



EXECUTIVE CHAMBERS
HONOLULU

NEIL ABERCROMBIE
GOVERNOR

December 16, 2010

Wayne Yoshioka, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawai'i 96813

Dear *Wayne* Yoshioka:

With this letter, I hereby accept the Final Environmental Impact Statement for the Honolulu High-Capacity Transit Corridor Project, as satisfactory fulfillment of the requirements of Chapter 343, Hawai'i Revised Statutes. The economic, social, and environmental impacts which will likely occur should this project be built, are adequately described in the statement. The analysis, together with the comments made by reviewers, provides useful information to policy makers and the public.

My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws. I find that the mitigation measures proposed in the environmental impact statement will minimize the negative impacts of the project.

In implementing this project, I direct the City and County of Honolulu, Department of Transportation Services and/or its agent to perform these or comparable mitigation measures at the discretion of the permitting agencies. The mitigation measures identified in the environmental impact statement are listed in the attached document.

Aloha
Sincerely,
Neil Abercrombie
NEIL ABERCROMBIE
Governor, State of Hawai'i

Attachment

c: Honorable Peter B. Carlisle, Mayor,
City and County of Honolulu
Office of Environmental Quality Control

**ATTACHMENT TO THE ACCEPTANCE LETTER OF THE GOVERNOR
TO THE DIRECTOR, DEPARTMENT OF TRANSPORTATION
SERVICES REGARDING MITIGATION MEASURES IN THE FINAL
ENVIRONMENTAL IMPACT STATEMENT FOR THE HONOLULU
HIGH-CAPACITY TRANSIT CORRIDOR PROJECT,
STATE OF HAWAI‘I, ISLAND OF O‘AHU**

Land Use

- The Project is consistent with adopted land use plans and policies; no mitigation is required.
- Because of the relatively small number of parcels affected by full acquisitions, the effects on different types of land uses in the study corridor will be minimal; therefore, no mitigation measures will be needed.

Economic Activity

The Project is not expected to result in long-term adverse effects on the economy or property tax revenues. No mitigation is required.

Acquisitions, Displacements, and Relocation

- Where acquisition of property will occur, compensation will be provided to affected property owners, businesses, or residents in compliance with all applicable Federal and State laws and will follow the Federal *Uniform Relocation Assistance and Real Property Acquisition Policies Act*.
- The City and County of Honolulu will assist all affected persons in locating suitable replacement housing and business sites within an individual's or business's financial means.
- A minimum 90-day written notice will be provided before any business or resident will be required to move.
- Relocation services will be provided to all affected business and residential property owners and tenants without discrimination; persons, businesses, or organizations that are displaced as a result of the Project will be treated fairly and equitably.
- Where landscaping, sidewalks, and driveway access will be affected by the Project, coordination will occur with the landowner, and these property features will be replaced and/or the property owner will be compensated in accordance with the Federal *Uniform Relocation Assistance and Real Property Acquisition Policies Act*.

Community Services and Facilities

Schools

- Buildings, parking, lighting, fencing, and other features will be replaced or compensation will be provided.
- Honolulu Community College – Light posts will be replaced. Property use agreement or acquisition will be negotiated with the University of Hawai‘i System.
- Waipahu High School – The affected portable buildings will be replaced or relocated on school property. A retaining wall and a new access road to the football field will be provided.

- Leeward Community College – The portable administration buildings and parking spaces will be relocated. There will be no net loss of parking. Property use agreement or acquisition will be negotiated with the University of Hawai‘i System.
- UH Mānoa Urban Garden Research Center – Property use agreement or acquisition will be negotiated with the University of Hawai‘i System.

Religious Institutions

- Alpha Omega Christian Fellowship Church – Property will be acquired in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Parks and Recreational Facilities

- Pearl Harbor Bike Path – The City will provide a temporary crossing over the trench to maintain bikeway access during construction. The bicycle path will be repaved in the affected area, and surrounding plantings disturbed by construction will be restored.
- Future Middle Loch Park – The area will be restored when outfall construction is complete, and surrounding plantings disturbed by construction will be restored.
- Nimitz Field – Property use agreement or acquisition will be negotiated with the Federal government.
- Ke‘ehi Lagoon Beach Park – The City will provide lighting and associated resurfacing for four of the tennis courts near the park entrance prior to construction so that nighttime tennis court use will be maintained during construction. After construction, the four tennis courts closed during construction will be restored in original location.
- Pacific War Memorial Site (DAV Kē‘ehi Lagoon Memorial) – Property use agreement or acquisition will be negotiated with the State.
- Aloha Stadium – Transit will provide additional access to the stadium. Kamehameha lot will be paved as a shared-use parking area. The shared park-and-ride will be used for stadium events.

Government and Military

- Pearl City Post Office – Property use agreement or acquisition will be negotiated with the Federal government.
- Honolulu International Airport – Property use agreement will be negotiated with the State. The Project complies with Federal Aviation Administration regulations; no mitigation measures are planned.
- Honolulu Post Office – Property use agreement or acquisition will be negotiated with the Federal government.
- Prince Kūhiō Kalaniana‘ole Federal Building/Courthouse – Property use agreement or acquisition will be negotiated with the Federal government.
- O‘ahu Correctional Facility – Property use agreement or acquisition will be negotiated with the State.
- Pearl Harbor Complex – Property use agreement will be negotiated with the Federal government.

Neighborhoods

- No mitigation is required because there will be no environmental effects to the relevant neighborhoods.
- Ongoing coordination efforts with the public will help develop design measures that will enhance the interface between the transit system and the surrounding community.

Environmental Justice

While the Project will not result in disproportionately high and adverse impacts within O‘ahu Metropolitan Planning Organization Environmental Justice Areas, the Banana Patch community will be affected, and residents and the church will be relocated in compliance with the Federal *Uniform Relocation Assistance and Real Property Acquisition Policies Act*.

Visual and Aesthetic Conditions

- As part of the final design process, the Department of Transportation Services (DTS) has developed specifications and design criteria to address the City’s requirements for the Project.
- Guideway materials and surface textures will be selected in accordance with generally accepted architectural principles to achieve integration between the Guideway and the surrounding environment.
- Landscape and streetscape improvements will mitigate potential visual impacts, primarily for street-level views.
- Design guidelines will establish a consistent design framework for the Project with consideration of local context.
- The project design will be coordinated by City transit-oriented planning and the Department of Planning and Permitting.
- Communities surrounding each station will be consulted for input on station design elements.
- Specific sites for landscaping and trees will be considered during the final design phase when plans by a landscape architect are prepared for new plantings. Landscape and streetscape improvements will serve to mitigate potential visual impacts.
- Stations and park-and-ride facilities will be designed in a manner that is compatible with the surroundings.
- Area and guideway lighting fixtures and standards will incorporate directional shielding where needed to avoid the intrusion of unwanted light and glare into adjacent sensitive land uses.
- Landscaping will be used to screen the traction power substations from sensitive adjacent land uses, such as residential areas.
- Lighting and security equipment will be located so as not to be visible from adjacent sensitive land uses.
- Local ordinances for screening, signage, and materials will be followed.
- Where possible, every effort will be made to integrate a traction power substation into a larger structure in the central business districts.
- Where there is an opportunity, the design will incorporate signage, materials, street furniture, landscaping, etc., to enhance the visual environment.
- Station sites will be designed to ensure that each station satisfies operational demands and is well integrated into the existing urban fabric and the communities the station serves.

- The physical form of the project stations and support facilities will embody Honolulu and Hawai‘i’s rich cultural heritage.
- Station designs will be context-sensitive, functionally integrated, and culturally expressive of their specific locations.
- Materials used in station construction will be consistent with the cultural and historic guidance and the recommendations set forth in the Design Language Pattern Book.
- The quality of the lighting design will enhance the appearance and attractiveness of stations and will play an important role in enabling the public’s acceptance of the system and the stations.
- Glare from transit station lights or reflective surfaces will be reduced to an absolute minimum such that it does not affect the vision of motorists.
- Light spill will be prevented from the stations onto roadways and areas adjacent to stations and station sites.
- Brightness and glare will be reduced to an absolute minimum by:
 - ⇒ Locating light sources to avoid direct reflection or by selecting anti-reflective finishes.
 - ⇒ Minimizing or eliminating undesirable reflections in glazed and polished surfaces, glass, walls, and other similar elements.
 - ⇒ Minimizing or eliminating light spillage onto adjacent properties and eliminating night sky pollution. This will be done using full cut-off luminaries (fixture and lamp design) and low-reflective surfaces.
- Light sources in parking structures will not be visible from outside the structure, particularly those on the upper decks.
- The transit system’s place in Hawai‘i will be defined by creating an inspired ground plane with landscape planting, paving, and furniture.
- The landscape architectural design components will unify the miles of guideway and stations.
- Design elements will be repeated in all stations while material sections will be varied based on community context.
- Use of limited shrubs and groundcover palette will unify the stations and approaches and create variation primarily in the paving colors and tree selections. Consistent application of these principals will result in a unified system.
- High quality materials will be used in limited amounts to emphasize the station approaches and other important features. The natural shape and character of materials will be the focus.
- Specialty stations will be treated with historic context and careful design to reinforce the uniqueness of context or use (e.g., the Kapālama Station might have a special planting of true kamani trees).
- The mauka-makai relationship of streams and perpendicular crossings will be accentuated to add character, variety, and scale to the alignment.
- Trees displaced by the guideway during construction will be transplanted to other areas of the corridor as feasible. Wood from any trees that cannot be saved or salvaged and transplanted will be repurposed.
- Street tree planting or transplanting will occur adjacent to the station area and along the alignment where the existing streetscape is affected. Trees will be placed every 50 feet when adjacent to residential areas and every 40 feet when adjacent to commercial areas. Tree species, sizes, and detail will conform to City standards.

- Trees will be planted a minimum of three feet away from curbs and a minimum of two feet away from the edge of the walkways.
- Planting and paving design will play a pivotal role in increasing station visibility and identity, as well as directing patrons to the station entrance. In some locations, planters will be added to soften the station architecture.
- Design of station approaches will link entry plaza to busy drop-off lanes and public walkways in creative ways that allow for pedestrian circulation and seating.
- Low shrubs and ground covers will be used in station areas to increase visibility near bicycle or vehicle traffic.
- Tall vertical plantings for vines will be used to screen or minimize the impact of the traction power substation structures. Plants or vines will be a minimum of six feet high in secure areas while maintaining visibility to the entrances.
- Maintain a minimum access width of five feet around all sides of the structure.
- Where the guideway columns fall within curbed areas, vines will be trained onto columns to reduce the likelihood of graffiti and to soften the appearance of the structures. Surface texture of the column design may be enhanced to facilitate vine attachment and growth.
- Plant material will be used to provide human scale elements and soften the elevated fixed-guideway and platform and help integrate the appearance of transit facilities.
- Site-specific designs will be created that provide station identity and respond to site conditions, including views, trees, sun and wind patterns, and soils that still relate to the design family of other station areas.
- Station designers will make provisions for specific tree relocations in their plans. A certified arborist will be consulted to determine the likelihood of survival for each tree being considered for transplanting.
- Wherever feasible (as determined by a certified arborist), existing trees will be protected in place.
- During construction, the City will maintain all landscaped areas within the construction limits to Hawai'i Department of Transportation (HDOT) standards utilizing HDOT maintenance specifications, including mowing, edging and trimming, weeding, pruning and care of shrubs and trees, fertilizing, pesticide and herbicides, clearing gutters, swales and ditches, invasive plant removal, and rubbish and debris removal and disposal.

Air Quality

- It is anticipated that the Project will reduce regional pollutant emissions by between 3.9 to 4.6 percent compared to the No Build Alternative.
- If the electricity used to operate the Project is generated by combustion, this may produce additional emissions. However, these emissions will be offset in whole or part by the reductions generated by reduced vehicle miles traveled (VMT).
- The Project is expected to have a small positive effect on mobile source air toxics (MSAT) emissions in the study corridor, compared to the No Build Alternative because of the reduction of VMT.
- Because no substantial air quality impacts are anticipated to result from operation of the Project, mitigation will not be required.

Noise and Vibration

- The elevated Guideway will include a parapet wall on both sides of the Guideway that extends three (3) feet above the top of the rail.
- The design specification for the rail vehicles will require wheel skirts that block noise coming from the undercarriage.
- At three locations where the noise analysis shows that moderate noise impacts will occur even with the parapet wall and wheel skirts, the Guideway structure will be lined with a material designed to absorb noise.
- The design specification for the traction power substations will require that the substations be designed to meet the standards in HAR Chapter 11-46, Community Noise Control.
- Automatic track lubrication devices will be installed on tight-radius curves in the maintenance and storage facility to eliminate wheel squeal on those curves.
- Because no vibration effects are projected, no mitigation is proposed.

Energy and Electric and Magnetic Fields

Because no negative health effects or effects on equipment related to electric and magnetic fields (EMFs) will occur, mitigation will not be needed.

Hazardous Waste and Materials

- Sites of concern were ranked “1” or “2.” A “1” ranking means there is a high probability that releases at the site have affected soil or groundwater beneath the Project. A “2” ranking means there is a low probability that releases at the site have impacted soil or groundwater beneath the Project, but further evaluation is needed based on proximity to the Project.
- If contaminated materials are identified, the property will be remediated in accordance with Federal, State, and Local regulations.
- The use of hazardous materials for the fixed guideway system’s operation and maintenance will be unavoidable. The volume of materials used and the extent of worker exposure will be limited in the following ways:
 - ⇒ Comply with State and Federal health and safety regulations.
 - ⇒ Use non-hazardous alternatives where possible.
 - ⇒ Use closed systems designed to limit exposure.
 - ⇒ Train employees in the safe use and management of hazardous materials.
 - ⇒ Institute waste minimization programs to limit the volume and type of materials used and resulting wastes.
 - ⇒ Provide appropriate waste storage locations and receptacles.
 - ⇒ Periodically evaluate wastes to establish whether they are hazardous.
 - ⇒ Recycle wastes to the maximum extent practicable.

Ecosystems

- No unavoidable adverse environmental effects are anticipated.
- Although the Project will have no effect on threatened, endangered, and protected species, mitigation will be implemented for the ko‘oloa‘ula, an endemic and endangered Hawaiian hibiscus that grows in dryland forests and is present in the study corridor.

Water

- Permanent mitigation features to Wai‘awa Stream include enhancement, establishment of water quality basin, ecological restoration with native Hawaiian plantings, extension of existing culvert, and enhancement of floodway capacity conveyance to achieve zero rise in flood zone.
- Where the Project crosses an estuary reach and placement of columns cannot be avoided, the columns will align with existing columns.
- Best management practices will be used to control the quality of stormwater runoff.

Street Trees

- Mitigation measures will consist of transplanting existing trees or planting new ones.
- Pruning will be in compliance with City and County ordinances and require supervision by a certified arborist.
- The City will coordinate with the State of Hawai‘i Department of Transportation landscape architect.

Archaeological, Cultural, and Historic Resources

- The draft Section 106 Programmatic Agreement (PA) was developed in consultation among the consulting parties. The draft PA records the terms and conditions agreed upon to mitigate potential adverse effects. These measures are identified and listed in Appendix H of the environmental impact statement.
- Any cultural resources that are uncovered will be assessed through collaborative consultation with appropriate cultural practitioners and/or community groups.
- Based on the results of the archaeological inventory survey (AIS) for the first construction phase area, the City will conduct archaeological data recovery before station construction at the makai entrance building of the Waipahu Transit Center Station for the subsurface cultural deposit (lo‘i sediments).
- If, in the event that subsurface cultural deposits or human skeletal remains are encountered during the course of project-related construction activities, all work in the immediate area will stop and the State Historical Preservation Officer will be notified in accordance with Federal and State law.
- If archaeological resources are identified during pre-construction design or during construction, the City will avoid or minimize impacts.

Maintenance and Storage Facility

- Operation of the maintenance and storage facility will meet Federal, State, and Local regulations related to noise, air quality, wastewater treatment and disposal, and stormwater management typical of light industrial operations.
- The maintenance and storage facility will pursue Leadership in Energy and Environmental Design (LEED) Certification. This involves the incorporation of proven sustainable materials, methods, and technologies into its facility design to increase life-cycle value, including reduction of energy and resource use, and to enhance the health and comfort of employees and visitors.

Construction Phase Effects

Business Access

Mitigation to reduce adverse economic hardships for existing businesses along the project alignment during construction activities may include the following:

- Coordinate construction planning and phasing with nearby property owners and Businesses.
- Develop a public involvement plan prior to construction to inform business owners of the construction schedule and activities.
- Initiate public information campaigns, including signs and lighting, to reassure people that businesses are open during construction and to encourage their continued patronage.
- Minimize the extent and number of businesses, jobs, and access affected during construction.
- To the extent practicable, coordinate the timing of temporary facility closures to minimize impacts to business activities – especially those related to seasonal or high sales periods.
- Minimize, as practical, the duration of modified or lost access to businesses.
- Provide public information (e.g., press releases or newsletters) regarding construction activities and ongoing business activities, including advertisements in print and on television and radio.
- Phase construction in each area so as to maintain access to individual businesses for pedestrians, bicyclists, passenger vehicles, and trucks during business hours and important business seasons.
- Provide advance notice if utilities will be disrupted and scheduling major utility shutoffs during non-business hours.

Communities and Neighborhoods

- Site-specific Construction Safety and Security Plans will be developed and implemented by the construction contractors to mitigate effects on community services, such as fire prevention and emergency preparedness and response, as well as to protect the general public, private property, and workers from construction risks.
- Measures will be identified to minimize effects on communities and their resources that address specific consequences anticipated at each location within the various communities, as well as ensure the safety of the public and the environment.
- In cases where traffic rerouting or delays are expected to affect access to public facilities or the functioning of public and emergency services, alternate access routes will be maintained during construction.
- Construction in high-volume traffic and pedestrian areas could employ police support to direct and control traffic and pedestrian movements to lessen effects on mobility.
- To maintain the functionality of public facilities, social resources, and transportation routes during construction, mitigation will include relocating and rearranging certain facilities, noise mitigation, and other efforts deemed necessary to maintain full functionality.
- In cases where project placement will restrict existing vehicular or pedestrian access routes to public service buildings, alternate access points will be included in mitigation efforts.

Schools, Parklands, and Recreational Resources

- In instances where any school, parkland, or recreational resource will experience a disruption in access, the effects will be mitigated as necessary and appropriate using applicable practices.

- Temporary barrier walls or fences will be placed around any school, parkland, or recreational resource to clearly delimit a construction area, to avoid public exposure to any possible construction hazards.

Utilities

- Communication and coordination have been initiated with the affected utility agencies and companies and will continue throughout design and construction.
- Hawai'i Department of Transportation will be involved with utility coordination for utility work in the state roadways and roadway rights-of-way.
- Property owners will be contacted prior to interruption of utility services.
- If facilities are temporarily relocated, the area will be restored as close as possible to its original condition.
- Replacements for existing utilities will provide service or capacity equal to that currently offered.
- Utilities that penetrate through or cross over transit structures will be designed so as to prevent damage.
- The vertical and lateral clearances of overhead and underground utility lines shall comply with the rules and regulations of the appropriate utility agency and Hawai'i Administrative Rules during final design and approved by the utility agencies.
- Existing underground utilities that are in the way of structural foundations and overhead utilities in the way of the aerial guideway will be relocated.
- Along several roadway corridors, most existing overhead utilities are in conflict with the guideway and safety clearance requirements and will be relocated underground.
- Coordination will occur with emergency services and utility companies to ensure that utility relocations meet their needs and that sufficient clearance is provided.

Visual and Aesthetic Conditions

The contractor will incorporate construction management practices as practical to minimize visual impacts during construction, including:

- Remove visibly obtrusive erosion-control devices, such as silt fences, plastic ground cover, and straw bales, as soon as an area is stabilized.
- Locate stockpile areas in less visibly sensitive areas whenever possible so they are not visible from the road or to residents and businesses.
- Shield temporary lighting and direct it downward to the extent possible.
- Limit the times construction lighting could be used in residential areas.
- Replace removed street trees and other vegetation with appropriately sized vegetation as soon as practical after construction is completed in the same location or another location in accordance with City and State requirements.

Air Quality

The following control measures can substantially reduce fugitive dust:

- Minimize land disturbance.
- Use watering trucks to moisten disturbed soil.
- Use low emission equipment when feasible.
- Cover loads when hauling dirt.

- Cover soil stockpiles if exposed for long periods of time.
- Use windbreaks to prevent accidental dust pollution.
- Limit the number of vehicular paths and stabilize temporary roads.
- Maintain stabilized construction area ingress/egress areas.
- Wash or clean trucks prior to leaving construction sites.
- Minimize unnecessary vehicular activities.
- Mobile-source pollution can be reduced by minimizing unnecessary vehicular and machinery activities and limiting traffic disruptions, particularly during peak travel hours.

Noise

- Prior to construction, an approved Community Noise Variance will be obtained from Hawai'i Department of Health for the Project.
- Noise permits will be obtained prior to the construction of each phase of the Project. The permits will regulate construction times and activities and include mitigation commitments.
- The following measures are examples of what could be included in the permits:
 - ⇒ Develop a monitoring plan with noise limits.
 - ⇒ Construct temporary noise barriers or curtains.
 - ⇒ Equip construction equipment engines with adequate mufflers and intake silencers.
 - ⇒ Strategically place stationary equipment, such as compressors and generators.
 - ⇒ Permit requirements will specify mitigation measures to minimize effects by limiting the time of day that certain activities could occur.

Vibration

- For buildings closer than 75 feet to pile-driving activities, the contractor will be required to provide mitigation for vibration levels during these activities.
- Drilled shafts or auger-cast piles, which are cast in-place rather than driven into the ground, will be used by the Project wherever possible. By using these types of foundations, impact driving will be eliminated and drilling will generate lower vibration levels.
- Prior to construction, the City, in cooperation with its contractors, will develop a noise and vibration construction mitigation plan. The plan will follow the Federal Transit Administration's Transit Noise and Vibration Impact Assessment (FTA 2006a) and meet Hawai'i Department of Health noise permit requirements.

Contaminated Media

If hazardous materials are identified during construction, the City will follow notification procedures described in the Hazardous Waste and Material section discussed earlier.

Solid Waste

In support of National Pollutant Discharge Elimination System permits, the contractor will prepare the following plans to mitigate construction impacts related to wastes:

- Construction Safety and Security Plan – this plan will meet the FTA requirement in 49 Code of Federal Regulations (CFR) 633 and address fire prevention, emergency preparedness and response, and protection of the general public and private property from construction activities, including exposure to toxic materials.

- Construction Health and Safety Plan – this plan will meet the requirements of 29 CFR 1910 and 1926 and all other applicable Federal, State, and Local regulations and requirements. It will also include provisions for identifying asbestos and lead-based paint that will be disturbed by the Project.
- Construction Contaminant Management Plan – this plan will identify procedures for contaminant monitoring and identification and the temporary storage, handling, treatment, and disposal of waste and materials in accordance with applicable Federal, State, and Local regulations and requirements.
- Construction Contingency Plan – this plan will identify provisions for responding to events, such as discovery of unidentified underground storage tanks, hazardous materials, petroleum hydrocarbons, or hazardous or solid wastes, during construction.
- Solid Waste Management Plan – this plan will identify procedures for recycling green waste during clearing and grubbing activities; maximizing the recycling of construction and demolition wastes, if appropriate; and properly containing solid waste generated during construction and disposing of it at solid waste disposal or recycling facilities permitted by the Hawai'i Department of Health. Every effort will be made to recycle all appropriate demolished material.

Vegetation

- To mitigate impacts to vegetation, cranes and other equipment will be sited on previously disturbed areas to the extent possible, and clearing and grubbing will be kept to a minimum.
- Construction impacts to the endangered ko'oloa'ula will be mitigated by following a Habitat Conservation Plan, using high-visibility construction barriers, having all contractors create fire mitigation plans, educating site workers, maintaining emergency site access, and establishing appropriate buffers.
- A Construction Safety and Security Plan addressing fire prevention, including worker education, access maintenance, designated smoking areas, identification of fire-fighting resources, and other requirements, is being reviewed for other projects in the area and will be incorporated into the Project as appropriate.
- Prior to clearing and grubbing near the ko'oloa'ula contingency reserve, the area will be surveyed. If any ko'oloa'ula are found, a horticulturist approved by DLNR will be given an opportunity to remove the plants and transplant them to the contingency reserve discussed earlier in mitigation.

Street Trees

- Street trees that require pruning for construction activities will be pruned more extensively than they will later for system operation.
- For street trees that will not be affected by system operation, a tree protection zone will be established during construction. Protective fencing will delineate the protection zone.

Wildlife

The pruning of large canopy trees prior to construction could affect the nests of white terns. The City will survey all large canopy trees to be pruned prior to construction to ensure that no trees have white tern chicks. If any are found, pruning will be delayed until chicks fledge.

Invasive Species

- Construction equipment or material imported to O‘ahu from the mainland, neighbor islands, or foreign countries must be free of dirt, vegetative matter, and animals.
- Construction equipment will be cleaned and inspected before being brought to the project site.
- On-site workers will be trained to recognize common invasive species growing in the construction area. Site surveys to assess the construction area for invasive species will be conducted before, during, and after construction.
- When fill is imported to or exported from the job site, care will be taken to avoid spreading invasive species, and location records will be kept.
- Criteria for cleaning, inspection, and treatment of plants that are at risk of harboring pests will be part of the landscaping requirements.
- Species that can be harmful invaders will not be used for project plantings.

Water Resources

- Placement of Fill in Waters of the U.S. – Best management practices (BMPs) will be developed during the permitting process to mitigate potential impacts to streams due to placement of fill. BMPs used may include, but not be limited to the following:
 - ⇒ Isolate the column construction area from the water through the use of cofferdams, sandbags, or other temporary water-diversion structures.
 - ⇒ Prohibit fueling of equipment while in the stream channel.
 - ⇒ Prevent wet or green concrete from coming into contact with flowing water.
 - ⇒ Maintain fish passage – consider migration of native fish (e.g., ‘o‘opu) and avoid work in streams during spawning.
 - ⇒ Minimize removal of riparian vegetation.
 - ⇒ Monitor for turbidity both upstream and downstream of the work area.
 - ⇒ When demolition of preexisting structures is required, such as the retaining walls at Kapālama Canal Stream, enclose the work area during demolition to contain airborne dust and debris and keep it from entering the stream.
 - ⇒ To mitigate potential impacts to streams or wetlands where there is no in-water work, establish a construction buffer during work in the area.
 - ⇒ Prohibit the contractor from entering wetlands during construction.
 - ⇒ Secure netting below guideway superstructure construction to prevent construction debris from falling into streams.
 - ⇒ Secure tight-woven netting under joints to catch excess epoxy when segments are post tensioned.
 - ⇒ Install toe boards along-edge of the guideway deck to prevent loose material from being knocked off the deck into streams.
 - ⇒ Air test post-tensioning ducts before grouting to ensure no grout seepage.
 - ⇒ Use silt fence and casing between foundation construction and stream to contain soil and construction debris.
 - ⇒ Collect and handle drilling spoils to eliminate uncontrolled releases into surface waters.
 - ⇒ Construct columns during the dry season, where feasible.
 - ⇒ Place silt fencing around temporary construction platforms or structures to contain disturbed sediment.

- ⇒ Provide sheet piling around abutment extensions at Kapālama Canal Stream to prevent soil and sediment from entering the stream during abutment and wall construction.

Wetlands

- The contractor will be prohibited from entering the wetlands during construction.
- The wetlands will be designated as a no-work area on the plan sheets and 3-foot-high orange fencing will be installed around the wetland to designate the no-work area.
- The orange fencing will be inspected routinely to ensure that it is maintained.

Groundwater

- Typical groundwater management practices for shallow excavations include dewatering by shallow well points or dewatering wells, cutoff walls in combination with sumps from within the stabilized excavation, ground treatment, such as soil amendment or possibly even ground freezing, or a combination of these methods to enable construction in dry conditions.
- Dewatering methods will be determined during the final design and construction stage, depending on actual conditions encountered, size/depth of excavations, and site-specific considerations.
- Oil and water separators, specialty media filters, and bio-filters can be used in conjunction with the sediment filters to mitigate groundwater contaminants.
- Where dewatering produces a drawdown in excess of 5 feet, construction monitoring will be required to monitor for dewatering induced settlement.
- Uncontrolled releases of drilling fluids are not permitted. The displaced fluid will be collected and treated as necessary for either reuse or disposal in accordance with permit requirements.
- At locations where the level of the groundwater pressure head exceeds existing ground surface, casing will likely be used to extend the work zone sufficiently above existing ground surface to counterbalance the excess water column.
- Another alternative is to use special additives in the drilling fluid to substantially increase the unit weight of the medium to counterbalance the artesian pressure head with a column of fluid.
- Another alternative may be to locally grout the water-bearing stratum to reduce the excess pressure head through the work zone.
- The contractor may have other methods for construction in these conditions, but any methods used will consider the vulnerability of the sole source aquifer.
- Drilled foundations that penetrate into the underlying basalt bedrock will only remain open long enough to insert a waiting, pre-made rebar cage support system.
- Surface water will be prevented from draining into the open hole.
- No hazardous materials will be stored within the drilling area.
- Standard construction best management practices (BMPs), such as regular inspections of equipment to ensure there are no leaks, will be employed.
- Drilling spoils will be collected and managed in accordance with applicable regulations.

Stormwater

- Stormwater BMPs may include, but not be limited to:
 - ⇒ Minimize land disturbance.

- ⇒ Stabilize or cover the surface of soil piles.
- ⇒ Revegetate all cleaned and grubbed areas to the extent possible.
- ⇒ Maintain stabilized construction area ingress/egress areas.
- ⇒ Wash or clean trucks prior to leaving the construction site.
- ⇒ Install silt fences and storm drain inlet filters.
- ⇒ Prevent offsite stormwater from entering the construction site.
- ⇒ Implement other stormwater management techniques.

Archaeological Resources

- Prior to construction, additional archaeological work will be completed to investigate the potential for subsurface deposits. This archaeological work will be completed in advance of the completion of final design so that the presence of any sensitive archaeological sites/burials discovered during fieldwork can be addressed during final design.
- A monitoring report will be prepared to document all results at the completion of construction.
- In the vicinity of the Waipahu Transit Center, archaeological monitoring will include the recovery of data from the identified subsurface cultural deposit (lo'i sediments) discussed earlier.
- In advance of construction, archaeological resources deemed worthy of preservation in place may be identified. If this occurs and the Project is modified to avoid such resources, construction activities will also avoid those resources. Protection zones will be established around these resources to avoid disturbance during construction.

Burial Treatment

- During the archaeological sampling, burials will be identified and managed in compliance with applicable laws.
- Although the goal of the archaeological sampling will be to identify all burials and treat them appropriately prior to the start of construction in a particular area, the chance exists that additional previously undiscovered burials will be encountered during construction. In each geographic area, the parties consulted regarding burials during the Project's archaeological sampling phase will be consulted if a find is made during construction.

Cultural Resources

The impact to cultural resources or areas will be mitigated using the same maintenance of access policies outlined for businesses.

Historic Resources

- Any potential construction impacts will be mitigated using measures outlined in previous construction sections related to noise, vibration, air quality, and water quality and as described in the draft Programmatic Agreement.
- To avoid collision with or damage to historic resources during construction, protection zones will be established around such resources to avoid disturbance during construction activities.