PLANNING COMMISSION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8007 • FAX: (808) 768-6743
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

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2014 APR -7 PM 3:3

April 7, 2014

The Honorable Ernest Y. Martin
Chair and Presiding Officer
and Members
Honolulu City Council
530 South King Street, Room 202
Honolulu, Hawaii 96813

Dear Chair Martin and Councilmembers:

SUBJECT: Aiea-Pearl City Neighborhood Transit-Oriented Development Plan

The Planning Commission held a public hearing on April 2, 2014 on the above subject matter. Two people testified and two written testimonies were received. The public hearing was closed on April 2, 2014.

The Planning Commission voted on April 2, 2014 to recommend approval.

Attached is the draft final plan, draft resolution, and transmittal package from the Director of the Department of Planning and Permitting.

Sincerely,

for Ka'iulani K. Sodaro, Chair
Planning Commission

Attachments

APPROVED:

for Kirk Caldwell
Mayor

Ember Lee Shinn
Managing Director

APPROVED:

George I. Atta, FAICP, Director
Department of Planning and Permitting

DEPT. COM. 271

Written Testimonies

UNIVERSITY of HAWAI'I®
LEEWARD
COMMUNITY COLLEGE

2014 APR 1 AM 11 39

March 31, 2014

DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

To: City and County of Honolulu Planning Commission

From: Mark Lane
Vice Chancellor of Administrative Services

Subject: Transit-Oriented Development (TOD) – Leeward Community College Station

Aloha Planning Commission Members,

On behalf of the Leeward Community College campus community, we support the overall planning and design concepts and principals as presented in the Aiea-Pearl City Neighborhood Transient-Oriented Development (TOD) Draft Final Plan, dated March 2014, insomuch as it relates to the Leeward Community College Station plan.

Chancellor Cabral and myself were members of the Aiea-Pearl City TOD Advisory Committee and the Draft Final Plan is consistent with previous versions of the preliminary TOD plans. The Draft Final Plan is also consistent with the anticipated updates to the campus' Long Range Development Plan (LRDP) that is currently in progress and will be vetted later this year with City and County planning officials.

Leeward Community College is an ardent supporter of the Honolulu rail transit system and we view the TOD plan, in conjunction with our updated LRDP, as the framework that will govern future campus growth for the foreseeable future.

Mahalo.

96-045 Ala 'Ike
Pearl City, Hawai'i 96782
Phone: (808) 455-0213
Fax: (808) 455-0471
An Equal Opportunity/Affirmative Action Institution

Takara, Gloria C

From: Mark Lane [marklane@hawaii.edu]
Sent: Monday, March 31, 2014 5:14 PM
To: Takara, Gloria C
Cc: Manuel Cabral
Subject: Public Hearing Testimony - Aiea-Pearl City TOD Plan
Attachments: C&C Planning Commission - TOD - LeeCC Station.pdf

Aloha Gloria,

Please see attached testimony from Leeward Community College regarding the Planning Commission's public hearing on the Aiea-Pearl City Neighborhood TOD Plan. Unfortunately, Chancellor Cabral and I have other meeting commitments and will not be able to attend the public hearing. Thank you for your assistance in ensuring our testimony is part of the official public hearing record.

Mahalo,

Mark

Mark Lane
Vice Chancellor of Administrative Services
Leeward Community College
96-045 Ala Ike
Pearl City, HI 96782
Voice: 808-455-0213
Fax: 808-455-0471

The Pacific Resource
PARTNERSHIP

2014 APR 1 PM 2 36

DEPT OF PLANNING
and PERMITTING
CITY & COUNTY OF HONOLULU

April 2, 2014

George Atta, FAICP, Director
City and County of Honolulu
Department of Planning & Permitting
650 South King Street, 7th Floor
Honolulu, HI 96813

Subject: AIEA-PEARL CITY NEIGHBORHOOD TRANSIT-ORIENTED DEVELOPMENT PLAN

Dear Director Atta:

The Pacific Resource Partnership (PRP) is a labor-management consortium representing over 240 signatory contractors and the Hawaii Regional Council of Carpenters.

PRP has always been a staunch supporter of Transit Oriented Development (TOD), the sustainable, smart growth, transit-ready, mixed-use community is the type of catalytic project that will help us maximize the public investment in the rail transit project. The pedestrian friendly, walkable, integrated community development will revitalize and enhance the existing neighborhood's character and sense of place, adding new amenities for the Aiea-Pearl City community.

The Aiea-Pearl City TOD Plan promotes the creation of new public spaces and revitalized neighborhoods along the waterfront as development occurs, enhancing view corridors from mauka areas, and improving the Pearl Harbor Historic Trail.

The TOD plan promotes a mixture of housing choices around the transit stations, including a variety of price options, housing types, and unit sizes to support a wide range of households. Much of the affordable housing currently located in Aiea and Pearl City were developed back in the 1960's and 70's and is obviously in need of repair, renovation, or redevelopment. The plan objective is to increase the quantity of workforce housing while also increasing the overall quality of the existing housing stock.

New sidewalks, street trees, street-level storefronts and activities, and streetscape amenities will make walking and biking more enjoyable. New neighborhoods can be created through redevelopment of existing parking lots such as those at Leeward Community College, Pearl Highlands Center and Pearlridge Center.

Each TOD area is definitely unique with its own set of recommendations, but each shares its goals of becoming livable, transit enhanced and connected neighborhoods.

Thank you for allowing us to share our opinion and we respectfully request your continued support in moving TOD forward.

Sincerely,

Cindy McMillan
Director, Advocacy and Communications

1100 Alakea Street • Alakea Corporate Tower, 4th Floor • Honolulu, HI 96813
Tel (808) 528-5557 • Fax (808) 528-0421 • www.prp-hawaii.com

The Pacific Resource
PARTNERSHIP

1100 Alakea Street, 4th Floor
Alakea Corporate Tower
Honolulu, Hawaii 96813
Ph. (808) 528-5557 • Fax (808) 528-0421 • www.prp-hawaii.com

Fax

To:	Planning Commission	From:	Stacy Ellamar
Fax:	768-6743	Pages:	3 including cover sheet
Phone:		Date:	04/02/14
Re:	Alea-Pearl City Neighborhood Transit-Oriented Development Plan	CC:	

☐ Urgent X For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Aloha,

PRP would like to submit the attached testimony in support of Aiea-Pearl City Neighborhood Transit-Oriented Development Plan.

Mahalo!

Stacy

Authorization George I. Atta
Advertisement March 21, 2014
Public Hearing April 2, 2014

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR

GEORGE I. ATTA, FAICP
DIRECTOR

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2014 MAR 25 PM 1 15
DEPT OF PLANNING and PERMITTING
CITY & COUNTY OF HONOLULU

March 21, 2014

MEMORANDUM

TO: Ka'iulani K. Sodaro, Chair
and Members of the Planning Commission

FROM: George I. Atta, FAICP, Director

SUBJECT: Aiea-Pearl City Neighborhood Transit-Oriented Development Plan

We are pleased to transmit for appropriate action the Aiea-Pearl City Neighborhood Transit-Oriented Development (TOD) Plan (the Plan). Also enclosed are a draft resolution approving the plan, a background report, and a booklet that summarizes the Plan.

This is the second neighborhood TOD Plan we are processing for formal City recognition and adoption. Your Commission recommended approval of the Waipahu Neighborhood TOD Plan on December 19, 2012. Although not required by law, we are submitting the plan to the Planning Commission (PC) in the spirit of maximizing community review. Also, given that the Plan directs changes to the zoning code, which will be coming before the PC in the form of Land Use Ordinance (LUO) amendments, it would be helpful for the Commission to review the basis of these amendments. Like zone changes and LUO amendments, once action is taken by the PC, the package is to be sent to the City Council for action. The PC may recommend approval of the resolution and Plan, or recommend rejection. It may also recommend approval with specified changes, or it may choose to take no action.

This Plan addresses the planning requirements of Ordinance 09-4, which outlines the City's TOD strategies. The Ordinance also sets forth the requirements for TOD zoning. A copy of this ordinance is attached.

We are in the midst of completing six additional TOD plans. Each plan covers one to three transit station areas. The subject Plan covers three stations. In the months to come, we will be submitting additional plans for your consideration.

While the Aiea-Pearl City Neighborhood TOD Plan was nearly complete in 2010, we delayed the formal recognition of the Plan until we had more experience planning for other transit neighborhoods. While each neighborhood area is unique, there are many commonalities. In the end, we want to develop sets of policies and regulations that make sense from a collective, regional standpoint, as well as from the individual neighborhood perspective.

We look forward to your consideration of this proposal. Please report and forward your findings and recommendation via the Mayor to the City Council.

GIA:kh

Enclosures:

1. Aiea-Pearl City Neighborhood TOD Plan
2. Draft Resolution
3. Background Report
4. Executive Summary Booklet
5. Ordinance 09-4

cc: Ember Lee Shinn, Managing Director

AIEA – PEARL CITY NEIGHBORHOOD
TRANSIT-ORIENTED DEVELOPMENT (TOD) PLAN
BACKGROUND REPORT
March 20, 2014

A. Background

Planning for transit-oriented development (TOD) around the Honolulu Rail Transit stations began soon after planning for the rail system began. In March 2009, City Council adopted Ordinance 09-4, outlining an overall TOD planning strategy.

Highlights of Ordinance 09-4:

- Neighborhood TOD plans are to be the basis for TOD zoning.
- Neighborhood TOD plans are to address economic revitalization, neighborhood character, unique historic and other community resources, circulation, and affordable housing.
- The process of creating the TOD plans is to be inclusive, open to all stakeholders.
- TOD zoning will be added to the Land Use Ordinance (LUO) as special districts.

In the Summer of 2013, the Department of Planning and Permitting (DPP) refined its overall vision for TOD with a planning framework - "One Island, One Community" – that sets the character typologies for TOD neighborhoods. The Pearlridge and Pearl Highlands station areas are identified as Urban Neighborhoods, and the Leeward Community College station area is to be a Mixed-Use Village.

The Aiea-Pearl City Neighborhood TOD Plan is the second plan developed by the Department of Planning and Permitting (DPP) with the assistance of the San Francisco and Denver-based firm, Van Meter Williams and Pollack.

Other plans are at various stages of completion. By 2015, neighborhood planning for 19 of the 21 transit station areas will be completed. Two station areas are not under the planning and zoning jurisdiction of the City & County of Honolulu, but under the Hawaii Community Development Authority (HCDA).

Plan Area	No. of Stations	Plan Status
Waipahu	2	At Council
East Kapolei	3	Draft completed
Aloha Stadium	1	Pending
Airport	3	Ongoing
Kalihi	3	Draft completed
Downtown	3	Draft completed
Ala Moana	1	Ongoing
Kakaako	2	HCDA

Given that the transit system is not expected to be fully operational until 2019, it may seem premature to complete the TOD plans before then. However, many of the recommendations may take several years to address, especially upgrades to deficient infrastructure systems. Moreover, the experience of other cities is that once the rail is at, or near completion, the real estate market moves very quickly, and will not wait for neighborhood planning. Therefore, TOD planning is being conducted on a proactive basis.

B. Planning Process

Although the recommendations may differ, the process for developing each neighborhood plan is essentially the same. Commonalities are:

- Analyses of existing neighborhood conditions and opportunities.
- Stakeholder interviews.
- Representative mail-in surveys solicit information on residents' needs and perceptions about their neighborhoods.
- Use of an advisory committee with members representing a cross section of the community: residents, landowners, businesses, community organizations, government agencies, and elected officials.
- Maintenance of a mailing list of all interested individuals and organizations.
- Presentations at open community meetings to assess neighborhood opportunities and issues; comment on alternative development schemes and to comment on draft plans.
- All reports, presentations and meeting summaries are available on-line.

As the department completes the individual neighborhood plans, information is cumulatively assessed at the regional level -- for the transit corridor overall. For example, we know comparatively speaking, which neighborhoods are more primed for TOD than others based on infrastructure capacities. This understanding is used to build strategies for TOD in general, such as building a "tool box" of financing options, and creating priority options for capital improvement projects.

Other initiatives at the regional scale are also underway, including coordination with state agencies with facilities (existing and planned) near rail stations, and development of state laws that support TOD.

C. Community Concerns

The following are key comments that were raised during the planning process by the community and are addressed by the Plan:

Waterfront

- There are currently very few opportunities to access the Pearl Harbor waterfront, and TOD is a chance to improve access both physically and visually.
- The Pearl Harbor Historic Trail could be a more valuable community resource with increased maintenance, more active uses along its alignment, and improved lighting and amenities.
- New buildings should not negatively impact public views of Pearl Harbor. Limit building heights makai of Kamehameha Highway to protect these views.

Connectivity

- Pedestrian and bicycle infrastructure is lacking in all three station areas, particularly along Kamehameha Highway.
- There is a strong desire for efficient mauka-makai bus connections between upland residential areas and the Pearlridge station. The proposed bus transfer facility could provide seamless transfers between rail and bus.
- The Leeward Community College is in need of a second access road. This is critical for future growth, as well as emergency access for existing uses.
- Sumida Watercress Farm has ongoing issues with security, so the surrounding trails proposed by the Plan should be elevated or designed to prevent trespassing.

- The UH Urban Garden Center also has security concerns, so the proposed trails have been moved to the perimeter rather than through the middle of the site.

Housing

- The community wants new housing in the station areas, that is affordable to the middle class.

D. Major Plan Recommendations

The Aiea-Pearl City Neighborhood TOD Plan recommends two zoning precincts: Transit-Oriented and Transit-Influenced. The TOD Precinct is the area immediately around the stations, up to roughly ¼ mile away. This is gauged to be about a five-minute walk to/from the station. The boundaries are determined by this walking distance and geographic and man-made barriers.

The Transit-Influenced Zone Precinct is farther away from the stations, or about ¼ to ½ mile; again, the exact boundaries are based on physical walking conditions. It includes land less influenced by the transit station and forms a transition zone to lower-intensity outlying areas.

In both precincts, uses are largely similar to existing commercial mixed-use zoning; i.e., BMX-3 and BMX-4 districts. Auto-dependent and heavy industrial uses, such as publishing plants and heavy manufacturing, would be prohibited.

Parking standards would roughly follow current standards from the BMX-4 District. It is also recommended that maximum parking limits be considered, but perhaps not immediately.

The Plan also recommends retention of previous urban design plan policies and guidelines found in the Aiea-Pearl City Livable Communities Initiative (2004), with the exception of raising the allowable building heights makai of Kamehameha Highway near the Pearlridge station.

E. Compliance with General Plan and Development Plans

In addition to compliance with Ordinance 09-4, the Aiea-Pearl City Neighborhood TOD Plan is consistent with the Oahu General Plan. Specifically, it conforms to the following objectives and policies:

VII. Physical Development and Urban Design

Objective A. To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

Objective E. To create and maintain attractive, meaningful, and stimulating environments throughout Oahu.

The Leeward Community College station area is part of the Central Oahu Sustainable Communities Plan (SCP, as adopted under Section 24-5, ROH). The TOD Plan is consistent with the SCP vision elements (Chapter 2, SCP):

- It promotes the proximity of colleges and new development in urban areas near transit nodes, commercial centers, or high-density residential areas;

- It encourages opportunities for recreational and educational use and physical contact with Oahu's natural environment;
- It encourages alternatives to automobile travel; and
- It encourages designs of communities that support non-automotive travel.

The Pearl Highlands and Pearlridge station areas are part of the Primary Urban Center Development Plan (DP, as adopted under Section 24-5, ROH). The TOD Plan is consistent with the DP vision elements (Chapter 2, SCP):

- It encourages mixed use development with increased density within DP-identified town centers; and
- It promotes public open spaces along the waterfront and the strengthening of physical and visual connections to the water.

F. Next Steps

The TOD strategy acknowledges that the private sector, landowners and developers, determine whether TOD happens or not. The City has relatively little land to leverage into landmark TOD projects, nor does the City have the financial ability to acquire significant private lands for TOD. While the state may be a major landowner, much of its property is committed to uses that may not be conducive to multiple uses (e.g., wetlands and airport use).

Therefore, the TOD strategy is largely dependent upon private sector development. Private developers are expected to build new housing, offices, and commercial spaces, and also help provide community benefits that not only benefit their projects, but the larger community. These benefits include affordable housing (new construction and preservation of existing units), more park space and publicly accessible open space, new bike paths, and improved sidewalk areas.

There is a balance between what the private sector can afford to provide and what the community wants. Ideally, much of this balance will be defined in forthcoming amendments to the Land Use Ordinance. For example, for additional building height, how much open space should be required? What specific incentives can be offered in return for more affordable housing?

Thus the immediate step is to refine the recommendations contained in the Plan and offer specific regulatory and incentive-based proposals to encourage good TOD projects. Expanded financing incentives can also help accelerate TOD and community benefits. The fruition of good TOD projects depends on a reasonable balance between private sector profits and community benefits, but also on the condition of the overall real estate market. It is the market that will also dictate how long it will take to fully implement all of the Plan's recommendations.

Additionally, the acceleration of critical infrastructure improvements can help to accelerate TOD and community benefits. Therefore, close coordination of capital improvement projects within the transit corridor is needed. For example, the City is moving forward with a catalytic project at the Pearlridge station that would incorporate a new bus transfer facility, apartment units, and a public space that connects the station with the Pearl Harbor Historic Trail—with the intent of spurring other private sector imvestments in this area.

Exhibits:

1. Advisory Committee Members
2. Advisory Committee Meeting Minutes
3. Community Workshop Summaries, Sign-In Sheets, and PPT presentations
4. Overview Market Analysis and Economic Impacts
5. Transportation Assessment
6. Memorandum on Infrastructure Implications
7. Implementation Case Studies
8. DPP Response to Public Review Draft Comments

A-PC BkgdRpt

Exhibit 1

Aiea-Pearl City Neighborhood TOD Plan Advisory Committee Members

- David Z. Arakawa, Land Use Research Foundation
- David Bylund, Architects Hawaii
- Clive L. Cabral, Pearl Highlands Center
- Manny Cabral, Leeward Community College
- Maria Chan, A&B Properties, Inc.
- Jeoffrey Cudiamat, Resident
- Chris Deuchar, U.S. Pacific Development
- Ronald Fitch, Resident
- Denis Fukumoto, Resident
- Rodney Funakoshi, Resident
- Breene Harimoto, Pearl City Foundation
- Dinh Huynh, Robertson Properties Group
- David Y. Ige, State Senate
- Mark Lane, Leeward Community College
- John Manavian, Robertson Properties Group (Kam Super Swap Meet)
- Bob Oda, Kamehameha Schools
- Fred Paine, Pearlridge Center, Management Office
- Lacey Shimabukuro, Waimalu Shopping Center, Management Office
- Jane Sugimura, Aiea Neighborhood Board No. 20
- David and Barbara Sumida, Sumida Farm, Inc.
- Claire J. Tamamoto, Aiea Community Assn./Friends of PHHT
- Curtis Togami, Continental Investment
- Cruz J. Vina, Jr., Pearl City Neighborhood Board No. 21

Exhibit 2

ADVISORY COMMITTEE MEETING I
Meeting Notes

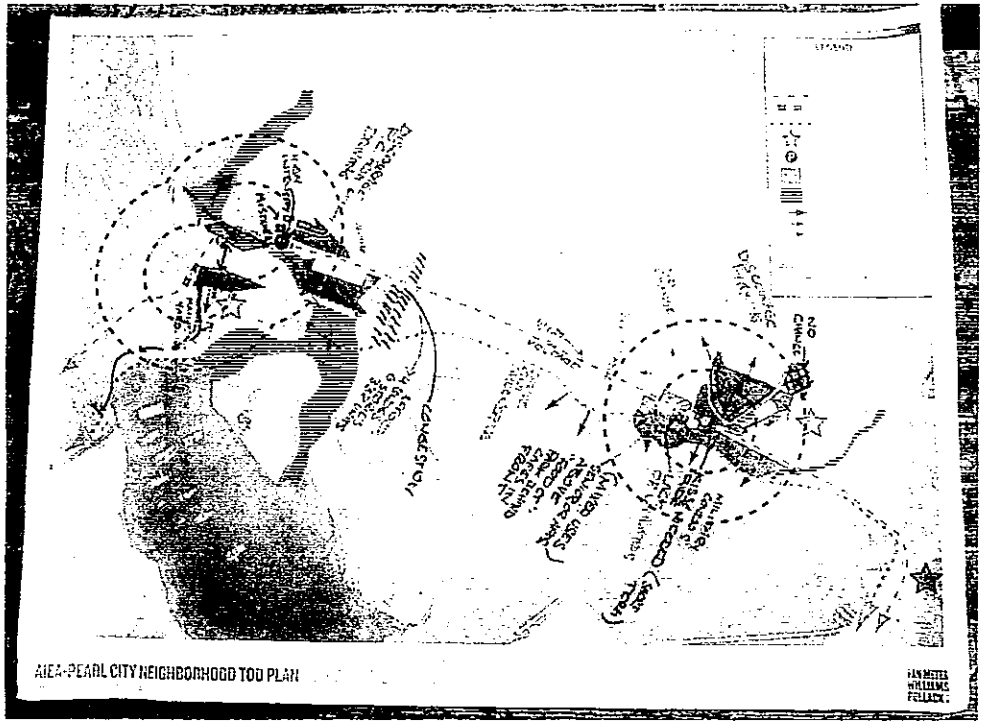
AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN

October 20, 2009

City and County of Honolulu

The following is a brief summary of the comments from the Advisory Committee Meeting I held on October 20, 2009. Advisory Committee Meeting I focused on the existing conditions for the Aiea / Pearl City Neighborhood TOD Plan.

- Better Ingress-Egress at LCC (Leeward Community College)
- Enhance Community: Urban Garden near PH (Pearl Harbor) Station
- Maintenance Yard adjacent to LCC
- Connect LCC to PHHT (Pearl Harbor Historic Trail)
  - Need increased and enhanced access
- Constraints to accessing Pearl Harbor at LCC and Pearl Highlands Stations
- University Town concept @ LLC
- PH station: Possible urban walk along floodway
- Town Center concept along Waimano Home Rd
- Small town Character as described in the APC L.C.P.
- Connect to Pearl Harbor amenity
- Higher Intensity uses close to stations
- Green Space along PHHT with more access
- Creating more affordable housing
- Senior housing should be provided within station areas
- There is currently a 7-Story 201 H affordable housing project proposed near Waimano Home Road and Kamehameha Highway called Hale Mohalu 2. It will contail 332 Units.
- Be transparent in higher density opportunities and impacts
- Realistic in timing of re-development
- Market-driven re-development
- Will Project impact my property?
  - Property taxes
  - Traffic impacts
- Incentives for areas of change?
  - What do you want to see (Community)?
- Park n Ride at Pearlridge station
  - Short-term Kiss n Ride
- Discourage Pearl City residents from driving to the stations.
- Discourage parking within re-development near Stations.
- Wi-Fi connections on rail.



The following is a brief summary of the comments from the Advisory Committee Meeting 2 held on November 30, 2009. Advisory Committee Meeting 2 focused on the Draft Alternatives for the Aiea / Pearl City Neighborhood TOD Plan.

- Too much information on PPT for the community to take in.
- People at the workshop will be familiar with the community, but not from a birds-eye-view.
  - Show existing photos.
- Point out landmarks, or buildings people will most likely know in the area as you are presenting.
- Get Google Earth street views to insert into Powerpoint.
- Define the concepts and then give examples of that concept.
- Identify what "high", "medium" and "low" intensities mean. Do this at the beginning of the powerpoint through pictures so that people will follow along comfortably.
- Show similar places so people will relate. The more pictures from Hawaii, the better.
- "Urbanism" is a tough concept for the community to understand. Use pictures to describe the concepts and ask "do you want this?" or "do you want this?"
- Lower density at LCC station makes sense.
- Higher density at Pearl Highlands and Pearlridge makes sense.
- Need to work with the City about lowering parking standards. Have to assume people will take transit!
- Show more incentives for a transit lifestyle.
  - Make people understand that this is a lifestyle "option". You don't have to change your current ways, but if you do, there will be positive benefits.
- Fundamental lifestyle changes
  - Car and bike sharing
  - Save money on mortgage (one less car)
  - New options for housing types and transportation types
- Show a successful example of TOD
  - Think about incorporating a video that people would grasp right away.
- Topography is an issue on many of these sites and you can't see that on the plan. Would help to make the landscape better understandable.
- Generate a reaction with the community.
  - Show taller buildings and see what kind of reaction you get.
  - Don't want to see Waikiki here. Maybe taller buildings at the stations, but keep the surroundings more low- and mid-rise.
  - Talk about the benefits of high-rise buildings and density (less land taken, more activity on the streets, more vibrant place).
  - People would react better to high-rises if they are more accessible on the ground floor, i.e. mixed use building with retail/commercial on ground floor. The high-rises that are only single use are the problem!

- Higher density can be low-rise as well. It doesn't have to be 20-30 story buildings.
- Kam. Swap Meet site could be a major catalyst site!
  - Good connections need to be made to transit.
  - Topography will be a challenge.
- In Livable Communities Plan, it says to keep buildings low-rise makai of Kamehameha Highway.
  - We should keep this concept in all of the Alternatives in order to preserve views to the water.
- Speak to the community in "qualitative" rather than "quantitative" terms. Community members may not understand terms like FAR (floor area ratio) and dwelling units per acre, etc.
- Diagrams of different typologies could be useful when describing the concepts and densities.
- There is the perception of reducing intensity at Pearlridge. In Alternative C, this is probably not desired.
- Circulator/tram connection from Pearlridge Center to Station as alternative.
  - Could we keep the monorail and integrate it into the new development/community?
  - People think walking distances are further than they actually are. If the walk is pleasant and interesting rather than dull and boring, the walk will seem shorter!
- Relate Alternatives to impacts on community.
- What is the cutting edge for TOD? What does the future hold? (Show video clip of TOD success).
- Show full screen shots of images so they can be read and understood more easily.
- Must keep things flexible. Make people understand that this is just a "vision". It is a plan to influence development in the proper manner. What shows up on a plan is not exactly what will happen.
- Parks in district should be kept flexible. Locations are not locked in.
  - Green space has to be public!
  - Military owned land could be used as a neighborhood amenity – we need to talk to the Navy.
- Show local examples of adaptive reuse.
  - Ward Center
  - Dole Cannery
  - Aloha Tower

The following is a brief summary of the comments from the Advisory Committee Meeting 3 held on February 17, 2010. Advisory Committee Meeting 3 focused on the Refined Alternatives for the Aiea / Pearl City Neighborhood TOD Plan.

LEEWARD COMMUNITY COLLEGE:

- This is a regional destination station because of the education facility.
- There are currently 7,500 students with a 30% growth over the past 3 years.
- The second access (via Farrington Highway by Waipahu High School) is critical for any kind of new development here.
  - LCC will be pushing for this additional access, as they would like to grow in the future and realize the potential of the station location and vacant land for new development.
- LCC opened the "lower 40" for parking this past semester. This is additional to the existing surface parking lot.
  - There are currently 1600 parking spaces serving the campus.
  - The station construction and Ala Ike Street realignment will result in the loss of 200 parking spaces.
- There is a long-range campus master plan that was created in 1995.
  - LCC is seeking funding for an update to this master plan.
  - This plan does not consider a future transit station.
  - Mostly for new development diamond head and makai of campus and the Theatre building.
  - This includes a new Teacher Education building that has been designed adjacent to the Theatre building (diamond head) and extends the campus "spine".
    - Final Design of building will be complete in the Spring of 2010.
  - The preferred plan should fit into the long range master plan.
- There is potential for workforce and student housing in this area, especially for international students.
  - Consider making the Mixed Use blocks incorporate student housing above retail instead of office.
  - The current master plan from a different developer shows two residential "towers" in this area. Lower density housing, as shown in the refined alternatives, is not necessarily what the college envisions.
- Overall, LCC is open to mixed-use developments.
- Alternative A critique:
  - The campus quad orientation is much preferred by LCC. A developer who has visited them has a similar concept in their plan.
  - Connections to the neighbors are good and shall be accentuated (bike, pedestrian paths, etc.).
  - The triangle next to the maintenance yard where they have a parking lot could come into play for new development.
  - There are security concerns with taking down the makai side fences.

- There was discussion about increased access to and through LCC.
- Alternative B critique:
  - Orientation of theatre "quad" is not preferred.
  - Central park in the residential area is preferred rather than the edge park in Alt. A.
    - A combination would be fine, but there is no need to have two roads fronting the park, just make it one-sided.

PEARL HIGHLANDS:

- This is a Park 'N Ride Station. This will mean lots of traffic and most riders will get right on the train.
  - There is an off-ramp from H-2.
  - There is no ramp back onto H-2.
- City has bought 140 acres of land in the station area at one point, but could not put residential on it because of environmental contamination.
- Pearl Highlands Center was built in 1993 with a 40 year anticipated lifespan. The property manager is OK with the vision of Alt. A.
- Acknowledge the Hale Mohalu II affordable and senior housing project makai of Kamehameha Highway in the redevelopment schemes.
- Bus routing and intermodal connections will be critical.
  - Especially for Kuala Street from the station.
- The transit plaza is above the Sam's Club loading dock.
  - The idea is to remove the corner of Pearl Highlands Center upper level (part of Ross and vacant retail store) to allow the pedestrian bridge to connect to the Pearl Highlands Center and the new "main street". This will allow the pedestrian bridge to be shorter in length regardless of grade change.
- The city's bus storage facility now looks out of place in this TOD. It could be included even though it is outside the 1/2 mile radius.
  - Consider acquisition of military lands for residential use.
- Alternative A:
  - Pearl Highlands Center representative prefers this alternative.
  - Some leases are 35 to 60 years long, so Alt. A is more feasible than Alt. B (Robertson Property representative).
- Alternative B:
  - Robertson Property representative prefers this because it does not conflict with their new shopping center.
  - They have a potential restaurant tenant for the area colored burgundy on Alt B, block 8.
- Perhaps the Preferred Alternative could be a hybrid between the two.
  - Keep taller buildings at the station.
  - Do not leave parcels blank, as in Alt. B.
  - Put a vision for the long term into the plan.
  - Possibly include the military housing site ewa of new development.

PEARLRIDGE:

- Keep buildings lower on the makai side of Kamehameha Highway.
  - Medium rather than high density.
- This station has the most potential for urbanism and placemaking.
- Fishponds are important and will need access.

  - The Palaau fishpond diamond head of our study area is to be retrofitted and brought back into use. This one will be much larger and better than the one located on this site.
  - Keep the one on this site as well.
  - Walls are in place and will need to be repaired.
- Bring as much access to the water as possible from the trail in Alternative B.
- The linear waterfront park is well liked by all.
- A small 2-acre park as part of Sumida Farms is liked.
  - Locate on fallow land on mauka side of Sumida Farms (approximately 2.5 acres).
- Alternative A:
  - This is very close to a redevelopment plan that has been proposed and contemplated for the site, i.e. keeping the Pearlridge Center and infilling around it. Also, to incorporate a quaint "main street" through the site.
- Alternative B:
  - This Alternative could work well if the existing Mall plan from Alt. A is incorporated – blend them.
  - Park space is the best in this plan.
    - Who will manage them? The city has a hard time with existing parks.
  - Blocks 36 and 38 are also good places to become part of the waterfront linear park because they are located in the floodplain.
- Other comments:
  - Is waterfront property zoned for conservation / preservation?
  - Kamehameha Schools property (a field) was talked about as possibly converting to a park.

ADVISORY COMMITTEE MEETING 4
Meeting Notes

AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN

April 20, 2010

City and County of Honolulu

The following is a brief summary of the comments from the Advisory Committee Meeting 4 held on April 20, 2010. Advisory Committee Meeting 4 focused on the Preferred Alternatives for the Aiea / Pearl City Neighborhood TOD Plan. Following VMWP's presentation, Robinson Properties presented draft plans for the Kamehameha Drive-in property, a key site within the Pearlridge Station area.

General Comments

- This should be presented to the public as a "conceptual plan," we need to focus on intent and not specifics.
- The Preferred Alternative is very detailed and specific for an "illustrative."
- The majority of attendees would like to see the Alternative "globed up," more conceptual and less in detailed. There is a concern that this is a long-term (30 year) Plan, but it looks like something that is happening tomorrow.
    - VMWP response: The Preferred Alternative is an urban design plan therefore the relationships between buildings, circulation and open space are important to illustrate.
- The diagrams and renderings were very well received by the Advisory Committee.
- We want to ensure a long "lifespan" for the Plan, understanding that many things will change over time.
- The renderings help to tell the story of the project.
- Phasing concepts should show how a suburban area could urbanize over time with infill and redevelopment.
- Development agreements for sites surrounding transit stations will be concurrent with TOD zoning.
    - DPP Response: Development agreements are currently allowed "on the books" but haven't been used by the City recently.
- Expanded negotiations and unilateral agreements will be needed in order to fulfill ultimate vision for the station areas.
- The Neighborhood TOD Plans will be codified into zoning standards that may be "hybrid" in nature including performance, form-based and Euclidian regulations.
- The Plan vision and the implementation strategy must be closely interrelated.
- How will rail effect parking standards?
    - VMWP response: Zoning recommendations will include lower minimum parking standards within the Plan areas. Overall, less parking may be required in the TOD precinct (closer to the station) than in the TIZ precinct.

Pearlridge Station

- Taller buildings should be oriented in a mauka-makai direction to preserve views.
- The Kamehameha Drive-in site is an urban core property.
- Higher density residential with retail uses will help to activate the Drive-in site.

- Variation of building heights would help create a better overall development on the Drive-in site.
- Should building footprints be shown in the Preferred Alternative?
- We should consider more breaks in the building fabric makai of Kamehameha Highway to provide views to Pearl Harbor.
- Attendees would like to see medium density near Pearl Harbor along with a general stepping down of heights makai of Kamehameha Highway from 5 to 2 or 3 stories.
- A representative from the Waimalu Shopping Center was very interested in the concept of providing surface parking to the rear of the site with mixed-use buildings fronting Kamehameha Highway. In this scenario, access to the site would be provided in the middle of the block. She also liked this central entrance concept.
    - VMWP response: As an alternative for the Waimalu shopping center site, the existing buildings could remain and retail "pad buildings" to help create more attractive, walkable edges to Kamehameha Highway.
- Attendees asked if there will be lower parking requirements in TOD zones.
    - VMWP response: Yes, typically parking requirements are lowered to promote more intense pedestrian focused development within TOD areas.
- Attendees really liked the concept of having restaurants and a pedestrian pathway around Sumida Farms. There may be some liability concerns with opening up perimeter to the public. We need direct input from Sumida Farms representatives on this issue.

Pearl Highlands Station

- Is a bridge over the freeway connecting to Leeward Community College feasible?
- Is the Pearl Highlands pedestrian bridge shown in the EIS?
- We need to ensure easy connections to the Pearlridge Station from surrounding areas.
- What should happen on the Pearl City Gateway site? Will the developer be required to create a higher density mixed-use project?
    - VMWP response: The zoning recommendations for the TIZ area will allow a mixture of uses and will not have minimum floor area ratios or density levels.
- We should create more connection to the UH Urban Gardens. This can be a great public space and resource for surrounding developments.
- We need to talk with the Pearl Highlands Center owner now so they don't lease the corner space that could connect to the transit station.

Leeward Community College Station

- We should try to get the Leeward Community College "players" more involved in the process.
- Do we have any concepts for block 1, mauka of the transit station? The planning team believes that this block is difficult for new development based on its isolation and is probably best suited to surface parking.
- The parking structure shown on block 5 should probably be moved closer to the LCC theater.

ADVISORY COMMITTEE MEETING 5
Meeting Notes

AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN

July 12, 2010

City and County of Honolulu

The following is a summary of the comments from Advisory Committee Meeting 5 held on July 7, 2010 from 6:30 to 9:00 pm at Pearl City Highlands Elementary School. Advisory Committee Meeting 5 focused on Implementation and Zoning recommendations for the Aiea / Pearl City Neighborhood TOD Plan. Following VMWP's presentation, questions and comments were provided by the Advisory Committee.

General Comments

- Should zoning heights be "phased in" based on the maturity of the transit system?
  - VMWP response: We can use best practices from other mainland TODs, while looking at surrounding neighborhood contexts to set the framework now. These standards can be revised over time as the corridor develops.
- There are parts of Honolulu that have similar population density to Singapore. They should be used as a model for some of the more urban TOD areas.
- Where are good examples of similar high density TOD development types?
  - VMWP response: Vancouver, Washington DC, San Francisco and Los Angeles are good examples of recently built TOD. San Francisco has similar topography issues to the Aiea – Pearl City station areas.
- We should focus TOD on sites where higher density development is more feasible and likely to occur.
- The City should conduct a corridor-wide height/density study to show where to concentrate density along the rail alignment.
- Attendees generally liked the idea of allowing additional height as a community benefits bonus.
- The bonuses should have both a regional and local outlook to fill community needs.
- There are various federal grants available to help implement TOD and community benefits bonuses.
- Neighborhood planning principles must be required of all developments; utilizing community benefits bonuses are optional.
- Currently, 30% of new units built have an affordability requirement if they underwent a recent zone change.
- The Aiea-Pearl City area was developed in a "piecemeal" pattern. Residents in the area may be less accustomed to master planning.
- It will be important for the City to create tools to enable TOD.
- Community benefits can't all come "on the back of developers"
- Where there is neighborhood impact, there should be community benefits.
- It is very difficult to make apartments "pencil out" in Hawaii.
- In terms of value capture, the land owner is the "real winner," Their land prices get raised and the developer has to spend more money to purchase the land. The increase in value is really to the landowner and not to the developer. How do you capture some of this increase in value?

- We need to think about both height and form in context with each other. Taller buildings may be acceptable in exchange for good design.
- What is the overall timeline for phasing?
  - VMWP response: This is generally a 20-30 year strategy for TOD development.
- Potential community benefit: maintaining small/local business tenants.

Pearlridge Station

- What is the rationale for a 60'-90' height limit makai of Kamehameha Highway? The Livable Communities Plan calls for preserving views to Pearl Harbor.
  - VMWP response: Stepping down to the Harbor while allowing potential for property owners to redevelop in a more urban pattern. The 90' height bonus discussed is not intended to be allowed universally. The height bonus is intended to create a "signature" building to help implement the "window to Pearl Harbor" park at the terminus of Kaonohi Street.
- Should we be looking at allowing taller heights at the Kam Drive-In site, which would allow for less bulky buildings? The density in this area is similar to Kakaako.
  - VMWP response: We are taking an ongoing look at appropriate heights in this area.
- What is the overall rationale for a 250' height limit in the Pearlridge area, mauka of Kamehameha Highway? It seems arbitrary to set limits too low or too high.
  - VMWP response: The neighborhood context and identification of Pearlridge as a regionally important TOD location provides justification for higher intensity development at this location.
- Development intensity at the Drive-In site should take into account proximity to the second-largest mall in the state. Heights here should be greater than at Pearl Highlands.
- Phase 2 should probably just show improvements on the lower part of Kaonohi Street, since the Kam Drive In redevelopment will address Kaonohi Street up to Moanalua Road.
- The phasing plan shows the conceptual visualization of a suburban mall (Pearlridge) to a more urban village-type design. The Ala Moana Center was built in phases.
- Sumida Farms could be the "front door" to the neighborhood while providing an important view corridor as well as urban agricultural uses.
- Open Space should connect the Pearl Harbor Historic Trail to the Pearlridge Station.
- We need to provide open space makai of Kamehameha Highway, per the Livable Communities Plan.
- The vacant Circuit City store is currently being retrofitted into a Bed Bath and Beyond with a 20-year lease.
- Kaonohi Street and the Pearl Harbor Park/connection to PHHT should be priority projects.
- We should Improve Moanalua Road for pedestrians.
- Include area mauka of Moanalua Road in the TOD/TIZ area?
- Trade Pearlridge park space for Kam Drive In site?
- What happens to properties that have height limits reduced?
  - VMWP response: If and when they redevelop, they will have to conform to the new height limits. The only area we are recommending for lower height

limits is directly adjacent to one and two story single-family homes, just mauka of Waimalu Shopping Center.

- Let Kam Drive In develop at high density in exchange for open space along Pearl Harbor.

Pearl Highlands Station

- We would like to see phasing of sites outside of the Pearl Highlands Center.
- We should consider a height limit of up to 250' near the Pearl Highlands Center.
- Big box stores will probably not take advantage of any parking reductions.

Leeward Community College Station

- What is the future vision for Leeward Community College? Will 90' be high enough for all future opportunities in the TOD area?
- Some attendees thought that we should make maximum heights at LCC 90'-150' to attract private capitol and development. LCC is generally happy with a 60'-90' height limit.

The following is a summary of the comments from Advisory Committee Meeting 6 held on November 16, 2010 from 6:30 to 8:30 pm at Pearl Ridge Elementary. Advisory Committee Meeting 6 focused on summarizing the Public Review Draft of the Aiea / Pearl City Neighborhood TOD Plan. Following VMWP's presentation, questions and comments were provided by the Advisory Committee.

General Comments

- The estimate for the Leeward Community College access road seems too low. LCC officials believe that the cost will be closer to $20 million.
- Cost estimates will change over time. How useful are they really? We should think about removing them from the final Plan.
- A mixture of diverse uses should be emphasized as a Plan principle
  - VMWP Response: it is included as a part of "Create a Comfortable and Lively Pedestrian Environment."
- Can better urban form be derived from an average of 250' in height on the Kamehameha Drive Inn site? For example, could a single 300' tower be allowed, with shorter towers and lower rise development surrounding it on the Kamehameha Drive-In site, rather than an absolute 250' height limit?
  - VMWP Response: height averaging may be difficult for the DPP to implement. Although a community benefit bonus height limit of 250' was presented and discussed for the Pearlridge area, this max amount is still undetermined and the recommended base height limit without a community benefit bonus is 150'.
- Could we get rid of specific height limits altogether and simply refer to certain areas as "high rise districts?"
- Could extra height be allowed for varying or averaging heights on multi-tower sites?
- We need a corridor wide plan to justify taller heights in certain station areas.
- Affordable housing may be difficult to generate within new transit-oriented developments because of current development costs.
- Kamehameha Drive-In developers can "make it work" at a height limit of 250'
- We should add an * to height limit maps next to 250' and say that they are draft limits (as part of a community benefits bonus) for discussion.
- Elements that go into the height discussion should be described to the community.
- We should identify the range of existing building heights within the station areas.
- Stepping down to Pearl Harbor is a major Plan principle and should be emphasized to the community.
- The waterfront park in the Pearlridge Station area should be identified as one of the priority projects.

AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN
Advisory Committee Meeting 7
Meeting Notes

February 27, 2014

Attendees:

- Advisory Committee: Chris Deuchar, Curtis Togami, Maria Chan
- Dept of Planning and Permitting: Harrison Rue, Bonnie Arakawa
- City: Councilmember Breene Harimoto

The following summarizes **Advisory Committee Meeting #7** held on February 27 at 6:00 pm at Alvah Scott Elementary, which focused on the proposed revisions to the Final Plan. The Department of Planning and Permitting (DPP) intends to transmit the Final Plan to the Planning Commission and City Council.

DPP presented a list of proposed revisions to the Plan, based on comments received on the Public Review Draft (November 2010) and DPP-proposed changes to the Plan. The following is a brief summary of comments from AC members:

- Education Facilities. Language on the new DOE impact fees should be added to the discussion on school capacity and facilities.

- Wastewater. The Department of Environmental Services is aware of sewer capacity issues in the Pearlridge station area and is working on short and long-term solutions in anticipaton of TOD.

- Affordable Housing Units. It was suggested that development incentives include waivers of permit fees, sewer fees, park dedication fee, reduction in parking, unbundling parking, fast tract permitting,

- Pearl Highlands. The existing parking structure is not designed to accommodate the additional loads of new structures shown in the main street concept rendering. Future development would need to consider reinforcement or reconstruction of certain areas.

Note: 3 additional AC members arrived in time for the General Information meeting (Wally Kazama, Cruz Vina, Jr. and Claire Tamamoto).

Exhibit 3

COMMUNITY WORKSHOP-1
Meeting Notes

AIEA / PEARL CITY
NEIGHBORHOOD TOD PLAN

October 21, 2009

City and County of Honolulu

The following is a brief summary of the comments from the Community Workshop 1 held on October 21, 2009. Workshop 1 focused on the existing conditions for the Aiea / Pearl City Neighborhood TOD Plan.

GROUP 1 - lead by Tim Van Meter *(Van Meter Williams Pollack, LLP)*

- Connect to water whenever possible
- Protect/Engage views
- Increase connections throughout
- Pedestrian orientation
- Local intermodal
- Pearl Harbor should be the focal point of Pead City
- Will there be a park-n-ride @ LCC (Leeward Community College)?
- How to visualize the elevated system that will affect existing views of the harbor?
- Once built people will appreciate the train; including the new views
- Create several connections to PHHT (Pearl Harbor Historic Trail)
- Relocate the Post Office to an "Area of Change"/Gateway
- What is the status of previous roadway improvements?
- 75-year lease is for the Post Office use only
- Traffic at bottom of "Spine road" is a problem
    - Also no pedestrian amenities or landscaping
- Waiawa street creates the second largest watersheds and nothing has been done to address the flooding
- Navy landfill @ Waiawa delta is one of the worst --will flood the PHHT (Pearl Harbor Historic Trail)
- 4-5 story buildings are OK, if they don't create walls that destroy Makai/Harbor views
- Will Bike Trail be wider to accommodate the increased use?
- Kamehameha Hwy. To be pedestrian friendly
- Make provisions for Shuttle buses

GROUP 2 - lead by Adam Rosa *(Van Meter Williams Pollack, LLP)*

- Mini Mall near LLC Station
- Affordable Housing opportunities
- Town Center
- Enterprise Zone
- Pearl Ridge Station:
    - Open Space at Waterfront
    - Aloha Tower Market Place type development
- Promoting more development opportunities near station areas with incentives
- Pedestrian walk between LCC (Leeward Community College) and Pearl Highlands stations
- Additional access to LCC
- 1,600 Space Parking lot at Pearl Highlands station. Security Concerns
- Urban Garden as a community Resource
- Corp. yard to move to maintenance yard
- Connect busses to trains

- Conflicts between bikes and pedestrians at Pearl Harbor Historic Trail
- Utilize Site adjacent to LCC station as Open Space
- Mix-Use Development:
    - TOD Zoning
    - Development Incentives
    - Senior Housing and Affordable Housing connected to Mixed-Use developments
- Provide Day-Care development near stations for convenience
- Property value Impacts near stations?
- TOD Plan as Vision
    - TOD Zoning
    - Market-Driven redevelopment
    - Incentives
- School/Community facilities and Parks on Makai side of Kamehameha Hwy. at Pearlridge station

GROUP 3 - lead by Wes Frysztacki *(Werfm)*

- Parking
- Short term "Kiss and Ride" needed
- Lack of Utilities
- Bus service / kaonohi
- Park space with parking
- Carve out Green Space
- Restrooms
- Create Residential opportunities that promote walking
- Affordable Housing needed
- Mix-Use Development:
    - Senior housing or Apartments
    - Food Courts with parking tucked behind
    - Café's in front
- Senior Housing and Affordable Housing connected to Mixed-Use developments
- Agree with TOD but going to be difficult to implement it well
- Preserve swap meet somehow -- Sun, Wed
- Trees
- Pedestrian/Bikes bridges cheaper than auto bridges across Kamehameha Hwy

Issues & Opportunities Questionnaire – Comments by attendees:

- Are there any issues/concerns that you envision within the **LCC** Station area?
    - Additional parking areas: double deck?
    - Better access: from east and west, new local roads.
    - College housing?
    - Bus access, more direct to LCC
    - Too close to Pearl Highlands Station
    - Not enough room allotted for development around it
    - Pearl City & LCC Stations as currently envisioned, will be single purpose
    - Is it too late to make LCC the park-n-ride and locate the Pearl City Station closer to Pead City Center (i.e. intersection of Waimano Home Rd. & Kamehameha Hwy.)?
- What are some opportunities for improvements in the **LCC** Station area?
    - Retain Conservation low lands
    - Adjacent to Pearl Harbor

- Are there any issues/concerns that you envision within the **Pearl Highlands** Station area?
  - Poor Location
  - Too close to LLC stop; too far from existing Civic uses (Library, district court, etc) so provisions should be made to relocate closer to Station
  - It will only be used for parn-n-ride
  - It is too far from Pearl City Center; District Court, Banks, Shops, Police, Library, Post Office, etc are all in the Pearl City Center
  - The Station is located in the wrong site
  - It should be moved closer to the Waimano Home Rd.

- What are some opportunities for improvements in the **Pearl Highlands** Station area?
  - Improve access to Post Office
  - Create space over Flood Zone for development
  - The Livable Communities Plan can work with TOD if the Station is located closer to Waimano Home Rd.

- Are there any issues/concerns that you envision within the **Pearlridge** Station area?
  - Kaonohi and Moanalua intersection is a poor design
  - Pedestrian access; Mauka to Makai on Kamehameha Hwy. is poor
  - How are people getting to/from Station?
  - Kamehameha Hwy. is not pedestrian friendly; connectivity to Pearlridge shopping center?
  - Are there any ways to create parking with retail closer to Station?
  - Highland's Station will be park-n-ride for other areas, what about Pearl City/Aiea residents?

- What are some opportunities for improvements in the **Pearlridge** Station area?
  - Create better view plane to Pearl Harbor.
  - Relocate hi-voltage lines on Kamehameha Hwy.
  - Providing views from Kamehameha Hwy. to harbor/water (low-rise on Makai side of Kamehameha Hwy.)
  - Making it easier to cross Kamehameha Hwy. as a pedestrian

- Any other comments, ideas, concern?
  - Kamehameha Hwy. is a primary highway through this area; improve traffic flow to increase daily traffic flow and more traffic lanes needed
  - For the Pearl City/Aiea area in general; Senior friendly housing
  - Area residents are older, their kids are either moving in or away but they want to stay in the neighborhood
  - Four to five story mixed-use buildings is a great idea. Much better than high-rises

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP # 1
October 21, 2009

	Name:	Affiliation:	Address:	Email	Phone
1.	Saul J Vila Jr.	PC NB 421			456-3480
2.	Curtis Tagami	Contrivental INV.	P.O. Box 4488 Aiea HI 96701	Curtis@Acai@cbar.com	255 2223
3.	Ryan Oyelina		98-1027 Moanalua Rd Aiea HI 96701	rogwile@hawaii.rr.com	
4.	Clive Colivet	Aiea Highlands Civic	1000 Kamehameha Hwy	Clive@colliersteam.com	456-1010
5.	Byron Quinn		Aiea Highlands St. Aiea HI 96701		
6.	John Lawlor		2420 Kalihi Ave Honolulu 96815	shenthea@yahoo.com	
7.	Linda Kaminiara		98-428 Pinehale St. Aiea 96701	hairyhulifi@yahoo.com	781-0027
8.	Claire Tamamoto	Aca	on file	claire@hawaiiar.com	429-1258
9.	Janice Sugimoto	AICA N.B	98-340 Kaonohi Lp. #112	Jisb@hsl.com	671-5112
10.	Angela Wisco		1162 Waimanu St #22	Wisco@communitiesfirst.com	
11.	Norman Saffery	Senate	5 Le Cap Pl. 230	saffery@centralpacific.com	586-0585
12.	D Yoshida		941-1 Aia Lima St	yoshida@hawaiiantel.com	9582097
13.	Breene Harimoto	PC Foundation	1983 Hoomalelo St	bharimoto@mrm.com	225-0368
14.	Tom Fee		733 Sand St	tfee@hhf.com	545-2055
15.	Linda Fujiki	WESLIN	1551 Ala Wai #3802	fujikiz@aol.com	591-0985
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SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP # 1
October 21, 2009

Name	Affiliation	Address	Email	Phone
1. DENNIS C. Silva Sr.	AIEA	98-223 OHENAUA LP. 96701		
2. JIN HU YOUNG JR	c/o PO Box 134 Pearl City, Hi 96782	96-135E Waiawa Road		455-8822
3. Jim Rickard, Sr	PCNHB #21	98334 Quinn Way 96782	Kaiulani@yahoo.com	456-9891
4. Michael Salfata		530 S. King St		718-5037
5. [illegible]	PCCA	1562 Gloucester Pl. PC		455-3897
6. Kim Setsu	AIEA	98-1028 Olina St.	aieadragon@aol.com	486-3579
7. BERNIE BOLTZ	AIEA	98-736 Moanalua Lp #C	bernie@islandshell.com	330-2421
8. VINCENT SHIGEKUNI	FBR Hawaii	1001 Bishop St. Suite 650	vshigekuni@fbrhawaii.com	521-5631
9. GARY K. OMORI	Hrail Transit	98-1936 Hapaki St		484-0736.
10. Shige Ushiro	PCCA	1209 Kawaloka St. P.C.		455-5287
11. REGINALD FIELDS	PB	1001 Bishop Ste 2400	fields@PBworld.com	566-2235
12. Cayung Sy	PC	1150 Nolani St. P.C. Hi 96782	chayy2094@aol.com	—
13. ERIC OSAKI		2714 Cornell Ave Hon 96822	emosaki@hawaii.com	4575075
14. Ron Fitch	AIEA N.B.	99-1019 Moanalua #73 Pr	[illegible]	487-1211
15. MARK GARRITY	PB	1001 Bishop St. 2400	garrity@pbworld.com	768-6128
16.				
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SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP # 1
October 21, 2009

Name	Affiliation	Address	Email	Phone
1. Jimmy Lota	CoC - DCS		jlota@honolulu.gov	
2. Chris Lucas	Pearl City Neighborhood Board		c.lucas.hi@gmail.com	
3. Rojan Olegario	Pearl City Resident		rolegario@gmail.com	
4. Austin Zavala	the Hawaii Independent		zavas@cc@gmail.com	
5. LEONARD MORTON	AIEA/MAKALAPA Resident	99-118 Kohomuhas St. Aiea 96701		
6. RUSS HONNAL	SELF	P.O. Box 1201 Hon 96807	-	
7. Miss Myrna A. Bourdeau AIEA 1050 Kaumakapili St. Pearl City, HI 96782-2612				
8.				
9. Denis Fukamoto	PC Resident		on file	
10. Mike Miura	Resident	99656 Aiupuni Dr 96701		
11. ROBERT DURICK	RESIDENT	98-863C Kaonohi St 96701	RED28@CORNELL.EDU	
12. Bob Kubo	PCCA	98-1548C Ulu Nui Drive 96701		
13. RYAN TAM	DTS-RTD	—	rtam2@honolulu.gov	
14. Frank Streed	City Council - Okino			
15. BILL BRIZEE	SELF	94-145 Uiwi Pl Mililani	bbrizee@alldesign.com	
16. Shirley Nakamura	resident	98-515 Kupuepue St Aiea	nakamura005@hawaii.rr.com	
17.				
18.				
19.				
20.				

Aiea - Pearl City Neighborhood
Transit-Oriented Development Plan
October 21, 2009

AIEA- CITY |

AGENDA FOR COMMUNITY WORKSHOP #1 - 10/21/09:

1) WELCOME
2) OVERVIEW OF NEIGHBORHOOD TOD PLAN PROCESS
3) PLAN AREAS
4) WHAT IS TOD?
5) WAIPAHU NEIGHBORHOOD TOD PLAN PROCESS
6) ONGOING AND PREVIOUS STUDIES
7) EXISTING CONDITIONS & ISSUES AND OPPORTUNITIES
8) NEIGHBORHOOD TOD PLAN PRINCIPLES - SMALL GROUP WORKING SESSION
9) REPORTS BACK.
10) NEXT STEPS

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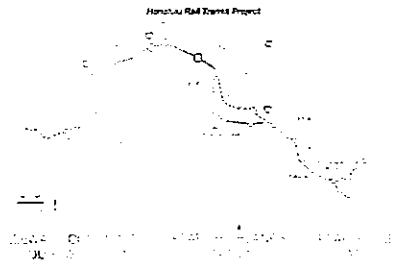
OVERALL SYSTEM MAP



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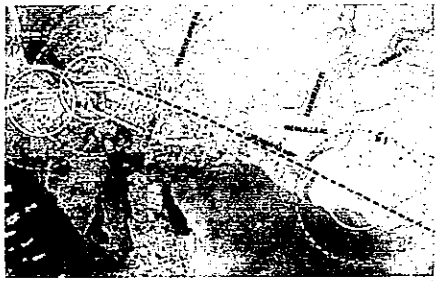

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OVERVIEW OF NEIGHBORHOOD TOD PLAN PROCESS

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COMMUNITY DRIVEN PROCESS

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WHAT IS TRANSIT ORIENTED DEVELOPMENT?

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BENEFITS OF TOD

TOD can have significant benefits to individuals, communities, regions, states, the economy and the natural environment.

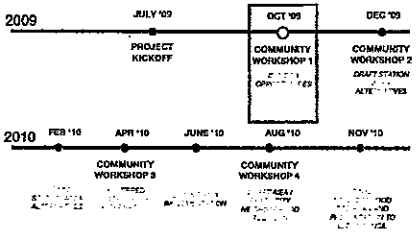
- MOBILITY CHOICES
- PUBLIC SAFETY
- TRANSIT RIDERSHIP
- REDUCES RATES OF VMT
- BOLSTER HOUSEHOLDS' DISPOSABLE INCOME

- REDUCES AIR POLLUTION
- CONSERVE RESOURCE LANDS AND OPEN SPACE
- ECONOMIC DEVELOPMENT
- DECREASES INFRASTRUCTURE COSTS
- AFFORDABLE HOUSING

A A-I A L CITY |

TIMELINE

AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN

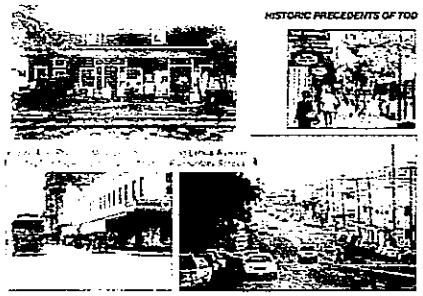


A A-I C T |

PLAN AREAS

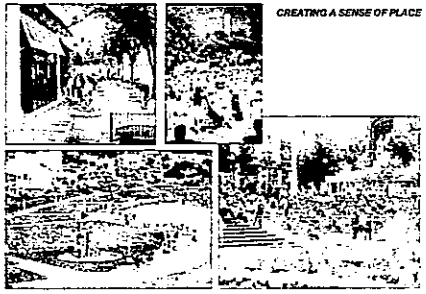
A CITY |

HISTORIC PRECEDENTS OF TOD

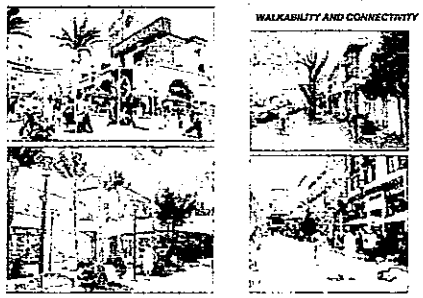


A-P CITY |

CREATING A SENSE OF PLACE

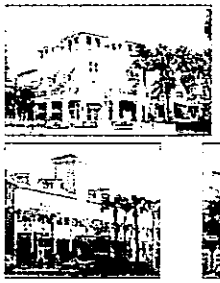


AI A-P L CITY |



WALKABILITY AND CONNECTIVITY

A A-PEA CITY |



MIXTURE OF USES

A CITY |

STATION AREA PRINCIPLES

1) MAINTAIN THE LOCAL CHARACTER OF THE PLACE.

2) ENHANCE THE 'GREEN NETWORK'

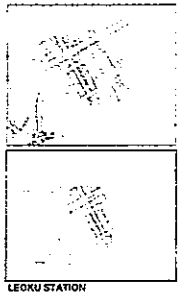
3) CREATE A *SAFE* PEDESTRIAN-FIRST ENVIRONMENT

4) PROVIDE MIXED-INCOME HOUSING

5) INTER-MODAL TRANSPORTATION NETWORK

6) CREATE A MIXED-USE, VILLAGE-LIKE SETTING IN THE 'CORE' AREA

A CITY |

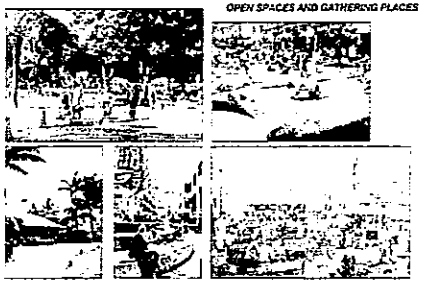


LEOKU STATION

DRAFT STATION AREA ALTERNATIVES

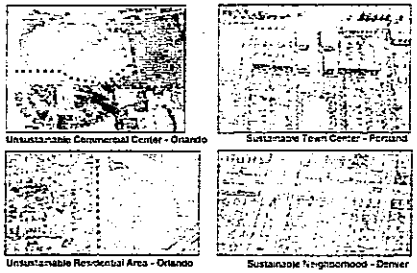
MOKUOLA STATION

A -PEARL CITY |



OPEN SPACES AND GATHERING PLACES

EA- CITY |



BUILDING SUSTAINABLE NEIGHBORHOODS

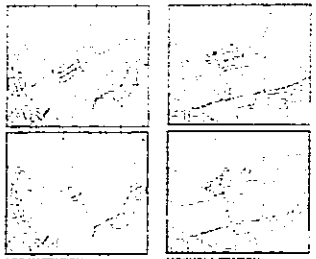
Unsustainable Commercial Center - Orlando

Sustainable Town Center - Portland

Unsustainable Residential Area - Orlando

Sustainable Neighborhood - Denver

A -PE CITY |



REFINED STATION AREA ALTERNATIVES

LEOKU STATION

MOKUOLA STATION

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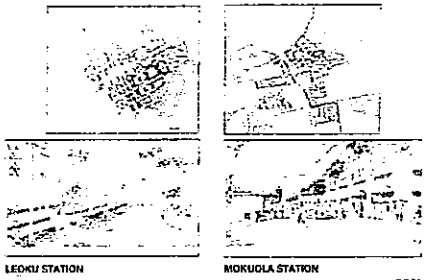

PREFERRED STATION AREA ALTERNATIVES

LEOKU STATION

MOKUOLA STATION

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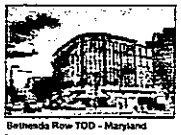
Downtown Oakland TOD - Oakland, CA



Bethesda Row TOD - Maryland

Fruitvale Village TOD - Oakland, CA

Orenco Station TOD - Portland, OR

HIGHER INTENSITIES AT STATION AREA

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WAIPAHU NEIGHBORHOOD TOD PLAN PROCESS

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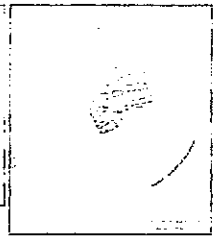
ZONING AND IMPLEMENTATION

LEOKU STATION



MOKUOLA STATION

A CITY |

EAST KAPOLEI NEIGHBORHOOD TOD PLAN

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ONGOING AND PREVIOUS STUDIES FOR AIEA - PEARL CITY

- AIEA - PEARL CITY LIVABLE COMMUNITIES PLAN
- PEARL HARBOR HISTORIC TRAIL MASTER PLAN

A- CITY

AIEA / PEARL CITY LIVABLE COMMUNITIES PLAN

Community-driven Plan, completed in 2004, that focuses on

for Aiea and Pearl City

- T· to better utilize streams and drainageways

and beautification of Kamehameha Highway and other important intersections and streets.

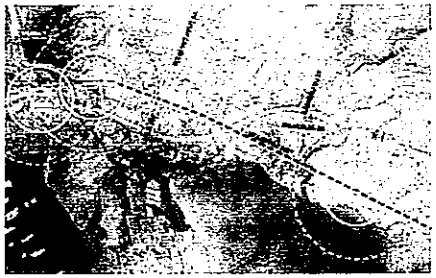
to Pearl Harbor

- Keep

feature for Aiea community

A1 CITY

AIEA - PEARL CITY



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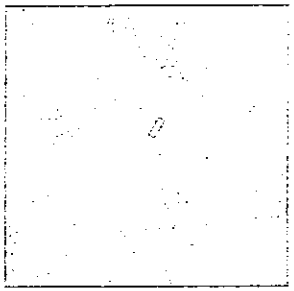
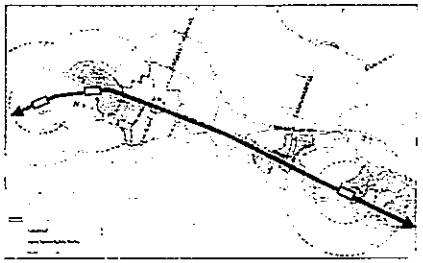


AIEA-PEARL CITY

AIEA / PEARL CITY LIVABLE COMMUNITIES PLAN



L CITY

PEARL HARBOR HISTORIC TRAIL MASTER PLAN

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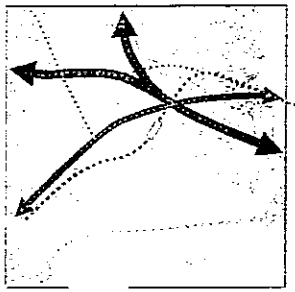
from

Focusing on ·

To provide . which connects several major urban centers.

To use the to run trolley cars on in conjunction with the multi-use path.

A L CITY



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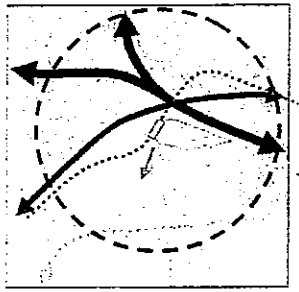
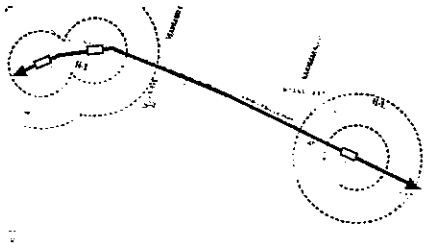


A1 CITY

PEARL HARBOR HISTORIC TRAIL MASTER PLAN



CITY

EXISTING CONDITIONS & ISSUES AND OPPORTUNITIES

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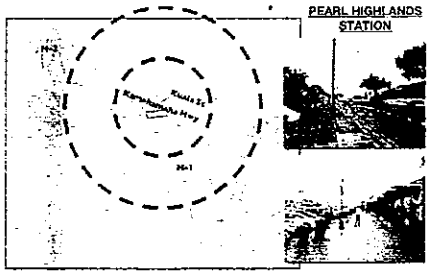
STATION AREA

PEARL HIGHLANDS STATION



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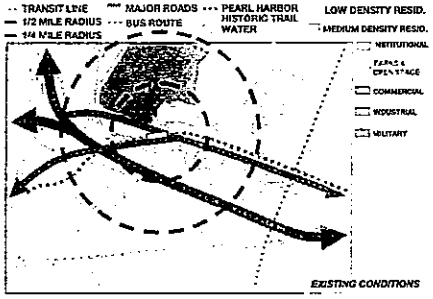
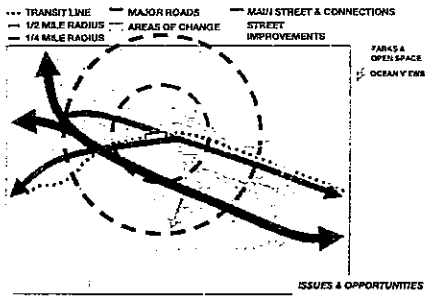
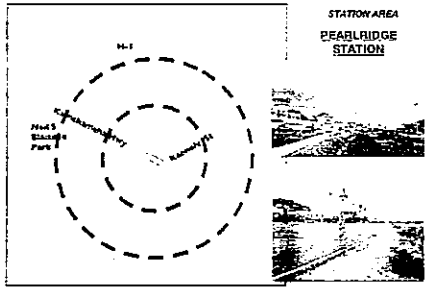
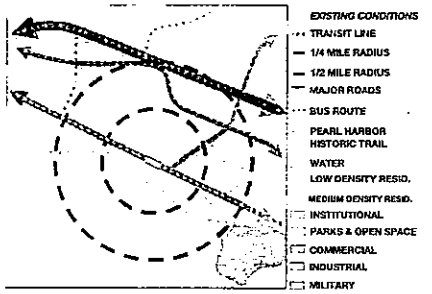
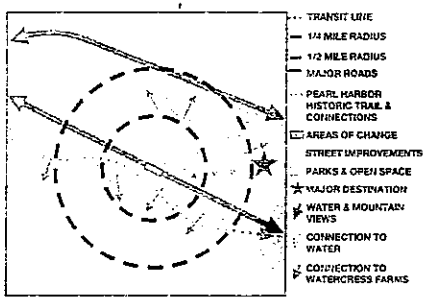


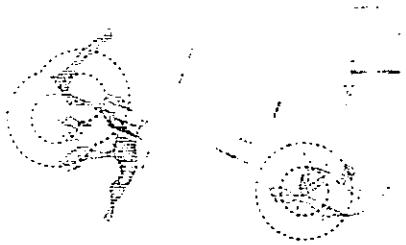
AIEA-P CITY











NEIGHBORHOOD TOD PLAN PRINCIPLES - SMALL GROUP WORKING SESSIONS

DESIRED OUTCOMES:

1) RECEIVE FEEDBACK ON EXISTING CONDITIONS/ISSUES & OPPORTUNITIES - ARE WE MISSING ANYTHING?
2) ESTABLISH PLAN PRINCIPLES TO GUIDE THE PROCESS
3) STATION SPECIFIC CONCEPTS TO BEGIN THE DRAFT STATION AREA ALTERNATIVES

The following is a brief summary of the comments from the Community Workshop 2 held on December 1, 2009. Workshop 2 focused on the Draft Alternatives for the Aiea / Pearl City Neighborhood TOD Plan.

GROUP 1 (Pearlridge Station) - lead by Tim Van Meter *(Van Meter Williams Pollack, LLP)*

- Parking
  - Provide parking for transit riders. Community members are worried that there is not enough. Create opportunities for private for-profit parking near the transit station to accommodate the perceived need for transit parking.
- Infrastructure
  - Navy fuel line runs in the Ewa/Diamondhead direction makai of Kamehameha Hwy. Make sure this is not disturbed.
  - Springs are located in area of Kamehameha Hwy. Make sure there are no basements or underground parking in this location to prevent flooding issues and damage.
- Densities
  - High density [mid-rise] is OK mauka of Kamehameha Hwy. Medium densities makai of Kamehameha Hwy are preferred with buildings no taller than 3 to 4 stories so that water views are maintained mauka and uphill of Kamehameha Hwy.
- Small Business
  - Create opportunities for small businesses to stay in place or be part of the redevelopment makai of Kamehameha Hwy.
- Live/Work/Play
  - Allow a variety of uses to co-exist throughout the TOD zone to capture internal trips. Introduce housing types that currently do not exist in the area. Increase local, rather than regional, retail.
- Urban Design
  - Alternative "A" - Corridors with a distinct emphasis on Kaonohi St and a de-emphasis on Kamehameha Hwy is preferred. Continue to keep the Pearlridge Center as the commercial hub as it is now the regional draw, but let it urbanize over time as needed.
  - Alternated "C" - Edge should not be considered further as the existing buildings makai of Kamehameha Hwy. lack any significant character or historical significance.
  - Alternative "B" - Nodes should be developed further with a more detailed study as to how the existing Pearlridge Center buildings stay in place while the parking lots and less significant buildings are redeveloped into a more urban form. This alternative also has the best open space concepts on the makai side of Kamehameha Hwy with the discontinuous greenways and focus on green spaces/places.
- Kam. Swap Meet Site
  - Develop concepts for this in more detail to explain the urban design potential as there is an interested developer/property owner who could implement a TOD pilot project for Honolulu.

GROUP 2 (Pearl Highlands Station) - lead by Adam Rosa *(Van Meter Williams Pollack, LLP)*

- Development Opportunities
  - Land makai of Kamehameha Highway is underutilized and will be easier to develop than mauka areas.
  - Idea of developing a high density building on top of the Park 'n Ride parking structure (awesome views, not taking up more land, "gateway")
  - Pearl Highlands Center is the key to successful transit oriented development.
    - Show Belmar case study to owners.
  - Need coordination with Pearl Highlands Center owner.
  - Move Corp. Yard on Kamehameha Highway to the proposed maintenance yard.
- Pedestrian Connections
  - Pedestrian connections to Pearl Harbor Historic Trail and Leeward Community College are key!
  - Possible connections between Pearl Highlands Station and LCC Station should be examined.
- Urban Design
  - Integration of proposed Station walkway and landing with Pearl Highlands Center will be very important.
  - Higher intensity uses are appropriate in this area to make the two towers not so apparent. More gradation of building heights to blend in is desired.
  - With taller buildings, try not to block important views from existing neighbors.
  - Step down building heights as they transition to existing neighborhoods on the periphery.
- Transportation
  - Circulator buses need to be convenient and easily accessible.
  - Being able to take bikes on trains would be nice amenity.
- Parking
  - Integrate shared parking at the station with shopping center.
- Schools
  - Consider the need for schools in this area of Pearl Highlands Center to serve new residents.
    - Where should they be located? Within walking distance of train, parks.
    - How many are needed?
    - Maybe near UH Urban Gardens?

GROUP 3 (Leeward Community College Station) - lead by Cheney Ferguson *(Van Meter Williams Pollack, LLP)*

- Development Opportunities
  - Combine resources between college and mixed-use village.
    - Vocational or training uses that coincide with the college curriculums would be great.
  - Iconic uses are needed in this area to establish an "identity" and help attract people into this more isolated site.
  - Campus Village is a good idea, but don't think this area should be fully dedicated to LCC expansion.

- Like the mixture of college uses within a mixed-use village with a "Main Street" better than all college uses.
  - Land value will be worth more for public-private development.
- Performing Arts facility is a major draw for the college.
  - Talk to LCC to see if there are plans for a new facility that we could add into the master plan.
- Culinary Arts program is also a major curriculum.
  - Maybe could take over UH Gardens if they move or incorporate gardens into the master plan for their purposes?
- Create better links between the colleges on the island.
  - LCC for two years and then transfer to UH.
- Need to talk to someone from LCC about the alternatives.
  - What do they like?
  - What don't they like?
  - What are their plans for the future?

- Entrance
  - Like "Alternative B" better at station. The idea of opening up the view from the station to the college with a green space (park or plaza) gives it a more "Hawaiian" feel.
  - Alternative B provides a visual connection to the college from the transit station and provides an identity for the college.
- Housing Opportunities
  - Good site for low-mid density housing.
    - Currently, LCC is strictly a commuter college. It would be nice to offer reasonably priced condos/houses for college students and professors (aka workforce housing).
    - Kamehameha Highway is a job corridor and will continue to be with transit. Because of this, there will always be need for housing near Kamehameha Highway.
    - Maintenance Yard will bring lots of jobs to this area as well.
- Topography
  - Take advantage of the topography as it slopes down to the water.
    - Maximum 4-5 stories near Ala Ike Road and then step down toward the water. Or, we could use the topography to keep buildings at the same height as the land slopes down because the grade change is drastic and allows this (like San Francisco or Seattle streets).
- Pedestrian Connections
  - Connect LCC Station to Pearl Highlands Station with trails.
    - Want LCC area residents and students to be able to access larger stores and amenities that will most likely be in Pearl Highlands station area.

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP # 2
December 1, 2009

Please Print Clearly

Name	Affiliation	Address	Email	Phone
1. YAMASHITA	LCS STAFF	98-729 MOANALUA LP #D18	—	—
2. Ray Suzuki		98-1628 Hapaki St, Aiea	—	486-6047
3. Lewis Silva, Sr.	AIEA Resident	99-223 Okehalu LP. Aiea 96701		255-5251
4. Russell Honma	SCCF	P.O. Box 12, Hn 96822		
5. Breene Harimoto	PC Foundation / Gary Okimoto office	1983 Moanalua St. PC	bharimoto@mac.com	225-0368
6. M F Kendrick	AIEA Resident	98-443 Moanalua Rd		
7. Mike Murphy	STP	98-1003 Hekeimo St	michael.a.murphy@ Hawaii.gov	295-1663
8. Denis Fukumoto	PC Resident	2139 Hoolai St	—	
9. FRED PAINE	PEARLRIDGE CENTER	98-1005 MOANALUA RD	FPAINE@PEARLRIDGECENTER.COM	245-2261
10. Steven Thomas	DOE	99-951 Aiea St		
11. Nick Nielsen				
12. Bill Brizee	ARCHITECTS HAWAII	1001 BISHOP ST #200	bbrizee@ahidesign.com	792-6349
13. Linda Sustetsch	WESTON	1551 Ala Moana #3309		
14. Kyoni Ayama		98-1624 Moanalua St, Aiea 96701 & 1164 Kawaiha St, Honolulu 96817	kayama@hawaii.gov	
15. Wes Kanetake		2228 Kuwili Rd		261-2641
16. Jon Sugisugu		Pearlridge		306-9131
17. Jaret Sugihara	AIEA NB	98-340 Kamehameha Hwy Aiea 96701	JS@LCS.COM	542-2412
18. Tom Smyth	BMPO CAC	700 Richards St #1203		
19. Ryan Tam	DTS		rtam@honolulu.gov	
20.				

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP # 2
December 1, 2009

Please Print Clearly

Name	Affiliation	Address	Email	Phone
1. Lewis Togami	Continental Inc.			255 22 82
2. JOHN MANJAVIAN	ROBERTSON PROPERTIES GROUP			
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SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP # 2
December 1, 2009

Please Print Clearly

Name	Affiliation	Address	Email	Phone
1. Peter RAPPA	Univ. Of Haw. Sea Grant	2525 Correa Rd. Hono 96822	rappa@hawaii.edu	956-3976
2. ROBERT DURICK	RESIDENT	98-863C KAONOHI ST 96701	red28@surfaloha	
3. JON + STEPHANIE YAMAGUCHI	RESIDENT	560 N NIMITZ HWY #1174 96817	STEPHANIE.YAMAGUCHI@HAWAII.RR.COM	
4. WES FRYSZTACKI	WESLIN	1551 ALA WAI #3802	wfryszytacki@worldnet	
5. Roy Johnstone	Kamehameha Schools	567 King #200, Honolulu, HI	lojohnst@ksbe.edu	
6. Stan Kurstak	Resident	225 Kuula St. Kailua		
7. Mark Garrity	Rail Project	1099 Alakea St. 17th Fl	96813	
8. Sandy Jessmon	Resident	98-774 Kaonohi St. #A 96701		
9. Amy Ilyechi	resident	2420 Hoohoiboi St. PC 96782		
10. RESHAWN FIELDS	PB	411 HOBSON LANE 96815		
11. Jean Fujimaga	Resident	99-624 Kaulawahe Pl Aiea 96701		
12. Jeffrey Chadamat	Resident	98-596 Kinamiloop, Aiea HI 96701	jeffchadamat@hotmail.com	
13. DAVID BIRKS	BIRKS ENGINEERING INC.	1122 KAUMAIWAWA PLACE	dbirks@birksengineering.com	792-2022
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Aiea - Pearl City Neighborhood
Transit-Oriented Development Plan
Workshop #2 - Draft Alternatives
December 1, 2009

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AGENDA FOR COMMUNITY WORKSHOP #2 - 12/01/09:

1) WELCOME & PURPOSE OF MEETING
2) PROJECT TIMELINE
3) PLAN AREAS
4) IDENTIFIED AREAS OF OPPORTUNITY
5) AIEA - PEARL CITY NEIGHBORHOOD PLANNING PRINCIPLES
6) EXAMPLES OF INTENSITIES
7) DRAFT ALTERNATIVES FOR EACH STATION
8) WORKING SESSION - REFINED ALTERNATIVES
9) NEXT STEPS...

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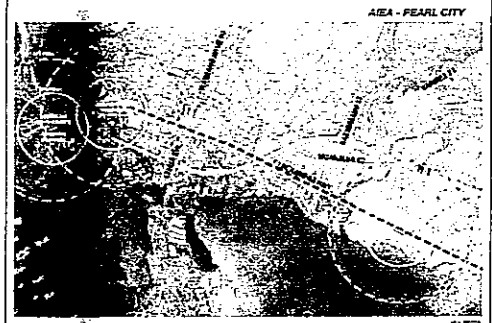

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IDENTIFIED AREAS OF OPPORTUNITY

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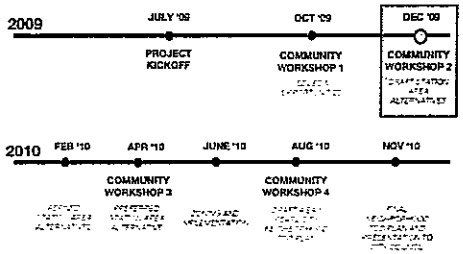
AIEA - PEARL CITY NEIGHBORHOOD TOD TIMELINE

A CITY

TIMELINE

AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN



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ISSUES AND OPPORTUNITIES POSTER (WORKSHOP #1)

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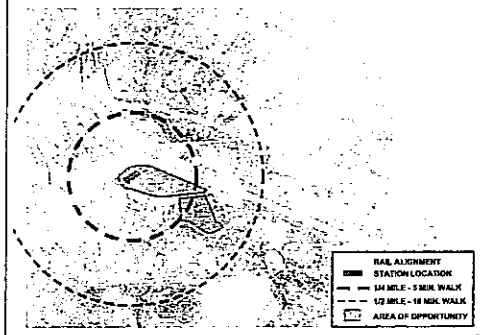

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PLAN AREAS

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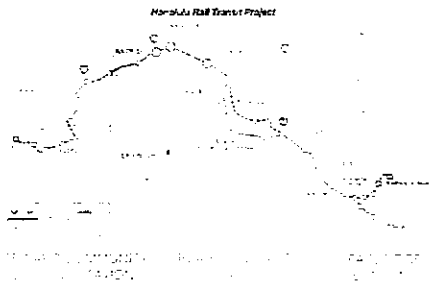
OVERALL SYSTEM MAP



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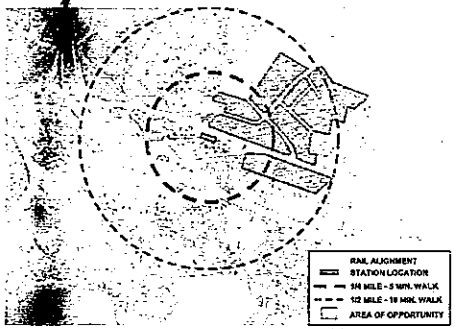

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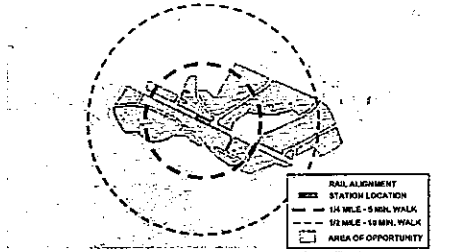

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AIEA - PEARL CITY NEIGHBORHOOD TOD PLANNING PRINCIPLES

AIEA - PEARL CITY

PLANNING PRINCIPLES

1) CREATE *ACCESS AND VIEWS* TO WATER AND PEARL HARBOR HISTORIC TRAIL

2) ENCOURAGE *WORKFORCE HOUSING*

3) CREATE A COMFORTABLE AND LIVELY *PEDESTRIAN EXPERIENCE*

4) PROVIDE *MULTI-MODAL ACCESS* TO AND FROM STATIONS

5) DEVELOP NEW AND ENHANCE EXISTING *OPEN SPACE*

AIEA - PEARL CITY

DRAFT ALTERNATIVES FOR EACH STATION

AIEA-PEARL CITY

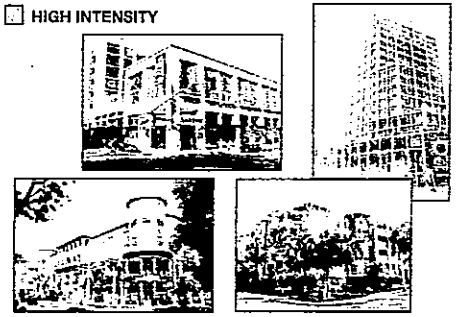
PROCESS...

AIEA - PEARL CITY

EXAMPLES OF INTENSITIES

AIEA - PEARL CITY

HIGH INTENSITY



AIEA - PEARL CITY

LCC STATION

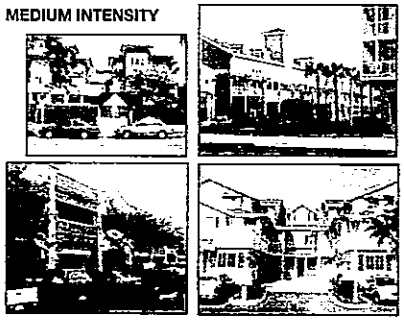
ALTERNATIVE A - "CAMPUS VILLAGE"

LCC - PEARL CITY

LCC - CAMPUS VILLAGE AND SQUARE

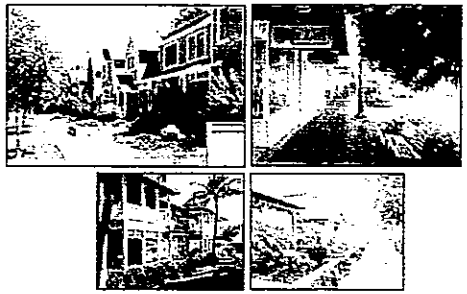
LCC - PEARL CITY

MEDIUM INTENSITY



PEARL CITY

LOW INTENSITY

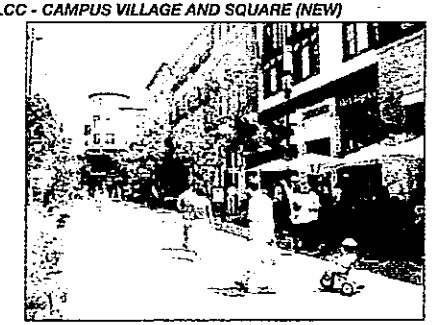


PEARL CITY

LCC - CAMPUS VILLAGE AND SQUARE (EXISTING)

PEARL CITY

LCC - CAMPUS VILLAGE AND SQUARE (NEW)



AIEA - PEARL CITY

LCC STATION

ALTERNATIVE B - "TRANSIT VILLAGE"

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LCC STATION - ALT B "TRANSIT VILLAGE"

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LCC STATION - ALT B "TRANSIT VILLAGE"

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LCC STATION

ALTERNATIVE C - "CAMPUS EXTENSION"

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LCC STATION - ALT C "CAMPUS EXTENSION"

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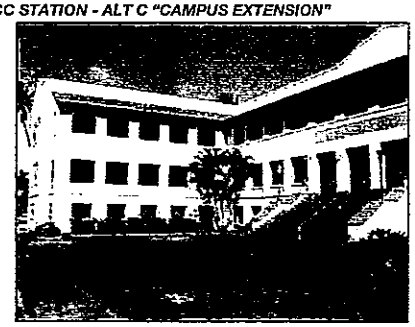
LCC STATION - ALT C "CAMPUS EXTENSION"



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PEARL HIGHLANDS STATION

ALTERNATIVE A - "CORRIDORS"

AI CITY |

KAMEHAMEHA HWY / KUALA ST. - HIGH INTENSITY CORRIDORS

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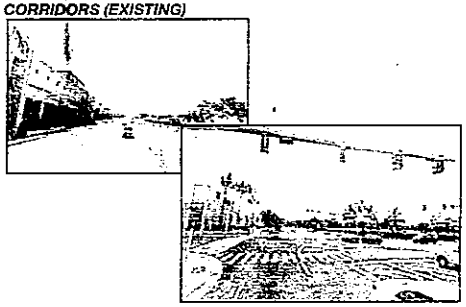
KAMEHAMEHA HWY / KUALA ST. - HIGH INTENSITY CORRIDORS (EXISTING)



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KAMEHAMEHA HWY / KUALA ST. - HIGH INTENSITY CORRIDORS (NEW)

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HOOMALU STREET - LOWER INTENSITY NEIGHBORHOOD

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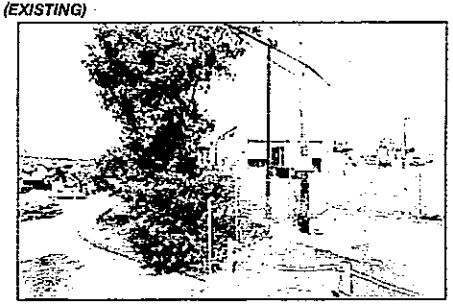
HOOMALU STREET - LOWER INTENSITY NEIGHBORHOOD (EXISTING)



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HOOMALU STREET - LOWER INTENSITY NEIGHBORHOOD (NEW)

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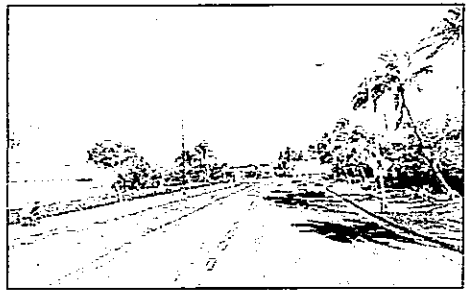
UH URBAN GARDEN CENTER - PUBLIC ACCESS

L CITY |

ACACIA AND KUALA - HIGH INTENSITY NODE (EXISTING)



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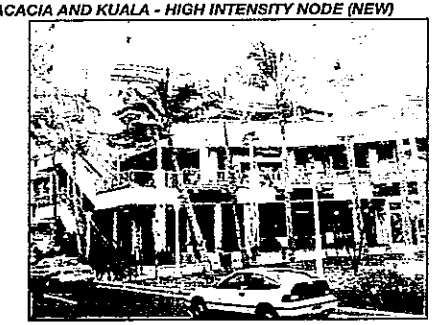
ACACIA AND KUALA - HIGH INTENSITY NODE (NEW)



CITY |

UH URBAN GARDEN CENTER - PUBLIC ACCESS (EXISTING)

CITY |

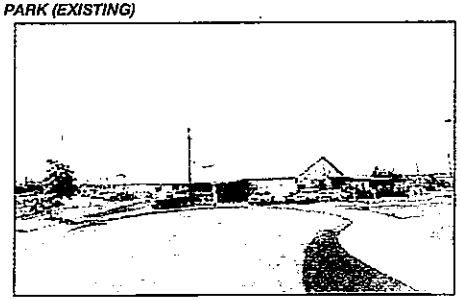
UH URBAN GARDEN CENTER - PUBLIC ACCESS (NEW)

CITY |

KANAEHA PL. - MIXED INTENSITY NEIGHBORHOOD AND PARK

CITY |

KANAEHA PL. - MIXED INTENSITY NEIGHBORHOOD AND PARK (EXISTING)



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PEARL HIGHLANDS STATION

ALTERNATIVE B - "NODE"

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ACACIA AND KUALA - HIGH INTENSITY NODE

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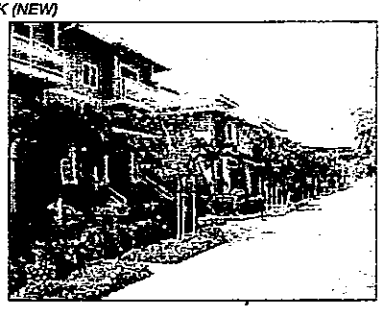
KANAEHA PL. - MIXED INTENSITY NEIGHBORHOOD AND PARK (NEW)



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UH URBAN GARDEN CENTER - NEW NEIGHBORHOOD PARK

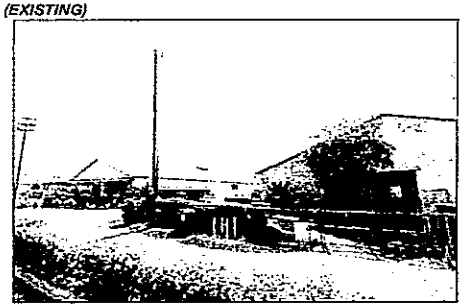
L CITY |

UH URBAN GARDEN CENTER - NEW NEIGHBORHOOD PARK (EXISTING)

UH URBAN GARDEN CENTER - NEW NEIGHBORHOOD PARK (NEW)

WAREHOUSES NEAR KUALA ST - ADAPTIVE REUSE

WAREHOUSES NEAR KUALA ST - ADAPTIVE REUSE (EXISTING)

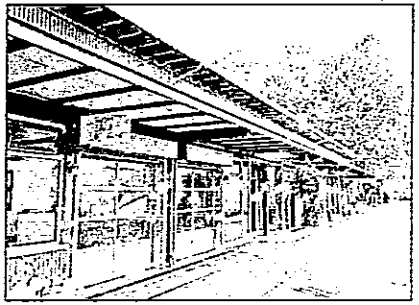


PEARL HIGHLANDS STATION

ALTERNATIVE C - "SPECIAL DISTRICT"

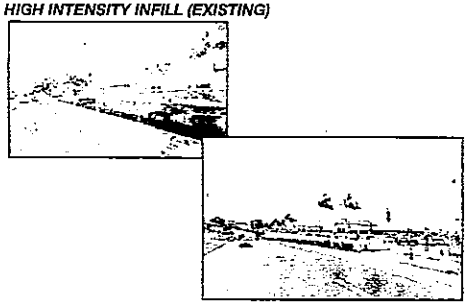
RETAIL CENTER ON KUALA ST AND PEARLRIDGE CENTER - HIGH INTENSITY INFILL

WAREHOUSES NEAR KUALA ST - ADAPTIVE REUSE (NEW)

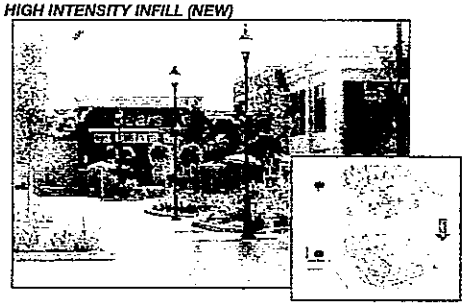


WAIAWA STREAM - ACCESS AND TRAIL CONNECTIONS

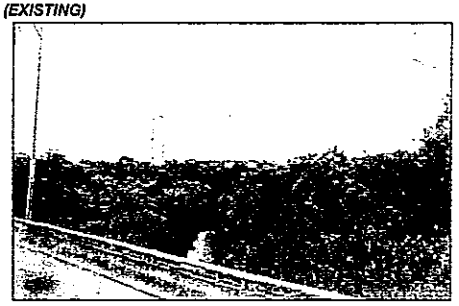
RETAIL CENTER ON KUALA ST AND PEARLRIDGE CENTER - HIGH INTENSITY INFILL (EXISTING)



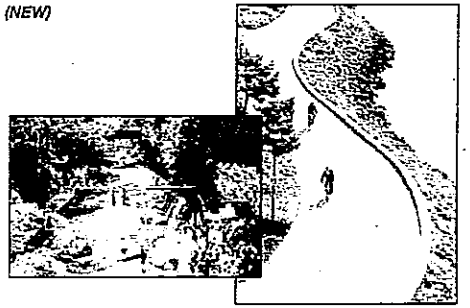
RETAIL CENTER ON KUALA ST AND PEARLRIDGE CENTER - HIGH INTENSITY INFILL (NEW)



WAIAWA STREAM - ACCESS AND TRAIL CONNECTIONS (EXISTING)



WAIAWA STREAM - ACCESS AND TRAIL CONNECTIONS (NEW)



PEARLRIDGE STATION
ALTERNATIVE A - "CORRIDORS"

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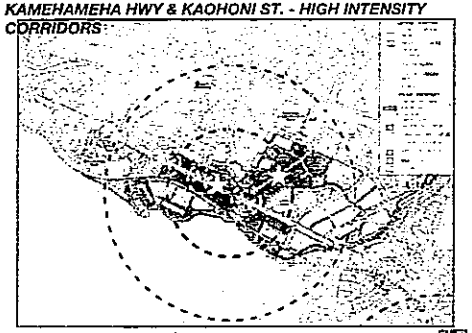
KAMEHAMEHA HWY & KAOHONI ST. - HIGH INTENSITY CORRIDORS



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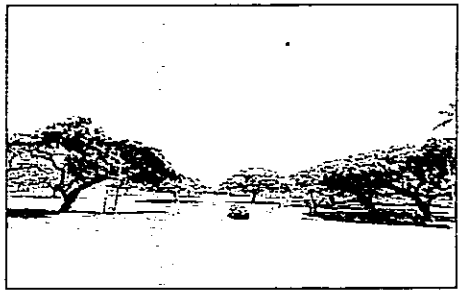
KAONOHI ST AND KAMEHAMEHA HWY- "WINDOW" TO PEARL HARBOR (NEW)



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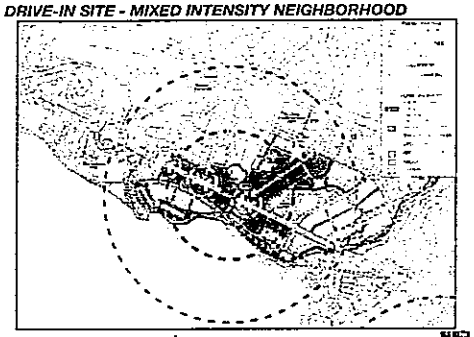
DRIVE-IN SITE - MIXED INTENSITY NEIGHBORHOOD



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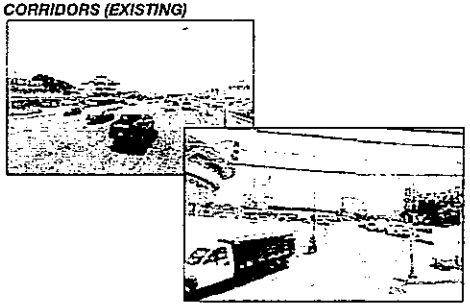
KAMEHAMEHA HWY & KAOHONI ST. - HIGH INTENSITY CORRIDORS (EXISTING)



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KAMEHAMEHA HWY & KAOHONI ST. - HIGH INTENSITY CORRIDORS (NEW)

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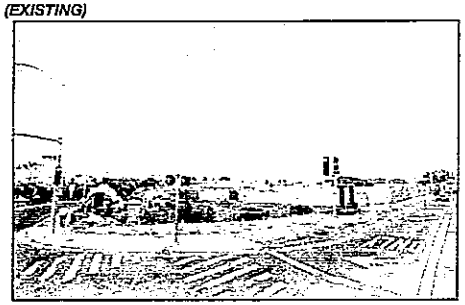
DRIVE-IN SITE - MIXED INTENSITY NEIGHBORHOOD (EXISTING)



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DRIVE-IN SITE - MIXED INTENSITY NEIGHBORHOOD (NEW)

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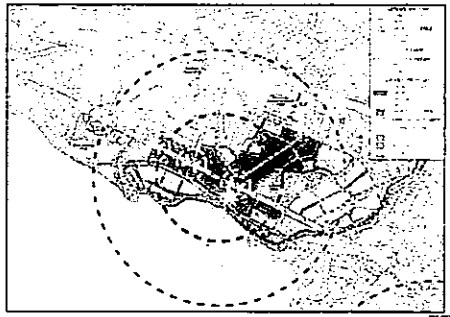
KAONOHI ST AND KAMEHAMEHA HWY- "WINDOW" TO PEARL HARBOR



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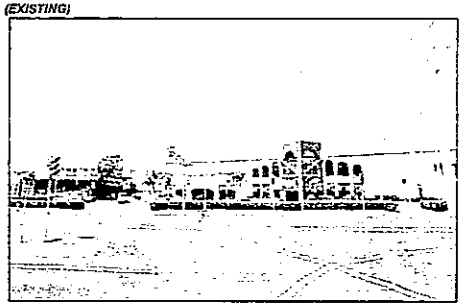
KAONOHI ST AND KAMEHAMEHA HWY- "WINDOW" TO PEARL HARBOR (EXISTING)



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PEARLRIDGE STATION
ALTERNATIVE B - "NODE"

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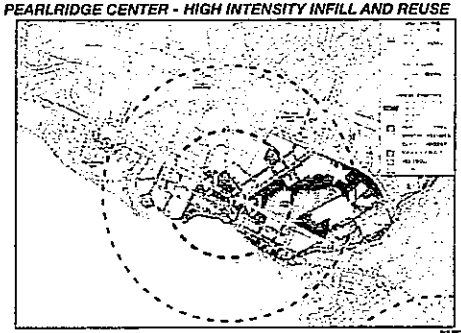
PEARLRIDGE CENTER - HIGH INTENSITY INFILL AND REUSE



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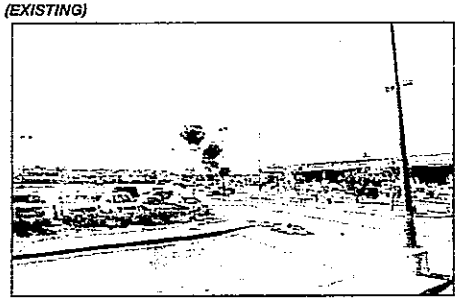
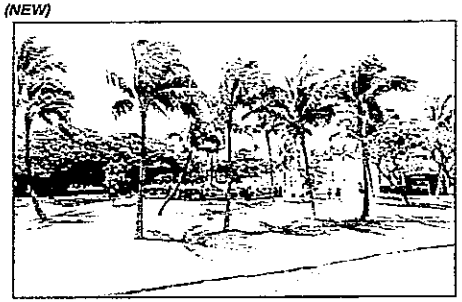
PEARLRIDGE CENTER - HIGH INTENSITY INFILL AND REUSE (EXISTING)

PEARLRIDGE CENTER - HIGH INTENSITY INFILL AND REUSE (NEW)

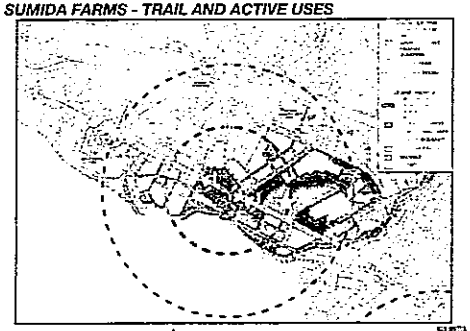
WATERFRONT MEDIUM AND LOW INTENSITY AND PARK (EXISTING)



WATERFRONT MEDIUM AND LOW INTENSITY AND PARK (NEW)



SUMIDA FARMS - TRAIL AND ACTIVE USES

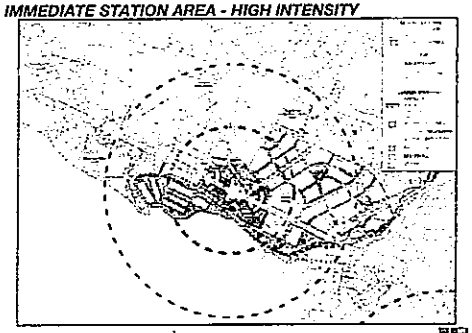


SUMIDA FARMS - TRAIL AND ACTIVE USES (EXISTING)

PEARLRIDGE STATION

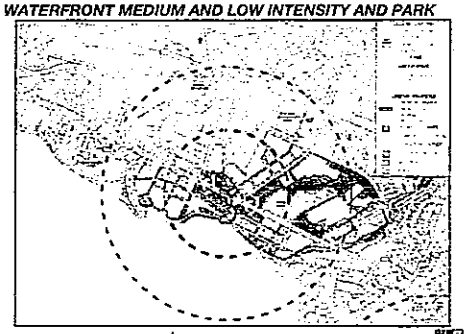
ALTERNATIVE C - "EDGE"

IMMEDIATE STATION AREA - HIGH INTENSITY

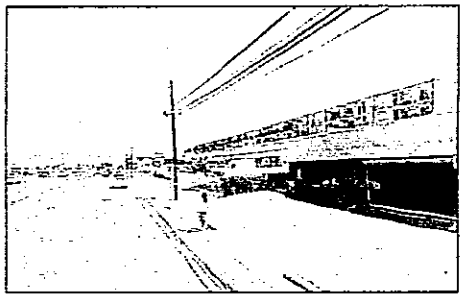


SUMIDA FARMS - TRAIL AND ACTIVE USES (NEW)

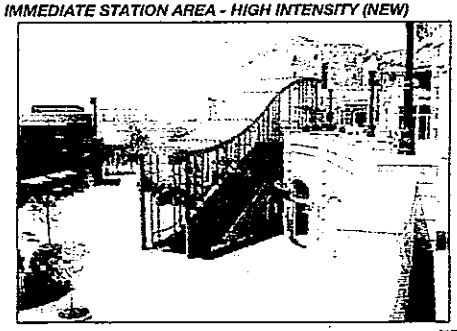
WATERFRONT MEDIUM AND LOW INTENSITY AND PARK



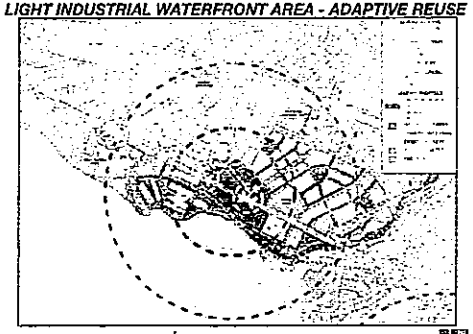
IMMEDIATE STATION AREA - HIGH INTENSITY (EXISTING)



IMMEDIATE STATION AREA - HIGH INTENSITY (NEW)



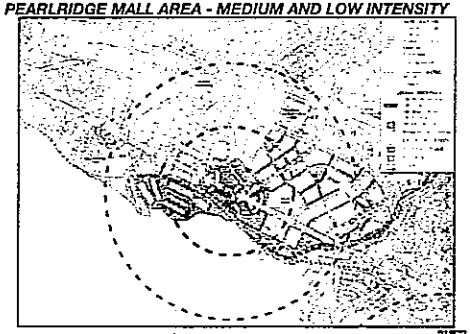
LIGHT INDUSTRIAL WATERFRONT AREA - ADAPTIVE REUSE



LIGHT INDUSTRIAL WATERFRONT AREA - ADAPTIVE REUSE (EXISTING)

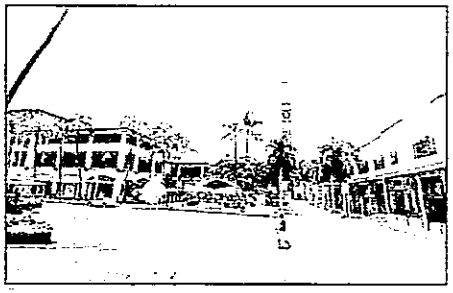
LIGHT INDUSTRIAL WATERFRONT AREA - ADAPTIVE REUSE (NEW)

PEARLRIDGE MALL AREA - MEDIUM AND LOW INTENSITY



PEARLRIDGE MALL AREA - MEDIUM AND LOW INTENSITY (EXISTING)

PEARLRIDGE MALL AREA - MEDIUM AND LOW INTENSITY (NEW)



NEIGHBORHOOD TOD PLAN SMALL GROUP SESSIONS

DESIRED OUTCOMES:

1) **RECEIVE FEEDBACK ON DRAFT ALTERNATIVES - ARE WE MISSING ANYTHING?**
2) **FILTER EACH ALTERNATIVE THROUGH PLANNING PRINCIPLES - ARE WE MISSING ANYTHING?**
3) **STATION SPECIFIC CONCEPTS - ANALYZE AND SUMMARIZE (2) REFINED ALTERNATIVES FOR EACH STATION**

Need more info?

Contact:

The following is a brief summary of the comments from Community Workshop 3 held on April 21, 2010. The Community Workshop focused on the Preferred Alternatives for the Aiea / Pearl City Neighborhood TOD Plan.

Pearlridge Station - Breakout Group

- Some attendees are concerned with the traffic impacts of new development.
- How wide are the sidewalks? We should have wider sidewalks on retail streets. Overall they will vary based on context.
- We should start a street tree program in the station area in order to help beatify the neighborhood.
- On-street parking will help to calm traffic and benefit businesses.
- Kaonohi Street is steep, should there be retail on the steep rise?
- Will a mix of uses help to improve traffic? More is more, but TOD will increase traffic less than conventional development.
- Who will ensure that the Plan is followed by private developers?
    - VMWP Response: Representatives from the private sector that are on the Advisory Committee have believe the Plan is "do able."
    - VMWP Response: The City and County will reflect the plan in new zoning regulations.
- On the Makai side of Kamehameha Highway – use fewer slightly taller buildings to open up views and modulate development.
- We like the "window to Pearl Harbor"
- Some attendees said that the don't want high rises "like Salt Lake"
- We need to create a lot of connections for the Kamehameha Drive-in site from Kaonohi Street and Moanalua Road.
- We should try to limit towers to 15 stories with open space in between.
- More streets for local trips would benefit circulation.
- The Kamehameha Drive-in site should be mixed-use vibrant, exciting and walkable with workforce housing.
- We should provide a 40' ROW for the historic train along the Pearl Harbor Historic Trail.
- There may be noise concerns for residents near the new rail line.
- Affordable housing may be hard to develop because of cost.
- Absentee landlords drive up rents.
- We need to link the rail project to economic development including: small business incubator spaces, employment center (not just retail) and creating access to existing jobs.
- TOD will provide an opportunity for less auto ownership and associated costs.
- This is a long-range plan.
- Attendees "just want to see something new." "Why can't we have rail now? Let's get it in place as fast as possible."

- Attendees want more of a neighborhood-focused station at Pearl Ridge and are concerned with the lack of parking at the station and local feeder bus service.
- The private sector could provide paid parking near the station.
- We need a kiss and ride at the station.

Pearl Highlands Station - Breakout Group

- Shifting lifestyles will take time, younger generation and students may be able to adapt quicker than older folks.
- How do we subsidize affordable housing in the TOD areas?
- It is important that the military housing have more direct pedestrian access to the station.
- Attendees generally like what they see in the Preferred Plan.
- Attendees like the Pearl Highlands Center plaza and direct transit station connection
- TOD should help to generate economic activity and increase the sustainability of the place.
- We need to make sure that the Pearl Highlands Station area becomes more of a job center. This is a great opportunity to create business places.
- We want to see more than just retail uses at the station areas.
- "How fast could rail happen?" "We want to see rail happen now!"
- We need to develop initiatives and funding sources for developers to create TOD.
- One attendee said "I wish I had a job where I could take the train."
- There are benefits and constraints for both elevated and at-grade transit systems.

Leeward Community College Station - Breakout Group

- We should be even more bold in our ideas!
- The phasing concept shown in the presentation works well.
- This is a great plan, the City and State need to take advantage of TOD.
- LCC Station is probably the easiest area to redevelop, since the other station areas are more built-out.
- TOD would make better use of existing facilities including the Leeward Community College theater.
- Can the maintenance area be used for TOD? We would like to see high density residential in this area.
- We like the pedestrian bridge into the Pearl Highlands Center.
- We need to take into account the flood plain areas surrounding the stations.
- The maintenance facility should be re-planned so that the administrative buildings are closer to the station.
- We should look at relocating the ramps of the H-1 Freeway and try to bridge over the freeway to connect the Pearl Highlands and Leeward Community College areas.
- With the new transit station, there may be less need for parking at the Community College.
- Transit results in easier, more pleasant trips than driving.
- We should take advantage of location-efficient mortgages for both residential and business uses.
- Leeward Community College Station could also act as a job center.

AIEA - PEARL CITY NEIGHBORHOOD TOD COMMUNITY WORKSHOP 3

Name	Address	Affiliation	Email	Phone Number
ROBERT DURICK	98-1654 KAONOHI ST AIEA HI 96701	RESIDENCE	RED2R@CUNNCILL.COM	375-1544
M.F. Kendrick	98-945 Moanalua Rd Aiea	"		486-4266
Robert McFarland	98-099 Ulaoli Pl #304	Residence	shortmac@live.com	486-3540
FRANK GENADIO	92-1370 KIKAHA ST, KAPOLEI		genadiofrs@hawaii.rr.com	672-9170
LINDA FRYSZTACKI	1551 ALA WAI #3008	INTERVIN	FRYSZTACKI@aol.com	
Terrence Kawano	99-1382 Halawa Hts. Rd	Resident	terrencekawano@gmail.com	
JOHN MANAHAN	120 N. ROBERTSON LHCA	9005	jmanahan@uchp.com	301 855 8456
John Zohon	1675 Pele St. 96813	President		234-3607
Chris Deuchar	1003 Bishop St 96813		cdeuchar@formpartners.com	330-5032
Mitch Neiva	98-658 Piki St	—		488 6619
Bogit Jan Fillazar	98 099 Ulaoli Pl #301	Resident	Fillazar002@hawaii.rr.com	487-2112
Myrtle Nyuha	98-456 Moomalani St	PCNB	mnyuha@hawaii.rr.com	456-4871
JANE SUGIMURA	98-340 KAUKA LP #112, AIEA		kyjimura@bandtfield.com	
Shannon Alivado/Dave Arakawa	700 Bishop St #1922	LURF	Salivado@lurf.org	

Name	Address	Affiliation	Email	Phone Number
Ray Suzuki	98-1628 Hapani St	Resident		486-6047
INES FRYSZTACKI	1551 ALA WAI			591-0988
PRICE NAGAO	98-654 Kualima	"		
NOE COBB-ADAMS	1216 Aokanaloa St Hlend			228-4907
Lisa Santimer	2444 Hueo St	"		
NOHEA SANTIMER	" "	"		
Darrell Tamaru	99-403 Honohono St	"	dtamaru@hawaiiantel.net	223-3238
Hinaye Niiya	98-1658 P. Ki St	"		
Cecil V. Ana Jr		PC NB #21		456-3480
Kiyomi Uyama	98-1674 Hoolauae St. Aiea 96701		kiyomi@hawaiiedu.gov	
Tom Fee	1333 Shep St		tfee@nhf.com	5452035
MARK GARRITY	1099 Alakea, 17th Fl.	RTD	garrity@pbworld.com	768 6128
GARY OMORI	987 956 HAPAKI ST	HHCTCP.	ayakimataemon@aol.com	551-6693
Jim Spencer	3029 Lowrey Ave HNL	UH	jhs@hawaii.edu	988-1691
DAVID BYLUND	47742 Hui Kelu 3 Kaneohe	AHL	dbylund@ahldesign.com	
Rodney Funakoshi	98096 Lani St	[illegible]		548-4869
HERMAN K. NAKI	98050 Lipoli Pl	~~RTD~~		
RYAN TAM	—	~~RTD~~ DTS-RTD	rtam1@honolulu.gov	768-6184
Cheryl Soon	39 Makaweli St	SSFM	csoon@sstm.com	356-1268

Name	Address	Affiliation	Email	Phone Number
[illegible]	98-1937 Kaulawai			487-2371
Saiki, Grace	98-1933 Kaulawai			487-8120

Aiea - Pearl City Neighborhood
Transit-Oriented Development Plan
Workshop #3 - Preferred Alternatives
April 21, 2010

A[illegible] ARL CITY |

AGENDA FOR COMMUNITY WORKSHOP #3 - 4/21/10:

1) WELCOME & PURPOSE OF MEETING
2) PROJECT TIMELINE
3) PLAN AREAS
4) IDENTIFIED AREAS OF OPPORTUNITY
5) AIEA - PEARL CITY NEIGHBORHOOD PLANNING PRINCIPLES
6) PREFERRED ALTERNATIVES FOR EACH STATION
7) WORKING SESSION - PREFERRED ALTERNATIVES
9) NEXT STEPS...

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AIEA - PEARL CITY NEIGHBORHOOD TOD TIMELINE

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TIMELINE

AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN

2009: JULY '09 — PROJECT KICKOFF; OCT '09 — COMMUNITY WORKSHOP 1; DEC '09 — COMMUNITY WORKSHOP 2

2010: FEB '10; APR '10 — COMMUNITY WORKSHOP 3; JUNE '10; AUG '10 — COMMUNITY WORKSHOP 4; NOV '10

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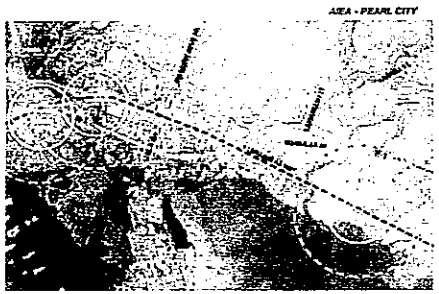
PLAN AREAS

AIE [illegible] CIT[illegible] |

OVERALL SYSTEM MAP

AIEA- . CITY |



IDENTIFIED AREAS OF OPPORTUNITY

LEEWARD COMMUNITY COLLEGE PREFERRED ALTERNATIVE

PREFERRED ALTERNATVE

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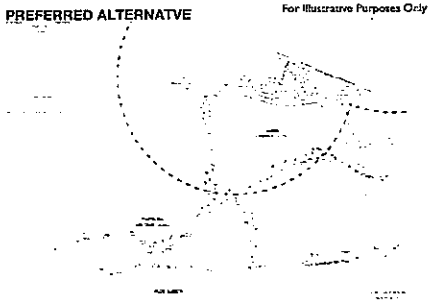

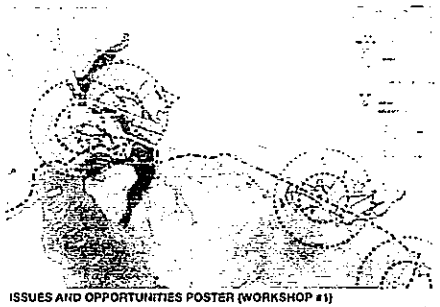

ISSUES AND OPPORTUNITIES POSTER (WORKSHOP #1)

AIEA - PEARL CITY NEIGHBORHOOD TOD PLANNING PRINCIPLES

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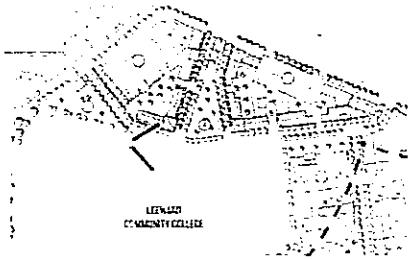


LEEWARD COMMUNITY COLLEGE STATION - CAMPUS

PLANNING PRINCIPLES

1) CREATE *ACCESS AND VIEWS* TO WATER AND PEARL HARBOR HISTORIC TRAIL

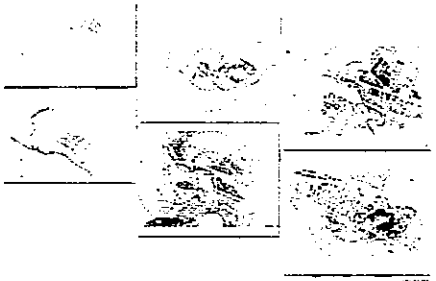
2) ENCOURAGE *WORKFORCE HOUSING*

3) CREATE A COMFORTABLE AND LIVELY *PEDESTRIAN EXPERIENCE*

4) PROVIDE *MULTI-MODAL ACCESS* TO AND FROM STATIONS

5) DEVELOP NEW AND ENHANCE EXISTING *OPEN SPACE*

ALTERNATIVES PROCESS



LEEWARD COMMUNITY COLLEGE STATION - CAMPUS

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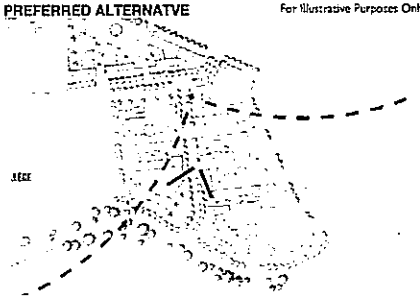

LEEWARD COMMUNITY COLLEGE STATION - NEIGHBORHOOD PARK

LEEWARD COMMUNITY COLLEGE STATION - NEIGHBORHOOD PARK

PEARL HIGHLANDS STATION - MAIN STREET

PEARL HIGHLANDS STATION - MAIN STREET

LEEWARD COMMUNITY COLLEGE STATION - MASSING

PEARL HIGHLANDS
PREFERRED ALTERNATIVE

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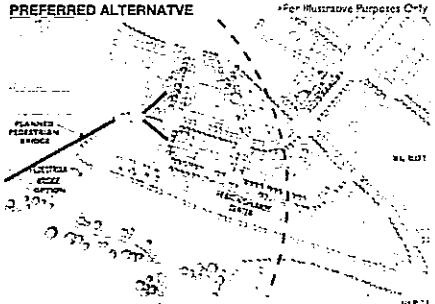

PEARL HIGHLANDS STATION - KUALA STREET

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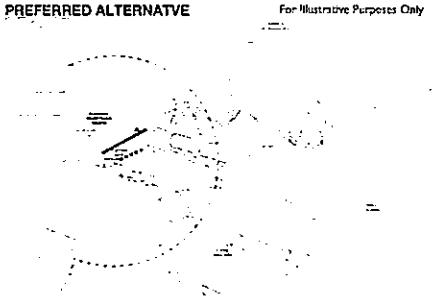

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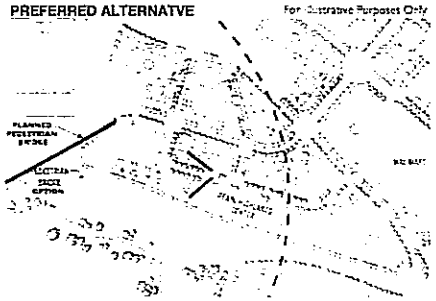

PEARL HIGHLANDS STATION - KUALA STREET

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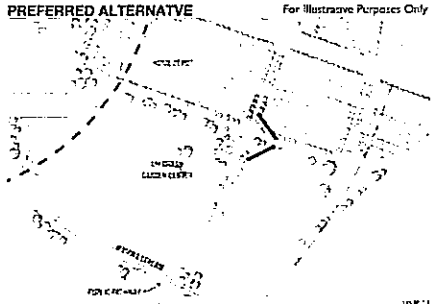

PEARL HIGHLANDS STATION -
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PEARL HIGHLANDS STATION -
UH URBAN GARDENS

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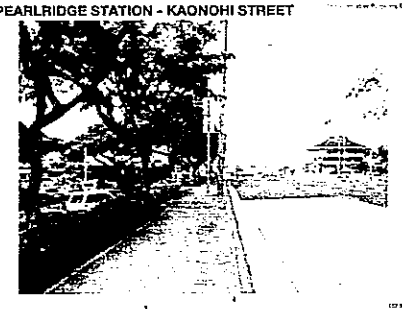
PEARLRIDGE STATION - KAONOHI STREET



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PEARLRIDGE STATION - KAONOHI STREET

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PEARL HIGHLANDS STATION - MASSING

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PREFERRED ALTERNATIVE

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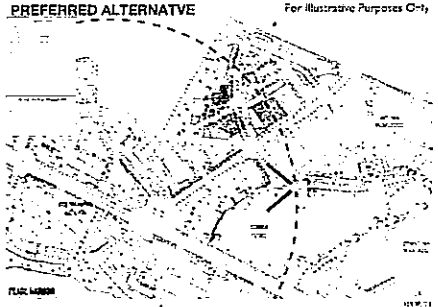

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PEARLRIDGE STATION - SUMIDA FARMS

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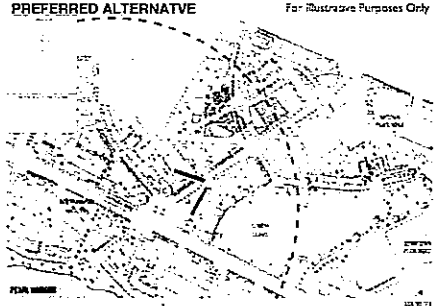

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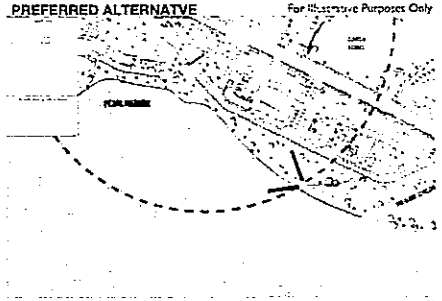

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PEARLRIDGE STATION -
PEARL HARBOR HISTORIC TRAIL

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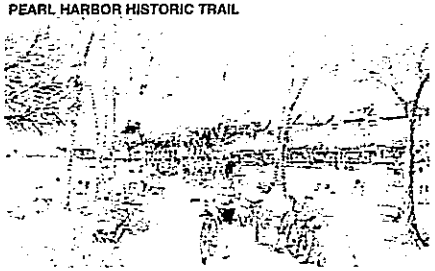
PEARLRIDGE STATION -
PEARL HARBOR HISTORIC TRAIL



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PHASING STRATEGY - PROTOTYPICAL SITE

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NEIGHBORHOOD TOD PLAN SMALL GROUP SESSIONS

DESIRED OUTCOMES:

1) RECEIVE FEEDBACK ON PREFERRED ALTERNATIVES - ARE WE MISSING ANYTHING?
2) FILTER EACH ALTERNATIVE THROUGH 5 PLANNING PRINCIPLES

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PEARLRIDGE STATION - MASSING

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PHASING STRATEGY - PROTOTYPICAL SITE

A L CITY |

NEXT STEPS

1) FINAL PLAN REFINEMENTS
2) CIRCULATION ANALYSIS MEMORANDUM
3) TOD ZONING RECOMMENDATIONS
4) PHASING STRATEGIES
5) ADVISORY COMMITTEE MEETING 5 - JUNE 2010

Need more info? [illegible]

Contact: Adam R[illegible] (Van [illegible] Pollack)
[illegible] x 17 [illegible]
Den[illegible] (Dept. of [illegible] and Per[illegible]g)
[illegible] 71 [illegible] .lu.gov

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A) -PE/ CITY |

PHASING STRATEGY - PROTOTYPICAL SITE

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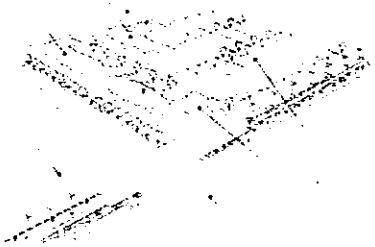
PHASING STRATEGY - PROTOTYPICAL SITE



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COMMUNITY WORKSHOP 4
Workshop Summary

AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN

November 17, 2010

City and County of Honolulu

The following is a summary of the comments from Community Workshop 4 held on November 17, 2010 from 6:30 to 9:00 pm at Pearl Ridge Elementary. Community Workshop 4 focused on summarizing the Public Review Draft of the Aiea / Pearl City Neighborhood TOD Plan. Following VMWP's presentation, an open house session was held where workshop participants could view illustrations and descriptions of Plans and provide comments on various Plan elements.

General Comments

- Higher density development seems appropriate along Kaonohi St and at Pearl Highlands within close proximity of the stations.
- Minimize bulk of buildings makai of Kamehameha Highway (at Pearlridge Station) in order to allow views of the water. This may necessitate slightly higher height limits.
- There needs to be parking at stations for local access. This could be provided by the private sector.
- Frequent and convenient bus/shuttle service must connect local neighborhoods with the rail stations.
- Design for segways, not just bikes and pedestrians, because of steep topography.
- Some meeting participants oppose the pathway through the UH Urban Garden Center dues to safety and security concerns. Participants suggested an alternate route around the garden periphery in a former utility easement that still connects up with the proposed bike path connecting to the Pearl Harbor Historic Trail.
- Is there a height limit in the area related to military operations and medi-vac access?
- The new Pearlridge "main street" is a good connection that would increase travel options. It would also allow for a traffic signal at Pearlridge Elementary, which the community has been requesting for a long time.
- Add "mix of or diversity of uses" to Plan Principles.

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP #4
November 17, 2010

Please Print Clearly

Name	Affiliation	Address	Email	Phone
Ray Suzuki	—	98-1628 Hapaia St	—	486-6047
Peter RAPPA	UH Sea Grant	UH Manoa	rappa@hawaii.edu	956-3976
Tayana Bowersox	Resident	1680 Kamehameha Hwy #101 A P.C.	[illegible]	456-8241
Chris Benchir	KGM Div 40			
Charles Tagami	Continental Tow	P.O. Box 4888 Aiea HI 96701	[illegible]	2552282
Jeanne Forth	Hoseth CCRT/NB #18	1149 Aiea Heights St Aiea HI 96701	[illegible]	225-0320
Rodney Kanagendi	resident	98056 Lexie Dr	[illegible]	595-4765
Betty Velunel	my Pearl City.com	1375 Hoolui St. PC. 96782	bamm@mypearlcity.com	571-9517
Ronald & Nancy Nishikawa	— resident	98-281 Aiea Bay St Aiea HI	nassinwatkins@hawaiiantel.net	389-0696
Ryan Tam	PTO - DTS		rtam1@hawaii.edu	788-8189

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP #4
November 17, 2010

Please Print Clearly

Name	Affiliation	Address	Email	Phone
Michelle Alipio				230-9953
Martha Loeffius	Resident	98-099 Ulao Pl #2309 Aiea	frogmlc@aol.com	484-5075
Vina	Pc NB #21			
Breene Harimoto	City Council / Pearl City Foundation			225-0368
JOHN MANAVIAN	ROBERTSON PROPERTIES GROUP		jmanavian@robproprs.com	310855-8435
Ronald Fujikawa	Continental Invest. Co.			255-6080
Reena Rabago	Representative Blake Oshiro	PO Box 1152 • Aiea 96701	rabago@capitol.hawaii.gov	
Lacey Shimabukuro	Naimalu Shopping Center	99-128 Aiea Heights Dr. #605 Aiea	laceyk3@gmail.com	487-9433
STEPHEN DiRICO	HARBOR POINTE BOARD	98-943 MOANALUA RD #1504 AIEA	DiRicoS001@HAWAII	RR. Cog 486-5255

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP #4
November 17, 2010

Please Print Clearly

Name	Affiliation	Address	Email	Phone
ROXANNE FUJIWARA	UGC	95-710 LAHAI ST.	fujiwarar003@hawaii	225 0408
STEVE NAGANO	UGC	955 Kam Hwy PC 96782	snagano@hawaii.rr.com	453-6054
Connie Tadao		1060 Kam Hwy 96817		
Howard Chong	Hoalani Land Co	P.O. Box 17658 HON 96817		486-4196

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP #4
November 17, 2010

Please Print Clearly

Name	Affiliation	Address	Email	Phone
Dean Minakami	PBR Hawaii	1001 Bishop St, Suite 650	dminakami@pbr-hawaii.com	521-5631
FRANK GENADIO	(NONE)	92-1370 KIKAHA ST, KAPOLEI 96707	genadiof001@hawaii.rr.com	672-9170
Tom Schnell	PBR Hawaii	1001 Bishop St Suite 650	tschnell@pbrhawaii.com	521-5631
Claria Hashimoto	Resident	98-1936 Hapaki St Aiea 96701	cyhashimoto45@hotmail.com	
Bea Sailer	UGC	955 Kam Hwy	sailebs@hawaii.rr.com	453-6050

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP #4
November 17, 2010

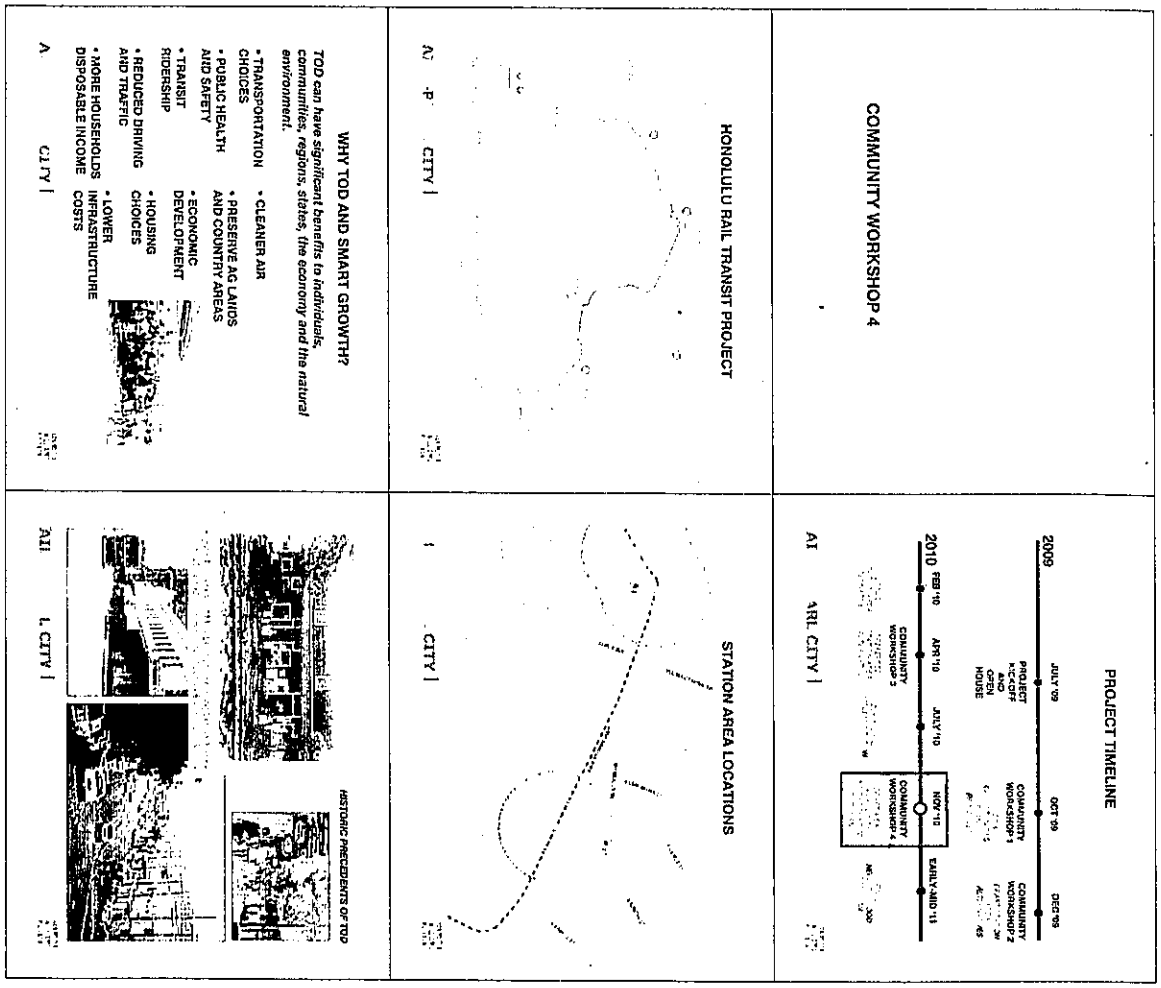
Please Print Clearly

Name	Affiliation	Address	Email	Phone
DARON LEE	HPD	4001 S BERETANIA ST	[illegible]	529-3963
M. E. Kendrick		98-943 [illegible]	1502 Aiea Hts	486-4766
Kevin Farm	HFO	1852-A Kaikunane Lp Hon 96819	Kevfarm@yahoo.com	845-4105
MARK GARRITY		1099 Alakea St. 96813	garrity@phworld.com	768-6128
BOUZA RODNEY	—	931937 KAULAHAO St		4872370
KEVIN KUBO	HARBOR POINTE	98-943 MOANALUA RD #779	ckjonkubo@hawaii.rr.com	486-9609
WARREN Ho		50 S. Beretania St. C-209		5210081

SIGN-IN SHEET
AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN - COMMUNITY WORKSHOP #4
November 17, 2010

Please Print Clearly

Name	Affiliation	Address	Email	Phone
ROBERT D WRICK	RESIDENT	98-1063C KAONO ST 96701	RGDBR@COMCAST.NET	
JACCE MIKULANEC	LEGISLATURE - B. OSHIRO		mikulanec@capitol.hawaii.gov.	
JOE MAGALDI	TRANSCON		ITALIANHAWAII@HOTMAIL.COM	
C. Mike Kido	PRP	1001 Bishop St Suite 1501	mkido@prp-hawaii.com	
Pat Lee			patlee@hawaii.rr.com	
Jim Fujton	City & County		jfujton@honolulu.gov	
Jeoffrey Cuchiamot	Structural Hawaii		engineer@structuralhawaii.com	



HIGHER INTENSITIES AT STATION AREA

Downtown Oakland TOD - Oakland, CA

Bethesda Row TOD - Maryland

Fruitvale Village TOD - Oakland, CA

Waterfront Area - Portland, OR

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CREATING A SENSE OF PLACE

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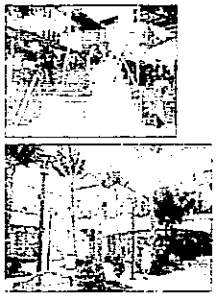

WALKABILITY AND CONNECTIVITY

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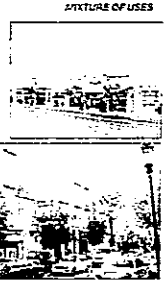
MIXTURE OF USES



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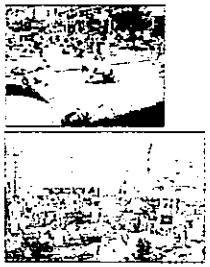
OPEN SPACES AND GATHERING PLACES



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PLAN PRINCIPLES

1) CREATE *ACCESS AND VIEWS* TO WATER AND PEARL HARBOR HISTORIC TRAIL

2) ENCOURAGE *WORKFORCE HOUSING*

3) CREATE A COMFORTABLE AND LIVELY *PEDESTRIAN EXPERIENCE*

4) PROVIDE *MULTI-MODAL ACCESS* TO AND FROM STATIONS

5) DEVELOP NEW AND ENHANCE EXISTING *OPEN SPACE*

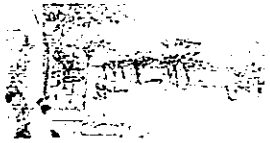
. CITY |

NEIGHBORHOOD TOD PLAN

THE PLAN AND GRAPHICS ARE CONCEPTUAL IN NATURE

ILLUSTRATIONS ARE INTENDED TO SHOW THE FUTURE COMMUNITY VISION

WHEN AREAS REDEVELOP OVER TIME, OWNERS WILL BE ENCOURAGED TO HELP FULFIL STATION AREA GOALS AND PLANNING PRINCIPLES



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NEXT STEPS - PRIORITY PROJECTS

A. CIRCULATION / CONNECTIVITY IMPROVEMENT
B. TOD CATALYST DEVELOPMENT
C. OPEN SPACE IMPROVEMENT
D. PEDESTRIAN / BICYCLE IMPROVEMENT

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LEEWARD COMMUNITY COLLEGE STATION AREA

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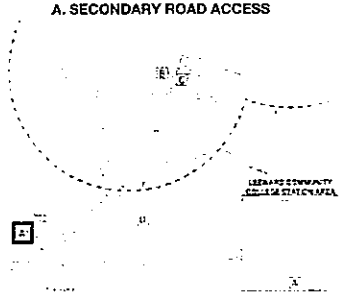
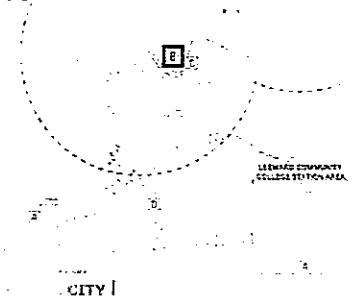
A. SECONDARY ROAD ACCESS



A) CITY |

B. DEVELOPMENT OF CATALYST SITE



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B. DEVELOPMENT OF CATALYST SITE

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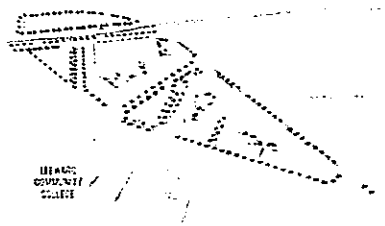
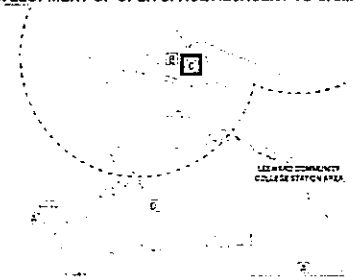
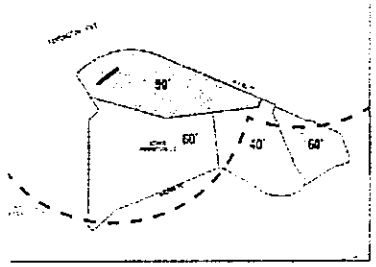


C. DEVELOPMENT OF OPEN SPACE ADJACENT TO CAMPUS



EXISTING BUILDING HEIGHTS

RECOMMENDED BUILDING HEIGHTS



C. DEVELOPMENT OF OPEN SPACE ADJACENT TO CAMPUS

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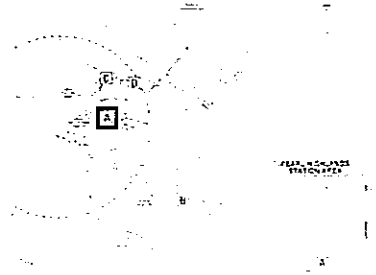
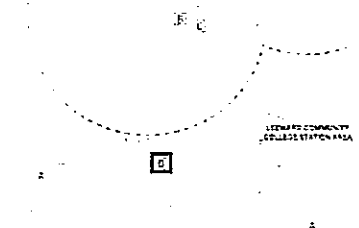
PEARL HIGHLANDS STATION AREA

A. PEARL HIGHLANDS CENTER PEDESTRIAN IMPROVEMENTS



D. PEARL HARBOR HISTORIC TRAIL CONNECTION



EXISTING BUILDING HEIGHTS

A. PEARL HIGHLANDS CENTER PEDESTRIAN IMPROVEMENTS

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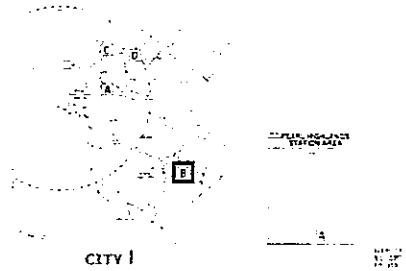
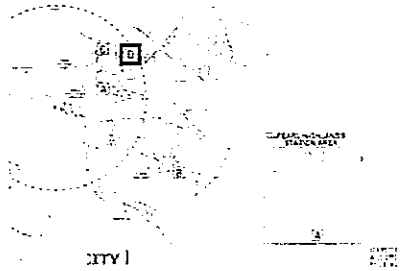
B. ACCESS AND IMPROVEMENTS TO UH URBAN GARDENS CENTER



B. ACCESS AND IMPROVEMENTS TO UH URBAN GARDENS CENTER

D. CREATION OF TRIANGLE PARK

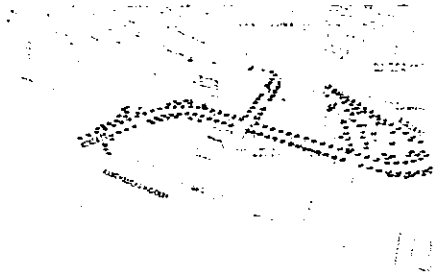


D. CREATION OF TRIANGLE PARK

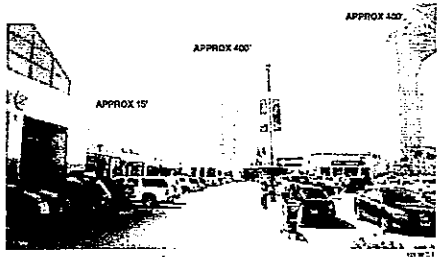
B. ACCESS AND IMPROVEMENTS TO UH URBAN GARDENS CENTER

C. DEVELOPMENT OF CATALYST SITE (MAUKA OF CENTER)

D. CREATION OF TRIANGLE PARK



EXISTING BUILDING HEIGHTS



C. DEVELOPMENT OF CATALYST SITE (MAUKA OF CENTER)

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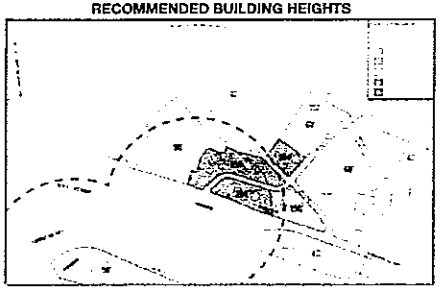
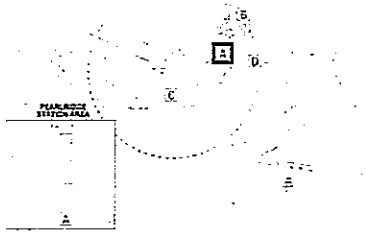
EXISTING BUILDING HEIGHTS

RECOMMENDED BUILDING HEIGHTS

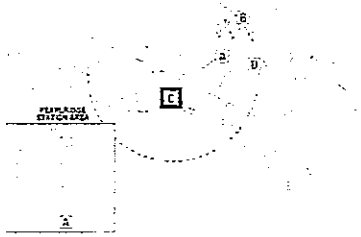


PEARLRIDGE STATION AREA

A. KAONOHI STREET IMPROVEMENTS

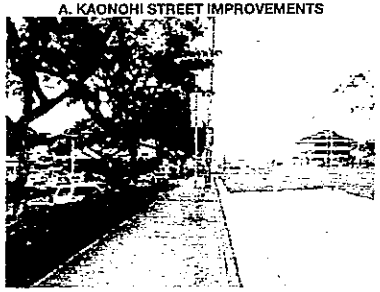


C. PEARL HARBOR OPEN SPACE AND TRAIL CONNECTIONS



C. PEARL HARBOR OPEN SPACE AND TRAIL CONNECTIONS

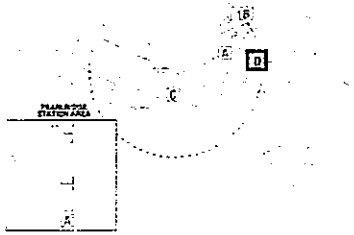
A. KAONOHI STREET IMPROVEMENTS



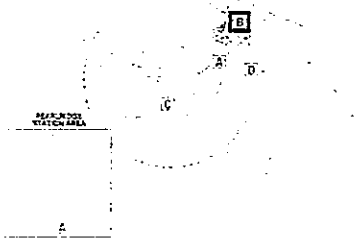
A. KAONOHI STREET IMPROVEMENTS

C. PEARL HARBOR OPEN SPACE AND TRAIL CONNECTIONS

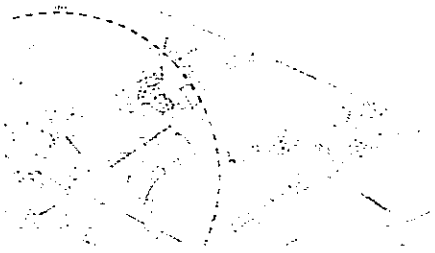
D. SUMIDA FARMS - TRAIL OVERLOOK



B. DEVELOPMENT OF KAMEHAMEHA DRIVE-IN CATALYST SITE



B. DEVELOPMENT OF KAMEHAMEHA DRIVE-IN CATALYST SITE



D. SUMIDA FARMS - TRAIL OVERLOOK

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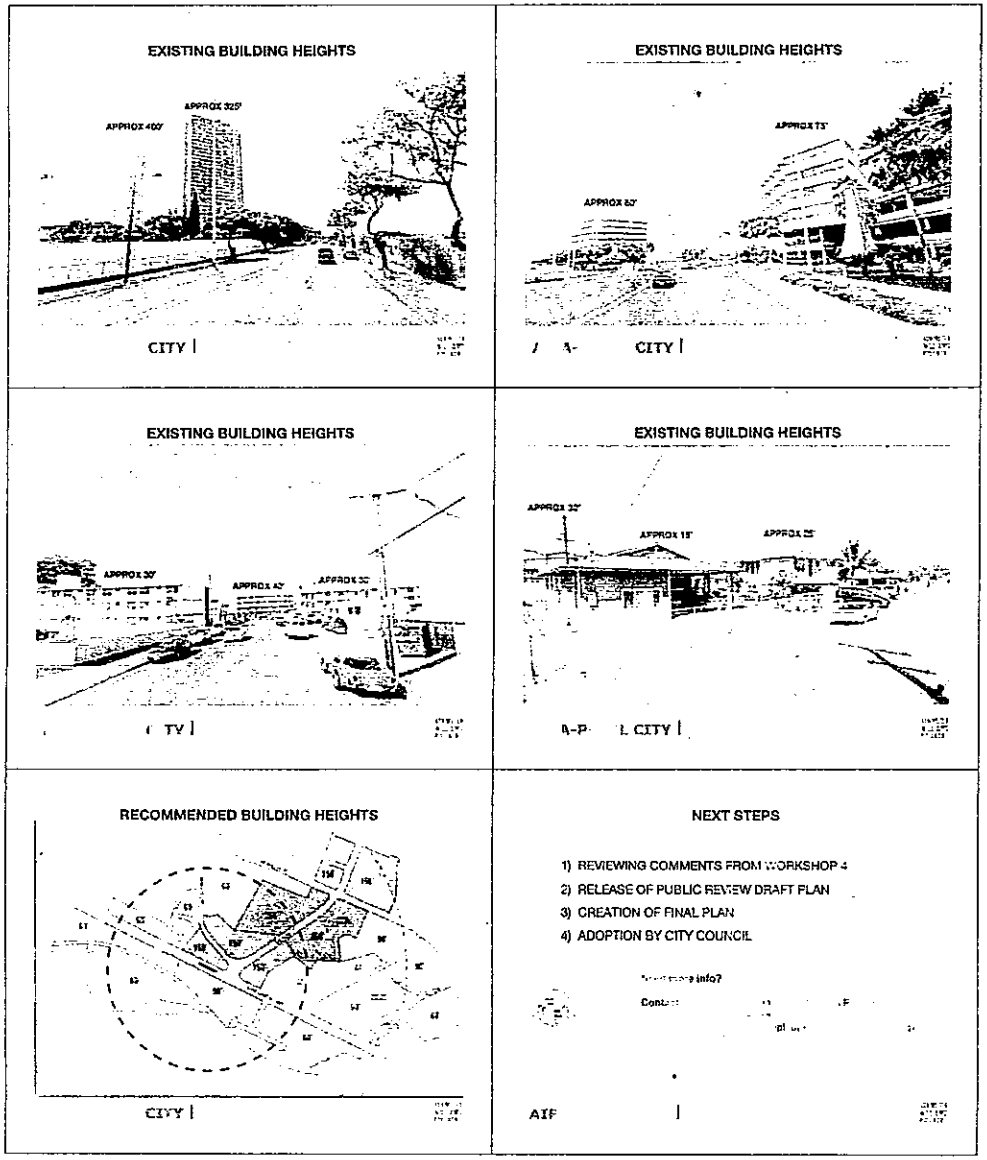


AIEA-PEARL CITY NEIGHBORHOOD TOD PLAN
General Informational Meeting 5
Meeting Notes

February 27, 2014

The following summarizes **General Informational Meeting #5** held on February 27 at 7:00 pm at Alvah Scott Elementary, immediately following the Advisory Committee meeting. This meeting focused on summarizing the highlights of the Plan, including notable revisions. Note: This meeting was requested by Councilmember Breene Harimoto and co-hosted by the Department of Planning and Permitting.

Following a welcome and introduction by CM Harimoto, Harrison Rue provided a powerpoint overview of the process to date, and highlights of the Plan.

General Comments (City response is in *italics*):

- How will the City expect landowners and developer to conform to the recommendations of the Plan? *Once zoning is in place, projects will need to meet the development standards of TOD, as applicable. For the interim, DPP currently has a bill in front of Council that will enable developers to build TOD projects – Interim Plan Development-Transit.*
- The City should consider a rail segment to Windward Oahu to alleviate the commute from that section of the island. *It was explained that rail typically encourages development and growth, and that may not be desirable on the Windward side.*
- A few attendees commented that they were pleased with the process and the work by the City.

The audience was informed of the DPP-proposed timeline as follows:

Aiea Neighborhood Board – Monday, March 10
Pearl City Neighborhood Board - Tuesday, March 25
Planning Commission Hearing – Wednesday, April 2

Aiea - Pearl City Transit Oriented Development Neighborhood Plan Workshop #5
Community Meeting
February 27, 2014

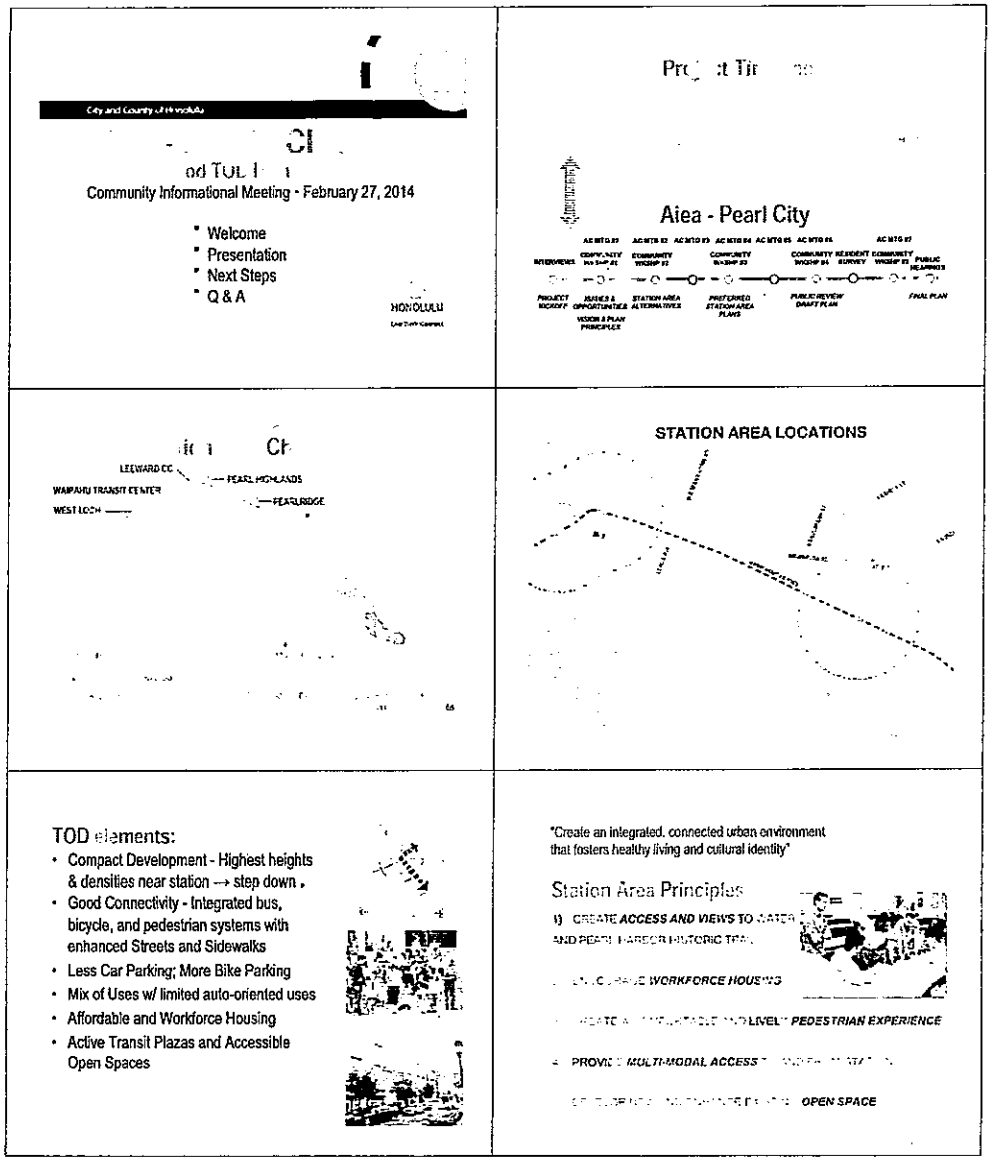
NAME (FIRST AND LAST)	MAILING ADDRESS	PHONE	E-MAIL
Frank STREED	530 S. King St.	968-5064	FSTREED@honolulu.gov
Maria Chan	AB Properties, Box Business Ctr Hon HI 96817	595-8434	mchan@abprop.com
JEFF GASKELL	95-1037 Aelike St. Mililani HI 96789	221-9157	jpg@50-50.com
ROBERT HELSHAM SR.	PO Box 1925 AIEA 96701	5063645	ROBERT.HELSHAM@GMAIL
Curtis Togami			
Chris Donchar			
Breene Harimoto			

Aiea - Pearl City Transit Oriented Development Neighborhood Plan
Community Meeting
February 27, 2014

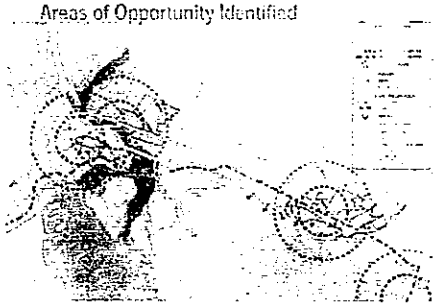
NAME (FIRST AND LAST)	MAILING ADDRESS	PHONE	E-MAIL
WALLACE KAMAMA	P.O. Box 578 Aiea HI 96701	487-1933	roodink@yahoo.com
Claire Tamamoto	99-210 Hailimanu Pl. Aiea 96701	486-0282	clairet@hawaii.rr.com
Carol Iwamoto	99-052 Moanalua Pl. #1-B 96701	265-8100	csiwamoto@earthlink.net
Vince Cruz, Jr.	PC NB #21		

Aiea - Pearl City Transit Oriented Development Neighborhood Plan
Community Meeting
February 27, 2014

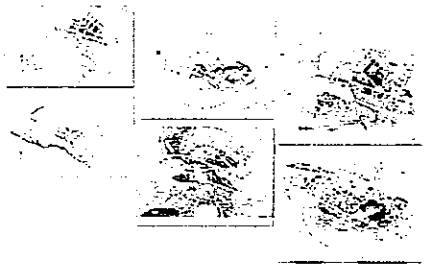
NAME (FIRST AND LAST)	MAILING ADDRESS	PHONE	E-MAIL
Myrtle Nyuha	98-455 Hoomalani St Pe[illegible]	808-[illegible]	myrtlenyuha@[illegible]
[illegible]	98-052 [illegible] RD	8[illegible] 2[illegible]-7282	[illegible]@Hotmail.com



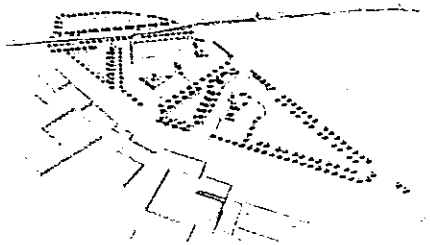
Areas of Opportunity Identified



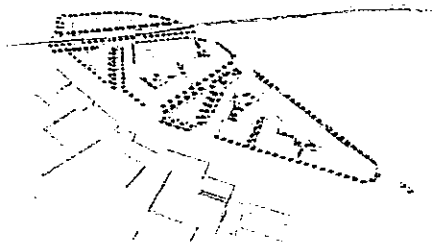
Alternatives Process

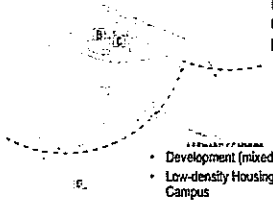


Mixed-Use Development on Parking Lot



Mixed-Use Development on Parking Lot





LEEWARD COMMUNITY COLLEGE RECOMMENDATIONS:

- Development (mixed-use) on parking lot
- Low-density Housing on Diamond Head end of Campus
- Bike Paths along extension of Ala Ike Street and Waiawa Stream
- PH Historic Trail Connections and Improvements
- Second Access Road to Farrington Hwy
- Wider Sidewalks and Shade Trees

Mixed-Use Development on Parking Lot

Open Space adjacent to Campus Buildings

Open Space adjacent to Campus Buildings

Mixed-Use Development on Parking Lot

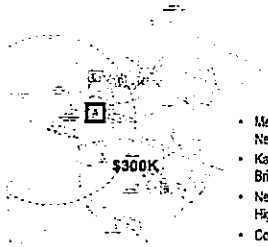
Mixed-Use Development on Parking Lot

Housing on DH end of Campus

Housing on DH end of Campus

Shared Path along Waiawa Stream

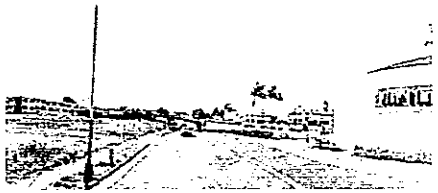
and Connections to an improved Shoreline Path (PHHT)



PEARL HIGHLANDS RECOMMENDATIONS:

- Medium-density Housing and Neighborhood Parks
- Kamehameha Hwy Pedestrian Bridge to Station
- New Main Street within Pearl Highlands Center
- Commercial space above station parking structure
- New and enhanced Bicycle lanes
- Urban Garden Ctr Access

Medium-density housing and bike facilities



Medium-density housing and bike facilities

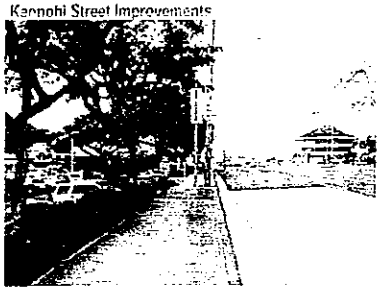
Main Street within Pearl Highlands Center

Main Street within Pearl Highlands Center

PEARLRIDGE RECOMMENDATIONS:

- Bus transit center and housing at the station
- Shoreline park at the base of Kaonohi Street
- PHHT improvements and path connections
- Medium-density Housing makai of Kamehameha Hwy; High-density Housing mauka of Kamehameha Hwy
- Sumida Farm perimeter trail and overlook
- New connector mainstreet from Moanalua Road to Kaonohi Street
- Better sidewalks in area

Kaonohi Street Improvements



Infill Development oriented to community resource

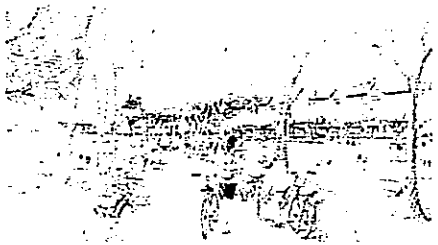
UH Urban Garden Center

Infill Development oriented to community resource

Pearlridge Center

Kaonohi Street Improvements

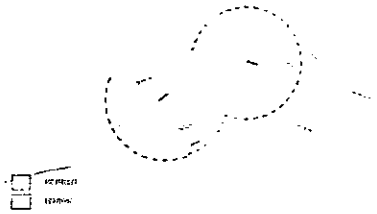
Pearl Harbor Historic Trail Area Improvements



Peartridge Overlook and Path at Sumida Farms

Peartridge Overlook and Path at Sumida Farms

Recommended TOD Boundaries



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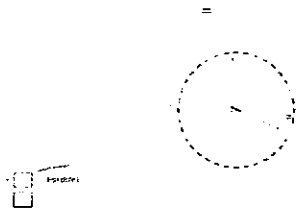
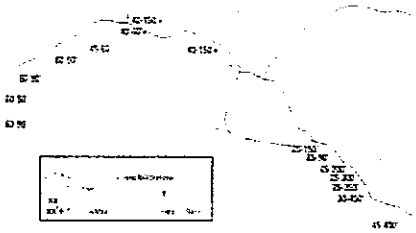


BUILDING HEIGHTS



Draft)

- Recommends that the need for new/expanded schools be evaluated as development proposals occur
- Relocates the proposed path through the UH Urban Garden Center to the edge of the facility for security
- Makes note of infrastructure capacity limitations
- Reflects removal of the planned pedestrian bridge at Pearl Highlands station
- Recommends parking management to prevent long-term parking by transit riders
- Recommends shuttle and circulator bus access to station

d Plan R

- Recommends office development above park-and-ride at Pearl Highlands station, and multi-family housing at Pearlridge station/bus transit facility
- Recommends expanded transit plaza connected to PHHT at Pearlridge station
- Sets maximum height limits with community benefits bonus
- Amends common open space requirement to require publicly accessible open space for new development on sites of 20,000 sf and larger
- Removes 1 acre threshold for affordable housing provision
- Expands discussion on Plan's compliance with regional development plans and General Plan

City and County of Honolulu

- Review and Adoption of the TOD Plan by City Council
- Preparation and Adoption of Zoning Code amendments
- Sidewalk/streetscape projects for improved station access by 2017 rail operation

www.todhonolulu.org

Exhibit 4

TRANSIT ORIENTED DEVELOPMENT, AIEA AND PEARL CITY: OVERVIEW MARKET ANALYSIS AND ECONOMIC IMPACTS

Plasch Econ Pacific LLC

March 2010

1. INTRODUCTION

a. **Purpose**

— This report provides an overview of the market for planned transit-oriented development (TOD) in Aiea and Pearl City, and the economic benefits and impacts of this development.

b. **Transit Stations**

— The transit stations addressed in the analysis include:

- Leeward Community College Station
- Pearl Highlands Station
- Pearlridge Station

c. **Geographic Scope**

— The geographic scope of the analysis extends approximately one-quarter mile out from each of the transit stations.

— These geographic areas are referred to below as the three TOD Project Areas.

d. **Alternatives**

— The analysis addresses two development alternatives: Refined Alternative A and Refined Alternative B.

— These alternatives are described in the February 8, 2010 document, "Refined Alternative Description," by Van Meter Williams Pollack, LLC.

2. LOCATIONAL AND OTHER ADVANTAGES FOR DEVELOPMENT

a. **Central Location and Access to Other Communities**

— Aiea and Pearl City are centrally located within the island's existing and planned urban area.

— Businesses and residents have good access to downtown Honolulu, Central O`ahu, `Ewa, and Windward O`ahu via the H-1, H-2 and H-3 Freeways, Moanalua Road, Kamehameha Highway, and Farrington Highway.

— Aiea and Pearl City are excellent locations for:

- Residents working in Aiea and Pearl City as well as those commuting to jobs in Honolulu, `Ewa and Central O'ahu.
- Students attending Leeward Community College and UH West O`ahu.
- Military personnel and civilian defense workers living in the area and commuting to nearby military facilities.
- Retail stores and office complexes serving Aiea, Pearl City and the surrounding region.

b. **Leeward Community College (LCC)**

— LCC serves about 6,000 students per semester in its credit programs and about 20,000 students per year in its non-credit programs.

— LCC employs about 300 full-time faculty and staff, and 60 to 80 lecturers and other temporary employees.

— Courses are offered in accounting, applied forensic anthropology, automotive technology, business technology, business, community food security, creative media, culinary arts, digital art, digital media, e-commerce, Hawaiian studies, information and computer science, management, music, Philippine studies, teaching, television production, and writing.

— To varying degrees, the students, faculty and staff shop in stores in Pearl City.

— Also, many of them live near LCC.

c. **Commercial Development**

— Major shopping centers in the area include:

- Pearlridge Center, which is Hawai`i's second largest shopping center at 1.2 million sq. ft.

- Pearl Highlands Center (411,518 sq. ft.)
- Pearl City Shopping Center (255,122 sq. ft.)
- Waimanu Plaza Shopping Center (143,229 sq. ft.)

— In addition, smaller shopping centers and office complexes are located along Kamehameha Highway, Moanalua Road, Hekaha St., Kaonohi St., and Pali Momi St.

d. Light-industry Parks

— Light-industry parks in the area include:

- Former Manana Storage Area: about 90 acres mauka of the Pearl Highlands Station.
- Hawai'i Business Park: about 5 acres two-thirds mile northwest of the Pearl Highlands Station.
- Sears Distribution Center: about 14 acres on Kamehameha Highway, and about 0.9 mile from the Pearl Highlands Station and 1.2 miles from the Pearlridge Station.
- Newtown Business Park: about 10 acres between the H-1 Freeway and Moanalua Road, and about two-thirds mile northwest of the Pearlridge Station.
- Harbor View Center and adjacent industrial properties: about 40 acres abutting or near the Pearlridge Station on the makai side of Kamehameha Highway.

— The transit system will allow some employees and customers to commute to and from businesses located in the industrial parks.

— However, some of the existing industrial businesses near the transit stations are likely to relocate in order to make room for redevelopment into mixed-use residential/commercial projects.

e. Kapiolani Medical Center at Pali Momi

— The planned Pearlridge Station is about a half-mile from the Kapiolani Medical Center at Pali Momi, making the area near the station an attractive location for physicians who want to have their offices near a major medical facility.

— The Medical Center is a 116-bed facility with more than 400 physicians on staff. The adjoining medical office building houses over 100 physicians and specialists.

f. Military

— The three transit stations are near major military facilites/employment centers, including:

- Camp Smith/Marine Corp Base Hawai'i Headquarters (located in Halawa Heights about 2.5 miles from the Pearlridge Station).
- Naval Station Pearl Harbor (about 2.2 miles from the Pearlridge Station and two stations toward town).
- Hickam Air Force Base and the Headquarters for the Pacific Air Forces (about 3.3 miles from the Pearlridge Station and two stations toward town).
- Fort Shafter, Army Headquarters for the Asia-Pacific Region (about 4.75 miles from the Pearlridge Station via the H-1 and Moanalua Freeways, or the planned transit system).
- Schofield Barracks (Army base located about 8 miles from Pearl Highlands via the H-2 Freeway).
- Marine Corps Base Hawai'i (Kaneohe, about 13 miles from Pearlridge via the H-1 and H-3 Freeways).

— Military housing near the three transit stations include:

- Manana (a few hundred duplexes and single-family homes about 0.4 mile northwest of the Pearl Highlands Station).
- Pearl City Peninsula (a few hundred duplexes about 1.2 miles south of the Pearl Highlands Station).
- McGrew Point (140 single-family homes about 0.6 mile southeast of the Pearlridge Station).

g. Bus Service to the Transit Stations

— Bus service to the transit stations will draw commuters from nearby communities, and these commuters will also become potential customers for businesses near the stations.

h. Low Value of Existing Buildings

— Many of the buildings near the planned Pearlridge Station are good candidates for replacement, since many of the lots are large; most buildings occupy only a fraction of the lots; the buildings are only one or two stories and, when the transit stations are built, many buildings will be over 30 years old.

3. PLANNED TRANSIT-ORIENTED DEVELOPMENT

a. **Alternative A (Table 1)**

— Net Increase in Homes (number)	Low	High
• Leeward Community College TOD Area	150	330
• Pearl Highlands Station TOD Area	870	3,210
• Pearlridge Station TOD Area	1,590	4,890
• Total	2,610	8,430

— Net Increase in Commercial Space (1,000 sq. ft.)	Low	High
• Leeward Community College TOD Area	140	515
• Pearl Highlands Station TOD Area	188	470
• Pearlridge Station TOD Area	976	3,032
• Total	1,303	4,017

b. **Alternative B (Table 2)**

— Net Increase in Homes (number)	Low	High
• Leeward Community College TOD Area	130	260
• Pearl Highlands Station TOD Area	580	3,220
• Pearlridge Station TOD Area	1,420	6,610
• Total	2,120	10,080

— Net Increase in Commercial Space (1,000 sq. ft.)	Low	High
• Leeward Community College TOD Area	106	413
• Pearl Highlands Station TOD Area	−91	439
• Pearlridge Station TOD Area	−726	1,901
• Total	−711	2,753

c. **Comments**

— The low and high estimates are extremes. For example, the high estimate reflects maximum development at allowed densities.

— In practice, actual development will lie between the extremes. In particular, a substantial loss of commercial space (Alternative B, Low Projection) is not regarded as realistic.

4. ABSORPTION RATES

a. **Homes**

— For Alternative A, development of the new homes within the three TOD Project Areas over a 20-year period will require an average absorption rate of about 100 to 390 multi-family homes per year (Table 1).

- This annual absorption amounts to approximately 10% to 39% of the average of about 1,000 or so new multi-family homes per year anticipated for development near all the transit stations planned for O`ahu.
- The estimated 1,000 homes per year near transit stations is based on a need for about 4,000 homes per year on O`ahu, of which about 25% would be built near the transit stations. The 25% market share is based on the experiences of mainland transit systems.
- Although the three transit stations have locational advantages and the extreme development scenarios are useful for planning purposes, the high 39% market share is not realistic.

— For Alternative B, development of the new homes within the three TOD Project Areas over a 20-year period will require an average absorption rate of about 110 to 500 multi-family homes per year (Table 2).

- This annual absorption amounts to approximately 10% to 50% of the average of about 1,000 or so new multi-family homes per year anticipated for development near all the transit stations planned for O`ahu.
- As above, the high 50% market share figure is not realistic.

b. **Commercial Retail and Office Space**

— For Alternative A, development of the new commercial space within the three TOD Project Areas over a 20-year period will require an average absorption rate of about 65,200 to 200,900 sq. ft. per year (Table 1).

- This annual absorption amounts to approximately 24% to 73% of the 274,000 sq. ft. or so of new commercial space per year anticipated for O`ahu.
- The estimate of 274,000 sq. ft. per year of new commercial space is based on the following:
  + Existing commercial space of about 27.4 million sq. ft., including about 11.7 million sq. ft. of retail space and 15.7 million sq. ft. of office space.

+ Projected 2010-to-2030 growth rates for O`ahu of 12% for population, 16% for jobs, and 33% for personal income (excluding inflation).

+ A corresponding growth rate for commercial space estimated at 20%.

+ 27.4 million sq. of commercial space x 20% for the increase to 2030 ÷ 20 years = about 274,000 sq. ft. per year.

• Although the extreme development scenarios are useful for planning purposes, the high market share of 73% is unrealistic.

— For Alternative B, development of the new commercial space within the three TOD Project Areas over a 20-year period will require an average absorption rate of about –35,549 to +137,644 sq. ft. per year (Table 2).

• This annual absorption amounts to approximately –13% to +50% of the 274,000 sq. ft. or so of new commercial space per year anticipated for O`ahu.

• As above, neither the low nor the high extreme market shares are realistic.

5. CHARACTERISTICS OF RESIDENTIAL DEVELOPMENT

a. **Median Resale Prices, Multi-family Homes** (2009)

— Pearl City/Aiea	$274,750
— All O`ahu	$305,000

— As indicated, median prices for multi-family homes in Pearlridge/Aiea are low compared to those for all of O`ahu.

b. **Existing and Anticipated Types of New Homes**

— The new homes near the transit stations are expected to offer a wide variety of sizes, amenities and prices.

• Multi-family homes are likely to range from small studio apartments for singles to 3-bedroom/2-bath units for larger families.

• Prices and rents are expected to range from affordable to moderate levels.

c. **Anticipated Market Prices of New Multi-family Homes Near the Stations**

	Low	Median	High
— 1 bedroom, 1 bath, 500 sq. ft.	$220,000	$250,000	$290,000
— 2 bedrooms, 1 bath, 700 sq. ft.	$260,000	$290,000	$330,000
— 2 bedrooms, 2 baths, 900 sq. ft.	$300,000	$330,000	$375,000
— 3 bedrooms, 2 baths, 1,100 sq. ft.	$340,000	$370,000	$420,000

— These prices are consistent with resale prices of multi-family homes in the Aiea/Pearl City region.

— Because of the advantages of living near a transit station, homes near transit stations are expected to command prices and rents about 10% to 20% higher than similar homes that are not near the stations.

— At the same time, building costs and home prices near transit stations can be reduced by having less parking than is typically provided.

d. **Types of Households**

— The future mix of housing types near the transit stations is expected to be more diverse than is currently the case for typical developments on O`ahu. The new households are expected to include:

• College-age students (singles, roommates, couples)

• Young couples, with and without children

• Families, with and without children

• Military personnel and civilian defense workers.

• Retirees (singles and couples)

• Families at various income levels (low, moderate, high, etc.)

• Families with various types of workers (entry level, unskilled laborers, skilled laborers, administrators, managers, professionals, etc.)

e. **Affordability Benefits of Transit**

— Many residents living near the transit stations may reduce the number of cars they would normally own—possibly owning one car instead of two.

— A portion of their resulting savings in transportation costs can be applied to servicing their mortgage or paying rent on a home that may be larger and have more amenities than they would otherwise be able to afford.

f. **Housing Affordability Requirements and Practices**

— For changes in zoning, the City requires that 10% of the homes in new projects be affordable to families earning 80% or less of median income, and an additional 20% of the homes must be affordable to families earning 81% to 120% of median income. The remaining 70% of the homes may be sold or rented at market prices.

— Assuming that at least 30% of the units near the transit stations will be priced at affordable rates, then more about 620 to 2,360 units will be affordable homes for Alternative A (Table 1), and about 640 to 3,030 units will be affordable for Alternative B (Table 2).

g. **HUD Affordable Guidelines, Honolulu (2009)**

	Percentage of Median Family Income		
	80%	100%	120%
— Income for:			
• Family of 1	$53,250	$55,510	$66,610
• Family of 2	$60,900	$63,440	$76,130
• Family of 3	$68,500	$71,370	$85,640
• Family of 4	$76,100	$79,300	$95,160
— Sale price of home for:			
• Family of 1	$243,600	$254,000	$304,800
• Family of 2	$278,600	$290,300	$348,300
• Family of 3	$313,400	$326,500	$391,800
• Family of 4	$348,200	$362,800	$435,400
— Monthly rent (including utilities) for:			
• Studio	$1,331	$1,387	$1,665
• 1-bedroom unit	$1,426	$1,486	$1,784
• 2-bedroom unit	$1,712	$1,784	$2,141
• 3-bedroom unit	$1,978	$2,061	$2,474

h. **Units Affordable for Low-Income Families**

— For low-income families (i.e., income below 80% of median income), government assistance may be required to help families purchase or rent market-priced housing, or government assistance may be required to supply housing at rents and prices that are affordable to these families.

— Government programs to help low-income families afford housing payments include rent vouchers to renters and low-interest loans to buyers.

— Government programs to increase the supply of homes at below-market rents and purchase prices include government-built housing, land and/or grants to organizations to build homes, low-interest construction loans, and tax credits for supplying below-market housing.

i. **Gentrification**

— Once the transit system nears completion, demand for homes near the transit stations will increase. In turn, this higher demand could result in the rents and prices of homes being bid up to somewhat higher levels. In the process, some renters could be displaced if they cannot pay the higher prices, and some homeowners may choose to take advantage of the higher prices by selling their homes and moving to some other neighborhood. In short, some gentrification may occur in the future.

— Owners of homes that increase in value due to their proximity to the transit stations will realize corresponding increases in family wealth. These increases in home values will far exceed the present value of the additional property taxes on the homes. If a family chooses to sell their property, they will have more equity which they can then use toward a down payment on a home elsewhere. Under the circumstances, it can be presumed that these homeowners will be better off financially due to the higher property values attributable to a nearby transit station.

— Displaced renters will need to find affordable housing elsewhere. This could include City-mandated affordable homes in new residential projects that will require a zoning change. As mentioned above, about 10% of the units will have to be affordable for families earning 80% or less of median income, while an additional 20% will have to be affordable for families earning 81% to 120% of median income. Over 50,000 homes are planned for `Ewa and Central O'ahu, of which 15,000 (30%) must be priced to meet affordability requirements.

j. **Upscale Homes**

— Near the Pearlridge Station, limited development of expensive upscale multi-family homes (costing near or possibly over $1 million) is possible. Such homes would take advantage of views of Pearl Harbor, would be comparatively large (over 1,500 sq. ft.); and would feature more and higher-quality amenities than the less expensive homes.

6. COMMERCIAL RENTS

a. **Retail Space: Average Rents Plus Expenses per Sq. Ft. (2009)**

— Pearl City/Aiea	$4.18
— All O`ahu	$4.62

— As indicated, rents for retail space in Pearlridge/Aiea are low compared to those for all of O`ahu.

b. **Office Space: Average Rents Plus Expenses per Sq. Ft. (2009)**

— Pearl City/Aiea	$3.29
— All O`ahu	$2.85

— As indicated, rents for office space in Pearlridge/Aiea are high compared to those for all of O`ahu.

7. PARTIAL RELOCATION OF INDUSTRIAL ACTIVITIES

a. **Activities to be Relocated**

— The industrial area near the planned Pearlridge Station encompasses about 40 acres and contains about 1 million sq. ft. of industrial space. Some of the industrial activities along Kamehameha Highway will have to relocate in order to make room to redevelop the area into residential and commercial mixed use.

— In addition, industrial activities that are incompatible with nearby homes and commercial activities will have to relocate. Incompatibility could result from excessive noise, obnoxious odors, or other nuisance problems.

— Since the subject area already contains industrial buildings that host a number of small economically healthy industrial activities, redevelopment of some blocks may be challenging and, if left to market forces, could take longer than 20 years.

b. **Required Replacement Space and Acreage** (approximate)

— Industrial space	1,000,000	sq. ft.
— Land	40	acres

c. **Available Land in Existing and Planned Industrial Parks**

— Manana	30	acres
— `Ewa Industrial Park (`Ewa)	40	
— Gentry, Honouliuli ('Ewa)	42	
— Harborside Center (West Kapolei)	251	
— Ho'opili (East Kapolei)	46	
— Irongate (West Kapolei)	66	
— JCIP (West Kapolei)	150	
— Kapolei Business Park (West Kapolei)	120	
— Royal Kunia (Kunia)	123	
— Waiawa Ridge, Phase I (Waiawa)	16	
— West Kalaeloa Business Park (West Kapolei)	100	
— Total	984	acres

— This accounting does not include acreage that may be planned for industrial development at Kalaeloa (the former Barbers Point Naval Air Station), Waiawa Ridge Phase II, or Koa Ridge Makai.

8. PROSPECTS FOR REDEVELOPMENT

a. For the larger parcels near the transit stations, no major difficulties are foreseen for market-driven redevelopment from low-intensity commercial and light industry to higher-intensity mixed-use commercial/residential. As mentioned in Section 2.g, many of the buildings are good candidates for replacement, since they occupy only fractions of their lots; are one or two stories; and, when the transit stations are built, many buildings will be over 30 years old.

b. Redevelopment of smaller proprieties may require joint development or consolidation of groups of parcels into larger parcels, and considerable time for some of the properties to be redeveloped.

9. ECONOMIC BENEFITS AND IMPACTS

a. **Population**

— At full development, the homes in the TOD Project Areas will provide housing for about 5,760 to 22,060 residents for Alternative A (Table 1), and 5,940 to 28,240 residents for Alternative B (Table 2).

b. **Workforce**

— The employed workforce in these homes will number about 2,590 to 9,930 workers for Alternative A (Table 1), and 2,680 to 12,710 workers for Alternative B (Table 2).

c. **Employment**

— At full development, the commercial retail and office space in the TOD Project Areas, combined with the loss of some industrial jobs near the Pearl Ridge Station, will add about 2,490 to 9,550 jobs for Alternative A (Table 1), and –2,750 to +6,260 jobs for Alternative B (Table 2).

— The new jobs are expected to range from entry-level positions requiring few skills and providing incomes of less than $25,000 per year, to management and highly skilled professional jobs paying over $100,000 per year.

d. **Geographic Distribution of Growth**

— TOD will affect where residential and commercial development will locate, but it will not significantly affect the amount of island-wide development or the amount of population growth.

e. **Transportation**

— For Aiea and Pearl City residents, transportation benefits of the transit system will include:

- Better access to jobs at employment centers located near transit stations.
- Faster rush-hour commutes.
- Increased mobility for residents who may not drive or have access to a vehicle.
- Reduced expenditures on transportation and parking fees for families who can reduce vehicle ownership and/or use.
- Reduced energy consumption for transportation.

— For students commuting to LLC and UHWO via the transit system, reduced expenditures on transportation costs and parking fees.

f. **Housing**

— Housing benefits and impacts will include:

- A wide choice of multi-family homes at competitive and affordable prices.
- Somewhat higher housing values and rents near the transit stations. The higher prices will reflect higher demand in response to the locational advantages. However, home prices can be reduced by building fewer parking stalls than would normally be the case.

g. **Commercial and Industrial**

— Benefits of commercial development near the transit stations will include a broader choice of goods, restaurants and services in Aiea and Pearl City, including:

- Convenience and specialty stores catering to residents in Aiea, Pearl City, and nearby communities.
- Fast-food, ethnic, gourmet and other restaurants.
- Specialized medical doctors, dentists, veterinarians, accountants, attorneys, personal-service providers, etc.

— Other economic benefits and impacts will include:

- Increased sales for stores and restaurants catering to residents in Aiea, Pearl City, and nearby communities.
- Higher rents in response to higher sales, and increased demand for commercial space.
- The relocation of about 1 million sq. ft. of industrial space from Pearl City to nearby industrial parks.

h. **Fiscal Impacts**

— As mentioned above, TOD will affect where residential, commercial and industrial development will locate, but will not significantly affect the amount of development on the island. As such, the impact of TOD on City finances will depend on revenues and costs relative to potential development elsewhere on O'ahu.

— Infrastructure: The cost to the City for infrastructure improvements to support TOD will depend on the circumstances.

- If developers provide or pay for their fair shares of infrastructure improvements for TOD, then the cost to the City will be similar to that for projects in 'Ewa and Central O'ahu.
- But if the City provides a significant share of the infrastructure for TOD, then the cost to the City could be higher than it would be to support development in 'Ewa and Central O'ahu.

— Operations, Full Development

- At full development, TOD probably will result in lower operating revenues to the City compared to those generated by development in 'Ewa and Central O'ahu.
  - + The amount of development will be greater and the property values higher near transit stations, but this will be offset by less development elsewhere on O'ahu.
  - + However, reduced vehicle ownership and use will result in lower City revenues from the motor vehicle weight tax, the fuel tax, and parking fees.
  - + Also, if reduced family expenditures on car ownership and use allow more families to own their homes rather than renting, then property taxes will be reduced due to the $80,000 homeowner exemption on the assessed value of owner-occupied homes.
  - + Other City taxes and revenues probably would not be affected significantly by TOD development.
- City operating expenditures in support of TOD could be lower than those for projects in 'Ewa and Central O'ahu. This is because the more compact development around a transit station allows for reduced expenditures on police and fire services, and on maintaining roads, water lines, and sewer lines.
- The net result could be a small increase in net operating income to the City for TOD compared to projects in 'Ewa and Central O'ahu.

Table 1. Alternative A Projections

Item	Leeward CC Station	Pearl Highlands Station	Pearlridge Station	Total	Ave. Annual Rate, 20 Years
Multi-family Homes					
Low					
Total Homes	152	871	1,585	2,608	
Less Existing Homes	-	(90)	(460)	(550)	
Net Increase in Homes	152	781	1,125	2,058	103
High					
Total Homes	332	3,207	4,890	8,429	
Less Existing Homes	-	(90)	(460)	(550)	
Net Increase in Homes	332	3,117	4,430	7,879	394
New Affordable Homes					
Low	46	234	338	617	31
High	100	935	1,329	2,364	118
Percent of Net Increase in Homes	30%	30%	30%	30%	
New Residents					
Low	426	2,187	3,150	5,762	288
High	930	8,728	12,404	22,061	1,103
Residents per Home	2.80	2.80	2.80		
Commercial Space (sq. ft.)					
Low					
Total Retail Space	46,904	1,092,098	2,085,046	3,224,048	
Total Office Space	140,712	80,735	790,851	1,012,298	
Less Existing Commercial Space	(48,000)	(985,000)	(1,900,000)	(2,933,000)	
Net Increase in Commercial Space	139,616	187,833	975,897	1,303,346	65,167
High					
Total Retail Space	56,285	1,092,098	2,466,862	3,615,245	
Total Office Space	506,562	363,309	2,465,133	3,335,004	
Less Existing Commercial Space	(48,000)	(985,000)	(1,900,000)	(2,933,000)	
Net Increase in Commercial Space	514,847	470,407	3,031,995	4,017,249	200,862
Industrial Space (sq. ft.)					
Relocation	-	-	(1,000,000)	(1,000,000)	(50,000)
New Workers					
Low	192	984	1,418	2,593	130
High	418	3,927	5,582	9,928	496
Percent of New Population	45%	45%	45%		
Employment					
Low					
New Retail and Office Jobs	363	488	2,537	3,389	169
Relocation of Industrial Jobs	-	-	(900)	(900)	(45)
Net Change in Jobs	363	488	1,637	2,489	124
High					
New Retail and Office Jobs	1,339	1,223	7,883	10,445	522
Relocation of Industrial Jobs	-	-	(900)	(900)	(45)
Net Change in Jobs	1,339	1,223	6,983	9,545	477
Jobs per 1,000 sq. ft.					
Retail and Commercial	2.60	2.60	2.60		
Industrial	0.90	0.90	0.90		

Table 2. Alternative B Projections

Item	Leeward CC Station	Pearl Highlands Station	Pearlridge Station	Total	Ave. Annual Rate, 20 Years
Multi-family Homes					
Low					
Total Homes	126	665	1,882	2,673	
Less Existing Homes	-	(90)	(460)	(550)	
Net Increase in Homes	126	575	1,422	2,123	106
High					
Total Homes	255	3,309	7,070	10,634	
Less Existing Homes	-	(90)	(460)	(550)	
Net Increase in Homes	255	3,219	6,610	10,084	504
New Affordable Homes					
Low	38	173	427	637	32
High	77	966	1,983	3,025	151
Percent of Net Increase in Homes	30%	30%	30%	30%	
New Residents					
Low	353	1,610	3,982	5,944	297
High	714	9,013	18,508	28,235	1,412
Residents per Home	2.80	2.80	2.80		
Commercial Space (sq. ft.)					
Low					
Total Retail Space	38,435	814,629	742,325	1,595,389	
Total Office Space	115,304	79,851	431,472	626,627	
Less Existing Commercial Space	(48,000)	(985,000)	(1,900,000)	(2,933,000)	
Net Increase in Commercial Space	105,739	(90,520)	(726,203)	(710,984)	(35,549)
High					
Total Retail Space	46,121	1,064,533	1,190,948	2,301,602	
Total Office Space	415,093	359,330	2,609,863	3,384,286	
Less Existing Commercial Space	(48,000)	(985,000)	(1,900,000)	(2,933,000)	
Net Increase in Commercial Space	413,214	438,863	1,900,811	2,752,888	137,644
Industrial Space (sq. ft.)					
Relocation	-	-	(1,000,000)	(1,000,000)	(50,000)
New Workers					
Low	159	725	1,792	2,675	134
High	321	4,056	8,329	12,706	635
Percent of New Population	45%	45%	45%		
Employment					
Low					
New Retail and Office Jobs	275	(235)	(1,888)	(1,849)	(92)
Relocation of Industrial Jobs	-	-	(900)	(900)	(45)
Net Change in Jobs	275	(235)	(2,788)	(2,749)	(137)
High					
New Retail and Office Jobs	1,074	1,141	4,942	7,158	358
Relocation of Industrial Jobs	-	-	(900)	(900)	(45)
Net Change in Jobs	1,074	1,141	4,042	6,258	313
Jobs per 1,000 sq. ft.					
Retail and Commercial	2.60	2.60	2.60		
Industrial	0.90	0.90	0.90		

Exhibit 5

Transportation Assessment

A Technical Memorandum
Prepared For The

AIEA – PEARL CITY NEIGHBORHOOD TOD PLAN

Prepared by

Weslin Consulting Services, Inc.

April 2011

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I. INTRODUCTION

The Aiea-Pearl City Transit-Oriented Development (TOD) neighborhood planning process has produced a preferred alternative for each of the three stations in the study area: Leeward Community College, Pearl Highlands and Pearlridge. The illustrations for the preferred alternative are shown in Figures I-1 and I-2. All three stations are located along the Farrington Highway and Kamehameha Highway corridor. This technical memorandum provides a transportation assessment of the preferred alternative to provide an overview of the transportation implications of the preferred alternative for each station and how they compare to each other.

Figure I-1: Aiea-Pearl City Neighborhood TOD Plan
Leeward Community College and Pearl Highlands Stations
(Source: Van Meter Williams Pollack)

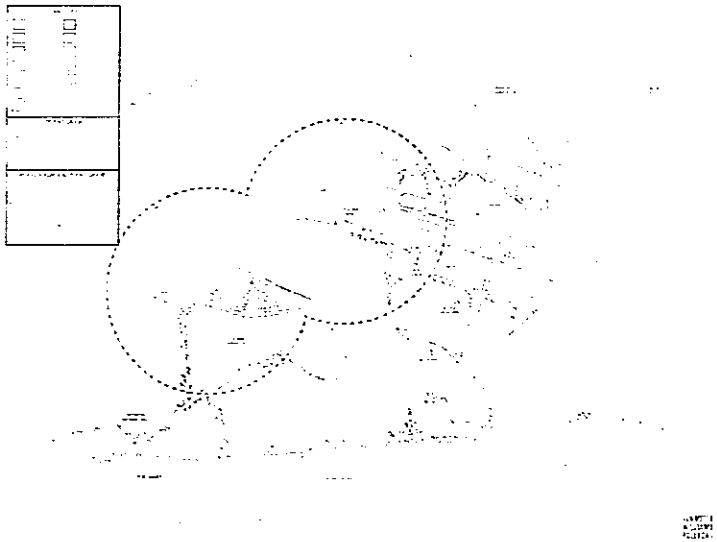
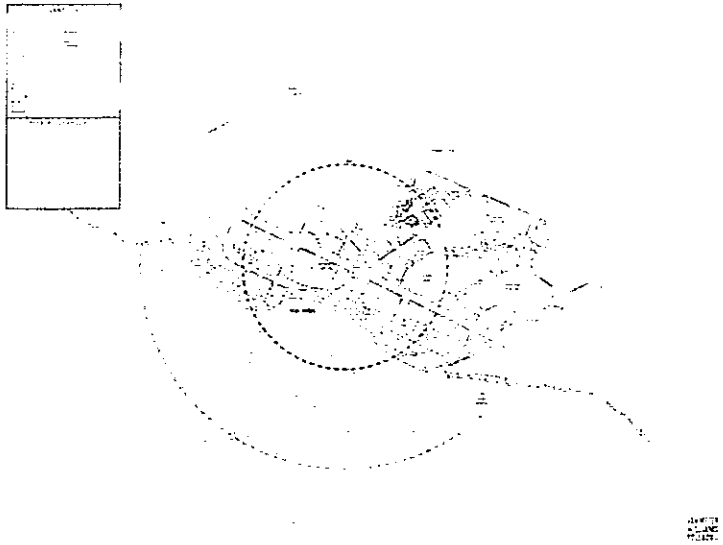


Figure I-2: Aiea-Pearl City Neighborhood TOD Plan
Pearlridge Station
(Source: Van Meter Williams Pollack)



An inventory of existing transportation conditions was documented in a previous technical memorandum.[1] That document included the description of existing plans, the proposed station locations, previous and ongoing transportation planning work, existing and planned public transportation services and facilities, existing and planned pedestrian and bicycle facilities, and existing and planned roadway facilities.

[1] Existing Transportation Conditions, a technical memorandum prepared for the *Existing Conditions Report* of the Aiea-Pearl City Neighborhood TOD Plan; Weslin Consulting Services, Inc.; December 16, 2009.

Access to the rail stations by mode is described in the Honolulu High-Capacity Transit Corridor Project (HHCTCP) Final EIS Chapter 3.[2] The EIS includes projections of the number of daily person trips by mode and these are included in Table I-1 for the three stations included in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative.

Table I-1: Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative Stations
Daily Mode of Access
(Source: HHCTCP FEIS Table 3-20)

	Daily Person Trips Using Guideway Stations By Mode								
	Walk/Bike		Bus		Kiss-and-Ride		Park-and-Ride		
Station	Volume	Share	Volume	Share	Volume	Share	Volume	Share	Total
Leeward Community College	2,850	89%	300	9%	40	1%	10	0%	3,200
Pearl Highlands	1,500	14%	5,410	51%	590	6%	3,110	29%	10,610
Pearlridge	490	8%	5,080	87%	230	4%	60	1%	5,860
Total	4,840	25%	10,790	55%	860	4%	3,180	16%	19,670

The majority of the persons using the three rail stations arrive by bus. The bus network serving these riders is described in Section 3.4.2 of the EIS. Appendix D of the EIS has a detailed description of the individual bus route characteristics and maps depicting their alignment.

Traffic studies conducted for the HHCTCP Final EIS considered the impacts of bus and additional vehicle traffic generated at each station attributable to those riders involved in kiss-and-ride or park-and-ride access modes. That analysis is contained in Section 3.4.3 of Chapter 3 of the Final EIS. Traffic circulation implications and mitigation measures are identified in Section 3.4.7 of the Final EIS for the Pearl Highlands Station. The complete results of the traffic impact analysis are included in the HHCTCP's Transportation Technical Report.[3]

[2] Honolulu High-Capacity Transit Corridor Project Final Environmental Impact Statement/Section 4(f) Evaluation; U.S. Department of Transportation Federal Transit Administration; June 2010.
[3] Transportation Technical Report Honolulu High-Capacity Transit Corridor Project; City and County of Honolulu; August 15, 2008; and, Addendum 02, 2009.

Those arriving by walk or bike constitute the second largest access mode group. The analysis of pedestrian and bicycle facilities is included in Section 3.4.5 of the Final EIS. The O'ahu Bike Plan is currently being updated. The public comment period on the draft plan has ended and the final plan is under preparation.[4] The draft update includes a prioritized list of bicycle projects developed using criteria that include access to transit.

The HHCTCP Final EIS states, "Higher volumes of pedestrians and bicycles are expected near stations. DTS will work with other City departments and HDOT to identify and improve key pedestrian and bicycle routes to stations as well as improve overall safety and accessibility near station entrances."[5] Since the vehicle aspects of transportation and circulation in close proximity to the stations have been addressed elsewhere and the O'ahu Bike Plan update is still underway, this technical memorandum concentrated on what seems to be a more challenging aspect of TOD planning: how to identify and improve key pedestrian routes to stations.

Section 4.19 of the Final EIS addresses TOD as an indirect effect. Rail would alter development near stations in the form of higher densities with commensurate increases in travel demand, the intent being that this travel demand would appear as more transit trips. But, this increase in transit ridership, mainly walk trips to rail stations, is intentionally excluded from the forecasts included in Table I-1 so as not to exaggerate transit ridership based on TOD that may not occur. The purpose of the neighborhood TOD plans is to assess the implications if the development does occur.

The increased mobility and accessibility created by the existence of rail will inevitably increase the value of land near stations and attract new investment. For the private developer to capture the full value of their investment, the right type of transportation improvements need to be made in association with the public investment in the rail project. This is an intrinsic partnership, it does not need to be a complicated union of two parties; but, the private/public relationship needs to be collaborative for both sectors to maximize the return on investment and best serve the public. This technical memorandum provides information on where such successful collaborative relationships have been achieved and how such a process might be applied to the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative.

Particular emphasis in this technical memorandum is placed on walk access to the Pearlridge station. Current projections as shown in Table I-1 suggest only 490 riders will access this station by walking or bicycling out of a total of 5,860. This is reflective of the fact that the travel demand forecasting models are not accounting for the additional travel demand generated by TOD. A case study is offered for one site demonstrating how a

[4] O'ahu Bike Plan, a bicycle master plan, public review draft; City and County of Honolulu Department of Transportation Services; July 2009.

[5] Honolulu High-Capacity Transit Corridor Project Final Environmental Impact Statement/Section 4(f) Evaluation; U.S. Department of Transportation Federal Transit Administration; June 2010; page 3-60.

developer's transportation consultant might conduct a traffic impact analysis using traditional methods in this country and how a developer in other countries might conduct a transportation assessment based on guidance from the jurisdictional authorities.

In the spirit of encouraging a different approach toward addressing the transportation impacts and opportunities of TOD projects, this technical memorandum is titled "Transportation Assessment" as opposed to a "Transportation and Circulation Analysis." The highlights of the following sections of the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative Transportation Assessment are:

- Section II. BACKGROUND – Describes the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative and demonstrates how it provides the fundamental transportation features necessary to be fully responsive to the expectations of a TOD. Transportation features described in this section include:
  - *The right kind of Infrastructure* -- including new bike paths, bike lanes, main street concepts, new street patterns, wide sidewalks, new pedestrian pathways and pedestrian transit plazas.
  - *A needed emphasis on safety* – including a concern for a "safe biking experience" and the orientation of streets to minimize modal conflicts.
  - *The best design approach* – including elements such as a "pedestrian-first" emphasis that is responsive to Hawai'i's evolving context sensitive design and complete streets efforts.
  - *The right balance between transportation and land use* – including the inclusion of workforce housing and employment opportunities to minimize the need to travel outside of the area during peak commute periods responding to Hawai'i's evolving Sustainability and Smart Growth initiatives.
- Section III. TOD TRANSPORTATION ASSESSMENT – Describes the methods used to conduct the transportation assessment of the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative and demonstrates how the fundamental transportation features necessary to be fully responsive to the expectations of a TOD are provided. Transportation planning features described in this section include:
  - *Presents transportation assessment as a new best practice* – including the requirement that a transportation assessment identify what measures will be taken to deal with the anticipated transportation needs to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transportation.

- *Compares a transportation assessment to a traffic impact analysis* – including the key difference wherein transportation assessments cover all modes from a person-trip perspective, with the emphasis on walking, cycling and public transportation; whereas, traffic impact analysis reports generally concentrate on accommodating car trips giving limited attention to accessibility by non-car modes.

- *Views parking supply as a critical policy issue* – including the primary concern that the availability of car parking has a major influence on the means of transport people choose for their journeys. Levels of parking supply can be more significant than levels of public transport provision in determining means of travel (particularly for the journey to work) even for locations very well served by public transport. Car parking also takes up a large amount of space in development, is costly to business and reduces densities.

- *Acceptance of PTALs As A Best Practice* – including examples of how use of Public Transportation Accessibility Levels (PTAL)s has been thoroughly reviewed, applied, modified, tested and accepted to establish its status as a valid transportation assessment procedure.

- *PTALs as a Regulatory Mechanism* – including a review of how PTALs are used to link plan policy to development review and approval through the use of density limitations and parking supply maximums based on PTALs.

- *Validation of the PTAL Methodology* – including details of England's guidance on transport assessment with seven examples of actual 'planning reports' by the Greater London Authority where the PTAL is tested against prime real estate development permit applications.

- *Use of PTAL As A Proposed Honolulu Practice* – describes the calculation procedures for the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative based on those developed by Transport for London and used throughout England and in other countries.

- *PTAL Calculations and Results for the TOD Plan* – including application of the PTAL methodology to the ¼-mile area surrounding each of the three stations in the Aiea-Pearl City Neighborhood TOD Plan study area including the average PTALs for existing conditions without rail and future conditions with rail and the TOD Preferred Alternative.

- Section IV. TOD PROJECT CASE STUDY – Describes the application of both the current traffic impact analysis practice and the transportation assessment method with PTAL now used as an international best practice. Case study findings described in this section include:

  - *Case Study Description* – including history of the Kam Drive in case study site, current use, existing transportation infrastructure conditions, vehicle traffic counts, rail station details, future transit system description, TOD plan features and the development plan proposal for the site known as "The Pearl".

  - *Case Study Traffic Impact Analysis* – including vehicle trip generation with and without adjustments to account for TOD plan characteristics and a conclusion that the current level of morning peak hour vehicle traffic generated by the Kam Swap Meet is greater than the projected future level of vehicle traffic that would be generated by a TOD project at the same site. This conclusion is predicated upon providing the necessary transportation infrastructure, service and program features to achieve such a result.

  - *Case Study Transportation Assessment* – including an example of the type of transportation infrastructure enhancements that would be offered by the project sponsor under a PTAL based regulation to increase the PTAL and qualify for greater building heights and density.

  - *Case Study Observations* – including the expectation that the traffic impact analysis mitigations and current minimum parking supply requirements might likely result in greater capital cost outlays imposed on the project sponsor than the transportation enhancements needed to increase the pedestrian safety and accessibility to the Pearlridge rail station, with likely greater increase in project value and return on investment to the project sponsors than would occur under current procedures.

  - *Case Study Recommendations* – including using the transportation assessment approach as the means to identify the design provisions to encourage use of rapid transit, buses, bicycling, walking and other non-automobile forms of transport that are safe and convenient as specified in Honolulu's TOD Ordinance 09-4.

II. BACKGROUND

This section provides the background to understand what the Aiea-Pearl City Neighborhood Transit-Oriented Development (TOD) Plan Preferred Alternative includes and how those features are responsive to TOD access expectations.

II.1 PREFERRED ALTERNATIVE DESCRIPTIONS

The Aiea-Pearl City Neighborhood TOD planning process has produced a preferred alternative for each of the three stations in the study area: Leeward Community College, Pearl Highlands and Pearlridge. All three stations are located along the Farrington Highway and Kamehameha Highway corridor. The following place emphasis on major land use and transportation characteristics and are not intended to be complete descriptions of the preferred alternative.

II.1.1. Leeward Community College Station

The Leeward Community College Station Neighborhood TOD Preferred Alternative was established based upon the following planning principles:

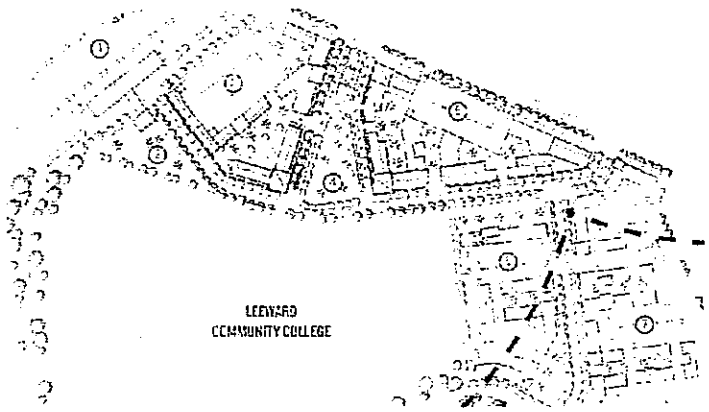
1. *Create Access and Views to Water and Pearl Harbor Historic Trail* -- New bike paths are located along the extension of Ala Ike Street traveling makai alongside the new maintenance yard and further past Waiawa Road to connect to the Pearl Harbor Historic Trail. Another bike path is proposed along the Waiawa Stream, which will connect to the Pearl Harbor Historic Trail.
2. *Encourage Workforce Housing* -- The proposed low density residential and new mixed use residential buildings could serve as workforce housing. This housing is positively influenced by proximity to the transit station, multiple access points for pedestrians and cyclists to the Pearl Harbor Historic Trail and excellent access for vehicles to H-1 and Kamehameha Highway.
3. *Create a Comfortable and Lively Pedestrian Environment* -- New bike paths will allow residents to travel throughout this station area and regionally, without having to use a car. A new "main street" will provide a pedestrian environment with shops and restaurants and a new park. Wide sidewalks and street landscaping will make it a pleasant and comfortable environment. The new residential street will provide sidewalks with limited curb cuts to allow for a pleasant pedestrian experience in the residential neighborhood.

4. *Provide Multi-modal Access to and from Stations* -- A new street pattern, broken up into smaller blocks with active uses, make for a pleasant walk to and from the station. Multiple bike paths connect into Pearl Harbor Historic Trail so that people can access the station regionally. The bike path proposed along Waiawa Stream provides multi-modal access from LCC station to Pearl Highlands station.
5. *Develop New and Enhance Existing Open Space* -- New bike paths will enhance connections to Pearl Harbor Historic Trail and open up access regionally to LCC station. A new mixed use environment with a central green and private courtyards will take the place of an existing surface parking lot. The existing campus spine will be retained and incorporated into the plan.

A new campus identity is envisioned at the Leeward Community College transit station. The TOD Plan includes a community college, diverse housing options and new "main street" environment with active uses such as restaurants and retail.

A pedestrian transit plaza is located adjacent to the transit station at block 2 as shown in Figure II-1. This will provide direct access to campus and make the college visible from the transit station.

Figure II-1: Aiea-Pearl City Neighborhood TOD Plan
Leeward Community College Station
(Source: Van Meter Williams Pollack)



Across from the new continuation of Ala Ike Street from the pedestrian transit plaza is a large surface parking lot. The transit line will pass over this block. Parking entry is provided under the guideway for use of this lot as campus parking.

There are currently 1,200 parking spaces in the existing surface parking lot. To maximize the highest and best use for the site, new development should be located where the parking lot now sits. The new surface parking lot on block 1, as well as the parking structure on block 3, could accommodate and replace 85% of the existing spaces (a 25% reduction factor was applied due to the arrival of transit).

Two mixed use blocks are envisioned at the heart of campus (blocks 3 and 5). These blocks could include retail, restaurants and coffee shops at corners and along a "main street" wrapped around a central green at Block 4. The top floors could be dedicated to residential use. Two parking structures would accommodate the parking requirements for these two blocks (block 3 structure will also accommodate replacement parking for campus users) using managed shared parking.

II.1.2. Pearl Highlands Station

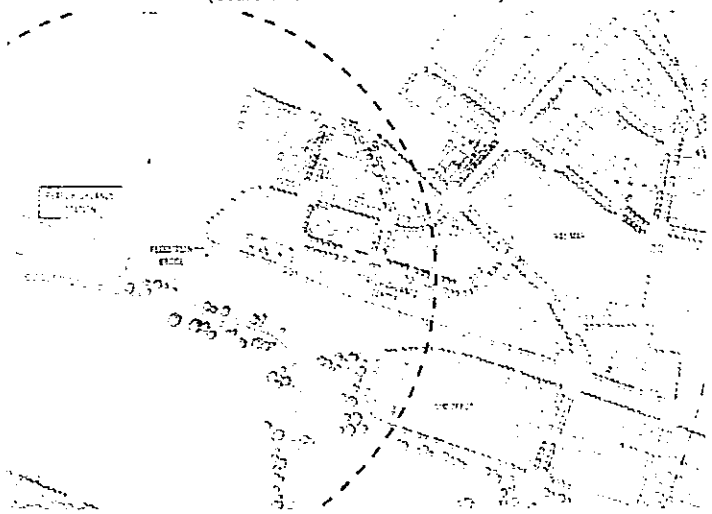
The Pearl Highlands Station Neighborhood TOD Preferred Alternative was established based upon the following planning principles:

1. *Create Access and Views to Water and Pearl Harbor Historic Trail* -- Views to Pearl Harbor will be seen at the newly proposed transit plaza. Access to Pearl Harbor Historic Trail is accommodated makai of Kamehameha Highway by way of new pathways traversing the UH Urban Gardens. These pathways link into a new bike path along Waiawa Stream and eventually connect into Pearl Harbor Historic Trail and LCC Station.
2. *Encourage Workforce Housing* -- Workforce housing is incorporated into the new residential neighborhood mauka of Kamehameha Highway and diamond head of Kuala Street.
3. *Create a Comfortable and Lively Pedestrian Environment* -- A pedestrian-first environment is illustrated in the new "main street" that passes through the existing Pearl Highlands Center. This is the first thing transit users will experience upon arriving at this station area and it is very important that this place be made lively and pedestrian-friendly. All other new streets will incorporate separated sidewalks with street trees and minimal curb cuts to provide for an uninterrupted and pleasant experience as a pedestrian. Retail streets will incorporate wide sidewalks and outdoor seating. Existing streets, such as Kamehameha Highway, Kuala Street and Acacia Road will be upgraded to incorporate street trees and high quality sidewalks. Kuala Street will also incorporate dedicated bike lanes.

4. *Provide Multi-modal Access to and from Stations* -- A bike path along Kuala Street will link bikers into the Pearl Highlands Station. New multi-use paths are proposed from Pearl Highlands Station, along Waiawa Stream, down to Pearl Harbor Historic Trail and LCC Station. New pathways through the UH Urban Gardens will connect into the proposed stream pathway.
5. *Develop New and Enhance Existing Open Space* -- Existing open space is enhanced by incorporating new public pathways through the existing UH Urban Gardens. This place has potential as an urban oasis and a regional destination by way of new bike paths. New open space is created by the proposal of new pathways along Waiawa Stream.

Pearl Highlands Station will serve as a major Park 'N Ride location along the transit line as shown in Figure II-2.

Figure II-2: Aiea-Pearl City Neighborhood TOD Plan
Pearl Highlands Station
(Source: Van Meter Williams Pollack)



The park 'n ride will have 1,600 parking spaces, a bus transit center serving 9 bus routes, a rail ridership proposed at 10,610 boardings per day and a new H-2 freeway connection. Bike racks will be provided.

Pedestrian upgrades, such as crosswalks with pedestrian timing, along Kamehameha Highway are recommended. Crosswalks are identified on all four legs of the intersection between Acacia Road and Kamehameha Highway to allow pedestrians to cross between blocks 2 and 5 using one crosswalk as opposed to three as they would need to do so under current conditions. A new parking structure on block 2 could replace existing surface parking for Home Depot and allow for new development.

At the terminus of the extension of Acacia Road, between blocks 1 and 2, is a proposed grand pedestrian entrance to the UH Urban Gardens. These gardens could incorporate pathways for the public to enjoy this urban oasis. These new pathways could connect into the proposed bike path along Waiawa Stream in two locations.

A pedestrian bridge from the transit station could cross over Kamehameha Highway to a new pedestrian transit plaza at the Pearl Highlands Center and new "main street". The corner of the existing Pearl Highlands Center could be removed to allow for this new transit plaza, bringing transit users to the upper level of the shopping center due to topography in the area.

A new "main street" is envisioned within the Pearl Highlands Center with new buildings proposed on blocks 6 and 7. The existing lower level parking structure would be preserved and could function in much the same way. New pad retail and two-story mixed use commercial buildings could allow for a pleasant pedestrian experience on the street as well as provide more retail/restaurant uses in this area contributing economic revitalization at the main street.

Blocks 8 and 9 could incorporate two residential towers (approximately 15-20 stories) wrapped with three and four-story urban housing to allow for a pedestrian-scaled environment along the street. Parking structures would be incorporated on each of these blocks to allow for residential on-site parking.

At the corner of Kuala Street and the newly proposed street with entrance to Pearl City Gateway could be a mixed use residential building with retail uses on the ground floor to complement the existing retail environment. A parking structure on-site would provide parking for this block.

A large new parking structure could replace the existing Wal-Mart surface parking lot. A parking structure should be lined with residential and mixed use buildings. New urban blocks are recommended. Ground floor retail or office uses should be focused along the street facing Wal-Mart.

II.1.3. Pearlridge Station

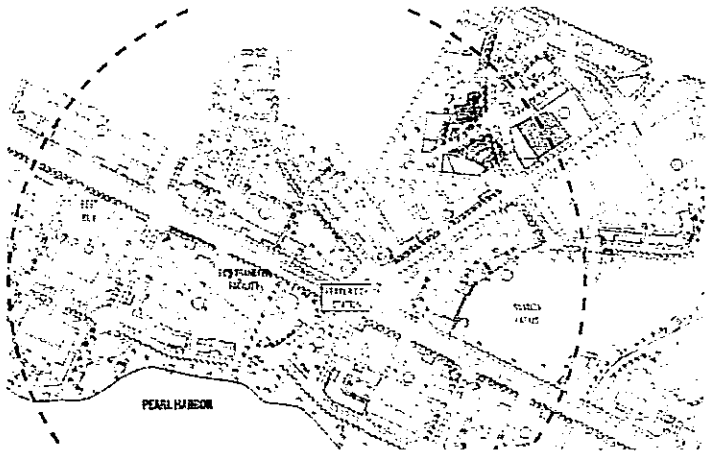
The Pearlridge Station Neighborhood TOD Preferred Alternative was established based upon the following planning principles:

1. *Create Access and Views to Water and Pearl Harbor Historic Trail* -- The Pearl Harbor Historic Trail is to be upgraded to offer a wonderful regional amenity and an identity for Pearlridge Station.
2. *Encourage Workforce Housing* -- Workforce housing is to be incorporated throughout.
3. *Create a Comfortable and Lively Pedestrian Environment* -- The newly proposed "main street" will provide for a comfortable and lively pedestrian experience to and from the station area. Existing streets, such as Kamehameha Highway and Kaonohi Street will be upgraded to include wider sidewalks and active uses to make for a more pedestrian-friendly environment. A small median is proposed in Kaonohi Street to break up the street and allow it to feel smaller. A new pathway is proposed along Sumida Farms, which will provide for a passive pedestrian experience. The Pearl Harbor Historic Trail passes through the site adjacent to the water and another extension of the trail is proposed adjacent to the residential area to allow for public access all along the waterfront.
4. *Provide Multi-modal Access to and from Stations* -- Multiple bike paths are included throughout (Pearl Harbor Historic Trail and Sumida Farms). A dedicated bike lane is proposed along Kaonohi Street to provide a safe biking experience from mauka neighborhoods to the station.
5. *Develop New and Enhance Existing Open Space* -- Existing industrial and commercial buildings interrupt pedestrian access to the waterfront. This plan makes the waterfront accessible by all.

Pearlridge Station is located at the intersection of Kamehameha Highway and Kaonohi Street in Aiea as shown in Figure II-3. The existing Pearlridge Center is the second largest mall in Hawai'i and is a major economic driver for this area. New urbanism design elements are used to update the Pearlridge Center to facilitate a more pedestrian-friendly environment.

Kamehameha Highway should be sustained as a commercial corridor. New mixed use commercial buildings, two to three-stories in height, are proposed along this corridor. Retail should be located in strategic locations, such as corners and on major streets where easily accessed while office uses should be located on the upper floors.

Figure II-3: Aiea-Pearl City Neighborhood TOD Plan
Pearlridge Station
(Source: Van Meter Williams Pollack)



A new civic building is proposed adjacent to a new pedestrian transit plaza, mauka of Kamehameha Highway at block 4. A civic use such as a community center or library could be a good fit for this location. An iconic circular building is located at the important intersection of Kaonohi Street. The other portion of block 4 includes mixed use commercial buildings and low density residential. This block should be site parked with a parking structure. Block 3 could be low density residential - transitioning into the existing single family neighborhood. A new park on block 2 could be centrally located for residents to enjoy.

Block 5, across from Moanalua Loop Road, could consist of mixed use commercial buildings along the auto-dominated Kaonohi Street. New low density residential could be placed further inward to the block, across from other residential uses. This block could be site parked with surface parking and a parking structure to serve the mixed use buildings on this block as well as block 10 across the street.

Block 6, which is separated from the lower portion by topography and a substantial retaining wall, is the site of the existing Kam Swap Meet. This site is perfect for catalyst development in this transit oriented development, as it has no major existing buildings, has a single owner and is ready for development. The TOD potential, and general transportation implications of the blocks 6, 7, 8 and 9, is so significant that has been selected as the basis for a detailed case study in this technical memorandum (see Section IV. TOD Project Case Study).

The upper half of block 5 could incorporate two residential towers (32 to 24 stories), as well as mixed use residential buildings that would line a new "main street". The new "main street" could run perpendicular to Kaonohi Street and swoop up to meet Moanalua Road. It could have retail uses line the edge to activate this street, as well as a small plaza and porte cochere at the entrance to the two towers. These active edges would provide for a more pedestrian-friendly walk to the station for existing and future residents and could provide a new identity to this neighborhood, in addition to the Pearlridge Center.

The rest of the Swap Meet site consists of blocks 7, 8, and 9. Block 7 incorporates a small urban park which could provide residents and shoppers with a passive park-like environment to enjoy. Block 8 incorporates a large grocery store, which could be wrapped with one-story retail buildings. Two small mixed use residential buildings (four stories) might be positioned to face onto the park. A third residential tower (18 stories) could be located on block 8 adjacent to the grocery store. Block 9 could have three small pad retail buildings with a central plaza seamlessly connecting the two blocks. Block 9 could incorporate surface convenience parking.

Across Kaonohi Street, on block 10, is the existing Anna Miller's building. Anna Miller's building could be maintained. Two new pad retail buildings are located along Kaonohi Street on block 10 adjacent to the existing bus stop. These new buildings could allow active uses to front onto Kaonohi Street and enliven the space and make this street more pedestrian-friendly. New mixed use commercial buildings with retail ground floor uses and office above could be positioned to overlook Sumida Farms.

Sumida Farms could be preserved and activated by putting uses that can overlook the beauty of the watercress farms. A multi-use pathway could surround the farms to provide a passive pedestrian experience for the neighborhood and to foster an awareness of island agriculture.

The "main street" from the Swap Meet site would cross Kaonohi Street and run adjacent to Sumida Farms and the existing Pearlridge Center and eventually meets up with Moanalua Road again. This "main street" could become a major identity for this transit-oriented development as well as a pedestrian-friendly passage to access the new transit station.

Block 11 incorporates the existing Pearlridge Center Mall, with a few additions. At the intersection of Kaonohi Street and the new "main street", retail uses could be added onto the existing parking structure to provide active uses on the street level.

Other retail buildings could be added along Kaonohi Street to upgrade the pedestrian experience. Behind the Pearlridge Center, adjacent to Sumida Farms, a new mixed use residential area could be created. A major entry/exit point from the mall could be transformed into a plaza on the axis to the new steps that lead to Sumida Farms and a new neighborhood park.

Block 12 could include mixed use residential buildings flanking "main street" and a large shared parking structure that would accommodate the new development being proposed on blocks 11 and 12.

Across the stream is "Downtown Pearlridge", another extension of the Pearlridge Center. New mixed use commercial and retail buildings are proposed along Kamehameha Highway.

Across Pali Momi Street is "Pearlridge East", an extension of Pearlridge Center. New one-story retail buildings are proposed to line the existing parking structure and to create an upscale strip shopping center adjacent to the existing Toys 'R Us on block 15.

Near the transit station, on block 18, a pedestrian transit plaza could be located at the major intersection. A new bus transit center is incorporated with the transit station to allow for smooth transitions from train to bus. A pedestrian pathway from the station to the waterfront could pass by a proposed civic use. This building could be a great place for a public building such as a community center.

Block 19 includes a large park, which has been coined the "window to Pearl Harbor". Opening up the view on axis with Kaonohi Street would offer wonderful views of the water and attract people to the waterfront and Pearl Harbor Historic Trail.

Mixed use residential buildings could be sited parallel to the waterfront and offer spectacular views on block 18. These areas might include nice restaurants or cafes with outdoor seating. A small building across the street might be a nature or education center. It is adjacent to a small remnant fishpond. This might provide education about the ancient Hawaiian's history of aquaculture.

The rest of the waterfront could be dedicated to a large linear park and pathway (Pearl Harbor Historic Trail) as well as medium density housing. These buildings, makai of Kamehameha Highway might be four stories or less to preserve views from mauka areas.

II.2 TOD TRANSPORTATION ACCESS FEATURES

The first Honolulu Neighborhood TOD Plan was prepared for Waipahu, a location once served by 28 passenger trains per day.[6] In the early years of the 20th century, transit dominated travel in cities worldwide. Development was clustered near transit by necessity. Transit and land use were closely connected.

O'ahu's development was heavily influenced by streetcars, "From Kalihi to Kamuki, from Manoa to Moiliili, the streetcar lines created modern Honolulu."[7] Private transit operators developed real estate and used the profits to subsidize transit operations.

O'ahu's transportation and land development history makes it clear that TOD is not a new concept. However, the basic principles for developing around transit stations fell into disuse as accessibility for automobiles became the focus of development.

Although O'ahu suffered from the same infatuation with auto-oriented development as elsewhere in the U.S., it did not neglect its transit system. As a result, some excellent proto-typical examples of TOD are found on O'ahu -- Waikiki, Ala Moana Center, downtown Honolulu -- where transit access and service levels are very high. These Honolulu examples epitomize much of what other U.S. cities are trying to achieve when TOD is envisioned.[8]

TOD is a coordinated transportation access and land development strategy used to create safe access to major transit facilities by multiple modes. The California Statewide TOD Study Technical Advisory Committee adopted the following definition of TOD:[9]

> *Transit-Oriented Development (TOD) is moderate to higher-density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment and shopping opportunities designed for pedestrians without excluding the auto. TOD can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use.*

[6] Next Stop Honolulu – The Story of the O'ahu Railway & Land Company; Jim Chiddix and MacKinnon Simpson; September 2004; page 169.
[7] Streetcar Days In Honolulu – Breezing Through Paradise; MacKinnon Simpson and John Brizdle; October 2000; page 71.
[8] Waipahu Neighborhood TOD Plan Transportation and Circulation Analysis; prepared for the City and County of Honolulu Department of Planning and Permitting; Weslin Consulting Services, Inc.; June 2008; page 3.
[9] Statewide Transit-Oriented Development Study – Factors for Success in California, Final Report; September 2002; California Department of Transportation, page 12.

Successful TODs increase the effectiveness of the large investment made in transportation.[10] TODs align transit with a community's vision for how it wants to grow over the long-term by creating mixed-use, higher density, pedestrian-friendly communities.

In recognition of the value of TODs, the City and County of Honolulu enacted an ordinance to set the strategy for TOD planning and implementation.[11] The ordinance establishes special districts to foster more livable communities. The ordinance is a framework for planning and zoning. It identifies issues to examine such as affordable housing potential, reduced parking and urban design.

TODs work by utilizing an appropriate land use mix, allowing pedestrians to access stores and services on foot, by bicycle, or transit. This process is called trip internalization. Personal trips are completed within the community by eliminating the need to travel outside the community by car for basic services.

Mixed land uses foster retention of trips within the development. In contrast, single use developments force people to travel outside of their neighborhood, often by personal vehicle. The broader the mix and diversity of land uses, the higher the probability that trips can be captured within the TOD without the need for a person to travel by personal vehicle. The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative achieves this appropriate mix and balance of land uses at each station.

The best TOD designs require a multi-disciplined approach combining transportation planning and urban design. TODs must be attractive, well designed, mixed use developments to encourage people to live and work in higher density projects near transit stations. This approach is referred to as the "three Ds": density, diversity, and design. Without the three Ds, development around transit is simply transit adjacent development that does not capture internal trips.

The principles of TOD serve as reminders for communities, designers, and developers who may have forgotten them. These principles can serve as a checklist for the development of pedestrian-scale and bicycle-oriented communities suitable for public transportation.

The paramount requirement is that superior transit access must be developed for each transit station, center or hub to assure that the catchment zone for the regional transit system is optimally served. The catchment zone is the area around a station from which over 90% of all transit trips actually begin or end.

[10] Transit Oriented Development Key Success Factors; prepared by Booz Allen Hamilton and Weslin Consulting Services, Inc. for the City and County of Honolulu, Department of Budget and Financial Services; November 2006.
[11] City and County of Honolulu Bill 10 (2008) Relating to Transit-Oriented Development.

The catchment zone will often be much larger than the area covered by TOD plans. It is vital that the TOD plans not inadvertently inhibit the best possible station access for all system patrons, not just those in the TOD area. The form of the TOD must follow the functional requirements of the overall transportation system designed to serve the maximum amount of travel demand possible.

There is no proven set of TOD methods that works across all situations to capture the maximum travel demand possible, but there are general best practices that can help. One best practice is to offer Transportation Demand Management (TDM) programs to residents, employees, students, shoppers and others who desire to travel to and from a catchment zone, particularly within the TOD area.

One TDM example is an employer sponsored transportation program. Program elements include subsidized transit fares, ride home programs, company vehicles for personal use, and memberships in a car sharing program. These elements can greatly increase transit use for those living outside of the TOD. The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative is expected to incorporate such travel demand management strategies.

Some TDM programs already exist. The Leeward Community College participates in TheBus' University Bus Pass Program or U-Pass. All students with a valid Leeward Community College identification card are eligible for a U-Pass. Each $100.00 U-Pass is valid for a five-month period, a value of $200.00. The U-Pass will be valid on the rail system. The combination of the close proximity of the Leeward Community College station and the reduced rate U-Pass will be very attractive to students.

The success of TOD at each station can be greatly impacted by the quality of transportation access to and within the TOD influence area. This influence area is normally considered to be the land within one-quarter mile of a station, about 63 acres, but it can be much larger with proper planning.

Access barriers, modal conflict points, circuitous pathways and other poor multi-modal transportation circulation network design and land development factors can negatively impact the size of the TOD influence area. These negative factors are sometimes the unavoidable consequence of existing conditions that cannot be cost-effectively removed or redeveloped.

Such negative factors can shrink the TOD influence area to just hundreds of feet from the rail station with a positive influence on only a few acres. A technique is used in this technical memorandum to quantitatively measure the relative level of public transportation access to each station for both current conditions and those proposed in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative.

Properly designed multi-modal access pathways that avoid modal conflict points can positively impact the effective size of the TOD influence area. Alternative transportation mode networks with unimpeded, direct links to rail stations will create quick access times attracting more pedestrians and cyclists, increasing market share for those access modes. People are actively looking for options to the automobile. Such positive factors can expand the TOD influence area to one-half mile radius or more from the rail station increasing the area served by a station from 63 acres to 500 acres or more.

II.2.1. TOD Supportive Transportation Elements

This technical memorandum considers innovative transportation elements associated with TODs and how those elements apply to the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative. Available strategies for creating the type of transportation environment desired is identified in publications such as the Transportation Research Board's Transit Cooperative Research Program Report 100, *Transit Capacity and Quality of Service Manual* (2003); the Institute of Transportation Engineer's *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities* (2005); the American Association of State Highway and Transportation Official's *Guide for the Planning, Design and Operation of Pedestrian Facilities* (2004) and *Guide for Achieving Flexibility in Highway Design* (2004); and, the American Planning Association's *Best Practices Manual on Complete Streets* (2010).

This technical memorandum reviews the Aiea-Pearl City Neighborhood TOD Preferred Alternative in the context of several other evolving topics related to best TOD transportation planning practices including Safety, Complete Streets and Context Sensitive Solutions (CSS). The next section addresses the relationships with Sustainability and Smart Growth. Much of the literature places the broad concept of "sustainability" as the over-arching theme with Complete Streets, TOD, Smart Growth and CSS being the various means to achieve "sustainability".

Another theme proffered within this technical memorandum is one in need of rejuvenation: "form follows function."[12] The European Union (EU) is attune to the axiom wherein transportation is provided that moves people and goods more efficiently and safely. China is quickly making adjustments to their transportation system as they grow their urban areas at rapid rates. Canada and Australia are gradually transitioning from their automobile era practices toward using the models offered by many EU countries. Many best practices in foreign locations are now being adopted in the U.S. One practice found most suitable for TOD planning work is from England where public transport access levels are determined. Those levels are used to define urban density and parking supply limits.

[12] Form and Function; Horatio Greenbough; 1947.

II.2.2. TODs and Transportation Safety

This technical memorandum offers guidance on achieving excellence in transportation planning and design for TOD Neighborhood Plans. It suggests the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative is a good place to launch some of the successful international best practices. The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative encourages the use of new transportation network design approaches to optimize safety for the most vulnerable travelers.

The types of new design approaches included in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative are driven by more than urban design seeking more aesthetically pleasing transportation infrastructure. The attractive "form" offered is most appealing when the safest environment possible has been created. That environment is safest when the "function" of transportation corridors has been clearly established such that the travel movements of alternative modes avoid points of conflict.

Table II-1 is from the recent report "Dangerous By Design."[13] It lists the highest average annual pedestrian traffic fatalities per 100,000 people 65 and older. Hawai'i is at the top by a wide margin with a rate three times greater than the national average.

Table II-1: Highest Average Annual Pedestrian Traffic Fatalities per 100,000 People 65 and Older

	State	Fatalities per 100,000 People 65 And Older (2007-2008)
1	Hawaii	6.97
2	California	[illegible]
3	New York	3.73
4	Rhode Island	[illegible]
5	New Hampshire	3.[illegible]
6	Nevada	[illegible]
7	Florida	3.21
8	Massachusetts	[illegible]
9	Idaho	3.08
10	New Jersey	[illegible]
	National Average	[illegible]

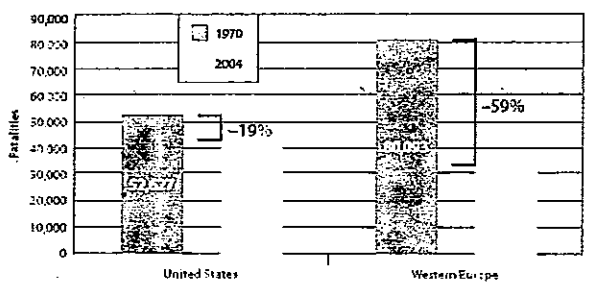
[13] Dangerous By Design; Michelle Ernst and Lilly Shoup; Surface Transportation Policy Partnership and Transportation For America; 2009; Table 3, page 24.

Pedestrian fatality rate statistics from the Fatality Analysis Reporting System (FARS) reveal that Hawai'i has been consistently ranked higher than most other states since 1994, the first year such comparative statistics are available. Hawai'i's average National rank during the nine year period from 2000 to 2008 was 7th. From 1994 to 1999, Hawai'i's average rank was 17th. Hawai'i's pedestrian safety record is getting worse.

Many factors contribute to these rankings. Some may make Hawai'i appear worse than other states. Hawai'i has a greater than average proportion of its population over 65; older people in Hawai'i make more trips than their counterparts on the mainland; and, more of those trips are as pedestrians.[14, 15]

The Leeward Community College, Pearl Highlands and Pearlridge rail stations will all encourage access by pedestrians as an outgrowth of the Neighborhood TOD Plans. The transportation design used to assure the safety of pedestrians must be better than what exists to encourage more of us to walk. International locations, especially those with highly developed public transportation systems, are placing priority on pedestrians, cycles and transit while restricting general purpose traffic, especially in areas that are in close proximity to a rail station. Figure II-4 provides the results of these types of policies.

Figure II-4: Comparison of U.S. and Western Europe Traffic Fatalities



[14] In 2010 Hawai'i had the 16th highest proportion of population age 65 and older among all states. Hawai'i is projected to be ranked 12th in 2010. Source: http://www.census.gov/population/projections/PressTab3.xls.
[15] U.S. Department of Transportation, Bureau of Transportation statistics, National Household Travel Survey 2001 Highlights Report, BTS03-05; Figure 5, page 10 and HDOT and OMPO NHTS Add-on Program, data files, 2001.

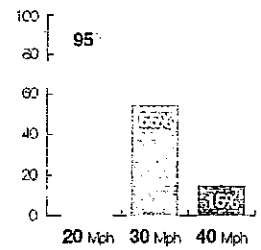
Figure II-4 is from the report "Performance Driven: A New Vision for U.S. Transportation Policy." The report observes that "The U.S. transportation system continues to fall short with respect to safety: mortality and injury rates – as well as accident-related economic losses – on the nation's highways are far in excess of those found in most other developed countries."[16]

The report compared Western Europe, a region of similar size and population to the U.S. The striking observation was not that the U.S. death toll was higher than Western Europe. It was that Western Europe once had a much higher fatality level than the U.S. but has succeeded in achieving a 59% reduction, compared to a 19% reduction over the same 34-year period in the U.S.

China reduced fatalities by 10% in one year, from 2007 to 2008.[17] China's peak traffic fatality total was in 2002 at 109,381. By 2008, the fatality total was down to 73,500. The reduction in China from 2002 to 2008 of 35,881 is a far greater achievement when compared to the U.S. reduction of only 9,991 that took 34 years to attain.

Statistics conclusively show that international transport safety policies have been much more effective than in the U.S. in saving lives. International transport planning recognizes the vulnerability of the pedestrian. Vehicle speed presents the greatest threat as shown in Figure II-5. The "Dangerous By Design" report makes the point that vehicle speed kills – a pedestrian struck by a vehicle at 20 mph has a 95% chance of surviving. That is reduced to just 15% when hit by a vehicle at 40 mph.

Figure II-5:
Pedestrian Survival Rate by Vehicle Speed



[16] Performance Driven: A New Vision for U.S. Transportation Policy; National Transportation Policy Project; Bipartisan Policy Center; June 9, 2009; page 40.
[17] Traffic fatalities in China fall to 73,500 in 2008: report; Car Tech; Beijing, China; January 4, 2009.

Vehicles on existing major streets around some of the TOD stations frequently travel at speeds above 40 mph. Crosswalks and traffic signals have been the preferred means of regulating conflicts in the past, but this approach is not as safe as a complete separation of modal conflicts as is achieved in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative. This separation is achieved by the redesign and reorientation of urban blocks, creation and strategic placement of pedestrian plazas adjacent to station entrances and the provision of pedestrian bridges such as the one at the Pearl Highlands station.

Some of the redeveloped areas in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative are candidates for traffic control approaches being used with increasing regularity. These traffic control approaches include the use of traffic cells, central cells, transition plazas, home zones and reduced speed zones as shown in Appendix A.

II.2.3. TODs and Complete Streets

The American Association of Retired Persons (AARP) has taken on traffic safety as a crusade. They have endorsed Complete Streets policies that take older pedestrians into account. AARP Hawai'i was a key proponent of Act 54, Hawai'i's Complete Street legislation passed in 2009.[18]

Act 54, Complete Streets, directs the state and county DOTs to adopt a complete streets policy that seeks to reasonably accommodate convenient access and mobility for all users including pedestrians, bicyclists, transit users, motorists, and persons of all ages and abilities. The law applies to new construction, reconstruction, and maintenance of highways, roads, streets, ways, and lanes located within urban, suburban, and rural areas, if appropriate for the application of complete streets.

The legislation created a temporary task force to review existing state and county highway design standards and guidelines. The purpose of the review is to develop standards that can be applied consistently statewide. The task force is to submit a final report before the 2011 legislative session.

It is recognized that Act 54 applies to the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative and that the planning principles serve as the complete streets policies for each station area.

[18] Letters to Hawai'i House Committee on Finance and Transportation from Jackie Boland, AARP Hawai'i Associate State Director; 2009.

The Federal Highway Administration (FHWA) has engineering guidelines for older drivers and pedestrians.[19] This guidance was a cursory update of work performed in the late-1990's, relying on research in the early-1990's, largely based on data from the 1980's. The Highway Design Handbook For Older Drivers and Pedestrians represents rigorous analysis using prudent engineering approaches oriented toward judiciously accommodating the pedestrian while giving preferential treatment to the optimization of vehicle flow.

The FHWA handbook attempts to address an aging population's desire for mobility as pedestrians within the confines of an institutionalized mindset that automatically assumes a U.S. defacto policy directive that streets are for vehicles versus an ever-strengthening and evolving international policy that streets are public rights-of-way available for the highest and best use to serve the public need. Consider the first sentence of the Bipartisan Policy Center's National Transportation Policy Project (NTPP) report:[20]

> *National transportation policy has lost direction and a clear sense of purpose, threatening substantial costs to our collective prosperity, security, environment, and quality of life.*

FHWA's guidance makes no references to more recent best international practices which undeniably have done a much better job of safety and accommodation of all modes. The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative is intended to be fully responsive to the intent of the Complete Streets program. The Interim Progress Report identified the following five potential Complete Streets best practices:

1. Development of a clear vision that explains why the community wants to enhance its street network with Complete Streets.
2. Development of provisions for "all users," including pedestrians, bicyclists, public transportation, freight, and vehicles.
3. Development of design standards or the requirement to create design standards.
4. Development of a Complete Streets Checklist.
5. Development of exceptions to the policy for circumstances where the implementation of Complete Streets may not be advisable.

The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative is intended to be inclusive of the kinds of best practices listed above.

[19] Highway Design Handbook For Older Drivers and Pedestrians; Federal Highway Administration; Publication No. FHWA-RD-01-103; May 2001.
[20] The NTPP is a project of the Bipartisan Policy Center founded by former Senate majority leaders Howard Baker, George Mitchell, Tom Daschle, and Bob Dole.

II.2.4. TODs and Context Sensitive Solutions

According to FHWA "Context Sensitive Solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist."[21]

Others expand even further to add "CSS respects design objectives for safety, efficiency, capacity and maintenance, while integrating community objectives and values relating to compatibility, livability, sense of place, urban design, cost and environmental impacts."[22]

The Institute of Transportation Engineers (ITE) Proposed Recommended Practice, Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities, advances the successful use of CSS in the planning and design of major urban thoroughfares for walkable communities. It provides guidance and demonstrates how CSS concepts and principles may be applied in roadway improvement projects that are consistent with their physical settings. Examples are provided showing how the principles of CSS have been applied to support walkable communities. The ITE report takes many of the international best practices identified in earlier reports and translates those successes into U.S. design standards.[23]

The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative is intended to be inclusive of those international best practices that have been included into U.S. design standards, others that are being implemented in the more savvy urban transportation cities such as New York City and Portland, and those that offer clear advantages applicable to Honolulu's environment.

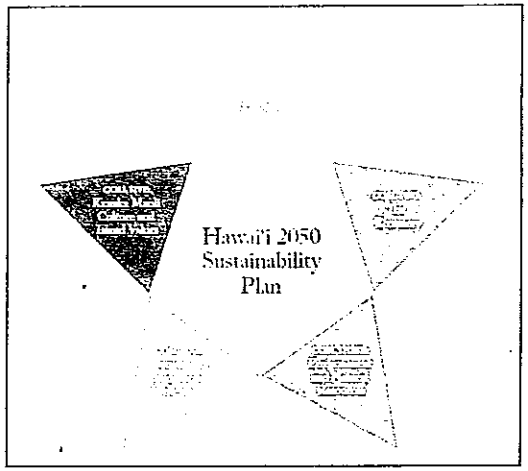
[21] Federal Highway Administration (www.fhwa.dot.gov/csd/index.htm).
[22] Context Sensitive Street Design; Atlanta Regional Commission, Urban Design Collaborative; December 2001; page 4.
[23] Geometric Design Practices for European Roads; International Technology Exchange Program; FHWA; June 2001.

II.3. TOD SUSTAINABILITY AND SMART GROWTH FEATURES

A report entitled "Hawai'i 2050 Update, Relating to Sustainability" was prepared in response to Act 225, 2008 Session Laws of Hawai'i. The subject matter of this report is applicable to the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative.[24]

Hawai'i 2050 is the most comprehensive statewide planning process conducted in over three decades. Hawai'i 2050 creates a long-term action agenda for achieving sustainability. Hawai'i 2050 is intended to augment and complement other plans to achieve sustainability goals and principles. Hawai'i 2050 provides five over-arching goals shown in Figure II-6 to guide county sustainability efforts.[25]

Figure II-6: Hawai'i 2050 Sustainability Plan Goals



[24] Hawai'i 2050 Update, Relating to Sustainability; prepared by the Social Sciences Policy Center, University of Hawai'i at Manoa; in response to Act 225, 2008 Session Laws of Hawai'i; January 2010.
[25] Hawai'i 2050 Sustainability Plan, Charting a course for Hawai'i's sustainable future; Hawai'i 2050 Sustainability Task Force, State of Hawai'i; January 2008, page 9.

The shape of a star is used to reflect the equal importance, inter-relationship and inter-dependence of the five sustainability goals.

Hawai'i 2050 defines sustainability as a Hawai'i that achieves the following:

- Respects the culture, character, beauty and history of our state's island communities;
- Strikes a balance between economic, social and community, and environmental priorities; and,
- Meets the needs of the present without compromising the ability of future generations to meet their own needs.

The Hawai'i 2050 Update released for the past legislative session recommended that the sustainability goals and definition be incorporated as a new section in HRS Chapter 226.[26] Legislation that would achieve this recommendation advanced through the 2010 legislative session but was not enacted.[27]

The Hawai'i 2050 Sustainability Plan and the Hawai'i 2050 Update identify sets of indicators to monitor and measure the success toward becoming a more sustainable Hawai'i. Many of these involve transportation performance measures such as:[28]

- Change in annual vehicle miles traveled
- Registered vehicles
- Public transportation ridership
- Use of ridesharing and alternative transportation
- Non-motorized trips
- Commute time

The first elements of sustainability emerged in the global arena at the 1972 UN Conference on the Human Environment.[29] A wealth of documentation has been produced on sustainability as it applies to transportation.[30]

[26] Hawai'i 2050 Update, Relating to Sustainability; prepared by Social Sciences Policy Center, University of Hawai'i at Manoa; in response to Act 225, 2008 Session Laws of Hawai'i; January 2010, page 2.
[27] SB2532 passed in the Senate (3/2/2010), passed in the House with amendments (4/6/2010), but was not reconciled in conference committee (4/22/2010).
[28] Hawai'i 2050 Sustainability Plan, Charting a course for Hawai'i's sustainable future; Hawai'i 2050 Sustainability Task Force, State of Hawai'i; January 2008, page 5; and, Hawai'i 2050 Update, Relating to Sustainability; prepared by the Social Sciences Policy Center, University of Hawai'i at Manoa; in response to Act 225, 2008 Session Laws of Hawai'i; January 2010, pages 28 and 29.
[29] Sustainability and Cities, Overcoming Automobile Dependence; Peter Newman and Jeff Kenworthy; 1999, page 1.
[30] Ibid, Note: There are about 450 reference documents to this book.

There is no universally accepted definition. Definitions include:[31]

- Sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland Commission, 1987)
- The goal of sustainable transportation is to ensure that environmental, social and economic considerations are factored into decisions affecting transportation activity." (United Nations Educational, Scientific and Cultural Organization's Management of Social Transformations - MOST, 1999)
- Sustainability is "the capacity for continuance into the long term future". Anything that can go on being done on an indefinite basis is sustainable. Anything that cannot go on being done indefinitely is unsustainable. (Center for Sustainability, 2004)

Simply stated, any economic or social development should improve, not harm, the environment. That is the primary theme used for "sustainability" and the related topics in this technical memorandum, especially as it applies to TOD planning.

A sustainable and smart growth development pattern emerged in the days when transportation was designed to dictate land use. This was the case in Hawai'i's past when trolleys on O'ahu formed walkable neighborhoods.

More recently, land use policy has dictated transportation policy. Bedroom communities separated people's homes from their workplace connected only by roads. Smart growth principles need to replace our reliance on automobiles.[32] The Aiea-Pearl City Neighborhood TOD Plan offers a significant step in that direction.

Past transportation planning tended to assume that transport progress consisted of advancing newer, faster modes. These displaced older, slower modes. Consequently, there was no harm if increasing automobile traffic caused congestion delay to public transportation or created a barrier to pedestrian travel. It was standard practice to give public transportation or walking lower priority over automobile travel.[33]

Sustainable transportation planning redefines standard practices. It credits each mode with purpose and value. It assigns a purpose to be fulfilled by each mode. It values each mode's contribution to a balanced transportation system.

[31] Issues In Sustainable Transportation; Global Environmental Issues; Volume 6, Number 2, 2006; page 332.
[32] The Renaissance of Honolulu – The Sustainable Rebirth of an American City; City and County of Honolulu, Mayor Jeremy Harris; 2004; Chapter 4, Sustainable Transportation; page 51.
[33] Issues In Sustainable Transportation; Global Environmental Issues; Volume 6, Number 2, 2006; page 335.

These new standard practices are so well established in other countries they are no longer considered innovative. They have become commonplace approaches supporting sustainable and smart growth development concepts such as Eco-towns and New Growth Points; terms reflecting a high sophistication of coordinated transportation and land use planning in the United Kingdom and other EU countries.[34] The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative embodies these sustainable transportation planning elements.

The most beneficial sustainable transport and smart growth strategies improve walking and cycling, provide more public transportation service, and restrict motor vehicle travel in areas with high pedestrian, cycling and public transportation activity. Sustainability and smart growth transportation plans can contribute to reducing auto-dependency.[35] The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative builds upon these established strategies.

II.4. SUMMARY OF PREFERRED ALTERNATIVE FEATURES

The Aiea-Pearl City Neighborhood TOD Preferred Alternative provides the fundamental transportation features necessary to be fully responsive to the expectations of a TOD. Transportation features include:

- The right kind of infrastructure – including new bike paths, bike lanes, main street concepts, new street patterns, wide sidewalks, new pedestrian pathways and pedestrian transit plazas.
- A needed emphasis on safety – including a concern for a "safe biking experience" and the orientation of streets to minimize modal conflicts.
- The best design approach – including elements such as a "pedestrian-first" emphasis that is responsive to Hawai'i's evolving context sensitive design and complete streets efforts.
- The right balance between transportation and land use – including the inclusion of workforce housing and employment opportunities to minimize the need to travel outside of the area during peak commute periods responding to Hawai'i's evolving Sustainability and Smart Growth initiatives.

[34] Building Sustainable Transport into New Developments: A Menu of Options for Growth Points and Eco-towns; Department for Transport, London, UK; April 2008.
[35] Growth Management and Sustainable Transport: Do Growth Management Policies Promote Transit Use?; Brian Deal, Jae Hong Kim, Arnab Chakraborty; University of Illinois; Journal of Public Transportation, Volume 12, Number 4, 2009; page 35.

III. TOD TRANSPORTATION ASSESSMENT METHODOLOGY

A number of countries have significantly revised procedures for reviewing the relationship between land development and transportation. Some of these countries have many areas exhibiting the type of spatial attributes desired for a TOD. These attributes have not been achieved spontaneously. They are the result of intensive efforts to link the fulfillment of planning policy with the formal review of major development applications.

This section is the result of a review of international best practices in the assessment of the transportation attributes of development proposals in relationship to their location to public transportation. London's Public Transport Accessibility Level (PTAL) approach and England's corresponding Transport Assessment (TA) procedures recognize policy directives to shift single occupant vehicle travel toward walking, cycling and public transportation. London has changed its land development traffic impact assessment procedures from the type of Traffic Impact Analysis Report (TIAR) used in Hawai'i to the TA procedures using PTAL over the past ten years.

A review of the London Plan, several individual London Borough plans, dozens of development planning review reports and scores of technical reports and papers leads to the conclusion that the PTAL approach has enormous value in providing a process that directly links government policy with land development proposals and approvals. Use of PTAL achieves progressive modal shift transportation policies such as desired through the City and County of Honolulu's sponsorship of TOD Neighborhood Plans.

This section reviews the PTAL process as used elsewhere and tests whether such an approach has merit in addressing the desired transportation and circulation attributes of the Aiea-Pearl City Neighborhood TOD Plan.

III.1. Transportation Assessments And Traffic Impact Analysis Reports

The common practice in the U.S., including Hawai'i, is to conduct a Traffic Impact Analysis Report (TIAR) for large development projects. This technical memorandum includes a case study of how such an approach can be used to review the implications of a TOD. However, this approach is being replaced in other countries where TODs are commonplace and the interest is not in accommodating the car. The new approach is a Transportation Assessment (TA).

England's TA guidelines were issued as Planning Policy Guidance 13 (PPG13) in 2001.[36] The purpose of PPG13 was "...to integrate planning and transport at the national, regional, strategic and local level and to promote more sustainable transport choices both for carrying people and for moving freight."[37] PPG13 is the means by which assurances can be attained that public policy has been translated into actions.

PPG13 identifies many of the attributes desired for a TOD. For example, a key planning objective in England is "to ensure that jobs, shopping, leisure facilities and services are accessible by public transport, walking, and cycling."[38] The need for the TA approach is to reflect the "change in the policy framework within which road space might be reallocated to pedestrians, cyclists and public transport in order to accommodate and facilitate the renaissance of towns and cities."[39]

PPG13 requires a TA where developments will have significant transport implications. TAs are to be "...submitted alongside the relevant planning applications for development."[40] TAs replaced the previously required Traffic Impact Analysis.[41] The TA is required to illustrate accessibility to the site by all modes and the likely modal split of journeys to and from the site. It gives details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts.

PPG13 includes the finding that "The availability of car parking has a major influence on the means of transport people choose for their journeys. Some studies suggest that levels of parking can be more significant than levels of public transport provision in determining means of travel (particularly for the journey to work) even for locations very well served by public transport. Car parking also takes up a large amount of space in development, is costly to business and reduces densities. Reducing the amount of parking in new development (and in the expansion and change of use in existing development) is essential, as part of a package of planning and transport measures, to promote sustainable travel choices. At the same time, the amount of good quality cycle parking in developments should be increased to promote more cycle use."[42]

[36] Planning Policy Guidance 13: Transport; Department for Communities and Local Government; London, England; March 2001.
[37] Ibid, cover page.
[38] Ibid, paragraph 19.
[39] Ibid, paragraph 65.
[40] Ibid, paragraph 23.
[41] Guidelines for Traffic Impact Assessment; Institution of Highways and Transportation (IHT); 1994.
[42] Planning Policy Guidance 13: Transport; Department for Communities and Local Government; London, England; March 2001, paragraph 49.

PPG13 identifies maximum parking standards to be used as part of a package of measures to promote sustainable transportation choices, reduce the land-take of development, enable schemes to fit into central urban sites, promote linked-trips and access to development for those without use of a car and to tackle congestion. There are no minimum parking standards for development, other than parking for disabled people.

PPG13 sets a consistent approach to maximum parking standards for a range of major developments. The levels set were applied as a maximum throughout England until recently updated to incorporate the use of public transportation accessibility levels discussed in the next section.[43]

PPG13 sets guidance "...to avoid on-street parking."[44] Rather, it seeks to have development applicants "...address the needs of all users. Within town centers and other areas with a mixture of land uses, priority should be given to people over traffic. Well designed pedestrianization and pedestrian priority schemes generally prove popular and commercially successful, and local authorities should actively consider traffic calming and the reallocation of road space to promote safe walking and cycling and to give priority to public transport."[45]

Traffic Management guidelines in PPG13 include designing residential roads "...to encourage low traffic speeds and may be car free, where there is sufficient access by non car modes. In established residential areas, there needs to be creative use of traffic management tools, to allow traffic calming, including the use of 20 mph zones..." and "...home zones."[46]

Travel Plans are another aspect of PPG13 designed to place emphasis on a new approach in transportation planning. Travel plans are to be "...submitted alongside planning applications which are likely to have significant transport implications."[47] Travel plan relevance"...lies in the delivery of sustainable transport objectives, including:

1. reductions in car usage (particularly single occupancy journeys) and increased use of public transport, walking and cycling;
2. reduced traffic speeds and improved road safety and personal security particularly for pedestrians and cyclists; and,

[43] Ibid; Annex D; note The parking maximum for food retail was one space per 14 square meters, or one space per 150.7 square feet. In comparison, the City and County of Honolulu's Land Use ordinance requires a minimum of one space per 300 square feet.
[44] Ibid, paragraph 66, item 5.
[45] Ibid, paragraph 67.
[46] Ibid, paragraph 68.
[47] Ibid, paragraph 89.

3. more environmentally friendly delivery and freight movements, including home delivery services."[48]

Elements of the 2001 TA guidance have been continuously refined and expanded, but the underlying policy foundation has not changed. The content of subsequent publications has been to elaborate on TA procedures. The Guidance on Transport Assessment published in March of 2007 reaffirmed PPG13 and provided detailed instructions with the following introduction:

> *A TA is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to deal with the anticipated transport impacts of the scheme and to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport.*[49]

The 2007 TA guidance was offered to enable properly prepared TA's to be more readily reviewed by local planning authorities and assure consistency with established policy. TAs allow the transport implications of proposed developments to be properly considered and identify suitable measures to achieve a more sustainable and environmentally sound outcome. In preparing the 2007 guidance the following considerations were found to be relevant:[50]

- ***Reducing the need to travel, especially by car*** – reducing the need for travel, reducing the length of trips, and promoting multi-purpose or linked trips by promoting more sustainable patterns of development and more sustainable communities that reduce the physical separation of key land uses.
- ***Tackling the environmental impact of travel*** – by improving sustainable transport choices and by making it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking, and cycling.
- ***The accessibility of the location*** – the extent to which a site is, or is capable of becoming, accessible by non car modes, particularly for large developments that involve major generators of travel demand.
- ***Other measures which may assist in influencing travel behavior*** – achieving reductions in car usage (particularly single occupancy vehicles), by measures such as car sharing/pooling, High Occupancy Vehicle (HOV) lanes and parking control.

[48] Ibid, paragraph 88.
[49] Guidance on Transport Assessment; Department for Transport, Great Minister House, London; March 2007; paragraph 1.2.
[50] Ibid, paragraph 1.19.

These relevant considerations are repeated in the TA procedures for individual Boroughs, sometimes with more emphatic emphasis on expected outcomes. For example, in December of 2008, the Worcestershire County Council published a report with the same four bullets listed above and the following statement:[51]

> *All new developments in Worcestershire must be designed as sustainable developments. Therefore, Transport Assessments and Statements must not focus on road building or highway capacity enhancements as a means of catering for the transport impacts of sites, without a full detailed exploration of measures to encourage sustainable transport behavior (i.e. increased use of public transport, walking and cycling).*

The reference to "Transport Assessments and Statements" is to distinguish the requirements of a TA from that of a Transport Statement (TS). In most London Boroughs, a TA is required for developments over a specified size, whereas a TS is required for smaller scale building projects.

III.2. Using PTALs As A TOD Transportation Planning Technique

In 2010, London instituted further updated TA procedures which feature the use of PTALs.[52] PTALs are a detailed measure of the accessibility of a geographic point to the public transport network, taking into account walk access time and service availability. The method measures the density of the public transport network from a particular point.

The PTAL methodology was originally developed in 1992 by a London Borough. It was subsequently tested and adopted by London Transport. Transportation planning practices in London transitioned from the type of TIAR used in Hawai'i to the TA now used throughout England and other countries over the past decade with the most recent guidance on TA's published this year.

Among the reasons for the change was to "use parking policies, alongside other planning and transport measures, to promote sustainable transport choices and reduce reliance on the car for work and other journeys" and to "give priority to people over ease of traffic movement and plan to provide more road space to pedestrians, cyclists and public transport in town centers, local neighborhoods and other areas with a mixture of land uses."[53]

[51] Requirements for Transportation Assessments and Transport Statements; Worcestershire County Council; December 2008; page 2.
[52] Transport Assessment Best Practices Guidance Document; Transport for London; April 2010; Appendix B PTAL Methodology, page 73.
[53] Planning Policy Guidance 13: Transport; Department for Communities and Local Government; London, England; March 2001; items 6.7 and 6.8.

Northern Ireland made a comparable change from what was their version of Hawai'i's TIAR to a TA in 2006. There guidelines explain it this way, "The key difference is that TAs cover all modes of transport from a person-trip perspective, with the emphasis on walking, cycling and public transport whereas Traffic Impact Assessments (TIARs) generally concentrated on accommodating car trips (to ensure that the traffic impacts associated with a new development would be accommodated) and gave only limited attention to accessibility by non-car modes."[54]

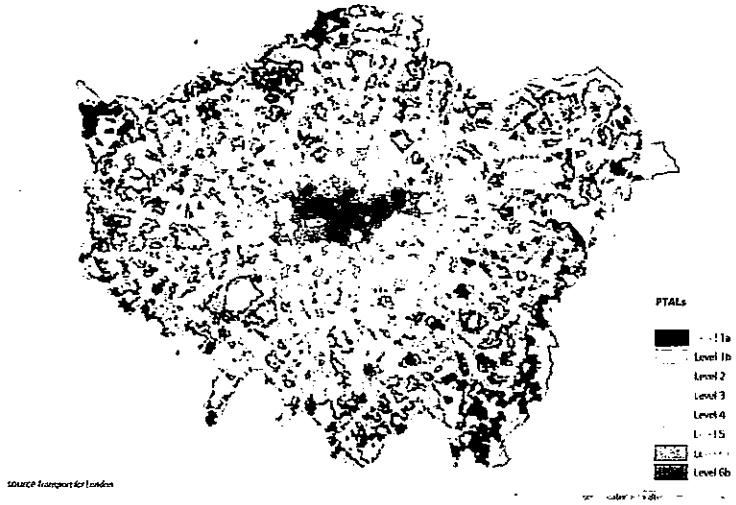
In Australia, towns as small as 20,000 use PTAL methods. Ryde, New South Whales, Australia is a suburb of Sydney. Ryde is located 13 kilometers (21 miles) from the Sydney CBD. It is using PTALs as part of their policy to reduce car use. Ryde is using PTALs to set car parking supply rates for new development.[55]

Many authoritative literature and best practice reviews reinforce the value of parking limitations, transportation demand management (TDM), public transportation network service levels, bicycle facility quality and meaningful pedestrian pathways.[56] Various scoring systems have been developed to quantify the attractiveness of the walking environment.[57, 58] Although these attributes are often alluded to in development proposals, there has been no way of objectively and quantifiably evaluating these types of transportation projects and programs until some governments updated to TA procedures.

The Greater London Authority investigated using PTALs as a tool to implement sustainable planning policies in 2002.[59] PTALs are now an integral part of the London Plan and London's approval process which requires a TA for major land development. The London Plan states "Spatial policies cannot be considered in isolation from their links to existing and proposed transport accessibility and capacity."[60] The map of existing public transport accessibility levels across London based on the PTAL method is shown in Figure III-1.

[54] Transport Assessment – Guidelines for Development Proposals in Northern Ireland; Department of Regional Development, Northern Ireland; November 9, 2006; page 3 paragraph 2.5.
[55] City of Ryde Integrated Transport and Land Use Strategy, Centre Report for Eastwood, Appendix J, PTAL Analysis Brief; August 2007, page 1.
[56] Planning For Sustainable Travel: Integrating Spatial Planning and Transport; Dr. Robin Hickman, Halcrow Group and University of Oxford (Transport Studies Unit), Catherine Seaborn, Halcrow Group, Peter Headicar, Oxford Brookes University (Department of Planning) and Professor David Banister, University of Oxford (Transport Studies Unit); Association for European Transport and Contributors; 2009.
[57] Two Instruments To Score Environments For Neighborhood Walkability; Dr. Anne Vernez Moudon, University of Washington, et al.; November 15, 2005.
[58] Identifying and Prioritizing Walking Investment through the PERS audit tool; Spencer Clark, Transport for London and Adam Davies, TRL; Walk21 Conference 2009, New York, New York; 2009.
[59] Parking standards for London retail, leisure, mixed use development and other issues; SDS Technical Report Twelve; August 2002.
[60] The London Plan, Spatial Development Strategy for Greater London, Consolidation with Alterations since 2004; February 2008; page 56, paragraph 2.42.

Figure III-1: London PTAL Contours



Other countries are either investigating the recent evolution in London's transportation policy and planning review process or are actively implementing the PTAL technique.[61] Other techniques are available to apply government policy guidance, but none are nearly as rigorously vetted as the PTAL approach.[62, 63]

[61] PPG13: A Vehicle For Promoting The New Agenda For A Sustainable Transport And Land Use Policy; Gurney, A., Jenkins, A, and Smyth, A., Ove Arup and Partners.
[62] Accessibility planning and accessibility modeling: a review; Helena Titheradge, University College; London, England; 2004.
[63] Measuring The Accessibility Of Opportunities and Services In Dense Urban Environments: Experiences From London; Simon Cooper, Peter Wright and Rhodri Ball, Transport for London; Association for European Transport and Contributors; 2009.

III.3. PTALs Determine Density and Maximum Parking Supply

London uses PTALs to limit density for suburban as well as urban areas as shown in Table III-1.[64] Appropriate density ranges are related to setting in terms of location, existing building form, existing building mass, and the PTAL index.

Table III-1: London Density Matrix
Habitable rooms and dwellings per hectare (hr/ha) by PTAL
Note: There are 2.47 acres per hectare

Setting	Public Transport Accessibility Level (PTAL) 0 to 1	2 to 3	4 to 6
Suburban	**150-200 hr/ha**	**150-250 hr/ha**	**200-350 hr/ha**
3.8-4.6 hr/unit	*35-55 u/ha*	*35-65 u/ha*	*45-90 u/ha*
3.1-3.7 hr/unit	*40-65 u/ha*	*40-80 u/ha*	*55-115 u/ha*
2.7-3.0 hr/unit	*50-75 u/ha*	*50-95 u/ha*	*70-130 u/ha*
Urban	**150-250 hr/ha**	**200-450 hr/ha**	**200-700 hr/ha**
3.8-4.6 hr/unit	*35-65 u/ha*	*45-120 u/ha*	*45-185 u/ha*
3.1-3.7 hr/unit	*40-80 u/ha*	*55-145 u/ha*	*55-225 u/ha*
2.7-3.0 hr/unit	*50-95 u/ha*	*70-170 u/ha*	*70-260 u/ha*
Central	**150-300 hr/ha**	**300-650 hr/ha**	**650-1100 hr/ha**
3.8-4.6 hr/unit	*35-80 u/ha*	*65-170 u/ha*	*140-290 u/ha*
3.1-3.7 hr/unit	*40-100 u/ha*	*80-210 u/ha*	*175-355 u/ha*
2.7-3.0 hr/unit	*50-110 u/ha*	*100-240 u/ha*	*215-405 u/ha*

Indicative Average Dwellings Size

[64] The London Plan, Spatial Development Strategy for Greater London, Consolidation with Alterations since 2004; February 2008; page 69, table 3A.2.

The PTAL is used as a development planning tool in London to determine permitted parking standards and allowable development densities. Large site developments must follow planning guidelines that allow more parking in areas with low PTALs and no or minimal parking in areas with high PTALs as shown in Table III-2 for retail land uses.

Table III-2: London Parking Standards
Maximum Parking Space Supply For Retail Land Use By PTAL
Note: There are 10.764 square feet in a square meter

	PTAL 6 central London	6 inner/ outer London & 5	4 to 2	1 maximum
Retail land use		**1 space per x square metres of gross floor area**		
Smaller food store				
(up to 500m2gfa)	–	75	50 – 35	30
Food supermarket				
(up to 2500m2rfa/c4000m2gfa)	–	45 – 30	30 – 20	18
Food superstore				
(over 2500m2rfa/c4000m2gfa)	–	38 – 25	25 – 18	15
Non-food warehouse	–	60 – 40	50 – 30	30
Garden centre	–	65 – 45	45 – 30	25
Town centre/shopping mall	–	75 – 50	50– 35	30

The approach set out in London Plan Policy 3C.23 seeks to regulate parking to minimize additional car travel, reduce trip lengths and encourage use of other, more sustainable means of travel. Policy 3C.24 also recognizes the need to support the economic development and regeneration of London's town centers.[65] The maximum parking space approach provides for flexibility to take account of local circumstances in balancing the desirability of reducing car use with the need to provide for attractive viable development.

[65] The London Plan, Spatial Development Strategy for Greater London, Consolidation with Alterations since 2004; February 2008; pages 154-155.

The dynamic maximum parking space approach using interactive relationships with PTALs and other features of a travel plan supersedes previous static parking standards. Managing the level of on-site parking provision in London is seen as a key reinforcing measure to promote alternative means of transport. Therefore, parking, access, levels of public transportation and travel plans are all included as inter-related in the development of the TA.[66]

A travel plan is a package of site-specific initiatives aimed at improving the availability of travel modes to and from a development. Travel plans are becoming an increasingly important tool as an international best practice in the delivery of sustainable outcomes. Travel plans provide, together with a TA, the mechanism for assessing and managing access to sites. Travel plans can improve accessibility, both to and from the site, and to local amenities and services.[67] London's recent guidance strengthens the role of the travel plan. Mode share targets must be set and monitored. The TA is to use those mode share targets to demonstrate a reduction in private vehicle travel.[68]

The TA includes a travel plan to demonstrate an ongoing obligation toward measures to improve access by public transport, walking and cycling, to reduce associated parking and mitigate adverse transport impacts cause by parking. TAs are a key factor in ensuring that parking levels sought for new developments are not excessive.[69]

The TA provides an estimate of how car parking demand will be minimized so as not to exceed the adopted standards. There is evidence that car use reduces as access to public transport, as measured by PTALs, increases.

This conclusion that car use reduces as access to public transport increases has been reached in other countries and has been codified as part of their land development regulation. For example, the Dutch use an A, B, C location policy. "A" locations have the most public transport access and "C" locations have the least. Parking at "A" locations is limited to 10 spaces per 100 employees in major urban areas and 20 spaces per 100 employees elsewhere. "B" location parking limits are 20 parking spaces in major urban areas and 40 elsewhere. "C" locations have no parking restrictions. England's PTAL approach still appears to be the most tested.[70]

[66] Ibid; appendix 4, page A23, items 1-4.
[67] Guidance on Transport Assessment; Department for Transport, Great Minister House, London; March 2007; page34, paragraph 4.80.
[68] Transport Assessment Best Practices Guidance Document; Transport for London; April 2010, page 58.
[69] The London Plan, Spatial Development Strategy for Greater London, Consolidation with Alterations since 2004; February 2008; appendix 4, page A23, item 5.
[70] PPG13: A Vehicle For Promoting The New Agenda For A Sustainable Transport And Land Use Policy; Gurney, A., Jenkins, A, and Smyth, A., Ove Arup and Partners. Pages 33-34.

PTALs and the TA are used to inform the level of parking within the range specified for employment parking in Table III-3.

Table III-3: London Parking Standards
Maximum Parking Space Supply For Retail Land Use By PTAL
Note: There are 10.764 square feet in a square meter

Location	Maximum of one parking space per x square metres of gross floor area, where x is (Value of x)
Central London (CAZ)	1,000 – 1,500
Inner London	600 – 1,000
Outer London	100 – 600

Locations with higher PTALs should have a lower level of parking provision within or below the range specified for employment parking and for residential parking as shown in Table III-4. Residential development with lower car parking provision is encouraged in areas with high PTAL scores and/or close to town centers. An element of car-free housing should be included where accessibility and type of housing allows.

Table III-4: London Parking Standards
Maximum Parking Space Supply For Residential Use By PTAL
Note: There are 10.764 square feet in a square meter

Predominant housing type	4+ bed units	3 bed units	1 – 2 bed units
Car parking provision	2 – 1.5 spaces per unit	1.5 – 1 space per unit space	1 to less than 1 per unit*

A new car parking standard for retail developments links car parking provision to public transportation accessibility and encourages more restrictive car parking where the PTAL is high, to prevent over-provision of car parking. This takes into account the trend for shopping centers with better public transportation provision, to have a higher public transportation modal share and lower car use for shopping trips. PTAL-based car parking standards should be used flexibly to avoid a perverse incentive to develop in areas where the PTAL is lower.[71]

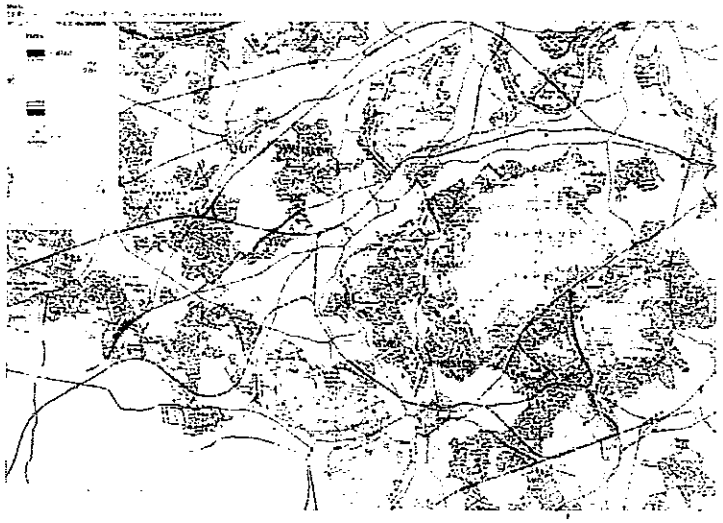
[71] Ibid; pages A24-A31.

III.4. PTAL Planning, Policy and Regulatory Applications

London is composed of 32 boroughs each with independent planning authority. As such, each borough exhibits slight variations on how PTALs are applied as indicated by how each portrays the color coding and interprets the use of PTALs differently. The following are a few examples to demonstrate the applications of the PTAL requirements.

Figure III-2 is the PTAL map for the London Borough of Richmond upon Thames, located in southwest London with a population of about 180,100 in 2008 and increasing at the rate of about 1,000 people per year. The borough is served by one London Underground line and several regional rail lines. Altogether, there are 14 stations in the borough.

Figure III-2: PTAL Contour Map for London Borough Richmond upon Thames



This borough stated in a draft plan that it would use a site's PTAL as a starting point, but also consider the proximity of bus, cycle and walking routes as well as future improvements when evaluating development proposals. Transport for London considered this statement to be misleading, as bus accessibility is taken into account as part of the PTAL process and the PTAL rating of an area therefore fully reflects the proximity of bus routes. The policy also lacks reference to highway capacity, which needs to be considered when looking at the scale and type of development.

Another proposed plan policy stated that higher levels of PTAL require good rail connections. Transport for London states this is incorrect as high levels of PTAL are not limited to areas with rail connections, highlighting PTALs have been shown to be as high as 6a based on access to bus routes alone.[72]

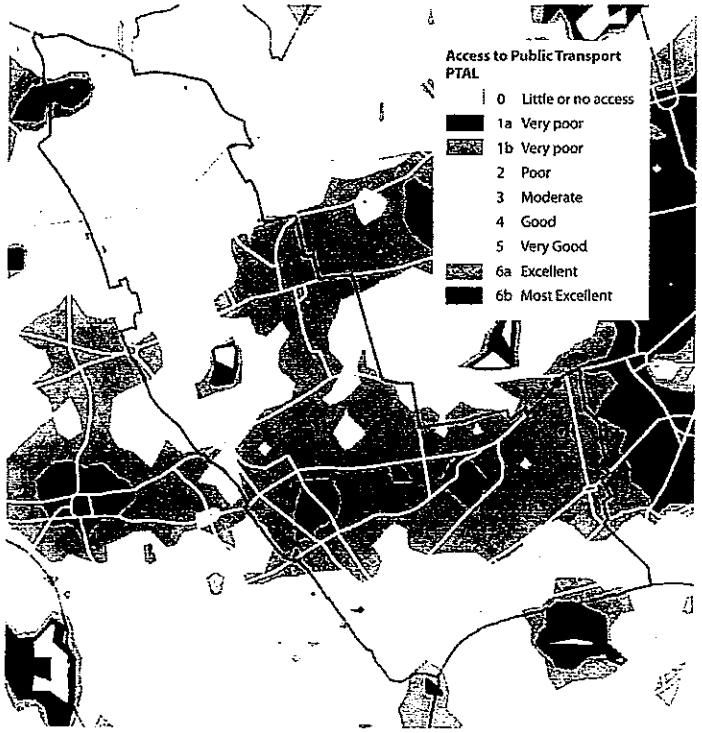
The Royal Borough of Kensington and Chelsea seems to have embraced the PTAL requirement more assertively. This borough has a population of about 160,000 and is on the west side of central London. The borough includes the famous Harrods Department Store and hosts the Notting Hill Carnival, one of the world's largest such events with daily attendance exceeding one million people. The borough is served by 12 London Underground stations operating on 5 of the system's 12 lines.

During the review of a new policy report issued last year there was some concern that requiring high trip generating development to be located in areas of PTAL four or higher was too restrictive and that a lower PTAL should be included. The Kensington Society felt that PTAL four was too low and PTAL five was more appropriate. PTAL four is considered a good level of public transportation accessibility and is considered appropriate for higher residential densities in the London Plan. Therefore, PTAL four was retained by the borough as an appropriate minimum PTAL for high trip generating development. Concerns were also raised over reduced maximum levels of car parking as too restrictive. The parking restriction policy was retained.[73]

The Royal Borough of Kensington and Chelsea contains a high concentration of shops, businesses and arts and cultural facilities. Walking and cycling can often be the quickest and easiest way of getting to places. Where residents need to use a car, a dense network of on-street car club bays means they do not need to own their own vehicle. The core strategy published in 2009 proposes to improve those communities currently blighted by traffic by returning roads to two-way operation.

[72] Local Implementation Plan; London Borough of Richmond upon Thames, Transport Planning Services; September, 2006.
[73] Policy Formulation Report; London Royal Borough of Kensington and Chelsea; November 2009, pages 42-43, paragraphs 4.98-4.99.

Figure III-3: PTAL Contour Map for London Royal Borough of Kensington and Chelsea



New developments in the borough will include all the facilities that enable residents, workers and visitors to make better travel choices. Travel Plans will be standard and will ensure walking and cycling is easy; that strong incentives are in place to encourage the use of public transport; and that organizations are committed to reducing the use of private cars.

An integral part of reducing the negative impacts of car use in the borough is to ensure that car parking levels are minimized in new development. Over the lifetime of the plan maximum parking levels will be reduced and new residential development will increasingly include zero car parking.

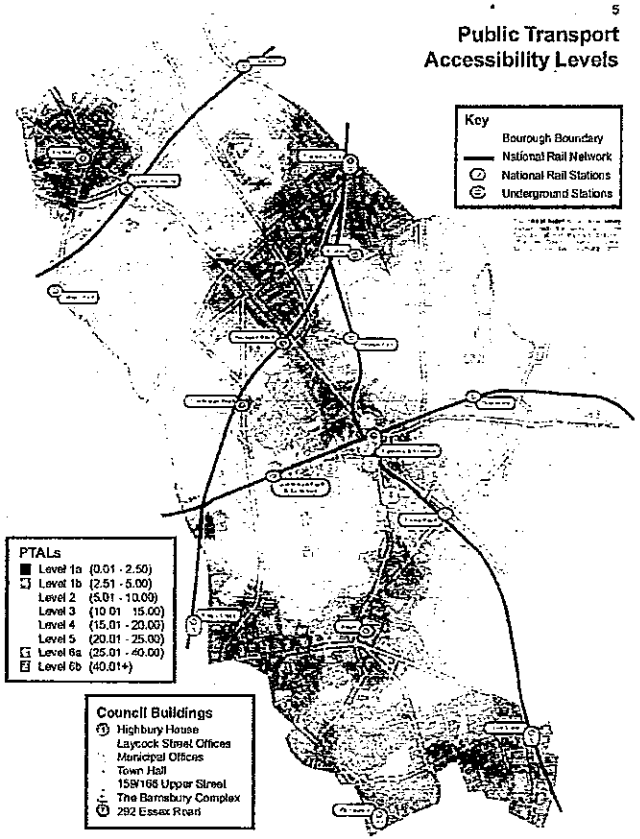
The borough's core strategy documents states "If the Council's vision is to be achieved new development must include from day one all the facilities needed to encourage walking, cycling and public transport whilst not encouraging the use of private cars. In other words, development must 'build in' the travel patterns the vision seeks. This will involve innovative facilities and measures to make walking, cycling and public transport an attractive first choice as well as low or zero levels of car parking for new additional residential development." A companion part of this policy is to require high trip generating development to be located in areas of the borough where public transport accessibility has a PTAL score of 4 or above, or will achieve this level as a result of improvements to public transport.[74]

The third London borough example of London's planning, policy and regulatory reform is Islington. Islington is one of London's inner boroughs with a population of about 190,900 in 2008. For over thirty years before World War I the borough maintained a population of over 400,000. It reached a population low of 157,512 in 1981. Given this history, it is understandable that good planning, balanced with the right kind of economic development, is important to the area. Islington has 9 underground and 8 regional rail stations. This borough has also welcomed the PTAL threshold approach. Its PTAL contour map is shown in Figure III-4.

Most of the borough is relatively well served by public transport. The figure illustrates areas shaded purple and red having high levels of access to public transport. Areas shaded blue and green are less well served. This indicates that areas around the main radial rail networks and radial bus corridors are highly accessible by public transport. However, there are a number of residential areas that are less accessible due to fewer or less frequent bus services and/or long walking distances to Underground and rail services.

[74] The Core Strategy for The Royal Borough with a particular emphasis on North Kensington; The London Royal Borough of Kensington and Chelsea; July 24, 2009; pages 159-161.

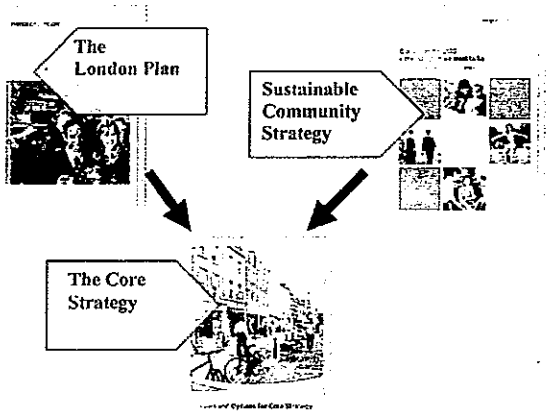
Figure III-4: PTAL Contour Map for London Borough of Islington



All three boroughs included as examples in this section are responding to the same national initiatives captured in the Mayor of London's "The London Plan." This relationship among planning efforts is depicted in Figure III-5. Islington, like most other boroughs, has its own planning document setting out sustainable community strategies based on the areas past legacy, present circumstances and future vision. For Islington, this is the "Our Vision for 2020 – the Islington we want to be."

Current planning policy for boroughs is directed by law to be contained in Unitary Development Plans (UDPs) that predate these recent initiatives including the use of PTALs. The 2004 Planning and Compulsory Purchase Act replaced the UDPs with a Local Development Framework. The Core Strategy is the principal document within the Local Development Framework (LDF). For Islington, this is the "Issues and Options for Core Strategy." In all of the examples presented, it is these core strategy planning efforts that were referenced.

Figure III-5: Planning Relationships for the London Borough of Islington



The point simply is this: in London, England, a land with not just centuries - but millennia - of land policy history, change has happened recently and significantly. England's 2004 Act and "The London Plan" have radically changed the approach transportation planners take in that part of the world. Is it time for Honolulu to do the same? This technical memorandum is assuming the answer is "yes" and offering how to transfer these international best practices to O'ahu via the City's TOD Neighborhood Plans, starting with Aiea-Pearl City.

Before proposals are introduced in the next section as to how the PTAL approach can be applied to the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative, another test of the relevance of PTALs is offered. That test is how were actual development applications reviewed in the context of this relatively new PTAL approach. Dozens of actual "planning reports" were reviewed. The following seven were selected offering a spectrum of PTAL levels. The reviews demonstrate how the PTALs for the land development location were considered while addressing parking, access and other transportation issues for each applicant.

- *London Case Study Example #1 – PTAL 6, Turks Boatyard*[75]

  Turks Boatyard is adjacent to the Thames River. The boatyard was demolished in 2005. The application is for 56 residential units with a gym and café on the ground floor. The PTAL score is 6 (noted on page 2 of the 12 page report). The proposal included 17 off street vehicle and 70 bicycle parking spaces. This equates to 0.3 vehicle spaces per unit. The proposal was found to be acceptable.

- *London Case Study Example #2 – PTAL 5, O_2, Phase 2, Greenwich Peninsula*[76]

  The O_2, Phase 2, project located in the northern part of Greenwich Peninsula in the Borough of Greenwich is known as the Millennium Dome, a London 2012 Olympics gymnastics and basketball finals venue. The application is for 24,000 square meters of floor space. Previous master plan approvals were granted in 1992, 1996, 1998 and 2004. No increase in vehicle parking was proposed. The PTAL score is 5 (noted on page 2 of the 11 page report). The government review observed that capacity for highways, rail, buses, taxis and bicycle storage has been exceeded or is a concern. The proposal was found to need a travel plan to regulate travel demand.

[75] Greater London Authority Planning Report PDU/2089/01 – Turks Boatyard; London Borough of Kingston upon Thames, planning application no.07/12536; July 23, 2008.
[76] Greater London Authority Planning Report PDU/2091/01 – The O_2, Phase 2, Greenwich Peninsula; London Borough of Greenwich, planning application no.08/0197/0; July 23, 2008.

- *London Case Study Example #3 – PTAL 4, Greenwich District Hospital Site*[77]

  The site is located one kilometer from Greenwich town center in the Borough of Greenwich. The application is for 645 residential units (50% affordable) within 5 new urban blocks with several new streets and a new public square. Parking is limited to a 190 vehicle space underground garage and 65 on street spaces. Overall, 920 bicycle parking spaces are offered. A prior application in 2003 was withdrawn. The PTAL score is 4 (noted on page 2 of a 17 page report). A transport assessment was completed with commitments for various TDM programs including a City Car Club. The government review observed that the parking of 0.32 spaces per residential unit was acceptable, but "...TfL strongly recommends reducing the level even further." The proposal was found to need confirmations of assumptions used in the TA regarding trip generation and modal split. Furthermore, the required travel plan needed SMART (specific, measurable, achievable, realistic, and time-bound) targets.

- *London Case Study Example #4 – PTAL 3-4, Edgeware Town*[78]

  The site is a former football field. Two underground stations and eight bus routes are next to or near the site. The PTAL score is 3 to 4 (noted on page 2 of an 11 page report). The proposal is for 189 residential units (57 affordable). Parking was proposed for 134 spaces, 104 underground and 32 on the surface (0.70 parking spaces per unit). The site plan was previously approved with the same conditions, but with 11 less units. Site access, bicycle parking, a pedestrian audit, bus stop audit and travel plan were among the items required. These were provided and the application was found to be acceptable.

- *London Case Study Example #5 – PTAL 3, The Former Harold Wood Hospital*[79]

  The site is within the center of Harold Wood. One rail station and three bus routes are within an acceptable walking distance of the site. The PTAL score is 3 (noted on page 2 of a 15 page report). The proposal is for 874 residential units (31% affordable) in two to four story structures, with some four to five story structures and one nine story structure. Parking was proposed for 1,311 spaces (1.50 parking spaces per unit). The site plan invoked the following review comment: "The overall density proposed is 68 units per hectare (27.5 units per acre). Considering that some of the site is assessed at having a PTAL of 1, this is an appropriate density." The review accepted the fact that parking

[77] Greater London Authority Planning Report PDU/0764a/01 – former Greenwich District Hospital; London Borough of Greenwich, planning application no.08/0688/F; June 11, 2008.
[78] Greater London Authority Planning Report PDU/2197/01 – Edgeware Town FC; London Borough of Harrow, planning application no.PA/1941/07/COU; April 21, 2009.
[79] Greater London Authority Planning Report PDU/0152b/01 – former Harold Wood Hospital; London Borough of Havering, planning application no.P0720.08; June 11, 2008.

was within the allowed PTAL maximum, but it still requested that the "proposed level of car parking is reduced."

- *London Case Study Example #6 – PTAL 3, Millwall Cutting and South Dock*[80]

  The site is in the Isle of Dogs. The PTAL score is 3 (noted on page 2 of the 10 page report). One rail station will be relocated increasing the PTAL from 3 to 4. The proposal is for a 180 room floating hotel permanently moored at Millwall Dock. The hotel is to be opened in time for the 2012 London Olympics. No parking will be provided. The applicant was directed to investigate the impacts on the public transportation system, make payment contributions for bus stops, make payment contributions for real time electronic signage, and provide bicycle parking.

- *London Case Study Example #7 – PTAL unknown, Terminal 5 Hotel*[81]

  The site is at Heathrow Airport's new Terminal 5. The PTAL score is unknown because the terminal is new, but it includes the extension of the Piccadilly Line and Heathrow Express (noted on page 2 of the 11 page report). The proposal is for a 314 room hotel with 73 car parking spaces, the maximum allowed by the parking standard. The applicant was directed to investigate the possibility of providing no parking. The Transport for London review states "...maximum car parking standards by definition are upper limits for parking provision, not standards to be aspired to." The applicant was directed to reduce the number of parking spaces.

The details of London's guidance on transport assessment are extensive. The above seven examples highlighted short sections from selected 'planning reports' offered as evidence that the PTAL methodology is more than theory or an academic thesis. PTAL is being tested daily between those who aspire to invest vast sums in prime real estate ventures and those responsible for London's land development plans and regulations.

The use of PTALs has been thoroughly reviewed, applied, modified, tested and accepted elsewhere to establish its status as a valid transportation assessment procedure. No application of PTALs could be found in the United States. Therefore, it is important to explain the details of the process of calculating PTAL levels and how that process has been applied for the Aiea-Pearl City Neighborhood TOD Plan. The next section describes the calculation procedures for the Aiea-Pearl City Neighborhood TOD Plan Transportation Assessment based on those developed by Transport for London which are included in their entirety in the Appendix.

[80] Greater London Authority Planning Report PDU/2218/01 – Millwall Cutting and South Dock; London Borough of Tower Hamlets, planning application no.PA/08/01359; August 20, 2008.
[81] Greater London Authority Planning Report PDU/2173/01 – Terminal 5 Hotel; London Borough of Hillingdon, planning application no.2008/1333; June 11, 2008.

III.5. PTAL Calculation Procedures

PTAL values range between "0" and "6". A "0" indicates no access often due to geographical constraints or physical barriers. A "1" represents very low public transport accessibility and a "6" represents very high public transport accessibility to any given site.

London's bus and rail transit network is homogenously excellent, except for overcrowding on certain routes at certain times of the day. Oahu's transit network is comparable on a smaller scale, but no less expansive when it comes to serving most of the population within its service area with a reasonably well integrated network of routes. The one major exception with TheBus service is that schedule reliability problems are a concern. These will be addressed through the implementation of the HHCTCP and the corresponding bus feeder network. Schedule reliability has been taken into account in the Aiea-Pearl City Neighborhood TOD Plan Transportation Assessment.

The results of the PTAL access pathway review and calculation for the Aiea-Pearl City Neighborhood TOD Plan Transportation Assessment assigned a level between 0, representing no public transport accessibility and 6, representing very high public transport accessibility, to any given site or Point of Interest (POI).

Calculating the PTAL of a POI involved a number of different factors including the proximity of the POI to public transportation stations or stops (known as Service Access Points or SAPs) for different public transportation modes and routes, and the AM peak frequency of those services. A reliability factor is added. The calculation gives a Public Transportation Accessibility Index (PTAI).

The pathway walking distance from the POI to the nearest SAP is calculated. Only SAPs within a maximum pathway distance of the POI are included (2,100 feet) for a bus stop and (3,150 feet) for a rail station, which correspond to a walking time of 8 minutes and 12 minutes respectively at the standard assumed walking speed of 264 feet per minute. The walking access time is increased by one minute when the pathway requires crossing a major street.

The service level during the morning peak (6:00 am – 7:00 am) for each route serving a SAP is determined. Where service levels differ in each direction on a route, the highest frequency is used. The HHCTCP rail operation will have equal service in each direction with a train arriving every three minutes. The bus routes and frequencies serving each station in the Aiea-Pearl City Neighborhood TOD area are shown in the POI tables in Appendix C.

A total access time for each SAP was calculated from each POI. The POIs for the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative are centroids within the cells of a grid network formed by lines 264 feet apart (approximating a one minute walk without any disruptions such as at major street intersections). The cell is assigned a score based upon the PTAL score for each corresponding POI.

The total access time is the total walking time from the POI to the SAP and the average waiting time for services on the route (half the time interval between arrivals). This is converted to an Equivalent Doorstep Frequency (EDF) by dividing 30 minutes by the total access time. This converts the total access time to a "representational average waiting time, as though the route were available at the doorstep of the POI."

A weighting is applied to each route to simulate the enhanced reliability and attractiveness of a route with a higher frequency over other routes. For each mode, the route with the highest frequency is given a weighting of 1.0, with all other routes in that mode weighted at 0.5.

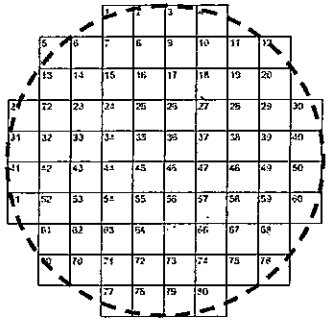
The EDF and the weighting are multiplied to produce an accessibility index for each route, and the accessibility indices for all routes are summed to produce an overall accessibility index for the POI. This accessibility index (AI) can then be converted to a PTAL grade (0-6) through a banding system where AIs of 0.0 have a PTAL of 0, 0.01-5.00 are PTAL 1, 5.01-10.00 are PTAL 2, and scores of 25 and above are PTAL 6 as shown in Table III-5.

Table III-5: Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative Public Transport Accessibility Levels

PTAL	Accessibility Index	Accessibility Description
0	0.0	No access
1	0.01 - 5.00	Very Poor
2	5.01 - 10.00	Poor
3	10.01 - 15.00	Moderate
4	15.01 - 20.00	Good
5	20.01 - 25.00	Very Good
6	25.01 +	Excellent

Appendix B includes the AIs and PTALs for each of the 80 grids with most of their area that is within the quarter mile radius circle around each of the three Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative stations as depicted in Figures I-1 and I-2. Figure III-6 illustrates the grid overlay on top of the quarter mile circle with each grid numbered. These numbers correspond with the same numbering sequence shown in each table in Appendix B. The width of each grid is 254-feet such that 10 grids equal one half mile, the diameter of the circle. The six tables in Appendix B have a set of two tables for each of the three stations – Leeward Community College, Pearl Highlands and Pearlridge. One of the two tables represents existing conditions and the other is for the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative.

Figure III-6: PTAL Grid Overlay Used To Compute Average Public Transport Accessibility Levels At Neighborhood TOD Plan Stations



The PTAL scores for all 80 grids are included in a calculation to derive the Average Public Transportation Accessibility Level for the existing condition and the future condition with the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative for each station. This is viewed as an equitable way of comparing the overall geographical walk accessibility among the stations. The Average PTAL score was also calculated excluding the grid cells located in geographically inaccessible areas, such as in Pearl Harbor. These Average PTAL scores are presented in Table III-6.

Table III-6: Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative Stations Public Transport Accessibility Levels

Station	Average Public Transportation Accessibility Level			
	Including All 80 Grid Cells		Excluding Inaccessibile Grid Cells	
	Existing Condition Without Rail	Future Condition With TOD Plan	Existing Condition Without Rail	Future Condition With TOD Plan
LCC	0.1	1.0	0.1	1.8
Pearl Highlands	0.5	2.4	0.6	2.9
Pearlridge	1.2	3.0	1.4	3.6

The scores for the Leeward Community College future station location existing condition are lower than for the other two stations primarily because there is no bus service near LCC in the morning peak period. The existing conditions PTAL score is the same whether all 80 cells are used or just the 43 cells that are in an accessible location. PTAL scores increase to 1.0 with all 80 cells and 1.8 with the 43 accessible cells because of the introduction of rail service, but the lack of bus service keeps these scores relatively low compared to the Pearl Highlands and Pearlridge stations.

Both Pearl Highlands and Pearlridge have 65 grid cells that are accessible, so the scores for these stations are directly comparable in all situations. The future Pearlridge station location has the highest PTAL level under current conditions primarily because of the higher level of existing bus service compared to Pearl Highlands. Pearlridge scores higher than Pearl Highlands in the future because of the higher number of buses arriving in the morning peak period. All three stations benefit equally with the introduction of rail service in the future because peak period service intervals are the same at each station.

One fascinating aspect of applying the England PTAL methodology to these three Neighborhood TOD Plan Preferred Alternative stations is that it demonstrates that the methodology is applicable to Honolulu. It provides a tool that can be used to guide development, limit parking and test what transportation improvements are most beneficial for a particular project to achieve federal, state and city goals, objectives and policies. The PTAL methodology will be further tested in the subsequent sections of this technical memorandum.

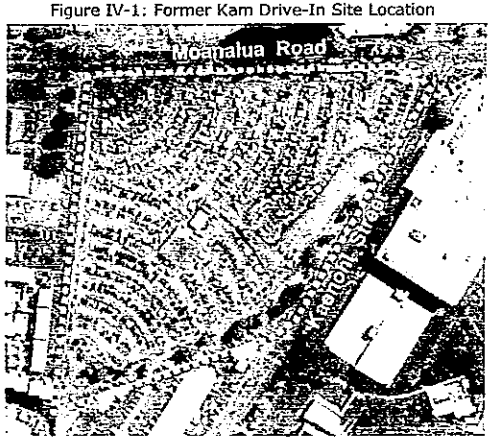
IV. TOD PROJECT CASE STUDY

This section uses the Kam Drive-In site as a case study on how a transportation assessment for a project within a TOD can be conducted using two methodologies. One is based on the current traffic impact analysis report vehicle trip generation methodology and the second uses the PTAL approach described in the previous section. The first method addresses the question: how does the current level of vehicle traffic generated by the site through the current use as the Kam Swap Meet compare to the level of vehicle traffic generated by a Transit Oriented Development at the same site? The second method answers the question: How does the public transportation level of service at the site impact the appropriate level of development?

IV.1. THE CASE STUDY: KAM-DRIVE IN SITE

The former Kam Drive-In site is a 13.981-acre property located in the southeastern corner of the intersection of Moanalua Road and Kaonohi Street as shown in Figure IV-1. The current zoning of the property is B-2 (Business Community).

Figure IV-1: Former Kam Drive-In Site Location

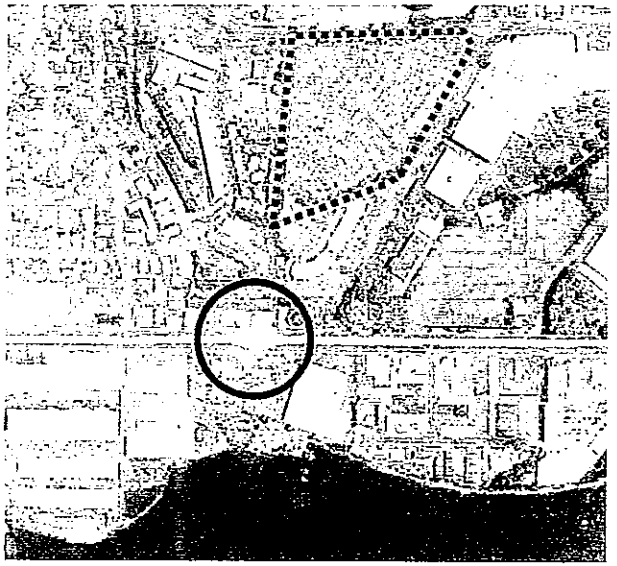


The Kam Drive-In site is one of the last large zoned properties in Honolulu's urban core. The property is situated in a dense, mixed-use community adjacent to Pearlridge Center, the second largest shopping mall in the state.

A Robertson Properties Group (RPG) affiliated entity owned and operated the leasehold property from 1962 to 2007. RPG purchased the property from Kamehameha Schools in 2007. It is RPG's intention to redevelop the property. Form Partners has been working with RPG to rezone the property to allow for the development of a high density urban mixed use project.

The site is bordered by Moanalua Road and Kaonohi Street. It is in close proximity to Kamehameha Highway. The boundary of the property is located within 500-feet of the edge of the planned Honolulu High-Capacity Transit Corridor Project's Pearlridge Station serving a rail alignment along Kamehameha Highway as shown in Figure IV-2.

Figure IV-2: Kam Drive-In Site Proximity to HHCTCP Pearlridge Station

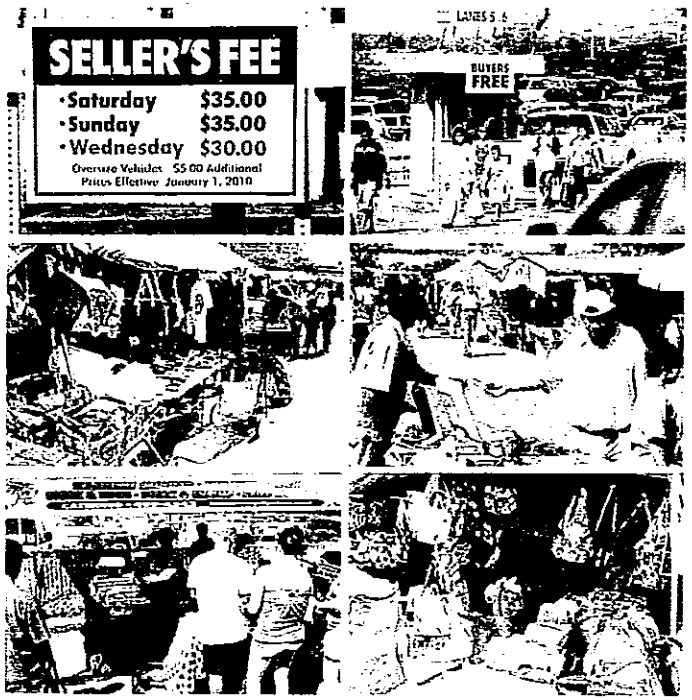


IV.1.1 Kam Drive-In Site Current Use

RPG is a Los Angeles based real estate development component of Consolidated Theaters. Consolidated had operated the Kam Drive-In primarily as an outdoor movie theater. The last movie was shown in 1998. The swap meet as featured in Figures IV-3 and IV-4 has operated continuously for 35 years.

Figure IV-3: Kam Drive-In Site Swap Meet Activities

Figure IV-4: Kam Drive In Site Swap Meet Activities



The swap meet operates on Wednesday, Saturday and Sunday from 5:30 am to 1:00 pm. Approximately 600 dealers, vendors and food enterprises can be found at the swap meet. Vehicle access is via a one-way entry drive located approximately 270 feet from the northwest corner of the intersection of Moanalua and Kaonohi. Vehicles enter this drive in single file and exit via another one way drive located approximately 830 feet west of the entry drive on Kaonohi as illustrated in Figures IV-5 and IV-6.

Figure IV-5: Kam Drive-In Site Swap Meet Vehicle Entry Conditions

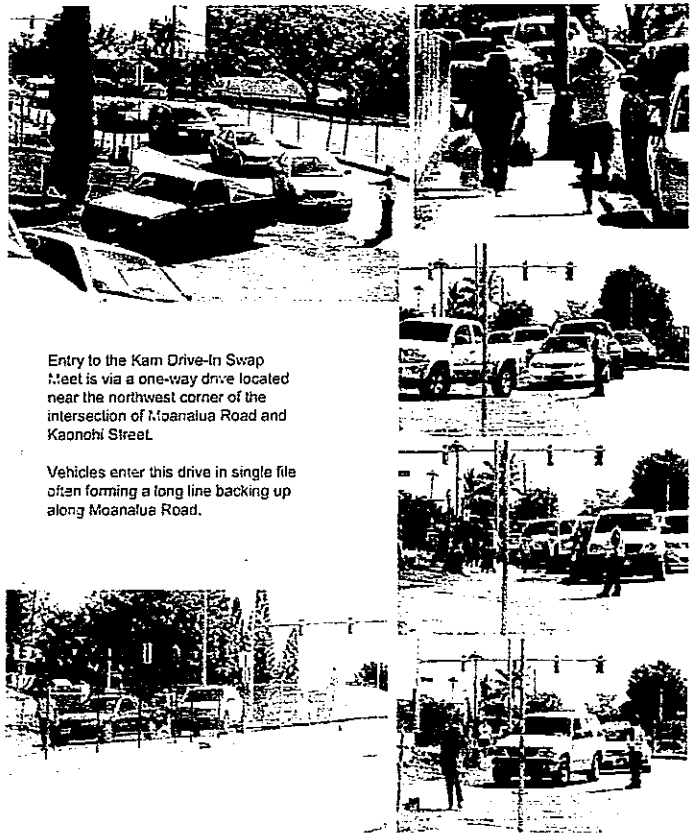
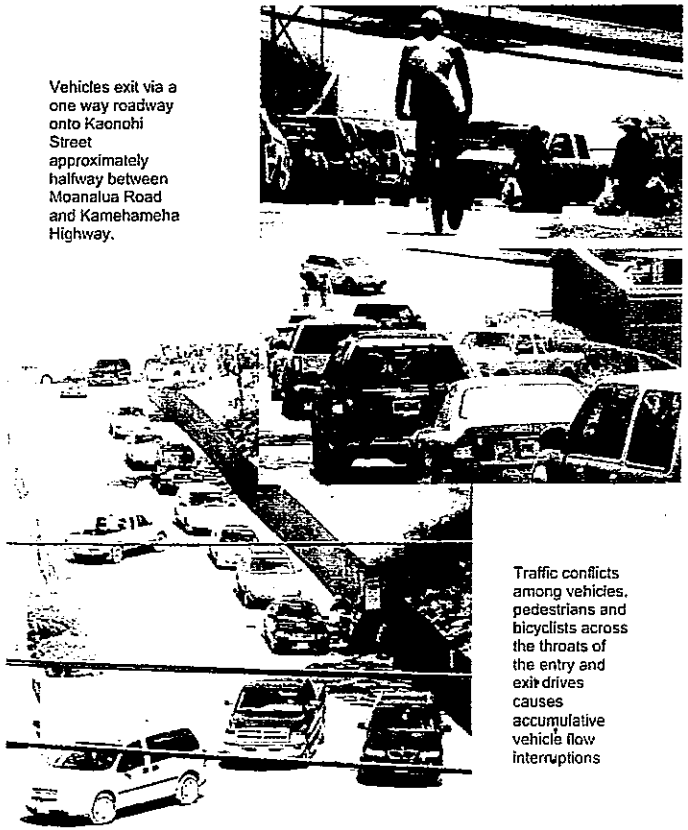


Figure IV-6: Kam Drive-In Site Swap Meet Vehicle Exit Conditions



Area residents have complained about the amount of vehicle traffic generated by the swap meet and the queue caused by the stream of Diamond Head bound vehicles turning right from Moanalua Road onto Kaonohi Street. Those vehicles turn right again from Kaonohi Street into the site. Although two vehicle traffic lanes exist on Kaonohi Street, vehicles turning wide into the swap meet sometimes block the second lane making it impossible for through traffic to pass. This is the only entrance used for the swap meet. Left turns are not possible due to a median strip with a chain link fence.

The Aiea Neighborhood Board has discussed the problem and meetings have been held with HPD, DTS, swap meet representatives, and other concerned parties. Actions have been taken to improve the situation including having personnel directing vehicle traffic. This person has to be attentive to the pedestrian traffic crossing the throat of the drive and walking into and out of the site, often requiring the need to stop entering vehicle traffic to assure safe passage for pedestrians.

Exiting vehicle traffic backs up into the site because of conflicts with vehicle, pedestrian and bicycle traffic and a pedestrian crosswalk located about thirty feet from the exit. Despite these conflicts and although the exit is not marked with stripped lanes or any traffic control signs to channel left and right turns, the drive is sufficiently wide and there are enough gaps in traffic flow to allow a high volume of vehicles to exit the site in a reasonable manner. Vehicles using this exit were counted over a two hour period on April 24, 2010. The results of these counts are included in Table IV-1.

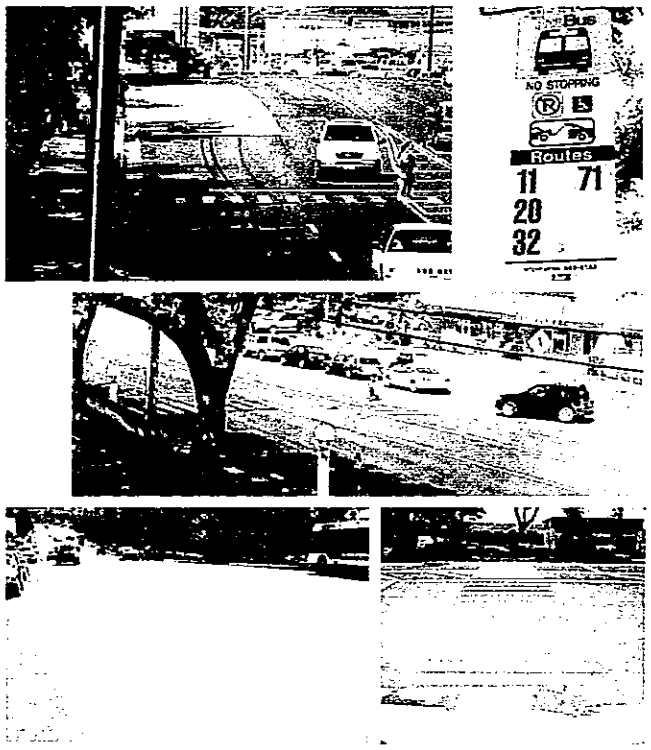
Table IV-1: Kam Drive In Site Swap Meet Vehicle Traffic Counts

	Time Period	Ten Minute Interval Counts	One Hour Interval Counts
1	9:00 - 9:09 AM	58	
2	9:10 - 9:19 AM	68	
3	9:20 - 9:29 AM	70	
4	9:30 - 9:39 AM	71	
5	9:40 - 9:49 AM	79	
6	9:50 - 9:59 AM	76	422
7	10:00 - 10:09 AM	51	
8	10:10 - 10:19 AM	75	
9	10:20 - 10:29 AM	97	
10	10:30 - 10:39 AM	84	
11	10:40 - 10:49 AM	73	
12	10:50 - 10:59 AM	82	462
TWO HOUR TOTAL			884

IV.1.2. Kaonohi Transit and Pedestrian Existing Conditions

Kaonohi Street across from the Kam Drive-In is used by TheBus Routes 11, 20, 32 and 71 as a route terminal and passenger waiting area as shown in Figure IV-7.

Figure IV-7: Kaonohi Street Transit Operations and Pedestrian Crosswalk



Crosswalks were observed being used by many pedestrians, but many other people elected not to use a crosswalk as shown in Figures IV-8 and IV-9. There are three available crosswalks across Kaonohi Street between Moanalua Road and Kamehameha Highway. Crosswalks are located on all legs of the intersection of Moanalua Road and Kaonohi Street. Crosswalks are located across Kaonohi and from a pedestrian island on Kaonohi across Kamehameha Highway at the intersection of Kaonohi and Kamehameha Highway. A third crosswalk is located about midway between these two major intersections.

The sight distances associated with the third crosswalk are excellent for both pedestrians and vehicle drivers, but the visibility of the crosswalk itself from a driver's perspective is deceptive. The street painted crosswalk markings are not very visible and signage is the minimum normally required. Pedestrians were observed being more apt to take advantage of those occasions when vehicle traffic offers a gap than to bypass such an opportunity in favor of proceeding to a crosswalk.

Available crosswalks do not align with evident pedestrian travel flow desire lines. The entry and exit for the Kam Drive-In swap meet are designed for vehicles and there are no other accommodations except for the stairway shown in Figure IV-10.

Figure IV-8: Kaonohi Pedestrian and Vehicle Conflicts Next to Kam Drive-In Site

Figure IV-9: Kaonohi Pedestrian and Vehicle Conflicts Near TheBus Stop

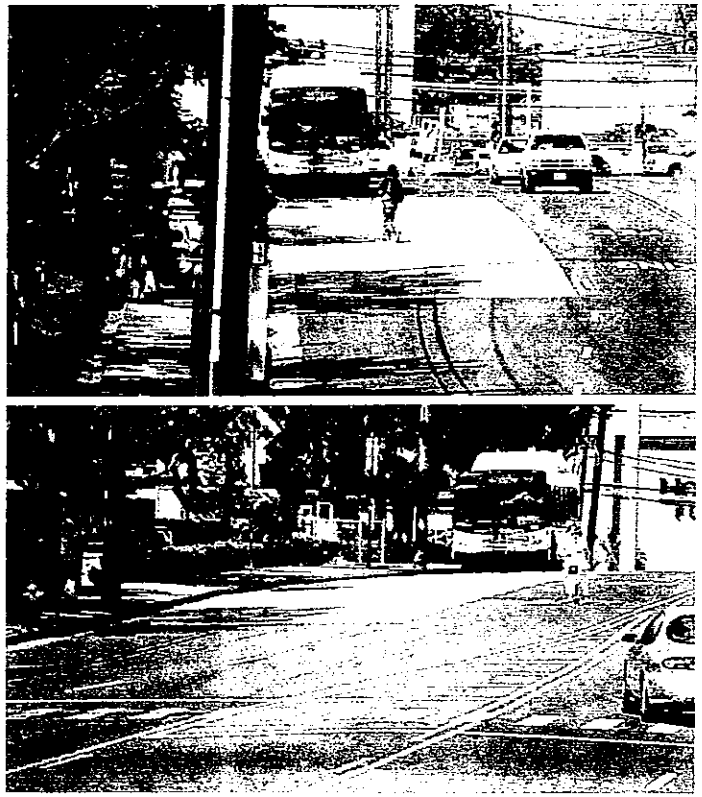
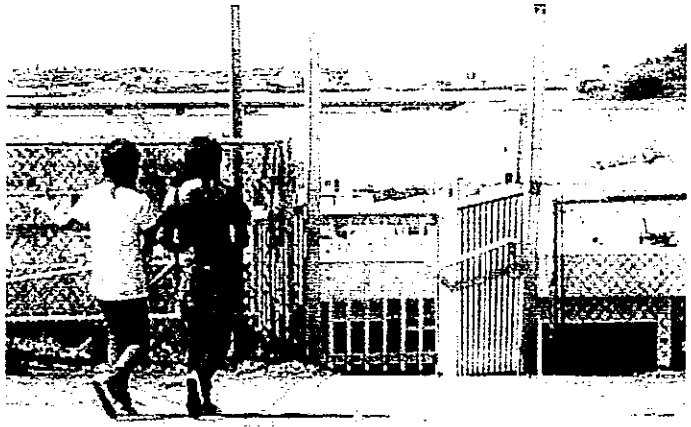
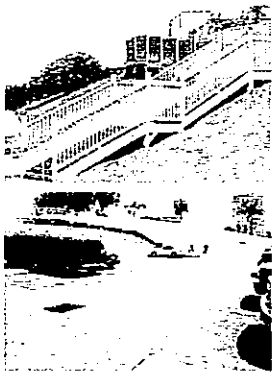


Figure IV-10: Kam Drive-In Site Swap Meet Pedestrian Access



The only safe pedestrian access is a stairway between the Westridge Shopping Center parking lot located on the makai side of the Kam Drive-In site. This stairway is not visible from Kaonohi Street.

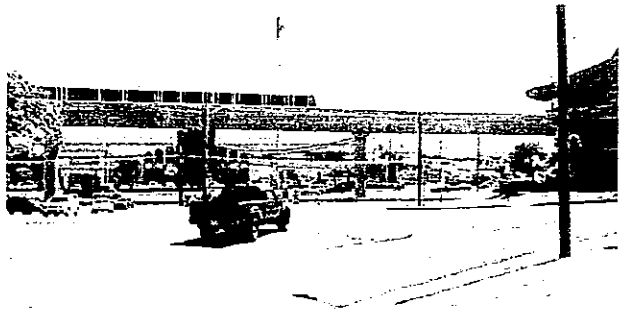


IV.2. CASE STUDY RELATED TRANSIT AND TOD PLANNING

The Honolulu High-Capacity Transit Corridor Project (HHCTCP) involves the construction of a rail line between East Kapolei and Ala Moana Center with future extensions to Kapolei, University of Hawaii at Manoa and Waikiki. The east-west length of the corridor is approximately 23 miles.

The project is to be constructed in four phases with the portion of the corridor serving the Aiea-Pearl City neighborhoods being constructed in the first two phases. First phase construction began in 2011. The second phase is to be opened by the end of 2016.[82] The final phase is planned to be operational in 2019. The Pearlridge station will be elevated above Kamehameha Highway as shown in Figure IV-11.[83]

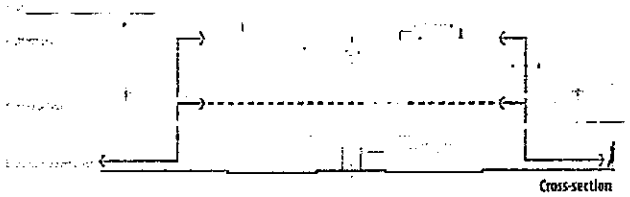
Figure IV-11: HHCTCP Elevated Guideway Simulation
Looking Makai On Kaonohi Street At Kamehameha Alignment



Station entrances will be provided on both sides of Kamehameha Highway as shown in Figure IV-12. An at-grade pedestrian connection will be provided to the Pearl Harbor Historic Trail and across Kaonohi Street.

[82] Honolulu High-Capacity Transit Corridor Project Draft Environmental Impact Statement; by the United States Department of Transportation Federal Transit Administration and the City and County of Honolulu Department of Transportation Services; November 2008; Page 2-40. Construction timeline has been updated.
[83] Honolulu High-Capacity Transit Corridor Project Pearlridge Rail Station Community Workshop presentation; December 2, 2009.

Figure IV-12: HHCTCP Elevated Guideway Simulation
Looking Makai On Kaonohi Street At Kamehameha Alignment



Existing transit routes will be restructured to provide better service efficiency by making connections at a centrally located Aiea-Pearl City transit hub as shown in Figure IV-13. The current TheBus route design in the Aiea-Pearl City neighborhoods features a network of routes without a strong local transit center. The current operation loops some bus routes around the Pearlridge shopping center.

The transit hub concept identified in the Aiea-Pearl City Livable Communities Plan and the Bus Service Improvement Plan was developed to emphasize community circulator routes with high schedule reliability connected at a single location. This concept would maximize the ability to make easy transfers between routes for those people traveling within the Aiea-Pearl City area while still making connections to downtown Honolulu, Ala Moana Center and Kapolei via the rail station. The hub concept using a transit center design is an integral part of the HHCTCP and the Aiea-Pearl City Neighborhood TOD Plan.

VI.2.1. Aiea-Pearl City Neighborhood TOD Plan

The preferred alternative for the Aiea-Pearl City Neighborhood TOD Plan includes a new "main street" to provide a comfortable and lively pedestrian experience to and from the station area. Existing streets, such as Kamehameha Highway and Kaonohi Street, will be upgraded to include wider sidewalks and active uses to make for a more pedestrian-friendly environment. A small median is proposed in Kaonohi Street to break up the street and allow it to feel smaller. A dedicated bike lane is proposed along Kaonohi Street which will remain auto-dominated. The preferred Aiea-Pearl City Neighborhood TOD Plan alternative as shown in Figure IV-14 is described in blocks. Blocks 6, 7, 8 and 9 include the Kam Drive-In site.

Figure IV-13: Aiea-Pearl City Livable Communities Plan and
Bus Service Improvement Plan
Pearl City & Aiea Transit Hub and Bus Route Network

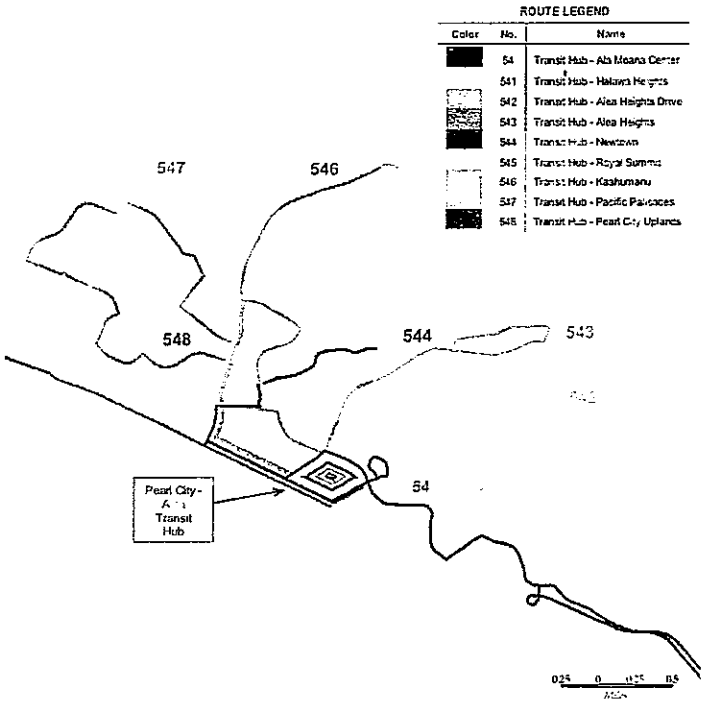
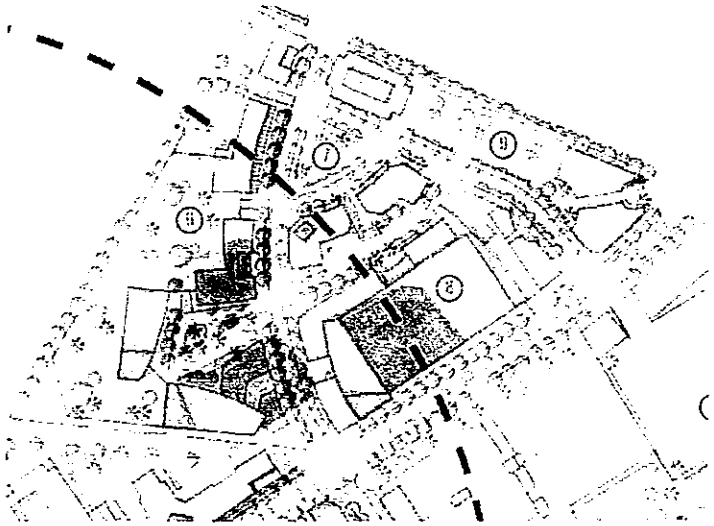


Figure IV-14: Aiea-Pearl City Neighborhood TOD Plan
For the Kam Drive-In Site



Blocks 6, 7, 8 and 9 have no major existing buildings, a single owner and are ready for development. These blocks are separated from the Pearlridge station by topography and a substantial retaining wall. If this site can be linked to the station with an attractive and direct pedestrian pathway, it would be perfect for transit-oriented development.

Block 6 incorporates two residential towers (32 to 24 stories, 655 units). Mixed use residential buildings (171 units) line a new "main street". The new "main street" will run perpendicular to Kaonohi Street and swoop up to meet Moanalua Road. It will have retail uses (47,371 square feet) lining the street edge to activate this street. A small plaza and porte cochere will be at the entrance to the two towers. The active edges will provide a pleasant walk to the station for existing and future residents and will provide a new identity to this neighborhood, in addition to the Pearlridge Center.

The rest of the swap meet site consists of blocks 7, 8, and 9. Block 7 would incorporate a small urban park which will provide residents and shoppers with a passive park-like environment to enjoy.

Block 8 would incorporate a large grocery store wrapped with one story retail buildings (79,500 square feet). Two small mixed use residential buildings (four stories) with 90 units above 15,000 square feet of retail space face the park. A third residential tower (18 stories, 210 units) is located on block 8 adjacent to the grocery store.

Block 9 has three small pad retail buildings (33,000 square feet) with a central plaza that connects the two blocks seamlessly. Block 9 incorporates surface convenience parking.

IV.3. KAM DRIVE-IN SITE DEVELOPMENT PROPOSAL

The Kam Drive-In site proposal offered by the developer has been named "The Pearl". Form Partners is managing all aspects of the project's preliminary development and entitlement activities on behalf of RPG. Form Partners is proposing an integrated mixed-use master plan for "The Pearl" as shown in Figure IV-15 with 170,000 SF of retail, 30,000 SF of office and 1,800 residential units.

The intent is to rezone from B-2 to BMX-3 to allow higher residential buildings on the site. Current zoning restricts building height to 60-feet. Preliminary concepts have depicted three-30 story residential towers requiring a height of about 300 feet as depicted in Figure IV-16.

The Master Plan design includes a main street aligned on Moanalua Road with the entrance to Pearlridge Elementary School and on Kaonohi Street with the entrance to Pearlridge Center. It appears that the intent is to have both these intersections controlled by traffic signals. It would be desirable to explore the opportunity to consolidate the neighboring St. Timothy's Church and Harbor Pointe driveway into the main street alignment.

Project development work is underway by Form Partners including preparation of an Environmental Impact Statement, traffic studies, community outreach and cost feasibility analysis. The developer has expressed an interest in making "The Pearl" a Transit-Oriented Development.

Figure IV-15: Kam Drive-In Site Conceptual Master Plan

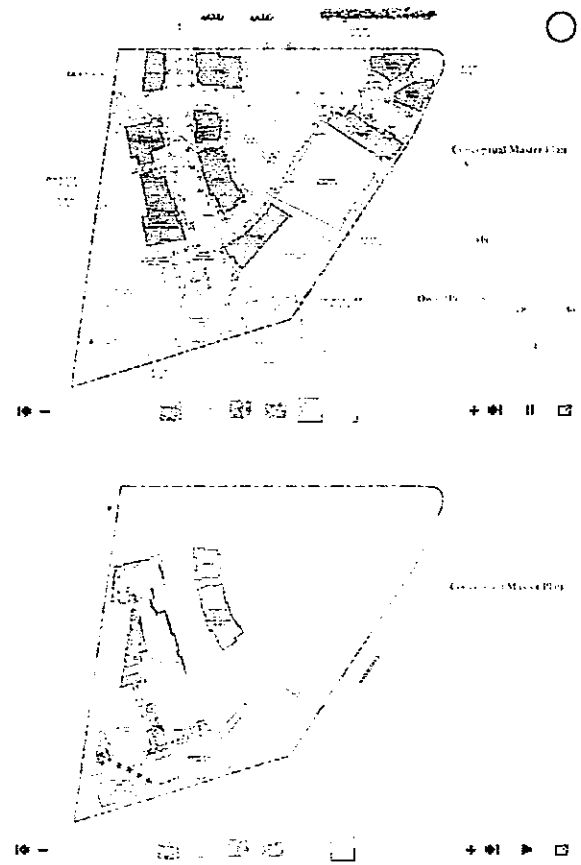
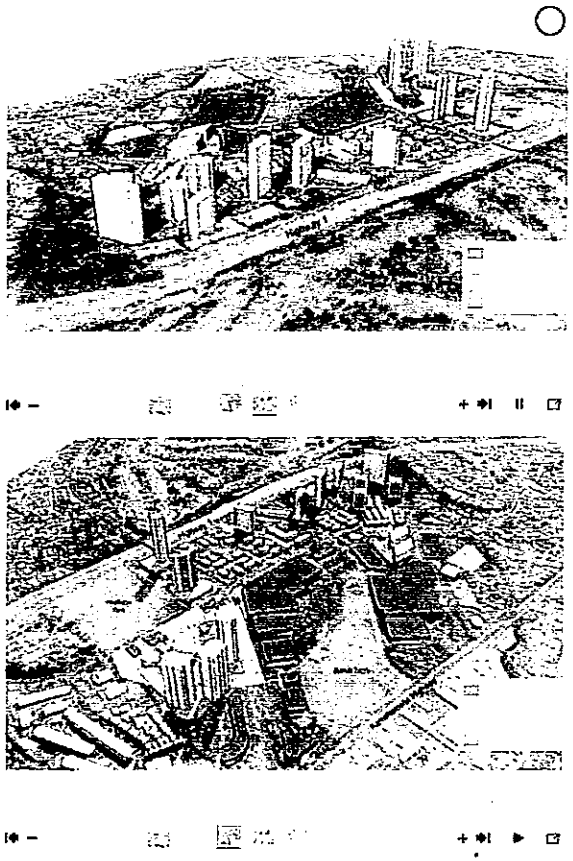


Figure IV-16: Kam Drive-In Site Conceptual Context Aerials



IV.4. CASE STUDY: TRAFFIC IMPACT ANALYSIS

The standard approach for determining the transportation implications of a proposed development is to conduct a traffic impact analysis based upon vehicle trip generation rates. Such studies have been used consistently for decades to make decisions about maximum land use holding capacity and minimum street network design requirements. The emphasis has been on analyzing the number of vehicle trips generated by a new development and the consequential impact on the level of service of critical roadways and intersections. The traffic impact study has evolved as the single tool used to determine roadway widths, street and intersection design and the financial contributions that are reasonable for those sponsoring the development that generates such additional vehicle traffic as to require changes to the local roadway system.

Traffic impact studies vary in their range of detail and complexity. Many states are becoming more regulatory in how traffic impact studies are to be conducted. Some jurisdictions have incorporated technical procedures, vehicle trip generation rates and allowable adjustments and reductions to those rates into ordinances and permit regulations. The Institute of Transportation Engineers (ITE) Trip Generation Handbook and User's Guide (8th Edition) has been the definitive technical references for estimating vehicle trip generation rates and adjustments for the purpose of conduction a traffic impact analysis for a proposed development project.

IV.4.1. Vehicle Trip Generation Adjustments

Mixed-use land use projects such as what is being contemplated for the Kam Drive-In site have necessitated making changes to past practices. ITE's procedures are still useful for vehicle-oriented, single-land use projects; but, adjustments to past procedures are necessary when considering mixed use developments, especially TODs.

IV.4.1.1. Traditional Vehicle Trip Adjustments

The vast majority of ITE vehicle trip data was collected from existing suburban, single land use classification developments. ITE has found that vehicle trip generation estimates should be reduced for multi-land use classification projects. This is referred to as an adjustment for "internal capture" of vehicle trips. Traditionally, these are deemed to be vehicle trips that have both vehicle trip ends within a multi- or mixed- land use project; consequently, they are captured within the proposed project. In reality, a well designed urban project now captures these as pedestrian and bicycle trips, not vehicle trips.

ITE has found that not all vehicle trips are new vehicle trips caused by the development being surveyed. Typical vehicle trip generation rates are derived from driveway counts. For many land uses, vehicle trips being counted are already on the road for other trip purposes and would "pass-by" the land use for other reasons even if it did not exist. Therefore, adjustments are allowed within the conduct of a traffic impact analysis report so as not to attribute such vehicle trips to the new development.

IV.4.1.2. Evolving Vehicle Trip Adjustments

Locations where vehicle trip data were collected often had poor or no public transportation service. ITE advises areas with good public transportation to adjust the vehicle trip generation rates to account for reduced vehicle use. Adjustments and reductions are also made for pedestrian, bicycle and Travel Demand Management (TDM) programs. Care must be used to be sure the vehicle trip rate adjustments for all of these factors are not double counted.

ITE 's Transportation Impact Analysis for Site Development report offers the following guidance: "...transit corridors can provide vehicle trip reductions in the range of 2 to 10 percent..." and "...around transit centers...can provide vehicle trip reductions in the range of 5 to 20 percent."[84] The distinction between the ITE vehicle trip reduction achieved within the transit category and the additional ITE vehicle trip reduction achieved in the TDM category is that the transit category only seeks credit for the provision of transit service.

A TOD TDM agreement is proposed to assure the provision of aggressive incentive programs designed to boost the shift from use of a private vehicle to alternative forms of transportation including walking, cycling and transit beyond the ITE trip generation rate reductions used under the transit classification.

The Commonwealth of Virginia is one of those states that have refined ITE traffic impact study methodology by promulgating rigid administrative guidelines.[85] The Virginia Department of Transportation (VDOT) defines a pedestrian "accommodation" as "...sidewalks, intersection treatments and exclusive, or shared (with bicyclists) off-street trails or paths." VDOT defines a bicycle "accommodation" as "...on-street bike lanes, paved shoulders of roadways that are not part of the designated travel way for vehicles, or exclusive, and shared (with pedestrians) off-street bicycle paths."

[84] Transportation Impact Analyses for Site Development; ITE Proposed Recommended Practice; 2005; P. 72.
[85] VDOT, Required Elements of A Traffic Impact Analysis – Administrative Guidelines; July, 2008.

VDOT requires that the traffic impact analysis provide both the route and segment quality of service as determined using procedures offered by one of three documents.[86] The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative provides the route and will equal or exceed the "accommodation" standards set forth in such procedures with a Level of Service "A" standard.

VDOT's administrative procedures for traffic impact studies are recent (published July 2008) and one of the most rigorous known to comprehensively address alternative transportation components using the best documentation available from FHWA, ITE, TRB and other state DOTs. These administrative procedures allow for a 4% reduction from ITE vehicle trip generation rates when a level of service A exists for pedestrian travel. It allows for a 3% reduction from ITE vehicle trip generation rates when a level of service A exists for bicycle travel. This is an overall combined reduction of 7% for both pedestrian and bicycle modes.

The application of the pedestrian and bicycle vehicle trip reductions took into consideration other current best practices used in other states to reflect excellence and high quality in pedestrian and bicycle infrastructure design. Research for the Florida Department of Transportation has shown existence of statistically significant factors correlating with the quality of pedestrian and bicycle network design. These include sidewalk and pathway network completeness. The California practices allow for up to a 9% reduction to ITE vehicle trip generation rates.[87]

There are both bad and good examples of pedestrian and bicycle infrastructure on Oahu. The Appendix includes a section on alternative transportation component terms and definitions with emphasis on many examples of high quality pedestrian and bicycle modal accommodation. Table IV-2 lists those considerations made when evaluating the quality of service offered by an alternative mode. These types of quality attributes are the types of design features envisioned for Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative when using the vehicle trip reductions noted in this technical memorandum.

[86] Note: The three documents are: 1) The Bicycle Compatibility Index: A Level of Service Concept, Implementation Manual (FHWA); 2) Bicycle and Pedestrian Level of Service Performance Measures and Standards for Congestion Management Systems; TRB 1538 (Quality/Level of Service Handbook (FDOT); and, 3) TRB Transit Capacity and Quality of Service Manual.
[87]. Crediting Low-Traffic Developments, Adjusting Site-Level Vehicle Trip Generation Using URBEMIS; August 2005; page 14.

Table IV-2: Framework for Evaluating Alternative Mode Quality of Service

Mode	Consideration
Pedestrian	Presence, connectivity and width of sidewalks Lateral separation from traffic Barriers and buffers from vehicle traffic Safe crossing opportunities with minimized vehicle conflicts Crossing delays at roadways Driveway frequency and volumes Visitor experience Wayfinding signage adequacy Barriers obstructing sidewalk or pathway International best practices: pedestrian zones & home zones
Bicycle	Presence of a dedicated facility Network connectivity Number and width of adjacent lanes Volume and speed of vehicle traffic Percentage of trucks and buses Pavement condition Barriers obstructing lane or pathway International best practices: cycle tracks & bike boxes
Transit	Frequency and hours of service Reliability of service Volume to capacity relationship Traveltime Network connectivity Information availability and content International best practices: access infrastructure
Note: See Appendix for examples of international best practices and other examples of quality of service considerations.	

The ITE Trip Generation Handbook, 2nd Edition, Appendix B, includes guidelines based on a number of documents with the following statement: "TDM programs with economic incentives to not drive alone were found to reduce the number of commuter vehicles generated by an employment site by an average of 16 percent.[88]

The ITE Trip Generation Handbook, 2nd Edition, Appendix B, also included the following statement: "TDM programs that combine economic incentives with transportation services produce the most significant effect on commuter vehicles generated by a site."

Other sources have found TDM programs with reductions in employee vehicle trips of up to 38%.[89] These are often the result of such TDM programs being part of a legally enforceable agreement (such as the Unilateral Agreements entered into by developers in Hawaii) that guarantees the TDM program will be implemented.

Three types of TDM elements have been found to have the greatest impact on travel behavior: 1) parking pricing attains up to a 25% trip reduction with a $6.00 daily charge, 2) free transit passes attain up to 25% where good transit service is available (as is the case with the Pearlridge station and associated bus transfer facility) and 3) work schedule programs including telecommuting, flextime or compressed work schedules can attain up to a 25% trip reduction. These vehicle trip adjustments have been observed from different sources and careful attention must be given to avoid double counting.

ITE vehicle trip generation rates for office buildings assume multi-tenant space with typical suburban work schedule variations. These rates do not reflect trip generation that will occur if all employees worked the same schedules. However, these rates also assume little or no transit service. Again, careful understanding of the interaction of the variables available to adjust and reduce the ITE vehicle trip generation rates is essential to producing an objective and credible traffic impact analysis.

The role of TDM in this alternative transportation component to the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative is to provide a comprehensive program wherein, at a minimum, residents and employees are encouraged to use the excellent transit service provided through the additional incentive of a free transit pass for every resident and every employee.

[88] Referenced documents include: NCHRP Report 323, Travel Characteristics at Large-Scale Suburban Activity Centers; TCRP Project B-4; ITE Recommended Practice Traditional Neighborhood Development Street Design Guidelines, 1999; ODOT/DLCD Transportation and Growth Management Program; and, LACMTA (Los Angeles County Metropolitan Transportation Authority), 1993.

[89] Crediting Low-Traffic Developments, Adjusting Site-Level Vehicle Trip Generation Using URBEMIS; August 2005; page 16.

Although a wide array of other TDM elements are to be included in the TDM program, the reduction to ITE vehicle trip generation rates is technically only being linked to a transit pass program. Those other TDM program elements, while very worthwhile and inevitably included in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative, tend not to have been proven to have a significant impact on travel behavior. Such TDM program elements, many illustrated in the Appendix, include the following:

- bike sharing and rental programs
- secure and ample bicycle parking
- guaranteed ride home and taxi scrip insurance
- car club and sharing programs
- carpool and vanpool brokering services
- real time traveler information and trip planning

The detailed vehicle trip adjustment calculations used a 25% vehicle trip reduction for residential land uses based on a subsidized transit pass program provided by the developer wherein new residents use a transit pass or a comparable set of related subsidized TDM benefits (such as participation in the bike sharing program).

The detailed vehicle trip adjustment calculations for other land use types used a vehicle trip reduction ranging from 10 to 25% depending upon the land use based on a subsidized transit pass program wherein new employees use a transit pass or a comparable set of related subsidized TDM benefits such as participation in a vanpooling program up to the maximum value of the TDM program benefit. Employers are responsible to support the TDM program, except those with less than 25 employees.

IV.4.1.3. Vehicle Trip Adjustment Traffic Impact Analysis Implications

The state of the art in traffic impact studies is evolving. Now, what used to be referenced as "traffic" impact analyses are becoming referred to as "transportation" impact analyses, transcending the past emphasis on vehicle traffic toward more consideration given to accessibility and mobility for people.

Both the preferred alternative for the Aiea-Pearl City Neighborhood TOD Plan and the developer's master plan conceptual proposal embody the factors that are bringing about the change in how major multi-use development projects are evaluated. Environmental movements toward sustainable development have placed emphasis on the use of alternative transportation programs.

Alternative transportation programs include fully integrating public transportation, bicycle and pedestrian modes using a wide variety of cost-effective and practical approaches. Some of these approaches may be found on Oahu, more are being used in mainland cities and many more have been time-tested and extensively vetted in European cities where transportation system design excellence is commonplace.

Future development projects such as the Kam Drive-In site must reflect an awareness of where best transportation system design practices are to be found. Continuing European research reveals that Oahu, and developments such as the Kam Drive-In site, are ideal locations to plan to do what most European and other world-class international cities have already achieved. The common intent is to optimize the development layout so it will facilitate transit use, walking and bicycling.

Oddly enough, European and Asian cities do not use the term Transit-Oriented Development. That is because virtually all existing urban transportation function and form in such cities is already configured and composed in a manner we attempt to emulate at a few TOD locations. Such TOD projects have been found to result in vehicle trip reduction rates that are 44% to 49% less that would otherwise be observed using unadjusted ITE vehicle trip generation rates.[90]

IV.4.2. Vehicle Trip Generation Calculations

Vehicle trip generation rate calculations and adjustment factors were applied to each land use classification to assess anticipated vehicle trip generation. The most applicable unit of measurement was used for each land use – square feet of floor area or number of dwelling units. Two sets of five page tables are included in the Appendix with detailed vehicle trip generation calculations for both the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative and the Developer Master Plan Conceptual Proposal.

The results of the vehicle trip generation calculations are presented in Table IV-3 which provides the vehicle trips by time period for the two land use scenarios plus the existing condition as recorded for the AM Peak Hour at the Kam Drive-In Swap meet on April 24, 2010. The second hourly count total of 462 vehicles from Table IV-1 was used in Table IV-3.

[90] TCRP Report 128; Effects of TOD on Housing, Parking, and Travel; 2008; page 4.

Table IV-3: Kam Drive In Site Weekday Vehicle Trips Generated By Land Use Scenario

	VEHICLE TRIPS BY TIME PERIOD					
	Daily		AM Peak Hour		PM Peak Hour	
LAND USE SCENARIO	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Aiea/Pearl City Neighborhood TOD Preferred Alternative	12,654	5,576	589	275	1,120	493
Developer Master Plan Conceptual Proposal	15,154	7,277	834	416	1,366	659
Existing Conditions - Swap Meet	NA	NA	462	462	NA	NA

Note: See Appendix for detailed notes regarding sources, assumptions, adjustments and calculations.

The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative vehicle trip generation calculations are for all development described for blocks 6, 7, 8 and 9 in Section VI. The Developer Master Plan Conceptual Proposal vehicle trip generation calculations are for all development described in Section VII. Weekday daily, AM peak hour and PM peak hour vehicle trips are provided for both unadjusted and adjusted conditions. The unadjusted conditions are using standard ITE vehicle trip generation rates for each land use classification. The adjusted conditions are for those types of internal capture, pass-by, transit mode, pedestrian and bicycle mode and other TDM alternative mode reductions appropriate to reflect urban mixed land use, TOD and other transportation program circumstances.

The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative has fewer vehicle trips being generated in all time periods than the Developer Master Plan Conceptual Proposal. This is partially attributable to the slightly different level of overall development proposed for the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative: 4,871 more square feet of retail, 30,000 less square feet of office space and 674 fewer residential units.

Both land use scenarios have more AM peak hour vehicle trips generated without applying adjustments than is currently experienced during the AM peak hour of the Kam Drive-In Swap Meet. However, both land use scenarios have less AM peak hour vehicle trips generated than the Kam Drive-In Swap Meet currently produces after vehicle trip reduction adjustments are applied. These adjustments are not exclusively attributable to the existence of the Pearlridge station or the features of TOD.

The success of TOD projects is rooted in fundamentals that apply to the full build out of the Kam Drive-In site and the nature of the transportation infrastructure, services and programs that will exist at that time. The right kind of transportation facilities, services and programs, using the right kind of cross-sectional design in the right locations, will result in significant reductions on the reliance upon the private vehicle. These transportation facilities and programs will be a magnet for the type of utilization these transportation features routinely obtain in Europe and Asia, but not as often in the U.S.

The guiding transportation design and program principles for the Kam Drive-In site development plan must be the same critical ones used to attain successes in Europe: creating a walkable community linked by pedestrian and bicycle paths and assuring connectivity for people while discouraging through vehicular traffic.

IV.4.3. Vehicle Traffic Impact Analysis Observations

This technical memorandum has established that the current level of morning peak hour vehicle traffic generated by the Kam Swap Meet is greater than the projected future level of vehicle traffic that would be generated by a TOD project at the same site. This conclusion is predicated upon providing the necessary transportation infrastructure, service and program features to achieve such a result using approaches such as those described in this and the following section.

IV.5. CASE STUDY: TRANSPORTATION ASSESSMENT

There are two major differences between a vehicle traffic impact analysis and the transportation assessment. First, the traffic impact analysis determines the ability of the transportation system to absorb higher levels of development as an input to the transportation planning process, not as an output. Amounts and types of land uses, street patterns and parking locations are provided to the traffic engineer for analysis after those development features have been identified by the project sponsors. The traffic engineer's task is to convince the responsible jurisdictions what needs to be done to make the increased level of vehicle traffic acceptable. The transportation assessment using PTALs informs the project sponsor before the development is designed. Acceptable maximum amounts of land use and parking under existing conditions for the project's location are pre-determined.

The second major difference between a traffic impact analysis and a transportation assessment is that the modal consideration is a person's level of access to public transportation, not vehicle level of service. Too many adjustments need to be made to the long established vehicle trip generation rates originally intended for suburban single purpose land uses serving auto-oriented communities with minimal or no public transportation.

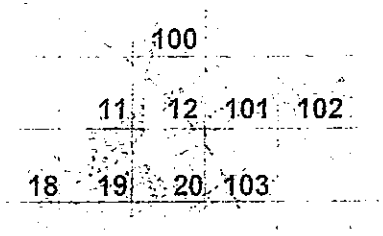
Recent research suggests the traffic impact analysis approach is still insufficient for mixed-use development (MXD), especially where good or better public transportation service either exists or can be provided. The most prominent U.S. effort to correct traffic impact analysis weaknesses observes that "While the ITE-recommended internal trip capture estimation procedure is the most frequently used method in practice, there are several limitations...there are no provisions in the method to account for certain features of the MXD that may have a profound impact..."[90]

Other countries have replaced traffic impact analysis with transportation assessments. This section demonstrates how the PTAL based transportation assessment methodology can be applied to the Kam Drive In site (and the proposed "The Pearl" development) case study.

The first step in the case study's transportation assessment was to determine the POI grid cells that apply to the site. Nine grid cells were identified. Five (11, 12, 18, 19 and 20) were included in the PTAL grid overlay to compute average PTALs at neighborhood TOD stations as depicted in Figure III-6. Four additional grid cells (100-103) were added as shown in Figure IV-17.

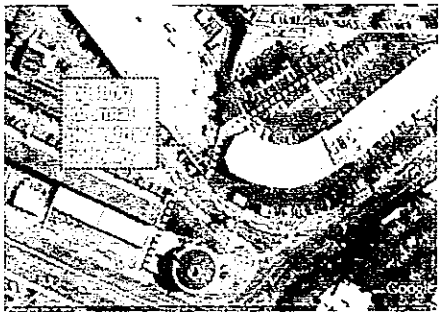
[90] Improved Estimation Of Internal Trip Capture For Mixed-Use Developments; Brian S. Bochner, P.E., PTOE, PTP, Kevin G. Hooper, P.E., and Benjamin R. Sperry, E.I.; ITE Journal; August 2010; page 24.

Figure IV-17: Kam Drive In Site Case Study POI Cell Numbers
For The Aiea-Pearl City Neighborhood TOD Plan



Using the procedures described in section III.5. of this technical memorandum, the existing conditions average PTAL for the nine grid cells for the Kam Drive In site was calculated as 1.4. The PTAL for the Aiea-Pearl City Neighborhood TOD Plan is 2.2. This low PTAL score is primarily attributable to the walking access from the grid cells to the rail station. This is even taking into consideration the likely walking path for many people between the rail station and the Kam Drive In site via the existing stairway between the Drive In and the Westridge Shopping Center as illustrated in Figure IV-10 and as shown in Figure IV-18.

Figure IV-18: Kam Drive In Site Case Study
Existing Informal Pedestrian Pathway



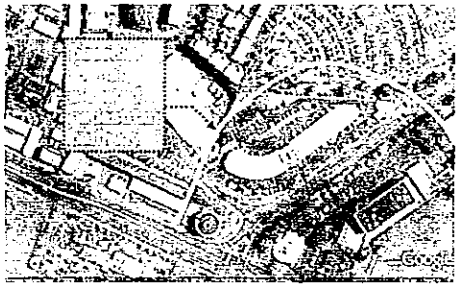
The existing informal pedestrian pathway is well used by those who know about it. The pathway would likely become heavily used once the Pearlridge station and "The Pearl" are constructed. It is the most direct connection and avoids the wide crosswalk at the intersection of Kaonohi and the Moanalua Loop. This crosswalk has relatively light traffic today so there are no traffic signals. It is unlikely the Moanalua Loop would ever be controlled by traffic signals because of the complexity this would involve with the intersection between Kaonohi Street and Kamehameha Highway.

Many pedestrians in the future will want to cross along the Ewa side of Kaonohi Street at the intersection with Moanalua Loop, but will be discouraged from doing so because of vehicle traffic using the vehicle turn lanes that create two isolated and unprotected pedestrian islands in the middle of the intersection. People using this pathway repeatedly will be apt to prefer the alignment shown in Figure IV-18.

The pedestrian access situation between the case study site and the Pearlridge station would be the subject of extensive evaluation in a transportation assessment, but not so in a typical traffic impact analysis. There is no motivation to do so.

A transportation assessment would focus on how to take advantage of the appealing mobility offered by the rail station. A transportation assessment would explore how to provide the highest quality and safest pedestrian link between the proposed development and the rail station. The developer would be encouraged to collaborate with other property owners to develop an alternative to forcing employees, customers and residents to walk along a busy street crossing busy intersecting streets and driveway entrances. The developer would be motivated to do so. Perhaps the developer would offer a new elevated pedestrian pathway such as the one depicted in Figure IV-19 to increase their PTAL. Otherwise, their project could not be approved.

Figure IV-19: Kam Drive In Site Case Study
Elevated Pedestrian Pathway As A PTAL Enhancement



This pedestrian pathway could be an iconic feature with enormous marketing value. It would have the potential to serve as a distinctive gateway to the site, attracting far more people than any conceivable array of roads and parking lots. It would simply use the existing pathway, but with a wide (20+ feet), high-quality, grade-separated walkway such as some of those shown in Appendix A.[91]

Ample possible easement exists between the existing buildings shown along the proposed pedestrian pathway. Support columns can be placed without disruption to any current uses. The wide walkway can be placed over existing driveways and parking spaces to provide a clear cross-sectional envelope from an at grade launching point at the case study site to the Pearlridge station's mezzanine level. Transit riders would be able to avoid a circuitous journey down the steps, through the parking lot, along the driveway, across the street and down the hill and up to the rail platform. Transit riders would avoid the un-signalized intersection and crossing multiple traffic lanes.

Adjacent property owners would benefit from such an elevated pedestrian pathway. If they specify provisions be made for direct pedestrian access to the pedestrian walkway, such links would increase future property value and versatility. No operations would be significantly disrupted, even during construction. Another beneficiary of the elevated pedestrian pathway could be the Pearlridge Shopping Center if the elevated pedestrian walkway is extended over Kaonohi Street.

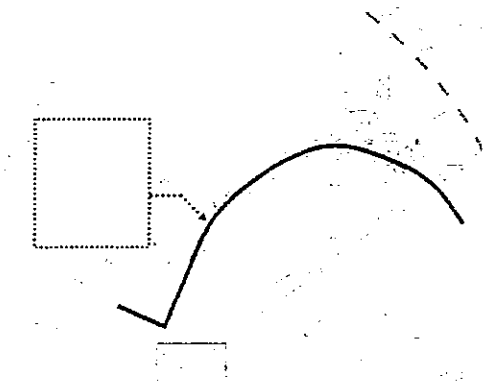
Pearlridge Shopping Center does not benefit as much as it could from the presence of the Pearlridge rail station because Kaonohi Street serves as a barrier to people. The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative calls for Kaonohi Street to be transformed into a pleasant, walkable street. Retail spaces and outdoor eateries would invite people to the street. But, such schemes will not adequately offset the havoc a pedestrian faces when crossing Kaonohi under existing conditions or any concept known for the future, other than an elevated pedestrian walkway.

What is the desired future? For people to travel between Pearlridge Shopping Center and the proposed "The Pearl" by car, or by foot? For people to be able to enjoy the walk to the Pearlridge station without ever having to look out for a car turning into their intended path? To make "The Pearl" a stop along a walk or a place where one needs to park?

[91] Note: A 20 foot width for a pedestrian/bicycle pathway may seem excessive to those familiar with previous U.S. standards for such facilities. This width is actually very narrow by international standards. The 2010 Winter Olympic Village at Southeast False Creek in Vancouver, British Columbia, Canada has a central pedestrian/bikeway with a width of 60 feet. This will remain to serve the permanent future housing development. The 3.8 miles of elevated pedestrian pathways at the 2010 Shanghai Expo had a minimum width of 80 feet. The main sections are 250 feet wide.

The proposed elevated pedestrian pathway could remain at grade through "The Pearl" using the current elevation of the site in the vicinity of grid cell 18. The at grade pedestrian pathway could continue through the case study site without any roadway conflicts. The main street elevation must match the elevation of Kaonohi Street and maintain a standard grade along the alignment shown in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative. The main street would pass under the pedestrian pathway using the alignment as shown in Figure IV-20.

Figure IV-20: Kam Drive In Site Case Study
Possible Future Formal Elevated Pedestrian Pathway
As A Public Transportation Access Level Enhancement



The pedestrian pathway concept places "The Pearl" midway along a 1400 foot long walkway connection between two major anchors: the Pearlridge station and the Pearlridge Shopping Center. The pedestrian pathway provides grade separated access to block 8 of the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative. This block would now be within a safe, relatively level and direct stroll to these anchors. Today, that same block 8 area is perched atop steep embankments at the edge of Kaonohi Street and is not accessible by pedestrians as shown in Figure IV-6. It is unclear how the conceptual plans deal with the grade differentials between the site and the street. The pedestrian walkway proposal takes advantage of this significant elevation difference.

The pedestrian pathway would be at grade at the corner of this portion of the site, becoming elevated as the pathway passes over Kaonohi Street connecting with the top level of the existing parking structure where stairs, elevators and pedestrian connections already exist into the center. The pedestrian walkway would be wide enough to comfortably accommodate bicycles, wheelchairs and baby strollers with people walking abreast of each other in both directions.

The pedestrian pathway is an example of the type of PTAL enhancement a project sponsor would offer to government for permit review to increase the PTAL of their site and become eligible for approval of higher density buildings. There is a big difference in the maximum density allowed for a site with a PTAL in the range from 2 to 3 versus one in the range of 4 to 6 as shown in Table III-2. Table IV-4 provides the Kam Drive In site case study POI calculations for the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative without and with the elevated pedestrian walkway enhancement. The average PTAL score increases significantly, from 2.2 to 3.6. This should be sufficient to warrant enough of a PTAL to justify increases in building height and overall density, if offered in combination with limits on parking supply.

Table IV-4: Kam Drive In Site Case Study POI Calculations
For The Aiea-Pearl City Neighborhood TOD Plan Without and With Enhancements

CASE STUDY WITHOUT ENHANCEMENTS			CASE STUDY WITH ENHANCEMENTS		
POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
11	12.61	3	11	16.77	4
12	11.82	3	12	15.27	4
18	15.98	4	18	18.70	4
19	15.27	4	19	18.70	4
20	12.20	3	20	15.27	4
100	0.00	0	100	14.64	3
101	2.55	1	101	14.06	3
102	2.26	1	102	12.20	3
103	2.67	1	103	14.06	3
	Average PTAL:	2.2		Average PTAL:	3.6

The walkway would pass by the current top of the stairs between the Kam Drive In and the Westridge Shopping Center as shown in Figure IV-10 providing stunning, unobstructed, panoramic views of Pearl Harbor. The plaza area shown in block 6 in the isolated corner of the case study site might otherwise be hidden behind a wall of residential towers. Instead, it now becomes the primary entryway to "The Pearl". The pedestrian plaza area could become the premium location for higher end restaurants and eateries, extraordinarily well located because of the spectacular views and close proximity to the rail station, just 600 feet away.

The guideway, passing trains and portions of the station would be visible from the entryway pedestrian plaza allowing people to precisely time their departure to catch the next train without worrying that their last minute dash would be interrupted by a traffic signal. These establishments would be able to capture those returning to their residences after arriving on their train from work in downtown.

Such gathering places and adjoining retail need no parking to attract clientele. People pass by not on their way to a car, but to complete their trip by non-car modes. This is both a natural evolution of people's preferences because of the quality of the transportation infrastructure in combination with the travel plans (as presented by the applicant as part of the TA, see section III.1) or TDM measures (as presented by the applicant as part of the TIAR, see section IV.12.).

IV.5.1. Transportation Assessment Parking

There are 1,105 people boarding buses at the stops in close proximity to the future Pearlridge station today.[92] About 697 of these people are not transferring between buses; they are walking to the transit system. Some existing bus riders who are walking may not use the new rail station because they are making a shorter, local transit trip, but it would seem hundreds of existing bus riders who walk to the bus today would switch to rail in the future.

Table I-1 indicates that 490 people will access the Pearlridge station by walk and bike. The projection demonstrates just how rail ridership projections are conservative. The projection seems to account for just existing bus riders. It does not account for TOD plans, especially those designed to limit parking. This is because doing so is believed by some Federal Transit Administration staff to inflate ridership projections when land use is assumed to be developed with standard land use ordinance based minimum parking supply requirements rather than the type of parking supply maximum limits appropriate for TODs. They are probably correct in expressing this concern.

[92] Source: Weslin Consulting Services, Inc. Boarding activity on current bus routes within ¼ mile of the Pearlridge station is based on Oahu Transit Services data for the period from 8-2009 to 11-2009. The HHCTCP FEIS identified the transfer rate in 2007 as 37%.

Table IV-5 compares the parking supply calculation using the City and County of Honolulu Land Use Ordinance Article 6, Off-Street Parking and Loading; the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative; and, PTAL Standards as presented in Section III.

Table IV-5: Kam Drive In Site Case Study Parking

LAND USE		SOURCE OF PARKING SUPPLY CALCULATIONS					
		Honolulu Land Use Ordinance		TOD Preferred Alternative		PTAL Standards	
Description	Amount	Parking Space Requirement	Minimum Number of Spaces	Parking Spaces Needed	Parking Spaces Provided	Parking Space Requirement	Maximum Number Of Spaces
Multi Family Residential							
Mixed Use (2-6 floors)	261 units	1 to 2+/unit	522	261	261	1 to 2/unit	261
High Density (32 floors)	865 units	1 to 2+/unit	1,730	865	865	1 to 2/unit	865
Commercial - Retail							
Mixed Use Ground Floor	43,571 sq.ft.	1/300 sq.ft.	145	35	86	1/ 376-538 sq.ft.	115
With Site Parking	131,300 sq.ft.	1/300 sq.ft.	437	328	328	1/ 376-538 sq.ft.	349
	Totals		2,834	1,489	1,540		1,590

Note: • The parking space requirement in Chapter 21 of the Honolulu Land Use Ordinance for Multi Family Dwellings is for a minimum of 1 parking space per dwelling unit with 600 square feet or less, 1.5 per 600 to 800 square feet and 2 for 800 square feet or more. The PTAL ordinance as shown in Table III-4 of this technical memorandum is for a maximim of 1 space for a 1-2 bedroom dwelling unit, 1-1.5 spaces for a 3 bedroom dwelling unit and 2 spaces for a dwelling unit with 4 or more bedrooms.

The current Honolulu Land Use Ordinance would require a minimum of 2,834 off-street parking spaces for the land use types and amounts as presented in the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative. These 2,834 parking spaces are 1,294 parking spaces greater than what the TOD Plan provides. This may seem like a significant reduction, but it is less than the 1,590 maximum parking spaces that would be specified using the PTAL standards. Therefore, the Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative parking space estimate for the case study site seems reasonable provided the types of enhancements needed to attain the PTAL are provided.

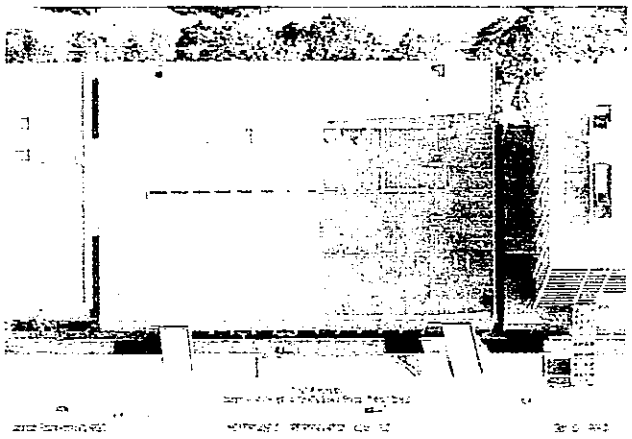
IV.5.2. Transportation Assessment Observations

The cost of providing parking is very high. This is especially true when projects are reliant upon structured parking to fulfill minimum parking supply regulations. Traffic impact analyses assume those parking spaces will be used. Vehicle trips generated by the availability of parking require new turn lanes and traffic signals to accommodate the increased vehicle circulation requirements.

Although the vehicle accommodations are presented as mitigations to impacts created by the proposed development, they often result in their own impacts that have not been taken into account. Pedestrians and cyclists find their travel path across the legs of intersections often require longer waits, involve longer distances because turn lanes have been added and involve conflicts with unrestricted vehicle turn movements.

Figure IV-21 offers one example of parking over supply. The illustration is the top deck of the new parking structure adjoining Nordstrom's at the intersection of Kapiolani Boulevard and Keeaumoku. The Google Earth image is dated September 28, 2008, just six months after the new store opened.

Figure IV-21: Top Deck of Parking Structure
Adjacent To Nordstrom's At Ala Moana Shopping Center



One might expect the top deck of a new parking facility to be empty before the store has established itself, or at certain times of the day, week or year. However, the parking structure's top deck has never been observed occupied by a single vehicle. Vehicles have not been observed on the next level either. The top level has 284 parking spaces. There are about 560 spaces that appear to have never been used in the 30 months since the store has opened. The 560 excess spaces likely cost the project sponsor in excess of $20,000 apiece, more than an $11 million investment. A transportation assessment using PTAL methods would have produced different transportation infrastructure proposals.

The Aiea-Pearl City Neighborhood TOD Plan Preferred Alternative provides 1,540 parking spaces, this is approximately 1,345 less parking spaces than the minimum required by the Honolulu Land Use Ordinance. The reduction is achievable if those attracted to the new development prefer to use rail. The City and the public benefit because at least 1,345 more riders will walk to the station, likely increasing the future forecast of 490 walk access rail riders per day to 1,835.[93]

For the City to recognize this transit ridership increase, the developer will have to provide the types of transportation enhancements identified in this technical memorandum. These include high quality, grade separated pedestrian/bicycle pathways, travel plans and TDM actions. These will incur costs to the developer, but will be far less of a financial obligation than the minimum parking supply requirements and the traffic circulation improvements usually recommended by a traffic impact analysis. The parking reduction cost savings alone for the case study site is likely to be about $27 million.

The City has recognized the problem of specifying too much parking with TOD Ordinance 09-4. The ordinance specifies that "If the Council approves a neighborhood TOD plan, with or without amendments, the director shall, within 120 days after the approval, submit to the planning commission a proposed ordinance establishing a TOD Zone for the applicable neighborhood and the TOD Development Regulations applicable thereto."[94] The TOD regulations are to include nine provisions one of which is the "Elimination or reduction of the number of parking spaces..."[95]

[93] Many variables affect this preliminary estimate. The amount of vehicle trips converted to person trips is influenced by parking stall utilization, parking turnover rates and vehicle occupancy. Some persons making transit trips will choose rail, others will make their entire trip by bus. Those transit trips will compete with other modes such as walking and bicycling. However, it is likely the result will be that those electing to make their trip by rail will be roughly equivalent to the number of parking spaces eliminated based on calculations using assumptions and professional judgments.
[94] City and County of Honolulu Ordinance 09-4; Sec. 21-9.100-3 (a).
[95] Ibid, Sec. 21-9.100-4 (c).

The TOD Ordinance suggests the TOD Development Regulations include "design provisions that encourage use of rapid transit, buses, bicycling, walking and other non-automobile forms of transport that are safe and convenient."[96]

Those design provisions are critical. This technical memorandum has demonstrated why those design provisions should be based upon the best international practices. It is recommended that the Transportation Assessment approach, including use of PTALs, be used as the means to identify those design provisions.

It is also recommended that the TOD Development Regulation include travel plans and TDM measures. Mode share targets should be established to demonstrate a commitment to achieve the TOD plan objectives. The project sponsor should provide a means to assure that efforts to achieve the mode share targets are maintained, monitored and revised as necessary.

The right type of transportation improvements need to be made in association with the public investment in the rail project for the private developer to capture the full value of their investment. If properly crafted, the TOD Development Regulation will provide the necessary framework for a balanced relationship.

[96] Ibid, Sec. 21-9.100-4 (d).

Transportation Assessment

Appendix A

Aiea -- Pearl City Neighborhood TOD Plan

All photographs in this attachment were taken by Wes Frysztacki, Weslin Consulting Services, Inc. except where noted.
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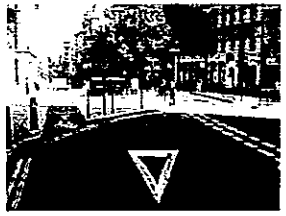
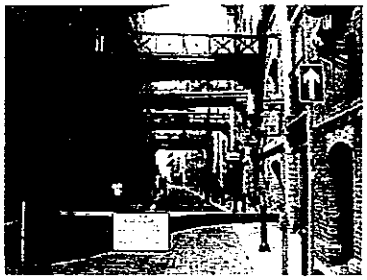
Please e-mail wfr tac :wa .net for further information.

Example Of Pedestrianized Zones In Europe

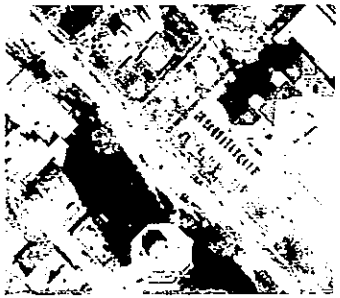
Example Of Pedestrian and Bicycle Ways Zones In Eindhoven

Example Of Traffic Cells In London

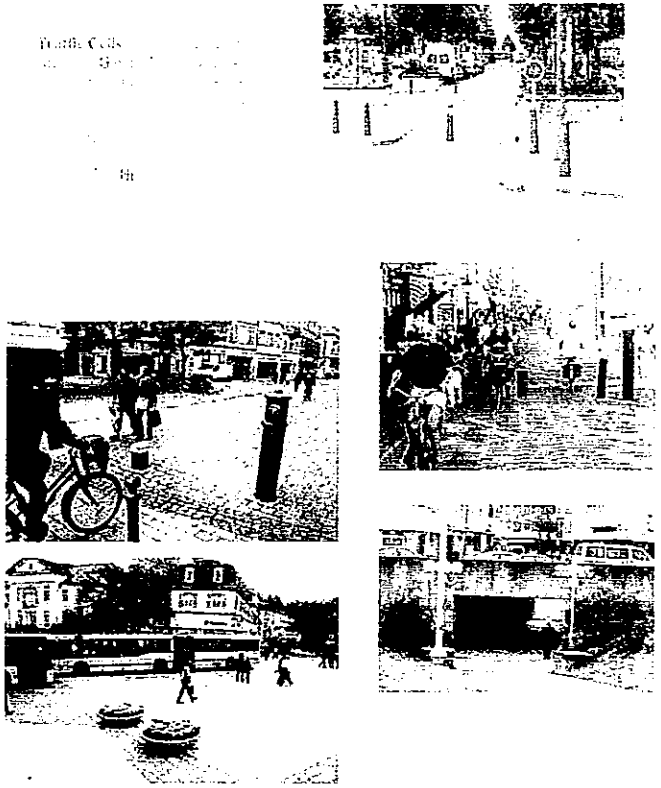




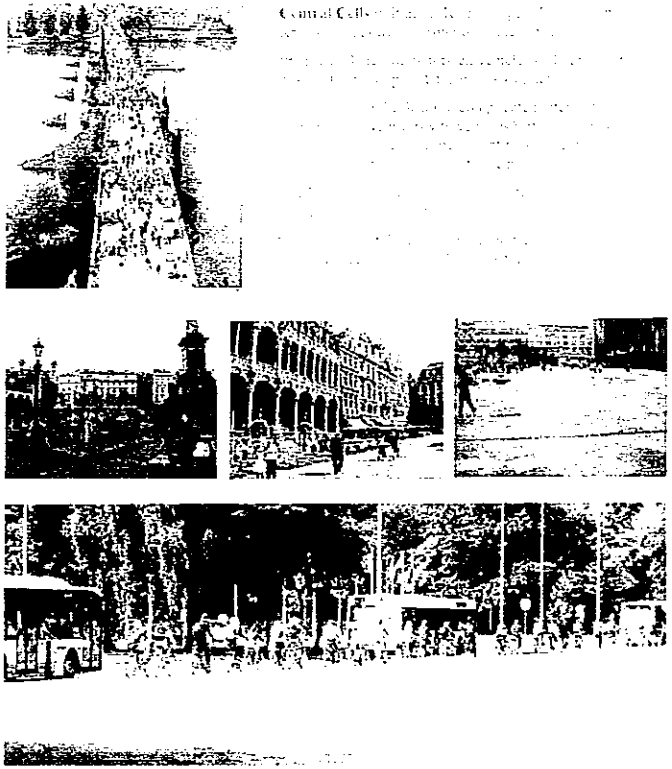
Example Of Traffic Cells In Canada



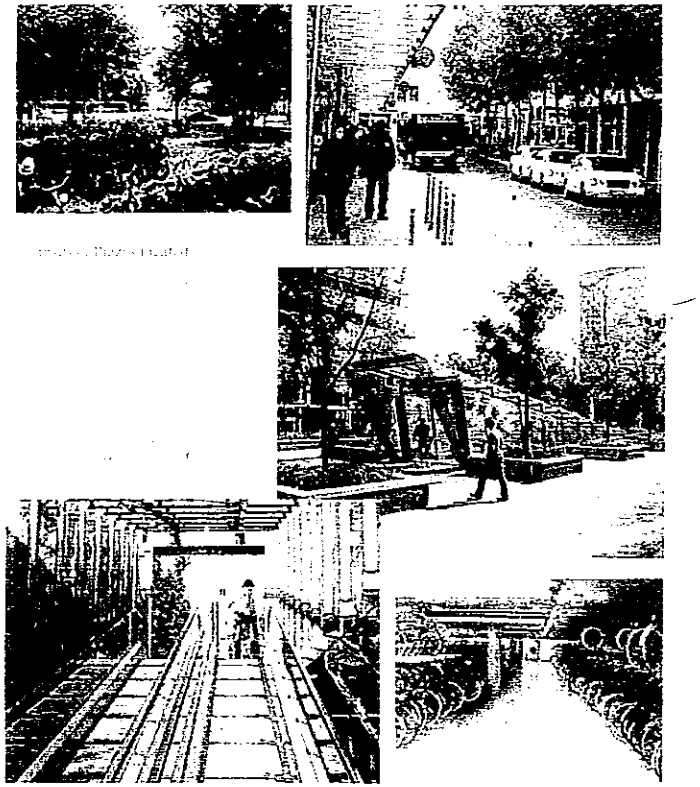
Example Of Traffic Cells In Europe



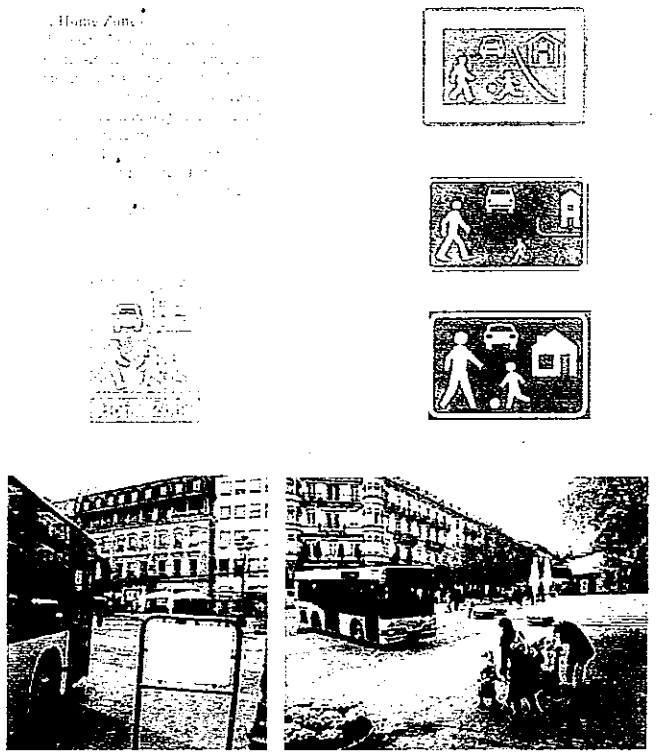
Example Of Central Cells In Europe



Examples Of Transition Plazas In Europe

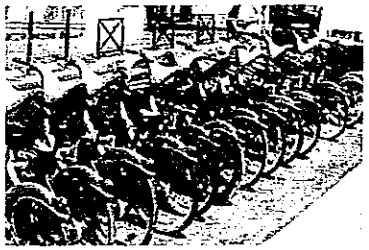


Examples Of Home Zones In Europe

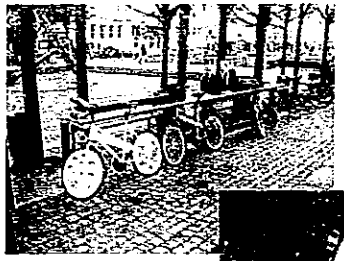


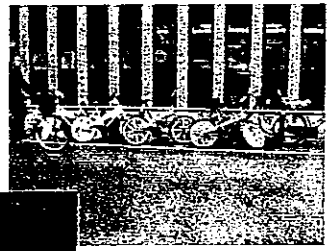
Examples Of Home Zones In Europe

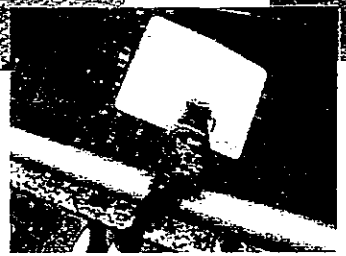
Example Of Community Bike Programs In Europe



Community Bike Program

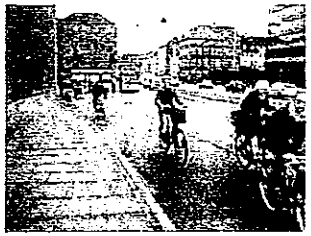




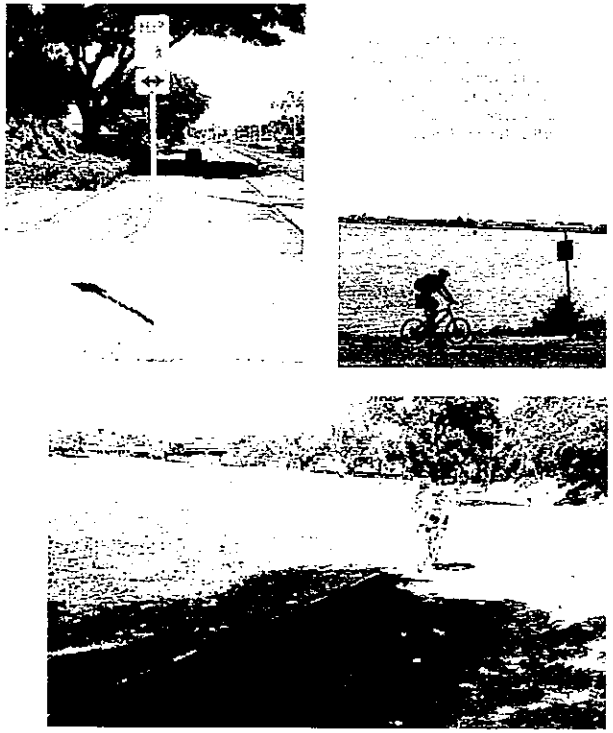


Example Of Cycle Tracks In Europe

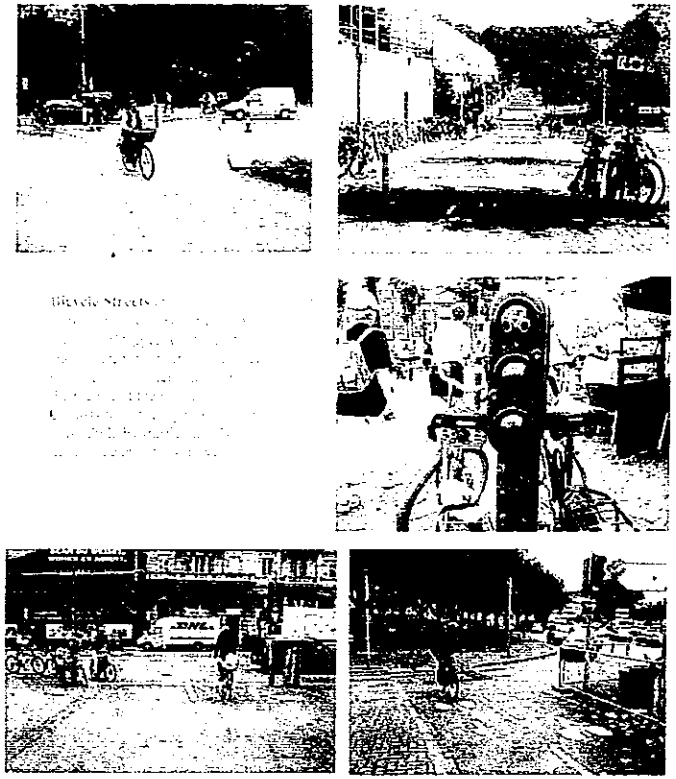
Example Of Cycle Tracks In Europe



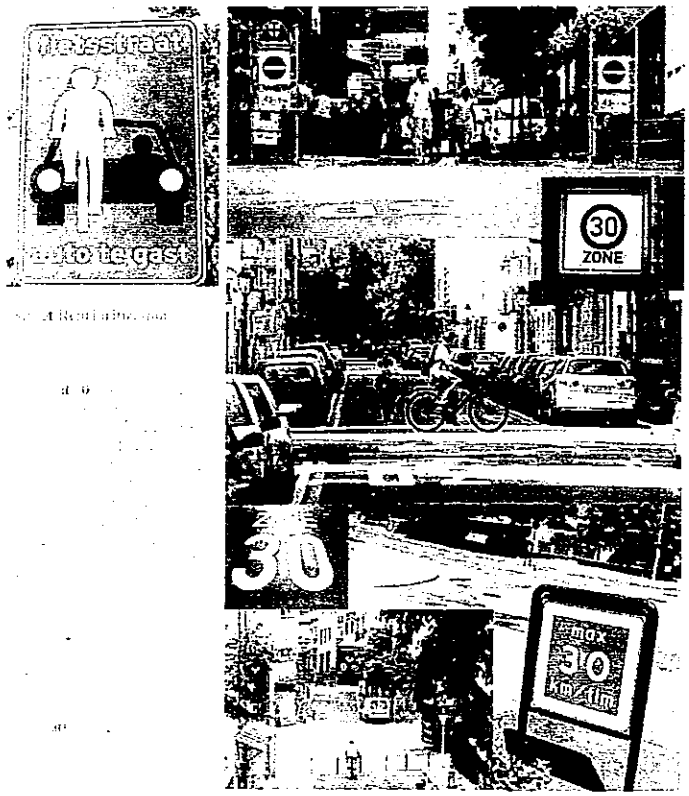
Example Of Bicycle Pathways In Honolulu



Example Of Bicycle Streets In Europe



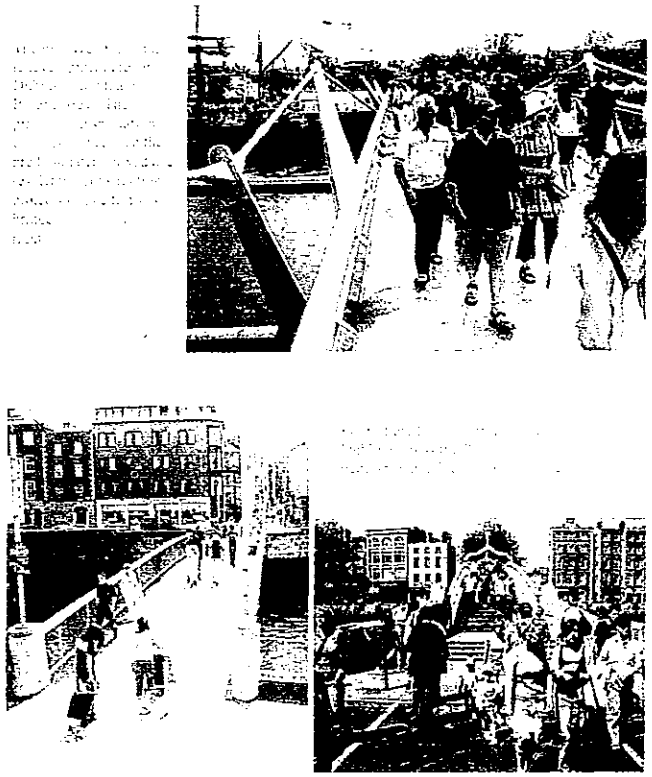
Example Of Street Reprioritization In Europe



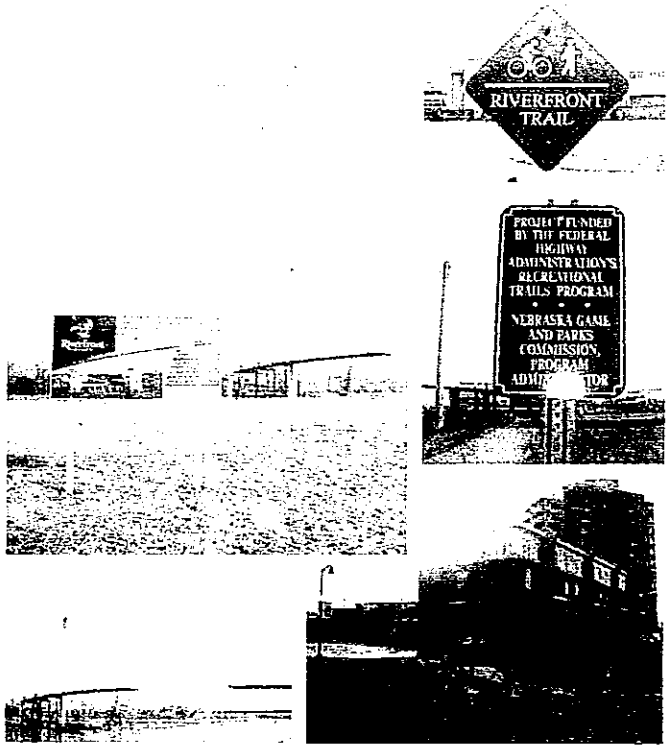
Example Of Bicycle Sheds and Bicycle Stations

Example Of Car Sharing Programs and Personal Transporters

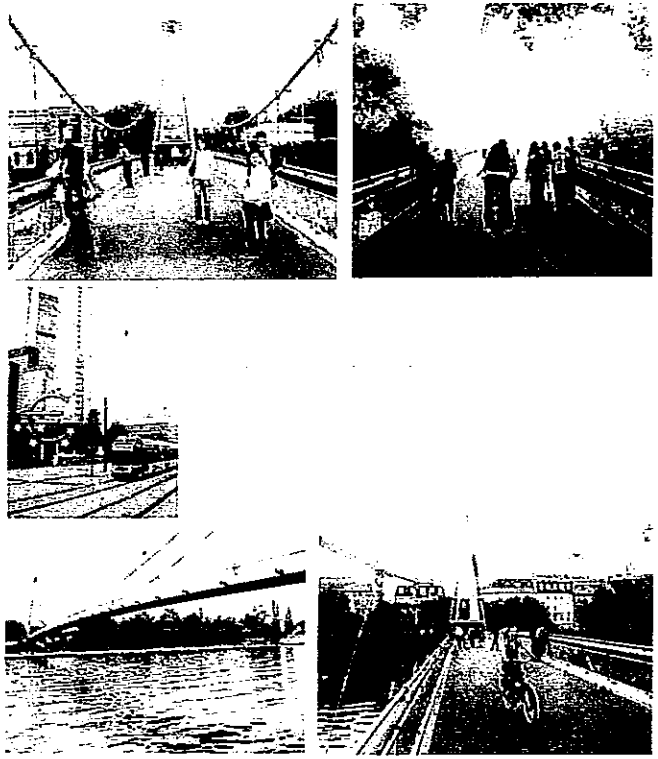
Example Of Pedestrian And Bicycle Only Bridges In Dublin



Example Of Pedestrian and Bicycle Only Bridges In Omaha

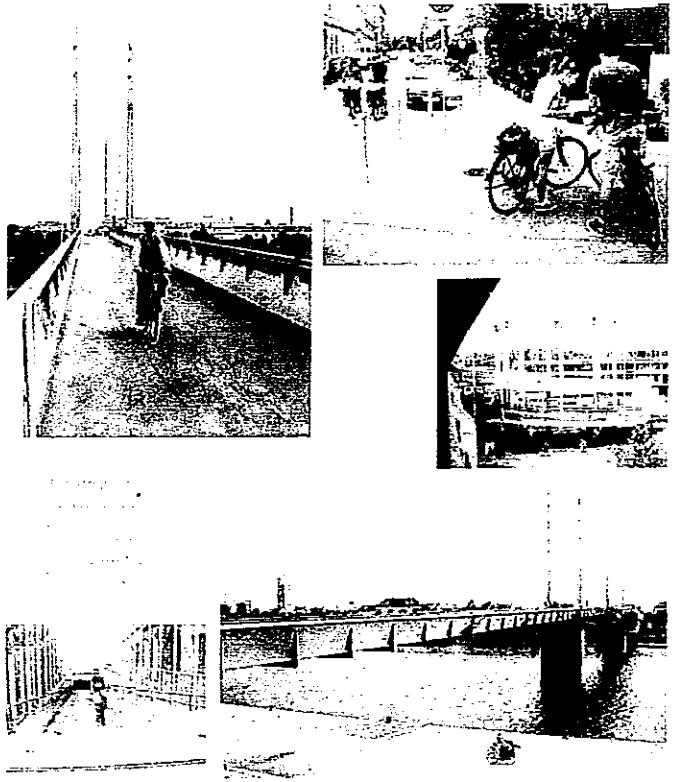


Example Of Pedestrian and Bicycle Only Bridges In Frankfurt

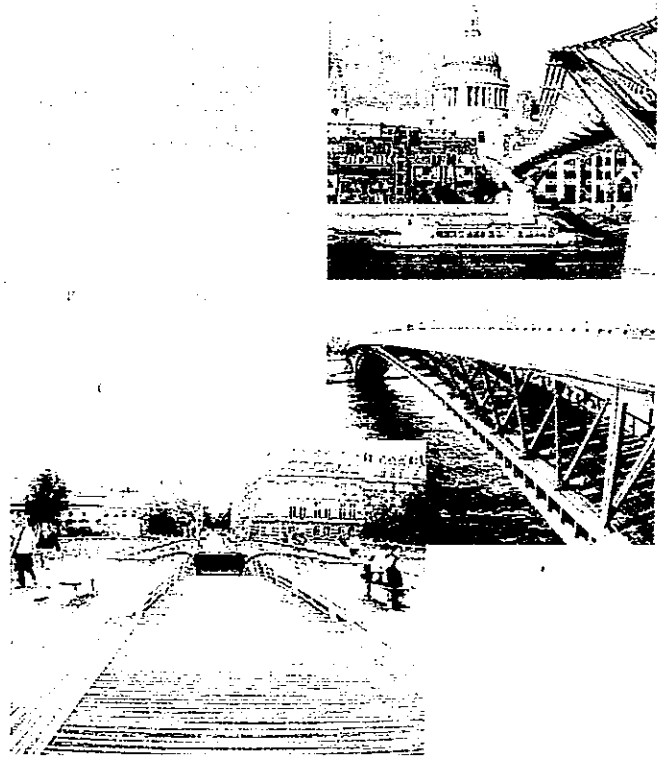


Example Of Pedestrian and Bicycle Only Bridges In Vienna

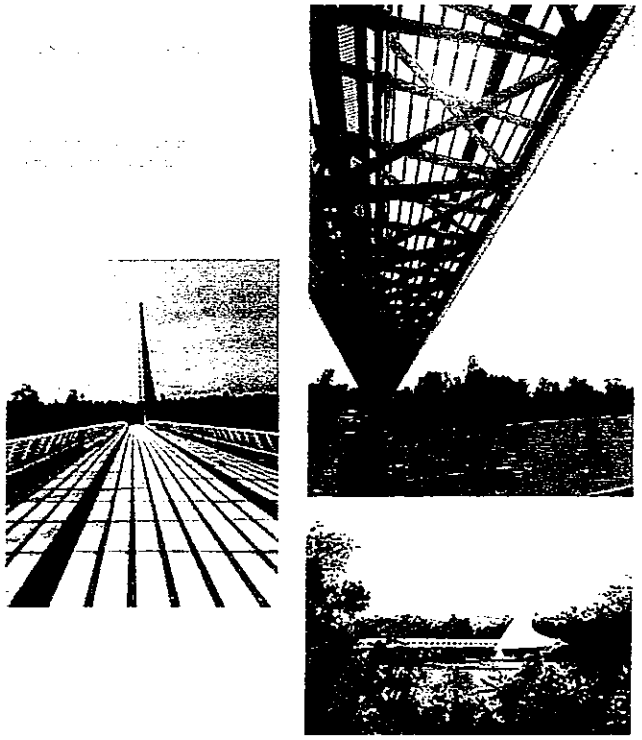
Example Of Pedestrian and Bicycle Only Bridges In Vienna



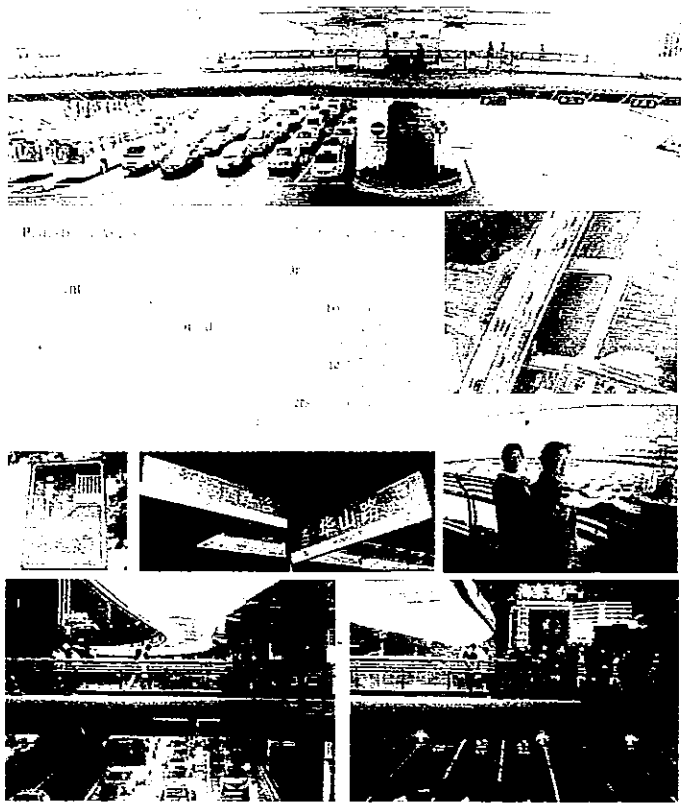
Example Of Pedestrian Only Bridges In London and Paris



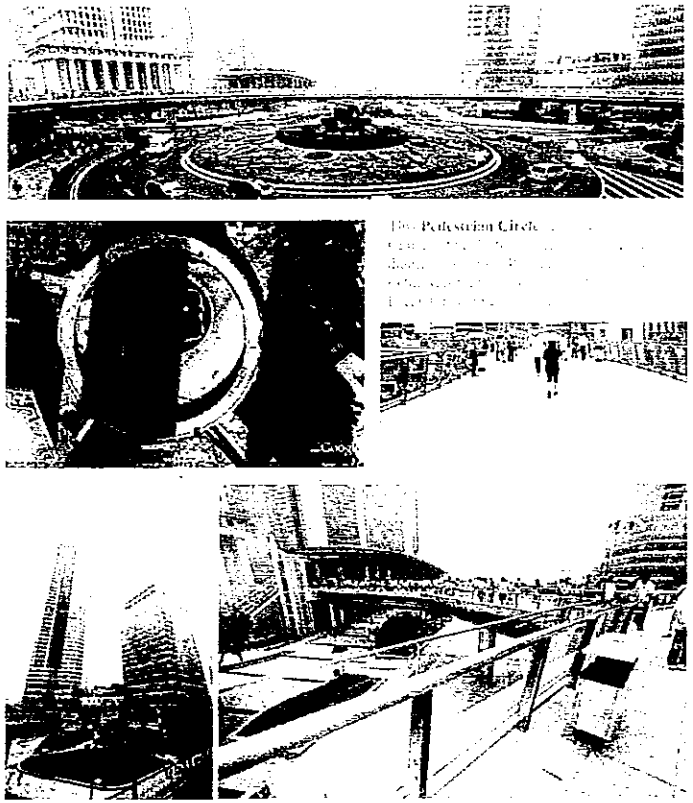
Example Of Pedestrian and Bicycle Only Bridge In Redding



Example Of Pedestrian Access In China



Example Of Pedestrian Access In China



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Transportation Assessment

Appendix B

Aiea -- Pearl City Neighborhood TOD Plan

The following are the tables for the PTAL Analysis of each station:

Leeward Community College:

- PTAL Analysis Existing Conditions Without Rail
- PTAL Analysis TOD Plan With Rail

Pearl Highlands:

- PTAL Analysis Existing Conditions Without Rail
- PTAL Analysis TOD Plan With Rail

Pearlridge:

- PTAL Analysis Existing Conditions Without Rail
- PTAL Analysis TOD Plan With Rail

Appendix B-1: Leeward Community College Station PTAL Analysis
Existing Conditions Without Rail
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
1	0.00	0	41	0.00	0
2	0.00	0	42	0.00	0
3	0.00	0	43	0.00	0
4	0.00	0	44	0.00	0
5	0.00	0	45	0.00	0
6	0.00	0	46	0.00	0
7	0.00	0	47	0.00	0
8	0.00	0	48	3.66	1
9	0.00	0	49	3.76	1
10	0.00	0	50	3.96	1
11	0.00	0	51	0.00	0
12	0.00	0	52	0.00	0
13	0.00	0	53	0.00	0
14	0.00	0	54	0.00	0
15	0.00	0	55	0.00	0
16	0.00	0	56	0.00	0
17	0.00	0	57	0.00	0
18	0.00	0	58	0.00	0
19	0.00	0	59	3.66	1
20	0.00	0	60	3.76	1
21	0.00	0	61	0.00	0
22	0.00	0	62	0.00	0
23	0.00	0	63	0.00	0
24	0.00	0	64	0.00	0
25	0.00	0	65	0.00	0
26	0.00	0	66	0.00	0
27	0.00	0	67	0.00	0
28	0.00	0	68	0.00	0
29	0.00	0	69	0.00	0
30	0.00	0	70	0.00	0
31	0.00	0	71	0.00	0
32	0.00	0	72	0.00	0
33	0.00	0	73	0.00	0
34	0.00	0	74	0.00	0
35	0.00	0	75	0.00	0
36	0.00	0	76	0.00	0
37	0.00	0	77	0.00	0
38	3.66	1	78	0.00	0
39	0.00	0	79	0.00	0
40	0.00	0	80	0.00	0
				Average PTAL:	0.1

Appendix B-2: Leeward Community College Station PTAL Analysis
Aiea-Pearl City Neighborhood Plan Preferred Alternative
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
1	0.00	0	41	0.00	0
2	0.00	0	42	0.00	0
3	0.00	0	43	6.32	2
4	0.00	0	44	8.00	2
5	0.00	0	45	10.91	3
6	0.00	0	46	10.91	3
7	0.00	0	47	8.00	2
8	0.00	0	48	6.32	2
9	0.00	0	49	7.68	2
10	0.00	0	50	6.24	2
11	0.00	0	51	0.00	0
12	0.00	0	52	0.00	0
13	0.00	0	53	5.22	2
14	0.00	0	54	7.06	2
15	0.00	0	55	8.00	2
16	0.00	0	56	8.00	2
17	0.00	0	57	6.32	2
18	0.00	0	58	5.22	2
19	0.00	0	59	6.91	2
20	0.00	0	60	6.17	2
21	0.00	0	61	4.14	1
22	0.00	0	62	5.71	2
23	0.00	0	63	5.71	2
24	0.00	0	64	6.32	2
25	8.00	2	65	6.32	2
26	9.23	2	66	5.22	2
27	0.00	0	67	4.44	1
28	0.00	0	68	3.24	1
29	0.00	0	69	3.24	1
30	0.00	0	70	3.64	1
31	0.00	0	71	5.22	2
32	0.00	0	72	5.22	2
33	0.00	0	73	4.44	1
34	0.00	0	74	4.14	1
35	10.91	3	75	3.64	1
36	10.91	3	76	2.93	1
37	9.23	2	77	4.14	1
38	8.78	2	78	4.14	1
39	7.83	2	79	3.64	1
40	0.00	0	80	2.93	1
				Average PTAL:	1.0

Appendix B-3: Pearl Highlands Station PTAL Analysis
Existing Conditions Without Rail
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
1	0.00	0	41	0.00	0
2	0.00	0	42	0.00	0
3	0.00	0	43	0.00	0
4	0.00	0	44	5.91	2
5	0.00	0	45	5.07	2
6	0.00	0	46	4.74	1
7	0.00	0	47	4.45	1
8	0.00	0	48	3.13	1
9	0.00	0	49	3.50	1
10	0.00	0	50	3.72	1
11	0.00	0	51	0.00	0
12	0.00	0	52	0.00	0
13	0.00	0	53	0.00	0
14	0.00	0	54	0.00	0
15	0.00	0	55	5.91	2
16	0.00	0	56	5.68	2
17	0.00	0	57	5.26	2
18	0.00	0	58	4.90	1
19	0.00	0	59	3.13	1
20	2.70	1	60	3.30	1
21	0.00	0	61	0.00	0
22	0.00	0	62	0.00	0
23	0.00	0	63	0.00	0
24	0.00	0	64	5.68	2
25	0.00	0	65	5.26	2
26	0.00	0	66	4.90	1
27	0.00	0	67	4.59	1
28	2.70	1	68	2.97	1
29	2.83	1	69	0.00	0
30	2.97	1	70	3.66	1
31	0.00	0	71	3.86	1
32	0.00	0	72	0.00	0
33	0.00	0	73	0.00	0
34	0.00	0	74	4.74	1
35	0.00	0	75	4.45	1
36	0.00	0	76	2.83	1
37	2.70	1	77	3.96	1
38	2.83	1	78	4.31	1
39	3.13	1	79	4.59	1
40	3.30	1	80	0.00	0
				Average PTAL:	0.5

Appendix B-4: Pearl Highlands Station PTAL Analysis
Aiea-Pearl City Neighborhood Plan Preferred Alternative
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
1	2.11	1	41	0.00	0
2	2.11	1	42	0.00	0
3	11.53	3	43	0.00	0
4	11.59	3	44	17.81	4
5	0.00	0	45	18.93	4
6	2.11	1	46	20.23	5
7	2.26	1	47	17.81	4
8	11.53	3	48	14.82	3
9	12.38	3	49	16.99	4
10	12.85	3	50	15.71	4
11	13.37	3	51	0.00	0
12	12.47	3	52	0.00	0
13	0.00	0	53	0.00	0
14	0.00	0	54	0.00	0
15	2.45	1	55	15.99	4
16	2.67	1	56	15.99	4
17	14.55	3	57	14.55	3
18	15.23	4	58	13.37	3
19	15.99	4	59	13.55	3
20	15.99	4	60	12.93	3
21	0.00	0	61	0.00	0
22	16.84	4	62	0.00	0
23	17.81	4	63	0.00	0
24	18.93	4	64	13.93	3
25	0.00	0	65	13.93	3
26	15.99	4	66	13.37	3
27	16.84	4	67	12.38	3
28	18.93	4	68	12.54	3
29	15.99	4	69	6.32	2
30	13.60	3	70	7.68	2
31	0.00	0	71	6.24	2
32	0.00	0	72	0.00	0
33	18.93	4	73	0.00	0
34	21.78	5	74	12.38	3
35	23.69	5	75	11.53	3
36	23.69	5	76	11.53	3
37	23.69	5	77	6.91	2
38	19.18	4	78	6.17	2
39	17.81	4	79	3.24	1
40	14.71	3	80	0.00	0
				Average PTAL:	2.4

Appendix B-5: Pearlridge Station PTAL Analysis
Existing Conditions Without Rail
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
1	3.90	1	41	4.50	1
2	3.71	1	42	4.24	1
3	3.62	1	43	4.79	1
4	3.45	1	44	4.37	1
5	4.37	1	45	6.45	2
6	4.01	1	46	6.97	2
7	4.12	1	47	6.97	2
8	3.71	1	48	6.97	2
9	3.45	1	49	0.00	0
10	1.88	1	50	0.00	0
11	1.88	1	51	4.24	1
12	1.88	1	52	4.01	1
13	4.37	1	53	4.37	1
14	4.37	1	54	4.12	1
15	4.37	1	55	6.45	2
16	4.01	1	56	6.97	2
17	3.80	1	57	6.97	2
18	4.46	1	58	6.70	2
19	4.46	1	59	6.70	2
20	4.70	1	60	6.22	2
21	5.13	2	61	0.00	0
22	4.95	1	62	0.00	0
23	4.79	1	63	0.00	0
24	4.64	1	64	0.00	0
25	4.50	1	65	6.00	2
26	5.27	2	66	6.00	2
27	4.97	1	67	5.61	2
28	5.27	2	68	5.27	2
29	6.00	2	69	0.00	0
30	5.80	2	70	0.00	0
31	4.79	1	71	0.00	0
32	4.50	1	72	0.00	0
33	5.13	2	73	0.00	0
34	5.13	2	74	5.27	2
35	4.79	1	75	4.97	1
36	5.80	2	76	4.70	1
37	5.80	2	77	0.00	0
38	6.70	2	78	0.00	0
39	6.45	2	79	0.00	0
40	5.61	2	80	0.00	0
				Average PTAL:	1.2

Appendix B-6: Pearlridge Station PTAL Analysis
Aiea-Pearl City Neighborhood Plan Preferred Alternative
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL	POINT OF INTEREST POI	SUMMARY ACCESSIBILITY INDEX AI	PUBLIC TRANSPORT ACCESSIBILITY LEVEL PTAL
1	9.41	2	41	13.13	3
2	9.27	2	42	14.40	3
3	8.85	2	43	16.79	4
4	5.60	2	44	17.66	4
5	13.89	3	45	25.39	6
6	13.38	3	46	19.90	4
7	13.87	3	47	19.90	4
8	13.54	3	48	17.66	4
9	12.61	3	49	0.00	0
10	13.06	3	50	0.00	0
11	12.61	3	51	12.70	3
12	11.82	2	52	13.60	3
13	15.87	4	53	14.64	3
14	15.62	4	54	16.77	4
15	16.03	4	55	16.77	4
16	15.98	4	56	17.66	4
17	15.27	4	57	16.77	4
18	15.98	4	58	15.27	4
19	15.27	4	59	13.54	3
20	12.20	3	60	13.54	3
21	15.68	4	61	0.00	0
22	15.58	4	62	0.00	0
23	17.65	4	63	0.00	0
24	18.70	4	64	0.00	0
25	21.35	5	65	15.27	4
26	16.77	4	66	13.54	3
27	15.27	4	67	11.82	3
28	17.59	4	68	12.61	3
29	18.64	4	69	0.00	0
30	18.64	4	70	0.00	0
31	11.13	3	71	0.00	0
32	15.25	4	72	0.00	0
33	17.35	4	73	0.00	0
34	21.72	5	74	13.54	3
35	25.39	6	75	12.61	3
36	23.12	5	76	11.82	3
37	21.35	5	77	0.00	0
38	17.66	4	78	0.00	0
39	15.98	4	79	0.00	0
40	15.27	4	80	0.00	0
				Average PTAL:	3.0

Transportation Assessment

Appendix C

Aiea -- Pearl City Neighborhood TOD Plan

The following is a summary of the tables from the POI Calculations:

Leeward Community College:

- POI Calculations Existing Conditions Without Rail
  – 15 pages
- POI Calculations TOD Plan With Rail
  – 40 pages

Pearl Highlands:

- POI Calculations Existing Conditions Without Rail
  – 16 pages
- POI Calculations TOD Plan With Rail
  – 40 pages

Pearlridge:

- POI Calculations Existing Conditions Without Rail
  – 15 pages
- POI Calculations TOD Plan With Rail
  – 40 pages

The above 168 pages are available upon request. The first page for each Station's Existing Conditions and TOD Plan POI series of calculations are included to illustrate the methodology.

Appendix C-1: Leeward Community College Station POI Calculations
Existing Conditions Without Rail
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	DTS-PTD Bus Stop Number SAP	Nearest SAP Mode	LOCATION Longitude	LOCATION Latitude	ROUTES Primary	ROUTES Trips	ROUTES Secondary	ROUTES Trips	Weight	Pathway Walk Time	SCHEDULED WAITING TIME SWT	Access Time	EQUIVALENT DOORSTEP FREQUENCY EDF	ROUTE ACCESSIBILITY INDEX AI	POI SUMMARY ACCESSIBILITY INDEX AI
1	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
1	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
1	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
1	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
2	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
2	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
2	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
2	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
3	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
3	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
3	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
3	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
4	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
4	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
4	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
4	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
5	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
5	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
5	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
5	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
6	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
6	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
6	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
6	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
7	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
7	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
7	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
7	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
8	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
8	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
8	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
8	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
9	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
9	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
9	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
9	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
10	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
10	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
10	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
10	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
11	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
11	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
11	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
11	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
12	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
12	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
12	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
12	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
13	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
13	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
13	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
13	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
14	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
14	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
14	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
14	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00

Appendix C-2: Leeward Community College Station POI Calculations
Aiea-Pearl City Neighborhood Plan Preferred Alternative
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	DTS-FTD Bus Stop Number SAP	Nearest SAP Mode	LOCATION Longitude	LOCATION Latitude	ROUTES Primary	Trips	Secondary	Trips	Weight	Pathway Walk Time	SCHEDULED WAITING TIME SWT	Access Time	EQIVALENT DOORSTEP FREQUENCY EDF	ROUTE ACCESSIBILITY INDEX AI	POI SUMMARY ACCESSIBILITY INDEX AI
1	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
1	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
1	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
2	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
2	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
2	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
3	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
3	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
3	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
4	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
4	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
4	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
5	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
5	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
5	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
6	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
6	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
6	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
7	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
7	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
7	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
8	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
8	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
8	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
9	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
9	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
9	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
10	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
10	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
10	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
11	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
11	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
11	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
12	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
12	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
12	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
13	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
13	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
13	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
14	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
14	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
14	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
15	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
15	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
15	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
16	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
16	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
16	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
17	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
17	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
17	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
18	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
18	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
18	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
19	R06	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
19	679	bus	-157.98	21.39	51	4			0.0	0.0	9.5	9.5	3.16	0.00	
19	679	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00

Appendix C-3: Pearl Highlands Station POI Calculations
Existing Conditions Without Rail
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	DTS-FTD Bus Stop Number SAP	Nearest SAP Mode	LOCATION Longitude	LOCATION Latitude	ROUTES Primary	Trips	Secondary	Trips	Weight	Pathway Walk Time	SCHEDULED WAITING TIME SWT	Access Time	EQIVALENT DOORSTEP FREQUENCY EDF	ROUTE ACCESSIBILITY INDEX AI	POI SUMMARY ACCESSIBILITY INDEX AI
1	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
1	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
1	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
1	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
2	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
2	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
2	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
2	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
3	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
3	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
3	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
3	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
4	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
4	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
4	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
4	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
5	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
5	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
5	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
5	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
6	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
6	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
6	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
6	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
7	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
7	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
7	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
7	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
8	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
8	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
8	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
8	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
9	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
9	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
9	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
9	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
10	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
10	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
10	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
10	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
11	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
11	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
11	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
11	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
12	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
12	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
12	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
12	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
13	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
13	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
13	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
13	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00
14	679	bus	-157.98	21.39	A	4			0.0	0.0	9.5	9.5	3.16	0.00	
14	679	bus	-157.98	21.39			40/40A	2	0.0	0.0	17.0	17.0	1.76	0.00	
14	679	bus	-157.98	21.39			42	2	0.0	0.0	17.0	17.0	1.76	0.00	
14	679	bus	-157.98	21.39			62	3	0.0	0.0	12.0	12.0	2.50	0.00	0.00

Appendix C-4: Pearl Highlands Station POI Calculations
Aiea-Pearl City Neighborhood Plan Preferred Alternative
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	DTS-PTD Bus Stop Number SAP	Nearest SAP Mode	LOCATION		ROUTES				Weight	Pathway Walk Time	SCHEDULED WAITING TIME SWT	Access Time	EQIVALENT DOORSTEP FREQUENCY EDF	ROUTE ACCESSIBILITY INDEX AI	POI SUMMARY ACCESSIBILITY INDEX AI
			Longitude	Latitude	Primary	Trips	Secondary	Trips							
1	R07	rail	-157.98	21.39	rail	20			1.0	12.0	2.3	14.3	2.11	2.11	
1	TC	bus	-157.98	21.39	D	4			0.0	0.0	9.5	9.5	3.16	0.00	
1	TC	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	
1	TC	bus	-157.98	21.39			51	4	0.0	0.0	9.5	9.5	3.16	0.00	
1	TC	bus	-157.98	21.39			83	6	0.0	0.0	7.0	7.0	4.29	0.00	
1	TC	bus	-157.98	21.39			83A	4	0.0	0.0	9.5	9.5	3.16	0.00	
1	TC	bus	-157.98	21.39			84	4	0.0	0.0	9.5	9.5	3.16	0.00	
1	TC	bus	-157.98	21.39			84A	4	0.0	0.0	9.5	9.5	3.16	0.00	
1	TC	bus	-157.98	21.39			98	4	0.0	0.0	9.5	9.5	3.16	0.00	
1	TC	bus	-157.98	21.39			441	4	0.0	0.0	9.5	9.5	3.16	0.00	2.11
2	R07	rail	-157.98	21.39	rail	20			1.0	12.0	2.3	14.3	2.11	2.11	
2	TC	bus	-157.98	21.39	D	4			0.0	0.0	9.5	9.5	3.16	0.00	
2	TC	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	
2	TC	bus	-157.98	21.39			51	4	0.0	0.0	9.5	9.5	3.16	0.00	
2	TC	bus	-157.98	21.39			83	6	0.0	0.0	7.0	7.0	4.29	0.00	
2	TC	bus	-157.98	21.39			83A	4	0.0	0.0	9.5	9.5	3.16	0.00	
2	TC	bus	-157.98	21.39			84	4	0.0	0.0	9.5	9.5	3.16	0.00	
2	TC	bus	-157.98	21.39			84A	4	0.0	0.0	9.5	9.5	3.16	0.00	
2	TC	bus	-157.98	21.39			98	4	0.0	0.0	9.5	9.5	3.16	0.00	
2	TC	bus	-157.98	21.39			441	4	0.0	0.0	9.5	9.5	3.16	0.00	2.11
3	R07	rail	-157.98	21.39	rail	20			1.0	8.0	2.3	10.3	2.93	2.93	
3	TC	bus	-157.98	21.39	D	4			1.0	8.0	9.5	17.5	1.71	1.71	
3	TC	bus	-157.98	21.39			40/40A	3	0.5	8.0	12.0	20.0	1.50	0.75	
3	TC	bus	-157.98	21.39			51	4	0.5	8.0	9.5	17.5	1.71	0.86	
3	TC	bus	-157.98	21.39			83	6	0.5	8.0	7.0	15.0	2.00	1.00	
3	TC	bus	-157.98	21.39			83A	4	0.5	8.0	9.5	17.5	1.71	0.86	
3	TC	bus	-157.98	21.39			84	4	0.5	8.0	9.5	17.5	1.71	0.86	
3	TC	bus	-157.98	21.39			84A	4	0.5	8.0	9.5	17.5	1.71	0.86	
3	TC	bus	-157.98	21.39			98	4	0.5	8.0	9.5	17.5	1.71	0.86	
3	TC	bus	-157.98	21.39			441	4	0.5	8.0	9.5	17.5	1.71	0.86	11.53
4	R07	rail	-157.98	21.39	rail	20			1.0	8.0	2.3	10.3	2.93	2.93	
4	TC	bus	-157.98	21.39	D	4			1.0	8.0	9.5	17.5	1.71	1.71	
4	TC	bus	-157.98	21.39			40/40A	3	0.5	8.0	12.0	20.0	1.50	0.75	
4	TC	bus	-157.98	21.39			51	4	0.5	8.0	9.5	17.5	1.71	0.86	
4	TC	bus	-157.98	21.39			83	6	0.5	8.0	7.0	15.0	2.00	1.00	
4	TC	bus	-157.98	21.39			83A	4	0.5	8.0	9.5	17.5	1.71	0.86	
4	TC	bus	-157.98	21.39			84	4	0.5	8.0	9.5	17.5	1.71	0.86	
4	TC	bus	-157.98	21.39			84A	4	0.5	8.0	9.5	17.5	1.71	0.86	
4	TC	bus	-157.98	21.39			98	4	0.5	8.0	9.5	17.5	1.71	0.86	
4	New	bus	-157.98	21.39			441	4	0.5	7.0	9.5	16.5	1.82	0.91	11.59
5	R07	rail	-157.98	21.39	rail	20			0.0	0.0	2.3	2.3	13.33	0.00	
5	TC	bus	-157.98	21.39	D	4			0.0	0.0	9.5	9.5	3.16	0.00	
5	TC	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	
5	TC	bus	-157.98	21.39			51	4	0.0	0.0	9.5	9.5	3.16	0.00	
5	TC	bus	-157.98	21.39			83	6	0.0	0.0	7.0	7.0	4.29	0.00	
5	TC	bus	-157.98	21.39			83A	4	0.0	0.0	9.5	9.5	3.16	0.00	
5	TC	bus	-157.98	21.39			84	4	0.0	0.0	9.5	9.5	3.16	0.00	
5	TC	bus	-157.98	21.39			84A	4	0.0	0.0	9.5	9.5	3.16	0.00	
5	TC	bus	-157.98	21.39			98	4	0.0	0.0	9.5	9.5	3.16	0.00	
5	TC	bus	-157.98	21.39			441	4	0.0	0.0	9.5	9.5	3.16	0.00	0.00
6	R07	rail	-157.98	21.39	rail	20			1.0	12.0	2.3	14.3	2.11	2.11	
6	TC	bus	-157.98	21.39	D	4			0.0	0.0	9.5	9.5	3.16	0.00	
6	TC	bus	-157.98	21.39			40/40A	3	0.0	0.0	12.0	12.0	2.50	0.00	
6	TC	bus	-157.98	21.39			51	4	0.0	0.0	9.5	9.5	3.16	0.00	
6	TC	bus	-157.98	21.39			83	6	0.0	0.0	7.0	7.0	4.29	0.00	
6	TC	bus	-157.98	21.39			83A	4	0.0	0.0	9.5	9.5	3.16	0.00	
6	TC	bus	-157.98	21.39			84	4	0.0	0.0	9.5	9.5	3.16	0.00	
6	TC	bus	-157.98	21.39			84A	4	0.0	0.0	9.5	9.5	3.16	0.00	
6	TC	bus	-157.98	21.39			98	4	0.0	0.0	9.5	9.5	3.16	0.00	
6	TC	bus	-157.98	21.39			441	4	0.0	0.0	9.5	9.5	3.16	0.00	2.11

Appendix C-5: Pearlridge Station POI Calculations
Existing Conditions Without Rail
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	DTS-PTD Bus Stop Number SAP	Nearest SAP Mode	LOCATION		ROUTES				Weight	Pathway Walk Time	SCHEDULED WAITING TIME SWT	Access Time	EQIVALENT DOORSTEP FREQUENCY EDF	ROUTE ACCESSIBILITY INDEX AI	POI SUMMARY ACCESSIBILITY INDEX AI
			Longitude	Latitude	Primary	Trips	Secondary	Trips							
1	483	bus	-157.95	21.38	53	3			1.0	5.5	12.0	17.5	1.71	1.71	
1	483	bus	-157.95	21.38			40/40A	2	0.5	5.5	17.0	22.5	1.33	0.67	
1	483	bus	-157.95	21.38			42	2	0.5	5.5	17.0	22.5	1.33	0.67	
1	483	bus	-157.95	21.38			62	3	0.5	5.5	12.0	17.5	1.71	0.86	3.90
2	483	bus	-157.95	21.38	53	3			1.0	6.5	12.0	18.5	1.62	1.62	
2	483	bus	-157.95	21.38			40/40A	2	0.5	6.5	17.0	23.5	1.28	0.64	
2	483	bus	-157.95	21.38			42	2	0.5	6.5	17.0	23.5	1.28	0.64	
2	483	bus	-157.95	21.38			62	3	0.5	6.5	12.0	18.5	1.62	0.81	3.71
3	483	bus	-157.95	21.38	53	3			1.0	7.0	12.0	19.0	1.58	1.58	
3	483	bus	-157.95	21.38			40/40A	2	0.5	7.0	17.0	24.0	1.25	0.63	
3	483	bus	-157.95	21.38			42	2	0.5	7.0	17.0	24.0	1.25	0.63	
3	483	bus	-157.95	21.38			62	3	0.5	7.0	12.0	19.0	1.58	0.79	3.62
4	483	bus	-157.95	21.38	53	3			1.0	8.0	12.0	20.0	1.50	1.50	
4	483	bus	-157.95	21.38			40/40A	2	0.5	8.0	17.0	25.0	1.20	0.60	
4	483	bus	-157.95	21.38			42	2	0.5	8.0	17.0	25.0	1.20	0.60	
4	483	bus	-157.95	21.38			62	3	0.5	8.0	12.0	20.0	1.50	0.75	3.45
5	484	bus	-157.95	21.39	53	3			1.0	3.5	12.0	15.5	1.94	1.94	
5	484	bus	-157.95	21.39			40/40A	2	0.5	3.5	17.0	20.5	1.46	0.73	
5	484	bus	-157.95	21.39			42	2	0.5	3.5	17.0	20.5	1.46	0.73	
5	484	bus	-157.95	21.39			62	3	0.5	3.5	12.0	15.5	1.94	0.97	4.37
6	483	bus	-157.95	21.38	53	3			1.0	5.0	12.0	17.0	1.76	1.76	
6	483	bus	-157.94	21.38			40/40A	2	0.5	5.0	17.0	22.0	1.36	0.68	
6	483	bus	-157.94	21.38			42	2	0.5	5.0	17.0	22.0	1.36	0.68	
6	483	bus	-157.94	21.38			62	3	0.5	5.0	12.0	17.0	1.76	0.88	4.01
7	483	bus	-157.95	21.38	53	3			1.0	4.5	12.0	16.5	1.82	1.82	
7	483	bus	-157.94	21.38			40/40A	2	0.5	4.5	17.0	21.5	1.40	0.70	
7	483	bus	-157.94	21.38			42	2	0.5	4.5	17.0	21.5	1.40	0.70	
7	483	bus	-157.94	21.38			62	3	0.5	4.5	12.0	16.5	1.82	0.91	4.12
8	483	bus	-157.95	21.38	53	3			1.0	6.5	12.0	18.5	1.62	1.62	
8	483	bus	-157.94	21.38			40/40A	2	0.5	6.5	17.0	23.5	1.28	0.64	
8	483	bus	-157.94	21.38			42	2	0.5	6.5	17.0	23.5	1.28	0.64	
8	483	bus	-157.94	21.38			62	3	0.5	6.5	12.0	18.5	1.62	0.81	3.71
9	483	bus	-157.95	21.38	53	3			1.0	8.0	12.0	20.0	1.50	1.50	
9	483	bus	-157.94	21.38			40/40A	2	0.5	8.0	17.0	25.0	1.20	0.60	
9	483	bus	-157.94	21.38			42	2	0.5	8.0	17.0	25.0	1.20	0.60	
9	483	bus	-157.94	21.38			62	3	0.5	8.0	12.0	20.0	1.50	0.75	3.45
10	1990	bus	-157.94	21.38	54	3			1.0	4.0	12.0	16.0	1.88	1.88	1.88
11	1990	bus	-157.94	21.38	54	3			1.0	4.0	12.0	16.0	1.88	1.88	1.88
12	1990	bus	-157.94	21.38	54	3			1.0	4.0	12.0	16.0	1.88	1.88	1.88
13	484	bus	-157.95	21.39	53	3			1.0	3.5	12.0	15.5	1.94	1.94	
13	484	bus	-157.95	21.39			40/40A	2	0.5	3.5	17.0	20.5	1.46	0.73	
13	484	bus	-157.95	21.39			42	2	0.5	3.5	17.0	20.5	1.46	0.73	
13	484	bus	-157.95	21.39			62	3	0.5	3.5	12.0	15.5	1.94	0.97	4.37
14	483	bus	-157.95	21.38	53	3			1.0	3.5	12.0	15.5	1.94	1.94	
14	483	bus	-157.94	21.38			40/40A	2	0.5	3.5	17.0	20.5	1.46	0.73	
14	483	bus	-157.94	21.38			42	2	0.5	3.5	17.0	20.5	1.46	0.73	
14	483	bus	-157.94	21.38			62	3	0.5	3.5	12.0	15.5	1.94	0.97	4.37
15	483	bus	-157.95	21.38	53	3			1.0	3.5	12.0	15.5	1.94	1.94	
15	483	bus	-157.94	21.38			40/40A	2	0.5	3.5	17.0	20.5	1.46	0.73	
15	483	bus	-157.94	21.38			42	2	0.5	3.5	17.0	20.5	1.46	0.73	
15	483	bus	-157.94	21.38			62	3	0.5	3.5	12.0	15.5	1.94	0.97	4.37
16	483	bus	-157.95	21.38	53	3			1.0	5.0	12.0	17.0	1.76	1.76	
16	483	bus	-157.94	21.38			40/40A	2	0.5	5.0	17.0	22.0	1.36	0.68	
16	483	bus	-157.94	21.38			42	2	0.5	5.0	17.0	22.0	1.36	0.68	
16	483	bus	-157.94	21.38			62	3	0.5	5.0	12.0	17.0	1.76	0.88	4.01

Appendix C-6: Pearlridge Station POI Calculations
Aiea-Pearl City Neighborhood Plan Preferred Alternative
As Measured During The Morning Inbound Peak Hour (6:00am – 7:00am)

POINT OF INTEREST POI	OTS-PTO Bus Stop Number SAP	Nearest SAP Mode	LOCATION Longitude	LOCATION Latitude	ROUTES Primary	ROUTES Trips	ROUTES Secondary	ROUTES Trips	Weight	Pathway Walk Time	SCHEDULED WAITING TIME SWT	Access Time	EQUIVALENT DOORSTEP FREQUENCY EDF	ROUTE ACCESSIBILITY INDEX AI	POI SUMMARY ACCESSIBILITY INDEX AI
1	R08	rail	-157.94	21.38	rail	20			1.0	9.5	2.3	11.8	2.55	2.55	
1	483	bus	-157.95	21.38	51	4			1.0	5.5	9.5	15.0	2.00	2.00	
1	483	bus	-157.95	21.38			40/40A	3	0.5	5.5	12.0	17.5	1.71	0.86	
1	483	bus	-157.95	21.38			544	2	0.5	5.5	17.0	22.5	1.33	0.67	
1	483	bus	-157.95	21.38			545	2	0.5	5.5	17.0	22.5	1.33	0.67	
1	483	bus	-157.95	21.38			546	2	0.5	5.5	17.0	22.5	1.33	0.67	
1	483	bus	-157.95	21.38			547	4	0.5	5.5	9.5	15.0	2.00	1.00	
1	483	bus	-157.95	21.38			548	4	0.5	5.5	9.5	15.0	2.00	1.00	9.41
2	R08	rail	-157.94	21.38	rail	20			1.0	8.5	2.3	10.8	2.79	2.79	
2	483	bus	-157.95	21.38	51	4			1.0	6.5	9.5	16.0	1.88	1.88	
2	483	bus	-157.95	21.38			40/40A	3	0.5	6.5	12.0	18.5	1.62	0.81	
2	483	bus	-157.95	21.38			544	2	0.5	6.5	17.0	23.5	1.28	0.64	
2	483	bus	-157.95	21.38			545	2	0.5	6.5	17.0	23.5	1.28	0.64	
2	483	bus	-157.95	21.38			546	2	0.5	6.5	17.0	23.5	1.28	0.64	
2	483	bus	-157.95	21.38			547	4	0.5	6.5	9.5	16.0	1.88	0.94	
2	483	bus	-157.95	21.38			548	4	0.5	6.5	9.5	16.0	1.88	0.94	9.27
3	R08	rail	-157.94	21.38	rail	20			1.0	9.5	2.3	11.8	2.55	2.55	
3	483	bus	-157.95	21.38	51	4			1.0	7.0	9.5	16.5	1.82	1.82	
3	483	bus	-157.95	21.38			40/40A	3	0.5	7.0	12.0	19.0	1.58	0.79	
3	483	bus	-157.95	21.38			544	2	0.5	7.0	17.0	24.0	1.25	0.63	
3	483	bus	-157.95	21.38			545	2	0.5	7.0	17.0	24.0	1.25	0.63	
3	483	bus	-157.95	21.38			546	2	0.5	7.0	17.0	24.0	1.25	0.63	
3	483	bus	-157.95	21.38			547	4	0.5	7.0	9.5	16.5	1.82	0.91	
3	483	bus	-157.95	21.38			548	4	0.5	7.0	9.5	16.5	1.82	0.91	8.85
4	R08	rail	-157.94	21.38	rail	20			1.0	10.0	2.3	12.3	2.45	2.45	
4	1990	bus	-157.94	21.39	548	4			1.0	3.0	9.5	12.5	2.40	2.40	
4	1990	bus	-157.94	21.39			546	2	0.5	3.0	17.0	20.0	1.50	0.75	5.60
5	R08	rail	-157.94	21.39	rail	20			1.0	8.0	2.3	10.3	2.93	2.93	
5	484	bus	-157.95	21.39	51	4			1.0	3.0	9.5	12.5	2.40	2.40	
5	484	bus	-157.95	21.39			40/40A	3	0.5	3.0	12.0	15.0	2.00	1.00	
5	691	bus	-157.94	21.38			54	4	0.5	8.0	9.5	17.5	1.71	0.86	
5	691	bus	-157.94	21.38			541	4	0.5	8.0	9.5	17.5	1.71	0.86	
5	691	bus	-157.94	21.38			542	2	0.5	8.0	17.0	25.0	1.20	0.60	
5	691	bus	-157.94	21.38			543	2	0.5	8.0	17.0	25.0	1.20	0.60	
5	484	bus	-157.95	21.39			544	2	0.5	3.0	17.0	20.0	1.50	0.75	
5	484	bus	-157.95	21.39			545	2	0.5	3.0	17.0	20.0	1.50	0.75	
5	484	bus	-157.95	21.39			546	2	0.5	3.0	17.0	20.0	1.50	0.75	
5	484	bus	-157.95	21.39			547	4	0.5	3.0	9.5	12.5	2.40	1.20	
5	484	bus	-157.95	21.39			548	4	0.5	3.0	9.5	12.5	2.40	1.20	13.89
6	R08	rail	-157.94	21.38	rail	20			1.0	7.0	2.3	9.3	3.24	3.24	
6	483	bus	-157.95	21.38	51	4			1.0	5.0	9.5	14.5	2.07	2.07	
6	483	bus	-157.95	21.38			40/40A	3	0.5	5.0	12.0	17.0	1.76	0.88	
6	691	bus	-157.94	21.38			54	4	0.5	7.0	9.5	16.5	1.82	0.91	
6	691	bus	-157.94	21.38			541	4	0.5	7.0	9.5	16.5	1.82	0.91	
6	691	bus	-157.94	21.38			542	2	0.5	7.0	17.0	24.0	1.25	0.63	
6	691	bus	-157.94	21.38			543	2	0.5	7.0	17.0	24.0	1.25	0.63	
6	483	bus	-157.95	21.38			544	2	0.5	5.0	17.0	22.0	1.36	0.68	
6	483	bus	-157.95	21.38			545	2	0.5	5.0	17.0	22.0	1.36	0.68	
6	483	bus	-157.95	21.38			546	2	0.5	5.0	17.0	22.0	1.36	0.68	
6	483	bus	-157.95	21.38			547	4	0.5	5.0	9.5	14.5	2.07	1.03	
6	483	bus	-157.95	21.38			548	4	0.5	5.0	9.5	14.5	2.07	1.03	13.38

Transportation Assessment

Appendix D

Aiea -- Pearl City Neighborhood TOD Plan

The following are the tables for the Case Study Traffic Impact Analysis:

1. Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments By Land Use Type Based Upon The Aiea - Pearl City Neighborhood TOD Preferred Alternative. 5 page table.

2. Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments By Land Use Type Based Upon Developer Master Plan Conceptual Proposal. 5 page table.

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon The Aiea / Pearl City Neighborhood TOD Preferred Alternative

PROJECT PROGRAM	BUILD OUT SIZE OF DEVELOPMENT				ITE VEHICLE TRIP GENERATION RATE [illegible]				
LAND USE TYPE [illegible]	AREA [illegible] Total Land (Square Feet)	AREA [illegible] Floor Area (Square Feet)	AREA [illegible] Total (Acres)	UNITS [illegible] Number	Code	Type	Weekday	AM Weekday Peak Hour	PM Weekday Peak Hour
Residential									
Multi-Family				261	230	Residential Condominium/Townhouse	5.86/DU	0.44/DU	0.52/DU
High Density MUM Family				865	232	High-Rise Residential Condominium/Townhouse	4.18/DU	0.34/DU	0.39/DU
Residential Total				1,126					
Commercial									
Retail - ground floor of mixed use		43,571			820	Shopping Center [illegible]	.04294/sq ft.	.00103/sq ft.	.00375/sq ft.
Retail - with site parking		131,303			820	Shopping Center [illegible]	.04294/sq ft.	.00103/sq ft.	.00375/sq ft.
Commercial Total		174,874							
Totals									

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon The Alea / Pearl City Neighborhood TOD Preferred Alternative

PROJECT PROGRAM	MASTER PLAN WEEKDAY DAILY TRIPS															
	A	B	C		D		E		F		G		H	I	J
	ADJUSTMENTS TO ITE VEHICLE TRIPS (calculated as a percent of column "B")														
LAND USE TYPE [1]	ITE Vehicle Trip Generation Rate (Vehicle Trips Per Day Per Measurement Unit)	Maximum External Vehicle Trips (Vehicle Trips Per Day)	Internal Capture Vehicle Trips [2]		Pass-By Vehicle Trips [3]		Transit Mode Reduction [4]		Pedestrian and Bicycle Mode Reduction [5]		Other TDM Alternative Mode Reduction [6]		Total External Vehicle Trip Adjustments (C+D+E+F+G)	Overall Trip Reduction Rate	Project Estimated External Vehicle Trips (B-H)
			%	No.	%	No.	%	No.	%	No.	%	No.			
Residential															
Multi-Family	5.86	1,529	0.15	229	0.00	0	0.10	153	0.00	0	0.25	382	765	0.50	765
High Density Multi Family	4.18	3,616	0.15	542	0.00	0	0.10	362	0.00	0	0.25	904	1,808	0.50	1,808
Residential Total		5,145	0.15	772	0.00	0	0.10	515	0.00	0	0.25	1,286	2,573	0.50	2,573
Commercial															
Retail - ground floor of mixed use	0.04254	1,871	0.36	674	0.00	0	0.05	94	0.09	168	0.25	468	1,404	0.75	467
Retail - with site parking	0.04294	5,638	0.10	564	0.25	1,410	0.10	564	0.00	0	0.10	564	3,101	0.55	2,537
Commercial Total		7,509	0.16	1,237	0.19	1,410	0.09	657	0.02	168	0.14	1,032	4,505	0.60	3,004
Totals		12,654	0.16	2,009	0.11	1,410	0.09	1,172	0.01	168	0.18	2,318	7,078	0.56	5,576

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon The Alea / Pearl City Neighborhood TOD Preferred Alternative

PROJECT PROGRAM	MASTER PLAN WEEKDAY AM PEAK HOUR TRIPS														
	A	B	C		D		E		F		G		H	I	J
	ADJUSTMENTS TO ITE VEHICLE TRIPS (calculated as a percent of column "B")														
LAND USE TYPE [1]	ITE Vehicle Trip Generation Rate (Vehicle Trips Per AM Peak Hour Per Measurement Unit)	Maximum Vehicle Trips (Vehicle Trips Per Hour)	Internal Capture Vehicle Trips [2]		Pass-By Vehicle Trips [3]		Transit Mode Reduction [4]		Pedestrian and Bicycle Mode Reduction [5]		Other TDM Alternative Mode Reduction [6]		Total External Vehicle Trip Adjustments (C+D+E+F+G)	Overall Trip Reduction Rate	Project Estimated External Vehicle Trips (B-H)
			%	No.	%	No.	%	No.	%	No.	%	No.			
Residential															
Multi-Family	0.44	115	0.15	17	0.00	0	0.10	11	0.00	0	0.25	29	57	0.50	57
High Density Multi Family	0.34	294	0.15	44	0.00	0	0.10	29	0.00	0	0.25	74	147	0.50	147
Residential Total		409	0.15	61	0.00	0	0.10	41	0.00	0	0.25	102	204	0.50	204
Commercial															
Retail - ground floor of mixed use	0.00103	45	0.36	16	0.00	0	0.05	2	0.09	4	0.25	11	34	0.77	10
Retail - with site parking	0.00103	135	0.10	14	0.25	34	0.10	14	0.00	0	0.10	14	75	0.55	60
Commercial Total		180	0.16	30	0.19	34	0.09	16	0.02	4	0.14	25	109	0.61	71
Totals		589	0.15	91	0.06	34	0.10	57	0.01	4	0.22	127	314	0.53	275

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon The Alea / Pearl City Neighbohood TOD Preferred Alternative

PROJECT PROGRAM	MASTER PLAN WEEKDAY PM PEAK HOUR TRIPS														
	A	B	C		D		E		F		G		H	I	J
			ADJUSTMENTS TO ITE VEHICLE TRIPS (calculated as a percent of column "B")												
LAND USE TYPE (1)	ITE Vehicle Trip Generation Rate (Vehicle Trips Per PM Peak Hour Per Measurement Unit)	Maximum Vehicle Trips (Vehicle Trips Per Hour)	Internal Capture Vehicle Trips (2)(3)		Pass-By Vehicle Trips (4)(5)		Transit Mode Reduction (6)(7)(8)		Pedestrian and Bicycle Mode Reduction (9)(10)		Other TDM Alternative Mode Reduction (11)(12)		Total External Vehicle Trip Adjustments (C+D+E+F+G)	Overall Trip Reduction Rate	Project Estimated External Vehicle Trips (B-H)
			%	No.	%	No.	%	No.	%	No.	%	No.			
Residential															
Multi Family	0.52	136	0.15	20	0.00	0	0.10	14	0.00	0	0.25	34	68	0.50	68
High Density Multi Family	0.38	329	0.15	49	0.00	0	0.10	33	0.00	0	0.25	82	164	0.50	164
Residential Total		464	0.15	70	0.00	0	0.10	46	0.00	0	0.25	116	232	0.50	232
Commercial															
Retail - ground floor of mixed use	0.00375	163	0.36	59	0.00	0	0.05	8	0.09	15	0.25	41	123	0.75	40
Retail - with site parking	0.00375	492	0.10	49	0.25	123	0.10	49	0.00	0	0.10	49	271	0.55	221
Commercial Total		656	0.18	108	0.19	123	0.09	57	0.02	15	0.14	90	395	0.60	261
Totals		1,120	0.16	178	0.11	123	0.09	104	0.01	15	0.18	206	627	0.56	493

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon The Alea / Pearl City Neighbohood TOD Preferred Alternative

Notes:
1) Source: Farm Partners LLC web site, May, 2010.
2) Source: ITE Trip Generation 7th Edition.
3) Source: VDOT, Required Elements Of A Traffic Impact Analysis - Administrative Guidelines; July 2008; page 10. 25% of vehicle trips may be considered pass-by for shopping centers.
4) Source: VDOT, Required Elements Of A Traffic Impact Analysis - Administrative Guidelines; July 2008; page 9. 15% of vehicle trips may be internal for mixed-use residential components.
5) Source: Adjusting Site-Level Vehicle Trip Generation Using URBEMIS; Nelson/Nygaard Consulting Associates; August 2005; page 3.
6) Source: Transportation Impact Analyses for Site Developments; ITE; 2003; pages 71-72. 25% of vehicle trips in peak periods if conditions specified are achieved.
7) Source: ITE Trip Generation Handbook Second Edition; June 2004; Appendix B (ODOT/OLCD); page 125. 10% of vehicle trips may be considered to be by transit if specified conditions are satisfied.
8) Source: ITE Trip Generation Handbook Second Edition; June 2004; Appendix C (FDOT); page 129-131. 36% of vehicle trips may be considered internal trips if comparable conditions are proposed.
9) Source: Traditional Neighborhood Development Trip Generation Study; Khattak et al; February 2005; page v. 20.2% internal capture observed for TND, comparable to the project's concept.
10) Source: TCRP Report 128, Effects of TOD on Housing, Parking, and Travel; pages 69-80.
11) Source: Adjusting Site-Level Vehicle Trip Generation Using URBEMIS; Nelson/Nygaard Consulting Associates; August 2005; pages14-15.
12) Assumption: Maximum vehicle trip reduction possible is reduced to avoid double counting with other related variables.
13) Assumption: Many pedestrian and bicycle trips have already been accounted for through the use of "high-rise" ITE land use codes and adjustement for internal trips in column C.
14) Calculations: Formulas may produce differences due to rounding.

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon Developer Master Plan Conceptual Proposal

PROJECT PROGRAM	BUILD OUT SIZE OF DEVELOPMENT				ITE VEHICLE TRIP GENERATION RATE [illegible]				
	AREA [illegible]			UNITS [illegible]					
LAND USE TYPE [illegible]	Total Land (Square Feet)	Floor Area (Square Feet)	Total (Acres)	Number	Code	Type	Weekday	AM Weekday Peak Hour	PM Weekday Peak Hour
Residential									
High Density Multi Family				1,806	232	High-Rise Residential Condominium/Townhouse	4.18/DU	0.34/DU	0.38/DU
Residential Total				1,806					
Commercial									
Retail - with site parking		170,000			820	Shopping Center [illegible]	.04294/sq.ft.	.00103/sq.ft.	.04375/sq.ft.
Office - with site parking		30,000			710	General Office Building	.01101/sq.ft.	.00152/sq.ft.	.00149/sq.ft.
Commercial Total		200,000							
Totals									

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon Developer Master Plan Conceptual Proposal

PROJECT PROGRAM	MASTER PLAN WEEKDAY DAILY TRIPS														
	A	B	C		D		E		F		G		H	I	J
			ADJUSTMENTS TO ITE VEHICLE TRIPS (calculated as a percent of column "B")												
			Internal Capture Vehicle Trips [illegible]		Pass-By Vehicle Trips [illegible]		Transit Mode Reduction [illegible]		Pedestrian and Bicycle Mode Reduction [illegible]		Other TDM Alternative Mode Reduction [illegible]				
LAND USE TYPE [illegible]	ITE Vehicle Trip Generation Rate (Vehicle Trips Per Day Per Measurement Unit)	Maximum External Vehicle Trips (Vehicle Trips Per Day)	%	No.	%	No.	%	No.	%	No.	%	No.	Total External Vehicle Trip Adjustments (C+D+E+F+G)	Overall Trip Reduction Rate	Project Estimated External Vehicle Trips (B-H)
Residential															
High Density Multi Family	4.18	7,524	0.15	1,129	0.00	0	0.10	752	0.00	0	0.25	1,881	3,762	0.50	3,762
Residential Total		7,524	0.15	1,129	0.00	0	0.10	752	0.00	0	0.25	1,881	3,762	0.50	3,762
Commercial															
Retail - with site parking	0.04294	7,300	0.10	730	0.25	1,825	0.10	730	0.00	0	0.10	730	4,015	0.55	3,284
Office - with site parking	0.01101	330	0.10	33	0.00	0	0.10	33	0.00	0	0.10	33	99	0.30	231
Commercial Total		7,630	0.10	763	0.24	1,825	0.10	763	0.00	0	0.10	763	4,115	0.54	3,515
Totals		15,154	0.12	1,892	0.12	1,825	0.10	1,515	0.00	0	0.17	2,644	7,877	0.52	7,277

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments By Land Use Type Based Upon Developer Master Plan Conceptual Proposal

PROJECT PROGRAM	MASTER PLAN WEEKDAY AM PEAK HOUR TRIPS															
	A	B	C		D		E		F		G		H	I	J
			ADJUSTMENTS TO ITE VEHICLE TRIPS (calculated as a percent of column "B")												
LAND USE TYPE [1]	ITE Vehicle Trip Generation Rate (Vehicle Trips Per AM Peak Hour Per Measurement Unit)	Maximum Vehicle Trips (Vehicle Trips Per Hour)	Internal Capture Vehicle Trips [2][3][4]		Pass-By Vehicle Trips [5][6]		Transit Mode Reduction [7][8][9][10]		Pedestrian and Bicycle Mode Reduction [11][12]		Other TDM Alternative Mode Reduction [13][14]		Total External Vehicle Trip Adjustments (C+D+E+F+G)	Overall Trip Reduction Rate	Project Estimated External Vehicle Trips (B-H)
			%	No.	%	No.	%	No.	%	No.	%	No.			
Residential															
High Density Multi Family	0.34	612	0.15	92	0.00	0	0.10	61	0.00	0	0.25	153	306	0.50	306
Residential Total		612	0.15	92	0.00	0	0.10	61	0.00	0	0.25	153	306	0.50	306
Commercial															
Retail - with site parking	0.00103	175	0.10	18	0.25	44	0.10	18	0.00	0	0.10	18	97	0.55	78
Office - with site parking	0.00195	47	0.10	5	0.00	0	0.10	5	0.00	0	0.10	5	14	0.31	32
Commercial Total		222	0.10	22	0.20	44	0.10	22	0.00	0	0.10	22	111	0.50	110
Totals		834	0.14	114	0.05	44	0.10	83	0.00	0	0.21	175	417	0.50	418

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments By Land Use Type Based Upon Developer Master Plan Conceptual Proposal

PROJECT PROGRAM	MASTER PLAN WEEKDAY PM PEAK HOUR TRIPS															
	A	B	C		D		E		F		G		H	I	J
			ADJUSTMENTS TO ITE VEHICLE TRIPS (calculated as a percent of column "B")												
LAND USE TYPE [1]	ITE Vehicle Trip Generation Rate (Vehicle Trips Per PM Peak Hour Per Measurement Unit)	Maximum Vehicle Trips (Vehicle Trips Per Hour)	Internal Capture Vehicle Trips [2][3][4]		Pass-By Vehicle Trips [5][6]		Transit Mode Reduction [7][8][9][10]		Pedestrian and Bicycle Mode Reduction [11][12]		Other TDM Alternative Mode Reduction [13][14]		Total External Vehicle Trip Adjustments (C+D+E+F+G)	Overall Trip Reduction Rate	Project Estimated External Vehicle Trips (B-H)
			%	No.	%	No.	%	No.	%	No.	%	No.			
Residential															
High Density Multi Family	0.34	684	0.15	103	0.00	0	0.10	68	0.00	0	0.25	171	342	0.50	342
Residential Total		684	0.15	103	0.00	0	0.10	68	0.00	0	0.25	171	342	0.50	342
Commercial															
Retail - with site parking	0.00375	638	0.10	64	0.25	159	0.10	64	0.00	0	0.10	64	351	0.55	286
Office - with site parking	0.00149	45	0.10	4	0.00	0	0.10	4	0.00	0	0.10	4	14	0.31	31
Commercial Total		682	0.10	68	0.23	159	0.10	68	0.00	0	0.10	68	365	0.53	317
Totals		1,366	0.13	171	0.12	159	0.10	137	0.00	0	0.18	239	707	0.52	659

Kam Drive-In Redevelopment Site Vehicle Trip Generation and Adjustments
By Land Use Type Based Upon Developer Master Plan Conceptual Proposal

Notes: 1) Source: Form Partners LLC web site, May, 2010.
2) Source: *ITE Trip Generation 7th Edition.*
3) Source: VDOT, Required Elements Of A Traffic Impact Analysis - Administrative Guidelines; July 2008; page 10. 25% of vehicle trips may be considered pass-by for shopping centers.
4) Source: VDOT, Required Elements Of A Traffic Impact Analysis - Administrative Guidelines; July 2008; page 8. 15% of vehicle trips may be internal for mixed-use residential components.
5) Source: Adjusting Site-Level Vehicle Trip Generation Using URBEMIS; Nelson/Nygaard Consulting Associates; August 2005; page 3.
6) Source: Transportation Impact Analyses for Site Development ITE; 2005; pages 71-72. 25% of vehicle trips in peak periods if conditions specified are achieved.
7) Source: ITE Trip Generation Handbook Second Edition; June 2004; Appendix B (ODOT/DLCD); page 125. 10% of vehicle trips may be considered to be by transit if specified conditions are satisfied.
8) Source: ITE Trip Generation Handbook Second Edition; June 2004; Appendix C (FDOT); page 129-131. 36% of vehicle trips may be considered internal trips if comparable conditions are proposed.
9) Source: Traditional Neighborhood Development Trip Generation Study; Khattak et al; February 2005; page v. 20.2% internal capture observed for TND, comparable to the project's concept.
10) Source: TCRP Report 128, Effects of TOD on Housing, Parking, and Travel; pages 69-80.
11) Source: Adjusting Site-Level Vehicle Trip Generation Using URBEMIS; Nelson/Nygaard Consulting Associates; August 2005; pages14-15.
12) Assumption: Maximum vehicle trip reduction possible is reduced to avoid double counting with other related variables.
13) Assumption: Many pedestrian and bicycle trips have already been accounted for through the use of "high-rise" ITE land use codes and adjustment for internal trips in column C.
14) Calculations: Formulas may produce differences due to rounding.

Transportation Assessment

Appendix E

Aiea -- Pearl City Neighborhood TOD Plan

The following contains:

"Measuring Public Transport Accessibility Levels – PTALs"

This summary methodology report was published as Appendix B of "Transport Assessment Best Practice" prepared by Transport for London dated April 2010. It is the basis for the PTAL methodology used to conduct the transportation assessment for the Aiea-Pearl City Neighborhood TOD Preferred Alternative.

Measuring Public Transport Accessibility Levels

PTALs

Summary

Transport for London

April 2010

Measuring Public Transport Accessibility Levels

Overview

Public Transport Accessibility Levels (PTALS) are a detailed and accurate measure of the accessibility of a point to the public transport network, taking into account walk access time and service availability. The method is essentially a way of measuring the density of the public transport network at any location within Greater London.

The current methodology was developed in 1992, by the London Borough of Hammersmith and Fulham. The model has been thoroughly reviewed and tested, and has been agreed by the London Borough-led PTAL development group as the most appropriate for use across London.

Walk times are calculated from specified point(s) of interest to all public transport access points: bus stops, rail stations, light rail stations, underground stations and Tramlink halts, within pre-defined catchments. The PTAL then incorporates a measure of service frequency by calculating an average waiting time based on the frequency of services at each public transport access point. A reliability factor is added and the total access time is calculated. A measure known as an Equivalent Doorstep Frequency (EDF) is then produced for each point. These are summed for all routes within the catchment and the PTALs for the different modes (bus, rail, etc) are then added to give a single value. The PTAL is categorized in 6 levels, 1 to 6 where 6 represents a high level of accessibility and 1 a low level of accessibility. Levels 1 and 6 have been further sub-divided into 2 sub-levels to provide greater clarity.

The measure therefore reflects:

- Walking time from the point-of interest to the public transport access points;
- The reliability of the service modes available;
- The number of services available within the catchment; and
- The level of service at the public transport access points - i.e. average waiting time.

It does not consider:

- The speed or utility of accessible services;
- Crowding, including the ability to board services; or,
- Ease of interchange.

The PTAL methodology was developed for London where a dense integrated public transport network means that nearly all destinations can be reached within a reasonable amount of time. Research using the ATOS (Access to Opportunities and Services) methodology shows that there is a strong correlation between PTALs and the time taken to reach key services – i.e. high PTAL areas generally have good access to services and low PTAL areas have poor access to services.

Components of the PTAL Method

The process can be broken down into a series of stages:

- Define the point of interest
- Calculate the walk access times from the Point of Interest (POI) to the service access points (SAPs)
- Identify valid routes at each SAP and calculate average wait time
- For each valid route at the SAPs calculate the minimum total access time
- Convert total access times to the Equivalent Doorstop Frequencies - to compare the benefits offered by routes at different distances,
- Sum all EDFs with a weighting factor in favour of the most dominant route for each mode
- PTALs are then determined using 6 banded levels.

Define the Points of Interest

The exact location of the point of interest may have a considerable bearing on the final PTAL score. The proximity of local public transport services and the nature of the local walk network will vary from point to point. If the PTAL is being calculated for a large development, for example a new supermarket, a number of points may be required to reflect different PTALs across the area.

Calculate the walk access times

Public transport access points
There are approximately 12,000 public transport network stops or access points within Greater London. Station locations are based on station entrances. Bus access points represent a pair or group of bus stops. For instance where there is a stop either side of the road for each service direction there would be one SAP. Similarly outside a rail station, where there may be two or more stops, a single SAP is generally used to represent this cluster of stops.

Walk access times
Walk access times are measured from the POI to the SAPs using the Ordnance Survey's representation of the road network - ITN (Integrated Transport Network). Distances between the POI and the SAPs are converted to a measure of time using an assumed average walk speed of 4.8 kph.

A number of parameters define the extent of the walk catchment area. For buses the maximum walk time is defined as 8 minutes or a distance of 640 metres. For rail, underground and light rail services the maximum walking time is defined as being 12 minutes or a walking distance of 960 metres. Any SAPs beyond these distances are rejected.

Table 1 below summarises the walk speed, maximum walk distances and reliability factors used in the calculations.

Table 1 Model Parameters

Parameter	Unit	Value
Walk Speed	Km/Hr	4.8
Walk Speed	Metres/Minute	80
Bus		
Reliability	Minutes	2
Maximum Walk Time	Minutes	8
Maximum Walk Distance	Metres	640
Rail		
Reliability	Minutes	0.75
Maximum Walk Time	Minutes	12
Maximum Walk Distance	Metres	960

Identify Valid Routes

Routes are identified for each valid SAP:

- The routes depend on the time period chosen. Generally service frequency data is selected from the morning peak period, specifically between 08.15 to 09.15;
- For each POI route information is only considered once. Where a route occurs twice or more - because it serves more than one SAP within the POI catchment area - the SAP that is nearest to the POI is used;
- Within each route (for example, the Victoria Underground line) different 'run' patterns are considered as separate entities with separate frequency patterns;
- At any SAP, routes will normally be bi-directional. In TfL's PTAL calculator it is the direction with the highest frequency that is considered in the model;
- For train services only those routes with at least 2 stops within the Greater London boundary (i.e. the origin stop and at least one other station) are considered. This is particularly significant for POIs where the SAPS include London major termini stations.

Bus frequency data is derived from TfL's BusNet system. This is a comprehensive database giving a global view of current bus and tram routes and their geographic routeings and services. Service information is based on the contractual requirements agreed between the operators and TfL and is therefore regarded as the most reliable data source available within TfL for calculating PTALs. Timetables offer a range of bus time intervals and can give the impression that higher frequency levels are possible. These times though are designed to reflect local road and traffic conditions which can change from day to day.

Table 2 below shows how the Public Transport Accessibility Index is built up, for a point served by 4 bus services and an Underground station. Note that the Northern Line branches are treated as separate services.

Table 2 PTAL calculation for a single point

Parameters	
Walk Speed (metres/min)	80
Bus reliability (mins)	2
Rail reliability (mins)	0.75
Peak hour services	

Site Details

New Offices X 526910 Y 180652

Site	Services	Stop	Route	Distance	Frequency	Weight	Walk Time	SWT	Access	EDF	Accessibility Index
New Offices	Bus Services	TW08	F12	[illegible]	4	0.5	3.78	9.50	13.28	2.26	1.13
		TW04	3A	403	6	0.5	5.10	7.00	12.10	2.49	1.24
		TW04	23	406	10	1	5.13	5.00	10.13	2.97	2.97
		TW03	125	511	6	0.5	6.39	7.50	13.89	2.24	1.12
	Rail/UL/DLR	East Finchley via CX		[illegible]	9	0.5	8.74	4.03	12.72	2.34	1.17
		via Bank		699	9	1	8.74	4.03	12.62	2.34	2.34
											9.97

Calculating Total Access Time

Total access time is made up of a combination of factors: combining the walk time from the POI to the SAP and the time spent waiting at the SAP for the desired service to arrive.

Total Access Time = Walk Time + Average Waiting Time

BAverage Waiting Time
Waiting time is the average time between when a passenger arrives at a stop or station, and the arrival of the desired service. In PTALs passengers are assumed to arrive at the SAP at random.

For each selected route the scheduled waiting time (SWT) is calculated. This is estimated as half the headway (i.e. the interval between services,) so SWT = 0.5 * (60/Frequency).

Thus a 10 minute service frequency (6 buses per hour) would give an SWT of 5 - on average a passenger would have to wait 5 minutes for a bus/train to appear.

To derive the Average Waiting Time, reliability factors are applied to the SWT according to the mode of transport used. The regularity of buses, underground and rail services are affected by a variety of factors, with bus services the worst affected. To allow for reliability additional wait times assumed are 2 minutes for buses and 0.75 minutes for rail services.

Calculating Equivalent Doorstep Frequency

The access time is converted to an Equivalent Doorstep Frequency (EDF) where:

EDF = 30/Total Access Time (minutes)

This treats access time as a notional Average Waiting Time as though the route was available at the "doorstep" of the selected POI.

Calculating the Accessibility Index for the POI

Summation of the EDF values gives the accessibility index. There are a number of additional factors that should be considered:

- Routes often travel in parallel for some distance so the range and frequency of destinations are likely to be less than that suggested by the number of routes included in the calculation.
- Travellers often have to change routes in order to reach the desired destination - this can add significant delays to the journey

Halving the EDF values for all but the most accessible or dominant route for each transport mode compensates for these factors. Transport modes are divided into three groups:

- Buses
- National Rail
- LUL – all LUL services together with DLR and Tramlink services

Thus for a single transport mode the AIs can be calculated using the following formula:

$$AI_{mode} = EDF_{max} + (0.5 * \text{All other EDFs})$$

Calculating the overall accessibility index is a sum of the individual AIs over all modes:

$$AI_{poi} = \sum(AI_{mode1} + AI_{mode1} + AI_{mode2} + AI_{mode3} \ldots AI_{mode\ n})$$

PTALs

The final formula given above calculates the PTAI - the Public Transport Accessibility Index. These indices can now be allocated to bands of Public Transport Accessibility Levels (PTALs) where band 1 (1a and 1b) represents a low level of accessibility and 6 (6a and 6b) a high level. The table below shows the relationship between PTAI scores and the final PTAL levels. A value of 0 would indicate no access to the public transport network within the parameters given.

Table 3 Public Transport Accessibility Levels

PTAL	Range of Index	Map Colour	Description
1a (Low)	0.01 – 2.50		Very poor
1b	2.51 – 5.00		Very poor
2	5.01 – 10.00		Poor
3	10.01 – 15.00		Moderate
4	15.01 – 20.00		Good
5	20.01 – 25.00		Very Good
6a	25.01 – 40.00		Excellent
6b (High)	40.01 +		Excellent

PTAL Web Site

A PTAL calculator is available on the web at the following address:

webpid.elgin.gov.uk

or via TfL's Borough Partnership's web page.

The site allows you to search for a specific location by street name, co-ordinates or postcode and then calculate the PTAL value for a selected location.

Further development of the PTALs methodology

PTALs were originally developed for the assessment of parking provision for commercial development proposals, and the related standards are based on the Monday-Friday am peak service levels. The PTALs development group, comprising representatives of the boroughs, TfL and GLA is considering a number of refinements of the PTAL methodology outline below.

PTALs for different time periods

It is already possible to calculate PTALs for any time period for specific sites. However, TfL is currently upgrading its PTALs calculator and underlying service databases, to enable borough and London wide PTALs to be calculated for other time periods. Although am peak PTALs give a good indication of maximum levels of public transport provision, in some areas, particularly those dependent on suburban rail services, there can be significant differences between am peak and off-peak service levels.

Once the borough level PTALs can be produced for additional time periods, there will need to be further dialogue within the working group as to how the related standards should be developed. For example, off-peak and evening PTALs will be particularly relevant to the assessment of leisure developments, but new standards for what constitutes good accessibility will have to be developed for these land-uses.

Using alternative parameters for different development purposes

The PTALs methodology imposes a maximum walk access time for bus, tube and rail services. However it is possible that this may need to be varied. For example, people may be willing to walk further to access a rail station served by a number of high frequency services, than one that is less well served. The maximum walk access time may also depend on the purpose of the journey or overall journey time. For example, people may be willing to walk further for commuting, or where the walk time is a relatively small proportion of the overall journey time, than they would be for a short leisure or shopping trip.

It is proposed to research how the maximum walk times vary by purpose and overall trip length, using the London Area Transport Survey 2001 data. Again, any set of PTAL values based on alternative parameters would have to be reviewed, in terms of how they should be applied to different development scenarios.

The contribution of each mode to the PTAI score

In the current methodology, each mode – rail, bus, tube – is given the same weight in the overall PTAI index. It may be appropriate to use different weights for each mode, for example to make rail or tube service provision more important, but this will very much depend on the nature of the development proposal and the characteristics of the area.

Building a more comprehensive measure of accessibility

A further area that is being developed is how PTALs can be used alongside other measures of public transport accessibility and assessments of capacity, to assess major development proposals.

List of Abbreviations

AI	Accessibility Index
ATOS	Access to Opportunities and Services
AWT	Average Waiting Time
BODS	Bus Origin and Destination Survey
EDF	Equivalent Doorstep Frequency
GIS	Geographic Information System
PDGIS	Planning and Development Geographic Information System - a GIS developed specifically for the Planning Department of London Transport, now being replaced.
POI	Point-of-Interest - the point for which the PTAL is being calculated. This can be an individual point or a grid of point.
PTAI	Public Transport Accessibility Indices
PTAL	Public Transport Accessibility Levels
RF	Reliability Factor
SAP	Service Access Point - bus stops, light rail stations, underground stations, tramlink halts etc. Points at which people have access to the public transport network.
SWT	Scheduled Waiting Time
TAT	Total Access Time
TfL	Transport for London

Exhibit 6

Memorandum on Infrastructure Implications **AIEA / PEARL CITY NEIGHBORHOOD TOD PLAN**

April 6, 2012 City and County of Honolulu

The following information provides an overview of the infrastructure implications of the Refined Station Alternatives (A and B). Water, Sewer and Drainage implications for each station are discussed below.

Introduction

Water

- The Board of Water Supply (BWS) provides service to the project areas. The Board of Water Supply system contains three (3) components. These are source, storage and transmission.
- It is anticipated that the BWS will need to develop new sources to meet the source requirement and that TOD along with other development will be one of the primary reasons that BWS initiates further source development including development of a desalinization facility adjacent to the Campbell Business Park.
- The commercial and residential projections for the TOD areas are approximately equal to that allowed by the current zoning for the area and TOD will not produce population growth beyond that previously used for region utility master planning purposes. The exception to this statement is the Leeward Community College TOD area where the TOD overlay exceeds that allowed by the underlying agricultural zoning (Ag-2). However, the TOD growth at the Leeward Community College Station is very modest in quantitative terms.
- The Refined Alternatives identifies two plans for each TOD Station. Estimates of existing water demands, proposed water demands and net increases are shown in Tables 1A and 1B for each alternative plan. For the purpose of the infrastructure discussion (below) there is essentially no difference between Alternative Plan A and Alternative Plan B.

Sewer

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

- As identified for water, the commercial and residential projections for the TOD areas are approximately equal to that allowed by the current zoning for the area and TOD will not produce population growth beyond that previously used for region utility master planning purposes. The exception to this statement is the Leeward Community College TOD area where the TOD overlay exceeds that allowed by the underlying agricultural zoning (Ag-2). However, the TOD growth at the Leeward Community College Station is very modest in quantitative terms.
- The Refined Alternatives identifies two plans for each TOD Station. Estimates of existing wastewater demands, proposed wastewater demands and net increases are shown in Tables 1A and 1B for each alternative plan. For the purpose of the infrastructure discussion (below) there is essentially no difference between Alternative Plan A and Alternative Plan B.
- Currently (as of 2/2012) the total TOD area has the equivalent of a moratorium for new sewer connections. The City Department of Environmental Services (ENV) has determined that a major sewer force main running from the Pearl City Pump Station to the Honouliuli WWTP has reached or exceeded its maximum capacity. The current ENV schedule is to complete planning, design and construction on a new force main by 2017. Until such time when the replacement force main project is available, redevelopment will be limited to "existing sewer flows".

Leeward Community College Station

Water

- The significant land use in Leeward Community College Station area is Leeward Community College and its use requires a fire flow of 2,000 gpm. The Ala Ike Street corridor contains pipe sizes (mainly 12-inch) that are capable of accommodating this flow requirement. Therefore, it is anticipated that backbone transmission system is generally adequate to support the projected TOD overlay.
- It should be noted that proposed Rail Maintenance Facility is located in the Leeward Community College Station area (just outside ¼ mile radius) and is not considered part of the TOD study. This use will require a fire flow of 4,000 gpm and off-site water transmission line improvements will be required to support this facility.
- Major new streets will require installation of a 12-inch water line within the right-of-way. Minor streets (primarily in residential overlay areas) will require a minimum 8-inch line be installed in the right-of-way.
- Tables 1A and 1B provide an estimate of increased water demands based on increased population related to TOD. The commercial density and housing increases reflect growth within a ¼ mile radius of the station. There is low to

medium density housing development proposed between the ¼ mile and ½ mile radius lines for the Leeward Community College Station, although not a significant amount.

- One of the infrastructure implications is that additional source and storage components must be provided. The Leeward Community College Station additional source requirement is estimated to be 0.15 MGD and the additional storage requirement must match the maximum day flow (average daily flow x 1.5) of 0.23 MGD.

- It is anticipated that additional storage will be provided for by existing BWS reservoirs. The Leeward Community College Station will generate an increased storage requirement of 0.23 MGD.

- The BWS assesses Water System Facility Charges (WSFC) for all new development requiring water service. The charges are assessed to allow the Board to develop new source, storage and transmission elements to serve new development. The increased water usage converted to equivalent multi-family dwelling units will generate approximately $1.7 million in WSFC for replenishment of the BWS water system. The Board would generally replenish source and storage components and apply the $1.7 million to those components. The TOD "projects" would be responsible for localized distribution system upgrades and additions (8-inch and 12-inch lines).

Sewer

- Tables 1A and 1B provide an estimate of increased wastewater demands based on increased population related to TOD. The commercial density and housing increases reflect growth within a ¼ mile radius of the station. The Leeward Community College Station net increase in average daily wastewater generation is projected to be 0.15 MGD.

- The Leeward Community College Station area has existing sewer infrastructure that connects to the Pearl City Pump Station. In turn, the Pearl City Pump Station is routed by means of 36-inch force main to the Honouliuli Wastewater Treatment Plant (WWTP). As reported in the Memorandum on Infrastructure portion of this TOD study, there are no significant deficiencies between the Pearl City SPS and the Honouliuli WWTP. The TOD overlay areas will require the extension of the existing gravity sewer system in the area to allow connection to the Pearl City SPS.

- All sewage generated by the Leeward Community College Station will be treated at the Honouliuli WWTP. The increased population will generate wastewater flows approximately equal to 500 equivalent single-family residences (ESDU) and generate $1.9 million in Wastewater System Facility Charges (2009/10 rate) for wastewater system expansion.

- This TOD study does not address wastewater impacts of the Rail Maintenance Facility. However, due to relatively small work force associated with this type of facility, no extra-ordinary impacts are anticipated on the area wastewater system. As with the TOD area, the area gravity sewer system will be need to be extended to collect wastewater from the Rail Maintenance Facility and deliver it to the Pearl City SPS.

Drainage

- The Leeward Community College Station is located in an area not associated with any extra-ordinary flooding issues. In addition, most of the TOD overlay areas proposed for development are currently part of the Leeward Community College complex and if not developed with buildings, are areas of extensive on-grade campus parking. For practical purposes, all lands proposed for development have essentially been touched by urban development. There are no significant issues of increased runoff aggravating downstream conditions. However, new TOD development will alter the direction of storm water runoff flow. New streets associated with TOD will need to include drainage systems to accommodate the runoff patterns created by the TOD overlay districts. The new street drainage systems will need to discharge into existing drainage systems.

- The Leeward Community College Station and surrounding areas are identified as being in Zone X of the Flood Insurance Rate Map (FIRM) system. Zone X is defined as areas "outside the 0.2% Annual Chance Floodplain." There are no FIRM requirements for development in Zone X. All development in a Zone X area would be subject to compliance with the Rules Relating to Storm Drainage Standards of the City and County of Honolulu.

<u>Pearl Highlands Station</u>

Water

- The existing land uses and zoning around the Pearl Highlands Station require pipe sizes suitable for fire flows up to 2,000 gpm. The existing water lines in the TOD area are 8-inch and12-inch. The area was originally developed with "industrial" uses in mind and the underlying TOD area is capable of supporting fire flows of 4,000 gpm. Therefore, it is anticipated that backbone transmission system is generally adequate to support the projected TOD overlay.

- Major new streets will require installation of a 12-inch water line within the right-of-way. Minor streets (primarily in residential overlay areas) will require a minimum 8-inch line be installed in the right-of-way. Existing streets within TOD overlay area, in general, have water lines with adequate sizes.

- Tables 1A and 1B provide an estimate of increased water demands based on increased population related to TOD. The commercial density and housing

increases reflect growth within a ½ mile radius of the station as shown on the Refined Alternatives Plans. One of the infrastructure implications is that additional source and storage components must be provided. The Pearl Highlands Station additional source requirement is estimated to be 1.30 MGD and the storage requirement must match the maximum day flow (average daily flow x 1.5) of 2.0 MGD.

- It is anticipated that additional storage will be located at or near existing BWS reservoirs. The Pearl Highlands Station will generate an increased storage requirement of 2.0 MGD.

- The BWS assesses WSFC for all new development requiring water service. The charges are assessed to allow the Board to develop new source, storage and transmission elements to serve new development. The increased water usage converted to equivalent multi-family dwelling units will generate approximately $14.5 million in WSFC for replenishment of the BWS water system. The Board would generally replenish source and storage components and apply the $ 14.5 million to those components. The TOD "projects" would be responsible for localized distribution system upgrades and additions (primarily 12-inch lines).

Sewer

- Tables 1A and 1B provide an estimate of increased wastewater demands based on increased population related to TOD. The population increases reflect growth within a ½ mile radius of the station. The Pearl Highlands Station net increase in average daily wastewater generation is projected to be 0.8 MGD.

- The Pearl Highlands Station will generate more than a modest increase in flow for the existing collection system. The gravity collection sewers in the Pearl Highlands Station area are relatively good size (10, 12, 15, 21-inch) but it should be anticipated that trunk sewers (8, 10, and 12-inch sewers) can reasonably be expected in the TOD overlay area to absorb the additional flows and transport all sewage to the Pearl City SPS.

- There is a possibility that Pearl Highlands TOD developers could jointly work with Waiawa-Gentry to upgrade the gravity collection system from Kamehameha Highway to the Pearl City SPS to gain economy of scale cost reductions. Waiawa-Gentry will require off-site improvements along the same corridor as Pearl Highlands TOD area between Kamehameha Highway and the Pearl City SPS.

- New streets will require installation of new sewer mains sized to meet the demand of the adjacent property and its level of development. The new sewer mains will connect to existing sewer line infrastructure in the TOD area.

- All sewage generated by the Pearl Highlands Station will be treated at the Honouliuli WWTP. The increased population will generate wastewater flows approximately equal to 2,000 equivalent single family residences (ESDU) and generate $10.0 million in Wastewater System Facility Charges (2009/10 rate) for wastewater system expansion.

Drainage

- The Pearl Highlands Station site has drainage issues. The site is in zone AE (Floodway) of the Flood Insurance Rate Map (FIRM) system. The floodway must remain free of (new) encroachments or be able to certify that encroachments result in a "No-Rise" condition. The floodplain and floodway actively convey flood waters from Waiawa Stream. The 100-year (1% recurrence interval) peak flow of the stream is significant and is approximately 35,000 cfs.

- Improvements required for the actual Station are anticipated to be primarily foundation related. To achieve a "No-Rise" certification condition, new construction with elements blocking active channel flow must be compensated by the creation of additional conveyance area elsewhere in the stream channel cross-section.

- Other improvements in the Waiawa Stream floodplain are anticipated to be pedestrian and bikeway connections. These types of improvements are typically at grade and can easily be designed to comply with "No-Rise" certification requirements.

- The majority of the Pearl Highlands TOD area is within Zone X of the FIRM (areas of 0.2% annual chance flood) and not subject to FEMA regulatory requirements.

- Most of the Pearl Highlands TOD area (mauka of Kamehameha Highway) is essentially developed. New streets will require drainage systems capable of collecting storm water generated in the right-of-way corridor and adjacent property(s) and connecting that new drainage system to existing or upgraded drainage systems in the area. Due to the current level of development in the TOD area, no increases in runoff are anticipated.

- Based on the City and County of Honolulu "Rules Relating to Storm Drainage Standards" commercial project over 5 acres and residential projects over 10 acres will be required to utilize a site-specific best management practices plan to address water quality requirements.

<u>Pearlridge Station</u>

Water

- The existing land uses and zoning around the Pearlridge Station require pipe sizes suitable for fire flows up to 2,000 gpm. The existing water lines in the TOD area are typically 8-inch and12-inch.

- Major new streets will require installation of a 12-inch water line within the right-of-way. Minor streets (primarily in residential overlay areas) will require a minimum 8-inch line be installed in the right-of-way. Existing streets with TOD overlay may require water line upgrades from 8-inch to 12-inch.

- Tables 1A and 1B provide an estimate of increased water demands based on increased population related to TOD. The commercial density and housing increases reflect growth within a ½ mile radius of the station as shown on the Refined Alternatives Plans. One of the infrastructure implications is that additional source and storage components must be provided. The Pearlridge Station additional source requirement is estimated to be 2.35 MGD and the storage requirement must match the maximum day flow (average daily flow x 1.5) of 3.50 MGD.

- It is anticipated that additional storage will be located at or near existing BWS reservoirs. The Pearlridge Station will generate an increased storage requirement of 3.50 MGD. This volume of storage is not insignificant and there is a reasonable expectation that actual construction of the additional storage may be placed on the Pearlridge TOD developers in lieu of paying the storage component of the BWS Water Service Facility Charges. The most likely site for an additional storage reservoir to serve the TOD area would be the Kaonohi 277 Reservoir.

- The BWS assesses WSFC for all new development requiring water service. The charges are assessed to allow the Board to develop new source, storage and transmission elements to serve new development. The increased water usage converted to equivalent multi-family dwelling units will generate approximately $11.75 million in WSFC for replenishment of the BWS water system. In the case of Pearlridge Station 9with a relatively large storage requirement) the Board would generally replenish the source component only and apply the $11.75 million to that component. The TOD "projects" would be responsible for localized distribution system upgrades and additions (primarily 12-inch lines) as well as the storage component.

Sewer

- Tables 1A and 1B provide an estimate of increased wastewater demands based on increased population related to TOD. The population increases reflect growth within a ½ mile radius of the station. The Pearlridge Station net increase in average daily wastewater generation is projected to be 1.48 MGD.

- The Pearlridge Station will generate more than a modest increase in flow for the existing collection system. The gravity collection sewers in the Pearlridge

Station area are relatively good size (10, 12, 15, 18-inch) but it should be anticipated that trunk sewers (8, 10, 15 and 12-inch sewers) can reasonably be expected in the TOD overlay area to absorb the additional flows and transport all sewage to the Waimalu SPS.

- New streets will require installation of new sewer mains sized to meet the demand of the adjacent property and its level of development. The new sewer mains will connect to existing sewer line infrastructure in the TOD area.

- All sewage generated by the Pearlridge Station will be treated at the Honouliuli WWTP. The increased population will generate wastewater flows approximately equal to 3,700 equivalent single family residences (ESDU) and generate $18.5 million in Wastewater System Facility Charges (2009/10 rate) for wastewater system expansion.

Drainage

- The Pearlridge Station is located in an area not associated with any extra-ordinary flooding issues. For practical purposes, all lands have essentially been touched by urban development. There are no significant issues of increased runoff aggravating downstream conditions. However, new TOD development will alter the direction of storm water runoff flow. New streets associated with TOD will need to include drainage systems to accommodate the runoff patterns created by the TOD overlay districts.

- The majority of the Pearlridge Station and surrounding TOD areas are identified as being in Zone D of the Flood Insurance Rate Map (FIRM) system. Zone D is defined as areas in which flood hazards are undetermined, but possible. There are no FIRM requirements for development in Zone D. All development in a Zone D area would be subject to compliance with the Rules Relating to Storm Drainage Standards of the City and County of Honolulu. As a side note, FEMA has prepared preliminary new FIRM. The preliminary FIRM have added Hurricane run-up for shoreline parcels. TOD parcels with frontage on East Loch will be affected upon adoption of the new FIRM. The flood elevation identified is approximately 3 to 4 foot (msl).

- There is a small area of the Pearlridge TOD that may be partially impacted by FIRM requirements related to the Kalauao Stream floodplain on the eastern side of the TOD overlay area adjacent to Kihale Place and Koauka Street. TOD development in the Kalauao Stream floodplain should be considered with appropriate elevations achieved to comply with FIRM and City Drainage Standard considerations. TOD development in the Kalauao Stream floodway should be avoided.

- Essentially all of the Pearlridge TOD area is developed. New streets will require drainage systems capable of collecting storm water generated in the

right-of-way corridor and adjacent property(s) and connecting that new drainage system to existing or upgraded drainage systems in the area. Due to the current level of development in the TOD area, no increases in runoff are anticipated.

- Based on the City and County of Honolulu "Rules Relating to Storm Drainage Standards" commercial project over 5 acres and residential projects over 10 acres will be required to utilize a site-specific best management practices plan to address water quality of storm water generated by the project.

Infrastructure Implementation.

Water

- BWS source, storage and major off-site regional transmission requirements for TOD projects will be paid for directly by individual projects by means of payment of the applicable portion of the Board's Water Service Facility Charges. The Board will in turn use fees to upgrade its facilities on a regional basis.

- Individual TOD projects will be required to include, as a part of project construction, localized water distribution and transmission system upgrades, as determined by the Board, when individual TOD projects are identified. These distribution system and transmission system upgrades will be primarily aimed at increasing pipe sizes serving the individual projects with connection(s) to the existing BWS system to provide the required fire flow.

- The Board does not anticipate undertaking any BWS sponsored pipe system improvement projects at the "local" level to upgrade fire protection in advance of projects coming on-line.

- The Board plans to develop an integrated program to coordinate localized distribution system improvements once the TOD area and network of new streets moves past the "Alternatives" development stage.

Sewer

- The Department of Environmental Services (ENV) intends to identify, schedule and implement improvements that are considered "regional in nature." This is part of an ongoing process related to other factors including:

  1) Project development in the areas other than TOD;
  2) Consent Decree requirements related to the Honouliuli WWTP and Collection System; and
  3) Stipulated Order provisions also related to the Honouliuli WWTP and Collection System. These types of improvements would include pump station upgrades, force main upgrades and major transmission system upgrades. Should there be a need to implement one of the regional

improvements in advance of its schedule; individual developers would be afforded the opportunity at the developer's expense. The developer's Wastewater System Facility Charges (WSFC) would be credited to the expenditure.

- Related to ENV's regional considerations, is the fact that the cumulative effect of the 3 Aiea / Pearl City Neighborhood TOD areas entering the Pearl City SPS may become overloaded. ENV is currently studying the regional system capacity.

- Localized sewer improvements would be the responsibility of the individual developers. These types of improvements would consist of smaller diameter relief sewers (8, 10, 12 and 15-inch typically) required to provide increased sewer capacity between the TOD areas and the two main pump stations serving these areas. Developers that provide localized sewer improvements can have their (WSFC) credited toward the expenditure.

Drainage

- Individual TOD projects will need to prepare (as a part of their project development documents) a Drainage Master Plan. The plan will need to demonstrate compliance with the County's "Rules Relating to Storm Drainage Standards" with respect to hydraulic capacity of existing pipe systems in the area as well as storm water quality. Individual projects should anticipate the use of structural methods to comply with the storm water quality provisions of the Standards. Localized improvements (borne at the expense of the developer) should be anticipated within all Aiea / Pearl City Neighborhood TOD areas.

- The Pearl Highlands TOD station site requires particular care in order to comply with FIRM requirements. This does not particularly affect the TOD area and is site specific to the actual station.

Exhibit 7

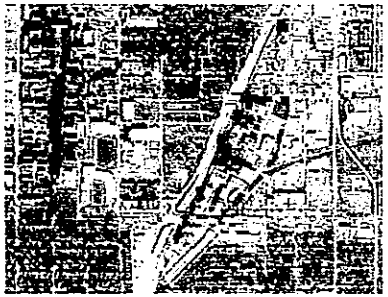
The following case studies are summarized from various sources including the Urban Land Institute and Congress for New Urbanism and are focused on built transit-oriented developments. The case studies have been selected based on integration with or proximity to educational facilities and universities. Aspects of the case studies that are particularly relevant to the LCC station area are designated in **bold**. A summary of applicable lessons learned follows each case study.

Overview

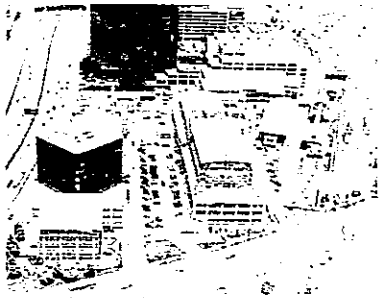
Mockingbird Station is an urban, mixed-use village completed in 2002 and linked to an adjacent Dallas Area Rapid Transit (DART) station via a pedestrian bridge. It was the first large-scale transit-oriented development constructed in Texas. Mockingbird Station is four miles and an eight-minute train ride north of Dallas's central business district. Mockingbird Station is also a major bus transfer center. The project includes:

- 216 housing units
- 140,000 square feet of office space
- 180,000 square feet of retail and restaurants

Mockingbird Station is directly adjacent to **Southern Methodist University,** which features educational facilities as well as regional destinations such as the Meadows Art Museum and the 32,000-seat Gerald J. Ford Stadium. Though it is within walking distance of the station, the main core of the campus is also **linked to the station via dedicated shuttle service.** The development is also located near the **Katy (hike and bike) Trail** and White Rock Lake, two regional recreational resources, and it ties directly across from Highland Park, one of Dallas's most prestigious neighborhoods.



Mockingbird Station - Aerial Photo



Mockingbird Station - Bird's Eye View

The following case studies highlight successful transit-oriented developments relevant to the LCC station area.

LEEWARD COMMUNITY
COLLEGE STATION
AREA PLAN

Planning

Development of the project began in 1997, when UC Urban bought a seven-acre property having an abandoned Western Electric building on Mockingbird Lane. In 1998, the developer purchased the Guaranty Federal Bank building and parking structure, adding three acres and giving the proposed project direct access to the freeway to complement the light-rail access. Purchase of this site also enabled the construction of 1,150 underground parking spaces for future residents, workers, and customers. The property was already **zoned for mixed-use prior to development,** so there were no zoning obstacles to overcome. Project densities are higher than those of the surrounding area but are below the maximums allowed.

In order to maximize site resources through **adaptive reuse,** the existing six-story office parking garage was modified to house one of the project's anchor tenants, a 35,000-square-foot retail space for the Virgin Records Megastore. The existing office building was also renovated and expanded to 140,000 square feet. Areas below the office tower and adjacent to the parking structure currently house retail uses including Abercrombie and Fitch and Ann Taylor Loft, restaurants, and cafés. The abandoned Western Electric building was renovated, and four stories were added to construct 200,000 square feet of loft apartments. Having **residential on-site** has helped to enhance the active, vibrant nature of the project.

Recognizing the need for a direct pedestrian link to the station, the **developer coordinated with DART** to design and build the pedestrian bridge. As the light rail was already operational prior to the project kickoff, there was no opportunity to change the location of the station, which sits in a deep below-grade trench and was designed to incorporate a future pedestrian bridge to the west.

The transit station, which includes a newsstand and a coffee shop, essentially serves as the **"front door" to the development.** According to the developer, "the proximity of the DART station and growing ridership made the Mockingbird Station project attractive and doable, and we're not doing it halfway." Thus, the landscaped pedestrian bridge connects to other pedestrian amenities within the site, including several gardens and a public courtyard with a waterfall.

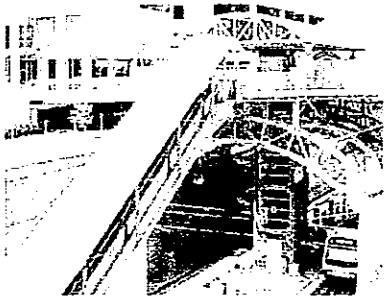
Mockingbird Station - Surface Parking

Mockingbird Station - Mixed-Use Development

Financing

With the exception of federal contributions toward local infrastructure, the development has been 100 percent privately financed. As an added amenity and resource, **the developer created a connection from the project to the Katy Trail and spent over $600,000 for improvements to public sidewalks and landscaping.** On behalf of the developer, the City successfully applied to have privately provided pedestrian improvements along Mockingbird Lane counted as a local match for state funding (a statewide Transportation Enhancement program grant).

Though the development has been largely successful in creating a pedestrian-oriented district, the developer has urged the city to allocate more funds to design **high-quality streetscape infrastructure** surrounding Mockingbird Station. In response to this concern, the North Central Texas Council of Governments has recently established a Sustainable Development Fund of $22 million to help pay for improvements.



Mockingbird Station - Transit Station and Pedestrian Bridge

Mockingbird Station - Circulation and Public Art

Lessons Learned

Because the pedestrian bridge linking the station to the development was not planned during construction of the station, workers had to take care to cover and protect overhead wires and could work only in three-hour shifts so as not to disrupt light-rail service. By not planning for land use and development in concert with rail infrastructure, later modifications become inefficient and costly.

- As HART continues their design of the Leeward Community College station, they should be considering and incorporating design concepts and principles that have been created as part of this neighborhood TOD planning effort.

The developer estimates that he had to build **$6 million worth of excess structured parking** for the project. While the city allowed the developer to build only 1,600 spaces by granting a mixed-use parking reduction credit, it refused to reduce parking further to reflect transit's proximity. The developer estimates that he may have needed to provide only 1,300 spaces, acknowledging that some tenants may have resisted the lower figure.

- The Plan recommends parking reductions as a way to increase transit ridership, reduce development costs and lessen traffic impacts on surrounding neighborhoods. Developments within the both the TOD and TIZ Precincts should be allowed to incorporate reduced parking.

The developer of Mockingbird Station continues to lobby the city for **better automobile access into and out of the site** despite high transit ridership. According to the developer, more such access should be provided to improve local traffic circulation, which is currently deficient.

- Implementing the secondary access road to Farrington Highway is essential for the continued development of the Leeward Community College area. Better automobile, bicycle, and pedestrian access will also allow the area to become more integrated with its surroundings.

The **retail portion of Mockingbird Station is not dependent on transit** to succeed; rather, transit access is an additional benefit. The transit location appears to be primarily a benefit for the residential component.

- In general, any retail at Leeward Community College must be feasible with or without transit. Access to the station is an amenity.

Overview

Technology Square, completed in 2003, is a complex of buildings on eight acres in Midtown Atlanta developed by the **Georgia Institute of Technology (Georgia Tech).** The mixture of uses are spread among four to six-story buildings. Wide sidewalks and a double row of trees line the perimeter, and a shuttle runs along Fifth Street, over the freeway, moving students to and from the main Georgia Tech campus.

The development includes:

- the Georgia Tech College of Management, housed in a LEED-certified building
- offices
- continuing education facilities
- a 250-room hotel
- a 1,500-space parking garage
- retail businesses, including a campus bookstore managed by Barnes & Noble

Technology Square has established itself as an example of a quickly completed, successful infill project undertaken by a **public developer.** This achievement is largely the result of two converging visions: one for a university, the other for a neighborhood.

Planning

At the time when Georgia Tech began to assemble properties for the project, the land had sat vacant for five years and contained several deserted buildings. Although dilapidated, the property had several redeeming features. It was flat, and it offered **good highway and MARTA rail access.** The Biltmore Hotel, a city landmark, sat just across from it on West Peachtree Street.

The design intent was to create a **high-tech campus with a Main Street feel.** In order to create a more pedestrian-friendly place, planners recommended narrowing Fifth Street from four lanes to two, retaining on-street parking, widening sidewalks, adding trees, and incorporating other streetscape improvements. To ensure a vibrant, urban character, all retail focused directly onto this street.

Tech Square - Bird's Eye View

Tech Square - Site Plan

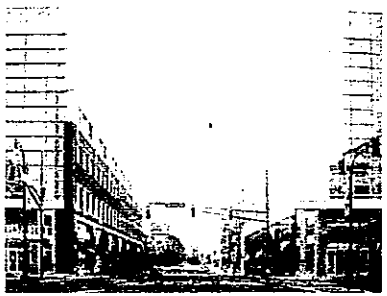
The intersection of Fifth and West Peachtree Streets is the most important area of the development and features the College of Management, as well as a pedestrian plaza. The College of Management building contains a 350-seat auditorium, offices, classrooms, the campus bookstore, and street-level retail space. It is shaped like a donut around an **open-air quad.**

Today, more than 10,000 multifamily units are in the works in the surrounding neighborhood. Millions of square feet in office buildings are emerging. At the north end of Midtown, the Woodruff Arts Center is expanding. The Federal Reserve has constructed a new regional vault there.

Financing

Technology Square was a $180 million project. The bulk of financing ($170 million) came from **bonds and the rest from an equity investment made by the Georgia Tech Foundation.** Each component—the small retail spaces, the bookstore, the College of Management, office buildings, the hotel/conference center, and the parking garage—had a distinct funding mechanism based on either donations or revenue. Some of the capital components, such as the College of Management, were supported by tax-exempt bonds; others, like the hotel and bookstore, by taxable bonds. The foundation's endowment secured all bonds, which were issued simultaneously. Upon payment of outstanding obligations, ownership will revert to the University of Georgia system.

The **hotel/conference center was, by far, the most complicated component** in the financial package. The developer wanted to optimize the debt/equity ratio to protect the long-term viability of cash flow, and also provide the administration with as much control as possible. Crestline Hotels and Resorts signed a 30-year operating lease that delineated a minimum rent and a two-year rent guarantee and backed the agreement with an irrevocable letter of credit. This gave the foundation protection from risk. In exchange, Crestline was able to negotiate for a more favorable agreement with the school during the time before a prearranged profit-sharing arrangement with the foundation was set to begin.



Tech Square - Mixed-Use Development

Tech Square - Trolley Shuttle Connection

Lessons Learned

In 2000, commercial property owners in Midtown created a **self-taxing district to fund improvement projects.** Administered by the Midtown Alliance, those proceeds, along with grants, were used to finance a public safety force, streetscaping initiatives, and a litter control crew. A year later, the city of Atlanta rezoned Midtown to incorporate the Midtown Alliance's planning ideas for the area. The Alliance updated these concepts in 2003, planning for additional retail, transit, and parks.

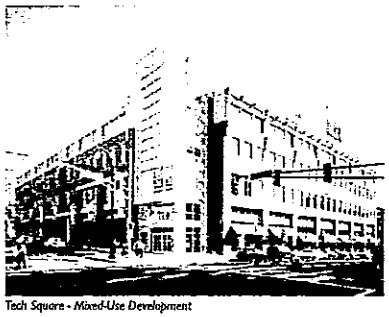
- District-level improvement funding strategies, such as the Business Improvement District in Waikiki, are an important tool in creating public facilities and infrastructure that benefit the entire neighborhood while also helping to entice catalytic development projects.

Prior to the project's completion, most of the retail spaces in the Square had been leased. When the fall semester started that year, hundreds of students and faculty plus alumni and business people began to activate the public spaces. From the outset, the hotel exceeded occupancy projections.

- Leeward Community College students and faculty are a "built-in audience" for new places that could be created in the area. The public spaces and mixed-use development that are recommended in this Plan will be invigorated by attractive connections to both the transit station and the existing college campus.

The developer believes that small design modifications could have resulted in an even better project. The plaza in front of the College of Management where the trolley stops is currently underutilized. Although trees were planted in the plaza, they take a long time to mature; in the interim, **the plaza is too large and too stark an expanse of pavement.** The university plans to redesign the area so that it is more appealing to pedestrians and purchase property across Fifth Street to better emphasize that Technology Square is a portal into Georgia Tech.

- Designing public spaces to feel both intimate and active should be a priority of any transit-oriented development that occurs near the Leeward Community College station.



Tech Square - Mixed-Use Development

Tech Square - The corner plaza is currently underutilized

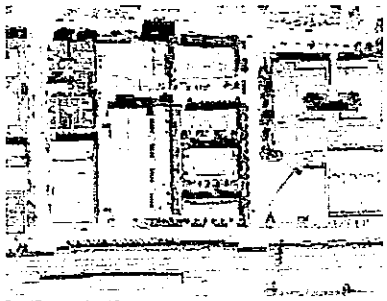
The following case studies are summarized from various sources including the Urban Land Institute and Congress for New Urbanism and are focused on built transit-oriented developments. The case studies have been selected based on integration with shopping districts and big-box retail. Aspects of the case studies that are particularly relevant to the Pearl Highlands station area are designated in **bold.** A summary of applicable lessons learned follows each case study.

1

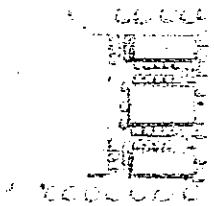
Overview

Euclid Terraces, completed in 2002, is a mixed-use infill development located in a **shopping district and directly adjacent to a rail station** in Oak Park, Illinois, a western suburb of Chicago. A strong public/private partnership and community engagement have been central to its success. The project incorporates multiple uses among several structures in a compact area, including:

- 59 condominium units
- 34 townhomes
- 7,000 square feet of retail and restaurant space
- 522 parking spaces in a vertical parking garage



Euclid Terraces - Aerial Photo



Euclid Terraces - Site Plan

The following case studies highlight successful transit-oriented developments relevent to the Pearl Highlands station area.

PEARL HIGHLANDS
STATION AREA PLAN

Planning

Focus Development, Inc., is a developer of residential and mixed-use real estate in the Chicago area. For the Euclid Terraces project, Focus Development partnered with The Taxman Corporation—a Chicago-area developer with extensive experience in Oak Park and retail development. The Taxman Corporation had previously developed the largest shopping area in downtown Oak Park as part of a public/private partnership with the Village of Oak Park.

The Euclid Terraces property is located in a shopping district at the intersection of Oak Park Avenue and Lake Street. Known as "the Avenue," it has been a lively retail hub for over a century. Prior to the construction of Euclid Terraces, the 3.2-acre site had accommodated **two surface parking lots, a fast-food restaurant, and a gas station.** In 2000, the Village of Oak Park issued a request for proposals (RFP), seeking to redevelop one of the largest remain properties in the Village with a project that would blend with the character of the historic neighborhood, as well as offer new uses that would meet local needs.

The high level of public involvement was the result of the origins of the project as a response to an RFP, as well as the developers' compliance with Oak Park's Planned Development Process, which requires a comprehensive review and public input before any construction can begin.

Initially, the community reacted to only two major elements of the project: the parking garage and the demolition of the Tasty Dog restaurant. The Avenue Business Association was against the proposed parking garage, preferring instead to **retain the existing surface parking lots.** To address these concerns, the Village performed extensive outreach to the association.

The community at large expressed vocal concern about the fate of the Tasty Dog, a much-loved fast-food restaurant that stood at a location necessary for the land assembly of the project. The Village briefly considered using eminent domain on the site, but ultimately the Village and the chosen developer relocated the beloved eatery across the street.

Initially, the site was split between two different zoning designations: B-3 Central Business and B-1 General Business. Under the planned development ordinance approved for this redevelopment area, these zoning classifications were changed to Planned Development, and the overall floor area ratio (FAR) allowed was between 1.7 and 2.7, not including the public parking garage structure.

Euclid Terraces - Mixed-Use Development

Euclid Terraces - Block Interior Open Space

Financing

A vital partner in the redevelopment of the site, the Village entered into a redevelopment agreement with the developer for the project. The Village Manager and Director of Development Services each **provided leadership in the management of the project and implementation of the redevelopment agreement.**

The Village's role included committing to delivering a buildable site with necessary environmental remediation, demolition, and utility relocation; serving as **owner and operator of the parking garage;** and leading the resolution of a land assembly dilemma involving a privately owned lot adjacent to the site.

As partners in the process, Focus Development managed the residential components of the project, and The Taxman Corporation handled the retail portion. The two main risks for the project were the construction risk and the market risk of selling the condominiums and townhomes. The environmental risk typically associated with an infill site was borne by the Village, which assumed responsibility for providing a clean, developable site to the development partnership under the terms of its redevelopment agreement.

The developer paid the Village $2.29 million for all of the public property that was included in the project, as well as the original site of the Tasty Dog eatery that was acquired as part of the project. The Village pursued the project in anticipation of the **property taxes and sales taxes** that would come from the new development beyond what the developers paid for the acquisition of the public property.

Euclid Terraces - Multifamily Residences

Euclid Terraces - Mixed-Use Corner

Lessons Learned

The community expressed **vocal concern** about the prospect of **traffic congestion** resulting from developing a multifamily property near single-family homes. The Village worked with concerned citizens, as well as various neighborhood organizations and the Environmental Protection Agency.

- Creative solutions, including public-private partnerships, are often essential to the success of a controversial project. Working with the community to show the true impacts of a project will also ensure a clear understanding of higher-intensity development.

In their proposal to the Village of Oak Park, the developers submitted a plan that did not include the maximum residential density that the market might have actually served. They felt that **a winning proposal needed to be slightly lower density to be well received by the Village and public as compatible with the character of the neighborhood.**

- Designing a project that is compatible with the surrounding Pearl Highlands neighborhood will take a nuanced approach that looks both at allowable zoning standards and specific site conditions.

Design excellence can persuasively overcome stakeholder concerns. The Avenue Business Association initially expressed doubts about replacing the surface parking lots with a parking structure. However, the developer was able to economically and efficiently **configure the large garage into the mixed-use setting, minimizing its visual impact** and also making it readily accessible for both cars and pedestrians.

- Parking should be placed within the interior of a development site and lined by active uses to minimize its visual impact and to create a strong, attractive pedestrian realm.

Overview

Located in Charlotte, North Carolina, Southborough, completed in 2009, is a **mixed-use project located along a new rail line and surrounding a big-box retail store.** Developed by the locally-based Conformity Corporation, Southborough provides an example of how the construction of a large-format retail store in an existing neighborhood can be mitigated through a high-quality housing and commercial development that **enhances the urban fabric.** Southborough includes:

- 69 residential units
- A 30,000 square-foot liner commercial building
- A 140,000 square-foot Lowe's home improvement store

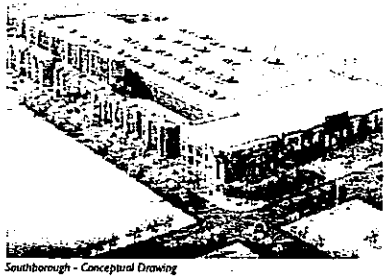
Working with developer Conformity Corporation, Lowe's has built a unique store with rooftop parking. The Lowe's building also includes a 16,000 square-foot rooftop garden; a 30,000 square-foot garden center; and a 4,200 square-foot outdoor living center.

Planning

Prior to the project, the City of Charlotte had created special transit-oriented zoning to promote high-density residential and commercial development projects. When the project was announced, it immediately created concern within the historic Dilworth neighborhood, which borders the site on two sides. The Dilworth Community Development Association opposed the rezoning of the site, arguing that a big-box store **did not reflect the character of the neighborhood** or surrounding areas. Other community concerns included the size of the retail center, the volume of traffic to be generated, and the impact of ongoing store operations.

Representatives of Lowe's and the development team opened an **expansive dialogue with the neighborhood, city staff, and other stakeholders.** Over a dozen meetings were held to review plans, discuss options, and generate feedback that was incorporated into subsequent site plan revisions. The neighborhood association also formed a committee that assisted with the design and rezoning process. Ultimately, an innovative design solution emerged that satisfied community concerns and fulfilled the business needs of Lowe's and the developer.

Southborough - Aerial Photo



Southborough - Conceptual Drawing

The key to the design was use of the project's residential components, combined with landscaping and green spaces, to **effectively camouflage the big-box store.** The initial plan was radically revised to place townhomes and flats on the two sides of the site that face the Dilworth neighborhood. The townhomes sit along the streets while, behind them, the flats wrap the store and face outward toward the other residential units to create an urban village atmosphere. Each unit has a garage that ensures parking for residents and minimizes visual impact. Fountains, generous landscaping and plantings, and green spaces and courtyards all contribute to the village atmosphere and further screen the retail center from the adjacent neighborhood. The result is an innovative urban infill project that meets the needs of Lowe's and the developer and coexists with the adjacent historic neighborhood.

Financing

The Southborough development was entirely privately financed. Lowe's assembled the 11-acre site **from a number of smaller parcels** that included a variety of industrial uses and several older homes.

Recognizing the challenges of getting a traditional store approved, Lowe's decided to engage a development partner to help mitigate the impact on the neighborhood. They issued an RFP, and Conformity Corporation was selected as codeveloper. A concession that Lowe's made was to provide rooftop parking, which was necessary to offset the acreage sold to Conformity. But this concession also reduced required surface parking in front of the store.

Conformity's winning proposal was to develop residential buildings along a narrow band of the overall site to buffer the Lowe's store from the Dilworth neighborhood. In effect, rather than looking at the back and side of the big-box store, the view from Lyndhurst and Magnolia Avenues would be of residential townhomes and flats.

The approvals process included dozens of meetings with the Dilworth Community Development Association and other neighborhood and City entities. The final development plan not only created a buffer between the Lowe's store and the neighborhood, but also a connection from Dilworth to the South End neighborhood across South Boulevard.

Southborough - Liner Retail Along Street

Southborough - Medium-Density Development to Rear of Site

Lessons Learned

Since the beginning of planning and design, it was important to the developer that Southborough be marketed as a part of the Dilworth neighborhood.

- Integration of new development with the surrounding neighborhood will be important at the Pearl Highlands station in creating a successful district with a strong regional identity.

Southborough is a successful example of designing and developing a mixed-use project with significant physical constraints, while keeping it competitive in the market. Fitting housing units on a very narrow site with grade changes, while also masking two sides of a big-box retail store, was a significant challenge, and Southborough provides a good model in this respect.

- Site challenges in the Pearl Highlands station area include grade differences and oddly-shaped properties that can be dealt with through **good urban design and architecture.**

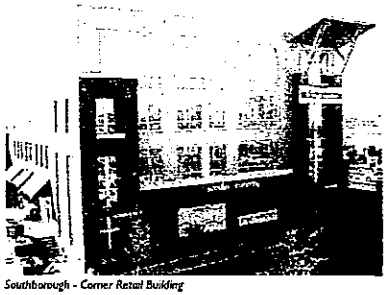
Winning approval from the neighborhood board was a delicate process. The developer knew that although Dilworth residents were not necessarily the target market, and while they did not have a direct financial stake in the project, they had to be satisfied with the project's appearance and impact on the neighborhood. Meanwhile, Conformity had to design and price units to be successful in the marketplace.

- Development in Aiea and Pearl City will also have to be well-received and accepted by the surrounding neighborhood. The first transit-oriented developments in the area will be especially important in fostering support for future projects.

Besides the obvious challenges inherent in designing a mixed-use development on a constrained site and keeping a strong neighborhood group happy, the greatest challenge for the developer was selling units and leasing space during a recession. Although initial sales were strong, Conformity had to go to great lengths to adjust the pricing of both residential units and office space in order to meet new market realities.

- Flexibility will be a key ingredient for successful developments in the Pearl Highlands station area. Allowing a wide mixture of uses within a high quality urban framework will allow projects to successfully mold themselves to the overall market.

Southborough - Modern Townhouses



Southborough - Corner Retail Building

The following case studies highlight successful transit-oriented developments relevant to the Pearlridge station area.

The following case studies are summarized from various sources including the Urban Land Institute and Congress for New Urbanism and are focused on built transit-oriented developments. The case studies have been selected based on shared characteristics with the Kamehameha Drive-In site and Pearlridge Center. Aspects of the case studies that are particularly relevant to the Pearlridge station area are designated in **bold.** A summary of applicable lessons learned follows each case study.

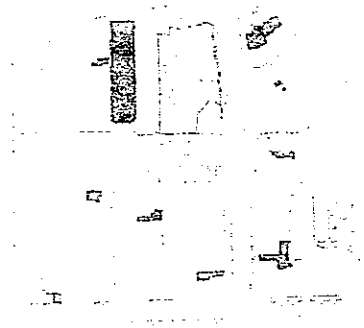
LE.

Overview

Rockville Town Square, completed in 2009, is an **urban mixed-use infill project anchored by restaurants, shops, public buildings and open spaces, and residences.** It provides a new focal point for Rockville, Maryland, an inner-ring suburb of Washington, D.C. The project, which has been a catalyst for further redevelopment in the area, features four new mid-rise buildings that include:

- 180,000 square feet of retail and restaurants
- 644 for-sale and rental residences, including 94 affordable units
- 100,000-square-foot public library
- 40,000-square-foot arts and business innovation center
- 2,000 parking spaces in three garages, on several surface lots, and at short-term meters

Rockville Town Square - Aerial Photo



Rockville Town Square - Site Plan

At the center of Rockville Town Square is a large 28,000-square-foot **landscaped plaza** (roughly the size of a football field) featuring paved areas, green space, trees, a pavilion and interactive fountain, sculptures, a seasonal ice-skating rink, and a rock garden and play area. The plaza, which is set directly across from the development's six-story clock tower, serves as a major urban gathering space, as well as a setting for community events and concerts. Wide sidewalks with plantings, benches, and restaurant seating border the plaza.

Rockville Town Square was developed through a **public/private partnership** among retail partner Federal Realty Investment Trust (FRIT), the City of Rockville, Montgomery County, and private sector owner/developer RD Rockville, LLC.

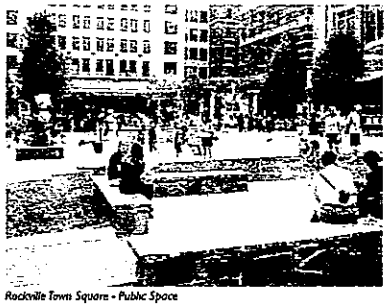
The site is easily accessible by several forms of transit via the combined Rockville Metrorail and Amtrak station, located one block to the southwest. Existing streets connect the site to Rockville City Hall and several other municipal, county, and state government buildings. The project is surrounded by **existing strip retail, offices, and public buildings,** and by **several historic landmarks.**

Planning

Rockville Town Square grew out of a community-based planning process that began soon after the City **demolished the failed Rockville Mall in 1995** and evolved from informal, unofficial discussions and a city-sponsored visioning process. In 2000, the City began working with several consultants and stakeholders in what became an 18-month-long community process.

Numerous on-site structures had to be razed before construction could begin. The project also required redirection of an existing creek bed, a process that had to be orchestrated with the U.S. Army Corps of Engineers. Old utility lines were removed and relocated, and new lines were run into the site as the new buildings and streets were constructed.

Planners recognized early on that the **lack of a street grid** was a major impediment to the site's redevelopment and proposed extending Maryland Avenue several blocks north to create a **new "Main Street"** for the city. The Plan has created a strong urban pedestrian-friendly edge by placing all buildings within 15 feet of streets. **Active street-level retail with detailed storefronts** set against wide, tree-lined sidewalks with benches and inlaid paving patterns add character and provide a human scale.



Rockville Town Square - Public Space

Rockville Town Square - Streetscape

Design priorities were determined as they related to a hierarchy of experiences, ranging from **pedestrian (primary) through vehicular (secondary) and "behind-the-scenes" (tertiary).** Higher levels of architectural details—including turrets, detailed brickwork, and intricate fenestration—were incorporated at significant corners and bays. Civic buildings, parking structures, and access points all were placed in locations that enhance the pedestrian experience. Pedestrian and vehicular access points, including **gateways and walkways,** are prominently marked, making it easier for visitors to navigate the site both by car and on foot.

The **plaza's location at the center of the site**—rather than along an arterial road—has made it a hidden jewel, one that is unseen by anyone simply driving past the project. Once people discover the plaza, they view it as a safe, welcoming, and appealing public space.

Financing

Aggregating the land so that it could be developed in a single phase required the efforts of many public agencies and individuals. Prior to its redevelopment, the site housed an **aging but still operating 100,000-square-foot strip shopping center** on its western side, as well as a gas station, and some townhouse-style offices on the northern and eastern sides. The City, which already owned approximately 4.5 acres at the center of the site, was able to assemble the entire site by **reaching settlement agreements with each property owner.** The City also provided **significant assistance to the businesses affected,** spending between $7 million and $8 million to help all of them relocate elsewhere. Several of these businesses eventually reopened in Rockville Town Square.

The project benefited from approximately **$100 million in public financing (out of $352 million overall).** The City provided about $60 million, including more than $40 million for streets, sidewalks, and public parking garages. The County provided approximately $27.5 million to build the library; it also contributed another $12 million to help with the cost of the project's infrastructure. In addition, the project received several million dollars in state funding—both from the governor's capital budget and from bond bills—including a $1 million grant to the City to help pay for one of the public parking structures. The City also received some federal funds for pedestrian improvements.

Rockville Town Square - Mixed-Use Development

Rockville Town Square - Pedestrian Walkway

Lessons Learned

Public financing is critical to the success of transit-oriented developments. Without the City-financed public streets, garages, and arts and innovation center—and the County-financed library—the Town Square would not have been economically viable because the private improvements could not bear all of these extraneous costs. A project like Rockville Town Square also has a significant impact on the surrounding community and municipalities. The area's **property, sales, and income tax revenues all have risen** since the project was completed. As a result, the project's **public sector costs will be pretty much recouped within a decade.**

- Public investment that assists private development can be a win-win for both sides. The Pearlridge station area has a tremendous opportunity to create value for the City while at the same time improving the overall neighborhood.

There was a great deal of trust and cooperation between the public and private partners. The mayor of Rockville viewed the **private partners as a team that was implementing the City's plan, rather than as opponents.** Both the public and private partners took significant risks—including spending more than $3 million even before the **development agreement** was signed—and made significant contributions to the project.

- The City must work hand-in-hand with developers to achieve the goals and principles outlined in this Neighborhood TOD Plan. The old way of choosing sides in a development battle will not create successful TOD for the Pearlridge neighborhood.

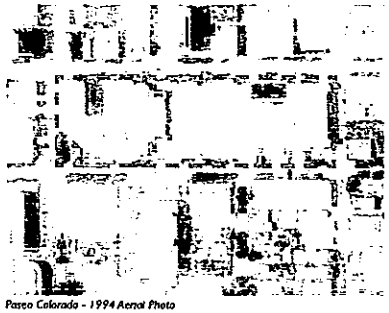
The commitment and continuity of elected officials also can have a substantial positive impact on a public/private project like Rockville Town Square. Larry Giammo served as a member of the Rockville Planning Commission from 1996 through 2001 and led the City's Town Center Land Use Advisory Committee before he was elected mayor in November of 2001. Giammo, who served three terms as mayor, was involved with the project on a daily basis. This **continuity of leadership** helped the project move forward as smoothly as possible.

Leadership from elected officials and key decision makers will also be key in accomplishing/realizing the goals of the Neighborhood TOD Plan.

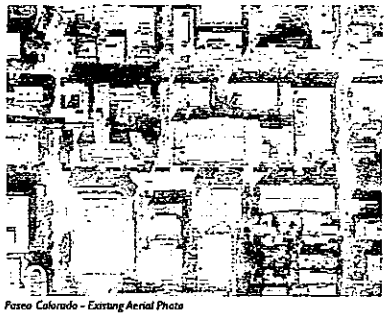
Overview

Paseo Colorado, a transit-oriented development created in 2002, is located directly adjacent to the Old Pasadena district. The project was developed by TrizecHahn Development Corporation, with Post Properties, Inc., as the residential developer. It was designed as a three-block "urban village" and replaces an **enclosed shopping mall built as part of a 1970s redevelopment effort.** Paseo Colorado was developed through a public/private partnership, with the City of Pasadena providing partial financing and other support. The development includes:

- 56 retail shops
- A full-line Macy's department store
- 7 destination restaurants
- 6 quick-service cafés
- a health club
- a day spa
- a supermarket
- a 14-screen cinema
- 387 units of rental housing



Paseo Colorado - 1994 Aerial Photo



Paseo Colorado - Existing Aerial Photo

Planning

The original Plaza Pasadena, which opened in 1980, was in all respects, except its location, a suburban mall. With three department store anchors, **the mall was almost completely inwardly focused,** leaving a two-block-long retail dead zone along Colorado Boulevard.

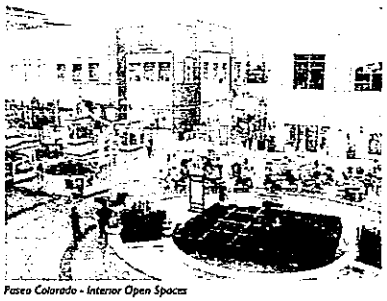
The City formed the Civic Center Task Force in 1997, which formulated the following objectives for the Plaza Pasadena site:

- Restore the city street grid, in particular the Garfield Avenue view corridor
- Reintroduce retail activity to Colorado Boulevard
- Provide for pedestrian circulation and gathering spaces
- Offer a mix of uses, including housing and retail

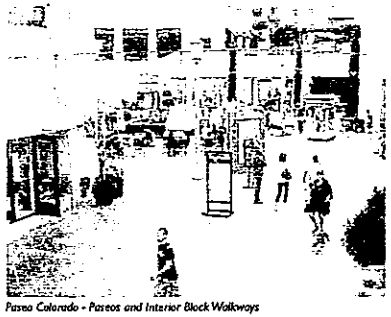
The Paseo Colorado concept, which entailed the demolition of everything above the subterranean parking structure, except the Macy's department store, is divided into several "neighborhoods," responding to its urban context and mixed-use program requirements. Inspired by Old Pasadena, Paseo Colorado has both street-fronting retail space on Colorado Boulevard and interior block walkways lined with more intimately scaled shops. The **blank brick facade of the Macy's store** was set back sufficiently to **allow for retail shops to be built in front of it,** thus continuing the facade line of Paseo Colorado and providing an additional increment of street activity. Paseo Colorado was built directly on top of the existing 3000-car underground parking structure.

The interior mid-block walkway is called "the Paseo." Running parallel to Colorado Boulevard, the open air Paseo is a slightly curving walkway that varies in width from 43 feet down to just 18 feet. The narrow Paseo design results in a more intimate space, and the curving plan invites exploration, as one end cannot be seen fully from the other.

The 387 housing units are grouped into two structures. The larger building, which includes 276 luxury apartments, overlooks Fountain Court. The second structure, which overlooks Euclid Court, contains 111 loft-style units. Residents have been attracted to the urban lifestyle that Paseo Colorado affords, especially the convenient shopping and entertainment opportunities. Moving in from Pasadena and surrounding communities, the residents are mainly singles and couples ranging in age from young professionals to empty nesters.



Paseo Colorado - Interior Open Spaces



Paseo Colorado - Paseos and Interior Block Walkways

Financing

As the project was structured, **the City contributed $26 million** in financing to the project in the form of certificates of participation backed by the lease on the center's parking structures. TrizecHahn maintains an ownership interest in the air rights above the parking, and Post Properties owns the air rights above the two-level retail podium.

Retail leasing for Paseo Colorado was complicated by the fact that the City of Pasadena had political and financial interests in the adjacent retail areas of Old Pasadena, the Playhouse District, and Lake Street. The City's mandate to the developer was in effect: provide an active and successful mix of retailers, but do not steal from other Pasadena venues. Macy's, the one tenant to remain from the original mall, invested approximately $1 million to remodel its store, converting the space from a discount outlet to a full-line store.

Lesson's Learned

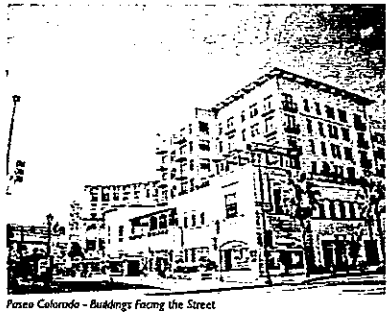
Paseo Colorado has replaced the inward-looking mall previously built on the site with a project that reintroduces retail uses to street frontages, restores the urban block pattern, and provides for a mix of uses and interior mid-block retail space. The success of the project is even **spurring proposals for development of long-neglected vacant parcels adjacent to the site.**

- By re-orienting existing retail, encouraging new uses and improving the overall pedestrian experience, Pearlridge Center can become a more vital and successful shopping destination, as well as a new town center for Aiea and Pearl City.

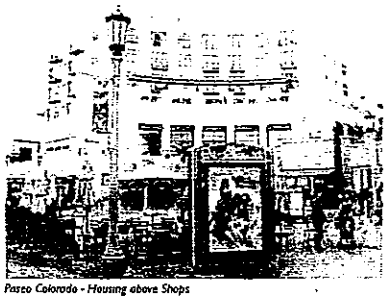
Destination restaurants appear to be a successful anchor concept at Paseo Colorado. "People go to the food," notes the developer, and the clustering of major restaurants adds to the anchor destination appeal.

- A redeveloped Pearlridge Center can bring in new customers by creating destination food options.

Second-floor commercial uses can be successful, but access is critical. At Paseo Colorado, access is achieved by several grand stairways and visible second-level plazas, as well as by multiple elevators and escalators throughout the project.



Paseo Colorado - Buildings Facing the Street



Paseo Colorado - Housing above Shops

Exhibit 8

Comment Sheet
AIEA-PEARL CITY Neighborhood TOD Plan – PRD Comments and DPP Responses (February 2014)

Note: Revisions from the 2010 PRD to the 2014 Draft Final are shown as BOLD.

No.	Date	Commentor	Comment	Action
1.	Feb 2011	Aiea Resident I	Resident suggests additional improvements to increase access to the rail stations for those who live too far to walk or bike.	The Plan recommends a bus transfer facility at the Pearlridge station to provide community feeder service to and from the station. **The Plan has been amended to strengthen language about bus access at stations.**
2.			Recommends public park-and-ride facility on Kamehameha Drive-In site	The City is only providing parking in this area at the Pearl Highlands and Aloha Stadium stations. There is nothing to prevent the private provision of parking near any of the rail stations.
3.			Recommends elevated pedestrian connections in the station area between the station, Pearlridge Center and the Kamehameha Drive-In site	While the TOD Plan does not explicitly recommend elevated pedestrian connections in the station area, there may be opportunities for elevated crossings between uses that have upper level destinations, such as the station, the new Kamehameha Drive-In development and Pearlridge Center.
4.			Recommends strategies to manage parking in the station area to maximize availability for the customers of area businesses	The section on shared parking and parking districts recommends a similar strategy, and district managed parking is being considered across the rail corridor. **The Plan has been amended to recommend time restrictions to avoid parking abuse by transit riders.**
5.			A strong connection should be made between the station and the Pali Momi Medical Center.	**Then Plan has been amended to recommend shuttle service between the station and Pali Momi.**
6.	Jan 2011	Aiea Resident 2	Resident is concerned about Plan's recommendation to upzone Kamehemeha Drive-In site. Also mentions that this development should seek to attract those who will actually ride the rail system.	The Drive-In site is a valuable opportunity for TOD in the area. Using the property for mixed-use development rather than a single-use shopping center (existing zoning) will actually reduce traffic demands and create additional ridership at the Pearlridge station. **The Plan has been amended to specify the types of transportation demand management (TDM) strategies that should be required of large developments, such as free transit passes, bikeshare stations, and reduced parking.**

Comment Sheet
AIEA-PEARL CITY Neighborhood TOD Plan – PRD Comments and DPP Responses (February 2014)

No.	Date	Commentor	Comment	Action
7.			Concerned about impact of TOD on views	The 60' height limit makai of Kamehemeha Highway is intended to preserve views of Pearl Harbor. Immediately adjacent to the station, this can go up to 90' with provision of community benefits bonus.
8.	Feb 2011	Pearl Highlands Center (former owner)	The proposed changes to the Pearl Highlands Center are not likely to happen in the near or mid-term given long-term tenant leases, structural design, and the investment objectives of the Center.	Ownership of the Center has changed, and the intent and investment objectives of the new owners are not yet known.
9.	June 2013	Councilmember Anderson	Expand discussion regarding compliance with the General Plan, the Central Oahu Sustainable Communities Plan, and the Primary Urban Center Development Plan.	**The Plan has been amended to add discussion of its consistency with the General Plan, the Central Oahu Sustainable Communities Plan, and the Primary Urban Center Development Plan.**
AGENCIES				
10.	March 2011	Dept of Transportation	HDOT supports the complete streets approach outlined in the Plan. Conflict points should be minimized to reduce hazards.	**The Plan has been amended to explicity refer to proposed multimodal improvements as consistent with the "complete streets" approach.**
11.			Best management practices for stormwater management and low-impact development (LID) should be applied in the TOD areas.	**Language on LID added to existing Green Streets section.**
12.	Dec 2010	UH Urban Garden Center	Replace the proposed path down the middle of the Urban Garden Center with a path on the Ewa side of Waiawa Stream.	**The proposed path has been relocated from the center of the Urban Garden Center to the Ewa side of Waiawa Stream.**
13.			Concerned that motorists will use the proposed road through the Home Depot parking lot as a bypass of traffic signals on Kamehameha Highway	**The TOD Plan has been amended to add language that this roadway should be designed with traffic calming measures that discourage its use as a bypass route.**
14.	Feb 2011	Dept of Education	The TOD Plan seems to overlook schools and the impact of new development, particularly workforce housing, on the need for new or expanded school facilities.	School capacity, the location of new schools, and the walkability of streets around them directly impact neighborhood livability. **Language to this effect has been added to several sections of the Plan.**

No.	Date	Commentor	Comment	Action
15.	March 2011	Dept of Design & Construction	With increased residential development, park dedication requirements are not adequately addressed.	The Plan recommends significant new park space in all the station areas. **The Plan has been clarified to identify the number of acres of public and private open space envisioned in each station area. A new section on open space has been added to Chapter IX, and language about park dedication and publicly accessible open space have been added to each station area chapter.**
16.			Neighborhood and community parks need to be a minimum of 4 to 10 acres in size and accommodate ballfields and playcourts.	The parks proposed in the Plan are generally 0.5 to 5 acres in size due to limited land availability in this area. These smaller parks are appropriate for dense urban areas near transit and are consistent with City standards. **This language has been added to the new section on open space in Chapter IX.**
17.			The TOD Plan should recommend opportunities to separate pedestrians and bicyclists from vehicular traffic.	The Plan recommends new trails and improvements to the Pearl Harbor Historic Trail. In other places, the Plan recommends complete streets improvements to improve the safety of all modes of travel.
18.	March 2011	Dept of Transportation Services	Suggested edits to Transportation Assessment technical memorandum (Appendix I)	**Various minor edits made to the Transportation Assessment technical memorandum (Appendix I)**
19.	March 2011	Board of Water Supply	Development in the Leeward Community College (LCC) station area will require significant water system upgrades.	**Memorandum on Infrastructure Implications (Appendix I) has been updated to reflect a need to upgrade the LCC station area water system. This issue has also been identified in a new section that briefly summarizes infrastructure capacity in the station areas.**
20.			The Plan should recommend water conservation measures.	**Infrastructure memo (Appendix I) has been updated to recommend water conservation measures.**
21.	Feb 2011	Dept of Facilities Maintenance	The Plan should address how City agencies will determine maintenance responsibility for proposed City-owned improvements.	**The TOD Plan has been amended to add a section on Maintenance of Public Improvements, including a recommendation to develop memoranda of understanding between agencies.**

No.	Date	Commentor	Comment	Action
22.			Improvements built within the City right-of-way should be constructed to City standards.	**This recommendation has been added to the section on Maintenance of Public Improvements**
23.	March 2011	Dept of Environmental Services	The Waimalu area has sewer capacity issues.	**Infrastructure memo (Appendix I) has been updated to reflect the need for system upgrades in this area. Language about sewer capacity constraints in the Pearlridge area has also been added to the new section on infrastructure.**
24.	Nov 2010	Land Use Permits Division, DPP	The Plan recommendations related to affordable housing, street design, "green streets," and other implementation strategies are not necessarily appropriate for inclusion in the Land Use Ordinance (the City's zoning code).	There may be more appropriate mechanisms for implementing these recommendations, so **Chapter IX: Zoning Recommendations was amended and re-organized as Chapter IX: Implementation Recommendations.**
25.	Feb 2011	Planning Division, DPP	Research indicates there is little chance of restoring historic rail operations on the Pearl Harbor Historic Trail, and references to it should be removed.	The map in the Plan is taken directly from the Pearl Harbor Historic Trail Master Plan, and it is not appropriate to modify it in the Neighborhood TOD Plan. **Language has been added to the Plan clarifying the challenge of restoring historic rail operations due to utilities in the right-of-way.**
26.			Figure 8 is difficult to read.	**Image has been rotated and enlarged.**
OTHER REVISIONS OF NOTE				
27.		HART	As a result of value engineering, HART is no longer providing a pedestrian bridge connection the Pearl Highlands station with Kuala Street.	**The Plan has been revised to show a pedestrian bridge connection as recommended but not currently planned.**
28.		Internal Staff		**The Plan has been amended to recommend new development above the park-and-ride facility at the Pearl Highlands station.**
29.		Internal Staff		**The Plan has been amended to recommend new development (preferable affordable housing) at the bus transfer facility at the Pearlridge station and expansion of the makai transit plaza to connect the station with the Pearl Harbor Historic Trail.**
30.		Internal Staff	The Public Review Draft did not set a cap on	**The Plan has been amended to set a maximum**

No.	Date	Commentor	Comment	Action
			the maximum heights achievable through a community benefits bonus.	**height of 90' in the LCC station area, 250' in the Pearl Highlands station area, and 350' in the Pearlridge station area.**
31.		Internal Staff		**The Plan has been amended to encourage green buildings and site plans and building designs that consider the best available science on climate change and sea level rise.**
32.		Internal Staff		**The implementation case studies have been moved from the main body of each station area chapter to Appendix I.**
33.		Internal Staff	Since the Public Review Draft was published, construction has begun on The Plaza at Pearl City assisted living facility on Kuala Street.	**The hypothetical phasing sequence for the Pearl Highlands station area has been updated to reflect construction of this project on previously vacant parcels.**
34.		Internal Staff		**The vision statement for the LCC station area has been amended to also include "new businesses."**
35.		Internal Staff	The City is currently working on a comprehensive affordable housing policy for the entire TOD corridor.	**The previously recommended percentages and income limits have been removed from the Plan, as well as the one acre site threshhold. Language has also been added to encourage rental affordable units.**
36.		Internal Staff	Since the Public Review Draft was published, the City has progressed on its development of an open space policy for the TOD corridor.	**The proposed minimum common open space requirement has been changed to a recommendation for publicly accessible open space for all new developments on parcels of 20,000 square feet or larger.**
37.		Internal Staff		**The project overview has been amended to add additional description of how the TOD plan will be implemented over time.**
38.		Internal Staff	Clarify and simplify discussion on permitted and prohibited land uses in the TOD Special District.	**The Plan has been amended to simplify the discussion on land uses.** The uses envisioned within the TOD Special District are similar to those currently allowed under BMX-3 zoning (with the exception of

No.	Date	Commentor	Comment	Action
				auto-oriented uses).
39.		Internal Staff	Clarify and simplify discussion on parking requirements in the TOD Special District.	**The Plan has been amended to simplify the discussion on parking requirements.** In the areas closest to the station, the Plan recommends parking standards similar to those of the BMX-4 zoning district.
40.		Internal Staff	Clarify and simplify discussion on front, side, and rear yard requirements in the TOD Special District.	**The Plan has been amended to simplify the discussion on yards into one section.**

CITY & COUNTY OF HONOLULU

AIEA–PEARL CITY

As most transit trips begin and end as walking trips, the area within easy walking distance of a transit station is where development opportunities can take advantage of and encourage transit ridership. Such transit-oriented development (TOD) may be the redevelopment of existing facilities or new development and should be designed with an emphasis at the pedestrian scale – mixing residences, employment, shopping and services.

TOD HONOLULU

Live.Work.**Connect**

PLANNING FOR RAIL TRANSIT

What is Honolulu Rail Transit?

The Honolulu Rail Transit system will serve 21 stations between East Kapolei and Ala Moana Center. Over 60% of Oahu's population currently lives within this transit corridor, and the population in the corridor is projected to continue to grow faster than the rest of Oahu. Over 40% of Honolulu jobs are within the corridor.

Rail transit provides an opportunity to help reduce the growth of traffic congestion by taking cars off the road; improve travel reliability; shorten travel times for most riders between home and work; and increase transportation options by transit, bicycle, and on foot.

How Can We Prepare For It?

The Department of Planning and Permitting (DPP) is preparing **neighborhood transit-oriented development (TOD) plans** to help integrate land use and transportation planning around the rail stations in anticipation of the rail project. The plans are intended to address opportunities for new development and plan for orderly growth and improved accessibility around the stations.

Each plan begins by looking at lands within one-half mile of the proposed transit stations. Land use, mobility, urban form and open space elements are addressed in every plan but result in different outcomes in different neighborhoods, including TOD district boundaries that relate to topographic and other physical parameters. The City intends to complete plans for the 19 station areas under its jurisdiction by the end of 2015. Two stations are under the planning jurisdiction of the State Hawaii Community Development Authority. The transit system itself is projected to be completed in 2019.

Successful TOD depends on participation and broad-based support from government, residents, businesses, community organizations, landowners, developers, and the financial sector. Good TOD projects increase transit ridership, walking and bicycling, as well as respond to community concerns, needs and goals.

As has been the experience of other communities with rapid transit systems, no single TOD strategy works for all cities and communities. Each community must determine what type of development will work best given its specific strengths and assets, growth and population trends, transportation, infrastructure, and social needs. Development happens as the result of private investment in response to local market forces. The role of government is primarily to provide the policies and set the blueprint, define and offer strategic incentives, ensure that adequate infrastructure is available, and engage the community in helping direct private investment into public benefit.

WHAT IS THE PLAN?

The Aiea–Pearl City Neighborhood Transit-Oriented Development Plan (the Plan) presents a community vision for the existing neighborhoods surrounding the planned Leeward Community College (LCC), Pearl Highlands, and Pearlridge rail stations. The goal of the Plan is to foster livable communities that take full advantage of transit—creating new transportation options while encouraging economic growth and attractive redevelopment.

Although each has its own unique identity, needs and opportunities, the Aiea–Pearl City station areas are all envisioned as compact, pedestrian-friendly environments that provide various housing, employment, and recreational opportunities. To achieve this vision, the Plan recommends appropriate strategies for land use, urban design, transportation, and parks and open space.

The Plan is intended as both an overall framework for growth and a guide for local decision making around the three rail stations. It is conceptual in nature, showing possible improvements on both public and private property. In order to ensure positive change in the station areas, it is essential that stakeholders work together on future projects.

PROJECT TIMELINE

2009						2010	
Project Kickoff	Issues & Opportunities Community Workshop 1	Draft Alternatives Community Workshop 2	Refined Alternatives	Preferred Plans Community Workshop 3	Zoning & Implementation	Public Review Draft Plan Community Workshop 4	Final Plan

What's the Planning Process?

An inclusive community-based planning effort elicited the goals and ideas of area stakeholders. This process included community workshops, a resident survey, an open house, local business outreach, and Advisory Committee meetings. The Advisory Committee, composed of individuals from a diverse range of interests and affiliations, serves as a sounding board for the project, providing essential guidance and encouraging community participation at the public workshops.

Beginning in July of 2009, the planning process included identification of issues, opportunities and constraints, the creation and refinement of alternatives, and development of preferred station area plans. The Plan also includes recommendations on phasing, implementation, and revisions to the Land Use Ordinance (LUO), including TOD Special District regulations for the areas around the three Aiea–Pearl City stations. (see Next Steps, p.12)

TOD recommendations for the Aiea–Pearl City corridor build upon the recommendations of previous planning efforts: Aiea–Pearl City Livable Communities Plan, Pearl Harbor Historic Trail Master Plan, Primary Urban Center Development Plan, and Central Oahu Sustainable Communities Plan.

"Create an integrated, connected urban environment that fosters healthy living and cultural identity."

GUIDING PRINCIPLES
FOR AIEA & PEARL CITY TOD NEIGHBORHOODS

Pearl Harbor Historic Trail - *Improved shoreline access and bike and pedestrian facilities*

1. Create Access and Views to Water and Pearl Harbor Historic Trail

Water has always played an important role in this area, from the ancient Hawaiian fishponds to sugar plantation irrigation to today's military presence in Pearl Harbor. This principle links the station area neighborhoods to nearby streams, springs, wetlands, and shoreline. The Plan promotes creating new public spaces and revitalized neighborhoods along the waterfront as development occurs, enhancing view corridors from mauka areas, and improving the Pearl Harbor Historic Trail.

LCC Neighborhood - *New housing and park space*

2. Encourage Workforce Housing

A mixture of housing choices around the transit stations is desired, including a variety of price options, housing types, and unit sizes to support a wide range of households. Much of the affordable housing currently located in Aiea and Pearl City was developed in the 1960s and 1970s and is in need of repair, renovation, or redevelopment. A Plan objective is to increase the quantity of workforce housing while also increasing the overall quality of the existing housing stock

Pearl Highlands Center - *Redevelopment of existing parking lot*

3. Create a Comfortable and Lively Pedestrian Environment

Current development in the area is primarily auto-oriented. The introduction of rail transit can be the impetus for fostering a true multimodal environment. New sidewalks, street trees, street-level storefronts and activities, and streetscape amenities will make walking and biking more enjoyable. New neighborhoods can be built through "greyfield" redevelopment of existing parking lots such as those at LCC, Pearl Highlands Center and Pearlridge Center. A diversity of uses will help ensure that these areas are active and safe at different times of the day and week.

Kaonohi Street - *Bike lanes and pedestrian-friendly sidewalks*

4. Provide Multimodal Access to and from the Stations

Rail transit will be part of a larger multimodal transportation network that connects communities. Residents and visitors will have transportation options, allowing them to choose the most efficient, economical, and enjoyable way to get around. Existing and new streets designed as "complete streets" will safely accommodate pedestrians, bicyclists, buses, drivers, kiss-and-ride drop-offs, and park-and-ride traffic. Off-street paths and trails also contribute toward creating a vehicle-free environment for walking, jogging, and biking.

Pearlridge Center - *Redevelopment oriented toward Sumida Farm, with overlook and pathway*

5. Develop New and Enhance Existing Open Space Amenities

Rail transit provides opportunities to create great public spaces at and near the stations. This principle recognizes the need for and creation of a connected network of public spaces that includes parks, plazas, paths, trails, and pedestrian-friendly streets.

PLAN HIGHLIGHTS

Each station area is unique with its own set of plan recommendations, as noted in the sections below. However, the shared goal of becoming livable, transit-enhanced, and connected neighborhoods results in recommended improvements that are common to all three areas, including:

- New streets and sidewalks
- Structured parking in conjunction with new mixed-use development
- Active transit plazas
- Affordable and workforce housing

LEEWARD COMMUNITY COLLEGE STATION

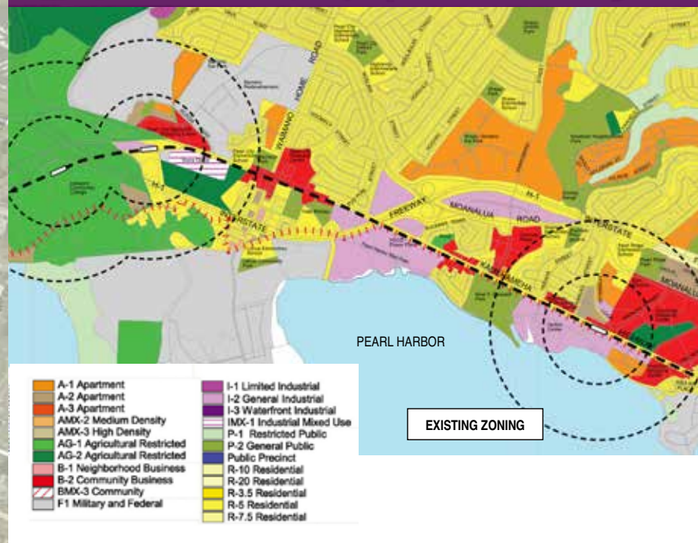
area is envisioned as a college-oriented neighborhood catering to students and faculty from the adjacent college, entrepreneurial businesses, as well as current and new residents.

- New bicycle paths along the extension of Ala Ike Street and along Waiawa Stream
- Pearl Harbor Historic Trail improvements
- Mixed-use development on existing surface parking area mauka of LCC campus
- Central green park mauka of LCC campus
- Low-density housing diamond head of LCC campus
- Neighborhood mini park diamond head of campus in conjunction with new development
- Wider sidewalks and landscaping on existing streets
- Secondary access road connecting the station area to Farrington Highway

PEARL HIGHLANDS STATION

will be a major intermodal facility and connection point for riders coming from central Oahu and mauka directions. Ongoing infill and revitalization of the commercial district can carefully balance the needs of passengers and shoppers arriving via transit, walking and wheeling, and via automobile.

- New bicycle paths along Waiawa Stream
- Tallest buildings in close proximity to station and lower development on perimeter
- Medium-density housing within 1/4 mile of the station and at the NW corner of Acacia Road and Kuala Street
- Neighborhood park on triangle property makai of Acacia Road
- Medium-density housing and neighborhood mini parks mauka of Walmart
- Low-density housing adjacent to Kanaeha Place and single-family housing along diamond head boundary of Plan area
- New Main Street within existing Pearl Highlands Center
- Development above rail transit station parking garage
- Improved public access and enhancements to UH Urban Garden Center



PEARLRIDGE STATION

are is a major urban center and regional destination with opportunities for new development, the regeneration of Pearlridge Center, and improved access to the Pearl Harbor Historic Trail and shoreline.

- Secondary shoreline path ewa of Kaonohi Street
- Pearl Harbor Historic Trail improvements
- Medium-density housing makai of Kamehameha Highway, potentially above proposed bus transfer facility
- High-density housing mauka of Kamehameha Highway
- Low-density housing along Moanalua Loop
- Pedestrian trail along the upper perimeter of Sumida Farm with overlook
- New Main Street connecting Moanalua Road and Kaonohi Street
- Wider sidewalks and landscaping on existing streets
- Additional waterfront park along Pearl Harbor shoreline
- “Window to Pearl Harbor” shoreline park at the terminus of Kaonohi Street
- Neighborhood mini park mauka of Sumida Farm

COMMUNITY BENEFITS

The Aiea–Pearl City Neighborhood TOD Plan defines a future for the three rail station communities with increased community amenities triggered by new investment. Many of these amenities can be developed by the private sector through a community benefits bonus. In return for development bonuses, a project can incorporate any number of these amenities within the project, or off-site, to help support community values and goals. The likely development bonus could be higher building heights, higher density (floor area) or less required parking. Improvements created through a community benefits strategy should focus directly on the following key plan elements:

LEEWARD COMMUNITY COLLEGE STATION AREA

- Secondary access road
- Development of public gathering space adjacent to campus
- Pearl Harbor Historic Trail connection makai of campus

PEARL HIGHLANDS STATION AREA

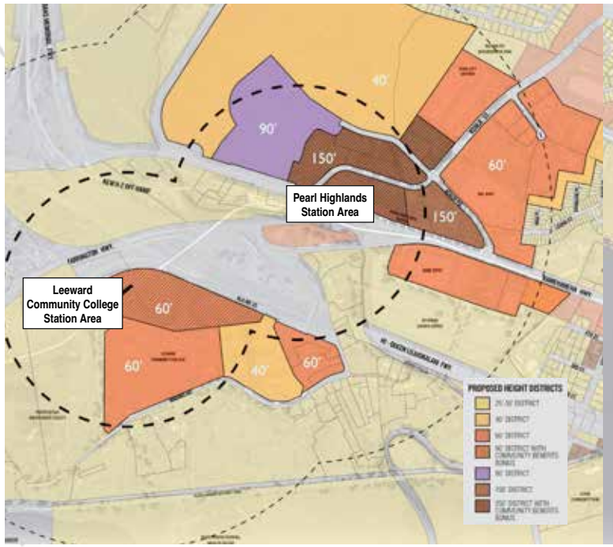
- Pearl Highlands Center pedestrian improvements and bridge connection to rail station
- Access and improvements to University of Hawaii Urban Garden Center
- Creation of public park space

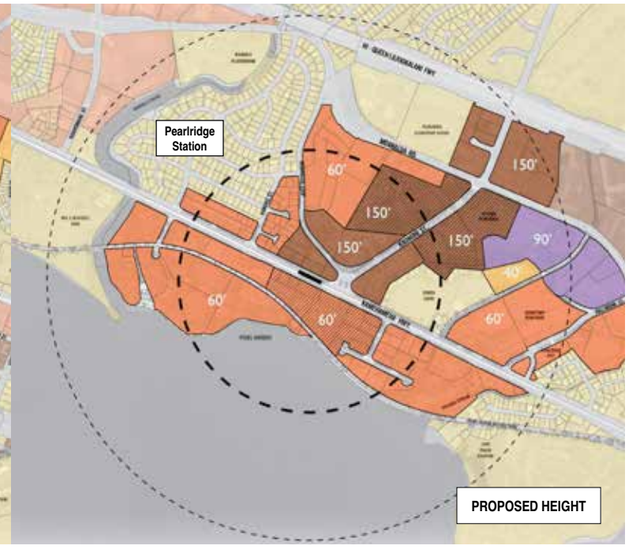
PEARLRIDGE STATION AREA

- Kaonohi Street pedestrian and bicycle improvements
- Transit plaza and pedestrian connection/view corridor from station to Pearl Harbor Historic Trail
- Pearl Harbor Historic Trail improvements
- Sumida Farm trail and overlooks

GENERAL

- Local jobs/workforce training
- Student and faculty housing
- Affordable housing
- Locally-owned retail support
- Sidewalk and streetscape upgrades





Leeward Community College - *Existing parking lot*

Kaonohi Street - *Existing conditions*

Leeward Community College - *TOD vision*

Kaonohi Street - *TOD vision*

TOD ZONING

The recommendations contained in the TOD Plan would serve as the basis for modifying the current zoning regulations. Two levels of TOD zoning precincts are recommended:

- TOD Precinct is the core area, generally encompassing lands within one-quarter mile from each station
- TIZ (Transit-Influenced Zone) Precinct is the area roughly one-quarter mile to one-half mile from each station

While the recommended development standards may be similar, there is greater attention to design and increased intensity in the core area (TOD Precinct). The TIZ Precinct provides a transition between the TOD Precinct and areas beyond, which are primarily lower-density neighborhoods.

Recommendations Include:

Land Uses
Similar to BMX-3 Community Business Mixed-Use District, allowing for a range of office, retail, business services, as well as multi-family dwellings

Floor Area Ratios (FAR)
TOD Precinct – Maximum FAR of 2.5
(up to 3.5 with Community Benefit Bonus)
TIZ Precinct – Maximum FAR of 1.0
(up to 1.5 with Community Benefit Bonus)

Building Area
No regulation on lot coverage, similar to business districts

Building Heights (Maximum)
Height limits vary based on existing land use patterns, community objectives, and market considerations. See the Proposed Allowable Heights Maps.

Affordable Housing
Projects with more than 29 housing units should be required to provide affordable housing.

Projects that provide additional affordable units may be granted height and density bonuses, as well as relief from development standards, such as minimum parking requirements.

Incentives should be provided to encourage affordable rental units.

Parking
TOD Precinct – similar to the BMX-4 Central Business District
TIZ Precinct – similar to current requirements for use, with lowered requirements for housing, office and retail

On-street parking may be credited as required parking.

Publicly Accessible Open Space
New developments on parcels of 20,000 square feet or larger should provide publicly accessible open spaces or contribute an equivalent value toward public park improvements within the station area.

PUBLIC REALM IMPROVEMENTS

To realize the vision and principles expressed in the Aiea–Pearl City Neighborhood TOD Plan, a concerted, long-term public-private partnership effort is needed to upgrade the public realm. Public sector investments are primarily in the form of capital improvement program (CIP) projects. For Aiea and Pearl City, the following public realm investments have been identified for the three rail station areas.

- A connected off-street trail network is a major component of the Plan. Recommendations include new trails along Waiawa Stream and around Sumida Farm, improvements to the existing Pearl Harbor Historic Trail, and connections between these facilities and area destinations.
- Existing streets throughout the station areas have narrow sidewalks and lack many amenities that would make them safe and comfortable for pedestrians and bicycles. Sidewalks near the stations should be widened, and streetscape elements should be added, such as street trees, bicycle lanes, places to sit, trash receptacles and adequate lighting.
- Development potential at Leeward Community College is currently limited by its single access point. A secondary access road connecting LCC with Farrington Highway in the ewa direction would improve connectivity and provide an impetus for new TOD.
- New development should contribute to a vibrant and engaging public realm by orienting buildings and active uses to the sidewalk and situating parking behind buildings or within structures wrapped within active uses.
- In conjunction with new development, new local street connections should be provided to break up large blocks, create more walkable station areas, and more evenly distribute local traffic.
- The Plan recommends a bus transit transfer facility makai of the Pearlridge station to provide easy connections between rail and local buses, improve access to surrounding residential neighborhoods, and remove queuing buses from the curb lane of Kaonohi Street where a bicycle lane is proposed. This project would require property acquisition and capital improvements, and should incorporate mixed-use development.
- New waterfront parks are proposed along the Pearl Harbor shoreline near the Pearlridge station to improve public access to water and open space, and to help re-establish this area as a waterfront neighborhood.
- Transit plazas with active uses are proposed for all three stations in Aiea and Pearl City.

PHASING

These sketches of development on the LCC campus parking lot are illustrative and intended to show that TOD does not occur overnight; rather it matures and evolves over time. The actual sequencing of development depends on numerous factors, including the real estate market of a particular neighborhood, the availability of financial incentives, and the interest of individual property owners. It will take several decades, even generations, for full "build-out."

The first phase is the construction of the train station and complementary roadway improvements. The first developments are likely to be very close to the station and on a larger property. Later phases will see additional infill development, including outlying and smaller properties. The surface parking lots would be reduced or replaced with mixed-use buildings and parking garages.

Kuala Street - *Existing*

Kuala Street - *TOD vision*

Existing Conditions

Phase 1

Phase 2

Phase 3

Phase 4

NEXT STEPS

The following steps should be taken in the near-term to move the Aiea-Pearl City Neighborhood TOD Plan into action and to ensure that future TOD and neighborhood improvements follow the vision and principles defined by the community.

- Adoption of the Aiea-Pearl City Neighborhood TOD Plan (Honolulu City Council)
- Adoption of the Aiea-Pearl City TOD Special District zoning regulations
- Identification of incentives and funding sources at the City, State, and federal levels
- Partnerships with property owners interested in redeveloping according to the Plan
- Identification and advancement of short-term (3-5 years) public improvement projects in the station areas

For more information about the City's TOD program, please visit www.todhonolulu.org or call 768.8000

or visit us on Facebook
www.facebook.com/TODhonoulu

Paid for by the taxpayers of the City and County of Honolulu

FEBRUARY 2014

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE 09-4

BILL 10 (2008), CD2

A BILL FOR AN ORDINANCE

RELATING TO TRANSIT-ORIENTED DEVELOPMENT.

BE IT ORDAINED by the People of the City and County of Honolulu:

SECTION 1. Findings and Purpose.

The council finds that Honolulu has initiated a major mass transit project that has the potential to fundamentally reshape the form and character of Honolulu. The council has selected a fixed guideway system and the Locally Preferred Alternative ("LPA") for the project under Ordinance 07-01.

A vital part of the mass transit project is the opportunity to develop and redevelop key areas of Honolulu to provide additional housing and work opportunities in our growing island. These efforts will allow the city to continue its goal of directing new growth to designated areas while "keeping the country, country." Appropriate transit-oriented development ("TOD") land use regulations along the alignment and around the rapid transit stations will be crucial for these efforts and goals.

It has been consistently noted about successful TOD programs of other cities that community-based input is an important element of TOD programs, and that one specific set of regulations cannot adequately address TOD needs and opportunities across all transit stations. Therefore, to assure that Honolulu will have a successful TOD program, a general land use scheme must be created that provides for a deliberate, inclusive process to plan for TOD so that well-defined, meaningful, and appropriate regulatory and incentive programs can be adopted for each area around a transit station or type of station.

This TOD planning and implementation process will implement the Oahu General Plan and applicable regional development plans. Specifically, it will help stem urban sprawl across the city's agricultural and open space lands; encourage the development of livable, walkable communities; and increase transit ridership, thereby promoting the economic, social, and environmental well-being of the city.

With the potential for such a significant and positive change in development patterns, it is crucial that proper planning guidance be given, well before the transit stations are constructed. This will allow for timely community input and to put into place appropriate regulations for TOD before redevelopment occurs.

The council, therefore, finds that to protect the public interest and welfare, the Land Use Ordinance is to be amended to provide guidance on how to determine zoning

regulations for areas around each transit station. The planning process shall be open, inclusive and visionary, and shall strive to increase the quality of life through rejuvenated community character, preservation and enhancement of historic, cultural, scenic, natural and other community resources and landmarks, while understanding the relationship between zoning, financing, and real estate market dynamics.

Pursuant to this ordinance, the council will establish special districts around rapid transit stations, to be known as Transit-Oriented Development Zones, to foster more livable communities that take advantage of the benefits of transit: specifically, reducing transportation costs for residents, businesses, and workers. While taking advantage of more efficient use of land, TOD can provide more walkable, healthier, economically vibrant communities, safe bicycling environments, convenient access to daily household needs as well as special events, and enhancement of neighborhood character, while increasing transit ridership. However, TOD should avoid loss of existing affordable housing and gentrification of communities.

SECTION 2. Section 13-9.3, Revised Ordinances of Honolulu 1990, as amended, is repealed.

"[**Sec. 13-9.3 Transit oriented development ordinance.**

As used in this article, "transit oriented development ordinance" ("TOD ordinance") means an amendment to the land use ordinance regulating development at and around transit stations. The TOD ordinance shall:

(1) Enable a mix of land uses;

(2) Enable higher densities;

(3) Eliminate or reduce minimum off-street parking requirements for such development;

(4) Encourage travel by rail transit, buses, walking, bicycling, and other nonautomobile forms of transport;

(5) Encourage development of a mixture of market-rate and affordable housing;

(6) Encourage public-private partnerships in such development;

(7) Utilize form-based zoning, exemptions, or other alternatives from existing development regulations, and utilize other incentives to encourage such development;

(8) Encourage activity at a defined community center; and

(9) Encourage public input in the design of each transit station so each station reflects unique community design themes, history, or landmarks.]"

SECTION 3. Chapter 21, Article 9, Revised Ordinances of Honolulu 1990, as amended, is amended by adding a new Section 21-9.100 and accompanying Sections 21-9.100-1, -2, -3, and -4, to read as follows:

"**Sec. 21-9.100 Transit-oriented development (TOD) special districts.**

(a) The purpose of this section is to establish a procedure for the establishment of special districts known as TOD Zones around rapid transit stations to encourage appropriate transit-oriented development.

(b) The regulations applicable to a TOD Zone shall be in addition to underlying zoning district and, if applicable, special district, regulations, and may supplement and modify the underlying regulations. Where a transit station is located within or adjacent to an existing special district, the TOD Zone provisions may be incorporated in the existing special district provisions. If any regulation pertaining to a TOD Zone conflicts with any underlying zoning district or special district regulation, the regulation applicable to the TOD Zone shall take precedence.

(c) As used in this section:

"TOD" means transit-oriented development.

"TOD Development Regulations" means the regulations establishing the permitted uses and structures and development standards within a TOD Zone, which shall be established by the council by ordinance, pursuant to the provisions of this section. TOD Development Regulations shall be specific to each TOD Zone and may include both zone and sub-zone specific provisions.

"TOD Zone" means the parcels of land around a rapid transit station subject to the TOD Development Regulations. Generally, the TOD Zone shall include the parcels of land where any portion of each parcel is within 2,000 feet of a transit station, provided

that for any such parcel, the entire parcel must be within one mile of the transit station; provided further that the council, by ordinance, may include or exclude any parcel from the TOD Zone either upon its own initiation or upon written request of the director.

Sec. 21-9.100-1 Creation of TOD Development Regulations.

For each TOD Zone, a set of TOD Development Regulations shall be created to foster and encourage transit-oriented development and redevelopment of such TOD Zone. The TOD Development Regulations shall include the minimum requirements in Section 21-9.100-4, and may include any other provisions, incentives and restrictions.

Prior to January 1, 2010, the TOD Development Regulations for each TOD Zone may be based on a neighborhood plan that addresses transit-oriented development ("neighborhood TOD plan"). The plans may include more than one station, and may address other community concerns and opportunities. On or after January 1, 2010, the council may initiate proposed ordinances establishing a TOD Zone and TOD Development Regulations applicable thereto where no neighborhood TOD plan has been adopted; provided, however, that there shall be a recognition that the use of neighborhood TOD plans shall be the preferred way to create TOD Development Regulations for each TOD Zone and amendments to the Development Regulations should be considered upon the completion of a neighborhood TOD plan.

Sec. 21-9.100-2 Neighborhood TOD plans.

(a) For each TOD Zone, the department shall prepare a neighborhood TOD plan which serves as the basis for the creation or amendment of a TOD Zone and the TOD Development Regulations applicable thereto. Each neighborhood TOD plan shall address, at minimum, the following:

(1) The general objectives for the particular TOD Zone in terms of overall economic revitalization, neighborhood character, and unique community historic and other design themes. Objectives shall summarize the desired neighborhood mix of land uses, general land use intensities, circulation strategies, general urban design forms, and cultural and historic resources that form the context for TOD.

(2) Recommend parcels to be included in the TOD Zone, taking into account natural topographic barriers, extent of market interest in redevelopment, and the benefits of transit including the potential to increase transit ridership.

(3) Recommended zoning controls, including architectural and community design principles, open space requirements, parking standards, and other modifications to existing zoning requirements, or the establishment of new zoning precincts, as appropriate, including density incentives. Prohibition of specific uses shall be considered. Form-based zoning may be considered.

(4) Preservation of existing affordable housing and potential opportunities for new affordable housing, and as appropriate, with supportive services.

(5) Avoid gentrification of the community.

(6) General direction on implementation of the recommendations, including the phasing, timing and approximate cost of each recommendation, as appropriate, and new financing opportunities that should be pursued.

(b) The process of creating neighborhood TOD plans shall be inclusive, open to residents, businesses, landowners, community organizations, government agencies, and others.

(c) The process shall consider population, economic, and market analyses and infrastructure analyses, including capacities of water, wastewater, and roadway systems. Where appropriate, public-private partnership opportunities shall be investigated.

(d) The neighborhood TOD plan shall be consistent with the applicable regional development plan.

(e) To the extent practical, the neighborhood TOD plan shall be consistent with any applicable special area plan or community master plan, or make recommendations for revisions to these plans.

(f) The neighborhood TOD plan shall be submitted to the council and approval of the plan shall be by council resolution, with or without amendments.

Sec. 21-9.100-3 Processing of proposed ordinances establishing TOD Zones and the TOD Development Regulations applicable thereto.

(a) If the council approves a neighborhood TOD plan, with or without amendments, the director shall, within 120 days after the approval, submit to the planning

commission a proposed ordinance establishing a TOD Zone for the applicable neighborhood and the TOD Development Regulations applicable thereto.

(b) If the council, pursuant to Section 21-9.100-1, initiates a proposed ordinance establishing a TOD Zone and the TOD Development Regulations applicable thereto where no neighborhood TOD plan has been adopted, the director shall, within 120 days after adoption of the resolution initiating the ordinance, submit to the planning commission a report accompanied by the proposed ordinance and any alternative ordinance proposed by the director. The provisions of Chapter 2, Article 24, relating to council proposals to amend the zoning ordinances and the processing thereof by the department, shall not apply to council proposals to establish a TOD Zone and the TOD Development Regulations applicable thereto.

The director may request, and the council may approve, a 60-day extension of the deadline to submit a report and proposed ordinance to the planning commission under the following procedure:

(1) Within the existing deadline, the director shall submit to the council a request for an extension of the deadline and an interim report describing the status of the director's processing of the council proposal and the reasons that additional time is needed for processing.

(2) The council may approve or deny the proposed extension by adoption of a committee report. If the council fails to take final action on the proposed extension within 45 days after receipt of the director's request, or the existing deadline, whichever occurs first, the extension shall be deemed denied.

(3) If an extension of the deadline is approved by the council, the director may thereafter request subsequent extensions of the deadline in accordance with the procedure described above.

Sec. 21-9.100-4 TOD Development Regulations minimum requirements.

The TOD Development Regulations for each TOD Zone shall include, but not be limited to, the following provisions:

(a) Allowances for a mix of land uses, both vertically and horizontally, including affordable housing.

(b) Density and building height limits that may be tied to the provision of community amenities, such as public open space, affordable housing, and community meeting space.

(c) Elimination or reduction of the number of required off-street parking spaces, including expanded allowances for joint use of parking spaces.

(d) Design provisions that encourage use of rapid transit, buses, bicycling, walking, and other non-automobile forms of transport that are safe and convenient.

(e) Guidelines on building orientation and parking location, including bicycle parking.

(f) Identification of important neighborhood historic, scenic, and cultural landmarks, and controls to protect and enhance these resources.

(g) Design controls that require human-scale architectural elements at the ground and lower levels of buildings.

(h) Landscaping requirements that enhance the pedestrian experience, support station identity, and complement adjacent structures.

(i) Incentives and accompanying procedures, which may include minimum standards and financial incentives, to encourage appropriate and necessary transit-oriented development."

SECTION 4. Section 2-24.1, Revised Ordinances of Honolulu 1990, as amended, is amended to read as follows:

"**Sec. 2-24.1 Applicability.**

This article shall apply to council proposals to revise or amend:

(1) The general plan;

(2) A development plan;

(3) The zoning ordinances[;], except as otherwise provided by Section 21-9.100-3(b); and

(4) The subdivision ordinance."

A BILL FOR AN ORDINANCE

SECTION 5. Section 21-9.20-6, Revised Ordinances of Honolulu 1990, as amended, is amended to read as follows:

"**Sec. 21-9.20-6 Conflicting regulations.**

If any regulation pertaining to the special districts conflicts with any provision contained within Article 3, the more restrictive regulation shall take precedence[.]; provided, however, that this section shall not apply to TOD Development Regulations enacted pursuant to Section 21-9.100 and accompanying Sections 21-9.100-1, -2, -3, and -4, which shall take precedence in the event of conflict with any underlying Article 3 provision or special district regulation."

SECTION 6. Ordinance material to be repealed is bracketed. New material is underscored. When revising, compiling or printing this ordinance for inclusion in the Revised Ordinances of Honolulu, the revisor of ordinances need not include the brackets, the bracketed materials, or the underscoring.

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE 09 - 4

BILL 10 (2008), CD2

A BILL FOR AN ORDINANCE

SECTION 7. This ordinance shall take effect upon its approval.

INTRODUCED BY:

Barbara Marshall (BR)

DATE OF INTRODUCTION:

February 14, 2008
Honolulu, Hawaii

Councilmembers

APPROVED AS TO FORM AND LEGALITY:

Deputy Corporation Counsel

APPROVED this 25th day of March, 2009.

MUFI HANNEMANN, Mayor
City and County of Honolulu

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. _____

RESOLUTION

APPROVING THE AIEA-PEARL CITY NEIGHBORHOOD TRANSIT-ORIENTED DEVELOPMENT (TOD) PLAN.

WHEREAS, the Revised Ordinances of Honolulu (ROH) Sections 21-9.100 through 21-9.100-4 of the Land Use Ordinance, enacted by Ordinance 09-4, establish a procedure for the creation of special districts known as transit-oriented development (TOD) zones, and accompanying development regulations, around rapid transit stations to encourage appropriate transit-oriented development; and

WHEREAS, ROH Section 21-9.100-2 provides that for each TOD zone, a neighborhood TOD Plan shall be approved by the Council and shall serve as the basis for the creation or amendment of a TOD zone and the TOD development regulations applicable thereto; and

WHEREAS, plans for the Honolulu rail transit project call for one station in Aiea near the intersection of Kamehameha Highway and Kaonohi Street (Pearlridge station), and two transit stations in Pearl City--one near the intersection of Kamehameha Highway and Kuala Street (Pearl Highlands station), and another on the Leeward Community College campus; and

WHEREAS, the Department of Planning and Permitting (DPP) and its consultant, Van Meter Williams & Pollack, have prepared the Aiea-Pearl City Neighborhood TOD Plan (March 2014) to serve as the basis for the creation of TOD zones around the Pearlridge, Pearl Highlands, and Leeward Community College rail transit stations; and

WHEREAS, the process of creating the Aiea-Pearl City Neighborhood TOD Plan was inclusive, open to residents, businesses, landowners, community organizations, government agencies, and others; and

WHEREAS, the process considered population, economic, and market analyses and infrastructure analyses, including capacities of water, wastewater, and roadway systems; and

WHEREAS, the Aiea-Pearl City Neighborhood TOD Plan does not ignore past planning for either community, but builds on the objectives of the Aiea-Pearl City Livable Communities Plan (May 2004); and

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CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. _____

RESOLUTION

WHEREAS, the Aiea-Pearl City Neighborhood TOD Plan is consistent with the Primary Urban Center Development Plan and the Central Oahu Sustainable Communities Plan established by ROH Chapter 24, Article 5; and

WHEREAS, the Council desires to approve the Aiea-Pearl City Neighborhood TOD Plan; now, therefore,

BE IT RESOLVED by the Council of the City and County of Honolulu that, pursuant to ROH Section 21-9-100-2(f), the Council hereby approves the Aiea-Pearl City Neighborhood TOD Plan (March 2014) attached hereto as Exhibit A and incorporated herein by this reference; and

BE IT FURTHER RESOLVED that, pursuant to ROH Section 21-9.100-3(a), the Director of the DPP is directed to submit to the Planning Commission, within 120 days of the adoption of this Resolution, a proposed ordinance establishing TOD zones for the Pearlridge, Pearl Highlands, and Leeward Community College rail transit stations, and the TOD development regulations applicable thereto; and

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. _____

RESOLUTION

BE IT FINALLY RESOLVED that copies of this Resolution be transmitted to the Mayor, the Director of the Department of Planning and Permitting, and the Honolulu Authority for Rapid Transportation.

INTRODUCED BY:

_____

_____

_____

_____

_____

_____

DATE OF INTRODUCTION: _____

_____

_____ _____
Honolulu, Hawaii Councilmembers

AIEA–PEARL CITY NEIGHBORHOOD TOD PLAN

DRAFT FINAL PLAN
MARCH 2014

PREPARED FOR:
THE CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PLANNING AND PERMITTING

PREPARED BY:
VAN METER WILLIAMS POLLACK, LLP
WESLIN CONSULTING SERVICES, INC
BILLS ENGINEERING, INC
DECISION ANALYSTS HAWAII, INC
BILL CHANG ARCHITECT, LLC

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EXECUTIVE SUMMARY

A. THE VISION

The Aiea–Pearl City Neighborhood Transit-Oriented Development (TOD) Plan (the Plan) presents a community vision for the existing neighborhoods surrounding the Leeward Community College, Pearl Highlands, and Pearlridge rail stations. The Plan is intended as both an overall framework for growth and a guide for local decision making in the three station areas. The Plan is **conceptual in nature,** showing possible improvements on both public and private property. In order to ensure positive change in the station areas, it is essential that stakeholders work together on future projects.

Located along the rail transit line that will connect Ala Moana Center with the East Kapolei region, the Aiea–Pearl City station areas are envisioned as compact, pedestrian-friendly environments that provide numerous housing, employment, and recreational opportunities. Each station area plan has been developed through an inclusive community-based planning effort to ensure that the goals and ideas of area stakeholders have been integrated into the Plan.

The goal of the Plan is to foster more livable communities that take full advantage of the benefits of transit—specifically, creating new transportation options while encouraging economic growth and attractive redevelopment.

The Plan recognizes that traffic congestion on area streets and highways has become a very pronounced problem. By improving and encouraging alternative modes of transportation in Aiea and Pearl City, both residents and visitors will have new mobility choices. The impact of such transportation improvements will be even more pronounced when coupled with new development within walking distance of the rail stations. Transit-oriented design uses land more efficiently and provides walkable, healthy, economically vibrant neighborhoods, safe bicycling environments, convenient access to daily household needs, and enhancement of local culture, history and character.

With improved access, maintenance and adjacent development, the Pearl Harbor Historic Trail could become a great community asset, much like the False Creek Trail in Vancouver, BC.

Pedestrian plazas at the entry/exit of train stations help activate the station area.

Each of the station areas provides unique development opportunities. The Plan aims to enhance the local identity of each station based on both current conditions and future needs:

- Leeward Community College (LCC) station area is envisioned as a college-oriented neighborhood catering to new residents and businesses, as well as students and faculty from the adjacent college.
- Pearl Highlands station will be a major intermodal facility and connection point for riders coming from ewa and mauka directions. Ongoing revitalization of the shopping district can carefully balance the needs of passengers and shoppers arriving via transit, on foot, and via automobile.
- Pearlridge station area is a major urban center and regional destination with opportunities for new development, the future revitalization of Pearlridge Center, and improved access to the Pearl Harbor Historic Trail and shoreline.

While taking into account the individual needs of each station area, the overall vision of the Neighborhood TOD Plan is a connected urban environment that fosters sustainable living and neighborhood identity across the three station areas.

Plan Principles:

- Create Access and Views to Water and Pearl Harbor Historic Trail
- Encourage Workforce Housing
- Create a Comfortable and Lively Pedestrian Environment
- Provide Multimodal Access to and from Stations
- Develop New and Enhance Existing Open Space Amenities

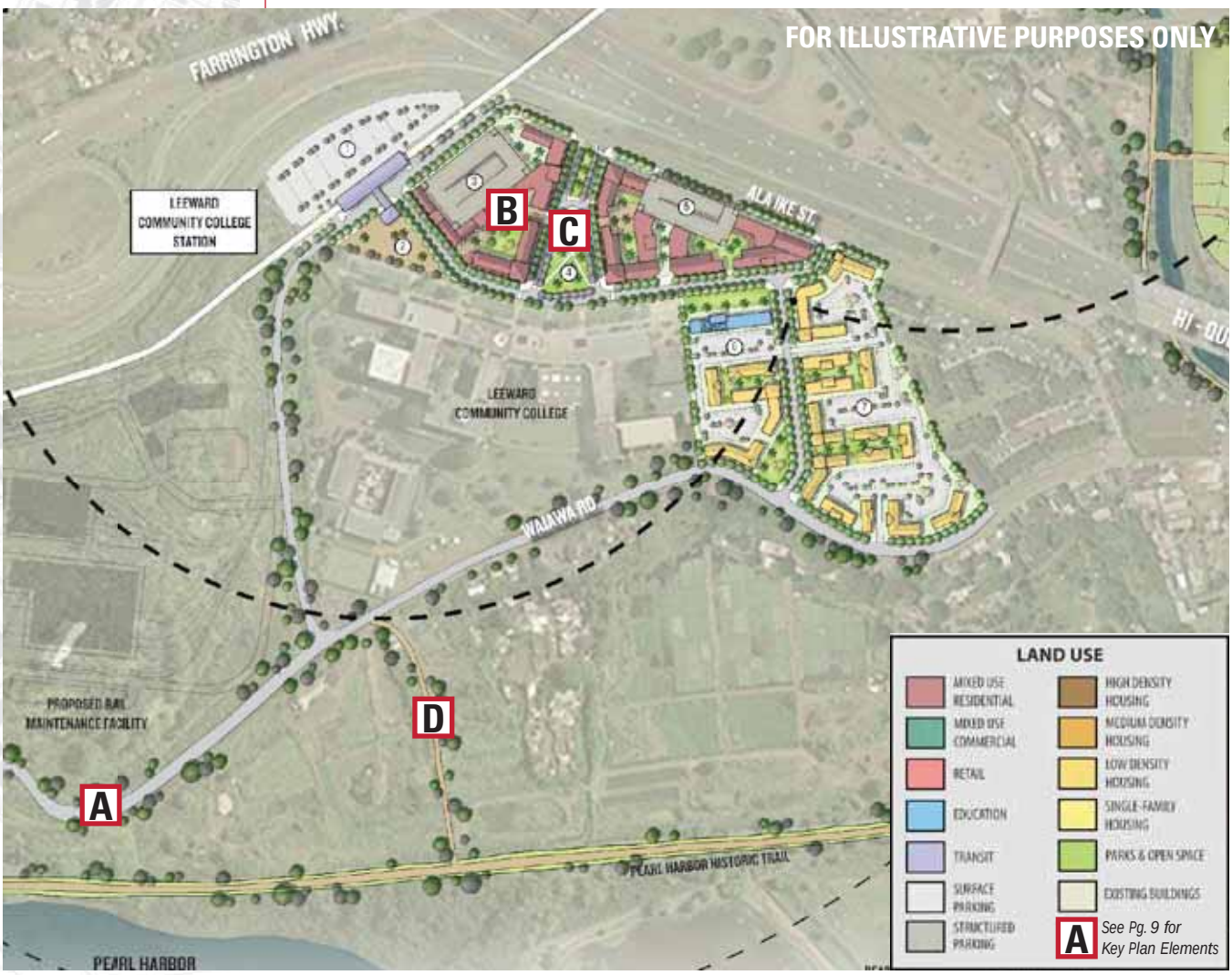
Transit stations should be accessible by bus, car, foot, and bicycle and include both housing and employment opportunities within walking distance.

Stores and restaurants that open to the sidewalk help to bring vitality and business activity to the pedestrian realm.

B. LEEWARD COMMUNITY COLLEGE STATION AREA

I. SUMMARY OF RECOMMENDATIONS

- New bicycle paths along the extension of Ala Ike Street and along Waiawa Stream
- Pearl Harbor Historic Trail improvements
- Mixed-use development on existing surface parking area mauka of LCC campus
- Central green park mauka of LCC campus
- Lower-density housing diamond head of LCC campus
- Neighborhood mini park diamond head of campus in conjunction with new development
- New streets and sidewalks within the station area in conjunction with new development
- Wider sidewalks and landscaping on existing streets
- Secondary access road connecting the station area to Farrington Highway
- Surface parking mauka of the station
- Structured parking in conjunction with mixed-use development
- Transit plaza adjacent to station
- Private open spaces on the interior of blocks



Leeward Community College Station Area Illustrative Plan

2. NEXT STEPS AND PRIORITY PROJECTS

The following steps should be taken cooperatively by the City and County of Honolulu in consultation with area stakeholders in the near (1–5 years) and midterm (5–10 years) in order to put the Plan into action and ensure the framework for TOD follows the vision and principles defined by the community. Priority projects are labeled on the Illustrative Plan (page 8).

A Secondary access road

B Development of catalyst site (closest to station)

C Development of open space adjacent to campus

D Pearl Harbor Historic Trail connection makai of campus

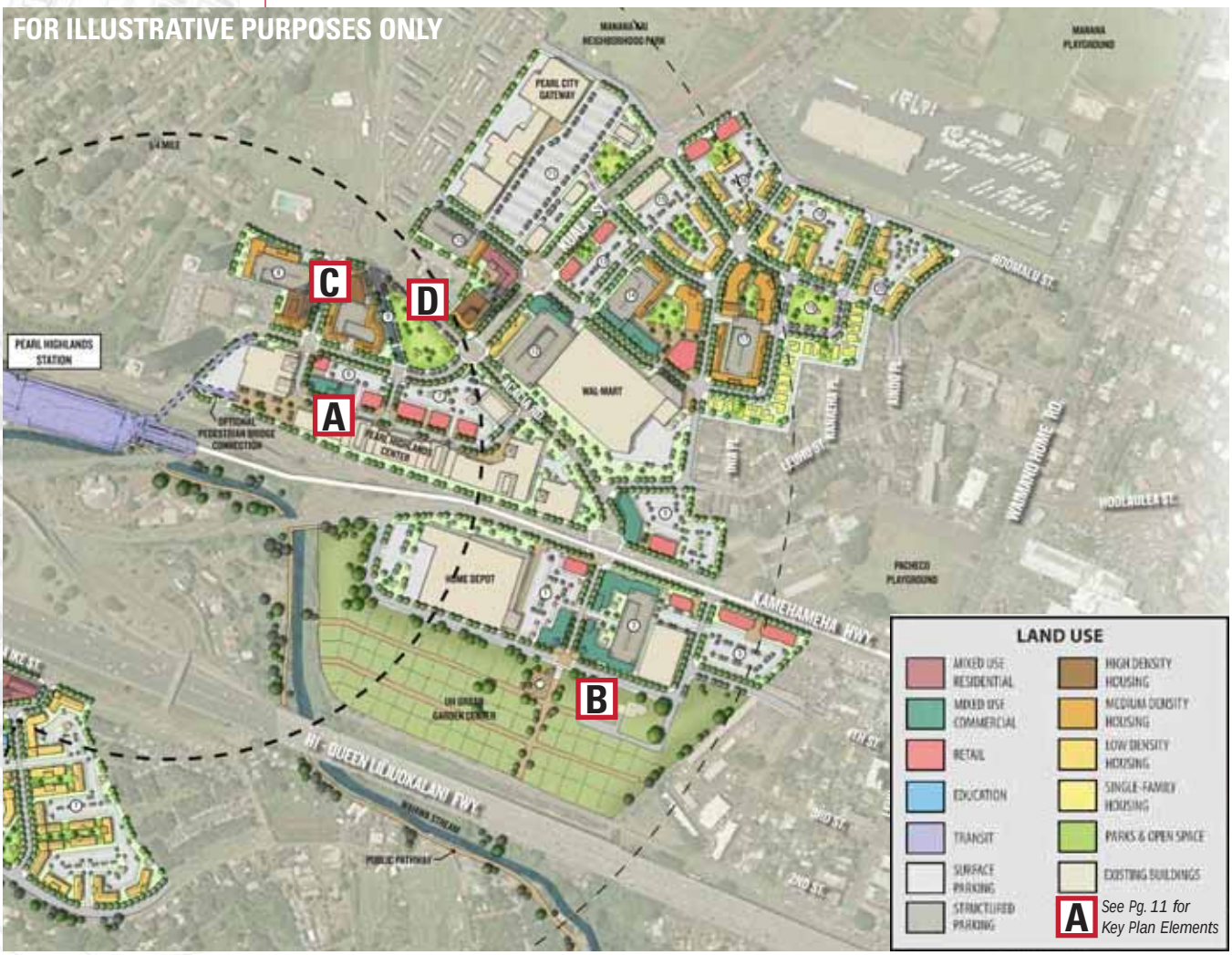
Existing green spine and surface parking mauka of LCC campus

Leeward Community College could integrate new active uses surrounding existing and new open spaces.

C. PEARL HIGHLANDS STATION AREA

I. SUMMARY OF RECOMMENDATIONS

- New bicycle paths along Waiawa Stream
- Tallest buildings in close proximity to station and lower development on perimeter
- Medium-density housing within 1/4 mile of the station and at the NW corner of Acacia Road and Kuala Street
- Neighborhood park on triangle property makai of Acacia Road
- Medium-density housing and neighborhood mini parks mauka of Walmart
- Low-density housing adjacent to Kanaeha Place along diamond head border of Plan area
- New Main Street within existing Pearl Highlands Center
- New streets and sidewalks within station area in conjunction with development
- Structured parking in conjunction with mixed-use development
- Development above rail transit station parking garage
- Transit plaza at the NW corner of Pearl Highlands Center
- Improved public access and enhancements to UH Urban Garden Center



Pearl Highlands Station Area Illustrative Plan

2. NEXT STEPS AND PRIORITY PROJECTS

The following steps should be taken cooperatively by the City and County of Honolulu in consultation with area stakeholders in the near (1–5 years) and midterm (5–10 years) in order to put the Plan into action and ensure the framework for TOD follows the vision and principles defined by the community. Priority projects are labeled on the Illustrative Plan (page 10).

A Pearl Highlands Center pedestrian improvements

B Access and improvements to University of Hawaii Urban Garden Center

C Development of catalyst site (mauka of Pearl Highlands Center)

D Creation of triangle park

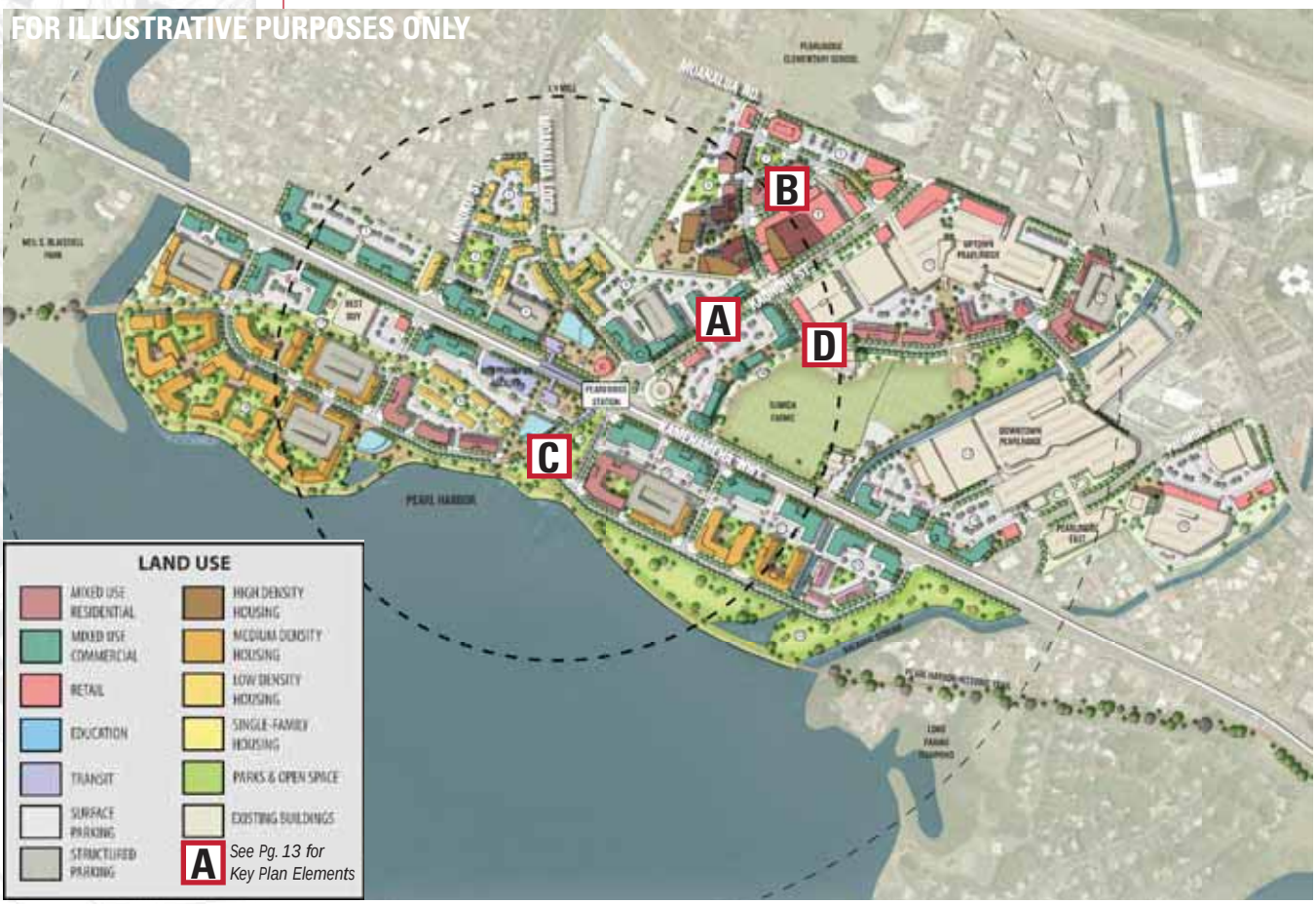
Existing view of Kuala Street looking towards Pearl Highlands Center

High density housing envisioned on Kuala Street within close proximity of Pearl Highlands station

D. PEARLRIDGE STATION AREA

I. SUMMARY OF RECOMMENDATIONS

- New Pearl Harbor shoreline path ewa of Kaonohi Street
- Pearl Harbor Historic Trail improvements
- Medium-density housing makai of Kamehameha Highway, potentially above proposed bus transfer facility
- High-density housing mauka of Kamehameha Highway
- Low-density housing along Moanalua Loop
- Pedestrian trail along the upper perimeter of Sumida Farm with overlook
- New Main Street connecting Moanalua Road and Kaonohi Street
- New streets and sidewalks within station area in conjunction with new development
- Wider sidewalks and landscaping on existing streets
- Structured parking in conjunction with mixed-use development
- Transit plazas on either side of Kamehameha Highway at station
- Additional waterfront park along Pearl Harbor shoreline
- "Window to Pearl Harbor" park at the terminus of Kaonohi Street
- Neighborhood mini park mauka of Sumida Farm
- Private open spaces on the interior of blocks



Pearlridge Station Area Illustrative Plan

2. NEXT STEPS AND PRIORITY PROJECTS

The following steps should be taken cooperatively by the City and County of Honolulu in consultation with area stakeholders in the near (1–5 years) and midterm (5–10 years) in order to put the Plan into action and ensure the framework for TOD follows the vision and principles defined by the community. Priority projects are labeled on the Illustrative Plan (page 12).

A Kaonohi Street pedestrian and bicycle improvements

B Development of catalyst site (Kamehameha Drive-In)

C New bus transfer facility, incorporating mixed-use development, a transit plaza, and a pedestrian connection/view corridor from the station to the Pearl Harbor Historic Trail

D Sumida Farm trail/overlook

Existing view of Kaonohi Street looking towards Kamehameha Highway

Proposed Kaonohi Street improvements would create an attractive pedestrian area, including new mixed-use development that activates the sidewalk.

PROJECT OVERVIEW & EXISTING CONDITIONS

A. BACKGROUND

PROJECT OVERVIEW & EXISTING CONDITIONS

- The Aiea–Pearl City Neighborhood TOD Plan focuses on three rail transit stations: Leeward Community College, Pearl Highlands, and Pearlridge.
- The Plan addresses connectivity and circulation, parks and open space, urban form, land use, phasing and zoning.

I. PROJECT OVERVIEW

The people of Oahu are making an important investment in their future by funding a $5.2 billion fixed guideway system connecting Aiea and Pearl City with East Kapolei to the west and Ala Moana Center to the east. This project will give residents a fast and efficient alternative to the private automobile and curb the growth of an already burdensome traffic problem in this corridor. The rail transit system also creates an opportunity to address growth and development pressures on Oahu without consuming rural land or forcing residents to drive far distances to reach daily destinations such as jobs, schools, shopping, and services. New infill development near the rail stations can help create compact, walkable neighborhoods that provide housing, travel, and lifestyle choices for generations to come. Household benefits of being located near rail include reduced housing and transportation costs, more time to spend with family and friends, more physical activity, and higher quality communities. This strategy of investing in and growing around transit stations—often referred to as transit-oriented development or TOD—is the focus of this report.

The Aiea–Pearl City Neighborhood Transit-Oriented Development Plan (the Plan) is one of a series of community-based planning efforts led by the Department of Planning and Permitting for station areas along the planned rail transit line. The Plan focuses on the areas within 1/2 mile (roughly a 10-minute walk) of the Leeward Community College, Pearl Highlands, and Pearlridge rail stations. The Plan offers an overall vision for TOD in Aiea and Pearl City and recommendations for each station area in terms of overall structure, connectivity and circulation, parks and open space, urban form, land use, prototypical phasing, and station area zoning. These recommendations are based on research about current transportation, infrastructure, and real estate market conditions, as well as extensive public outreach and best practices for TOD. The Plan will take decades to be fully realized and will be implemented in various ways: the Department of Planning and Permitting will create new TOD zoning districts; public agencies will invest in infrastructure improvements; and private landowners will redevelop their properties consistent with the vision and details laid out in the Plan. The Plan is illustrative and shows how the area could develop over time. For example, prototypical phasing strategies are given for each station area, but actual phasing will depend on variables such as available funding, land acquisition, community support, economic conditions, and more. The goal of the Plan is to present the community's long-term vision for how these station areas should grow and evolve around transit.

FIGURE 1 - Honolulu Rail Transit Project Alignment Map

2. LOCATION AND CONTEXT

Aiea and Pearl City are centrally located within the island's existing and planned urban areas. Businesses and residents have good access to downtown Honolulu, Central Oahu, Ewa, and Windward Oahu via the H-1, H-2 and H-3 freeways, Moanalua Road, Kamehameha Highway, Farrington Highway, and the City's extensive bus transit system.

Aiea and Pearl City are excellent locations for:

- Residents working in Aiea and Pearl City, as well as those commuting to jobs in Honolulu, Ewa and Central Oahu
- Students attending Leeward Community College and UH West Oahu
- Military personnel and civilian defense workers living in the area and commuting to nearby military facilities
- Retail stores and office complexes serving Aiea, Pearl City and the surrounding region

The Aiea–Pearl City Neighborhood TOD Plan focuses on three rail transit stations: Leeward Community College (LCC), Pearl Highlands, and Pearlridge.

- Leeward Community College is the western-most station addressed in this study. This station will serve the campus and provide students with fast, frequent rail transit service to and from school.
- The Pearl Highlands station, situated along Kamehameha Highway north of the H-1/H-2 interchange, will be a major park-and-ride location for the fixed guideway system.
- Pearlridge is the most urban of the three stations covered by the Plan. The major attraction near the Pearlridge station is the existing Pearlridge Center, which is the largest indoor shopping center in Hawaii. Pearlridge Center features a monorail system that transports customers between Uptown and Downtown Pearlridge Center and overlooks historic Pearl Harbor and the

FIGURE 2 - Aiea–Pearl City Neighborhood TOD Plan Areas

- The planning process was initiated in June, 2009.
- Community Workshop 1: October 21, 2009
- Community Workshop 2: December 1, 2009
- Community Workshop 3: April 21, 2010
- Community Workshop 4: November 17, 2010

3. PROJECT SCHEDULE AND COMMUNITY PARTICIPATION

The Aiea–Pearl City Neighborhood TOD Plan was developed through an extensive outreach process, including a series of four community workshops. Beginning in June of 2009, the planning process included identification of issues and opportunities, the creation of draft station area alternatives, refinement of the alternatives, and creation of preferred station area plans. Additionally, the planning team has made recommendations on phasing, implementation, and revisions to development standards for the area around the three stations.

A Project Advisory Committee, comprised of individuals from a broad range of interests and affiliations, was created to serve as an advisory body and sounding board to the City's planning team. The Committee also networked with the larger Aiea–Pearl City community to disseminate information and encourage attendance and participation at the community workshops.

Successful transit-oriented development depends on the participation of, and broad-based support from, government, residents, businesses, community organizations, landowners, developers and the financial sector. High quality TOD projects emerge after listening to the concerns and needs of all parties and result from a common set of goals.

PROJECT TIMELINE

The Aiea–Pearl City Neighborhood TOD Plan was developed through an outreach process that included a series of four community workshops.

B. WHAT IS TOD AND SMART GROWTH?

Transit-oriented development is compact, mixed-use development situated near transit.

Transit-oriented development is compact, mixed-use development situated near transit. TOD concentrates a mix of land uses, such as residential, office, retail, civic uses and entertainment, within easy walking and biking distance of a transit station (generally 1/4 mile to 1/2 mile, or a 5 to 15 minute walk). This mix of uses, combined with thoughtfully designed community spaces, plazas and parks, forms a vibrant village-like neighborhood where people can live, work, and play. Transit-oriented developments encourage transit ridership while discouraging sprawl, reducing impacts on the environment and helping to foster a sense of community. Other benefits include reduced household transportation costs, healthier lifestyles, and the increased ability of seniors, youth and the disabled to reach goods and services.

"The urban design principles associated with TOD are:

- *Organize growth on a regional level to be compact and transit-supportive.*
- *Place commercial, housing, jobs, parks, and civic uses within walking distance of transit stops.*
- *Create pedestrian-friendly street networks that directly connect local destinations.*
- *Provide a mix of housing types, densities, and costs.*
- *Preserve sensitive habitat, riparian zones, and high-quality open space.*
- *Make public spaces the focus of building orientation and neighborhood activity.*
- *Encourage infill and redevelopment along transit corridors within existing neighborhoods."*

- Peter Calthorpe
The Next American Metropolis

TOD contains a mixture of uses along with thoughtfully designed community spaces, plazas, and parks which form a vibrant village-like neighborhood.

Successful TOD depends on participation of all stakeholders including government, residents, business and community organizations, landowners, developers, and the financial sector.

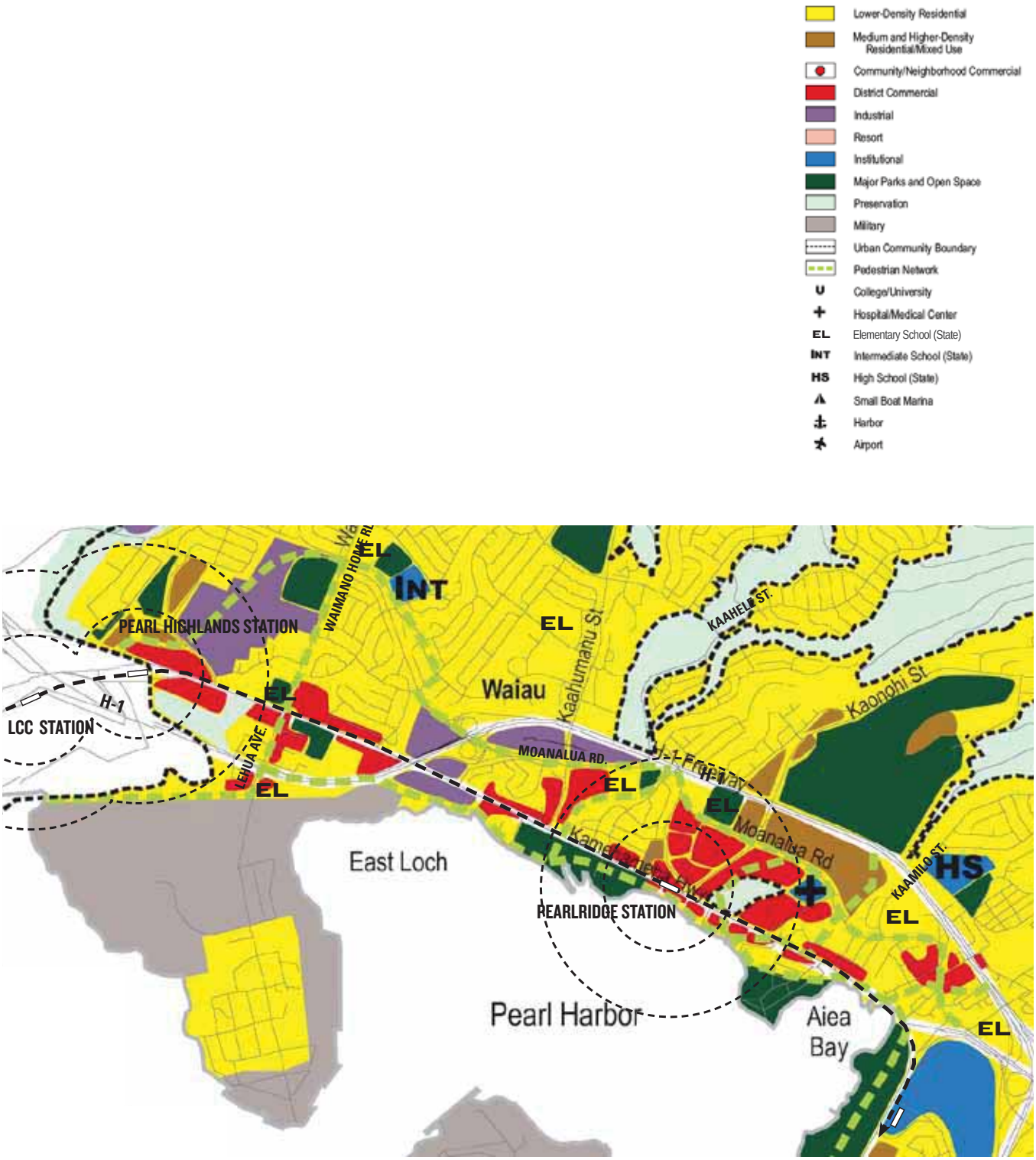


FIGURE 3 - Primary Urban Center Development Plan Land Use Map

C. ONGOING AND PREVIOUS PLANS

1. GENERAL PLAN

The General Plan for the City and County of Honolulu is a comprehensive statement of objectives and policies which sets forth the aspirations for the future of Oahu and the strategies to achieve them. The General Plan addresses the following areas of concern: population, economic activity, the natural environment, housing, transportation and utilities, energy, physical development and urban design, public safety, health and education, culture and recreation, and government operations and fiscal management. Policies support a diverse economy, public transportation options, affordable housing, adequate public facilities/resources and energy resources, well-designed buildings and public spaces, safety from natural and man-made disasters, community health and education opportunities, multi-ethnic culture, and historic and cultural resources.

The General Plan also distinguishes planning areas within the island. The communities addressed in the Aiea–Pearl City Neighborhood TOD Plan lie within the Primary Urban Center and Central Oahu planning areas.

2. PRIMARY URBAN CENTER DEVELOPMENT PLAN

The City's Primary Urban Center (PUC) Development Plan (DP) consists of policies and guidelines intended to guide land use and infrastructure decisions in a manner consistent with applicable General Plan (GP) provisions. It outlines the vision for Oahu's most populous region, which stretches from Kahala to Pearl City. The Pearl Highlands and Pearlridge station areas are located on the western end of the PUC (long-range land use patterns are show in Figure 3 on page 20). The DP emphasizes retaining the qualities that attract both residents and visitors while encouraging the full development of the PUC, consistent with the General Plan projections showing the PUC accommodating approximately 46% of the island's population by 2025. As of 2010, the actual population was 435,118 or 45.6%. The TOD Plan projects roughly 1,400 and 2,400 dwelling units could be shifted to the area around the Pearl Highlands and Pearlridge stations, respectively, from other areas. Using an average household size of 2.61, the population in the station areas could increase by roughly 10,000. However, it is important to note that this increase will be market driven and will occur incrementally over many years.

The DP identifies several Aiea and Pearl City town centers where the focus is to stimulate a strong sense of community with people-oriented town centers. The Pearl Harbor Town Center, which includes the Pearlridge station, should include a greater diversity of uses than the other town centers, integrating medium or higher-density residential and commercial development with proper transitioning to adjacent residential neighborhoods with compatible building forms and street connections. The Pearl City Town Center, which includes the Pearl Highlands station, should serve as a more localized activity and service area. The TOD Plan encourages mixed-use development with increased density nearest both station areas, and higher allowable heights in the Pearlridge area.

Also, the DP calls for the creation of public open spaces along the waterfront and strengthening of the physical and visual connections to the water. It recognizes the shoreline as a principal organizing element in the PUC, and sees waterfront development as an economic and social asset for the surrounding community. The TOD Plan recommends new bicycle and pedestrian paths leading to the Pearl Harbor Historic Trail, with added parks and open space for community

- The General Plan supports transit-oriented development.
- The Primary Urban Center Development Plan encompases the Pearlridge and Pearl Highlands station areas and supports TOD.

The Central Oahu Sustainable Communities Plan encompasses the LCC station area. It supports completion of the Pearl Harbor Historic Trail and focusing new development around transit.

recreation and waterfront access. Mixed-use development with a housing emphasis is proposed between the waterfront and Kamehameha Highway.

The DP calls for the development of a balanced transportation system, offering pleasant and efficient travel choices. Other travel modes, such as walking and bicycling, should be supported with proper facilities and connections to transit. Complementary to the rail transit system, the TOD Plan encourages safe and convenient connections to and from each station to promote transit use, including new and/or improved streets, sidewalks, bicycle facilities, active transit plazas, and landscaping.

3. CENTRAL OAHU SUSTAINABLE COMMUNITIES PLAN

The Leeward Community College (LCC) station area is situated just within the southeastern boundary of the Central Oahu Sustainable Communities Plan (SCP) (December 2002). The SCP consists of policies and guidelines consistent with General Plan (GP) provisions that encourage residential development near employment centers, recreational and commercial uses. The production of a range of housing choices is encouraged, including the provision of affordable rental housing.

The SCP promotes the location of colleges and new development in urban areas near transit nodes, commercial centers, or high-density residential areas. Focusing residential development near transit stations helps Central Oahu maintain its unique character and lifestyle, and supports economic opportunities along the rail corridor. The TOD Plan recognizes the potential for an active college town community adjacent to the LCC station, including offices, businesses and services that could cater to the university's needs. In addition, approximately 820 multifamily housing units could be provided as a convenient housing option for students and faculty, which would also help to reduce overall vehicle usage.

Transportation issues are also identified in the SCP as a primary concern that impacts the Pearl City and Aiea areas. Central Oahu experiences traffic congestion and bottlenecks, especially where H-2 joins H-1 (near the LCC and Pearl Highlands transit stations). Traffic volume on H-2 at Kipapa is projected to increase almost 40% by 2020, and H-1 traffic is projected to increase by 10%. The SCP suggests that projected demand for peak-hour transportation in Central Oahu should be met by increased use of transit. The Plan states that "Central Oahu will be developed with a transportation system which provides easy access to transit, uses traffic calming design, and encourages people to walk and bike, reducing the need for the use of the automobile." The TOD Plan envisions rail transit as a part of a larger multimodal transportation network. By creating better connected communities, residents and visitors will have a range of transportation choices, allowing them to choose the most direct, efficient, and economical way to get around. The TOD Plan promotes new streets, paths, and trails to accommodate access by the appropriate mode.

The GP also encourages opportunities for recreational and educational use and physical contact with Oahu's natural environment. The SCP recognizes the Pearl Harbor Historic Trail, envisioned to travel from Aiea to Nanakuli, as a recreational and cultural landmark for the area. Consistent with its planning principle to create access and views to the water and Trail, the TOD Plan proposes new paths and enhancements to the trail from all three stations, allowing for increased pedestrian and bicycle recreation, as well as immediate views and access to the shoreline. Appropriate mixed-use development along the waterfront could increase access, usage, and safety of the waterfront trail and its adjacent open spaces.

4. AIEA–PEARL CITY LIVABLE COMMUNITIES PLAN

The Aiea–Pearl City Livable Communities Plan, completed in 2004, is a community-based Special Area Plan that focuses on transportation, community design, and implementation to lay out a vision for the future of these communities. This plan is intended to "improve traffic-congested roadways, provide a more pedestrian-friendly environment, and revitalize the livability and character of the neighborhoods."

Many key components of the Livable Communities Plan are consistent with TOD and are highlighted in Figure 4 on page 24. Shoreline connections, both physical and visual, are promoted, especially pedestrian and bicycle connections across Kamehameha Highway. Town centers are emphasized for establishing the desired small-town feeling in Aiea and Pearl City. Urban trails are proposed to better utilize the streams and drainageways that run from mauka residential areas to the shoreline. Landscape improvements and beautification of Kamehameha Highway and other major streets are proposed to help with traffic calming, pedestrian-friendliness, and a sense of community. Expanded open space and views to the Pearl Harbor shoreline are desired, as well as expanded use of the Pearl Harbor Historic Trail.

Generally, higher density commercial and residential mixed-use developments are proposed mauka of Kamehameha Highway, while lower densities and building heights are desired makai of Kamehameha Highway to preserve views of Pearl Harbor.

Both the Aiea and Pearl City communities have identified specific areas as "Town Districts." Both communities wish to recapture and enhance the small town character, create a more pedestrian-oriented atmosphere and create more open space around Pearl Harbor.

- The Aiea–Pearl City Livable Communities Plan is intended to "improve traffic-congested roadways, provide a more pedestrian-friendly environment, and revitalize the livability and character of the neighborhoods."

The Aiea–Pearl City Livable Communities Plan identifies the Pearlridge station area as a regional town center.

Expanding use of the Pearl Harbor Historic Trail is an important component of the Aiea–Pearl City Livable Communities Plan.

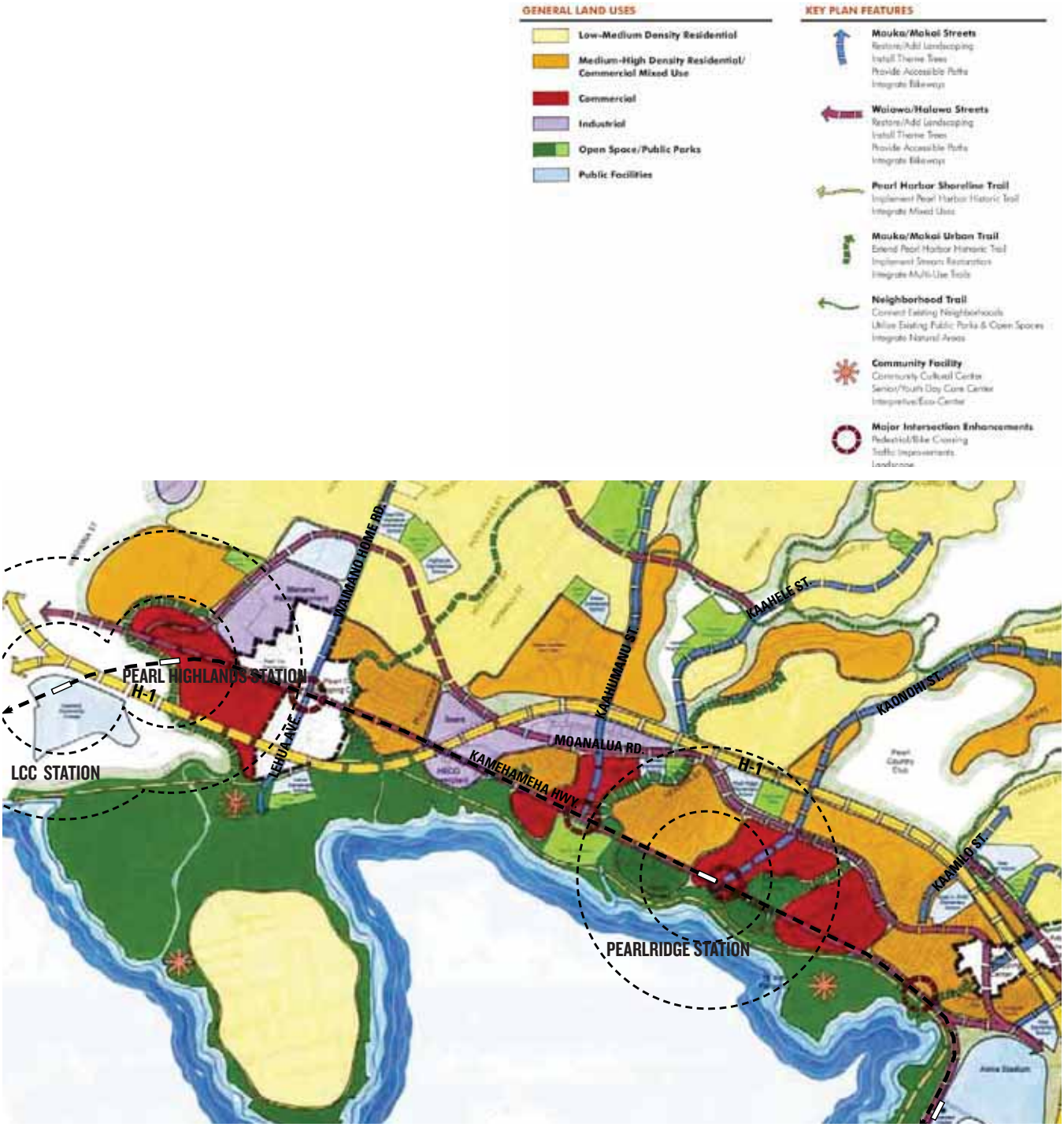


FIGURE 4 - Aiea–Pearl City Livable Communities Plan

5. PEARL HARBOR HISTORIC TRAIL MASTER PLAN

The vision laid out in the Pearl Harbor Historic Trail (PHHT) Master Plan (Figure 5, page 26) is to develop the historic Oahu Railway and Land Company (OR&L) right-of-way as a world-class heritage and recreational corridor that enhances and connects the communities from Aiea to Nanakuli. This plan focuses on the community's four key goals for the Pearl Harbor Historic Trail: outdoor recreation/physical fitness, historic preservation and education, economic revitalization, and environmental preservation and education.

The trail connects several major urban centers with the natural resources surrounding Pearl Harbor. Traveling primarily along the coast, it is planned to weave through various existing and proposed attractions such as nature overlooks, historic fishponds, Rainbow Bay Marina, and the Pearl Harbor National Wildlife Refuge. The path comes within a block of the Pearlridge rail transit station, and this proximity could further strengthen the viability of alternate modes of transportation in this neighborhood. In addition, the trail is proposed to connect the Leeward Community College campus into the larger trail network.

While the PHHT Master Plan proposes to restore the historic railway tracks and run train cars adjacent to the pedestrian/bicycle path, research indicates that exiting utilities in the right-of-way preclude restoration of historic rail operations. This plan also has a proposed ferry connection to take travelers across the harbor, which would provide another amenity for transit-oriented development near the Pearlridge station.

- The Pearl Harbor Historic Trail Master Plan outlines a world-class heritage and recreational corridor that enhances and connects the communities from Aiea to Nanakuli.

The Pearl Harbor Historic Trail is an important regional amenity.

The Pearl Harbor Historic Trail Master Plan identifies trail improvements in both Aiea and Pearl City.

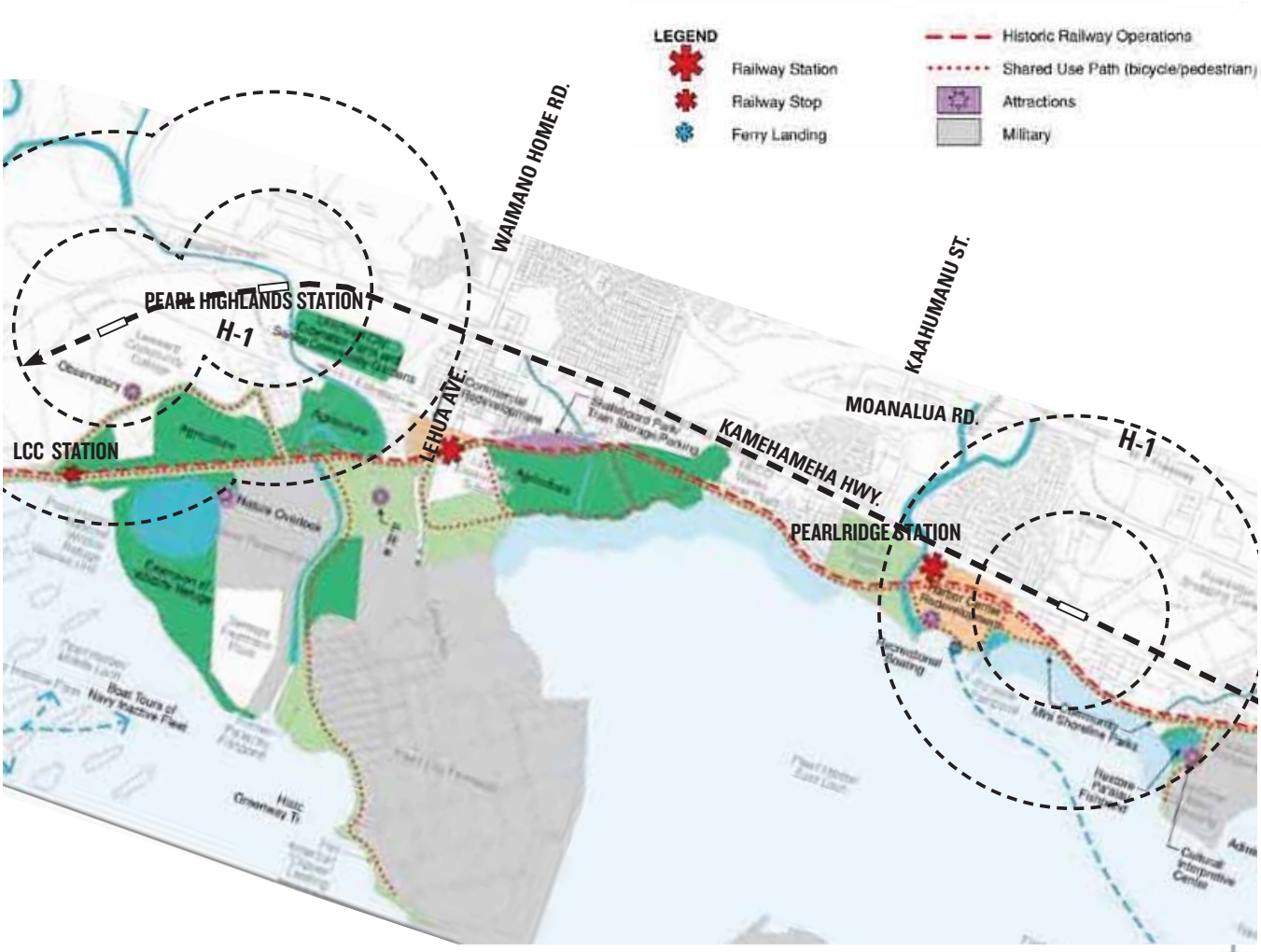


FIGURE 5 - Pearl Harbor Historic Trail Master Plan

6. HONOLULU RAIL TRANSIT PROJECT

The Honolulu Rail Transit Project involves the planning, design, and construction of an elevated rail line between East Kapolei and Ala Moana Center, with possible future extensions to Kapolei, University of Hawaii at Manoa, and Waikiki. The length of the corridor is approximately 20 miles. The project is being constructed in phases, with the portion of the corridor serving the Aiea–Pearl City neighborhoods being coperational by 2017. The final phase is expected to be operational by 2019.

The Leeward Community College station will be located at the north west end of campus and the only at-grade station in the system. The Leeward Community College station is not expected to have the high passenger access demands of other station locations because it is physically isolated and will have neither a park-and-ride lot nor a bus transit center nearby. No bus stops, taxis or other significant access provisions are anticipated at this station.

The Pearl Highlands station will include a 1,600-space parking structure on 11 acres of land west of the station. The station will be elevated above the road just east of the intersection of Farrington and Kamehameha Highways. The vehicle entrances to the parking structure will greatly influence local traffic circulation and TOD planning considerations. The Pearl Highlands station will also be served by numerous bus routes. About half of these routes are express bus services now serving the Alapai Transit Center. There will be a high volume of bus-related traffic combined with high-volume peak-period vehicle traffic. Direct ramp connections with the H-2 freeway are likely to be for joint bus and high-occupancy vehicle use.

The Pearlridge transit station will be elevated above Kamehameha Highway, and station entrances will be provided on both sides of Kamehameha Highway. The station will be served by 12 bus routes using the planned bus transit center identified in the Aiea–Pearl City Livable Communities Plan. The bus transit center should be considered an integral part of station area TOD planning even though it is not being constructed as part of the rail project.

- The portion of the rail project serving Aiea–Pearl City neighborhoods is expected to be operational by 2017.

The rail transit line will run down the median of Kamehameha Highway.

Significant redevelopment can occur within 1/4 mile of the rail stations.

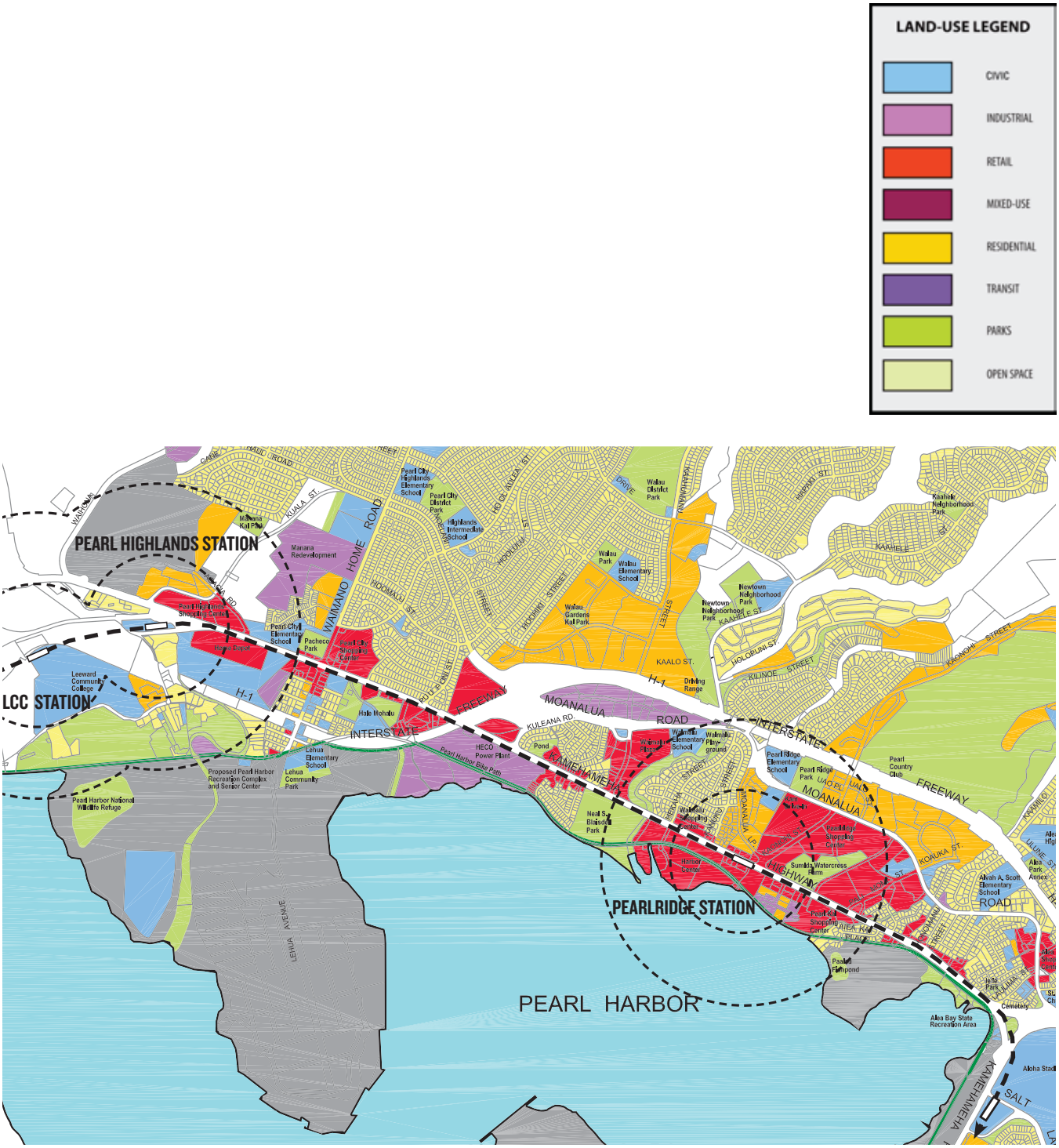


FIGURE 6 - Existing Land Uses

D. PLANNING AREA OVERVIEW

1. EXISTING LAND USES

Within 1/4 mile of the Leeward Community College station, the primary existing land use is the educational facility which houses numerous buildings and parking lots near the H-1 freeway. Makai of the college are military land and open space. Just makai of Waiawa Road, there are some scattered single family homes and agricultural properties. The shoreline and the Pearl Harbor Historic Trail are within 1/2 mile of this station.

The Pearl Highlands station will sit in an area of vacant land where Kamehameha Highway and Farrington Highway meet. Within a 1/4 mile of the proposed station location, there is a Home Depot (just diamond head) and a Sam's Club and shopping center (just mauka). Mauka of Kamehameha Highway, there is a multifamily residential community, while the makai side consists of scattered single family homes and some agricultural uses. The Pearl Harbor Historic Trail, Walmart, a post office, more single and multifamily housing, and the UH Urban Garden Center are within 1/2 mile of this station.

The Pearlridge station is located at the intersection of Kaonohi Street and Kamehameha Highway near, Pearlridge Center. On the mauka side of Kamehameha Highway, there is a mixture of single and multifamily residences, miscellaneous business services including automobile services and retail, and Sumida Watercress Farm. The Pearl Harbor Historic Trail is within 1/8 mile of the transit stop and provides direct access to the shoreline. Other uses makai of the transit stop and Kamehameha Highway include a Best Buy and other retail services, automobile repair services and industrial warehouses (adjacent to the Harbor), and some scattered multifamily residential buildings.

- Leeward Community College station area: primarily educational
- Pearl Highlands station area: primarily retail and residential
- Pearlridge station area: primarily commercial

Both commercial and multifamily residential uses are found near the Pearlridge station.

Existing multifamily residential buildings are located adjacent to Pearl Harbor, makai of Kamehameha Highway.

- Existing zoning encourages single-use districts. The TOD areas should include new zoning standards to encourage mixed-use development.

2. EXISTING ZONING

Land Use Ordinance (LUO) zoning designations are generally consistent with existing land uses in the station areas. Existing zoning designations are shown below. The Plan recommends changes to the LUO, as described in Chapter IX: Implementation Recommendations.

- A-1 Apartment
- A-2 Apartment
- A-3 Apartment
- AMX-2 Medium Density
- AMX-3 High Density
- AG-1 Agricultural Restricted
- AG-2 Agricultural Restricted
- B-1 Neighborhood Business
- B-2 Community Business
- BMX-3 Community
- F1 Military and Federal
- I-1 Limited Industrial
- I-2 General Industrial
- I-3 Waterfront Industrial
- IMX-1 Industrial Mixed Use
- P-1 Restricted Public
- P-2 General Public
- Public Precinct
- R-10 Residential
- R-20 Residential
- R-3.5 Residential
- R-5 Residential
- R-7.5 Residential

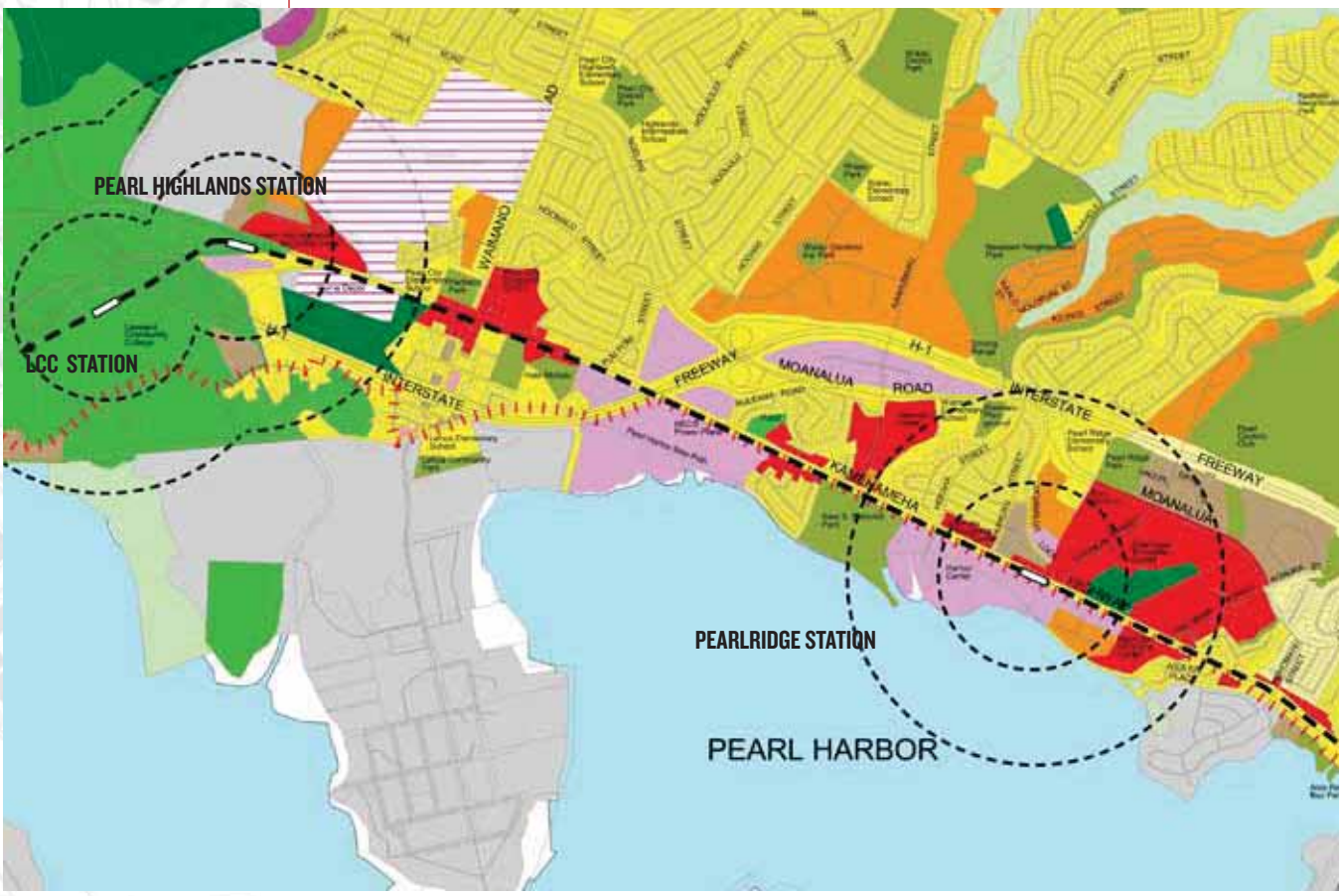


FIGURE 7 - Existing Zoning

3. TOD ISSUES AND OPPORTUNITIES

The issues and opportunities associated with transit-oriented development in Aiea and Pearl City are summarized below and represented in Figure 8 on page 32.

The Leeward Community College station area is primarily one land use: the college. With rail transit on the way, it is very important to plan for a mixture of uses that support the college, enhance transit ridership, and encourage placemaking. This will require a new and innovative approach to campus planning. The campus, perched on a bluff, offers great views of Pearl Harbor and could be connected to the Pearl Harbor Historic Trail and waterfront. The expansive existing surface parking lot is a prime opportunity for new development. With great visibility from H-1 and Farrington Highway, this site has a lot to offer in terms of potential for transit-oriented development, but currently access is a hindrance to new growth.

The Pearl Highlands station area also has both TOD issues and opportunities. A major constraint is the floodway, which runs east to west through this station area. The proposed park-and-ride facility adjacent to the station provides an opportunity for high intermodal activity in this station area, especially during peak hours but could also exacerbate existing traffic problems. A pedestrian bridge is proposed from the station to the existing shopping area, which is crucial for successful TOD in the area of the touchdown. Most development potential is within 1/2 mile of the station, however, Kuala Street and Kamehameha Highway bisect these areas. The areas near Kuala Street could become a mixed use environment with an active, vibrant feel. The larger area just makai of Kamehameha Highway, surrounding the existing Home Depot, might be better suited for commercial development with access and visibility from H-1 and Kamehameha Highway. It is important that both of these areas, identified as areas of opportunity in Figure 8, connect seamlessly to the town center district along Lehua Avenue that was envisioned in the Aiea–Pearl City Livable Communities Plan. Additionally, development right at the station above the park-and-ride facility should be explored.

- Leeward Community College station area: the surface parking lot is an opportunity.
- Pearl Highlands station area: a well-developed pedestrian connection is crucial for successful TOD.
- Pearlridge station area: has the most opportunity for TOD of the three station areas

Waimalu Shopping Center, while active and vibrant, suffers from poor pedestrian access.

Several shopping centers near the proposed transit stations will be key opportunity sites for TOD.

The Pearlridge station area has the most opportunity for TOD of the three stations covered by the Plan. This area, which includes both Pearlridge Center and Pali Momi Medical Center, is both a local and regional destination. There are many areas suited for transit-oriented development. These areas are called out as areas of opportunity on the map below. The land makai of Kamehameha Highway and adjacent to Pearl Harbor offers access to the water, great views, and connections to the Pearl Harbor Historic Trail. New development should be pursued in this area in conjunction with a planned bus transfer facility. The areas mauka of Kamehameha Highway have potential for redevelopment in a dense, mixed-use pattern. New jobs, retail and housing opportunities exist in this area. Another opportunity is to take advantage of Sumida Farm by turning development towards this amenity, instead of away from it; restaurant lanais could overlook this urban oasis. Views of the mountains can be enjoyed from many parts of this station area. Connections to the canal along the diamond head side of Sumida Farm could also be beneficial for walking and jogging.

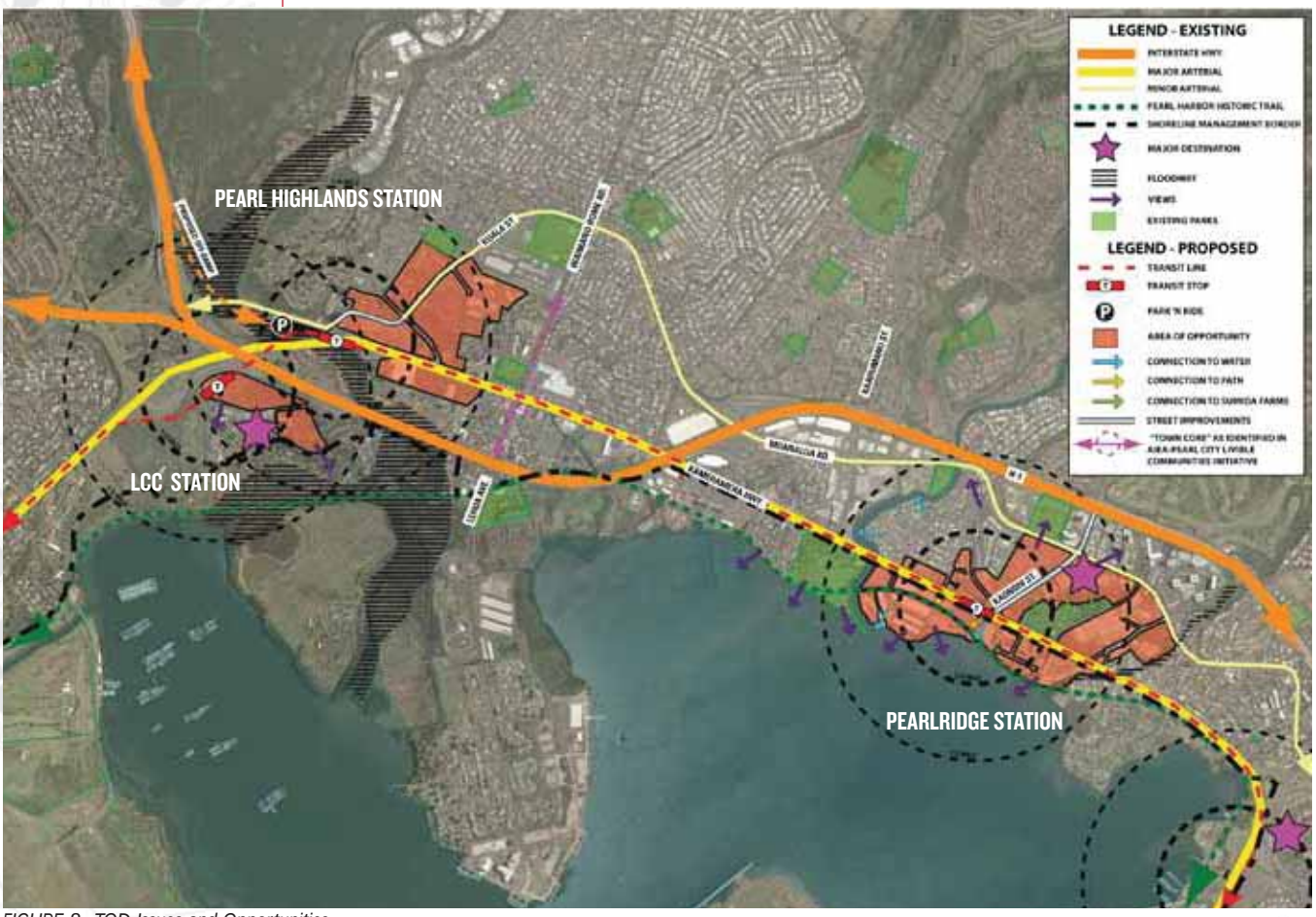


FIGURE 8 - TOD Issues and Opportunities

4. PRESERVATION AND CHANGE

Development of the rail transit system and stations creates an opportunity for change, but not everything will change or should change. Figure 8 shows the areas of greatest opportunity for positive change, but it also shows areas that will be preserved, including parks, floodways and most residential areas. Typically, single-family neighborhoods and areas with small parcel sizes and a large number of land owners are least affected by change. Community-oriented open spaces, historic buildings, and other cultural places should remain also relatively unchanged. The alternatives that have been developed through the planning process focus primarily on the areas of opportunity while protecting adjacent single-family neighborhoods and other areas of preservation.

Historically and culturally significant features within the planning area include the Waiawa Separation Bridges, the Waiawa Booster Pump Station and the Waiawa Stream Bridge near the Pearl Highlands station, and the Sumida Watercress Farm and Kalaulao Spring Bridges near the Pearlridge station. These features are among those recognized as places to preserve for future generations.

5. INFRASTRUCTURE

Existing water and sewer infrastructure in the TOD areas is sized for current zoning, which is approximately equal to the proposed commercial and residential projections for TOD. Exceptions include the Leeward Community College station area, which is zoned AG-2, however, the proposed growth in this area is modest. Another exception is the Pearlridge station area where a modest increase in sewer flow will occur, and because of this, trunk sewers should be expected in the TOD overlay area to absorb additional flows.

- A greater degree of change can be expected within 1/4 mile of the stations, with less intensive effects moving outward toward the 1/2 mile radius and beyond.

Industrial buildings makai of Kamehameha Highway could be transformed into new uses.

Sumida Farm is an important community resource to be celebrated and preserved.

6. MARKET DEMAND

The market analysis completed for this study explains that Aiea and Pearl City are excellent locations for TOD due to their central location between Ewa and Downtown Honolulu and access to major freeways and arterials, as well as the addition of rail transit and extensive bus service. In addition to its central location, Aiea and Pearl City serve students attending Leeward Community College and UH West Oahu, as well as military personnel and civilian defense workers. Job creation and affordable housing will assist these demographics.

7. TRANSPORTATION

Existing transportation modes in the planning area include bus, private automobile, bicycles, and walking. Pearlridge is the most bus transit-served station area due to Pearlridge Center and other area destinations. Existing Pearlridge bus routes include: A, 11, 20, 32, 40, 42, 53, 54, 62, 71, and 90. Pearl Highlands and LCC are both served by the same routes, including A, 40, 42, 62, and 73.

Currently, the only bikeway facilities in the Aiea–Pearl City area include the Pearl Harbor Historic Trail and bicycle lanes along the new Kuala Street extension in Pearl City. The need exists for bicycle connections from residential areas to activity centers, schools, recreation areas, and major transit stops. An integrated bikeway system is needed to link these places together and provide safe access for biking to be considered a viable transportation option.

Current pedestrian facilities are also lacking. Sidewalks are provided throughout the Aiea–Pearl City area, although many of them are not adequate and need improvement to encourage pedestrian activity. Safer pedestrian crossings are also needed in the TOD areas, especially near Moanalua Road and Kamehameha Highway in the vicinity of Pearlridge Center.

More detailed information related to existing transportation conditions is available in the Existing Conditions Report.

PLAN PRINCIPLES

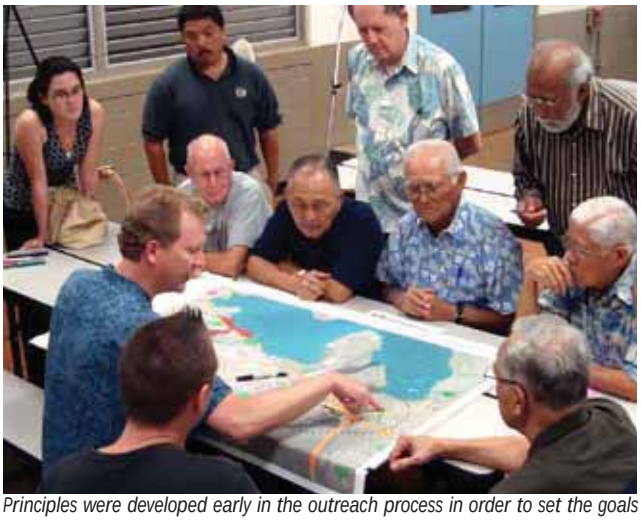
FIGURE 9 - Aiea–Pearl City Neighborhood TOD Planning Principles

PLAN PRINCIPLES

INTRODUCTION

The following plan principles were developed by community stakeholders, neighborhood residents and property owners through the Aiea–Pearl City Neighborhood TOD Plan process. They are intended to serve as overall objectives for both the Plan and the subsequent TOD zoning regulations. Recommendations made in the Plan relate directly to these important principles for how the Aiea–Pearl City neighborhoods should grow around the new rail stations:

- Create Access and Views to Water and Pearl Harbor Historic Trail
- Encourage Workforce Housing
- Create a Comfortable and Lively Pedestrian Environment
- Provide Multimodal Access to and from Stations
- Develop New and Enhance Existing Open Space Amenities



Principles were developed early in the outreach process in order to set the goals and objectives for the overall neighborhood TOD vision and plan.

1. CREATE ACCESS AND VIEWS TO WATER AND PEARL HARBOR HISTORIC TRAIL

Water has always been important to this area, from the time of the ancient Hawaiians to the sugar plantation era to the modern military presence in Pearl Harbor. This principle recognizes the important link between the station area neighborhoods and the nearby streams, springs, wetlands, and Pearl Harbor shoreline.

Much of Aiea–Pearl City is directly adjacent to Pearl Harbor. Over time, the area has generally developed mauka of Kamehameha Highway, leaving the shoreline areas for light industrial uses because access and flooding issues have limited development potential. A main goal of the Plan is to reconnect the residents of Aiea–Pearl City to the incredible natural resource of Pearl Harbor. The Plan promotes creating new open spaces along the waterfront, ensuring view corridors from mauka areas, ensuring improvements to the Pearl Harbor Historic Trail, and developing new waterfront neighborhoods along the shoreline. The Pearlridge station area has the most potential to reconnect to Pearl Harbor Harbor, while Pearl Highlands and Leeward Community College can strengthen connections with new pedestrian and bicycle paths leading to the Pearl Harbor Historic Trail and protect existing view corridors to the water.

Pearl Harbor as seen from Pearlridge Center

Current condition of the Pearl Harbor Historic Trail

2. ENCOURAGE WORKFORCE HOUSING

This principle emphasizes a mixture of housing choices around the transit stations, which includes a variety of price options, housing types, and unit sizes to support a wide range of households. Much of the affordable housing currently located in Aiea–Pearl City was developed in the 1960s and 1970s and is in need of repair, renovation, or redevelopment. A main goal of this principle is to increase the quantity of workforce housing, while also increasing the overall quality of these residences.

Households living near the rail transit stations may be able to reduce vehicle usage or the number of cars that they would normally own and operate—possibly owning one car instead of two or three. A portion of the resulting savings in transportation costs can be applied to paying for a mortgage or rent on a home that may be larger and have more amenities than they would otherwise be able to afford. The future mix of housing types near the transit stations is expected to be more diverse than is currently the case.

Housing density does not necessitarily entail high-rise towers. Low and mid-rise multifamily housing can provide adequate densities to support transit.

A variety of housing types should be located within station areas, including workforce housing.

3. CREATE A COMFORTABLE AND LIVELY PEDESTRIAN ENVIRONMENT

Current development in the area typically auto-oriented. The introduction of rail transit can be the impetus for creating a true pedestrian-first environment. In the near future, residents and visitors to Leeward Community College, Pearl Highlands and Pearlridge will arrive at transit stations, without cars. A more connected street system will enhance circulation by providing increased route options. New sidewalks, street trees, and streetscape elements will create a more comfortable walking environment. Streetscape elements should be accompanied by new buildings with street level retail and other active uses, outdoor seating, and pedestrian-scaled features such as lighting and awnings.

It is important to have a diverse mix of uses in the station areas since different uses will ensure that these areas are active and safe at different times of the day and week. Future development in the station areas will be designed in a way that focuses on the sidewalk and pedestrian realm while accommodating automobiles in parking structures or surface lots behind buildings. New parks and open spaces will create destinations for walkers of all ages.

Current developments in Aiea–Pearl City are typically auto-oriented.

The introduction of rail transit can be the impetus to creating a true pedestrian-first environment.

4. PROVIDE MULTIMODAL ACCESS TO AND FROM THE STATIONS

The new rail stations will be part of a larger multimodal transportation network that should be enhanced in the surrounding neighborhoods. Existing streets should be improved and new streets designed to accommodate access by the appropriate mode, which could include pedestrians, bicyclists, kiss-and-ride drop-offs, park-and-ride traffic, and local through traffic. Off-street paths and trails are also important for creating vehicle-free environments for walking, jogging, and biking.

By creating more connected communities and employing "complete streets" design principles, residents and visitors will have a range of transportation choices allowing them to choose the most efficient, economical, and enjoyable way to get around. The Plan emphasizes that rail, buses, cars, bicycles, and pedestrians be accommodated in safe and convenient ways.

The new rail stations will be part of a larger multimodal transportation network.

By creating more connected communities, residents and visitors will have a range of transportation choices.

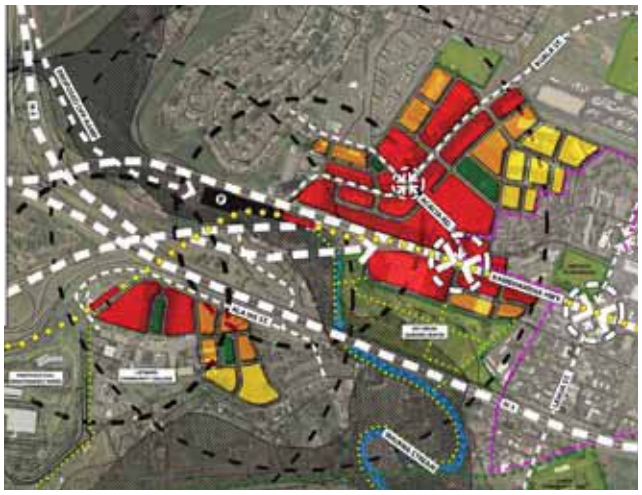
5. DEVELOP NEW AND ENHANCE EXISTING OPEN SPACE AMENITIES

Rail transit and TOD provide the opportunity to create great public spaces at the stations and in nearby neighborhoods. This principle emphasizes the creation of a network of public open spaces and linkages through the station areas. This network should include parks, plazas, paths, trails, and shaded neighborhood streets in order to soften development and provide opportunities for residents to feel more connected to the natural environment. The increase in families living within the station area communities may necessitate the expansion of existing schools or new school facilities, which should also be integrated into the neighborhood open space network.

The introduction of rapid transit provides the opportunity to create great public spaces at the stations.

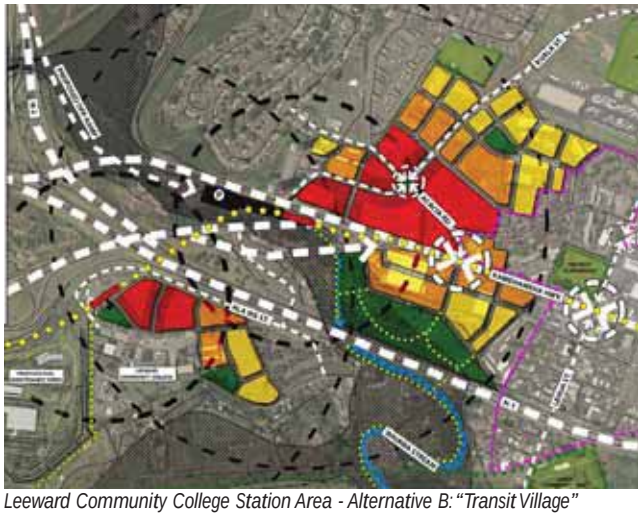
The green network should include parks, paths, trails, and shaded neighborhood streets.

DRAFT STATION AREA ALTERNATIVES



Leeward Community College Station Area - Alternative A: "Campus Village"
Pearl Highlands Station Area - Alternative A: "Corridors"

Pearlridge Station Area - Alternative A: "Corridors"



Leeward Community College Station Area - Alternative B: "Transit Village"
Pearl Highlands Station Area - Alternative B: "Nodes"

Pearlridge Station Area - Alternative B: "Nodes"

Leeward Community College Station Area - Alternative C: "Campus Extension"
Pearl Highlands Station Area - Alternative C: "Special Districts"

Pearlridge Station Area - Alternative C: "Edge"

DRAFT STATION AREA ALTERNATIVES

1. LEEWARD COMMUNITY COLLEGE STATION AREA

1. Alternative A: "Campus Village"

- Focuses high-intensity development on the existing surface parking lot mauka of Leeward Community College and adjacent to the transit station. The proposed high-intensity development will be mixed-use in nature and help to form a "campus village" around a new community green.

2. Alternative B: "Transit Village"

- Focuses high-intensity development on the existing surface parking lot mauka of Leeward Community College and offers a new park adjacent to the transit station, linking the college to transit both visually and physically.

3. Alternative C: "Campus Extension"

- Creates an extension of Leeward Community College. This scenario would encourage the school to grow towards the transit station instead of locating temporary buildings on valuable open space on the makai side of the current campus.

2. PEARL HIGHLANDS STATION AREA

1. Alternative A: "Corridors"

- Focuses high-intensity development along the Kuala Street corridor mauka of the Pearl Highlands station and along the Kamehameha Highway corridor diamond head of the station to the proposed town center along Lehua Avenue, as identified in the Livable Communities Plan.

2. Alternative B: "Nodes"

- Locates high-intensity development at the intersection of Kuala Street and Acacia Road to create a new mixed-use node within a five-minute walk of the station.

3. Alternative C: "Special Districts"

- Focuses high-intensity development along the Kuala Street corridor mauka of the Pearl Highlands station. This alternative incorporates existing shopping centers into future redevelopment concepts.

3. PEARLRIDGE STATION AREA

1. Alternative A: "Corridors"

- Focuses high-intensity development along the important corridors of Kamehameha Highway ewa and diamond head of the station and Kaonohi Street mauka of the station.

2. Alternative B: "Nodes"

- Focuses high-intensity development directly adjacent to the new rail transit station along Kamehameha Highway and around the existing Pearlridge Center. In this alternative, Pearlridge Center would be preserved as a regional shopping destination and enhanced with infill commercial uses.

3. Alternative C: "Edge"

- Focuses higher-intensity development immediately adjacent to the station at the intersection of Kamehameha Highway and Kaonohi Street. Development would include mixed-use commercial (office above retail) and/or mixed-use residential (residential above retail) buildings.

- The Draft Station Area Alternatives were presented to the Aiea–Pearl City community at Workshop 2 on December 1, 2009.
- Elements of the Draft Station Area Alternatives have been incorporated into the Plan for each station area.

PLAN OVERVIEW

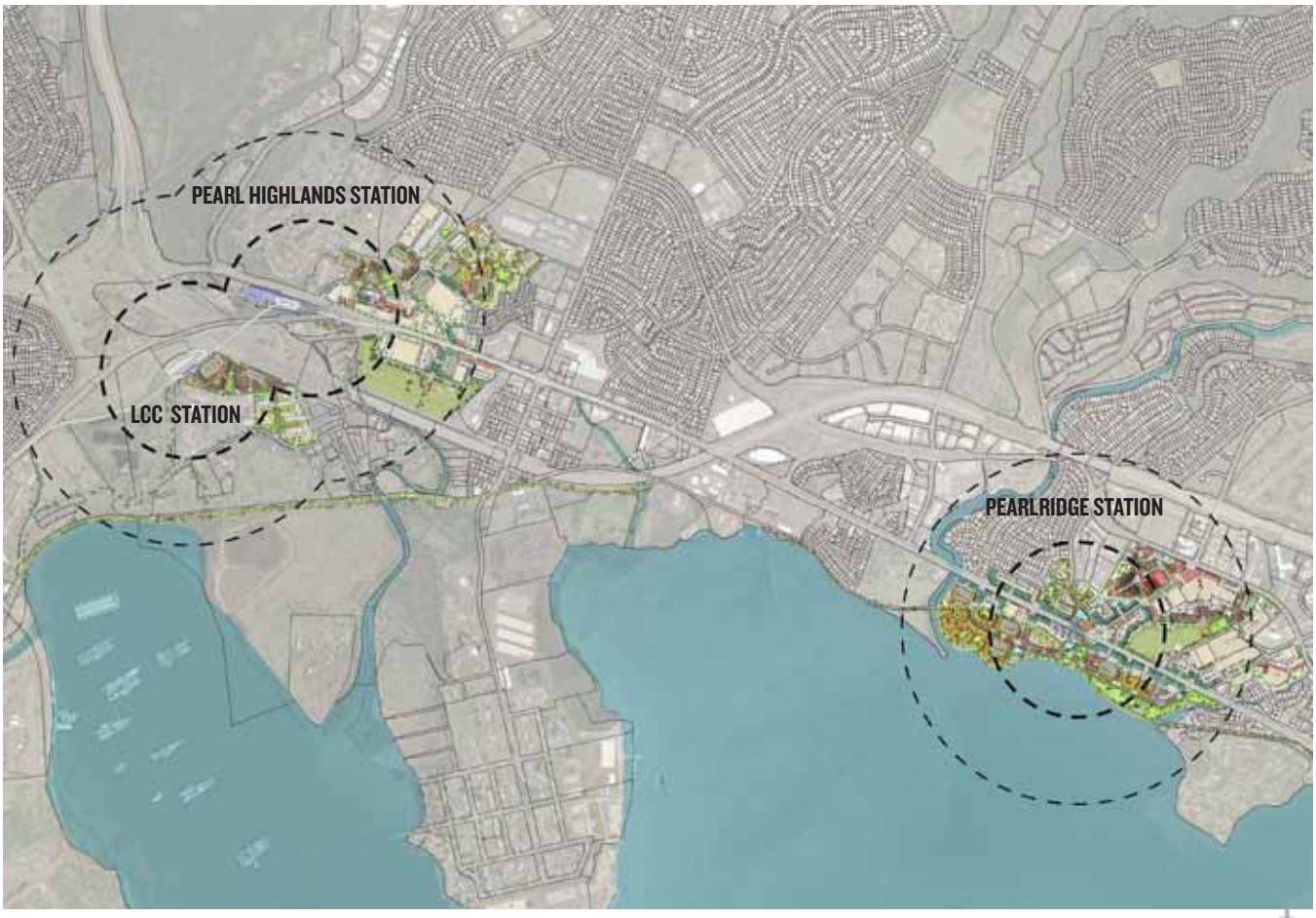


FIGURE 10 - Aiea–Pearl City Neighborhood TOD Plan Overview

PLAN OVERVIEW

The Aiea–Pearl City Neighborhood TOD Plan outlines a long-term vision for three vibrant station area nodes along the proposed rail transit line at the Leeward Community College, Pearl Highlands and Pearlridge stations. The Plan outlines a long-term vision for focusing development intensity within a 1/4 mile of each station (also referred to as the TOD Precinct) in order to create highly walkable and attractive transit communities. These core areas provide the foundation for each station area's unique but integrated identities. Each station area provides varied development opportunities. The Plan aims to enforce the local identity of each station area based on both current conditions and future needs:

- The Leeward Community College (LCC) station area is envisioned as a college-oriented neighborhood catering to new residents and businesses, as well as students and faculty from the adjacent college.
- The Pearl Highlands station will be a major intermodal facility and connection point for riders coming from ewa and mauka directions. The station should be tied to a revitalized shopping district which carefully balances passengers and workers arriving via transit, on foot, and via auto.
- The Pearlridge station area is seen as continuing its role as a major urban center and regional destination through new development opportunities, regeneration of Pearlridge Center, and improved access to the Pearl Harbor Historic Trail and the shoreline.

The areas between 1/4 mile and 1/2 mile from the stations (also referred to as the transit influence zone or TIZ Precinct) would experience less intense but still active and diverse development since they are within walking distance of rail transit. The development will step down in both building height and intensity to be compatible with the less dense, residential neighborhoods surrounding the station areas.

The density and diversity of proposed uses would contribute to a pedestrian environment and strong sense of place, both qualities that allow residents and visitors to travel to many nearby destinations without an automobile, including schools and open spaces. Streets will need to be designed to also support bicycles and low speed traffic.

PLAN OVERVIEW

- The Neighborhood TOD Plan envisions three vibrant nodes along the proposed rail transit line at the Leeward Community College, Pearl Highlands and Pearlridge stations.

LEEWARD COMMUNITY COLLEGE
STATION AREA PLAN

FIGURE 11 - Leeward Community College Station Area Illustrative Plan

A. OVERALL STRUCTURE

Leeward Community College (LCC) station area is envisioned by the community to become a college-oriented neighborhood with educational facilities, residences, and retail and services catering to students and faculty from the adjacent college, as well as new residents. The current LCC Master Plan envisions a new educational building on the diamond head side of campus. Tremendous potential exists for new transit-oriented development due to the large surface parking lot that currently serves all students and faculty. With a new rail station serving the college, many visitors will be able to easily arrive by train, potentially freeing up space in the surface parking lot for new uses.

The overall structure of the station area plan is focused around a new central green park, as well as a transit plaza adjacent to the station. Medium-density mixed-use development would surround the green, mauka of the existing campus. This area would have a mix of educational facilities, housing, office, restaurants, and convenience retail.

Currently, the area just diamond head of the campus is used as overflow parking. In the future, this area is envisioned as a new lower density neighborhood of townhouses and apartments. This area will provide needed housing for singles and families, helping to fulfill the plan principle of "Encourage Workforce Housing."

LCC Program (Existing)

- Total Site Area: 27.3 Acres
- Total Residential: 0 Units
- Total Institutional: 48,000 SF

LCC Program (TOD Plan)

- Total Residential: 820 Units
- Total Institutional and Commercial: 88,000 SF (including retail/office/industrial)

LEEWARD COMMUNITY COLLEGE STATION AREA PLAN

- Leeward Community College station area will be a college-oriented neighborhood catering to students and faculty from the adjacent college, as well as new residents.

Leeward Community College should integrate new active uses surrounding existing and new open spaces.

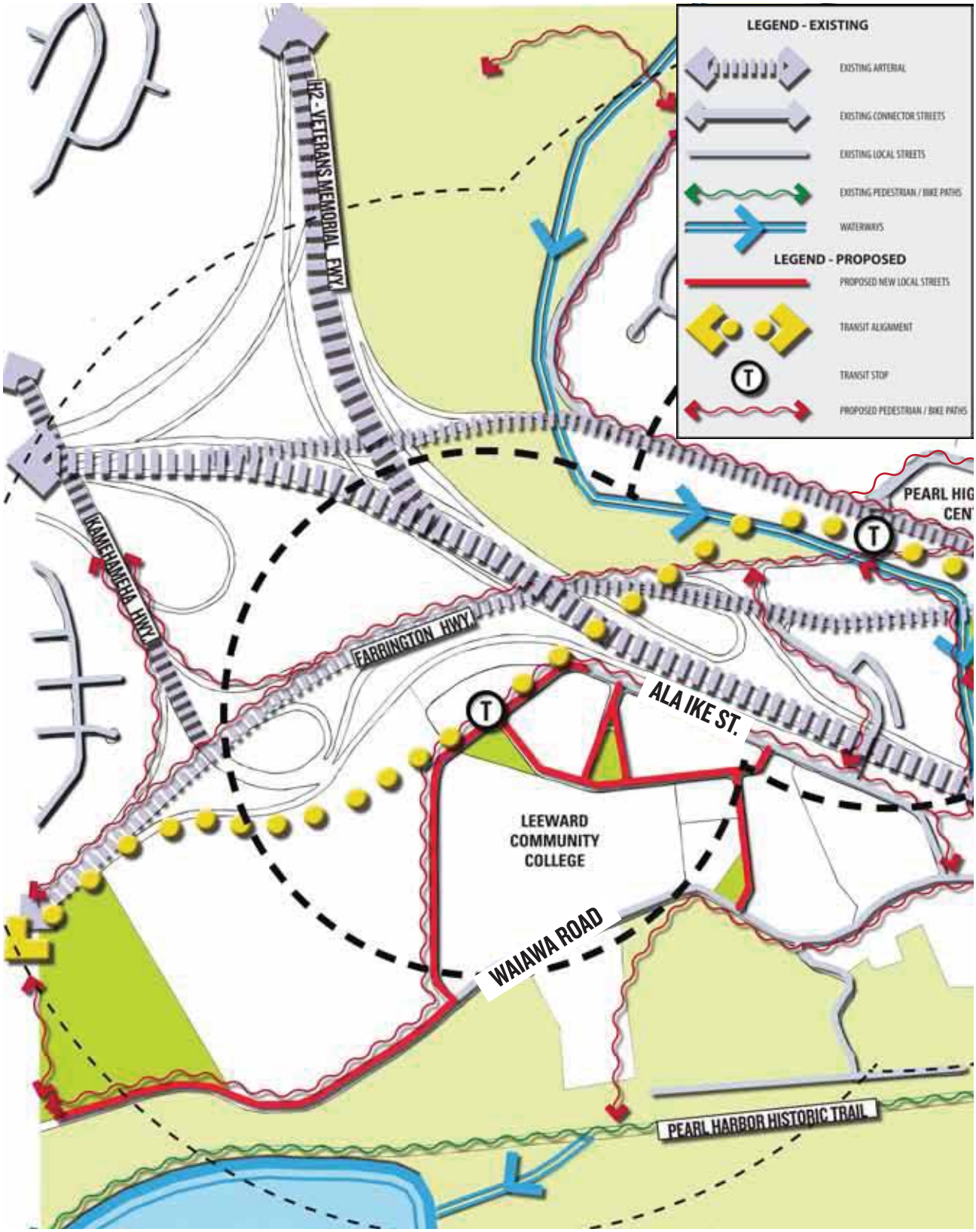


FIGURE 12 - Leeward Community College Station Area Circulation Diagram

B. CONNECTIVITY & CIRCULATION

Along with the rail line and station, the primary circulation improvement that is recommended in this area is a secondary access road connecting the LCC area with Farrington Highway in the ewa direction. This secondary access would improve connectivity to Leeward Community College, as well as the adjacent rail maintenance facility. The secondary access will also provide an impetus for new transit-oriented development surrounding the campus while helping to fulfill the plan principle of "Provide Multimodal Access to and from the Stations." The secondary access road could be combined with the maintenance facility driveway and should be designed as a complete street for use by pedestrians, bicyclists, and automobiles.

There are currently 1,200 parking spaces in the existing surface parking lot mauka of the LCC campus. The proximity of this parking lot area to the rail transit station makes it an opportunity for new development in the future. A new proposed street pattern would help to break up the large surface parking lots into smaller blocks for new development, and new buildings with active ground floor uses would help create visual interest for pedestrians walking between the station and campus.

A new bicycle path is recommended along the proposed extension of Ala Ike Street on the ewa side of campus traveling makai alongside the rail maintenance yard and past Waiawa Road to the Pearl Harbor Historic Trail and Waipahu High School. Another bicycle path is proposed along Waiawa Stream in order to connect the Pearl Harbor Historic Trail to the Pearl Highlands area. These improvements help to fulfill the plan principle of "Create Access and Views to Water and the Pearl Harbor Historic Trail," among others.

Mauka of the transit station is an area that will become more isolated from the rest of the campus area due to the rail infrastructure. The Plan envisions this area as a good location for new surface parking. The rail line will pass through this block, but access can be provided for cars to use this lot as dedicated or overflow campus parking or transit parking. The new surface parking mauka of the station, as well as new parking structures, could accommodate and replace 85% of the existing spaces (a 15% reduction factor was applied due to the introduction of new transit service).

LEEWARD COMMUNITY COLLEGE STATION AREA PLAN

- The primary circulation improvement recommended in the LCC station area is a secondary access road connecting LCC with Farrington Highway in the ewa direction.

New bicycle paths are recommended within the station area.

New streets should be designed for pedestrians, automobiles, and bicycles.

Existing view of Pearl Harbor from area diamond head of campus

Proposed neighborhood mini park overlooking Pearl Harbor and surrounded by lower-density residential development

C. PARKS & OPEN SPACE

In order to fulfill the plan principle of "Develop New and Enhance Existing Open Space," the Plan envisions several new parks and gathering spaces in proximity to the Leeward Community College campus.

A new mixed-use environment with a central green and private courtyards is recommended to take the place of the large existing surface parking lot. This development would create new gathering space for both campus users and residents to enjoy. The existing campus spine should be retained and incorporated into the larger open space network. This concept is consistent with the current LCC Master Plan.

In tandem with lower-density residential development east of campus, a new one-acre neighborhood mini park is proposed to provide open space and views to Pearl Harbor. The new bicycle paths described in the previous section will enhance connections to the Pearl Harbor Historic Trail and help to create regional bicycle access to both the LCC campus and the rail station. These improvements are intended to fulfill the plan principle of "Create Access and Views to Water and the Pearl Harbor Historic Trail."

A transit plaza is proposed adjacent to the station as both a gathering place and a gateway to the LCC area. The transit plaza would open up views and access to the LCC campus, making the college prominent from the rail station. This transit plaza should be an active space for students, residents, faculty, and visitors. Directly connected to the existing green campus spine, this plaza should include wayfinding devices and amenities such as a fountain and public art.

Park dedication and publicly accessible open space requirements should be contingent on specific development proposals within the station area.

LEEWARD COMMUNITY COLLEGE STATION AREA PLAN

- A new mixed-use environment with a central green and private courtyards is recommended to take the place of the large existing surface parking lot.
- The Plan proposes approximately two acres of public open space (including the transit plaza) and two acres of semi-public and private open space in the LCC station area.

Proposed lower-density residential area adjacent to campus, surrounding a neighborhood mini park - before and after illustrations from the perspective of the red arrow above are shown on page 56.

Existing green spine and surface parking mauka of LCC campus

View of the proposed campus spine with surrounding mixed-use development

D. URBAN FORM

The intent of the proposed urban form in the Leeward Community College area is to encourage the plan principle of "Create a Comfortable and Lively Pedestrian Environment." The Plan conceptualizes buildings around a new central green in order to create a lively and vibrant college-town atmosphere.

Quality building design is essential to achieving this vision. Buildings should relate directly to their surroundings and should be oriented to both existing and planned parks and public spaces. Entries should be clearly defined from the sidewalk, and corner elements should be given prominence through additional height or massing.

Buildings should be oriented to the sidewalk and pedestrian spaces. Shade should be provided both by landscaping and architectural elements such as awnings and overhangs.

Parking for new development should be situated within structures wrapped with active uses or behind buildings in order to create an attractive and safe streetscape.

LEEWARD COMMUNITY COLLEGE STATION AREA PLAN

- The Plan focuses buildings around a new central green in order to create a lively and vibrant college-town atmosphere.

Proposed mixed-use development and open spaces mauka of the main campus entrance - before and after illustrations from the perspective of the red arrow above are shown on page 58.

FIGURE 13 - Leeward Community College Station Area - Existing Land Uses

FIGURE 14 - Leeward Community College Station Area - Proposed Land Uses

E. LAND USE

The proposed land uses described in this section are based on the plan principles and direct community feedback on early versions of the Plan. The land uses described below are recommendations; the TOD zoning developed for the station area will allow a flexible mix of urban uses. Proximity to a new transit station, multiple proposed access points to the Pearl Harbor Historic Trail, and excellent access to H-1 and Kamehameha Highway will make the station area a strong location for new workforce housing, helping to fulfill an important plan principle.

Two mixed-use residential blocks are envisioned mauka of the LCC campus. These blocks could include active uses such as non-profit organizations and college-oriented retail, restaurants, and coffee shops at strategic locations. Ground floor uses could also include services such as banks, college offices, and other educational facilities. Upper stories could include for-sale housing, apartments, student housing, and office uses for LCC and businesses that want to take advantage of faculty, students and technology transfer. Small courtyards and private open space are envisioned within these blocks for residents to enjoy. Parking structures, shown on the interiors of blocks, could accommodate the parking requirements for this development, as well as some replacement parking for LCC students and faculty.

An Education Department building is planned by Leeward Community College directly diamond head of the existing campus and is incorporated into this Neighborhood TOD Plan. The long, slender building will be an extension of the campus spine and adjacent to the existing Performing Arts building plaza. This building will house classrooms and offices, as well as a green roof with an outdoor lanai/reception room.

Envisioned just makai and diamond head of the new campus building is a lower-density residential neighborhood between the college and existing multifamily housing to the east. The topography of this area slopes toward Pearl Harbor. A neighborhood mini park is proposed at the terminus of a new street. This park should be surrounded by residential uses on both sides, which will help to provide "eyes on the park" and enhance safety. The placement of the park should allow for uninterrupted views of Pearl Harbor in the distance, creating a unique community space which ties directly to the surrounding natural environment.

LEEWARD COMMUNITY COLLEGE STATION AREA PLAN

- The proximity to a new transit station, multiple proposed access points to the Pearl Harbor Historic Trail, and excellent access to H-1 and Kamehameha Highway will make the station area a strong location for new workforce housing.

Mixed-use development is envisioned adjacent to Leeward Community College.

Lower-density development is proposed diamond head of campus.

FIGURE 15 - Leeward Community College Station Area: ***Existing Conditions***

FIGURE 16 - Leeward Community College Station Area: ***Phase 1***

F. PROTOTYPICAL PHASING

Appropriate development phasing will maximize investments in infrastructure and guide development in critical areas while accomplishing the plan principles. Below is a sample phasing program for a prototypical block in the LCC station area. The goal of the hypothetical phasing study is not to show a specific design but to illustrate how development can occur in an area over time. While the LCC property is used as an example, the phasing strategies described below can be applied to similar blocks throughout Aiea and Pearl City.

EXISTING CONDITIONS

The Existing Conditions diagram at left (Figure 15) shows the large surface parking lot adjacent to Leeward Community College. It also shows the nearby H-1/H-2 interchange and how it isolates the LCC area from the surrounding Pearl City neighborhood. The large expanses of surface parking are all owned by Leeward Community College (State of Hawaii).

PHASE I

Phase 1 (Figure 16) involves the construction and opening of the rail transit station (the only at-grade station in the entire system). The rail guideway will be elevated over the H-1/H-2 interchange towards the intermodal Pearl Highlands station to the east. The LCC station will be just mauka of the west end of the LCC campus, replacing several temporary structures currently in the area. Ideally, Phase 1 would also include the new transit plaza, helping to connect the campus to the station and acting as a gateway and gathering place. Creating a strong connection between transit and the college will make riding the train an attractive alternative to driving to LCC, potentially freeing up a portion of the current surface parking area for higher and better uses.

- The goal of the phasing study is not to show specific development design, but to illustrate how development can occur in an area over time.

The transit plaza should be an active gathering place.

New pedestrian improvements should help connect the station to the LCC campus.

FIGURE 17 - Leeward Community College Station Area: ***Phase 2***

FIGURE 18 - Leeward Community College Station Area: ***Phase 3***

PHASE 2

Phase 2 (Figure 17) illustrates the first mixed-use development, ideally directly adjacent to the rail station. The new mixed-use buildings could provide housing and space for commercial or educational uses while still preserving a large portion of the current surface parking lot. Along with the mixed-use buildings, a parking structure would provide spaces for the residents and businesses of the new development, parked at a lower ratio than traditional auto-oriented development.

Along with new development, new circulation routes should connect to the transit station and provide access on the diamond head side of campus. The roadways along both sides of the parking lot should be upgraded into a complete street for automobiles, pedestrians, and bicyclists.

Phase 2 also illustrates the a new central green directly in front of the main LCC entrance. This green space could become a major focal point for the campus, as well as an amenity for new uses in the area.

PHASE 3

Phase 3 (Figure 18) depicts the second block of mixed-use development on the diamond head side of the central green. By completing this block, the park would have active edges on all sides, creating a sense of enclosure and intimacy for the space. Because of reduced parking usage and the structures built in phase 1, the development of the second block could occur without providing additional parking.

Phase 2 includes a new central green and mixed-use development.

Phase 3 includes additional mixed-use development.

FIGURE 19 - Leeward Community College Station Area: ***Phase 4***

PHASE 4

Phase 4 (Figure 19) illustrates build-out of the LCC surface parking lot with new development surrounding a second parking structure. Mixed-use development would front onto the current LCC campus and create an attractive edge and pedestrian environment. The buildings could contain uses such as housing, retail, restaurants, and educational facilities and offices.

The parking structure shown in Phase 4 would function as a shared parking facility for the surrounding development and Leeward Community College uses, including theater patrons, students and faculty.

The full build-out of this site represents a dynamic and cohesive transit-oriented development. Commercial uses are supported by both residents and visitors, and streets are pedestrian-friendly and activated throughout the day.

Active uses should front the central green.

Phase 4 illustrates a full build-out of the surface parking lot.-

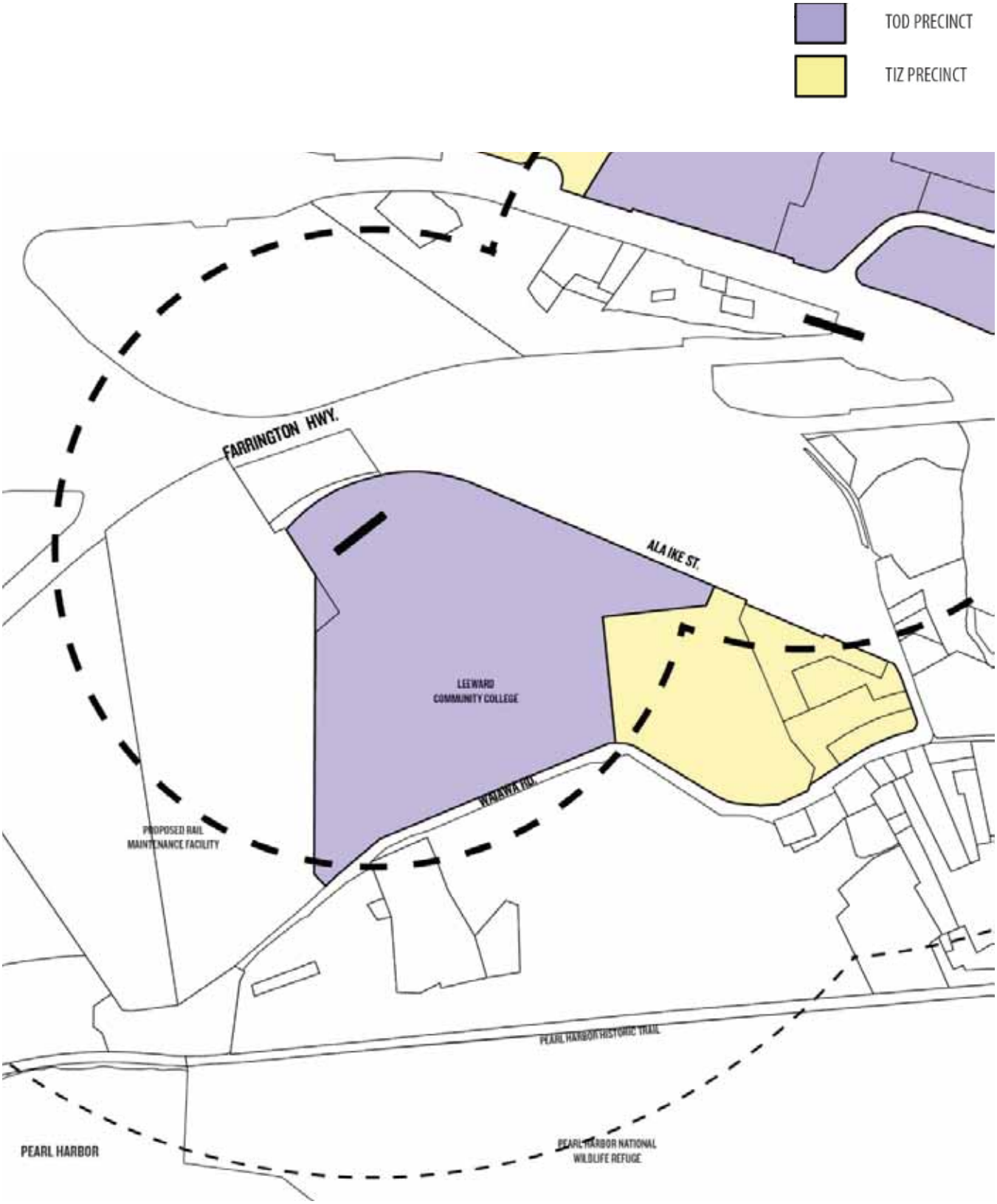


FIGURE 20 - Leeward Community College Station Area - Recommended TOD Special District

G. DISTRICT BOUNDARIES

The Plan recommends a TOD Special District intended to ensure the community vision for the station area through zoning standards that enable and promote transit-oriented development. Figure 20 illustrates the recommended boundaries of the TOD Special District for the Leeward Community College station area. Recommended zoning standards for each station area are described in the Implementation Recommendations chapter.

The recommended Special District boundaries around the Leeward Community College station take into account distance from the transit station, natural topographic and man-made barriers, extent of market interest in development, planned land uses, and the overall benefits of TOD, including the potential to increase transit ridership.

The TOD, or transit-oriented development, Precinct is generally within 1/4 mile of the LCC station and includes the areas with greatest development potential. These areas will likely be redeveloped in the near (0-10 years) to mid-term (10-20 years) and should include larger buildings and higher intensity mixed-use environments.

The TIZ, or transit-influence zone, Precinct is located beyond the TOD core between 1/4 mile to 1/2 mile from the Leeward Community College station. The TIZ Precinct should be less intense by nature, generally stepping down from the higher-density TOD precinct. Properties within the TIZ Precinct are more likely to develop in the long-term (20-30 years) and should be compatible with the existing lower-density residential neighborhoods on the periphery.

LEEWARD COMMUNITY COLLEGE STATION AREA PLAN

- Special District boundaries take into account distance from the station, natural and man-made barriers, market interest, and planned land uses.
- The TOD Precinct is generally within 1/4 mile of the LCC station.
- The TIZ Precinct is generally located between 1/4 and 1/2 mile from the LCC station.

The large surface parking lot adjacent to LCC is located in the TOD Precinct.

The TIZ Precinct includes areas diamond head of the LCC campus.

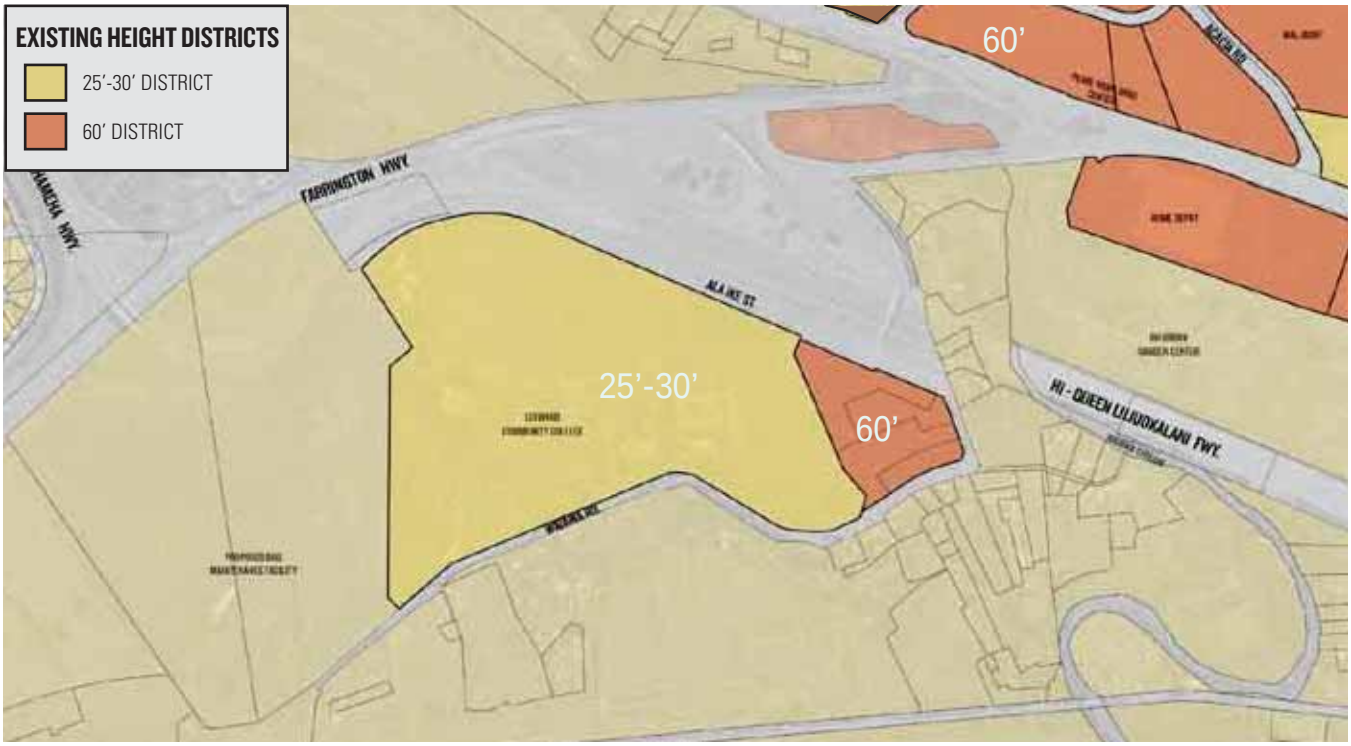


FIGURE 21 - Leeward Community College Station Area - Existing Allowable Heights

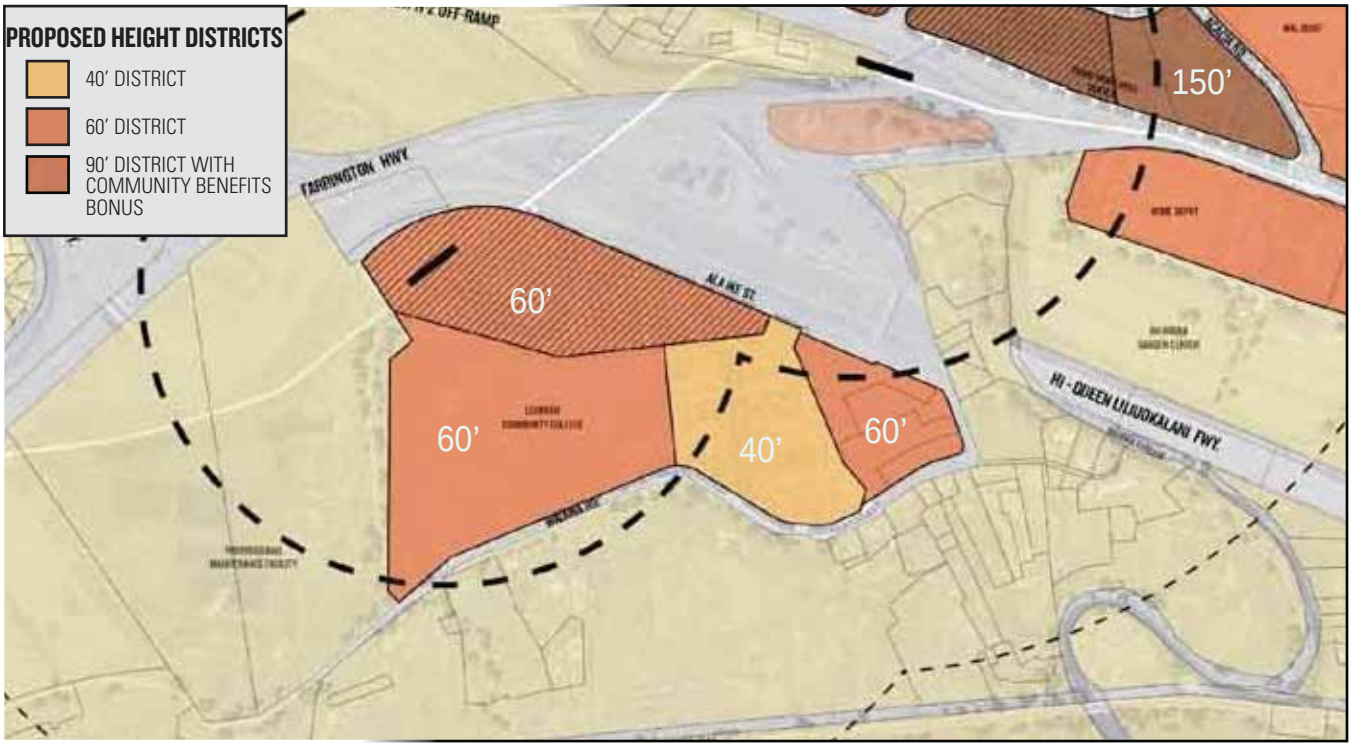


FIGURE 22 - Leeward Community College Station Area - Proposed Allowable Heights

- The Plan recommends base height limits of 40' and 60' within the planning area.

2. EXISTING ALLOWABLE HEIGHTS

There are currently two height limit zones surrounding Leeward Community College station: a height limit of 25'-30' for the majority of the campus site and 60' for the existing residential area diamond head of campus.

3. PROPOSED ALLOWABLE HEIGHTS

New buildings in the station area should generally be taller near the station and step down in height further from the station. Stations should serve as focal points and hubs for more intense development.

The Plan recommends two base height zones surrounding Leeward Community College. The first zone, which recommends a maximum of 40', is restricted to the area envisioned for multifamily housing diamond head of campus. The existing surface parking lot, which is envisioned to transform over time into a mixed-use "campus village," and the existing campus have a recommended base height limit of 60'. A community benefits bonus for hatched areas on Figure 22 would allow greater heights in exchange for community amenities, as recommended in the Implementation Recommendations chapter. These amenities could include a central green to preserve views and create an identity for campus.

The recommended base height in the TOD Precinct is 60'.

The TIZ Precinct is recommended for lower-density development.

PEARL HIGHLANDS STATION AREA PLAN

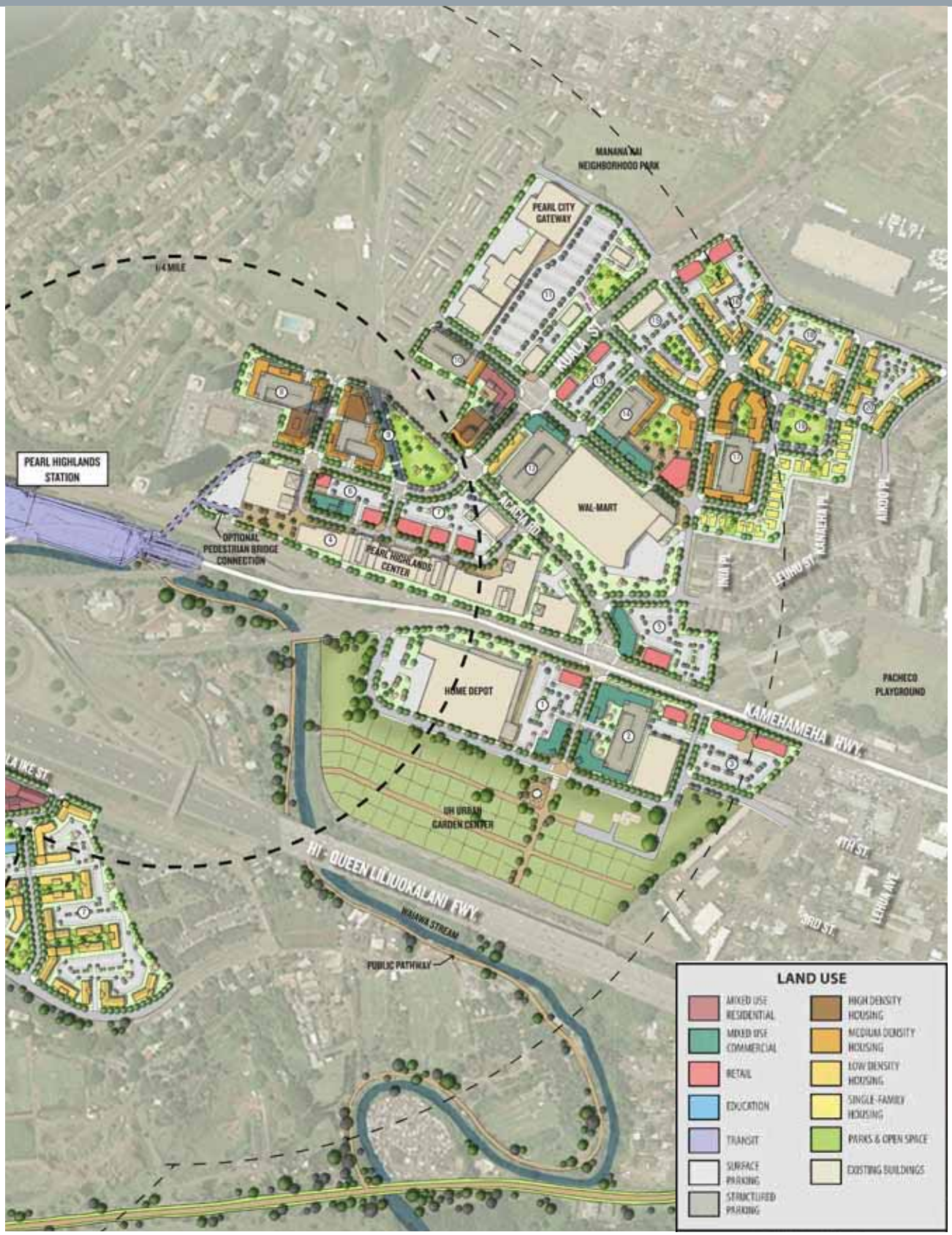


FIGURE 23 - Pearl Highlands Station Area Illustrative Plan

A. OVERALL STRUCTURE

PEARL HIGHLANDS STATION AREA PLAN

- The Pearl Highlands station area is envisioned as a thriving pedestrian-friendly district.

The Pearl Highlands station will be a major intermodal facility and connection point for riders coming from ewa and mauka directions. The station area is envisioned as a revitalized shopping district that carefully balances passengers and workers arriving via transit, on foot, and via automobile.

Over time, the Pearl Highlands station area could transition from a suburban commercial center to a thriving pedestrian-friendly district complete with a mixture of commercial, residential, and community uses. The intent of the Plan is to demonstrate how this auto-dominated area can redevelop in the future while retaining many of the recently built "big-box" stores along Kamehameha Highway and Kuala Street. Along with how to retrofit existing stores to encourage pedestrian use, the Plan also identifies possible catalyst sites for new high, medium and lower-density housing around the Pearl Highlands station. While some of the current property owners may not have plans to redevelop their properties, it is anticipated that in the long run, retail activities will cater to both auto-based and transit-based customers.

Pearl Highlands Program (Existing)

- Total Site Area: 100 Acres
- Total Residential: 90 Units
- Total Commercial: 985,000 SF (retail/office/ industrial)

Pearl Highlands Program (TOD Plan)

- Total Residential: 1,500 Units
- Total Commercial: 1,105,000 SF (retail/office/ industrial)

High-density housing envisioned within close proximity of the Pearl Highlands rail station

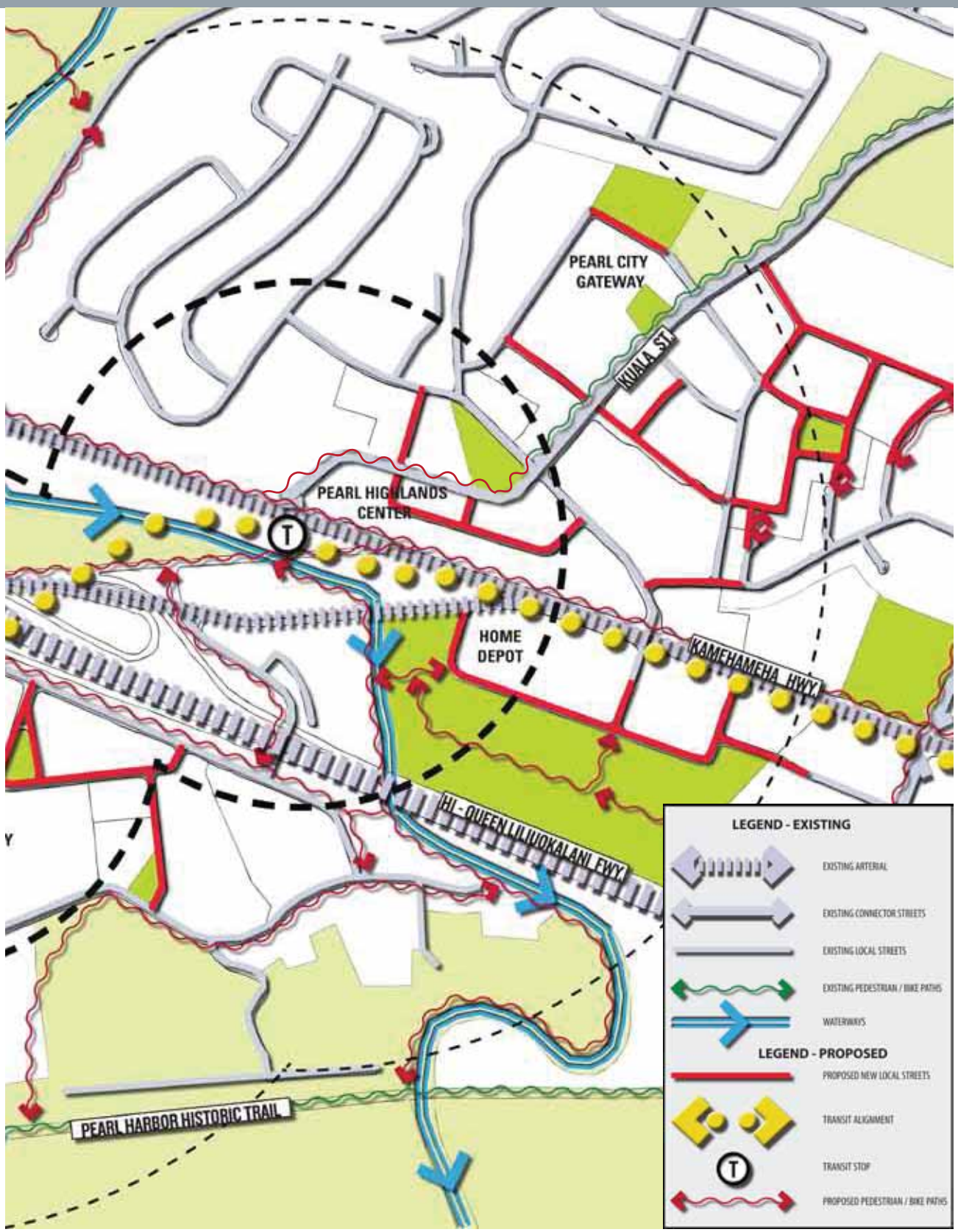


FIGURE 24 - Pearl Highlands Station Area Circulation Diagram

B. CONNECTIVITY & CIRCULATION

A critically important plan principle for the Pearl Highlands station area is to "Provide Multimodal Access to and from the Stations." The Pearl Highlands station will serve as a major park-and-ride location along the rail transit line, with access to H-1, H-2, Kamehameha Highway and Farrington Highway. The park-and-ride will have 1,600 parking spaces and a bus transit facility serving 10 bus routes, resulting in rail ridership estimated at 22,000 riders per day. The station will also be connected to the H-2 freeway via a dedicated off-ramp.

The Plan envisions a new bicycle lane along Kuala Street that will link riders to the Pearl Highlands station from the upland neighborhood. New multi-use paths are also proposed from the station, along Waiawa Stream, connecting to the Pearl Harbor Historic Trail and LCC. A new walkway along the edge of the UH Urban Garden Center could also connect to the proposed Waiawa Stream path. All of these improvements would help to fulfill the plan principle of "Create Access and Views to Water and Pearl Harbor Historic Trail."

The station area is divided by heavily trafficked Kamehameha Highway. Pedestrian upgrades, such as improved sidewalks and crosswalks with pedestrian countdown signals, are recommended to help increase safety in the area. Pedestrian upgrades are also important for students walking between the station area and Pearl City Elementary School on Waimano Home Road.

New street connections are envisioned to be built as development occurs over time. These improvements will help to create a complete streets network that allows multiple travel routes and modes, alleviating some of the local traffic on Kamehameha Highway. New street connections should be designed for slow speeds with traffic calming measures that deter their use as a bypass of higher capacity roadways, such as Acacia Road and Kamehameha Highway.

To provide a safe and attractive pedestrian connection to the Pearl Highlands station, the Plan recommends a direct bridge connection from the station into Pearl Highlands Center. By routing pedestrians in this manner, existing businesses such as shops, restaurants, and the movie theater will benefit from direct customer access. This pedestrian bridge would also encourage employees of Pearl Highlands Center to arrive via transit.

- The Pearl Highlands station will serve as a major park-and-ride location along the rail transit line.

New street connections should be multimodal in nature.

A trail along Waiawa Stream could connect the station area to the Pearl Harbor Historic Trail.

Existing view of the Home Depot parking lot and mauka boundary of the UH Urban Garden Center

Pedestrian gateway to the UH Urban Garden Center envisioned along with adjacent infill development on existing surface parking lot

C. PARKS & OPEN SPACE

The Plan envisions new and enhanced open spaces in the Pearl Highlands station area. As a centerpiece to neighborhood redevelopment and improvement of the overall green network, the Plan recommends improvements to the existing UH Urban Garden Center. The Garden Center is a tremendous resource and an oasis of beauty and green space that is currently underutilized by the surrounding community. It is recommended that the Center be enhanced by providing safe pedestrian access through the current Home Depot parking lot, creating a connection to the proposed Waiawa Stream trail, and allowing new development to highlight the Center. Providing additional public access to the Garden Center will allow the University of Hawaii to promote awareness of their agricultural programs while helping to create a strong identity and amenity for the surrounding area.

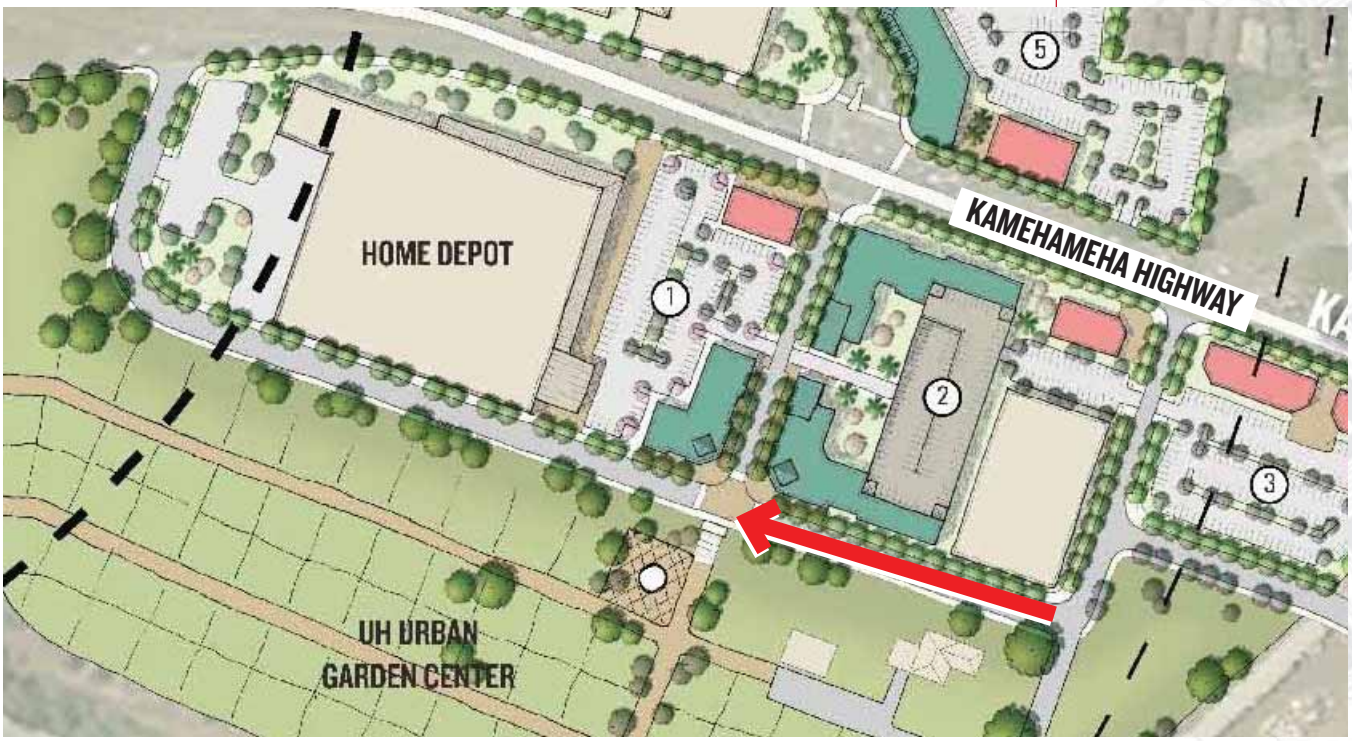
Additionally, new neighborhood mini parks are proposed mauka of the station to serve as community gathering places and small recreation areas. A larger open space is envisioned on the triangle-shaped parcel at the corner of Kuala Street and Acacia Road that could act as a new front yard for adjacent transit-oriented development. The intent of the illustrative Plan is to generally show where new parks are recommended, not necessarily specific locations or designs.

The Plan also envisions a new transit plaza at the northwest corner of Pearl Highlands Center. This important neighborhood gateway could be an outdoor open space, as illustrated in the Plan on page 81, or an interior connection through the Center. The transit plaza should be an active environment, with people coming from and going to the station throughout the day.

Park dedication and publicly accessible open space requirements should be contingent on specific development proposals within the station area.

PEARL HIGHLANDS STATION AREA PLAN

- As a centerpiece to neighborhood redevelopment and improvement of the overall green network, the Plan recommends access improvements to the UH Urban Garden Center.
- The Plan proposes approximately 4 acres of public open space and 3 acres of semi-public and private open space in the Pearl Highlands station area.



Improvements and public access to the UH Urban Garden Center - before and after illustrations from the perspective of the red arrow are shown on page 78.

Existing view of Pearl Highlands Center looking west towards the Pearl Highlands rail station

A new Main Street environment is envisioned, helping to keep the Center vital in the future and creating a direct link to the rail station.

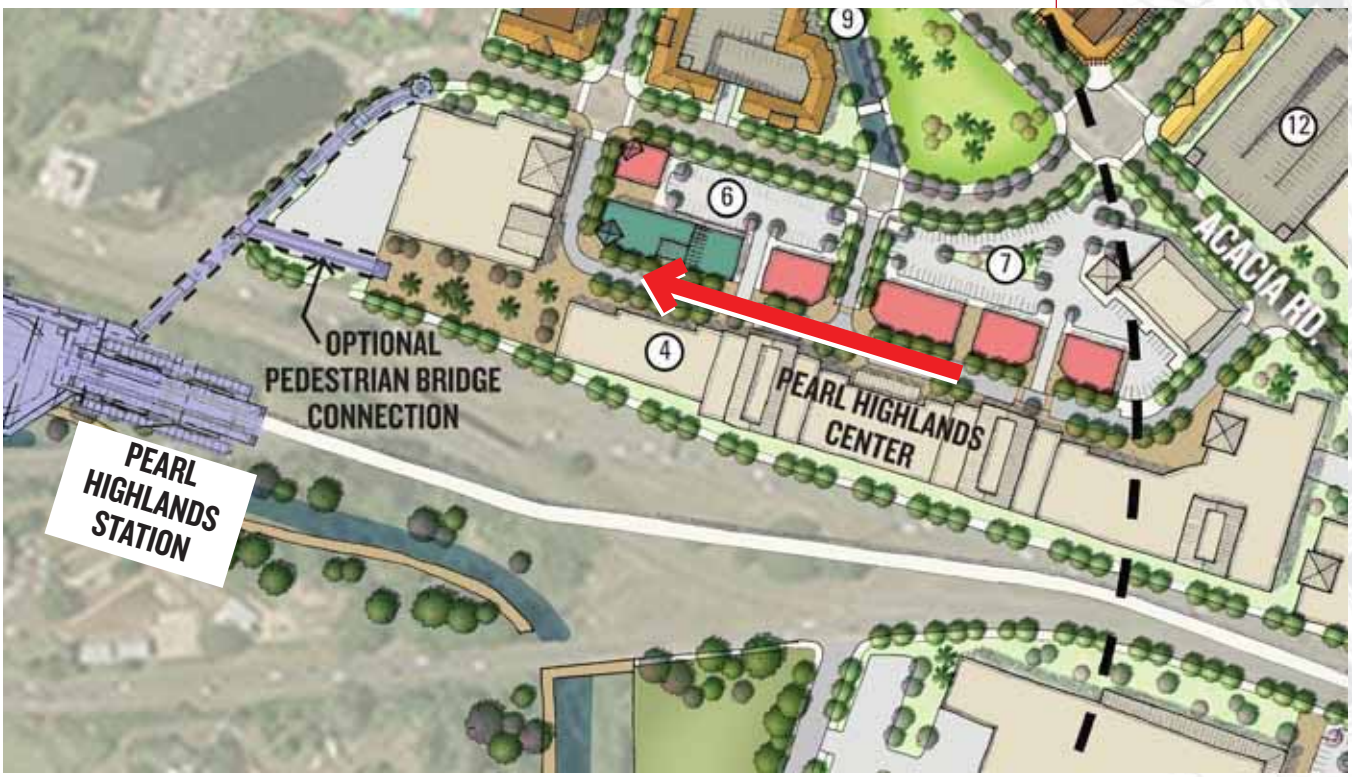
D. URBAN FORM

The recommended urban form in the Pearl Highlands station area encourages the plan principle of "Create a Comfortable and Lively Pedestrian Environment."

A pedestrian-first environment is the intent of a new Main Street concept envisioned within the existing Pearl Highlands Center. By creating a direct connection from the station, a more pedestrian-friendly environment can be created and the Center can benefit from new customers. This concept would help Pearl Highlands Center adapt for the future, when many customers will arrive by rail transit. The Plan focuses on creating a stronger identity for the Center and ensuring a true sense of place.

Other shopping centers and "big box" retail in the area are also encouraged to create stronger connections to transit in order to adapt a suburban auto-oriented environment into an urban pedestrian-oriented community. As new, walkable development in the area emerges, surface parking can be replaced by structured parking and new mixed-use buildings can be constructed along street edges to enhance the pedestrian nature of the station area.

- A pedestrian-first environment is illustrated by a new Main Street within the existing Pearl Highlands Center.



The creation of a new Main Street environment within Pearl Highlands Center, including a direct connection to the Pearl Highlands station - before and after illustrations from the perspective of the red arrow are shown on page 80.

FIGURE 25 - Pearl Highlands Station Area - Existing Land Uses

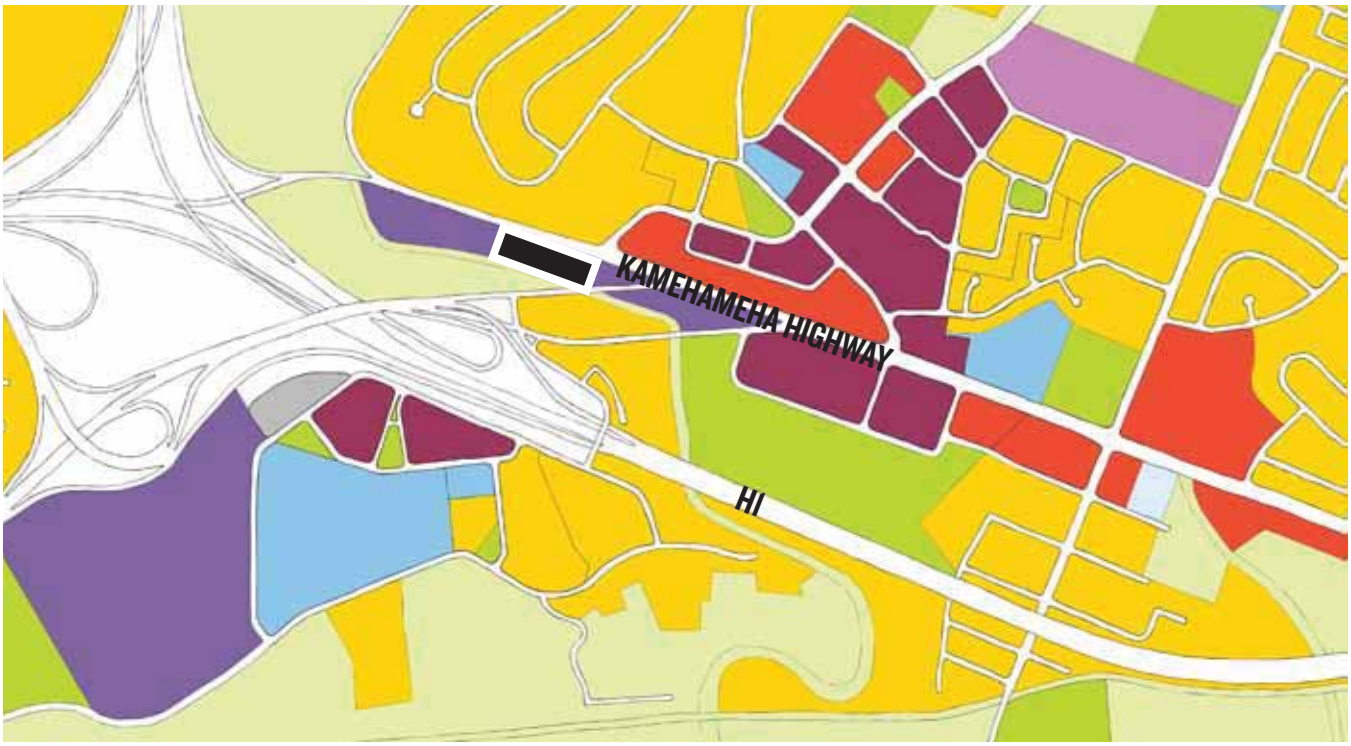


FIGURE 26 - Pearl Highlands Station Area - Proposed Land Uses

E. LAND USE

The proposed land uses described in this section are based on the plan principles and community feedback on draft alternatives. The land uses described below are recommendations, and the TOD zoning developed for the station area will allow a flexible mix of urban uses.

The Plan focuses the most intense high and medium-density development within 1/4 mile of the Pearl Highlands station. Medium and lower-density housing is envisioned further away, mauka of Walmart. Generally, housing densities and building heights should step down as they approach existing single-family neighborhoods. Workforce and senior housing should be incorporated throughout the station area.

The Plan envisions many of the existing and newly-constructed retail establishments in the area to remain for the foreseeable future yet growing and adapting over time. Retail and mixed-use infill development is envisioned along Kamehameha Highway, Kuala Street, and Acacia Road to create a more lively pedestrian environment and provide new jobs and services for area residents.

PEARL HIGHLANDS STATION AREA PLAN

- The Plan focuses the most intense high and medium-density development within 1/4 mile of the Pearl Highlands station.

Retail liner buildings at the sidewalk can help to create an attractive pedestrian edge for larger big box stores

Medium-density housing on smaller infill sites can help to create a vibrant neighborhood.

FIGURE 27 - Pearl Highlands Station Area: ***Existing Conditions***

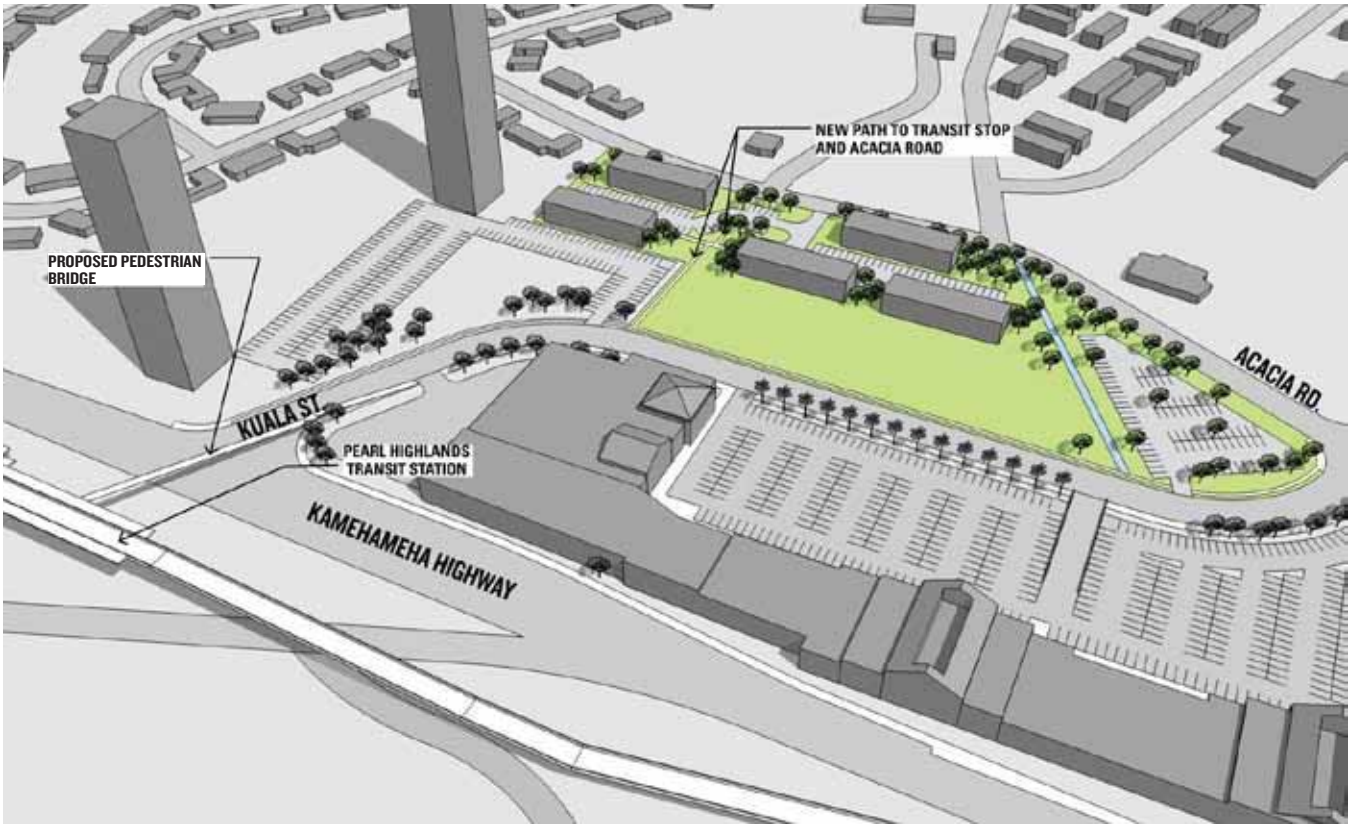


FIGURE 28 - Pearl Highlands Station Area: ***Phase 1***

F. PROTOTYPICAL PHASING

Appropriate development phasing will maximize the investments in infrastructure and guide development in critical areas while accomplishing the plan principles. Below is a sample phasing program for a prototypical block in the Pearl Highlands station area. The goal of the hypothetical phasing study is not to show a specific design but to illustrate how development can occur in an area over time. While the Pearl Highlands area is used as an example, the phasing strategies described below can be applied to similar blocks throughout Aiea and Pearl City.

EXISTING CONDITIONS

The Existing Conditions diagram at left (Figure 27) shows an existing apartment complex along Acacia Road, previously vacant parcels along Kuala Street (The Plaza at Pearl City assisted living facility has since started construction), and the surface parking lot at the corner of Acacia Road and Kuala Street. These sites offer opportunities for new housing and mixed-use development while creating a public amenity that acts as a gateway and gathering space for the community.

PHASE I

Phase 1 (Figure 28) begins with the construction and opening of the rail transit station. The Pearl Highlands station will be a major intermodal facility and will have an automobile off-ramp from the H-2 freeway. The station will sit in a small valley, separated from the station area by high-speed roadways. Therefore, an an elevated pedestrian bridge is proposed to help connect to the mauka side of Kamehameha Highway. This bridge could touch down at the northwestern corner of Pearl Highlands Center. During Phase 1, a new pedestrian pathway could also be created to help connect the existing multifamily housing mauka of Kuala Street to the new rail station.

- The goal of the phasing study is not to show specific design, but to illustrate how development can occur in an area over time.

Previously vacant lot along Kuala Street mauka of Pearl Highlands Center (now the site of The Plaza at Pearl City assisted living facility)

Triangle lot at the corner of Kuala Street and Acacia Road

FIGURE 29 - Pearl Highlands Station Area: ***Phase 2***

FIGURE 30 - Pearl Highlands Station Area: ***Phase 3***

PHASE 2

Phase 2 (Figure 29) illustrates infill of the previously vacant parcels with higher-density housing and mixed-use development. A new residential tower is envisioned adjacent to the existing twin towers. The new tower could step down from the existing 400' towers at approximately 250'. A second building could include a parking structure to accommodate the parking needs for both buildings. Access could be provided by a new street, which is proposed in the following phase to connect to Acacia Road. To provide access to natural spaces for residents, the existing drainage canal should be restored to its natural state and enhanced with a pedestrian pathway. Also during Phase 2, Kuala Street streetscape upgrades should be incorporated to create a safer and more attractive pedestrian experience near the Pearl Highlands station. Phase 2 should also include improved pedestrian crossings of Kuala Street.

PHASE 3

Phase 3 (Figure 30) could entail redevelopment of the existing apartment complex on Acacia Road. The units could be replaced with higher-density development, creating more housing for area residents. Using lower parking standards than typical development due to direct transit access, Phase 3 would include a parking structure to accommodate the parking needs for the two additional buildings. The new street that bisects the property could be completed in this phase to connect Kuala Street and Acacia Road. Also in Phase 3, a new triangle park could provide a gathering space for area residents.

Pedestrian walkways should help to connect residents to area amenities.

Higher-density housing should include new public open spaces.

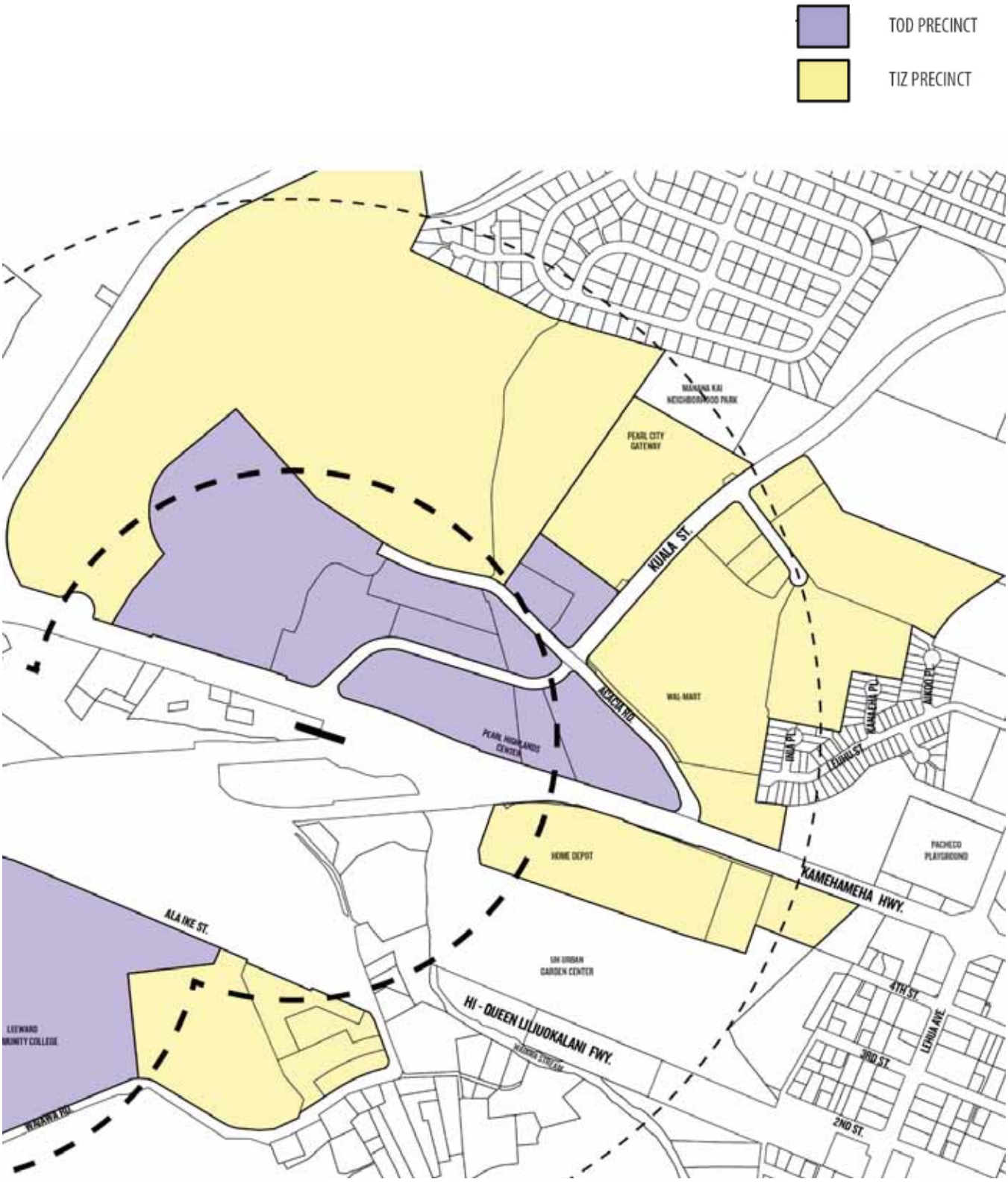


FIGURE 31 - Pearl Highlands Station Area - Recommended TOD Special District

G. DISTRICT BOUNDARIES

The Plan recommends a TOD Special District intended to ensure the community vision for the station area through zoning standards that enable and promote transit-oriented development. Figure 31 illustrates the recommended boundaries of the TOD Special District for the Pearl Highlands station area. Recommended zoning standards for each station area are described in the Implementation Recommendations chapter.

The recommended Special District boundaries around the Pearl Highlands station take into account distance from the transit station, natural topographic and man-made barriers, extent of market interest in development, planned land uses, and the overall benefits of TOD, including the potential to increase transit ridership.

The TOD, or transit-oriented development, Precinct is generally within 1/4 mile of the Pearl Highlands station and includes the areas with the greatest development potential. These areas will likely be redeveloped in the near (0-10 years) to mid-term (10-20 years) and should include larger buildings and higher intensity mixed-use environments.

The TIZ, or transit-influence zone, Precinct is located beyond the TOD core, between 1/4 mile to 1/2 mile from the Pearl Highlands station. The TIZ Precinct should be less intense by nature, generally stepping down from the higher-density TOD Precinct. Properties within the TIZ Precinct are more likely to develop in the long-term (20-30 years) and should be compatible with the existing lower-density residential neighborhoods on the periphery.

- Special District boundaries take into account distance from the station, natural and man-made barriers, market interest, and planned land uses.
- The TOD Precinct is generally within 1/4 mile of the Pearl Highlands station.
- The TIZ Precinct is generally located between 1/4 and 1/2 mile from the Pearl Highlands station.

The TOD Precinct includes the immediate station area.

The TIZ Precinct includes more outlying areas, including properties makai of Kamehameha Highway.

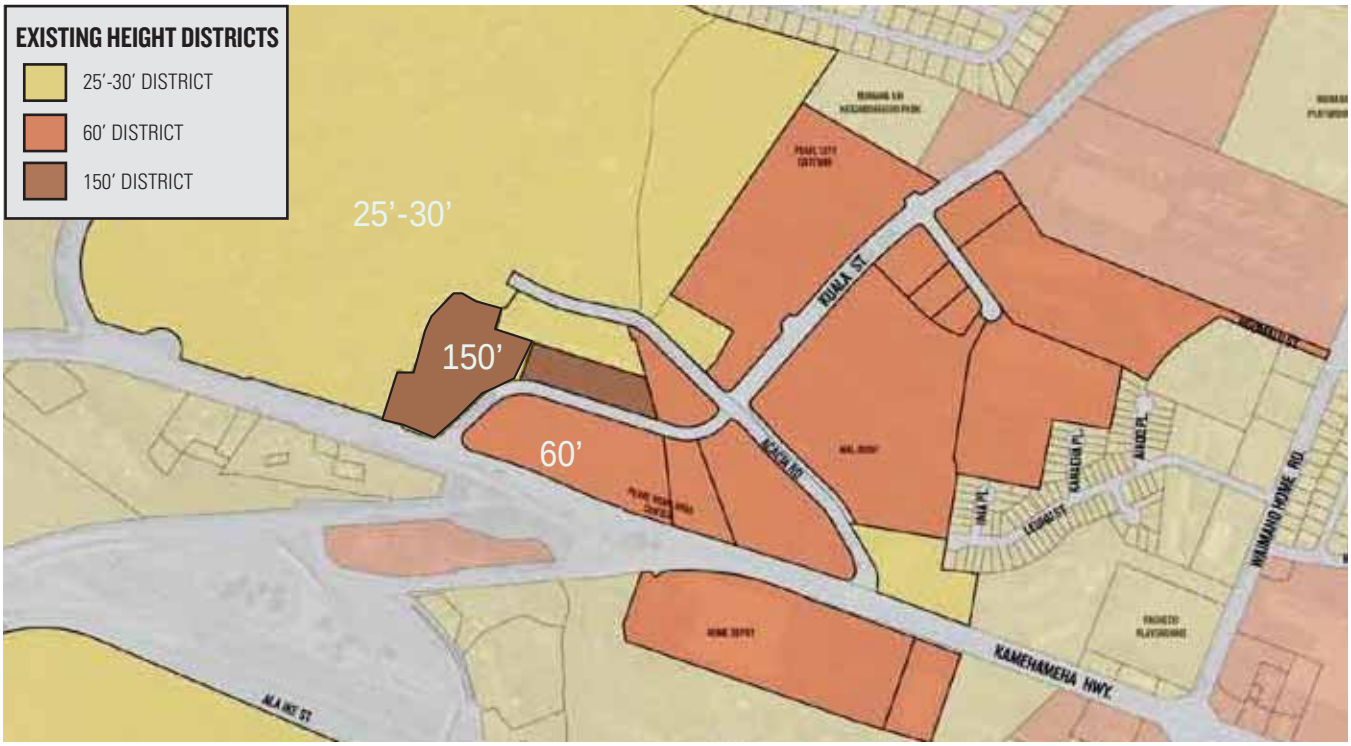


FIGURE 32 - Pearl Highlands Station Area - Existing Allowable Heights

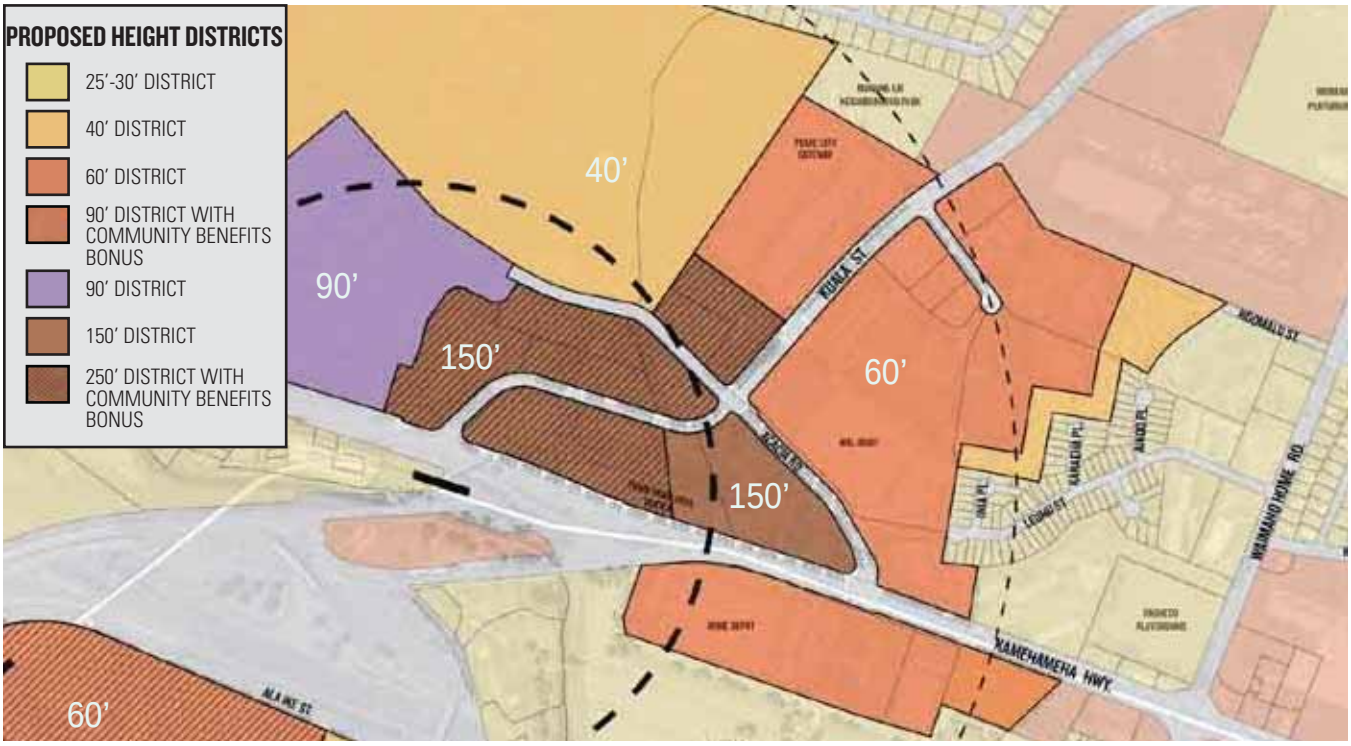


FIGURE 33 - Pearl Highlands Station Area - Proposed Allowable Heights

2. EXISTING ALLOWABLE HEIGHTS

There are currently three height limit zones surrounding the Pearl Highlands station: a height limit of 60' for the majority of the area, a height limit of 150' mauka of Pearl Highlands Center, and a height limit of 25'-30' for the existing residential areas diamond head and ewa of the core station area. Adjacent to Pearl Highlands Center are two residential high-rises of approximately 400' (40 stories). These buildings greatly exceed both the existing and proposed allowable heights.

3. PROPOSED ALLOWABLE HEIGHTS

New buildings in the station area should generally be taller near the station and step down in height further from the station. Stations should serve as focal points and hubs for more intense development.

The Plan recommends that the 150' height limit zone be expanded to include Pearl Highlands Center and areas mauka of Kuala Street in order to incentivize transit-oriented development. Also envisioned is a 90' height limit in areas immediately north of the station. The surrounding housing area should have a height limit of 40' while areas mauka of Acacia Street along the Kuala Street corridor should have a maximum height limit of 60', stepping down to 40' diamond head of Walmart.

The hatched areas on Figure 33 are recommended for higher allowable heights in exchange for community benefits, as described in Chapter IX: Implementation Recommendations.

- The Plan recommends base height limits of 40', 60', 90', and 150' within the planning area.

Taller buildings may be appropriate within the TOD Precinct.

Areas mauka of Walmart are generally proposed to have a height limit of 60'.

PEARLRIDGE STATION AREA PLAN

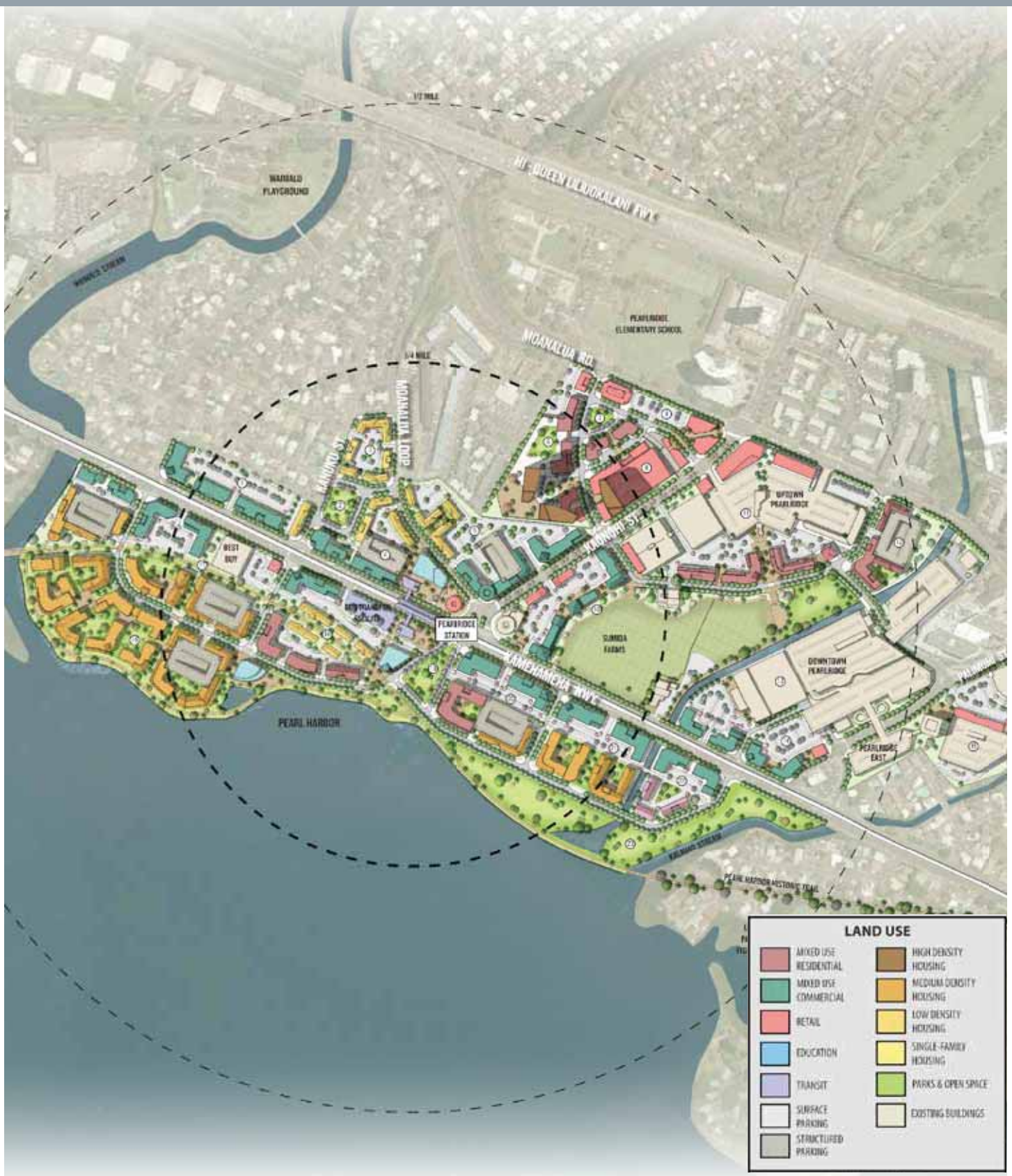


FIGURE 34 - Pearlridge Station Area Illustrative Plan

A. OVERALL STRUCTURE

PEARLRIDGE STATION AREA PLAN

- The Plan envisions the Pearlridge station area as a major urban center and regional shopping destination.

The Pearlridge station is located at the intersection of Kamehameha Highway and Kaonohi Street in Aiea. The nearby Pearlridge Center is the second largest mall in Hawaii and a major economic driver for this area. The Plan envisions the Pearlridge station area as a major urban center and regional shopping destination.

Central to the Plan's recommendations is improvement to the pedestrian and bicycle experience on Kaonohi Street, a key mauka–makai connection between the transit station, Pearlridge Center, and existing higher-density upland neighborhoods.

In addition to public improvements, the Plan identifies a major opportunity site at the previous Kamehameha Drive-In at the intersection of Kaonohi Street and Moanalua Road. This site has the potential to reposition regional shopping opportunities in the neighborhood while also providing much needed housing in the Pearlridge area.

A major goal of the Plan is to "Develop New and Enhance Existing Open Space" in this station area. Two primary open spaces identified for enhancement include Sumida Farm and its immediate environs and the Pearl Harbor shoreline, including the existing Pearl Harbor Historic Trail connected to a new transit plaza. Blending new development with quality public space will create a truly unique and livable urban center.

Pearlridge Program (Existing)

- Total Site Area: 180 Acres
- Total Residential: 460 Units
- Total Commercial: 2,900,000 SF (retail/office/industrial)

Pearlridge Program (TOD Plan)

- Total Residential: 3,900 Units
- Total Commercial: 2,990,000 SF (retail/office/industrial)

The Plan envisions new development and a pedestrian pathway overlooking Sumida Farm.

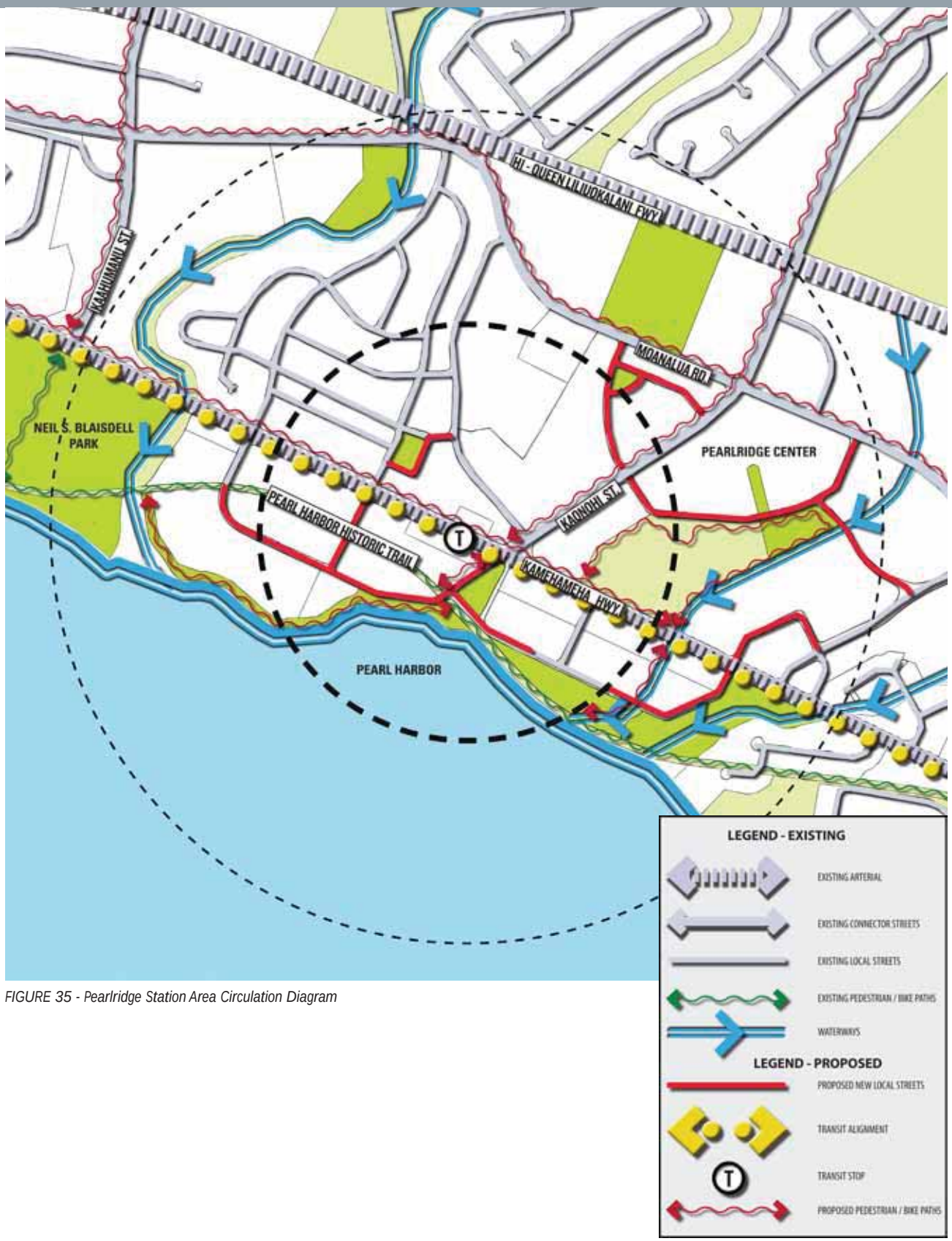


FIGURE 35 - Pearlridge Station Area Circulation Diagram

B. CONNECTIVITY & CIRCULATION

A primary principle of the Plan is to "Provide Multimodal Access to and from Stations." The City envisions that the Pearlridge rail station will experience heavy pedestrian-based ridership. Streetscape improvements, including wider sidewalks, street trees, crosswalks and seating areas along Kaonohi Street and Kamehameha Highway, are essential to creating safe and convenient connections to area jobs, shopping, and residences.

The Plan also recommends a bus transit facility makai of the station. This facility will provide easy connections between rail and local buses, improving access to surrounding residential neighborhoods. A pedestrian and bicycle path should connect through the bus facility directly to the Pearl Harbor Historic Trail, and mixed-use development above the facility should be explored.

Other bicycle facility improvements are also recommended throughout the area. A dedicated bicycle lane is proposed along Kaonohi Street to provide a safe biking experience from mauka neighborhoods to the station. The Pearl Harbor Historic Trail should be improved to create a more attractive environment for pedestrians and bicyclists along the shoreline and to re-affirm the trail as a "special place" and regional amenity. Maintenance is especially important in ensuring that the trail remains clean and safe, helping to draw new users and encouraging healthy activity for neighborhood families.

New streets are recommended in tandem with redevelopment in the station area. One of the most important of these is a new Main Street connecting from Moanalua Road and the Pearl Ridge Elementary School, through the old Kamehameha Drive-In site, across Kaonohi Street, and through the Pearlridge Center parking lot back to Moanalua Road. This Main Street has the potential to provide a strong identity for transit-oriented development, as well as a pedestrian-friendly connection through the neighborhood.

It is recommended that a strong connection also be provided from the station to the Pali Momi Medical Center, including a shuttle service for seniors and the disabled.

- Streetscape improvements, including wider sidewalks, bicycle lanes, street trees, crosswalks and seating areas, along Kaonohi Street and Kamehameha Highway are essential to creating safe and convenient connections to area jobs, shopping, and residences.

Sidewalk and streetscape improvements can help to create a more attractive pedestrian environment.

Strengthening connections to the Pearl Harbor Historic Trail is a key element of the Plan.

Existing view of Pearl Harbor Historic Trail, showing limited and unattractive access from adjacent housing

Improvements to the trail, as well as adjacent properties, could create a valuable waterfront gathering place.

C. PARKS & OPEN SPACE

Central to the community's vision for the Pearlridge station area is the principle of "Creating Access and Views to Water and the Pearl Harbor Historic Trail." It is the intent of the Plan to ensure public access and open space opportunities along the Pearl Harbor shoreline, helping to re-establish the Pearlridge area as a waterfront neighborhood.

The Plan envisions a new community open space at the terminus of Kaonohi Street—a "window to Pearl Harbor." Over time, as redevelopment occurs in the surrounding area, this view corridor should be created and protected to ensure a direct visual and physical connection with the heart of the Pearlridge area.

Station area open space opportunities should be enhanced by creating a pedestrian pathway around the existing Sumida Farm. The watercress farm is valued by the community as a cultural resource that should be recognized. New development in the Pearlridge Center area is encouraged to provide an attractive edge along the farm with outdoor seating areas and windows to overlook this important amenity. Improving visual access to the Farm will foster neighborhood identity while providing an important awareness of current agriculture practices and the area's heritage.

In addition to these primary open spaces, new neighborhood mini-parks are proposed mauka of the station to serve as community gathering places and small recreation areas. The intent of the illustrative Plan is the show generally where new parks are recommended to be incorporated into future development, not necessarily specific locations or designs. The Plan also envisions two new transit plazas, one on each side of Kamehameha Highway. The transit plazas should be designed as active spaces which will act as community gateways from the rail station.

Park dedication and publicly accessible open space requirements should be contingent on specific development proposals within the station area.

PEARLRIDGE STATION AREA PLAN

- It is the intent of the Plan to ensure public access and open space opportunities along the Pearl Harbor shoreline, helping to re-establish the Pearlridge area as a waterfront neighborhood.
- The Plan proposes approximately 15 acres of public open space (includes transit plaza/ excludes Sumida Farm) and 10 acres of semi-public and private open space in the Pearlridge station area.

Pearl Harbor Historic Trail improvements and a new waterfront open space will help to connect the Pearlridge area to the waterfront - before and after illustrations from the perspective of the red arrow are shown on page 98.

Existing view of Kaonohi Street looking towards Kamehameha Highway, showing surface parking along the sidewalk and a lack of bicycle facilities

Proposed Kaonohi Street improvements would create an attractive bicycle and pedestrian environment, including new mixed-use development that activates the sidewalk.

D. URBAN FORM

The intent of the recommended urban form for the Pearlridge station area is to encourage the plan principle of "Create a Comfortable and Lively Pedestrian Environment." The Plan focuses on creating a stronger identity for the neighborhood and a true sense of place. By integrating this concept directly with transit, the area can gain vitality in the future, growing transit ridership, and establishing a pedestrian lifestyle.

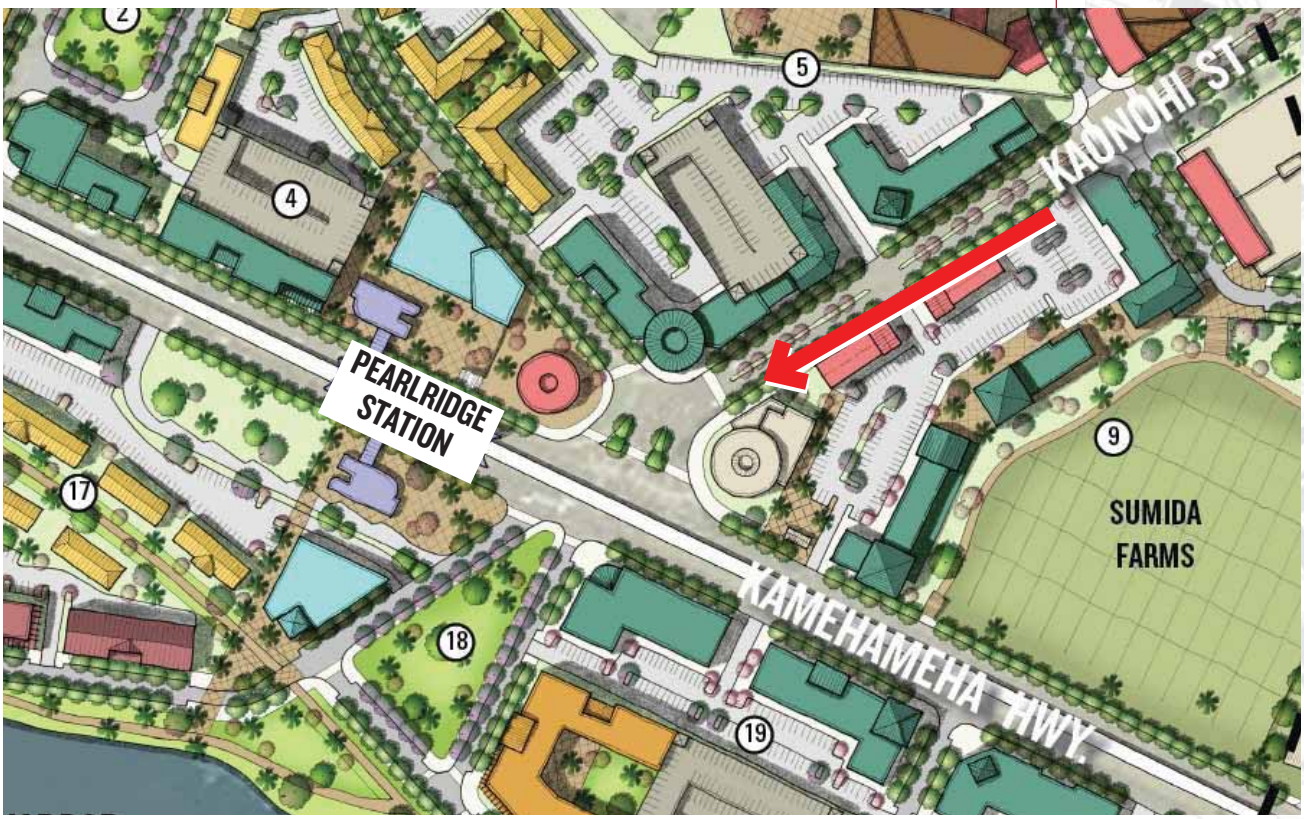
Consistent with this vision, new development in the station area should be oriented directly to the sidewalk, placing parking to the rear or in wrapped parking structures. Buildings that abut Sumida Farm should be oriented to look out over it with lanais, cafe seating and large windows.

New development at the catalytic Kamehameha Drive-In site should be mixed-use in nature, with internal connections, as well as attractive edges that integrate the development into the surrounding neighborhood.

The existing Pearlridge Center should be re-oriented from a traditional shopping mall to a more urban, outwardly-focused mixed-use destination. Anchor stores can remain vital while secondary areas are redesigned to create a town center atmosphere.

Also central to the Plan's vision is a signature building adjacent to the station and a new waterfront neighborhood along Pearl Harbor. By revitalizing existing buildings and encouraging new development, workforce housing can be created that embraces the existing Pearl Harbor Historic Trail and future park space along the shore.

- The Plan focuses on creating a stronger identity for the Pearlridge neighborhood and a true sense of place.



Before and after illustrations of Kaonohi Street improvements, looking towards Pearl Harbor and the Pearlridge station, are shown on page 100.

FIGURE 36 - Pearlridge Station Area - Existing Land Uses

FIGURE 37 - Pearlridge Station Area - Proposed Land Uses

E. LAND USE

The intent of the Plan is to encourage a mixed-use regional center surrounding the Pearlridge station. Existing properties are typically single-use in nature with retail and commercial uses along Kamehameha Highway and Kaonohi Street and residential uses in the surrounding neighborhoods.

The Plan envisions mixed-use development along Kaonohi Street and Kamehameha Highway. Immediately adjacent to the station, new civic uses could help to emphasize the area as a major destination for the region.

The Pearl Harbor shoreline is envisioned with medium-density housing and mixed-use residential development.

Pearlridge Center should remain the anchor for a vital retail district, enhanced by new shopping opportunities across Kaonohi Street at the Kamehameha Drive-In site. High-density housing is also envisioned for the Drive-In site. By providing additional residences in this area, workforce housing options will increase, transit ridership will improve, and nearby retail stores and restaurants will have a stronger customer base.

Areas adjacent to Moanalua Loop could also be redeveloped in the future with lower density residential uses, helping to transition to adjacent single-family neighborhoods.

New residences will also increase the number of school-age children in the community and may require new schools or the expansion of existing facilities. Schools should be centrally located and connect to surrounding neighborhoods with safe walking and biking routes.

- The intent of the Plan is to create a mixed-use regional center surrounding the Pearlridge station.

Retail uses should be oriented to the sidewalk.

Housing can be integrated with new commercial development in the Pearlridge station area.

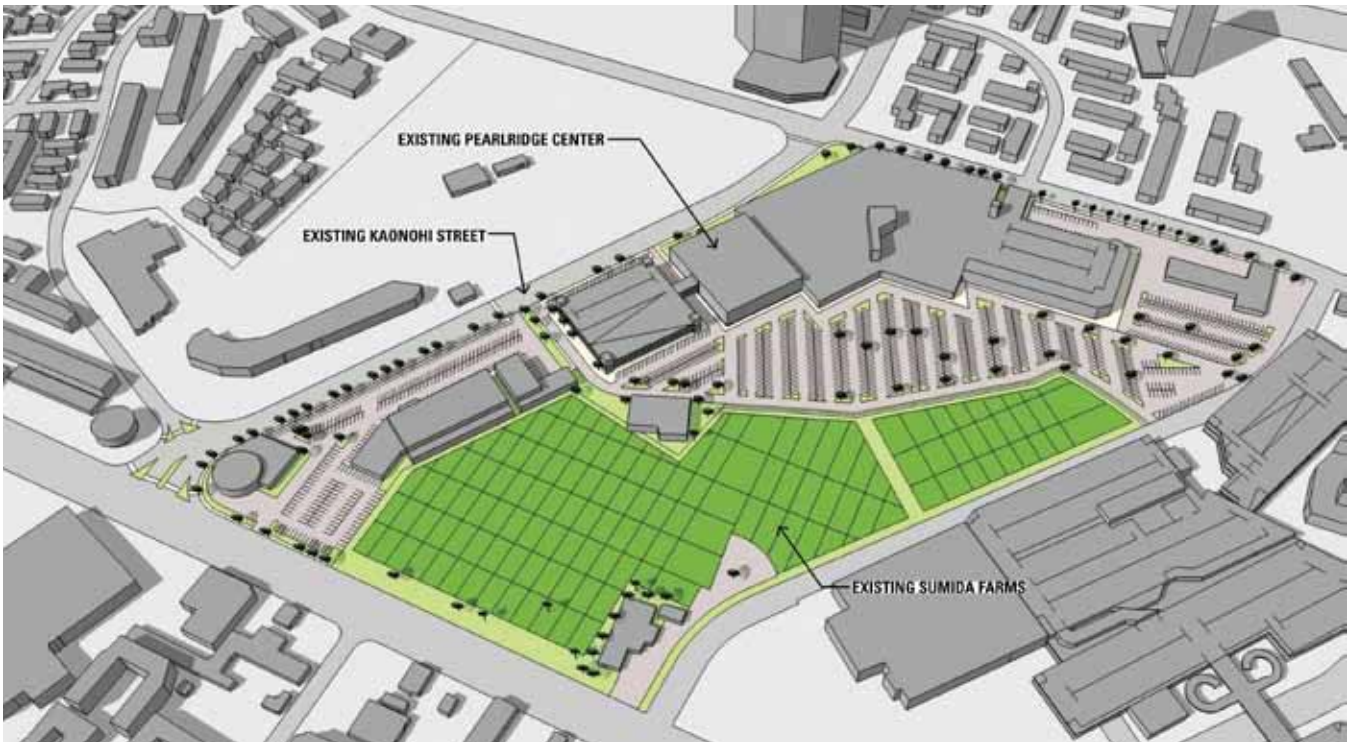


FIGURE 38 - Pearlridge Station Area: ***Existing Conditions***

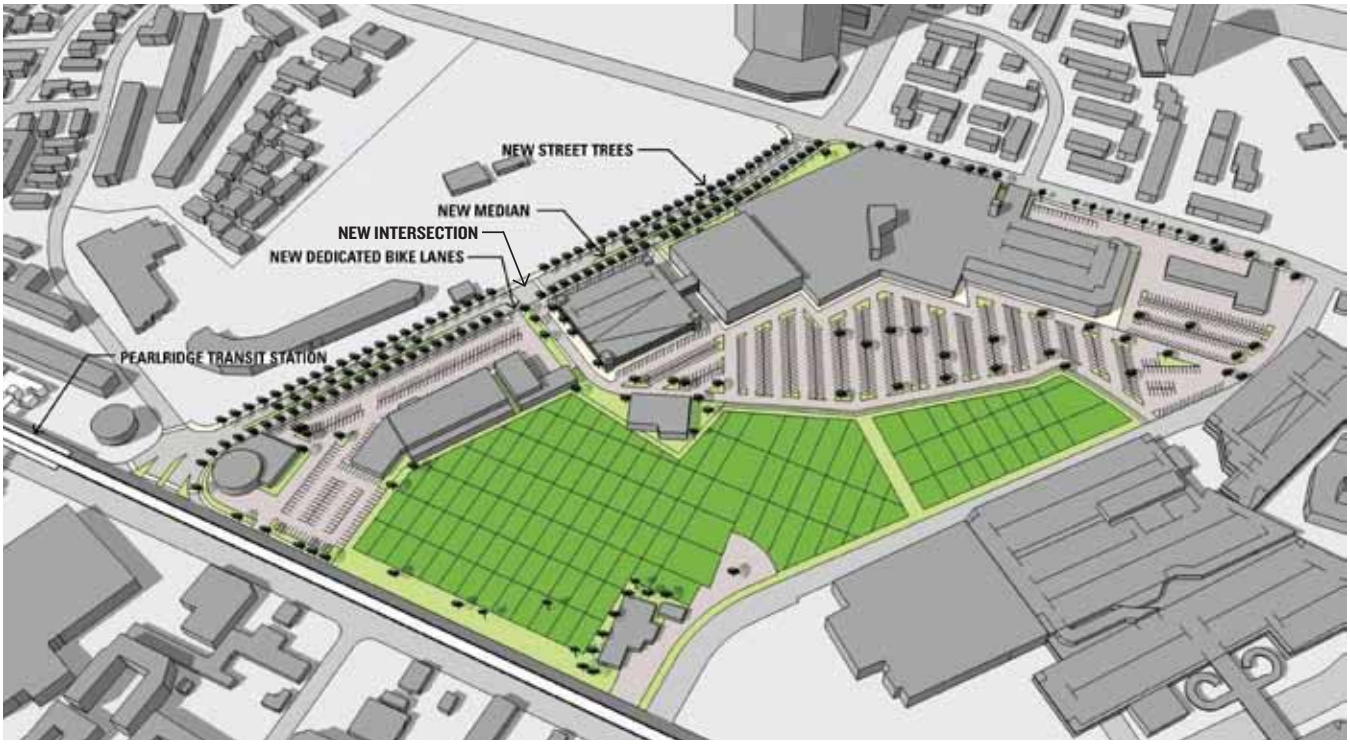


FIGURE 39 - Pearlridge Station Area: ***Phase 1***

F. PROTOTYPICAL PHASING

Appropriate development phasing will maximize investments in infrastructure and guide development in critical areas while accomplishing the plan principles. Below is a sample phasing program for a prototypical block in the Pearlridge station area. The goal of the hypothetical phasing study is not to show a specific design but to illustrate how development can occur in an area over time. While the Pearlridge area is used as an example, the phasing strategies described below can be applied to similar blocks throughout Aiea and Pearl City.

- The goal of the phasing study is not to show specific design, but to illustrate how development can occur in an area over time.

EXISTING CONDITIONS

The Existing Conditions diagram at left (Figure 38) shows the existing Pearlridge Center mauka of Kamehameha Highway. The shopping center currently surrounds Sumida Farm and includes both surface and structured parking. A monorail system connects the Uptown and Downtown portions of the Center. Kaonohi Street provides the primary access to the Center from the station and is currently auto-oriented in design.

PHASE I

Phase 1 (Figure 39) shows the introduction of the Pearlridge rail transit station into the neighborhood. The station, which will be located in the median of Kamehameha Highway, will include elevated walkways touching down on both the mauka and makai sides of the highway. The initial phase will also include a bus transfer facility adjacent to the makai rail station, with potential for housing or mixed-use development above it, and an expanded transit plaza that connects to the Pearl Harbor Historic Trail. In order to provide safer and more attractive access to the station from surrounding retail and residential uses, it is recommended that Kaonohi be redesigned in the short term (1-5 years) to be a complete street that accommodates pedestrians, bicyclists, buses and autos while maintaining access to Pearlridge Center. Another key short-term improvement is a new intersection at the existing driveway for Pearlridge Center on Kaonohi Street. This intersection would allow the Main Street to connect through the Center and the Kamehameha Drive-In site in future phases.

Kaonohi Street currently lacks pedestrian amenities such as wide sidewalks, lighting, and seating areas.

Sumida Farm is a tremendous open space asset to the Pearlridge area.

FIGURE 40 - Pearlridge Station Area: ***Phase 2***

FIGURE 41 - Pearlridge Station Area: ***Phase 3***

PHASE 2

Phase 2 (Figure 40) incorporates new mixed-use development in the area closest to the station, adjacent to the existing Anna Miller's restaurant. This infill development would create an attractive pedestrian-focused environment for transit riders to explore and add shopping, dining, and living opportunities in the station area. Along with new development, Phase 2 also envisions a new multi-use trail overlooking Sumida Farm. This trail would reinforce the Farm as an important neighborhood resource, while also providing an off-street pedestrian and bicycle route between Pearlridge Center and the station. The final element of Phase 2 is infrastructure for the Main Street between Uptown Pearlridge Center and Sumida Farm. It is recommended that the current parking lot drive be upgraded to street standards in order to create a physical framework for future infill development surrounding the Center.

PHASE 3

Phase 3 (Figure 41) envisions additional infill development along the newly-created Main Street. Commercial mixed-use development could be introduced into existing surface parking areas to create a town center character for Pearlridge Center. Currently, most buildings in the area turn their backs to Sumida Farm. A key element of new development in the area should be orientation of buildings to look out over Sumida Farm and the proposed multi-use trail. Lanais, cafe seating and large windows should provide views of the Farm, the elevated rail, and Pearl Harbor. This recommendation is consistent with the plan principle of "Creating Access and Views to Water and the Pearl Harbor Historic Trail."

New retail uses would help preserve the Pearlridge area as a major regional shopping destination.

Housing above retail shops can help to create a more active mixed-use environment.

FIGURE 42 - Pearlridge Station Area: ***Phase 4***

PHASE 4

Phase 4 (Figure 42) envisions the completion of Main Street to Moanalua Road, creating a new street connection from the existing higher-density residential areas through Pearlridge Center to lower Kaonohi Street and the rail station. Phase 4 could include additional infill development at the Moanalua Road entrance to the Main Street, including a new parking structure. Additional development is also encouraged along Moanalua Road, mirroring the existing residential uses acorss the street, and at the important corner of Kaonohi Street and Moanalua Road to create a front door to Pearlridge Center. These prototypical phases illustrate the transformation of an auto-oriented environment into a pedestrian-oriented place that competes economically with other regional shopping areas and provides neighborhood amenities that benefit local residents and workers.

Retail liner buildings can be developed on existing surface parking areas surrounding Pearlridge Center.

Safe crossings would allow pedestrians to easily move across Kaonohi Street.

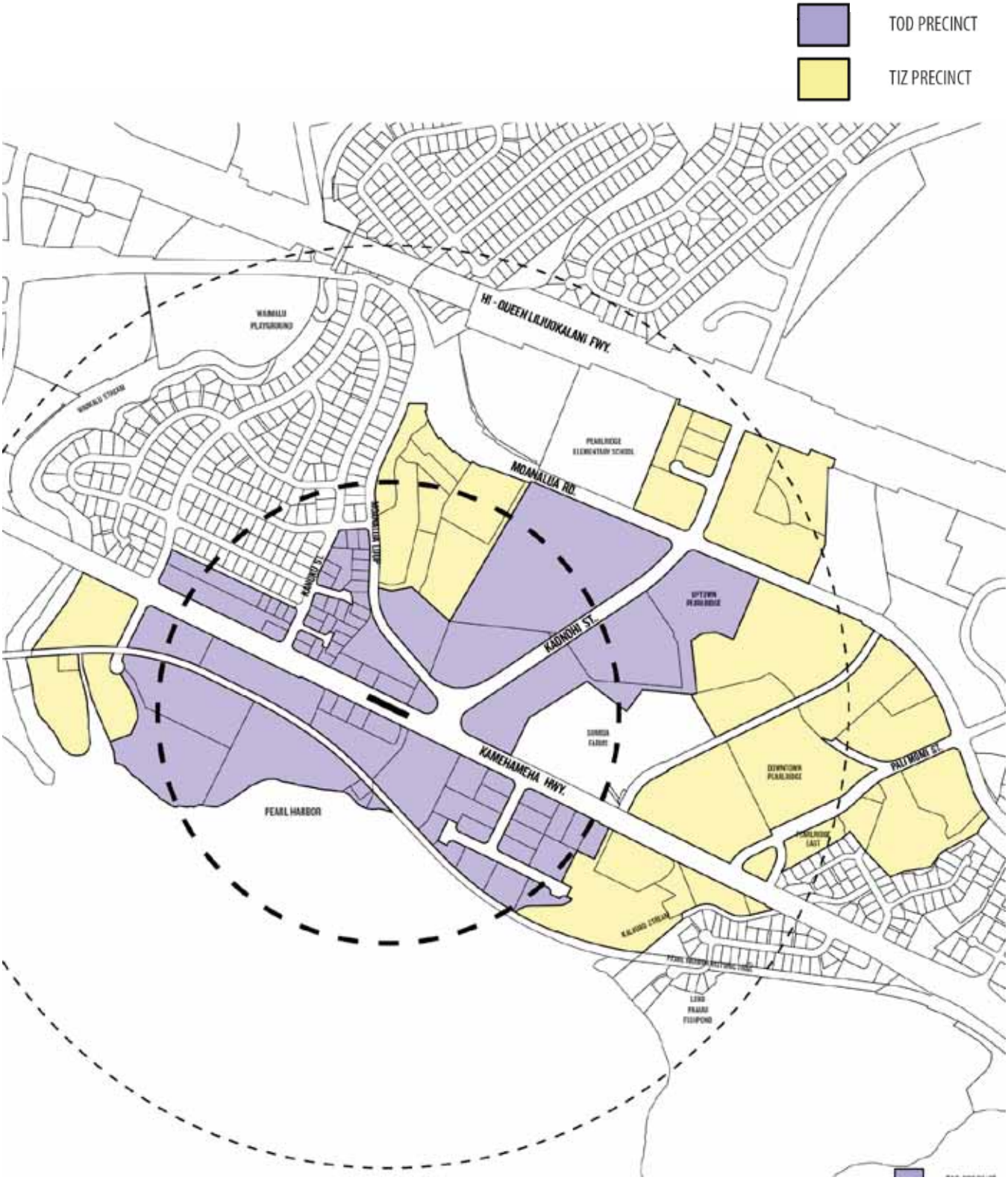


FIGURE 43 - Pearlridge Station Area - Recommended TOD Special District

G. DISTRICT BOUNDARIES

The Plan recommends a TOD Special District intended to ensure the community vision for the station area through zoning standards that enable and promote transit-oriented development. Figure 43 illustrates the recommended boundaries of the TOD Special District for the Pearlridge station area. Recommended zoning standards for each station area are described in the Implementation Recommendations chapter.

The recommended Special District boundaries around the Pearlridge station take into account distance from the transit station, natural topographic and man-made barriers, extent of market interest in development, planned land uses, and the overall benefits of TOD, including the potential to increase transit ridership.

The TOD, or transit-oriented development, Precinct is generally within 1/4 mile of the Pearlridge station and includes the areas with the greatest development potential. These areas will likely be redeveloped in the near (0-10 years) to mid-term (10-20 years) and should include larger buildings and higher intensity mixed-use environments.

The TIZ, or transit-influence zone, Precinct is located beyond the TOD core, between 1/4 mile to 1/2 mile from the Pearlridge station. The TIZ Precinct should be less intense by nature, generally stepping down from the higher-density TOD Precinct. Properties within the TIZ Precinct are more likely to develop in the long-term (20-30 years) and should be compatible with existing lower-density residential neighborhoods on the periphery.

- Special District boundaries take into account distance from the station, natural and man-made barriers, market interest, and planned land uses.
- The TOD Precinct is generally within 1/4 mile of the Pearlridge station.
- The TIZ Precinct is generally located between 1/4 and 1/2 mile from the Pearlridge station.

Kaonohi Street is within the core of the TOD Precinct.

Areas makai of Kamehameha Highway are also within the TOD Precinct.

FIGURE 44 - Pearlridge Station Area - Existing Allowable Heights

FIGURE 45 - Pearlridge Station Area - Proposed Allowable Heights

2. EXISTING ALLOWABLE HEIGHTS

Currently, the areas closest to the Pearlridge station primarily have a height limit of 60'. Properties on the makai side of Moanalua Loop have a height limit of 150', as do areas mauka of Moanalua Road near Kaonohi Street. A small portion of the neighborhood adjacent to the Pearl Harbor Historic Trail, the area ewa of Kamehameha Drive-In, and a parcel mauka of Sumida Farm currently have height limits of 25'-30'.

3. PROPOSED ALLOWABLE HEIGHTS

In order to promote transit-oriented development within the station area, particularly along Kaonohi Street, height limits of 150' are recommended. Stepping down to Pearl Harbor, the Plan recommends a base height limit of 60' makai of Kamehameha Highway.

In order to transition from the existing residential towers mauka of Moanalua Road, on the diamond head side of Pearlridge Center, the Plan recommends a base height limit of 90' on the makai side of the road, stepping down to 40' and 60' closer to Kamehameha Highway.

A portion of the residential area that currently has a 150' height limit along Moanalua Loop is envisioned for lower density development with a height limit of 60' in order to gradually step down to the adjacent single-family homes.

The property near the intersection of Moanalua Road and Moanalua Loop is generally within a five to ten minute walk of the rail transit station and has a recommended height limit of 60'.

The hatched areas on Figure 45 are recommended for higher allowable heights with a community benefits bonus, as described in Chapter IX: Implementation Recommendations.

- The Plan recommends base height limits of 40', 60', 90', and 150' within the planning area.

Taller buildings and higher density development, as shown here outside of Washington, DC, should be clustered around transit stations.

Buildings should step down in height away from the station to be compatible with the surrounding single-family neighborhoods.

IMPLEMENTATION RECOMMENDATIONS

IMPLEMENTATION RECOMMENDATIONS

- The TOD Special District is intended to ensure the community vision for the station areas through zoning standards that enable and promote transit-oriented development.
- Land uses are proposed to be similar to those set forth under the existing BMX-3 Community Business Mixed Use zoning district.

A. TOD SPECIAL DISTRICT

The Plan recommends a TOD Special District intended to ensure the community vision for the station areas through zoning standards that enable and promote transit-oriented development.

1. APPLICABILITY

Special District regulations would be mandatory, not optional. The proposed TOD Special District regulations may supplement or modify the underlying zoning district regulations in the Land Use Ordinance (LUO). If any TOD Special District regulation conflicts with any provision contained in Article 3 of the LUO (Establishment of Zoning Districts and Zoning District Regulations), the more restrictive regulation takes precedence. A property owner must follow the provisions of the TOD Special District in order to develop property. In doing so, the property may be subject to different permitted and conditional uses and modified densities, building heights, yard, and parking requirements. Increased entitlements, such as higher building heights, could be granted in exchange for providing community benefits or meeting additional design-related criteria. All applications would be subject to design review.

2. DISTRICT BOUNDARIES

The recommended Special District boundaries around each rail station take into account distance from the transit station, natural topographic barriers, extent of market interest in development, planned land uses, and the overall benefits of TOD, including the potential to increase transit ridership.

The TOD, or transit-oriented development, Precincts are generally within 1/4 mile of the stations—areas with greater development potential. These areas will likely be developed sooner and should include larger building forms and higher-intensity mixed-use, employment, and residential options.

The TIZ, or transit-influenced zone, Precincts are located beyond the TOD core, between 1/4 mile and 1/2 mile from the stations, and should be less intense in character. Properties within the TIZ Precincts will most likely redevelop over a longer time frame and should include smaller buildings that step down to meet surrounding lower-density neighborhoods.

For specific TOD and TIZ boundaries, please see Section G for each station area.

3. LAND USES

The station areas should contain a mix of complementary uses. Complementary land uses are those that offer goods and services at different times of the day and week and provide a consolidated one-stop area for people to live, work, shop, and participate in entertainment and community activities in close proximity to one another. Complementary land uses located in a neighborhood designed to accommodate pedestrians, bicycles, buses and trains reduce dependence on the automobile and, thereby, the need for standard provisions of parking. This is consistent with the principle of "Create a Comfortable and Lively Pedestrian Environment" in the core station areas. These uses can be mixed horizontally within a neighborhood or block and/or vertically in multistory buildings.

Within the TOD Special District, uses are proposed to be similar to those set forth under the City's existing BMX-3 Community Business Mixed Use zoning district. However, the exclusion of auto-oriented uses should be considered, including automobile service stations, automobile sales, drive-thru facilities, and self-storage facilities. The TOD regulations would not eliminate the requirement for discretionary permit approval, including Plan Review Use (PRU) approval for certain uses such as for colleges and universities, as specified in the LUO.

4. DENSITY & FLOOR AREA RATIO

According to the Primary Urban Center Development Plan, areas close to transit lines and the major east-west arterials should be zoned for medium-density residential, which may range from 13 to 90 units per acre, or high-density residential mixed use, which may go up to 140 units per acre. Neighborhoods in these zones should also include uses which support resident lifestyle choices, such as convenience or neighborhood stores, dining establishments, professional and/or business services, and other similar activities.

- Current underlying zoning does not specify FAR limits (floor area ratios, which limit development density) in the Leeward Community College TOD Special District. It does, however specify a maximum building area of 10 percent of the lot. The low coverage standard is due to its current AG-1 (Agricultural, Restricted) zoning designation. Overall intensities proposed in the Plan far exceed this current standard.
- Current underlying zoning specifies FAR limits in the Pearl Highlands TOD Special District in I-2 (Industrial, Intensive) zones (2.5 FAR). A maximum building area of 50 percent of the lot is specified in R-5 (Residential) zones. Overall intensities proposed in the Plan exceed the current R-5 standard.
- Current underlying zoning FAR limits in the Pearlridge TOD Special District are specified in I-2 zones (2.5 FAR), B-2 (Business, Community) zones (2.5 FAR, up to 3.5 with open space bonus), and AMX-3 (Apartment, Mixed-use, High-density) zones (0.6-2.8 FAR). Overall intensities proposed in the Plan generally fit within these current standards.

It is recommended that a **maximum FAR of 2.5, or up to 3.5 with a community benefits bonus** (as described in Section 9 - Community Benefits Bonus), be applied to all areas within the TOD Precincts.

It is recommended that a **maximum FAR of 1.0, or up to 1.5 with a community benefits bonus**, be applied to all areas within the TIZ Precincts.

Allowing a higher FAR in the station areas helps to promote the plan principle of "Encourage Workforce Housing" in the station areas. The intent of the Special District FAR regulation is to focus more intense development in the TOD Precincts and less intensity in the TIZ Precincts. Greater allowable FAR should be considered as a community benefits bonus, as described in Section 9 - Community Benefits Bonus.

According to the Primary Urban Center Development Plan, areas close to transit lines and the major east-west arterials should be zoned for medium and high-density development.

- New buildings in the station areas should generally be taller near the station and step down in height farther away.

5. MAXIMUM BUILDING AREA

Transit-oriented development is most efficient when buildings optimize lot coverage in order to create active, urban street edges and opportunities for structured parking. Buildings set far back from the street within large open spaces or surface parking lots should be avoided. With this in mind, it is recommended that the maximum building area (coverage) standard not be regulated for the TOD Special Districts. This is consistent with the standard for the B-1 (Business, Neighborhood), B-2, BMX-3, and BMX-4 (Business, Mixed-use, Central) zones.

6. MAXIMUM BUILDING HEIGHTS

New buildings in the station areas should generally be taller near the stations and step down in height farther away. Stations should serve as focal points and hubs for more intense development.

According to the Primary Urban Center Development Plan, allowable building heights should be based on view plane studies to preserve views of natural landmarks. Otherwise, the maximum building height for districts zoned low-density apartment should be approximately four stories, or 40 feet. For areas zoned medium-density apartment, the maximum desired building height should be either 60 feet, or the present height of the building occupying the lot. The Neighborhood TOD Plan generally incorporates these standards, with the addition of allowing additional height close to rail transit stations.

Greater allowable heights may be considered in exchange for community benefits, as described in Section 9 - Community Benefits Bonus. For specific height recommendations, please see Section G for each station area.

7. YARDS

Yards should foster an attractive environment while relating directly to the principle of "Create a Comfortable and Lively Pedestrian Environment." The recommended yard standards proposed below for the Aiea–Pearl City station areas are generally consistent with existing standards set forth in the BMX-3 Community Business Mixed Use district.

- Front yards in the station areas should foster a strong pedestrian-oriented character.
- New buildings should generally maintain a frontage with the building face adjacent and parallel to the front yard and should address or open directly on to the sidewalk. Small variations in yards should be used to create small open spaces, delineate pedestrian pathways and emphasize main building entries.
- Front yards for buildings with dining and retail uses on the ground floor should include additional pedestrian space and seating areas. It is recommended that outdoor dining and cafes be allowed in both the TOD and TIZ Precincts within the front yards in order to encourage an active, vibrant pedestrian environment. Retail uses on the ground floor should have a high degree of transparency with storefront windows, along with recessed building entries and glass doors.
- In order to encourage active street edges and create wide sidewalks buffered from traffic by street trees and planting strips near the curb, development may be allowed to provide the required landscaping within the public right-of-way fronting the site rather than within the front yard.

- Front yards for buildings with residential uses on the ground floor should include landscaping and entry walks, along with porches and stoops within the yard. Low transparent fences, no higher than 4', should be allowed to help delineate public and private space within the front yards.
- Front yards for buildings with industrial uses on the ground floor should include landscaping along with ground floor windows along the front facades in order to avoid blank walls along the street.
- Buildings within the station areas should avoid blank walls facing streets or pedestrian pathways.
- To avoid the appearance of top-heavy buildings, development should step back on upper levels and include large lanais with transparent railings for both residential and office uses.

8. PUBLICLY ACCESSIBLE OPEN SPACE

Open space is a key component of a healthy transit-oriented community. Publicly accessible open spaces, gathering spaces, and parks with seating, recreation areas, shaded areas, and WiFi service are elements that help create a sense of place and community.

The TOD Plan recommends that new developments on parcels of 20,000 square feet or larger provide usable, publicly accessible open space consistent with the neighborhood TOD vision. Alternatively, payment to improve existing public park space in the station area is also acceptable. Additional information is described in Section F - Open Space.

- Publicly accessible open spaces help to establish an identity and focus for new developments, as well as provide an important resource for the surrounding community.

- A community benefits bonus is a development policy that can both shape development in the station areas and realize community goals.

9. COMMUNITY BENEFITS BONUS

The use of a community benefits bonus (CBB) is one of several development policies that can be used both to shape growth and development in the Aiea–Pearl City station areas and realize community values and goals. In their most basic form, community benefits bonuses are a means by which new development is authorized to exceed a baseline level of FAR and/or building height in exchange for providing support for community goals. A well-defined, but flexible, CBB program for transit-oriented development has the potential to provide a more predictable, efficient, and equitable process for development interests and more direct and meaningful benefits for the community.

Community benefits need to relate to the amenities desired and/or needed by a community or in a specific area. Improvements created through a community benefits strategy should focus directly on the following key plan elements:

Leeward Community College Station Area

- Secondary access road
- Development of open space adjacent to campus
- Pearl Harbor Historic Trail connection makai of campus

Pearl Highlands Station Area

- Pearl Highlands Center pedestrian improvements and bridge connection to rail station
- Access and improvements to University of Hawaii Urban Gardens
- Creation of public park space

Pearlridge Station Area

- Kaonohi Street pedestrian and bicycle improvements
- Transit plaza and pedestrian connection/view corridor from station to Pearl Harbor Historic Trail
- Pearl Harbor Historic Trail improvements
- Sumida Farm trail and overlooks

General

- Local jobs/workforce training
- Student and faculty housing
- Affordable housing
- Locally-owned retail support
- Sidewalk and streetscape upgrades

As the community's needs evolve over time, the bonus system should be reviewed and updated to meet the changing needs and wants of stakeholders.

Bonus systems are a widely accepted and integral part of many present day zoning and planning standards in urban locales throughout the US. The following cities have developed different versions of community benefits bonuses, usually premised on a community's specific priorities and needs.

- Seattle allows downtown residential buildings higher than 8 stories if developers contribute to an affordable housing fund at a certain cost per additional square foot.
- Austin is developing a model for a CBB as a menu system where developers can earn additional square footage for their buildings by providing certain predefined community benefits, including parks, open space and other urban amenities.
- Tyson's Corner, VA has developed a basic matrix for community benefits as a way to achieve a livable, walkable community.
- San Diego is in the final stages of approving new municipal codes with incentives relating to workforce/affordable housing, urban open space, and employment uses.
- Miami offers incentives to encourage street-level retail.
- Anchorage provides incentives for climate-controlled courtyards.
- Cincinnati gives incentives for historic preservation.
- San Francisco offers zoning bonuses to encourage rooftop observatories.

Some benefits/amenities are simpler to qualify, value, and administer than others. Many cities are separating administrative functions based on the level of review necessary in granting the bonuses. Bonuses for easily quantifiable amenities can be made available on an as-of-right basis and approved without extensive site plan review. The proposed project must demonstrate it will incorporate the bonus benefit/amenity and meet minimum design guidelines. For those benefits/amenities requiring consideration as part of complex design criteria, bonus incentive approvals will need to undergo more extensive site plan review.

In exchange for these community benefits, the following bonuses are recommended:

- Allowing greater building heights over the maximums defined in Section G for each station area. These additional allowable heights would need to strongly take into account adjacent properties and neighborhood context, as well as the principles defined in this Neighborhood TOD Plan.
- Allowing a density bonus (greater FAR) in both the TOD and TIZ Precincts, as described in Section 4 - Density and Floor Area Ratio.

- Community benefits need to directly relate to the amenities desired and/or needed by a community or in a specific area.

- The Plan recommends reduction in the required number of off-street parking spaces in order to reflect and encourage lower automobile ownership in transit-oriented districts.
- It is recommended that on-street parking be counted towards the required guest parking spaces for multifamily housing, as well as the required off-street spaces for restaurant and retail uses.

10. PARKING REQUIREMENTS

The Plan recommends reduction in the required number of off-street parking spaces in order to reflect lower automobile ownership in transit-oriented districts, as well as the negative impact parking facilities can have on urban quality. Parking should also be reduced to encourage transit ridership, lessen urban runoff, and make more efficient use of land. Additionally, lower parking requirements can lower overall construction costs, resulting in improved financial performance of development projects and more affordable housing development.

Reducing required parking promotes the plan principles of "Encourage Workforce Housing" and "Create a Comfortable and Lively Pedestrian Environment" in the station areas.

Parking requirements in the TOD Precincts should be consistent with parking requirements in the existing BMX-4 Central Business Mixed Use district.

Parking requirements in the TIZ Precincts should be consistent with existing standards although requirements for housing, office and retail uses should be lowered.

11. MAXIMUM PARKING STANDARDS

In certain transit-oriented developments it may be appropriate to implement maximum parking standards. Typically, maximum parking standards are equal to 125% of the minimum required amount, based on research from other communities. Maximum parking standards can help to ensure that transit-oriented developments are not parked at suburban standards and that they focus on the principle of "Creating a Comfortable and Lively and Pedestrian Environment."

It is recommended that a maximum parking standard in Aiea–Pearl City be studied in greater detail.

12. ON-STREET PARKING

It is recommended that on-street parking in both the TOD and TIZ Precincts be counted towards the required guest parking spaces for multifamily housing, as well as the required off-street spaces for restaurant and retail uses. The spaces could be on either public or private streets and should be available for all uses in the area.

On-street parking is essential to creating Main Street retail environments and promoting the plan principle of "Create a Comfortable and Lively Pedestrian Environment." By providing on-street parking along public and private streets, the more intense TOD uses in the station areas will have less need for costly on-site structured and surface parking.

On-street parking also provides an important buffer between the sidewalk and automobile travel lanes, thereby making the pedestrian realm more safe and comfortable.

I3. SHARED PARKING & PARKING DISTRICTS

Shared parking is publicly and/or privately-owned parking that is used by two or more distinct land uses without conflict. The success of shared parking depends on the specific uses and the interaction between them. In particular, shared parking works best when adjacent land uses have different peak activity periods (e.g., an office building and a cinema).

District parking is the large-scale application of shared parking and is usually implemented in urban commercial and retail areas using multiple common parking facilities. District parking can be particularly beneficial to new development as it can reduce the marginal costs of new construction. When coupled with mobile app-based wayfinding and reservation systems, a district-wide approach can better manage existing spaces while improving traffic operations by reducing the number of people driving around to find an available space.

District parking can also provide public or privately managed spaces for commuter park-and-ride use. This, along with time restrictions on other public spaces, can help avoid parking abuse by commuters. Many districts allow developers to contribute a set amount of cash on a per space basis in lieu of providing parking themselves. It is recommended that a parking district be studied for the Aiea–Pearl City area, especially in the area surrounding the Pearlridge station.

I4. BICYCLE PARKING

To help foster a multimodal transportation network, bicycle parking should be provided in secure areas for workers, shoppers, and residents throughout the TOD Precincts. Bicycle parking should be located at transit stations and may include bicycle storage facilities and lockers. It is recommended that development in the TOD Precincts provide bicycle parking areas holding at least the equivalent of 10% of the required automobile parking.

- Deviation from the Livable Communities Plan to allow for more intense development around the rail transit stations is intended to help create more active, vibrant neighborhoods while providing additional value to the City.

B. REVISION TO PREVIOUS PLANS

The design guidelines in the Aiea–Pearl City Livable Communities Plan should, where applicable, guide development in the Aiea–Pearl City TOD Special District, with one primary exception. The TOD Plan recommends more intense development than the Livable Communities Plan makai of Kamehemeha Highway near the Pearlridge station. The TOD Plan recommends increasing the maximum building height from two stories or 30 feet to 60 feet (or higher with community benefits bonus), while still providing for Pearl Harbor vistas at mauka–makai view corridors. The goal is to create an active, vibrant neighborhood that also provides additional value to the City to fund public improvements such as new sidewalks, street trees, parks, and open space. A taller building above the bus transfer station would also mark the station location.

The Aiea–Pearl City Neighborhood TOD Plan is generally consistent with the principles of both the Central Oahu Sustainable Communities Plan and the Primary Urban Center Development Plan. According to the Primary Urban Center Development Plan, allowable building heights should be designated based on view plane studies to preserve views of natural landmarks. Otherwise, the maximum building height for districts zoned low-density apartment should be approximately four stories or 40 feet. For areas zoned medium-density apartment, the maximum desired building height should be either 60 feet or the present height of the building occupying the lot. The Neighborhood TOD Plan generally incorporates these standards with the addition of allowing additional height surrounding the rail transit stations.

C. ENVIRONMENTAL DESIGN

1. CLIMATE CHANGE ADAPTATION

Development in the TOD Special District should take into account the best available science on climate change and sea level rise as it relates to on-site uses, building location and elevation, and the design of foundations, ground floors and mechanical and electrical systems.

2. GREEN BUILDINGS

Green buildings are strongly encouraged within the TOD Special District to lower energy and water use, minimize utility costs, create healthier living and working environments, and reduce demands on public infrastructure systems.

D. AFFORDABLE HOUSING

The current affordable housing requirements for the City and County of Honolulu require that 30% of the residential units in all new developments, which require a zone change, must be affordable with:

- 10% affordable to low-income households (earning no more than 80% of area median income);
- 10% affordable to low/moderate-income households (earning between 81% and 120% of area median income); and
- 10% affordable to gap group households (earning between 121% and 140% of area median income).

It is recommended that the City and County of Honolulu create an inclusionary housing requirement for all new housing development (for sale and rental) larger than 29 units within the TOD Special District boundaries. As a community benefits bonus for developers who exceed this base level requirement, an increase of FAR from 2.5 up to 3.5 may be granted. All requirements should incentivize the City's preference for rental affordable housing.

The affordable housing requirements for the station areas could be implemented through a special district zoning overlay or another mechanism. As described above, incentives could be offered for development of affordable housing around the transit stations, including both height and density bonuses and relief from strict development standards like parking ratios.

These incentives would provide flexibility and encourage smaller developers and landowners to redevelop their properties around transit without the financial burden of providing affordable housing, thus making these small, incremental infill projects more feasible.

IMPLEMENTATION RECOMMENDATIONS

- Incentives may be offered for development of affordable housing around the transit stations, including both height and density bonuses and relief from strict development standards like minimum parking requirements.

- The local street network should accommodate automobiles while also encouraging rapid transit, buses, bicycling, walking, and other non-automobile forms of transport.

E. STREETS AND CONNECTIVITY

1. TRANSIT-ORIENTED COMPLETE STREET NETWORK

In order to support the plan principle of "Provide Multimodal Access to and from Stations," the local street network should reflect the philosophy of complete streets by accommodating automobiles while also encouraging rapid transit, buses, bicycling, walking and other non-automobile forms of transport in a safe and convenient fashion.

Places where people take transit are places where people walk or bike. Every transit trip starts and ends with a walking trip, and places where walking and biking are comfortable and appealing have a larger catchment area for transit patrons who can access the system on foot or bicycle. For non-transit riders, active, walkable streets are one element of a park-once district, where walking is possible between multiple destinations.

The Plan recommends a number of new streets to help create a highly connected street network. These streets would allow users to circulate freely and provide a structure for neighborhood development. Streets within both the TOD and TIZ Precincts should have frequent intersections and no dead ends. It is envisioned that these street connections would be built over time as new development occurs in the area. New streets can be either public or private and should help to break up large blocks and provide improved connectivity. Smaller blocks between 300'-350' in length are ideal but not always realistic. Blocks created by new streets should be a maximum of approximately 500' in length between intersections. It is also recommended that new developments provide internal pedestrian pathways connecting to public streets.

2. URBAN STREET STANDARDS

In addition to connectivity improvements, it is recommended that the City develop more urban street standards for use in TOD areas. These standards would be implemented through various City agencies. They should place a greater emphasis on the pedestrian and bicyclist by calling for wider sidewalks and bicycle lanes. The standards should also help to calm traffic by reducing automobile lane widths and encouraging on-street parking and physical barriers between automobile and bicycle traffic wherever possible.

- A "green street" is a street that uses vegetated facilities to manage stormwater runoff at its source.

3. GREEN STREETS

It is recommended that "green street" principles be adopted for new streets and major street improvements within the station areas. A green street is a street that uses vegetated facilities to manage stormwater runoff at its source. A green street is a sustainable stormwater strategy that meets regulatory requirements and resource protection goals by using a natural systems approach to manage stormwater, reduce flows, improve water quality, and enhance watershed health.

Green streets have the potential to:

- Reduce the polluted stormwater entering Aiea–Pearl City streams and Pearl Harbor
- Reduce impervious surface so stormwater can infiltrate to recharge groundwater and decrease surface water run-off
- Increase urban green space
- Improve air quality and reduce ambient air temperature and the urban heat island effect
- Reduce demand on the City and County's stormwater collection system and the cost of constructing expensive pipe systems
- Address requirements of federal and state regulations to protect public health and restore and protect watershed health

To maximize these benefits, sustainable stormwater management best practices should also be applied at the site development level using Low-Impact Development design strategies.

4. TOD TRANSPORTATION ASSESSMENT

The City's enabling TOD Ordinance requires that the adopted TOD Special District regulations include "design provisions that encourage use of rapid transit, buses, bicycling, walking and other non-automobile forms of transport that are safe and convenient." It is recommended that a broader Transportation Assessment approach, including use of Public Transport Accessibility Levels (PTALs), be used as the means to identify those design provisions rather than using the more narrowly focused Traffic Impact Assessment approach. The Plan recommends basing these assessments upon international best practices.

It is also recommended that TOD-related updates to the Land Use Ordinance require or incentivize transportation demand management measures, such as reduced parking, bikeshare and carshare stations, and free transit passes for homebuyers. Mode share targets should be established to demonstrate a commitment to achieve the TOD plan principles. Each project developer should provide a means to assure that efforts to achieve the mode share targets are maintained, monitored, and revised as necessary.

The right type of transportation improvements need to be made in association with the public investment in the rail project for the public sector and the private developer to capture the full value of their investment. If properly crafted, the TOD Special District regulation will provide the necessary framework for a balanced relationship.

F. OPEN SPACE

The Plan proposes a series of new publicly accessible open spaces in all the station areas. These improvements are intended to reflect the principle of "Develop New and Enhance Existing Open Spaces." Parks help to establish an identity and focus for new developments, as well as provide an important resource for the surrounding community. Parks, plazas, and other public spaces should be sited and designed to be versatile, secure, and easily maintained.

1. MINI PARKS

The predominant form of new open spaces in the Plan are the neighborhood mini parks and urban plazas. A mini park would generally be smaller than existing neighborhood parks in the Aiea–Pearl City area. The mini parks should provide passive recreational and social gathering space with benches, landscaping, and picnic tables, as well as play areas for children.

The parks proposed in the Plan are generally 0.5 to 5 acres in size. These smaller parks are appropriate for dense urban areas near transit and are consistent with standards for Community and Neighborhood Park facilities in urban areas, as recommended in the City and County of Honolulu's 2004 *Standards and Design Precepts for Future Park Development*.

2. FINANCING NEW PARKS, STREETS, AND URBAN INFRASTRUCTURE

The City and County of Honolulu requires park space dedication for all residential developments of more than one dwelling unit. In case these requirements (350 sf per single-family unit and 110 sf per multifamily unit) do not provide for the amount of park and open space called for in this plan, additional financing options are available.

Tools for raising park and open space revenues at the local level are diverse and expanding. In some cases, usual options, such as local income tax and cell phone tax, are being tapped. In other cases, traditional revenue sources, such as the sales and property tax, are being broadened. In Nevada for example, the state legislature recently authorized Carson City to impose a quarter-cent "quality of life" sales tax for park development and maintenance and open space acquisition. Private maintenance and management of park space is also gaining popularity as a means to provide high-quality spaces in residential and commercial developments.

Depending on the available options for infrastructure, the needs of the community, and the tolerance of the electorate, local public financing often takes the form of a pay-as-you-go measure, long-term borrowing, or a combination of the two. With the pay-as-you-go approach, government spends revenues from general appropriations or a dedicated funding source. This funding source, which can include property assessments, sales tax set-asides, real estate transfer taxes, and even one-time environmental fines and budget surpluses, can be attractive to debt-resistant voters and public officials. Pay-as-you-go means year-by-year accountability and no borrowing costs. It also means relatively small annual revenues (sometimes too small to pay for large capital projects) and funding that can be difficult to sustain as the politics and leadership of a community changes.

Borrowing presents its own set of opportunities and obstacles. On the opportunities side, it can provide a community with the revenue and flexibility it needs up-front to fund large-scale park and open space projects, the cost of which is less today than it will be tomorrow. Bonds are typically paid off over twenty years with low, tax-exempt interest rates. Financing charges are part of the package, however, and convincing voters of the merits of incurring debt can be challenging.

Often, the two techniques are combined by bonding pay-as-you-go funds in order to bring in more up-front cash. These revenue bonds can combine the most attractive elements of both methods.

Many taxing tools are increasingly being supplemented with non-tax sources such as user fees and impact fees, as well as different types of special taxing districts. With these techniques, the level of service can be increased according to special needs or the willingness or ability of park uses to pay.

IMPLEMENTATION RECOMMENDATIONS

- City maintenance resources may need to be expanded for additional infrastructure in the TOD areas.
- It is recommended that a memorandum of agreement between various City agencies be developed to determine maintenance jurisdiction of City-owned improvements.

G. MAINTENANCE OF PUBLIC IMPROVEMENTS

To ensure the continued safety and quality of new public improvements, memoranda of understanding should be developed between various City agencies to determine maintenance jurisdiction of City-owned improvements. City maintenance resources will also need to be expanded for the additional infrastructure proposed in the Aiea–Pearl City station areas.

New public spaces and right-of-way improvements will also need to be constructed in accordance with City and County standards in order to be dedicated to and maintained by the City.

H. IMPLEMENTATION PARTNERS

Like any other successful community project, high-quality transit-oriented development depends on the participation and support of all stakeholders. Innovation in building design, parking, public amenities, and financing are often part of successful TOD projects. Partnerships involving the public and private sectors make these new approaches possible.

The following tables summarize the public and private partners that are required to realize the plan principles and specific plan recommendations for each station area. The black dots represent those partners with lead roles, and the white dots indicate those who must support them.

● - Lead ○ - Support	City and County of Honolulu	State of Hawaii	Federal Govt.	Private Developer / Property Owner
LEEWARD COMMUNITY COLLEGE STATION AREA				
Principle 1: Create Access and Views to Water and Pearl Harbor				
New bicycle paths along the extension of Ala Ike Street and along Waiawa Stream	●	○		
Pearl Harbor Historic Trail improvements	●		○	
Neighborhood mini park diamond head of campus in conjunction with new development	●			○
Principle 2: Encourage Workforce Housing				
Mixed-use development on existing surface parking mauka of LLC	○	○		●
Lower-density housing diamond head of LLC campus	○	○		●
Principle 3: Create a Comfortable and Lively Pedestrian Environment				
New streets and sidewalks within station area in conjunction with development	○	○		●
Wider sidewalks and landscaping on existing streets	●	○		
Principle 4: Provide Multimodal Access to and from Stations				
Secondary access road connecting station area to Farrington Highway	●			
Pearl Harbor Historic improvements	●		○	
Surface parking mauka of station	○	●		
Structured parking in conjunction with mixed-use development	○			●
Principle 5: Develop New and Enhance Existing Open Space				
Central green mauka of LLC campus		●		○
Transit plaza adjacent to station	●			
Private open spaces on the interior of blocks				●

FIGURE 46 - Leeward Community College Station Area - Implementation Partners

● - Lead ○ - Support	City and County of Honolulu	State of Hawaii	Federal Govt.	Private Developer / Property Owner
PEARL HIGHLANDS STATION AREA				
Principle 1: Create Access and Views to Water and Pearl Harbor				
New bicycle paths along Waiawa Stream	●		○	
Principle 2: Encourage Workforce Housing				
Higher-density housing within 1/4 mile of station and at corner of Acacia Road and Kuala Street	○		○	●
Lower-density housing mauka of Walmart	○			●
Low-density housing along Kanaeha Place	○			●
Single-family housing along diamond head edge of station area	○			●
Principle 3: Create a Comfortable and Lively Pedestrian Environment				
Taller buildings in close proximity to station and lower development on perimeter	○			●
New Main Street within existing Pearl Highlands Center				●
New streets and sidewalks within station area in conjunction with new development	○			●
Wider sidewalks and landscaping on existing streets	●	○		○
Principle 4: Provide Multimodal Access to and from Stations				
Direct pedestrian connection between station and Pearl Highlands Center	●			○
Structured parking in conjunction with mixed-use development	○			●
Bicycle lanes on Kuala Street leading to station	●	○		
Principle 5: Develop New and Enhance Existing Open Spaces				
Improved public access and enhancements to UH Urban Garden Center	○	●		●
Transit plaza at corner of Pearl Highlands Center	●			●
Neighborhood park on triangle property makai of Acacia Road	●			○
Neighborhood mini parks mauka of Walmart	●			○
Private open spaces on the interior of blocks				●

FIGURE 47 - Pearl Highlands Station Area - Implementation Partners

● - Lead ○ - Support	City and County of Honolulu	State of Hawaii	Federal Govt.	Private Developer / Property Owner
PEARLRIDGE STATION				
Principle 1: Create Access and Views to Water and Pearl Harbor				
New Pearl Harbor shoreline path ewa of Kaonohi Street	●	○		○
Pearl Harbor Historic Trail Improvements	●	○		
Principle 2: Encourage Workforce Housing				
Medium-density housing makai of Kamehameha Highway	○			●
High density housing mauka of Kamehameha Highway and ewa of Kaonohi Street	○			●
Low-density housing along Moanaloa Loop	○			●
Principle 3: Create a Comfortable and Lively Pedestrian Environment				
Taller buildings mauka of Kamehameha Highway	○			●
Pedestrian trail and overlooks along the perimeter of Sumida Farm	○			●
New Main Street connecting Moanaloa Road ewa and diamond head of Kaonohi Street	○			●
New streets and sidewalks within station area in conjunction with new development	○			●
Wider sidewalks and landscaping on existing streets	●	○		○
Principle 4: Provide Multimodal Access to and from Stations				
Bus transfer center makai of transit station	●		○	
Structured parking in conjunction with mixed-use development	○			●
Principle 5: Develop New and Enhance Existing Open Space				
New "window to Pearl Harbor" park	●			○
Transit plazas on either side of Kamehameha Highway to station	●			
Waterfront park along Pearl Harbor shoreline	●		○	○
Neighborhood park mauka of Sumida Farm	●			○
Private open spaces on the interior of blocks				●

FIGURE 48 - Pearlridge Station Area - Implementation Partners