adjacent to Salt Lake Boulevard would be the most sensitive to this visual change. However, many residences on the hillside above the boulevard have panoramic views, where the project elements would serve as smaller components of the larger landscape in a wider vista. Visual effects in this area are expected to be moderate.

The guideway would shift to the makai side of Salt Lake Boulevard as it continues to the Ala Liliko'i Station. This area is primarily comprised of one and two-story residences mauka and more open space, larger multi-story apartments, condominiums, and military housing makai. Mature trees would be removed at several locations to accommodate the guideway, which would vary from about 20 to 40 feet above the roadway. The guideway and columns would be a distinct contrast with single-story homes. View obstructions would be greatest from the residential neighborhood mauka of the boulevard, where the guideway would block some views makai across the boulevard. However, as with other residential neighborhoods in this area, many residences on the hillside above the boulevard have panoramic

views where the project elements would serve as smaller components of the larger landscape in a wider vista.

The Ala Liliko‘i Station, at about 60 feet above the Salt Lake Boulevard/Ala Liliko‘i intersection, would be a substantial change and a dominant element. It would also contrast with the two-story and taller residential character established by the surrounding apartments, military housing, and neighborhood shopping center. Views from upper-story windows of some multi-story residences would be obstructed by the station. These upper-story residences would also be affected by light and glare from trains traveling on the guideway and from station lighting. Visual effects in this area are expected to range from moderate along the alignment, to high in the station area Koko Head from the Ala Liliko‘i Station to Pu‘uloa Road where the guideway would generally be above the median of Salt Lake Boulevard. Businesses and multi-story apartments and condominiums are mauka of the boulevard, with military family housing makai. Views from some fourth and fifth-floor windows would be obstructed by the guideway and columns. View obstructions would be greatest mauka of Peltier Avenue. However, the guideway would be similar in scale to the surrounding multi-story buildings. Visual effects in this area are expected to range from moderate to high.

The guideway would continue Koko Head through the Servco Māpunapuna Plaza and industrial park. Visual effects from the guideway and columns would be low in this area, because it contains primarily automobile-oriented businesses and high volumes of traffic. However, the guideway and columns would be adjacent to Moanalua Stream where they would be dominant elements in views along the stream and from the park Koko Head. Mature trees along the stream would be trimmed or removed. The open, natural character of the stream bank and park would change substantially with the contrasting bulk and scale of the guideway, which would be on both sides of the stream. The most substantial changes would be along Moanalua Stream. Visual effects in this area are expected to range from moderate to high.

From Moanalua Stream, the guideway would cross over the H-1 Freeway interchange to the Middle Street Transit Center. The guideway over the H-1 Freeway and the Middle Street Transit Center would be dominant elements, visible at a great distance. However, they would fit with the interchange’s large scale and the surrounding developed urban character of the mostly industrial and commercial uses. Views of Honolulu Harbor from the park are already obstructed by the interchange and would not be substantially affected by the Project. Visual effects in this area are expected to be moderate.

Significant Protected Views and Vistas

The potential for the guideway and stations to block protected mauka-makai views and vistas of the following features and landmarks would vary throughout Landscape Unit 3. Viewpoints that are not close to the alignment would generally be less sensitive to changes in the visual environment because they take in a longer, more expansive landscape. The project elements would be noticeable but not dominant

features in these views, and visual effects on significant protected views and vistas would be low to moderate. Passengers on trains would have enhanced views of these areas compared to passengers in vehicles whose views are often obstructed by buildings, vehicles, and signage.

- Views of Pearl Harbor and Lochs framed by the Waiʻanae Mountain Range
- Views of Diamond Head and Honolulu valleys
- Views of Punchbowl Crater
- Views of Āliamanu Crater and Central Oʻahu valleys

Changes in Visual Quality

Viewpoints 3a through 3d are representative viewpoints for the Salt Lake Alternative alignment in Landscape Unit 3, and were used to evaluate changes in visual quality. Significant protected views and vistas were also considered. The visual simulations generally depict the guideway (technology) that would have a comparatively greater visual effect. Where stations would be visible, a typical prototype is shown. The viewpoint locations and view directions are shown on Figure 4-3.

Viewpoint 3a shows the existing condition and the simulated view, where the guideway would be above the Aloha Stadium parking lot (Figure 5-25). The guideway and columns would change the composition of panoramic views with the high visibility of the guideway. However, these more distant views, which include the mountains and urban skyline, take in a wider view and would not be substantially affected. Viewed from this distance and with the surrounding vegetation, the effects of light, glare, and shade or shadows associated with the guideway are not anticipated to be noticeable. The primary viewer groups that would be affected include recreationists, commuters, business owners, and visitors. The overall visual effects would be moderate.

Figure 5-25: Viewpoint 3a Existing and Simulated Views—Aloha Stadium, Looking Mauka

Viewpoint 3b shows the existing condition and the simulated view from a residential neighborhood above Salt Lake Boulevard (Figure 5-26). Similar to Viewpoint 3b, the guideway and columns would serve as noticeable components of the larger landscape in a wider vista and the visual effects would not be substantial. Views of the mountains and urban skyline would not be affected. However, distant makai views from residences along Salt Lake Boulevard would be obstructed by the project elements and would also be affected by light, glare, shade, and shadows. The overall visual effects would be moderate.

Figure 5-26: Viewpoint 3b Existing and Simulated Views—Salt Lake Neighborhood at Wanaka Street, Looking Makai

Viewpoint 3c shows the existing condition and the simulated view for the Ala Liliko‘i Station and the Salt Lake Boulevard/Ala Liliko‘i Street intersection (Figure 5-27). The Ala Liliko‘i Station and guideway, at about 60 feet above Salt Lake Boulevard, would be dominant elements that would substantially change views and visual character. They would also be a distinct contrast with surrounding one and two story buildings. The overall visual effects would be high.

Figure 5-27: Viewpoint 3c Existing and Simulated Views—Ala Liliko‘i Street/Salt Lake Boulevard Intersection near Ala Liliko‘i Station, Looking Makai

Viewpoint 3d shows the existing condition and the simulated view for the Salt Lake Boulevard area makai of the Ala Liliko‘i Station (Figure 5-28). Although multi-story buildings are located within this view, the area immediately adjacent to the alignment mostly consists of single-story low-profile buildings. The bulk and scale of the station and guideway would contrast substantially with primarily these buildings and the tree-lined streetscape. The project elements would also be out of character with the surrounding area. The primary viewer groups that would be affected are residents, business owners, and visitors. Because residents are most sensitive to visual changes, visual effects are expected to be high.

Figure 5-28: Viewpoint 3d Existing and Simulated Views—Salt Lake Boulevard Makai of Ala Liliko'i Station Area, Looking Mauka

Compatibility with Existing Visual Policies

Policy documents affecting the Salt Lake Alternative's alignment within Landscape Unit 3 include the O'ahu General Plan (DPP 1997a), the Primary Urban Center Development Plan (DPP 2004), and the Revised Ordinances of Honolulu (ROH 1978a; ROH 1990). The alignment has the potential to be incompatible with these policy documents as follows:

- Conflict with the existing aesthetic environment (elevated structure out of scale with the existing visual environment)
  - O'ahu General Plan, Objective E, Policies 4, 5, and 9
- Alter or change the integrity of setting of historic resources
  - Central O'ahu Sustainable Communities Plan, Policy 3.4
  - Primary Urban Center Development Plan, Policy 3.1.2
- Remove, move, or alter large mature trees and vegetation
  - O'ahu General Plan, Objective A, Policy 9
  - Revised Ordinances of Honolulu, Chapter 41, Article 13

Construction Impacts

Construction impacts would be the same as those discussed previously in the Consequences Common to All Build Alternatives section.

5.2.3 Airport Alternative

With the Airport Alternative, the environmental consequences for Landscape Units 1, 2, and 4 would be the same as those discussed previously for all Build Alternatives.

Long-Term Impacts

Landscape Unit 3—Aloha Stadium to Kalihi

The Airport Alternative's alignment would continue Koko Head of Kamehameha Highway makai past Aloha Stadium and over Hālawa Stream. Aloha Stadium is at a major freeway interchange and surrounded by parking lots. Views of East Loch and the Pearl Harbor historic sites from residences near Kohomua Street would be obstructed by the guideway and columns. Hālawa Bridge is a historic site, and its appearance would be substantially changed to accommodate the guideway and support columns. The contrast in the scale and character of the guideway, columns, station, and park-and-ride lot with the existing environment would be a noticeable change. Visual effects in this area are expected to range from moderate to high.

Between Hālawa Stream and the H-1 Freeway intersection, the guideway would be above Kamehameha Highway's median. Six historic sites, including the Makalapa U.S. Navy housing and other U.S. Navy facilities, lie along this section of the alignment. Visual effects on these resources are expected to be moderate. Although

‘Ewa views of Pearl Harbor from the U.S. Navy housing would change, the project elements would fit within the context of the highway as a transportation corridor, so overall visual effects would be moderate.

The Pearl Harbor Naval Base Station would fit with the scale and character of commercial development at the Kamehameha Highway/Radford Drive intersection. However, the guideway and columns would be noticeable changes in the visual environment makai of the H-1 Freeway as it intersects with Nimitz Highway. This area is a major interchange that includes wide paved areas and several elevated ramps. Visual effects would vary from low to moderate.

Project elements, including the Honolulu International Airport Station and Lagoon Drive Station, would fit with the bulk and scale of other structures in the vicinity of the airport, which is surrounded by other transportation elements and industrial buildings. Although the guideway and columns would reduce the open character of parking lots and the streetscape and mature trees would be removed makai of the H-1 Freeway and ‘Ewa of the Honolulu International Airport Station, the overall visual effect would be low.

The guideway would connect with Kamehameha Highway and the Middle Street Transit Center after passing over a portion of Ke‘ehi Lagoon Beach Park and Nimitz Highway. The park’s open spatial quality would be altered by the guideway and columns. This change would be noticeable but not substantial to park users, because the alignment would be along the periphery of the park and would closely follow Nimitz Highway and the H-1 Freeway. Views of Honolulu Harbor and the park are already obstructed by the interchange and would not be substantially affected by the Project. Although the Middle Street Transit Center would be a dominant element, it would fit with the interchange’s large scale and with the surrounding developed urban character of the mostly industrial and commercial uses. Overall visual effects would be moderate.

Significant Protected Views and Vistas

The potential for the guideway and stations to block protected mauka-makai views and vistas of the features and landmarks listed below would vary throughout Landscape Unit 3. Viewpoints that are not close to the alignment would generally be less sensitive to changes in the visual environment because they take in a longer, more expansive landscape. The project elements would be noticeable but not dominant features in these views, and visual effects on significant protected views and vistas would be low. Passengers on trains would have enhanced views of these areas compared to passengers in vehicles whose views are often obstructed by buildings, vehicles, and signage.

- Views of Pearl Harbor and Lochs framed by the Wai‘anae Mountain Range
- Views of Diamond Head and Honolulu valleys
- Views of Punchbowl Crater
- Views of Āliamanu Crater and Central O‘ahu valleys

Changes in Visual Quality

Viewpoints 3e and 3f are the representative viewpoints for the Airport Alternative's alignment in Landscape Unit 3 and were used to evaluate changes in visual quality. Significant views and vistas were also considered. The visual simulations generally depict the guideway (technology) that would have a comparatively greater visual effect. Where stations would be visible, a typical prototype is shown. The viewpoint locations and view directions are shown on Figure 4-3.

Viewpoint 3e shows the existing condition and the simulated view with the guideway above Kamehameha Highway (Figure 5-29). The Pearl Harbor Navel Base Station and guideway would dominate the linear view corridor above the highway. However, the Kamehameha Highway is a major transportation. The primary viewer groups that would be affected include commuters and visitors. Overall visual effects would be moderate.

Figure 5-29: Viewpoint 3e Existing and Simulated Views—Kamehameha Highway near Radford Road and Pearl Harbor Navy Base Station Area, Looking Mauka

Viewpoint 3f (View 1) shows the existing condition and the simulated view with the guideway adjacent to Nimitz Highway and the H-1 Freeway (Figure 5-30). The guideway structure would be slightly more visible than the highway in the background. However it would not noticeably conflict with the view's character. Changes associated with shade, shadow, light, and glare are not anticipated to be noticeable. The primary viewer groups that would be affected include recreationists and visitors. Visual effects would be low.

Figure 5-31 (View 2) shows how the guideway and columns would appear looking mauka from the Waiwai Loop Road entrance to Ke'ehi Lagoon Beach Park. These project features would be prominent features in the background of mauka views from the park. In addition, their bulk and scale would contrast with the open character of park facilities where the guideway would extend above Waiwai Loop Road and traverse the perimeter of tennis courts and a ball field. Further Koko Head, it would run parallel with the H-1 Freeway where it would be less noticeable from the park. The primary viewer groups that would be affected include recreationalists and visitors. Visual effects would be moderate.

Figure 5-30: Viewpoint 3f Existing and Simulated Views—Ke‘ehi Lagoon Beach Park, Looking Mauka (View 1)

Figure 5-31: Simulated View—Ke‘ehi Lagoon Beach Park, Looking Mauka (View 2)

Compatibility with Existing Visual Policies

Policy documents affecting the Airport Alternative’s alignment within Landscape Unit 3 include the O‘ahu General Plan, the Primary Urban Center Development Plan, and the Revised Ordinances of Honolulu. The alignment has the potential to be incompatible with these policy documents as follows:

- Conflict with the existing aesthetic environment (elevated structure out of scale with the existing visual environment)
  - O‘ahu General Plan, Objective E, Policies 4, 5, and 9
- Alter or change the integrity of setting of historic resources
  - Central O‘ahu Sustainable Communities Plan, Policy 3.4
  - Primary Urban Center Development Plan, Policy 3.1.2
- Remove, move, or alter large mature trees and vegetation
  - O‘ahu General Plan, Objective A, Policy 9
  - Revised Ordinances of Honolulu, Chapter 41, Article 13

Construction Impacts

Construction impacts would be the same as those discussed previously in the Consequences Common to All Build Alternatives section.

5.2.4 Airport & Salt Lake Alternative

Long-Term Impacts

With the Airport & Salt Lake Alternative, the environmental consequences for Landscape Units 1, 2, and 4 would be the same as those discussed previously for all Build Alternatives.

Landscape Unit 3—Aloha Stadium to Kalihi

The alignments that would serve the Airport & Salt Lake Alternative are the same as those discussed previously for the Salt Lake and Airport Alternatives, with the exception of also including a future fork in the alignment following Kamehameha Highway and Aolele Street at Aloha Stadium that would rejoin at Middle Street. All of the stations discussed for the Salt Lake and Airport Alternatives would also be provided. However, the Aloha Stadium Station would be relocated makai to provide a Pearl Harbor Memorial Station instead of a second Aloha Stadium Station on Salt Lake Boulevard.

The environmental consequence of the Airport & Salt Lake Alternative would be very similar to the combined effects of the Salt Lake and Airport Alternatives, with the exceptions discussed below. The future fork in the alignment following Kamehameha Highway and Aolele Street at Aloha Stadium that would rejoin at Middle Street would not result in notable changes in the visual environment.

Relocation of the Aloha Stadium Station makai to provide a Pearl Harbor Memorial Station

Because the Aloha Stadium Station would be relocated makai, this alternative would have slightly greater visual effects on views of East Loch and the Pearl Harbor historic sites than the Airport Alternative because it would be closer to these resources. The station's bulk and scale would also be a more noticeable contrast with the surrounding environment's scale and character. Overall visual effects for this station area with the Airport Alternative would be moderate, which would likely increase to high with the Airport & Salt Lake Alternative.

Construction Impacts

Construction impacts would be the same as those discussed previously in the Consequences Common to All Build Alternatives section.

5.3 Indirect and Cumulative

The President's Council on Environmental Quality (CEQ) regulations implementing NEPA define indirect impacts as those:

> "which are caused by the proposed action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to the induced changes in the pattern of land use, population density or growth rate, and

related effects on air and water and other natural systems, including ecosystems."

Cumulative impacts are those impacts:

"which result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions" (40 CFR 1508.7)

The indirect and cumulative effects analysis considers the full range of consequences of actions related to project activities. NEPA, the CEQ regulations, and Hawai'i's EIS law (Hawai'i Revised Statutes Chapter 343) require analysis of cumulative issues within the context of the action, alternatives, and effects.

Actions that were considered part of cumulative impacts for the Project include mid-range and long-range projects listed in the Draft O'ahu Regional Transportation Plan, which include islandwide congestion relief and transit projects. Other actions considered were projects listed in the *Transportation for O'ahu 2025 Final Report* (O'ahuMPO 2001), including the Kunia Road/Fort Weaver Road Corridor, Fort Barrette Road/Makakilo Drive Corridor, H-1 Freeway Interchange Improvements, Farrington Highway Corridor, and Kapolei Parkway Corridor. The development projects considered included the Ala Moana-Sheridan Community Plan, the 'Ewa Development Plan (DPP 1997b), and projects programmed for the 'Ewa Plain area (e.g., State Department of Hawaiian Homelands, UH West O'ahu campus, East Kapolei area developments, and the Mehana residential project).

5.3.1 No Build Alternative

No construction would occur under the No Build Alternative, so no indirect or cumulative effects on visual resources or the existing visual environment would occur. Substantial visual changes would occur in the corridor including urbanization and development of the 'Ewa Development Plan Area, but would not be affected by construction of this transit project.

5.3.2 Build Alternatives

Consequences Common to All Build Alternatives

Cumulative Impacts

The Build Alternatives, in conjunction with other large transportation and urban development projects, could potentially change the existing visual environment as a result of developing open spaces and constructing multi-story structures. Urbanization and development of the 'Ewa Development Plan Area is the planned goal for this area. Additional development and expansion of transportation systems and housing throughout Central O'ahu and the PUC are also a City goal. Construction of these large transportation and urban development projects would alter visual resources by replacing open, undeveloped areas with housing, commercial, and public facility developments and increasing density in urbanized areas with construction of multi-story structures. The Build Alternatives would

contribute to changes in the visual landscape caused by the overall urbanization anticipated in the ‘Ewa Plain and throughout Central O‘ahu and the PUC. Cumulatively, these development projects would result in a denser, more urbanized setting.

Indirect Impacts

The Build Alternatives would introduce a new, elevated transportation corridor in areas that are currently both rural and densely urbanized. The Build Alternatives are not expected to result in additional growth, because the transportation and development projects considered in conjunction with the Project are not dependent on completion of the Project. However, specific land uses and development patterns would be influenced by the location of transit stations and the transit alignment. The secondary effect of the alternatives would be redevelopment and changes in land use patterns along the study corridor and at transit station locations, resulting in a change in the aesthetic character and design of these areas. If future development shifts from more rural portions of O‘ahu to the transit corridor, more open areas and views would be preserved. In consultation with developers and City, County, and State agencies, transit-oriented development policies and principals could influence station designs and shape the growth in areas surrounding the stations.

6 Mitigation

The mitigation measures discussed in this section focus on preserving visual resources and enhancing the project design to comply with applicable policies. These proposed measures identify techniques or design considerations that could help achieve an attractive project from a viewer's perspective and design components that are appropriate to the visual setting.

6.1 No Build Alternative

No construction would occur under the No Build Alternative. No effects on the visual environment would occur, so no mitigation would be required.

6.2 Build Alternatives

Impacts associated with the Build Alternatives could include:

- Removal or relocation of Exceptional Trees;
- Changes in the settings of historic or cultural sites or Section 4(f) resources;
- Alteration of mauka-makai views;
- Introduction of project components that are out of scale or character with their setting;
- Moderate to high viewer response to project changes;
- Introduction of new light sources in sensitive areas; and
- Inconsistency with policy documents.

The following design principles are based on common-theme comments received on the Project regarding aesthetic considerations. They are also based on previous studies, the reference guide for context-sensitive design, and aesthetic policies in governing policy documents. These principles should be considered to help minimize, reduce, or mitigate impacts.

- Integrate transit-oriented development policies and principals with station designs, in consultation with developers and City, County, and State agencies;
- Incorporate elements of the Design Language Pattern Book being developed by the Project Team;
- Consider a contextual approach as part of final project design, so project elements are functional as well as aesthetically appropriate to their setting;
- Consult with the communities surrounding each station for input on station design elements;
- Use project components to define spaces and create a "sense of place" that is appropriate in scale and character to its setting;

- Consider design components that help create a human-scale and pedestrian-friendly environment;
- Create opportunities for appropriate and sensitive “showcasing” of project components that are too large scale to apply minimizing techniques;
- In highly sensitive settings, use design features with materials and shapes that fit the topography and visual setting;
- Look for opportunities to use materials that reflect the Hawaiian culture and minimize the potential for vandalism;
- Incorporate appropriate consultation, monitoring, preservation, and documentation measures to minimize impacts to Section 4(f), historic, cultural, and vegetative resources;
- Pursue cooperative agreements with adjacent property owners to finance and maintain landscaping, artwork, or other design features that would improve the Project’s visual quality;
- Where practicable, retain existing street trees along sidewalks and in medians, or plant new vegetation to help soften the visual appearance of project elements (e.g., stations, guideway columns, and TPSSs);
- Use source shielding in exterior lighting at stations and ancillary facilities such as the maintenance and storage facility and park-and-ride lots, to ensure that light sources (such as bulbs) would not be directly visible from residences, streets, and highways and to limit spillover light and glare in residential areas; and
- Integrate project elements with area redevelopment plans as appropriate, particularly at stations.

Construction-related mitigation measures should include the following:

- Removing visibly obtrusive erosion-control devices (e.g., silt fences, plastic ground cover, and straw bales) as soon as an area is stabilized;
- Replacing street trees and other vegetation that must be removed with appropriately sized vegetation;
- Keeping roadways as clean as possible by using street sweepers and wheel washers to minimize off-site tracking;
- During dry periods, applying water to exposed soils to minimize airborne sediment;
- Properly maintaining construction equipment to minimize unnecessary exhaust; and
- Locating stockpile areas in less visibly sensitive areas and, whenever possible, placing them in areas that are not visible from the road or to residents and businesses.

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