Photo Credit: Harrison Burke

HOALOHA PARK ADAPTATION PLAN

County of Maui
Department of Parks & Recreation

AUGUST 2025

PREPARED BY SSFM INTERNATIONAL, INC.

IN ASSOCIATION WITH
BROWN AND CALDWELL
INTEGRAL CONSULTING
NOHOPAPA HAWAI'I

SSFM International

Brown AND Caldwell

integral engineering p.c.

NOHOPAPA HAWAI'I

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The project team engaged a wide range of stakeholders, including decisionmakers, government agencies, community members, and park users. These stakeholders were instrumental in sharing knowledge and on-the-ground experience of Hoaloha Park. The team would like to thank all those who contributed.

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Hoaloha Park Adaptation Plan

EXECUTIVE SUMMARY

The purpose of this adaptation plan is to provide a clear roadmap to guide future improvements at Hoaloha Park, a small urban shoreline park in Kahului. The adaptation plan will maintain the park's current uses, particularly Hawaiian canoe paddling, while managing impacts from sea level rise (SLR). This is the first adaptation plan developed for a Maui County beach park, building on the 2021 Beach Parks Vulnerability and Adaptation Study which evaluated the vulnerability to SLR of all beach parks in Maui County.

PLANNING PROCESS

The Hoaloha Park Adaptation Plan began in 2023 and had two key phases: 1) research and analysis, and 2) development of adaptation pathways. Community outreach and engagement was a core part of this project, achieved through:

1) A Project Advisory Committee (PAC), comprised of representatives from the two canoe clubs present on-site, the wingfoil community, adjacent businesses, Hawai'i Department of Transportation Harbors Division, and community stakeholders;
2) Twelve (12) agency and stakeholder meetings to gather information on the local context of the site and planning effort; and
3) Two (2) public meetings to receive input from a wide cross-section of interested parties.

A core element of the adaptation plan is the concept of an **adaptation pathway**. Adaptation pathways provide a phased approach based on specific thresholds, triggers, and sequencing of actions, which have been identified with the help of community and stakeholder input.

TECHNICAL STUDIES

Six (6) technical studies were completed as foundational to the development of this plan including bespoke coastal erosion modeling. The studies assessed existing conditions and identified potential constraints and opportunities around project site conditions, infrastructure, transportation, and cultural and historic resources.

Findings were shared with the PAC and other community stakeholders to inform the development of adaptation strategies, plan, and pathways that support a shared vision for the park's future.

Key takeaways from the technical studies include:

- The park faces significant hazards and vulnerabilities including sea level rise, flooding, hurricanes, and wildfire.
- Adaptation strategies can provide multiple benefits by addressing the impact of hazards while increasing the resilience of the site by allowing for continued access and public safety.
- Park users indicated a need for public bathrooms and showers and support for increasing native vegetation for erosion control and shade.
- Cultural importance of the site for canoe paddling and the traditional hale stem from Native Hawaiian and Pacific Islander park use.
- Modeling showed that vegetation on the coastal foredune (the dune on the shoreline) plays a significant role in preventing dune erosion.

ADAPTATION PATHWAYS & CONCEPTS

The adaptation pathway and future SLR concepts for Hoaloha Park are intended to create a long-term, programmatic approach for the Department of Parks and Recreation that encourages continuity of investment and allows for evaluation over time.

The purpose of the concepts, strategies, and adaptation pathway are to mitigate the impact of SLR over the long term to ensure the safety and current and future use of the park while maintaining the focus of the park as a hub for Hawaiian canoe paddling, traditional Hawaiian culture, and water sports.

VISION FOR HOALOHA PARK

The vision for Hoaloha Park was developed with the community and PAC as a series of guiding principles that will underscore the adaptation plan. The guiding principles are outlined below:

IMPLEMENTATION

An Implementation Plan is provided with the timeframe, lead and supporting organizations, triggers, and rough order of magnitude (ROM) costs for the concepts presented. This section provides an overview of how the Hoaloha Park Adaptation Plan can be implemented, the partners needed to make this happen, some potential methods of financing the plan, and the environmental permitting required to implement the strategies.

Acronyms

Acronym	Definition
BPVAS	Beach Parks Vulnerability and Adaptation Study
BRIC	Building Resilience Communities and Infrastructure
CATEX	Categorical exclusion determination
CWA	Clean Water Act
CZM	Coastal Zone Management
DLNR	Department of Land and Natural Resources
DPR	County of Maui Department of Parks & Recreation
DPW	County of Maui Department of Public Works
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
HCC	Hawaiian Canoe Club
HDOT	Hawai'i Department of Transportation
HEPA	Hawai'i Environmental Policy Act
HRS	Hawai'i Revised Statutes
LT	Long-term
MPO	Metropolitan Planning Organization
MT	Mid-term
NEPA	National Environmental Protection Act
NKE	Nā Kai 'Ewalu
NOAA	National Oceanic and Atmospheric Administration
OPSD	Office of Planning and Sustainable Development
PAC	Project Advisory Committee
ROM	Rough Order of Magnitude
RRFB	Rectangular Rapid Flashing Beacons
SHPD	State Historic Preservation Division
SLR	Sea level rise
SLR-XA	Sea level rise exposure area
SMA	Special Management Area
ST	Short term
TOD	Transit-oriented development
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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1 Project Overview

In 2024, The County of Maui Department of Parks and Recreation (DPR) began development of an adaptation plan for Hoaloha Park to guide future park improvements in the face of climate change and sea level rise. This project was the first adaptation plan developed for a Maui County beach park, building on the 2021 Beach Parks Vulnerability and Adaptation Study which evaluated the vulnerability to sea level rise (SLR) of all beach parks in Maui County.

The purpose of this adaptation plan is to provide a clear roadmap for the future of Hoaloha Park that maintains the current uses, particularly Hawaiian canoe paddling, while also adapting the site to sea level rise and ensuring the safe and continued use of the area for existing and future generations.

A core element of the adaptation plan is the concept of an adaptation pathway. Adaptation pathways are an approach to developing a response to climate change that allows decisionmakers to prioritize strategies, build capacity, maintain flexibility, and communicate critical issues to a community (ResilientCA, n.d.). Pathways provide a phased adaptation approach based on specific thresholds, triggers, and sequencing of actions, which are often identified with the help of community and stakeholder input. Strategies are designed to be phased in gradually over time based on a range of possible future conditions. Monitoring is a critical component of this approach, as specific triggers provide critical junctures for taking action. Policymakers identify triggers before they happen, often through a process of stakeholder engagement, and develop strategies and actions to implement as those thresholds become reality. In this way, the phased adaptation pathway allows for proactive planning and preparation while facing uncertainty and changing conditions.

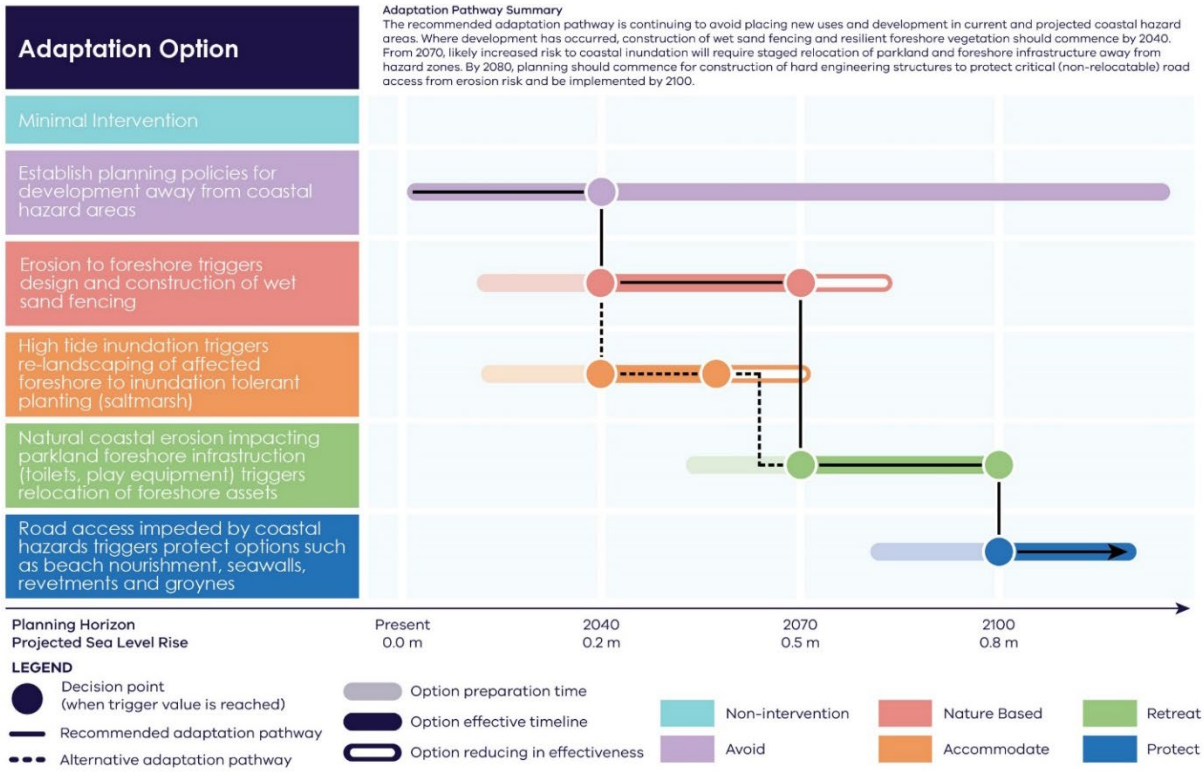


Figure 1: Example of an Adaptation Pathway

Source: Department of Energy, Environment, and Climate Action (2023)

A Note on Language

In County documents, Hoaloha Park is listed as Hoʻaloha Park. The word Hoaloha means "Friend" in ʻōlelo Hawaiʻi (Hawaiian language) and is not spelled with an okina. This was confirmed by the project cultural consultant, Nohopapa Hawaiʻi. This plan will use the correct spelling of Hoaloha throughout.

1.1 Hoaloha Park

Hoaloha Park is a small urban shoreline park located in Kahului. The park is predominantly used by canoe clubs for Hawaiian canoe paddling activities and is home to two canoe hale. Other ocean users also use Hoaloha Park as a launch site, including surfers, swimmers, stand up paddleboarders and wingfoilers. Fishermen also use the beach to cast their lines.

Figure 2: Hoaloha Park Location Map

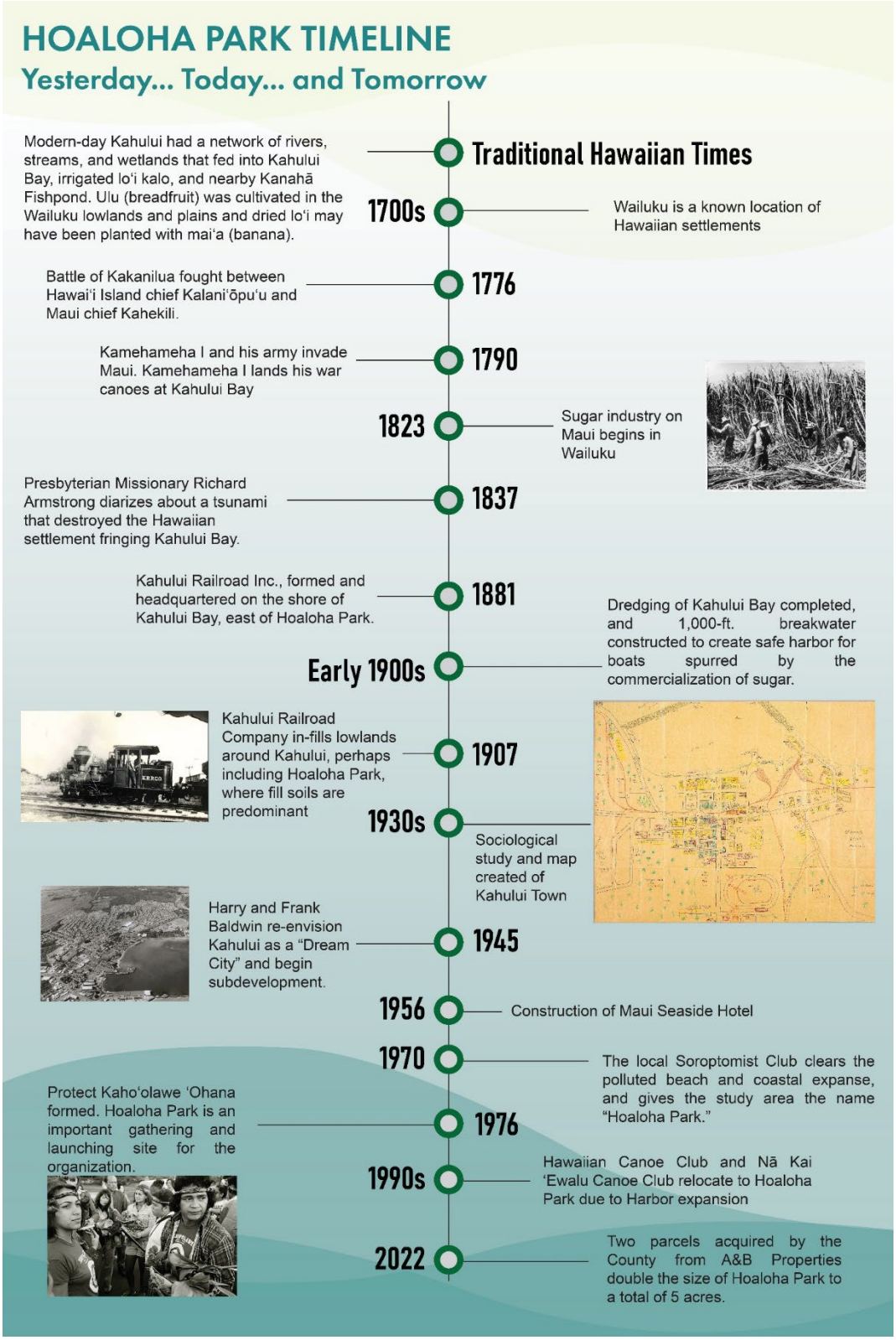


Figure 3: Hoaloha Park Timeline

1.1.1 Park Yesterday

In traditional Hawaiian times the area that is modern day Kahului had a network of rivers, streams, and wetlands that led into Kahului Bay. This network irrigated loʻi kalo and fed Kanahā Fishpond. The sandy shoreline of Kahului Bay was used to Hukilau, a traditional form of fishing using a large number of people to drive fish from the sea into a large net and onto shore. The bay was also the landing point for waʻa (canoes), including the war canoes of Kamehameha I and his army during his invasion of Maui in 1790. The shoreline of Kahului Bay, and the coastal dunes of the surrounding Wailuku lowlands, were used as burial places to inter iwi kupuna (ancestral remains).

In 1881, Kahului Railroad Inc. was formed and had its headwaters on the shore of Kahului Bay. The development of the railroad and the booming sugar industry in the later 1800s and early 1900s led to the dredging of Kahului Bay and the construction of a 1,000ft breakwater to create safe harbor for boats.

In 1945 Harry and Frank Baldwin re-envisioned Kahului Town as a "dream city" and begin subdevelopment, changing the town from its plantation roots to the development pattern seen today. The Maui Seaside Hotel, constructed on the shorefront and adjacent to Hoaloha Park, was constructed in 1956. Hoaloha Park itself was created in the 1970s when the local Soroptimist Club cleared the polluted beach area and named the area Hoaloha, meaning friendship.

1.1.2 Park Today

Present day Hoaloha Park is used as the launching point for ocean activities, predominantly for Hawaiian canoe paddling, as well as surfers, swimmers, stand up paddleboarders, wingfoilers, and fishermen.

There are two canoe hale in the park belonging to Hawaiian Canoe Club (HCC) and Nā Kai ʻEwalu Canoe Club (NKE). The clubs were relocated to Hoaloha Park in the 1990s when their former site was redeveloped to expand Kahului Harbor. The clubs provide training and recreation opportunities for a large number of community members in Central Maui as well as conducting cultural ceremonies on the site and caring for the park.

Hoaloha Park also serves as the gathering place for the Protect Kahoʻolawe ʻOhana, a grassroots organization dedicated to the island of Kahoʻolawe and the principles of Aloha ʻĀina.

In 2022 the County acquired two parcels from A&B Properties in a negotiated transfer of land that expanded the size of Hoaloha Park by almost 3 acres to the south and west of the park. This increased the footprint of County-owned land at Hoaloha Park; however, the land dedicated by A&B was considered part of the park by many users and passersby and therefore did not constitute an increase in useable space at the park.

1.1.3 Park Tomorrow

The future of Hoaloha Park is connected to both the existing users and the future of Kahului. The canoe clubs have seen a large increase in membership in the past five (5) years, and wingfoiling is growing in popularity too with many using Kahului Harbor as a training area due to its sheltered conditions.

The vicinity of the park is actively redeveloping with a recently completed affordable senior housing complex, a forthcoming mixed use Kahului Civic Center Complex, and resort developments and renovations nearby. Kaʻahumanu Avenue, which provides access to the park, is one of the busiest corridors on Maui and is being reimagined as a transit-oriented development (TOD) community corridor with housing, landscaping, and multi-modal transportation options.

Figure 4: Hoaloha Park Map

Figure 5: Planned Future Development in Kahului

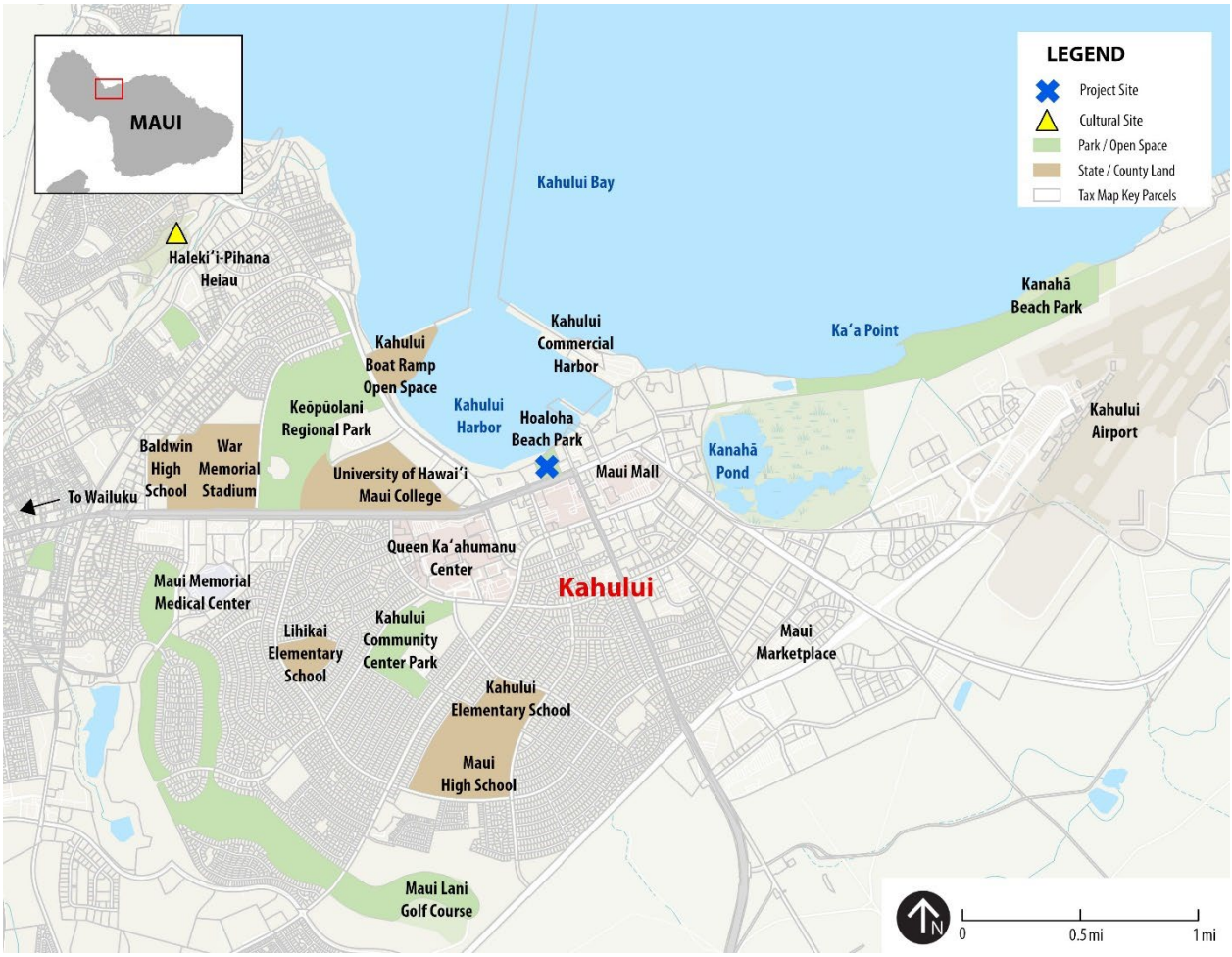


Figure 6: Regional Public Space, Kahului/Wailuku

1.2 Preceding Studies

The Hoaloha Park Adaptation Plan considers previous studies completed by the County of Maui. In particular, the Hoaloha Park Adaptation Plan builds on the Beach Parks Vulnerability and Adaptation Study (BPVAS) started in 2020. The BPVAS assessed the vulnerability of shoreline adjacent parks in Maui County to a variety of coastal threats. The objectives of this study were to:

a) assess vulnerability of parks to coastal hazards and sea level rise;
b) determine the potential for each beach park to adapt to future conditions;
c) identify adaptation strategies for each beach park;
d) develop a prioritization framework for investments in park infrastructure; and
e) recommend policies, strategies, and actions to address the short and long term impacts of climate change.

As part of the assessment, each beach park was given a rating for its future adaptation potential from High to Low. Low adaptation potential means that the park is highly vulnerable to sea level rise and significant adaptation measures would be required to maintain the parks viability into the future. Each beach park was assigned one of six (6) adaptation strategies based on the expected future conditions and adaptation for each location.

The findings from the BPVAS provided initial direction for the Hoaloha Park Adaptation Plan and was a starting point for the development of this plan.

Hoaloha Park received a Medium Park Adaptation Potential score and the Beach Parks Vulnerability and Adaptation Study identified the adaptation strategy for Hoaloha Park as "Retreat/acquire land and relocate structures."

1.3 Organization of Plan

The plan is organized as follows:

SECTION 1

Introduces and frames the project and final plan. This section lays out the purpose of the project, the context for Hoaloha Park and the background that led to the development of this plan.

SECTION 2

Provides an overview of the planning process, detailing the outreach and engagement conducted for the project and the key technical assumptions underpinning the plan.

SECTION 3

Overviews the technical studies that were conducted for the project and that provide the background to the adaptation plan, pathway, and concepts.

SECTION 4

Identifies the Hoaloha Park Adaptation Pathway and Adaptation Concepts for the Short-, Mid-, and Long-term and lists the adaptation strategies.

SECTION 5

Describes how the plan will be implemented, including critical implementation steps such as funding and permitting.

2 Planning Process

The Hoaloha Park Adaptation Plan began in 2023 and had two key phases:

- Research and Analysis identified and analyzed current conditions around the project site and considered factors that may influence future use of the park. This was completed as a series of technical studies, discussed in Section 3.
- Adaptation Pathways formed the backbone of the recommendations in this Plan. This phase included coastal wave run-up modelling, identification of adaptation strategies and environmental triggers, and the development of an adaptation pathway for Hoaloha Park. Adaptation Pathways are discussed in Section 4.

2.1 Outreach and Engagement

Community outreach and engagement was a core part of this project, with opportunities conducted throughout the project process to ensure community feedback was integrated into this plan.

2.1.1 Project Advisory Committee

A Project Advisory Committee (PAC) was convened for this project. The purpose of the PAC was to advise the project team throughout the process and serve as liaisons and project champions to communicate to broader stakeholder groups and the public. A diverse cross section of park users and stakeholders were invited to be part of the project, 15 of whom served as PAC committee members. The committee included representatives from HCC and NKE canoe clubs, the wingfoil community, adjacent businesses, Hawai'i Department of Transportation – Harbors Division, and community stakeholders.

The PAC met four (4) times throughout the project process. The first meeting was an introductory meeting, introducing PAC members, the project team, and the project itself. The PAC supported the development of a vision statement. Meetings two and three provided an opportunity for the project team to brief the PAC on the technical reports developed as part of the project and for the PAC members to provide input on the direction of those technical reports. Meeting four was held as a workshop to explore and evaluate adaptation options and to help to shape the adaption pathway proposed for Hoaloha Park.

Figure 7: Photo from PAC Meeting 1

Figure 8: Photo from PAC Meeting 4

2.1.2 Agency and Stakeholder Meetings

Twelve (12) agency and stakeholder meetings were held as part of the Hoaloha Park Adaptation Plan. The purpose of the agency and stakeholder meetings was to gather information on the local context of Hoaloha Park and Kahului Harbor, to understand how the Hoaloha Park Adaptation Plan fit within other ongoing planning efforts. The list of agencies and stakeholders interviewed is provided below. All interviews were conducted virtually aside from the meeting with the Canoe Clubs which was held at the Hawaiian Canoe Club Hale.

- Hawai'i Sea Grant
- Hawai'i Housing Finance and Development Corporation
- County of Maui Department of Planning Long Range Division
- EAH Housing
- Café O'Lei
- Hawai'i Department of Transportation Harbors Division
- Maui Metropolitan Planning Organization
- Nā Kai 'Ewalu Canoe Club and Hawaiian Canoe Club
- Hawai'i Department of Transportation, Highways Division + County of Maui Department of Transportation
- U.S. Army Corps of Engineers (USACE)
- County of Maui Archaeology
- Surfrider Foundation, Hawai'i Chapter

2.1.3 Public Meetings

Two (2) public meetings were held as part of the Hoaloha Park Adaptation Plan to gather community input.

The first meeting was held virtually and was intended to introduce the project, establish the context of the site, provide an overview of anticipated climate impacts, and gather input from the community. The project team used an online polling tool to gather input, as well as open forum discussion.

Key takeaways from the first meeting included:

- The community was most concerned with protecting access to the following as the site changes over time:
  - the ocean
  - a sandy beach
  - conditions for watersports.
- The community wanted to see the following added to the park:
  - trees
  - grass and native plants
  - public restrooms

The second public meeting was held at J. Walter Cameron Center in Wailuku. The purpose of the meeting was to gather community input on the proposed adaptation strategies, adaptation pathways, and draft adaptation concepts for Hoaloha Park. The meeting was held as an Open House, with informational posters around the room and team members to answer questions. The material was also posted online to allow comments from the community from folks who couldn't make it to the evening meeting. The website received 373 page views during the open comment period.

Figure 9: Community Meeting 2

Overviews of the public meeting can be found in Appendix C.

2.2 Sea Level Rise and Assumptions

The Hoaloha Park Adaptation Plan has a long time horizon and depends on SLR projections to forecast likely potential futures for Hoaloha Park. The County of Maui uses the State of Hawai'i Sea Level Rise Exposure Area (SLR-XA) as a planning benchmark when considering future development on the shoreline. The SLR-XA model has a known drawback in that the model does not effectively account for SLR in protected areas, such as a harbor. Additionally, upon review, there are some discrepancies between SLR-XA and the existing Federal Emergency Management Agency (FEMA) coastal wave flood hazard modelling. For example, the SLR-XA models do not forecast wave flooding hazards at the park, while the existing FEMA regulatory Flood Insurance Rate Maps (FIRM) show a wave velocity zone and a base flood elevation of 17 feet above North American Vertical Datum of 1988. For this reason, the project team developed site specific coastal wave flood models calibrated with the FEMA FIRM map to support the evaluation of the project adaptation strategies on existing and future storm wave flood risk.

The project uses the same future SLR projections as the SLR-XA model to maintain ease of comparison between the potential SLR futures facing Hawai'i. Additionally, this provides clear messaging to the public about projected SLR, and the timelines associated with potential SLR futures. The projections used in this plan are:

0.5ft – current	**~2030**
1.1ft – near term	**~2050**
2.0ft – mid-term	**~2070**
3.2ft – long-term	**~2100**

2.3 Vision for Hoaloha Park

The project team worked with the PAC and community members to develop a series of guiding principles that will underscore the development of the adaptation pathway for the adaptation plan. The guiding principles are outlined below:

3 Technical Studies

Six (6) technical studies were completed as foundational and to support the development of the adaptation plan. The technical studies were intended to identify and analyze current conditions at and around the project site as well as factors that may influence the future use and design of the park. The studies assessed existing conditions and identified potential constraints and opportunities around project site conditions and usage, infrastructure, transportation, and cultural and historic resources. Findings were shared with the PAC and other community stakeholders to inform the development of adaptation strategies, plan, and pathways that support a shared vision for the park's future.

3.1 Site, Infrastructure, and Transportation Studies

The site conditions technical study describes the context of Hoaloha Park on a watershed, neighborhood, and site-specific scale. The study identifies external influences from neighboring areas and documents existing site features such as topography, drainage, soil, flora, fauna, and other environmental features, while evaluating and identifying major vulnerabilities of the site to climate influenced coastal hazards.

Regional Context and Watershed:

- Hoaloha Park is in the Wailuku ahupua'a (traditional Hawaiian land division). The Wailuku ahupua'a spans seven miles of coastline from the Wailuku River to Kailua Nui Gulch at Baldwin Beach Park and includes Kahului Harbor and Hoaloha Park. Two major streams, Wailuku River ('Iao Stream) to the northwest and Kalialinui Gulch to the northeast, flow mauka to makai and discharge to the ocean outside of Kahului Harbor.

Neighboring Uses:

- The area immediately surrounding the park is predominately a business and industrial center. This area of Kahului is undergoing redevelopment, with planned civic facilities, additional affordable housing, and Complete Streets traffic improvements.

Existing Site Conditions:

- Hoaloha Park's location exposes it to regular trade winds averaging 13.7 mph.
- The park's elevation ranges from 3 feet to 10 feet above mean sea level, peaking on the shoreline boundary at 9 to 10 feet. The site is considered flat with slopes of 0-3%, though there are various low spots where ponding may occur such as north of Ka'ahumanu Avenue and north of the Maui Seaside Hotel parking lot.
- Coastal naupaka (indigenous), maintained by the canoe clubs, and 'aki'aki (indigenous) and Bermuda grass (introduced) are present throughout the site. No streams, gulches, or drainage channels run through the site.
- The site is mapped as a Special Flood Hazard Area (1-percent annual chance flood) by FEMA; is in flood zone VE, high-risk coastal zone; and is in a Tsunami Zone.
- Brown water advisories are commonly issued for Kahului Harbor after high rain and high surf events.

Canoe Hale, Storage, and Fencing:

- There are three canoe hale at the park within designated easements. The grass fronting the canoe hale is used for canoe storage. Site access is controlled by fencing and a lockable gate, though the canoe clubs maintain after-hours access.

The infrastructure technical study identified existing infrastructure and facilities serving Hoaloha Park. The purpose of the study was to identify infrastructure and facilities that may be vulnerable to coastal hazards, as well as to inform the development of potential adaptation strategies and capital projects to increase the site's resilience to coastal hazards.

Water & Wastewater:

- The public water system supplies water for drinking, showers, fire protection, and irrigation. Both canoe hale have private showers, restrooms, and external spigots for member use only.
- Both hale feed into the sewer system, which connects to the Wailuku-Kahului Wastewater Treatment Plant, slated for upgrades in 2030. A portapotty, often on-site, provides the only public restroom available.
- Stormwater runoff in the area is collected and conveyed by a municipal storm sewer system, but there is no existing on-site storm drain infrastructure.
- Park access is sometimes cut off during heavy rain by flooding adjacent to the site (along Puʻunēnē and Kaʻahumanu Avenue).

Power and Communications:

- Electricity and communications are delivered to the site via overhead cables on wood utility poles and provide service to the two modern canoe hale.

Additionally, a transportation study was completed to assess existing conditions around multimodal access to and within the site. This study included an assessment of uses during normal times as well as during more intensive times such as during canoe regattas.

Site Access:

- Hoaloha Park driveway provides the only public access to the site through an unsignalized intersection.
- There is no direct bus access to the site, however there are a few bus stops within a half mile from the site. The majority of buses are routed through Queen Kaʻahumanu Transit Center, located 0.3 miles from the site on Vevau Street.
- Pedestrian access to the site is provided via sidewalks and sidepaths along Kaʻahumanu Avenue, and along the half-mile stretch of public shoreline between Puʻunēnē Avenue and Kahului Beach Road.
- No dedicated pedestrian pathway exists along the driveway for accessing the beach park.
- Bike lanes are marked along the outside travel lines of Kaʻahumanu Avenue; no bike racks exist within the park.

Parking:

- There are 50 paved parking stalls within the existing parking lot, one of which is a designated accessible stall. Additional parking is available on the open field to the south of the park, along the makai leg of Puʻunēnē Avenue and across the street at Kahului Town Center.

Regatta Conditions:

- Hoaloha Park is one of two primary sites for canoe regattas held on Maui, with four regattas held there during the 2023 racing season. Regatta season is between April and July. A regatta event on June 24, 2023, was observed for the purposes of documenting conditions during intensive use times. It was observed that during regatta events, the park was congested and vehicles had a difficulty maneuvering.

3.1.1 Hazards and Vulnerability Considerations

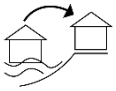
The park faces significant hazards and vulnerabilities, including sea level rise, flooding, and wildfire. These hazards, exacerbated by climate change, pose threats to the site's infrastructure, operations, and surrounding communities. Four main potential hazards were assessed for their impact on the watershed, the site, and park users. Key findings by hazard are outlined in Table 1.

 *Sea Level Rise & Flooding*	• *Passive flooding and groundwater inundation at the site impacting infrastructure and restricting accessibility due to rising sea levels* • *High wave flooding impact on park accessibility, especially on Kahului Beach Road* • *Subject to inundation from 100-year flood events, leading to potential infrastructure damage and accessibility issues* • *Increased potential for tsunamis reaching farther inland, posing greater destructive force* • *Disruption to transportation networks including risk of damage to roadways, particularly along Hoaloha Park driveway and internal circulation routes, and restricted available space for parking*
 *Hurricanes*	• Damage to critical infrastructure including power and communication lines • Structural damage to buildings and facilities from high winds and storm surge, and disruption to utilities hindering emergency response
 *Wildfire*	• Potential damage to facilities and structures such as canoe hale and storage areas as fire spreads • Impaired nearshore water quality at the affecting aquatic ecosystems and park users • Resulting runoff and erosion leading to potential _flooding around the site

Table 1: Site, Infrastructure, and Transportation Impacts on Site by Hazard

3.1.2 Adaptation Considerations

Adaptation strategies can provide multiple benefits by addressing the impact of hazards while increasing the resilience of the site by allowing for continued access and public safety. The site, infrastructure, and transportation technical studies identified adaptation considerations, including:

	Maintain existing vegetation and planting more indigenous and endemic plants, particularly along the coastal dunes to limit coastal erosion and modify and/or consolidate beach accessways.
	Maximize permeable surfaces throughout the park by limiting future paving projects and keeping the mauka lot unpaved.
	Add fill in strategic locations, such as the mauka lot, to elevate the site and increase resilience against rising sea levels.
	Add low vegetated berms further mauka in the park to limit water flow across the site.
	Elevate and relocate structures, utilities, and storage away from areas subject to flooding.
	Use corrosion resistant materials that are more resilient to flooding and groundwater inundation.
	Pursue a formal shared parking agreement with Maui Mall and Kahului Town Center to formalize overflow parking on regatta days.
	Add Rectangular Rapid Flashing Beacons (RRFB)s at the unsignalized crossing across Ka‘ahumanu Avenue to increase safety for those accessing the park from mauka of Ka‘ahumanu Avenue.
	Provide dedicated sidewalks or shared use paths for pedestrian and bicycle access into the park.
	Consider improving circulation and access by providing a secondary access to the park.

3.2 Cultural and Historic Resources and Traditional Uses

The purpose of the cultural and historic resources and traditional uses study was to develop a more place-based, culturally accurate, local understanding of wahi kūpuna (Native Hawaiian ancestral places), historic properties, and other cultural resources valued by stakeholders at Hoaloha Park and within the Wailuku Ahupuaʻa. The study provides information and community manaʻo (thoughts) gathered through research of primary and secondary ʻōlelo Hawaiʻi resources, community ethnography, and a review of previous academic and archaeological studies. Community ethnography included five interviews with community members with a connection to Hoaloha Park. The consultations gathered information about wahi kūpuna and other significant cultural resources and historic properties that characterize Hoaloha Park.

One issue the study raised was burials. The shoreline of Kahului Bay, including Hoaloha Park, contains known burial grounds recorded in Hawaiian oral traditions and corroborated by contemporary historical and archaeological studies. Any ground disturbing activities (onshore or offshore) could lead to the discovery of iwi kūpuna (ancestral remains). One burial was previously discovered in the Hoaloha Park Area and has been reinterred and honored with an existing placard in the Park.

Archaeological studies in the immediate area have identified isolated historical artifacts and a subsurface waterworn pavement likely part of a historical trail network. Previous studies and projects along the central Maui coastline have discovered iwi kūpuna including in the vicinity of Hoaloha Park. Any future discoveries will require compliance with laws around cultural preservation to ensure any remains are treated respectfully in consultation with lineal descendants.

Furthermore, the study reinforced the park's connection to traditional Hawaiian canoe paddling, which has been present since the mid 1990s when the canoe clubs were displaced from their previous location to make way for the expansion of the harbor facilities and were provided an opportunity to relocate to Hoaloha Park. Canoe paddling represents a living culture and tradition that consultees felt strongly should be maintained and celebrated.

Additionally, some contemporary uses of Hoaloha Park are rooted in tradition, including use of the imu (earth oven); religious practices (prayer), and 'awa (kava) ceremonies; fishing; canoe carving, building, and related cultural protocols and practices. Cultural enrichment programs also occur in the park associated with the ahu dedicated to Kanaloa, installed in 1995, and the traditional Hawaiian hale installed in 2010. The park is also an important gathering and launching site for the Protect Kaho'olawe 'Ohana, a movement to restore the island of Kaho'olawe from the damaging impacts of military use.

Moving forward, it is crucial to recognize the living cultures and traditions (Hawaiian, canoe clubs, local) associated with the study area. Efforts should consider maintaining access for park users in a way that respects and protects the Native and local activities and practices of the area.

3.2.1 Vulnerability Considerations

	Hazards pose a risk to damaging cultural resources.
	Potential exposure of iwi kūpuna due to coastal erosion.
	Loss of land due to coastal erosion leading to loss of space to conduct cultural practices such as Hawaiian canoe paddling, ceremonies, and cultural protocols.

3.2.2 Adaptation Considerations

	Continue contemporary cultural and traditional uses on the site.
	Protect and expand the shoreline dune to ensure that iwi kūpuna remain interred in place.
	Develop a proactive burial management plan to be implemented if iwi kūpuna are discovered on the site.

3.3 Park User Profile

A park user survey was conducted to better understand the current and potential future users of the park, characteristics of typical park visits, and value of Hoaloha Park as a regionally important location for recreational, educational, and cultural activities. The survey was distributed online and shared via a Maui County Press Release and through Maui County social media accounts, through members of the Hoaloha Park Adaptation Plan Project Advisory Committee (PAC), and through a flyer handed out at summer canoe regatta events at the park. Participants self-selected to take the survey and is not considered a randomized sample. There were 141 responses to the survey, the majority of whom reside in Maui. Due to the relatively small sample size, inferences drawn from information collected via this survey should be treated with caution when attempting to extrapolate to the general population of Maui, or current and potential future users of Hoaloha Park. Responses to this survey represent a subsample of the adults who currently use the park and were sufficiently motivated to respond to the County emails, emails from PAC members, or to find out about the project via the website or community meetings.

Key Findings:

- Respondents indicated a need for public bathrooms and showers at the park as well as support for increasing native vegetation for erosion control and shade.
- Cultural importance of the site for canoe paddling and the traditional hale stem from Native Hawaiian and Pacific Islander (21% of respondents) park use.

OF TOTAL RESPONDENTS:

- **66%** use the park for canoe paddling or wingfoiling.
- **90%** are Maui residents who travel to the park from their home.
- **91%** drive to the park, with 40% visting from Central Maui.
- **66%** were over 55 years old, with none under 18
- **97%** utilize Hoaloaha Park because of its unique characteristics, not because it's close to home.

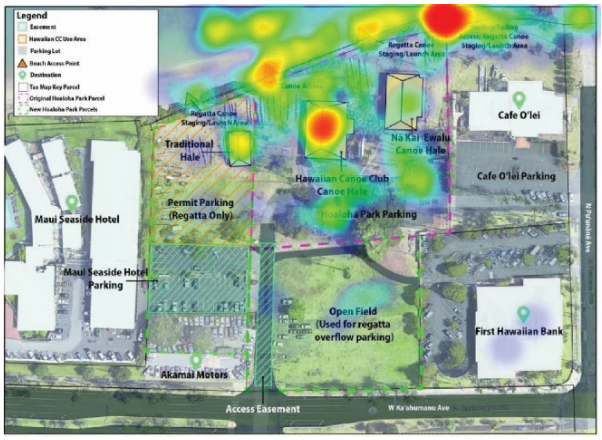


Figure 10: Heat Map: All Users

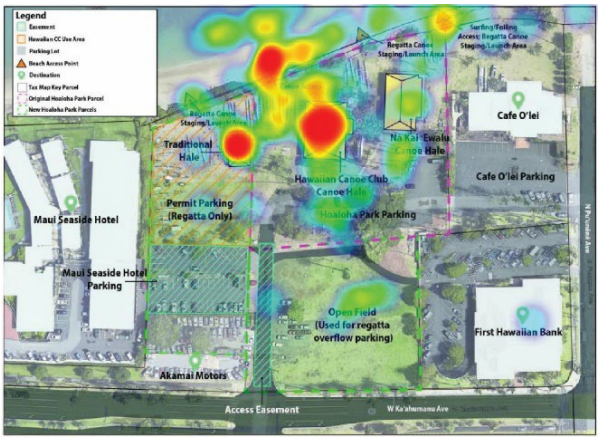


Figure 11: Heat Map: Canoe Clubs

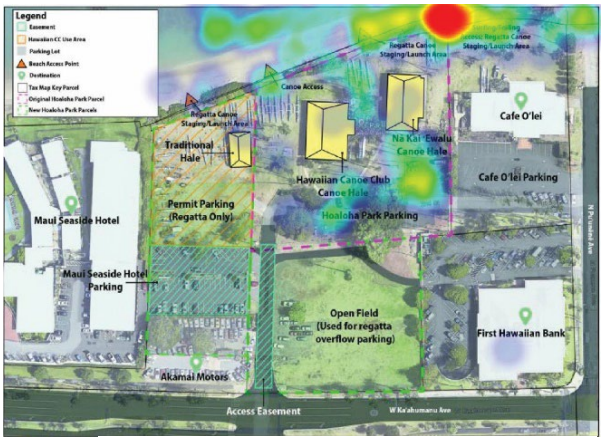


Figure 12: Heat Map: Wingfoilers

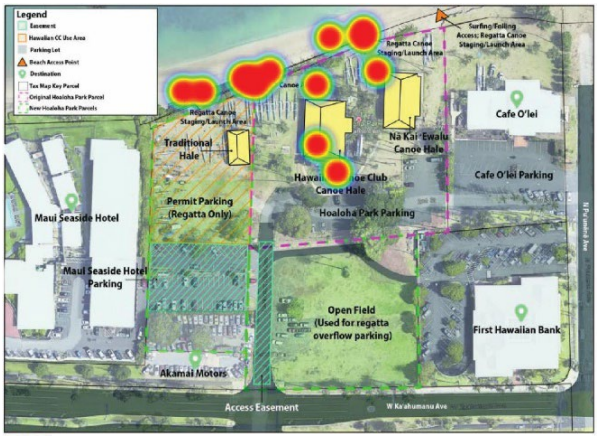


Figure 13: Heatmap: Non-Paddler or Wingfoiler

3.3.1 Vulnerability Considerations

The majority of survey respondents (66%) expressed a concern for climate change. Another 10% felt that climate change was a concern for Maui more broadly but less so for Hoaloha Park due to the protected nature of the harbor.

3.3.2 Adaptation Considerations

Respondents advocated for nature-based solutions in response to climate change. These included increasing vegetation, shade, giving consideration to sediment management and beach nourishment, and being sensitive to historical and cultural uses of the area. Respondents highlighted a desire to ensure that the level of development of the park does not increase.

3.4 Coastal Hazards and Park Vulnerabilities

The coastal hazards assessment analyzed existing and future conditions at Hoaloha Park to understand the park's vulnerabilities and model the potential future impacts of coastal hazards including sea level rise and erosion. Using the data from these modeling efforts, the project team evaluated the vulnerability of Hoaloha Park and identified viable adaptation strategies to increase the resilience of Hoaloha Park over the next fifty years.

Modeling was conducted for this project to develop an understanding of site-specific coastal wave run up and the specific extents of existing shoreline vegetation. The project utilized two erosion models to analyze site-specific potential impacts from erosion (Table 2) and coastal flooding in three Sea Level Rise (SLR) scenarios (Table 3).

Erosion Model	Projected Erosion Impacts
1.1 ft SLR	The dune crest is expected to encroach upon the existing location of the canoe hale structures.
3.2 ft SLR	The dune crest is expected to migrate 13 ft. landward, behind the existing canoe hale structures.

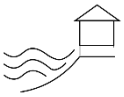
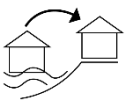
Table 2: Projected Erosion Impacts

Sea Level Rise Scenario	*Projected Sea Level Rise Impacts*
Existing Sea Level	Existing park facilities and infrastructure face minimal risk from flooding and erosion.
1.1 ft SLR	Moderate shoreline erosion and potential encroachment of coastal hazards on existing structures may occur.
2.0 ft SLR	Severe erosion, loss of canoe storage areas, and potential structural damage to existing facilities may occur.
3.2 ft SLR	Catastrophic erosion, loss of structures, and widespread coastal flooding across the park and onto Ka'ahumanu Avenue may occur.

Table 3: Projected Sea Level Rise Impacts

3.4.1 Adaptation Considerations

In the assessment, wave events were simulated with adaptation strategies in place in order to determine their potential effectiveness. Only nature-based solutions were considered, following community and County of Maui feedback which demonstrated a desire to avoid engineering approaches such as shoreline hardening. Modeling showed that vegetation on the coastal foredune (the dune on the shoreline) plays a significant role in preventing dune erosion and overtopping as vegetated dunes are more resilient to erosion and flooding than non-vegetated dunes. Berms at lower elevations further mauka on the site would also help protect landward areas from coastal flooding. The following interventions were recommended as key components of the adaptation strategy for the site over time.

	**Dune Vegetation Planting:** Maintain and expand existing vegetation in the park. Implement a vegetation maintenance plan and barriers to limit trampling of vegetation.
	**Dune Elevation:** Expand the existing foredune in width and height to increase resilience to erosion and overtopping. Plant additional vegetation to further increase resilience. Modeling shows that the dune would provide protection up to 3.2 ft. of SLR if the dune was elevated to 13 ft. above sea level.
	**Reduce # of Shoreline Access Pathways through Dune:** Pathways through the foredune are vulnerable points where storm waves can erode and overtop the dune and wind can move sand, lowering the dune elevation. Reduce number of pathways while maintaining suitable recreation access for existing users.
	**Add Back Berms in the Mauka Sections of the park:** Back berms can prevent or lessen flooding in the event that storm waves overtop the foredune. Back berms should be located where they can restrict or cut off coastal flood water flow paths that may enter the park through dune low points or offsite.
	**Elevate the Site:** Consider elevating the mauka parcel to 10ft. above sea level rise. This would increase the resilience of the park by raising a portion above projected sea level rise impacts.
	**Retreat the Structures:** Move the existing canoe hale mauka in the park, to limit impacts to the hale and canoes from coastal erosion, flooding, and sea level rise.

4 Hoaloha Park Adaptation Pathway and Concepts

The adaptation pathway and future SLR concepts for Hoaloha Park are intended to create a long-term, programmatic approach for DPR that encourages continuity of investment and allows for evaluation over time.

The Hoaloha Park adaptation plan builds on the technical studies discussed in section 3 and incorporates the vision and guiding principles outlined in section 2. The adaptation pathway was developed by the project team with input from the PAC and the wider community to provide a roadmap towards a future that ensures the safe and future use of the area for current and future generations and maintains the focus of the park as a hub for Hawaiian canoe paddling, traditional Hawaiian culture, and water sports.

4.1 What is an Adaptation Pathway?

Adaptation pathways are an approach to developing a response to climate change that allows decisionmakers to prioritize strategies, build adaptive capacity, maintain flexibility, and communicate critical issues to a community (ResilientCA, n.d.). Flexible adaptation pathways address short- and long-term adaptation priorities together, providing a roadmap for implementing actions from the present day into the future. This phased adaptation approach is based on specific thresholds, triggers, and sequencing of actions, which are often identified with the help of community and stakeholder input. Monitoring is a critical component of this approach, as specific triggers are identified ahead of time as critical junctures for taking action. Policymakers can identify triggers before they happen, often through a process of stakeholder engagement, and develop strategies and actions to implement as those thresholds become reality.

Adaptation pathways have become an increasingly popular approach to plan for climate adaptation (Werners et al., 2021) and have been shown to be effective in planning for SLR (Barnett et al., 2014). Adaptation pathways provide a holistic method of evaluating a range of adaptation options and incorporating place-specific conditions and community knowledge into the development of adaptation strategies. Due to their efficacy in planning for SLR and related climate impacts, adaptation pathways were identified as an appropriate strategy to guide adaptation planning at Hoaloha Park.

4.2 Hoaloha Park Adaptation Pathway

The adaptation pathway for Hoaloha Park shows the site-specific phased adaptation approach developed through the planning process and informed by stakeholder engagement (Figure 14). On the left, phases are broken out by timing (current, near-term, mid-term, and long-term, with mid-term encompassing two phases). Each phase lists potential strategies to employ to address impacts. Strategies are discussed in more detail in Section 4.3. Each phase also lists triggers that would initiate movement into that phase. Cost is broken up by up-front cost and ongoing maintenance costs. On the right of the graphic under Pathway Visualization, the timeline shows the framework for moving through the pathway. The red lines and arrows show the phasing of strategies over time, while the black dots and downward arrows represent the triggers that would indicate a move to the next phase. Some strategies come to a point at which they are no longer effective, depicted as ending in a red square. Others can continue to be employed as SLR intensifies, visualized as red arrows.

Trigger points that spur the next phases of adaptation planning and implementation were

identified through a combination of technical analysis and stakeholder input. The County of Maui BPVAS provided a baseline upon which further modeling was conducted to identify and characterize coastal hazards within Hoaloha Park. These assessments, along with community engagement of the PAC and the public during the Community Open House, provided the information needed to identify key trigger points and develop a monitoring strategy. Triggers, and the associated monitoring that lets the community know when triggers are reached, are critical to allow sufficient lead time for actions to be taken, while acknowledging future uncertainty. Triggers are outlined in further detail below.

4.2.1 Current to Near-Term Triggers (Phase 0 to Phase 1)

The triggers identified in the current to near-term phases are already impacting Hoaloha Park. These triggers are chronic processes that can significantly accelerate during episodic large wave and storm events. They are caused both by natural processes (wind and waves) and human behavior, as foot traffic through the dunes deflates the sand profile. Vegetation loss from foot traffic further exacerbates erosion as plant roots lose their ability to hold sand in place.

- Dune erosion
- Vegetation loss

4.2.2 Mid-Term Triggers (Phase 2A to Phase 2B)

The triggers identified to spur movement into the mid-term phases focus on challenges (e.g. loss of dune crest elevation) and opportunities (e.g. suitable sediment available for use in dune elevation strategies). Triggers related to coastal flooding and stormwater ponding contain information on frequency of occurrences in order to provide sufficient detail to allow for monitoring.

- Critical loss of dune crest elevation and vegetation
- Suitable sediment availability (e.g. dredging)
- Land width between hale and foredune crest is less than 40 ft
- Coastal flooding of hale – Any coastal flooding of hale is a trigger to initiate Phase 2A. When flooding of hale occurs more than once a year, it is a trigger to move to Phase 2B.
- Prolonged stormwater ponding more than 6 times per year

4.2.3 Long-Term Triggers (Phase 3)

The strategy in the long-term is to relocate hale mauka, therefore the triggers that would be used to identify movement into this phase focus on signs that the hale are becoming structurally undermined. The end of the current lease period presents an opportunity for change, so this has been identified as a trigger as well.

- Coastal flooding causes structural impacts to hale or unsustainable maintenance costs
- Narrowing land width between hale and foredune crest prevents canoe storage
- End of current lease period

4.2.4 Park Adaptation Pathway Table

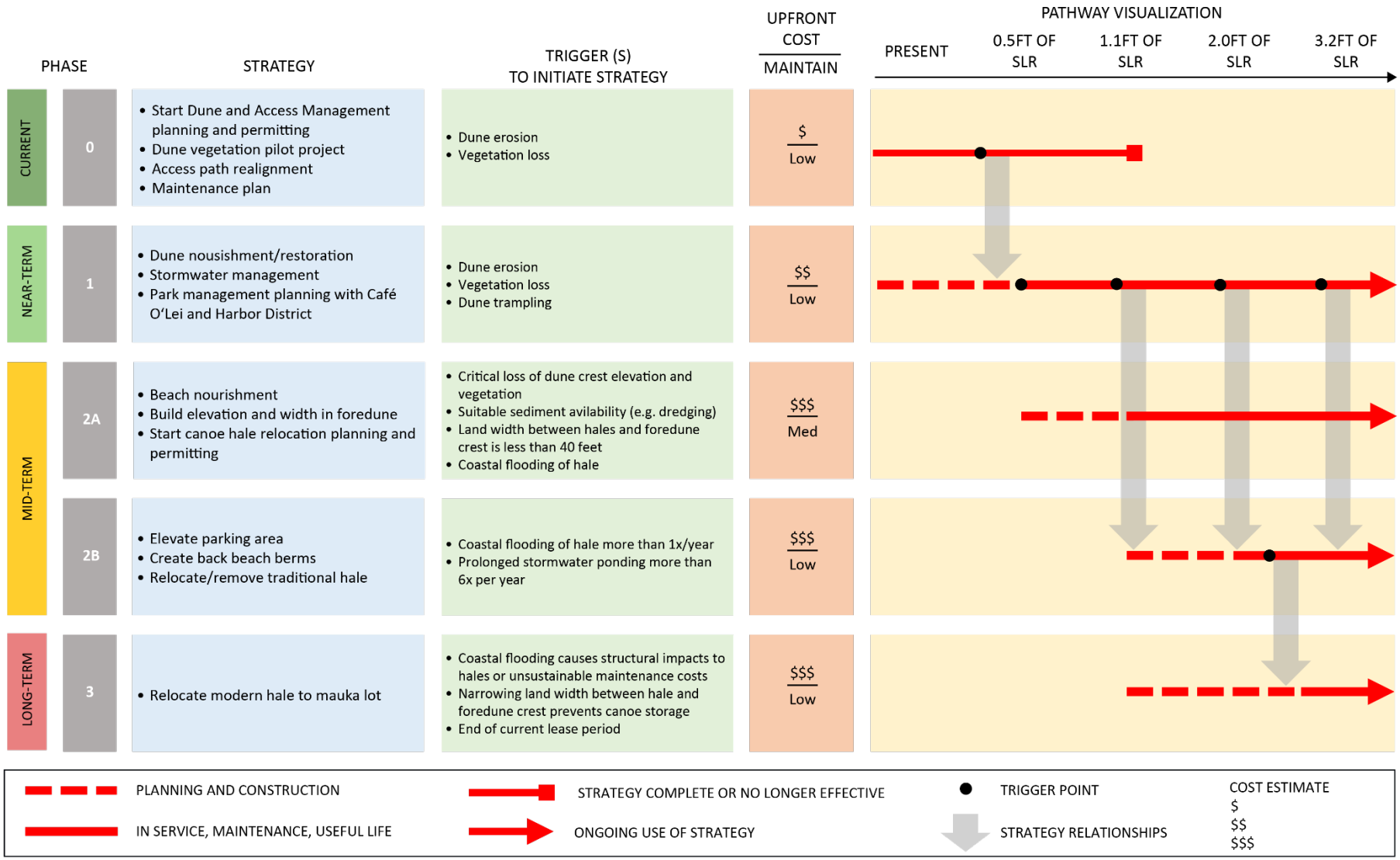


Figure 14: Hoaloha Park Adaptation Pathway

4.3 Adaptation Concepts

The adaptation concepts that underpin the Hoaloha Park Adaptation Pathway provide a vision of a potential future for the park. The purpose of the concepts and strategies are to mitigate the impact of SLR over the long term to maintain usability of Hoaloha Park for current and future generations.

These adaptation concepts are intended to build on one another. The plan has a long time horizon to 3.2ft of SLR which is roughly expected by 2100. Each concept shows the projected dune crest position with the SLR elevation associated with each concept (1ft, 2ft, and 3.2ft). The projected dune crest position shows the projected location of the shoreline if no action is taken.

The short- and mid-term concepts are provided as interim steps towards achieving the end goal of this plan. Actions taken in the short- and mid-term phases are intended to be used as building blocks to actively mitigate impacts from SLR and support the progression through the adaptation pathway. A key tenant of the development of the adaptation concepts is the idea that DPR should only move things one time. This means that if a park element needs to be relocated further mauka, then it should be planned to be moved only one time and should be moved to a location where it will be safe for the long term. This reduces the need for DPR to incrementally move park elements every time the shoreline recedes, providing stability to park users and reducing unnecessary construction and spending for the County.

The strategies identified in the adaptation concepts are tied to triggers that are measurable, rather than being tied to specific years. The purpose of a trigger-based pathway is to support DPR to make changes as impacts are felt, not on an arbitrary date. This gives flexibility to amend adaptation strategies and timelines to meet the needs of users and Hoaloha Park itself, rather than randomly deciding that a specific action needs to take place on or by a specific date.

Triggers are outlined in the adaptation pathway in section 4.2. Triggers were chosen because they are measurable and provide a clear action point. For example, one trigger is to take action when the shoreline has receded by 20ft. This trigger is easy to measure and provides a long lead time before the trigger will occur. It allows for planning for the next action to occur while the shoreline erodes and then for action to be taken once the trigger is reached to move the pathway into the next phase.

Monitoring of the triggers is envisioned as a collective effort. This will be led by DPR, as the manager of the land, but they will depend on support from the community. Hoaloha Park users such as paddlers, wingfoilers, and people fishing are there multiple days a week and can see the changes happening over time. Utilizing a citizen science approach that encourages two-way communication and collaboration between DPR and the community allows for action to be taken and encourages cooperation for the benefit of Hoaloha Park and those who use the space.

Cost estimating for the adaptation concepts was conducted at a high level to provide rough order of magnitude (ROM) costs for each strategy. The ROM costs considered the best available data at the time of the plan and would need to be updated as each phase of the plan is implemented.

4.3.1 Short-Term – 0-1ft Sea Level Rise

The purpose of the short-term design concept is to lay the foundation for the resilience of the park and future adaptation. The strategies in this concept are designed to mitigate the change in shoreline at 1.1ft of SLR elevation. If no action was taken, the future shoreline would begin undermining the two canoe hale. Figure 16 shows all of the strategies proposed for the short-term concept. The strategies are further discussed below.

ST-1 Protect and enhance existing dune vegetation

The existing foredune is partially vegetated with a mix of indigenous dune plants and introduced Bermuda grass. There are large sections that have been eroded from a combination of natural processes and foot and canoe traffic. This strategy envisions re-seeding and growing native dune supporting plants along the foredune to stabilize the dune in its current location. Native plants as those listed in the Hawai'i Dune Restoration Manual (2022) should be used to stabilize the dunes. Current plantings of naupaka should remain and a diversity of plants should be encouraged.

ST-2 Consolidate existing access points

One of the ways that erosion will impact Hoaloha Park is through gaps in the foredune, and a primary cause of this is the transport of outrigger canoes. This strategy proposes closing and/or reorienting some existing access points (such as the central access in front of HCC Hale). These locations were chosen in collaboration with representatives of HCC and NKE to ensure that continued canoe access is preserved. Two access points are identified as predominantly for canoe access, while the easternmost access point is identified for all recreational access users.

ST-3 A new connection to Puʻunēnē Avenue

Current vehicle flow into the park is one way in and out using Heterodox View Ave, the main Hoaloha Park driveway. This strategy envisions a future access point adjacent to Café oʻLei to allow vehicles to exit the park along Puʻunēnē Avenue. This would be particularly beneficial during regatta season.

ST-4 Advocate for dune and vegetation management

The County of Maui has ownership over Hoaloha Park; however, erosion and SLR will impact the shoreline outside of the county jurisdiction as well and have long lasting effects on the park. Accordingly, this strategy advocates for cooperation between DPR, Café Oʻ Lei, HDOT Harbors, and Department of Land and Natural Resources to develop a foredune across the length of the shoreline from Hoaloha Park to Pier 2 at Kahului Harbor. This would limit shoreline erosion across the whole littoral cell and provide enhanced protection to the park and surrounding businesses.

A littoral cell is used to define a section of shoreline that contains sand movement. Each cell has its own source of sand, and sand moves within the cell and then is lost in a sink. Littoral cells are commonly used in regional shoreline management (Patsch and Griggs, 2006). The littoral cell for Hoaloha Park extends from the groin on the western boundary of the park to Pier 2 at Kahului Harbor (Figure 15).

ST-5 Proposed multimodal access path

To support access to the park by modes other than person vehicles, the plan proposes a shared use path on the west side of the driveway into Hoaloha Park and a new sidewalk on the east side of the driveway. This would support Countywide goals to encourage multimodal transportation.

ST-6 Proposed Rectangular Rapid Flashing Beacon

Many people access Hoaloha Park on foot from mauka of Kaʻahumanu Avenue, particularly during summer regatta season. There is an unsignalized crosswalk at the Hoaloha Park driveway that requires users to cross over 100ft of roadway.

Kaʻahumanu Avenue is one of the busiest roadways in Maui County and many users identified this crosswalk as unsafe. A proposed Rectangular Rapid Flashing Beacon (RRFB) would support safe pedestrian access to the park.

ST-7 Proposed new public restrooms and showers

Many users identified a need for public restrooms and showers at Hoaloha Park. This strategy proposes the development of a public restroom and shower block along the mauka edge of the parking lot, as it is between two water meters and is a visible public area.

Figure 15: Hoaloha Park Littoral Cell

Figure 16: Short-Term Design Concept

4.3.2 Mid-Term – 2ft Sea Level Rise

The purpose of the mid-term design concept is to build on the foundation of the short-term concept and plan for a future with a higher level of SLR. The strategies in this concept are designed to mitigate the change in shoreline at 2.0ft of SLR elevation. If no action was taken, the future shoreline would erode halfway beneath the canoe hale. Figure 20 shows all of the strategies proposed for the mid-term concept. The strategies are further discussed below.

MT-1 Expand and elevate the foredune

This strategy would expand and elevate the foredune. As discussed in Section 3.4, modelling shows that the building up the foredune to 13ft above sea level will protect the park from impacts of sea level rise up to 3.2ft of SLR. The current elevation of the park at the canoe hale is 9ft so the proposed increase in the height of the foredune is roughly 5ft. An example of this is provided in Figure 17. Elevating the foredune would require the availability of suitable beach sediment. The proposed site for this is from periodic dredging conducted by USACE in Kahului Harbor. This sediment would need to be studied for suitability.

MT-2 Construct elevated vegetation berms

Alongside the foredune, the project team identified the development of elevated vegetation berms in key areas of the park to limit any coastal flooding in the cases where the dune is overtopped. Berms are proposed for near to the Hale buildings, along the divide between the park and the Maui Seaside Hotel Parking lot, at the makai edge of the open field and at the mauka edge of the open feel adjacent to Ka‘ahumanu Avenue. These vegetation berms would be much lower in elevation, roughly 1 or 2ft in height. A visual example would be similar in height to the landscaping adjacent to First Hawaiian Bank (Figure 18). The fill for these berms would not need to be beach sand and could be sourced from other locations on Maui Island.

MT-3 Elevate the open field

The mauka open field is currently used for overflow parking during heavy park use and during regatta season. To prepare for a future with increased SLR, it will be necessary to relocate the existing canoe hale away from the current location in the park. To ensure the hale can be safely relocated for the future, this strategy recommends elevating the open field to a height of 10ft above sea level. This is roughly to the height of the existing stone wall that borders Hoaloha Park and First Hawaiian Bank. An example of this is provided in Figure 19. The fill for this elevated field would not need to be beach sand and could be sourced from other locations on Maui Island.

MT-4 Advocate for dune and vegetation management

This strategy is similar to the strategy outlined in 4.3.1.4. DPR should continue to coordinate with Café O‘Lei, HDOT Harbors, and DLNR to develop and manage dunes across the littoral cell. Any action taken by DPR along the shoreline, such as elevating the foredune, should be mirrored across the shoreline throughout the littoral cell.

Figure 17: Rendering of potential future foredune elevation

Figure 18: Example of elevated berm

Figure 19: Rendering of potential future open field elevation

Figure 20: Mid-Term Design Concept

4.3.3 Long-Term – 3.2ft Sea Level Rise

The purpose of the long-term design concept is to forecast the more distant future of Hoaloha Park. It proposes to maintain canoe paddling and watersports use that is resilient to future SLR. This concept aligns a future dune crest with the projected dune crest position with 3.2ft of SLR elevation. This could be considered the most conservative concept and shows what could happen if shoreline erosion associate with SLR is not mitigated. Figure 21 shows all of the strategies proposed for the long-term concept, which are further discussed below.

LT-1 New Foredune

This strategy proposes to reconstruct the foredune in line with the projected dune crest position with 3.2ft of SLR elevation. The foredune should be constructed at the same elevation as in the mid-term strategy (13ft above sea level). Fill for these dunes should be beach quality sand. The ideal source would be from the USACE dredging of Hoaloha Park if that sand is suitable quality.

LT-2 Elevated vegetation berms

Similar to strategy 4.3.2.2, this strategy proposes low level elevated vegetation berms (1-2ft) to limit flooding from dune overtopping. The dunes are proposed along the divide between the park and the Maui Seaside Hotel parking lot, at the makai edge of the open field, and at the mauka edge of the open field adjacent to Ka‘ahumanu Avenue. The fill for these berms would not need to be beach sand and could be sourced from other locations on Maui Island.

LT-3 Relocate canoe hale

Given the projected position of the dune crest with 3.2ft SLR elevation, the canoe hale will have to be relocated. After discussion with representatives from both HCC and NKE clubs, it was determined that the hale should be relocated to the mauka field which would already have been elevated to 10ft above sea level. The placement of the hale in the concept drawing is for illustrative purposes only and DPR and the canoe clubs should discuss the placement and requirements for relocating the hale described in the adaptation pathway.

LT-4 Relocate parking

This strategy proposes to relocate the existing parking lot to a new location at the mauka edge of the open field. The new parking lot would be smaller than the current lot and would be paved to comply with Americans with Disabilities Act standards. Overflow parking could take place on the grass or in adjacent lots, such as on the mauka side of Ka‘ahumanu Avenue. When parking is relocated, the existing parking lot should be returned to grass, increasing open space for canoe storage, wingfoil rigging, and other ocean sport launching activities.

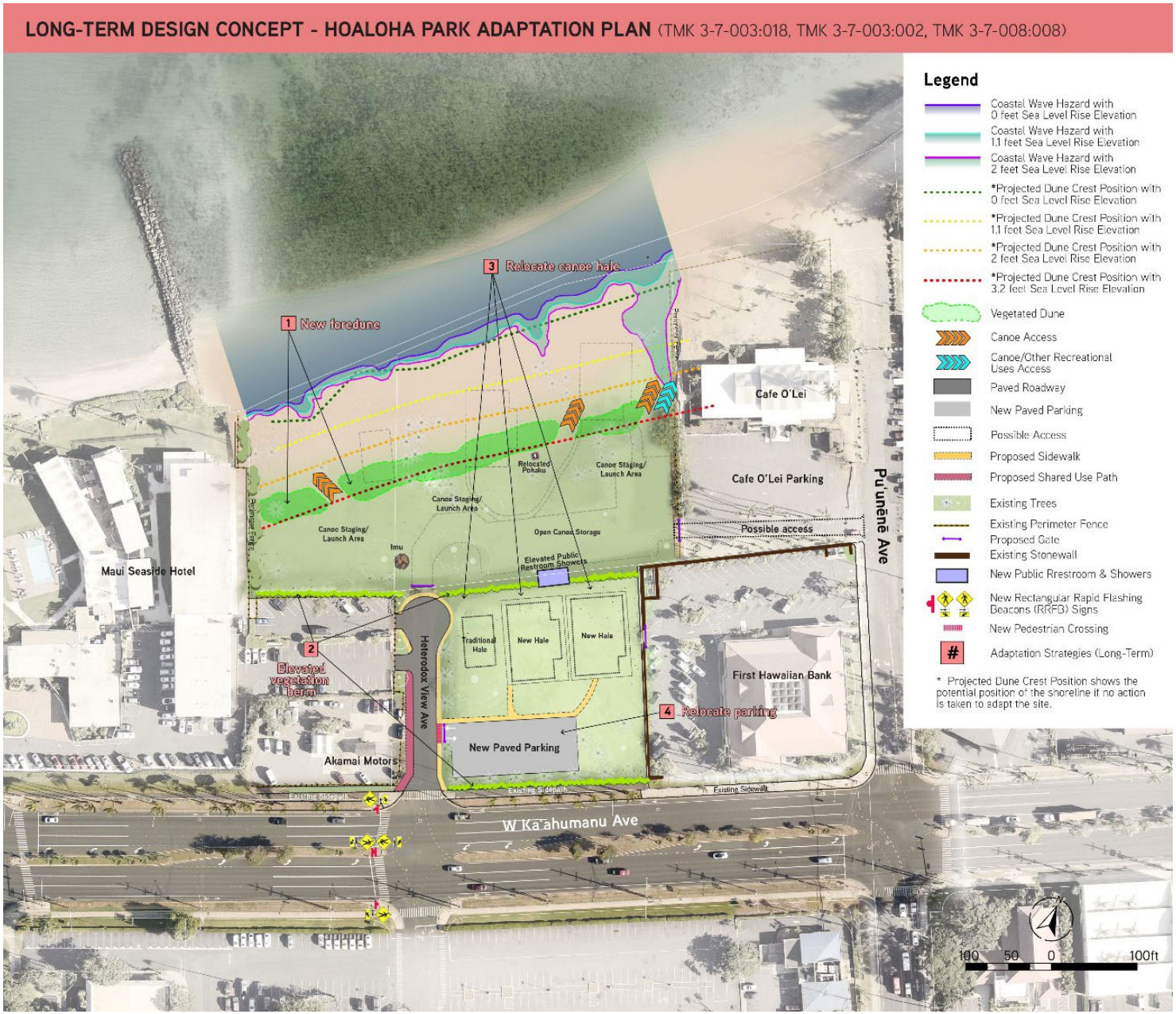


Figure 21: Long-Term Adaptation Concept

4.4 Adaptation Strategies Considered and Dismissed

Table 4 provides a list of strategies that were considered for the Hoaloha Park Adaptation Plan but ultimately disregarded through consultation with the PAC and community input.

Strategy	Description	Reason for Dismissal
Expand and raise nearshore reef	Propose to raise the nearshore reef to mitigate wave action	Does not mitigate SLR enough to warrant implementation
Construct a seawall	Construct a concrete seawall to fix the shoreline in place	Not desired by County or PAC members Prohibited under State Law (Hawai'i Revised Statutes 205A) Would impact ability of users to access the water May cause the beach to slowly erode
Expand the Groins	Expand and add to the existing groin on the western edge of Hoaloha Park	May impact recreation in the harbor May not mitigate SLR enough to warrant implementation

Table 4: Mitigation strategies considered and dismissed

5 Implementation

The purpose of this adaptation plan is to ensure that Hoaloha Park remains a community asset and gathering place for generations to come. Actions taken to ensure the future viability of Hoaloha Park will be most effective if implemented in coordination with a broader regional strategy for Kahului Bay; however, the goal of this plan is to ensure that the County can enable the continued use of Hoaloha Park. The strategies identified in Section 4 were chosen to support this goal. This section will provide an overview of how the Hoaloha Park Adaptation Plan can be implemented, the partners needed to make this happen, some potential methods of financing the plan, and the environmental permitting required to implement the strategies.

5.1 Implementation Plan

Table 5 provides an overview of the adaptation strategies outlined in Section 4.3 and highlights the timeframe, organizations, triggers, and rough order of magnitude (ROM) costs to implement.

5.1.1 Hoaloha Park Adaptation Strategies

#	Timeframe	Name	Definition	Lead and Partners	Triggers	Cost
ST-1	Short-Term 0-5 years	Protect and enhance existing dune vegetation	Re-seed and grow native dune supporting plants along the foredune	**DPR**, Canoe Clubs, Hawai'i Sea Grant, Surfrider	Existing dune erosion	$
ST-2	Short-Term 0-5 years	Consolidate existing access points	Close and reorient access points to limit erosion	**DPR**, Canoe Clubs	Existing dune erosion	$
ST-3	Short-Term 0-5 years	A new connection to Pu'unēnē Avenue	Add an access point adjacent to Café O'Lei	**DPR**, DPW, Café O'Lei	Existing traffic congestion during regatta season	$$
ST-4	Short-Term 0-10 years	Advocate for dune and vegetation management	Coordinate with adjacent landowners to develop a dune management strategy for the whole littoral cell	**DPR**, HDOT Harbors, DLNR, Café O'Lei	Existing dune erosion	$
ST-5	Short-Term 0-10 years	Proposed multimodal access path	Add a shared use path and sidewalk connection into Hoaloha Park	**DPR**, DPW	Existing traffic congestion and limited pedestrian access	$$
ST-6	Short-Term 0-5 years	Proposed Rectangular Rapid Flashing Beacon	Add an RRFB to Ka'ahumanu Avenue Crosswalk	**HDOT,** Maui MPO	Existing community concern	$$
ST-7	Short-Term 0-5 years	Proposed new public restrooms and showers	Build a new public restroom and shower blow	**DPR,** Canoe Clubs	Existing community concern	$$

#	Timeframe	Name	Definition	Lead and Partners	Triggers	Cost
MT-1	Mid-Term 15-30 years	Expand and elevate the foredune	Elevate the foredune by 5-feet.	**DPR**, USACE, Canoe Clubs	3-ft loss in dune crest elevation Availability of suitable sediment (e.g. dredging) Land width between hale and foredune crest less than 40-feet.	$$$
MT-2	Mid-Term 15-30 years	Construct elevated vegetation berms	Construct 1- to 2-feet vegetation berms in the park	**DPR,** Canoe Clubs	Prolonged stormwater ponding more than 6x per year	$$
MT-3	Mid-Term 20-50 years	Elevate the open field	Use fill to elevate the open field to 10ft above sea level	**DPR**	Coastal flooding of hale more than 1x per year	$$
MT-4	Mid-Term 15-30 years	Advocate for dune and vegetation management	Coordinate with adjacent landowners to develop a dune management strategy for the whole littoral cell	**DPR**, HDOT Harbors, DLNR, Café O'Lei	Land width between hale and foredune crest less than 40-feet.	$
LT-1	Long-Term 50-70 years	Construct a new foredune	Construct a new foredune as the shoreline recedes	**DPR**, USACE, Canoe Clubs	Narrowing land width between hale and foredune crest prevents canoe storage	$$$
LT-2	Long-Term 50-70 years	Construct elevated vegetation berms	Construct 1- to 2-feet vegetation berms in the park	**DPR,** Canoe Clubs	Narrowing land width between hale and foredune crest prevents canoe storage	$$

#	Timeframe	Name	Definition	Lead and Partners	Triggers	Cost
LT-3	Long-Term 40-60 years	Relocate canoe hale	Relocate the canoe hale to the mauka field	**Canoe clubs**, DPR	Coastal flooding causes structural impacts to hale Unsustainable Hale maintenance costs End of current lease	$$$
LT-4	Long-Term 40-60 years	Relocate parking	Relocate the existing parking lot to the mauka field	**DPR**	Narrowing land width between hale and foredune crest prevents canoe storage	$$
ROM Cost: $=low, $$=medium, $$$=high						

Table 5: Hoaloha Park Adaptation Strategies

5.2 Financing

Adaptation planning is a challenging and expensive undertaking. The County may be able to fund some actions itself, but it may require outside funding to achieve all the goals of the plan. The County should ensure that funding and financing strategy approaches are equitable and efficient.

The first step the County should take is to ensure that future projects are part of the Capital Improvement Plan for the department, as well as inclusion in area plans like the Central Maui Community Plan which began its update process in 2024. Inclusion of these projects in existing community plans enables the County to apply for grant funding from state and federal sources.

Some opportunities for federal grants could include Hazard Mitigation Assistance grants through the Federal Emergency Management Agency (FEMA) or the Building Resilient Communities and Infrastructure (BRIC) program, also through FEMA. The National Wildlife Federation hosts the National Coastal Resilience Fund which funds conservation projects to restore or expand natural features. This could be particularly used to fund the dune system.

5.3 Environmental Permitting

A major part of implementing the built elements of the Hoaloha Park Adaptation Plan will be completing environmental permitting. Hoaloha Park's location on the shoreline adds additional permitting requirements that the County will have to clear in order to add built elements to the park. This section will describe the typical permits that may be required for elements of the Adaptation Plan.

If the project receives federal funding, then it would be considered a federal action and would require federal level environmental permits in addition to state level permits. If the project does not receive federal funding, then the project would require only state level environmental permits.

5.3.1 National Environmental Protection Act (NEPA) Environmental Assessment

NEPA is a federal regulation that applies to all major federal actions, including awarding funds to applicants for federal assistance. NEPA requires that prior to funding, authorizing, or implementing an action, federal agencies consider the effects that their proposed action may have on the environment and the related social and economic effects. NEPA compliance includes categorical exclusion determinations (CATEXs), Environmental Assessments (EAs), and Environmental Impact Statements (EISs). CATEXs are given to actions that do not individually or cumulatively have a significant effect on the human environment. If a federal agency determines that a CATEX does not apply, then an EA or EIS must be prepared. An EA determines whether or not a federal action has the potential to cause significant environmental effects. An EIS is required for federal actions that have been determined to significantly affect the quality of the human environment. It is expected that the majority of strategies in the Hoaloha Park Adaptation Plan would fall under CATEX.

5.3.2 Hawai'i Environmental Protection Act (HEPA)

Under HEPA, an EA or EIS is required for any project that may have significant effects on the environment. HEPA complements NEPA but applies specifically to agency or applicant projects that includes one or more triggers as identified in Hawaii Revised Statutes (HRS) Chapter 343. Use of state or county funds and use of state or county lands is an applicable trigger for this project.

5.3.3 Special Management Area

Most, if not all, projects will require a Special Management Area (SMA) permit from the County. Any project that qualifies as "development" under the County of Maui SMA Rules and HRS Chapter 205A will require an SMA

permit. All projects identified in this plan, including the expansion of the dune systems and the building of public facilities such as public restrooms, will require an SMA permit.

5.3.4 Historic Preservation Review

Under Section 106 of the National Historic Preservation Act and/or the Hawai'i Historic Preservation Program (HRS Chapter 6E), any project that could affect historic or cultural resources requires consultation with State Historic Preservation Division (SHPD). This includes reviewing potential impacts on archaeological sites, historic properties, and places of cultural significance. There is one known burial in Hoaloha Park, and the Kahului Bay shoreline is a known location for iwi kupuna burials, therefore Historic Preservation review will be a key permitting step for many projects outlined in this plan. The development of a proactive burial management plan for Hoaloha Park will support the County in the event that iwi kupuna are found during any construction activities.

5.3.5 Endangered Species Act Consultation

If a federal action could affect endangered or threatened species, Endangered Species Act (ESA) Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) may be required. This includes species such as sea turtles, monk seals, or native Hawaiian birds that may be present in or near the project area.

5.3.6 Section 10 of the Rivers and Harbors Act

Under Section 10 of the Rivers and Harbors Act, any construction or work (such as dredging, filling, or the placement of structures) in navigable waters of the United States requires a permit from the USACE. This would likely be required for any beneficial use of dredged material.

5.3.7 Clean Water Act Section 404 Permit

This permit is required for any activities that involve discharging dredged or fill material into waters of the United States, including wetlands and coastal waters. It is likely that a Section 404 permit would be needed for projects involving the foredune.

5.3.8 Clean Water Act Section 401 Water Quality Certification

A Section 401 Water Quality Certification ensures that any activity that might impact water quality complies with state water quality standards. This certification is typically required in conjunction with a Section 404 permit.

5.3.9 Coastal Zone Management (CZM) Federal Consistency Determination

For federal actions, the CZM Act requires a federal consistency review for activities affecting the coastal zone in Hawai'i. Any proposed improvements to Hoaloha Park would likely trigger this review. The project must be consistent with the objectives of Hawaii's Coastal Zone Management Program.

5.3.10 Conservation District Use Permit or Small Scale Beach Nourishment Permit

This permit is required for any action that takes place in the State Conservation District, which includes all lands makai of the high wash of the waves. Foredune projects or beach nourishment projects would require one of these permits.

5.4 Beneficial Use of Dredged Material

Beach nourishment and dune restoration are two key elements of the plan that work to delay the impact of coastal flooding and erosion on Hoaloha Park. Beach nourishment and dune restoration both require beach quality fill in order to be implemented and it is not always easy to source. This is particularly true in Hawai'i where it can be expensive to bring in from the mainland or from offshore sand sites. Finding a source of beach quality sand is a critical item for this plan.

One location for beach sand may be through the regular dredging of Kahului Harbor. The harbor is dredged every 10 years, and the last dredging occurred in 2024. Currently the dredged material is disposed of at an Environmental Protection Agency (EPA) designated site about 5 miles offshore. This is deemed the most cost-effective use of the material. However, the USACE will consider beneficial use of dredged material in conjunction with a local partner. The following section lays out the process and permitting steps for potentially using dredged material for the Hoaloha Park Adaptation Plan.

5.4.1 Test Dredged Material

County should work with USACE and HDOT to evaluate the dredged material to see if it meets the quality for beach sand as laid out by the Office of Conservation and Coastal Lands.

5.4.2 Local Agency Stakeholder Meetings

Working with local agencies will help identify project needs and concerns while the project is in the planning phase. Potential partners include state agencies such as OPSD, DLNR, and SHPD, and federal agencies like EPA, USFWS and NOAA. It would also be beneficial for the ounty to hold public meetings during this phase to inform the public about the project.

5.4.3 Enter a Beneficial Use Agreement with USACE

County would have to enter into a Beneficial Use Agreement with USACE and other partners. USACE already has a dredge process for Kahului Harbor, therefore the County would have to take on some of the incremental costs to use the material. The typical cost share is 75% federal and 25% local. It is likely that this effort would not require congressional authorization, because the project would likely fall below the $15million threshold outlined in Section 204 of the Water Resources Development Act. More information on this process can be found in the Beneficial Use Planning Manual (EPA 2007).

5.4.4 Obtain environmental permits

To conduct a beneficial use project, the County would likely need to obtain the following permits and would likely require an environmental assessment.

- Conservation District Use Permit or Small Scale Beach Nourishment Permit
- SMA Permit
- Right of Entry from DLNR
- CZM Federal Consistency
- CWA Section 404 Permit
- CWA Section 401 Water Quality Certification
- National Pollutant Discharge Elimination System Permit

5.4.5 Timeline

The process for engaging with USACE and obtaining the necessary permits will take time to complete. However, the known dredging cycle for Kahului Harbor provides an end goal for the County to work towards. The table/graphic below outlines a potential timeline for beneficial use with the goal of implementing the project during the 2034 dredging cycle.

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Test Dredged Material										
Stakeholder Meetings										
Public Meetings										
Environmental Permitting										
Environmental Assessment										
Implement Project										

Table 6: Potential timeline for beneficial use project

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Appendix A1: Site Summary

Appendix A2: Infrastructure Summary

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Appendix B2: Infrastructure Technical Study

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Appendix B4: Cultural and Historic Resources and Traditional Uses

Appendix B5: Park User Profile

Appendix B6: Coastal Hazards and Park Vulnerabilities

Appendix C1: Public Meeting 1 Report

Appendix C2: Public Meeting 2 Report