

SAUSALITO SHORELINE ADAPTATION Community Meeting 3

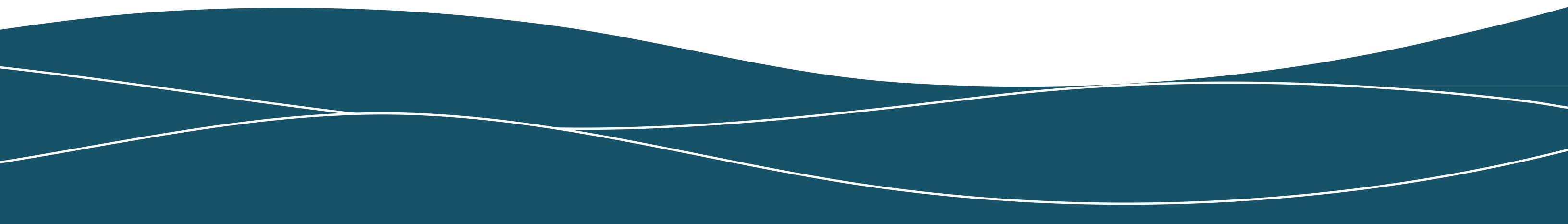


SEPTEMBER 2025

WRT with ONE Architecture & Urbanism / Arup / ESA



Agenda

- 1. Project Overview**
 - 2. Vulnerabilities**
 - 3. Community Priorities**
 - 4. Key Adaptation Recommendations**
 - 5. How to Give Feedback**
 - 6. Q&A / Discussion**
- 

We want to **HEAR FROM YOU!**

Give your Feedback on the Sausalito Shoreline Adaptation Plan

City of Sausalito is accepting
public comments through
October 7th. Please use the link
to the Public Feedback Form to
provide your comments.



PROJECT OVERVIEW:

The city is developing a **COMMUNITY-INFORMED SHORELINE ADAPTATION PLAN** to meet present and future challenges related to Sea Level Rise.

HARD COPIES of the plan for review are available at City Hall Administration Desk and Library. Hard copies of the Public Feedback Forms are also available upon request.

SAUSALITO
SHORELINE ADAPTATION



with ARUP
ONE ARCHITECTURE, ESA,
SCHAAF & WHEELER

Scan to learn more and register:
www.sausalito.gov/shorelineplan



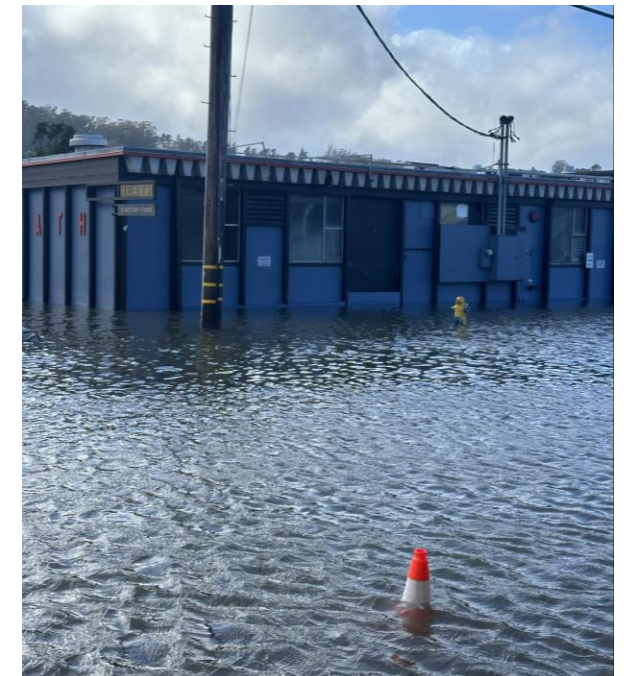
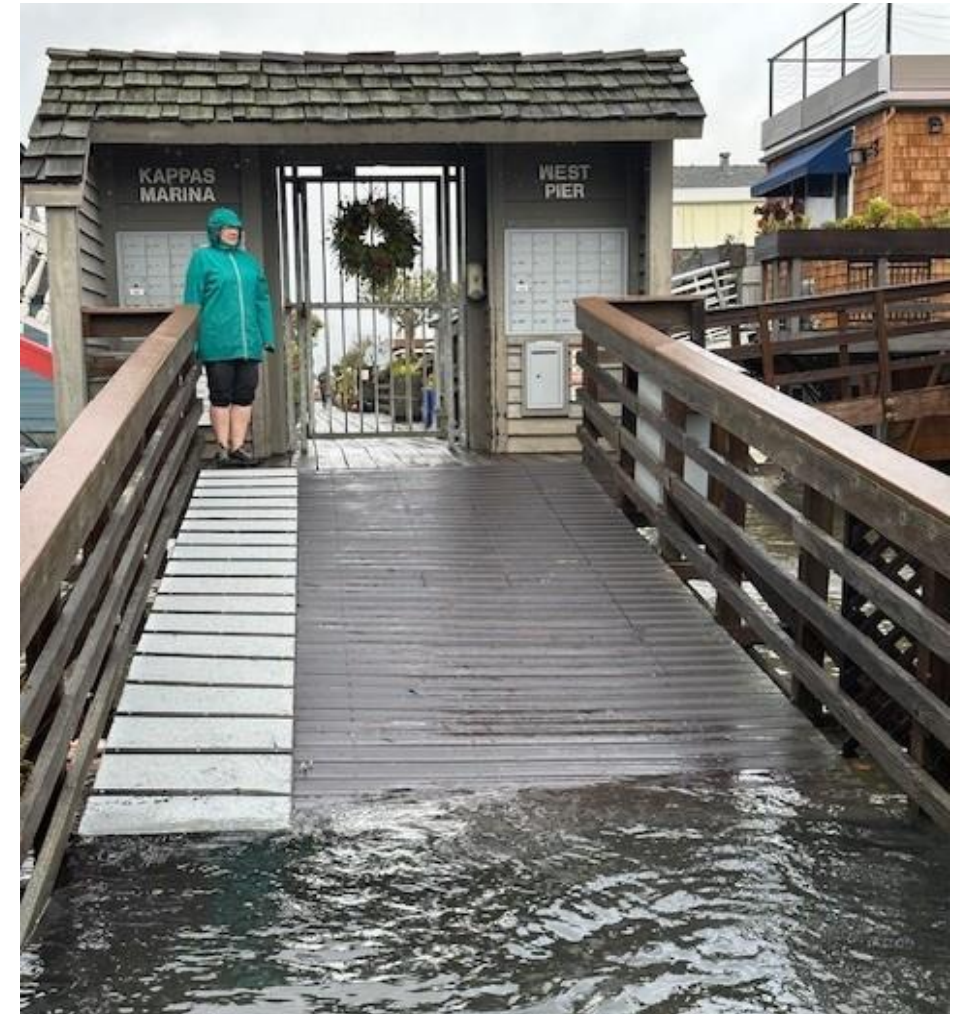
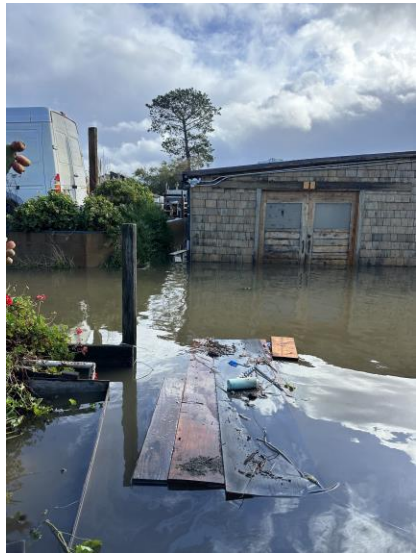
01

Project Overview

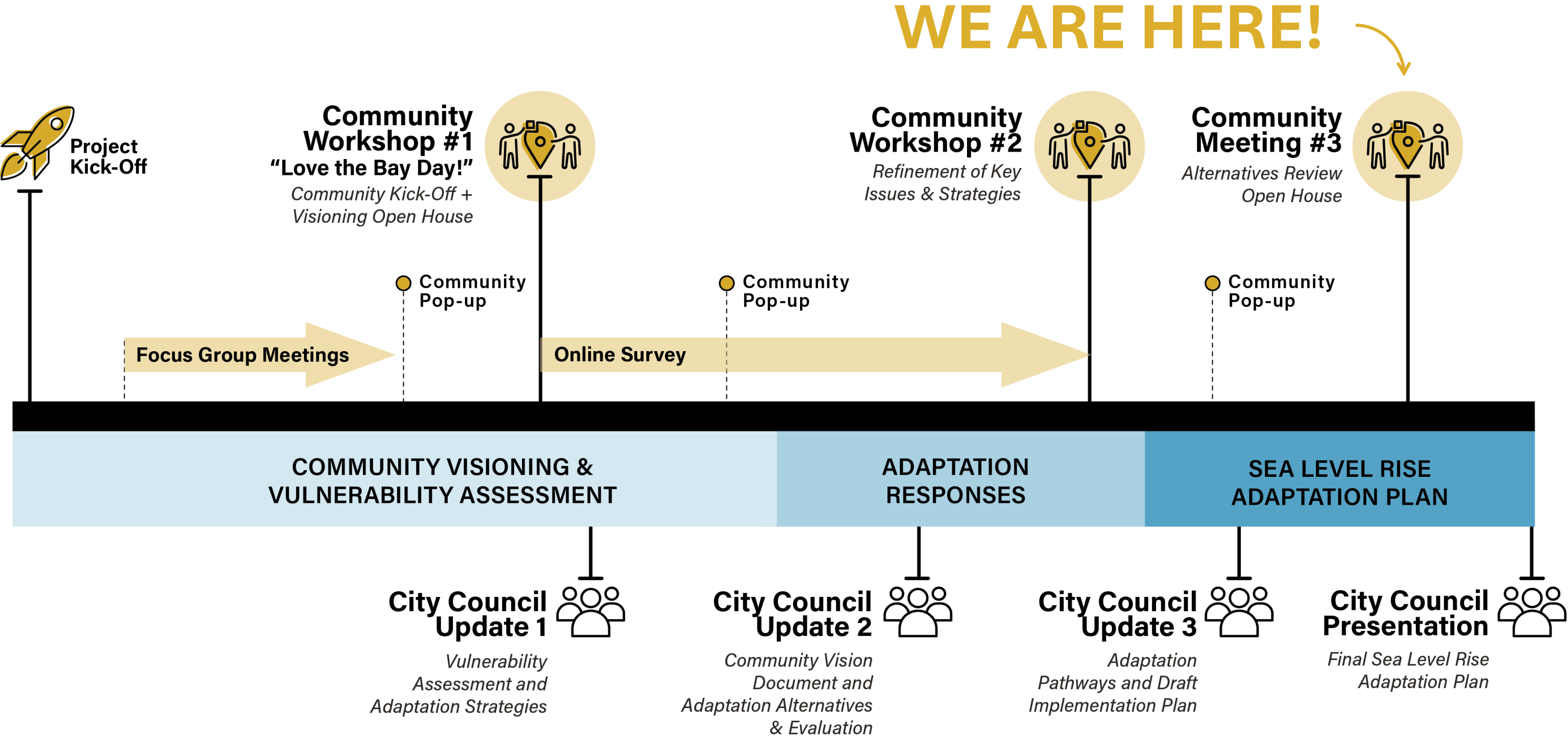
Why We're Here



Why We're Here



Project Team & Timeline



Draft Document for Public Comment



CITY OF SAUSALITO SHORELINE ADAPTATION PLAN

SAUSALITO
SHORELINE ADAPTATION



DRAFT - SEPTEMBER 2025

Draft Document for Public Comment

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02

Vulnerabilities



Sausalito SLR Vulnerability

Map Sources: California State Lands Commission, City of Sausalito, County of Marin
Map Author: WRT, 2024

Base Map

- Sausalito City Boundary
- Sphere of Influence
- Parks

Sea Level Rise Scenarios

- 0.8 feet
- 0.8 feet + 100-yr Storm
- 3.1 feet + 100-yr Storm

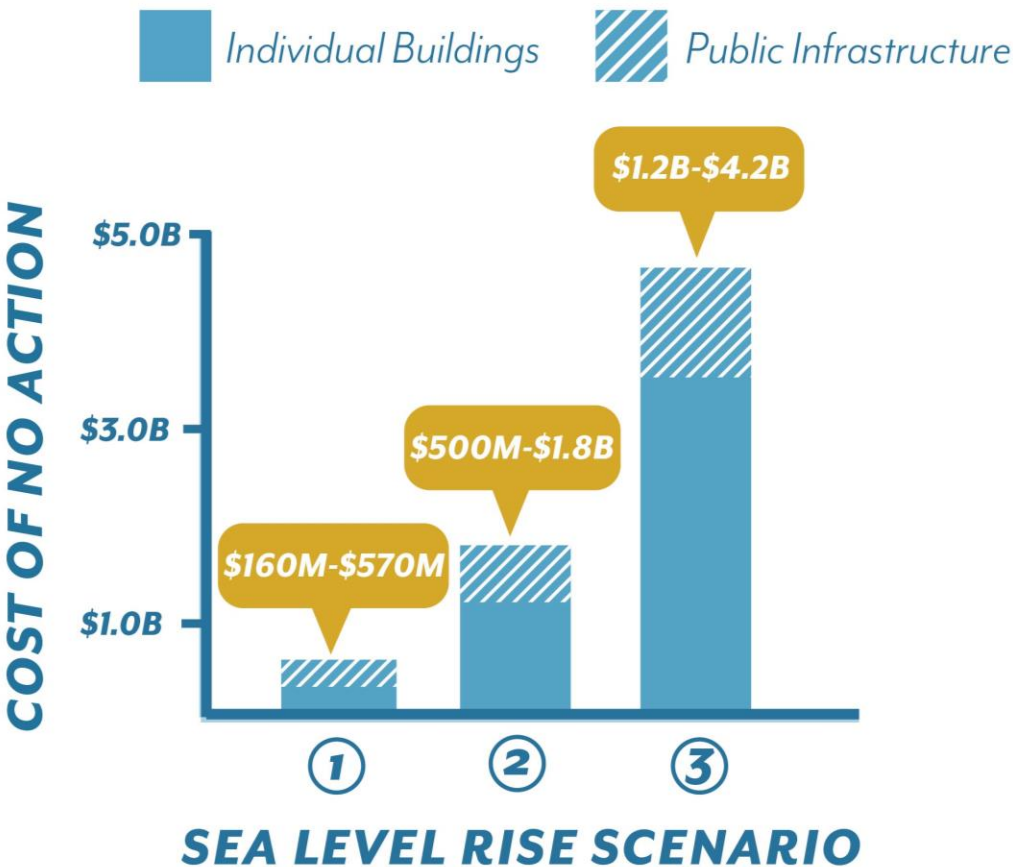
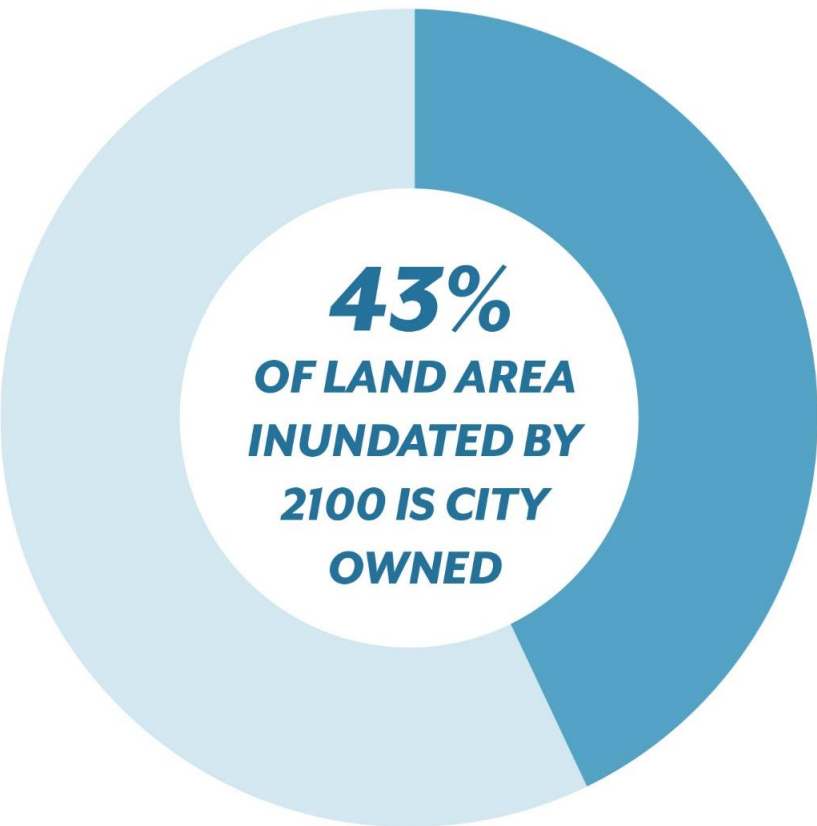
Understanding City-wide Vulnerability in line with Regional Guidance

- 1. Mid-century (2050) scenario of 0.8 ft Sea Level Rise without storm surge
- 2. Mid-century (2050) scenario of 0.8 ft Sea Level Rise scenario combined with 100-year storm surge, which adds to 4.3 ft total water level
- 3. End-of-century (2100) intermediate projection of 3.1 ft Sea Level Rise, combined with 100-year storm surge; or End-of-century high projection of 6.6 ft sea level rise. Both would result in 6.6 ft total water level.

SEA LEVEL RISE SCENARIOS	SEA LEVEL RISE		STORM SURGE (100-YEAR)	SCENARIO TOTAL
	INCHES	FEET		
1 2050	10	0.8	0'	+0.8'
2 2050	10	0.8	3.5'	+4.3'
3 2100 INTERMEDIATE	37	3.1	3.5'	+6.6'
2100 HIGH	79	6.6	0'	

Citywide Vulnerabilities

LAND AREA IMPACTED BY END-OF CENTURY



EVACUATION ROUTES



Segments of Bridgeway at Dunphy Park, along Promenade, and Hwy 101 impacted by mid-century

HABITAT



Significant loss of suitable eelgrass habitat as sea levels rise. Habiata areas shift to North Richardson Bay, outside of Sausalito.

CITY STORMWATER

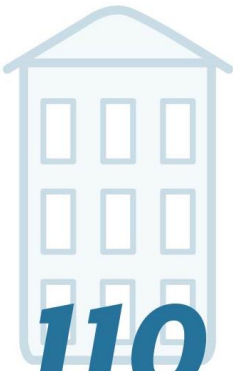


Marinship's stormwater system is already impacted by inundation. By end-of-century, Newtown also has major impacts



110

Industrial Buildings



110

Commercial Buildings



40

Residential Buildings

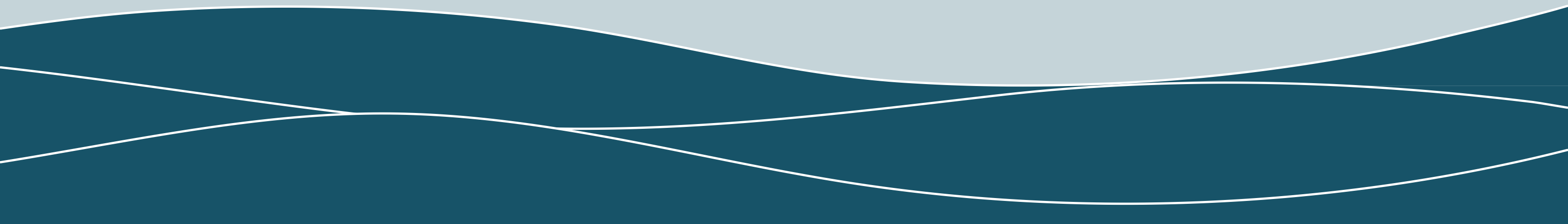
STRUCTURES IMPACTED BY END-OF CENTURY

Summary of Vulnerable City-wide Assets

SCENARIOS	CITY ASSETS			
	1 2050 0.8' SLR w/o Storm	2 2050 0.8' SLR w/ Storm or 4.3' SLR w/o Storm	3 2100 3.1' SLR w/ Storm or 6.6' SLR w/o Storm	
BY TYPE	CITY STORMWATER	8 Storm Drains 1,700 ft Storm Pipe	50 Storm Drains 8,100 ft Storm Pipe	110 Storm Drains 16,700 ft Storm Pipe
	CITY SEWER	1,300 ft Sewer Pipe	10,300 ft Sewer Pipe	24,400 ft Sewer Pipe
	ROADS & TRANSPORTATION	2,900 ft Road 4,700 Fixed Pier, 25,700 Floating Pier 0 Bus Routes 0 Bus Stops	23,900 ft Road 6,400 Fixed Pier, 26,300 Floating Pier 8 Bus Routes 6 Bus Stops	49,500 ft Road 8,000 Fixed Pie, 26,300 Floating Pier 8 Bus Routes 6 Bus Stops
	EVACUATION ROUTES	0 ft Evacuation route	1,500 ft Evacuation route	5,000 ft Evacuation route
	HABITAT	Eelgrass: Reduction across most of Richardson Bay; Potential increase in suitability near Gate 6 Rd. Marshes: No significant changes Beaches: Potential erosion and narrowing		Eelgrass: Significant reduction Marshes: Transition to lower mudflat Beaches: Potential erosion and narrowing
	COMMUNITY FACILITIES & CITY PROPERTIES	10 Residential buildings 20 Commercial buildings 30 Industrial buildings 10 Public/City-owned buildings	30 Residential buildings 80 Commercial buildings 80 Industrial buildings 20 Public/City-owned buildings	40 Residential buildings 110 Commercial buildings 110 Industrial buildings 30 Public/City-owned buildings
	LAND USE	1% of new land use area inundated 52% of inundated area is Public/City-owned	6% of new land use area inundated 45% of inundated area is Public/City-owned	12% of new land use area inundated 43% of inundated area is Public/City-owned
ALL TYPES	TOTAL COST OF NO ACTION	\$160-570M 55% INDIVIDUAL BUILDINGS 45% COLLECTIVE INFRASTRUCTURE	\$500-\$1.8B* 75% INDIVIDUAL BUILDINGS 25% COLLECTIVE INFRASTRUCTURE	\$1.2B-\$4.2B* 85% INDIVIDUAL BUILDINGS 15% COLLECTIVE INFRASTRUCTURE

03

Community Priorities



Engagement To Date

- Focus Group Meetings
Spring 2024
- Shoreline Walking Tour
May 2024
- Community Pop-ups
June 28, July 19,
and August 6, 2024
- Workshop 1
September 7, 2024
115 Attendees
- Online Survey
September 7 – November 19
200 Respondents
- Workshop 2
January 25, 2025
120 Attendees
- **Meeting 3 – Today!**
September 10, 2025



Internal Charrette



Shoreline Walking Tour



Shoreline Walking Tour



Pop-up Events



Pop-up Events

Workshop 1



What We've Heard

"More recreation on/near the water"

"Restore this wetland like Galilee!"

"Nature-based wave attenuator protects the shore!"

"Community gathering spaces (i.e. 4th of July)"

"Water finds a way...limited money means don't spend on an interim measure"

We need to protect, restore, and foster our marsh land. Marshes are some of the most biodiverse communities and we need to use that to our advantage. MARSH!

Please consider floating docks. - Houseboat owner

"More floating homes with subsidies berthage"

"Mix of hard and soft. Protect historic. Adjust for each area"

"Prioritize walkability, attractiveness, Sausalito's Character"



"Public Access to the waterfront! retails + recreation"

"Attenuator-based public access and attractions (halts erosion, boosts civic amenities)"

"Nature-based solution integrated with hardening and floating adaptations"

"Expand Floating community; be innovative for commercial uses"

The waterfront defines Sausalito and must be adapted and be protected.

"Nature-based solutions integrated with hardening and floating adaptations"

"Floating homes are important character + Identity (tourism, home)"

"Please do not encroach on our maritime industry and arts jobs!"

"The working waterfront is CRITICAL!"

Workshop 2

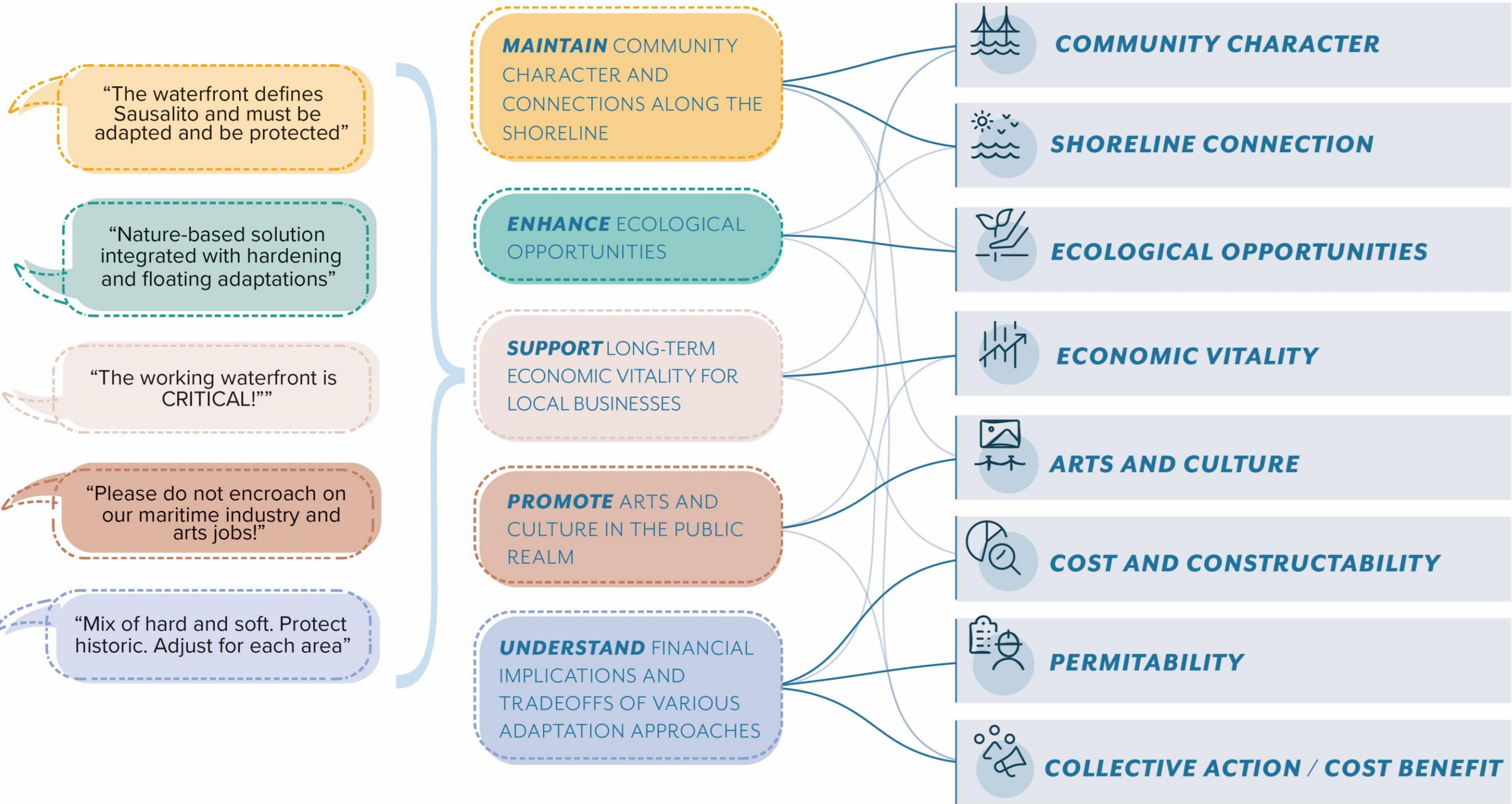


Community Priority Process

COMMUNITY INPUT

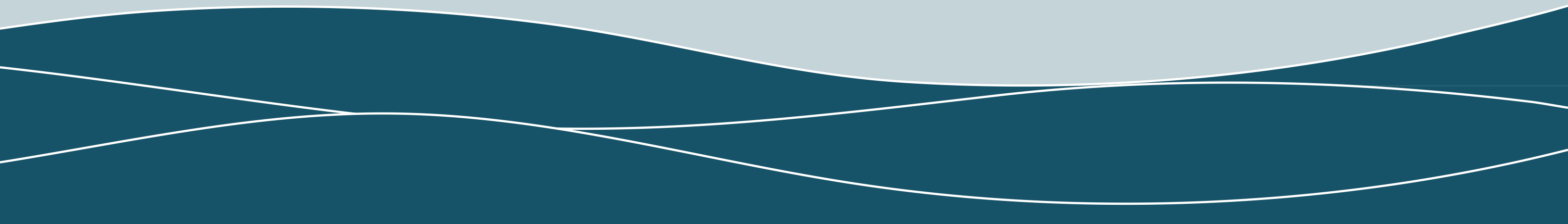
PROJECT GOALS

EVALUATION CRITERIA

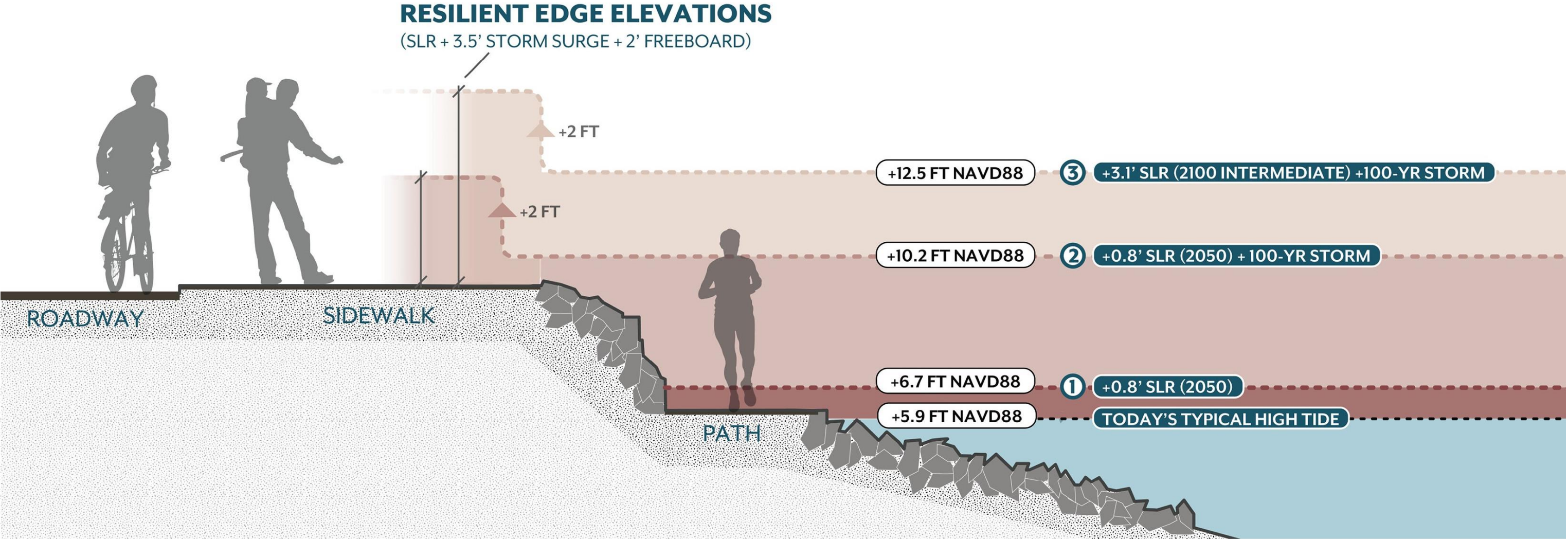


04

Adaptation Recommendations



Resilient Edge Elevations



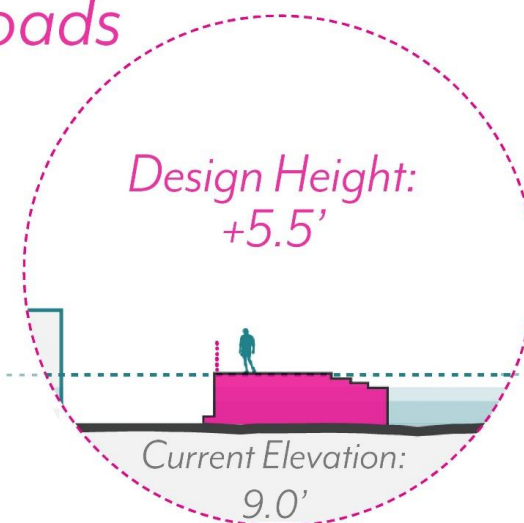
SEA LEVEL RISE SCENARIO	SCENARIO TOTAL (SLR + STORM)	RESILIENT EDGE ELEVATION (AWAY FROM WAVES)		RESILIENT EDGE ELEVATION (NEAR WAVES)
1 2050	+0.8'	6.7'	+ APPROX. 2' FREEBOARD (FOR AREAS EXPOSED TO WAVES) =	8.7'
2 2050	+4.3'	10.2'		12.2'
3 2100 INTERMEDIATE 2100 HIGH	+6.6'	12.5'		14.5'

Resilient Edge Alternatives

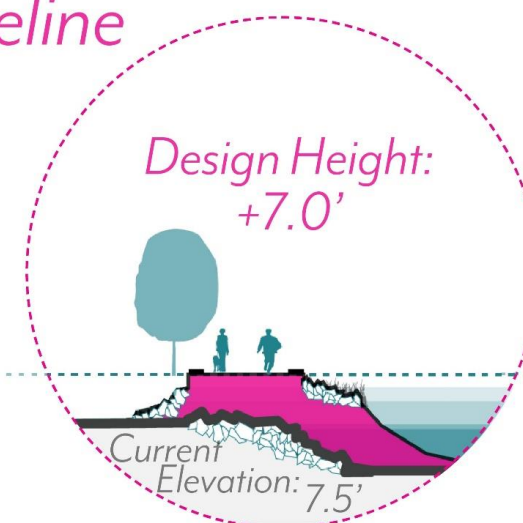
Bridgeway



Local Roads



Existing Shoreline



Above the resilient edge: Dry
Below the resilient edge: Wet

+14.5'
Resilient Edge Elevation

Total Water Level
for 3.1' SLR w/ Storm
+ 2' Freeboard

Alternative 3

Alternative 2

Alternative 1

Possible Range of the Resilient Edge

Evaluation Criteria



Option A

SHORELINE AS THE
RESILIENT EDGE

Option B

BRIDGEWAY AS THE
RESILIENT EDGE

No Action

Comparing benefits and impacts across multiple approaches

- **Community Character:** What feels authentic to Sausalito?
- **Shoreline Connection:** Views, access, water adjacent uses
- **Ecological Opportunities:** Habitat and nature-based solutions
- **Economic Vitality:** Innovation, land use impacts, business continuity
- **Arts and Culture:** Community infrastructure and tourism
- **Cost-Benefit:** Who pays? Who benefits?
- **Permitability:** Changes to current and future regulation
- **Collective Action:** Shared benefits and trade-offs

	Option A SHORELINE AS THE RESILIENT EDGE	Option B BRIDGEWAY AS THE RESILIENT EDGE	No Action
COMMUNITY CHARACTER	+	++	+
SHORELINE CONNECTION	+	+++	+
ECOLOGICAL OPPORTUNITIES	++	+++	+
ECONOMIC VITALITY	+	+++	+
ARTS AND CULTURE	++	++	+
COST/ CONSTRUCT- ABILITY	+	++	+
PERMITABILITY	+	++	N/A
COLLECTIVE ACTION / COST- BENEFIT	+	+++	N/A

Principles of Adaptation

PRINCIPLE 1: MAINTAIN AN ACTIVE PUBLIC WATERFRONT

PRINCIPLE 2: EXPLORE FLOATING OPTIONS

PRINCIPLE 3: SUPPORT A WORKING WATERFRONT

PRINCIPLE 4: EXPLORE EELGRASS RESTORATION POTENTIAL AND OTHER ECOLOGICAL OPPORTUNITIES

PRINCIPLE 5: SUPPORT AND EXPAND MANY OF THE RESILIENT COMMUNITY PRACTICES ALREADY UNDER WAY

PRINCIPLE 6: ENSURE ALL SHORELINE PROJECTS ALIGN WITH SLR ADAPTATION OPPORTUNITIES

PRINCIPLE 7: DEVELOP ADAPTATION PATHWAYS FOR LONG-TERM PROJECT PLANNING.

- Use to guide design / decision making for future development of shoreline projects
- Reflect the priorities of the community regarding adaptation

Individual vs Collective Actions

Do we want to plan for big moves?

Individual Action

- Individual asset owners will determine how and when to invest in adaptation.
- Government will take a similar approach but prioritize more publicly-valued assets.
- Result in a greater variety of adaptation levels over time, thus more challenging to maintain urban cohesion.

2050

Adaptation is a constant; property owners decide when and how

2100

Adaptation is more challenging as difference between assets increases

Collective Action

- The City leads with an integrated adaptation strategy to transform the coastline and the land use behind it collectively.
- Pooling resources and sharing benefits
- More cohesive and cost-efficient but requires buy-in and coordination

2050

Focus on the adaptation of critical systems. Individuals need to buy-in and wait.

2100

The capacity is built in to increase levels of protection

Adaptation Strategies

5.2 ADAPTATION TOOLKIT

The toolkit of adaptation strategies is reintroduced in this chapter as the basis of

specific approaches recommended for the shoreline. Graphic icons are accompanied by a short description to create a glossary. Strategies range from traditional engineering to nature-based solutions. Each reach or subarea may reference multiple strategies, sometimes in combination. As was described

earlier as the “resilient edge,” a shoreline may be planned to meet multiple goals such as raising infrastructure, building seawalls, floating buildings, and expanding tidal wetlands. This chapter applies these tools to near- and long-term solutions for the entire shoreline.

Harden the Edge



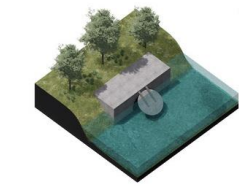
Berms

A levee or berm is a reinforced earthen structure, often running parallel to the course of a river or along low-lying coastlines, that physically blocks water from entering protected spaces while retaining vegetated banks and water access.



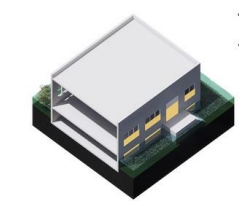
Seawall / Bulkheads

Seawalls and Bulkheads are retained earthen structures built out parallel to coastlines in order to raise the ground level and protect from rising waters, currents and wave action, and to hold back land and prevent erosion



Backflow preventers

Backflow preventers stop floodwaters from backing up into storm drains or buildings, protecting properties from sewer flooding during high tides or heavy rains.



Temporary flood barriers

Temporary barriers provide both individual protection to keep water out of structures during flood events. Equipped with the flood gates they can be closed during flood events to protect from inundation, while being open at other times to retain waterfront access and usage.

Raise Infrastructure



Dry flood-proofing

Dry floodproofing lower floors of a structure provides both permanent and operable barriers to keep water out of structures during flood events. Structures are protected from water damage but are subject to increased lateral loads.



Adaptive Piers

Floating or adjustable pier structures that rise with water levels, maintaining access during floods and high tides. These piers use flexible connections, floating docks, or hydraulic systems to accommodate changing water heights while preserving waterfront functionality.



Raised infrastructure

Elevating roadways above projected flood levels through embankments, bridges, or fill to maintain transportation access during coastal flooding. Includes upgraded drainage systems and resilient materials to withstand saltwater exposure.



Elevated homes / assets

Elevating the lowest floor of a building above the design flood elevation can offer protection from floods while retaining current occupation and usage.

Reduce Impact



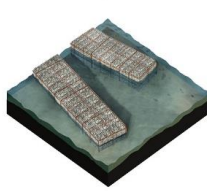
Vegetated setback levees

Levees set back from the shoreline, combined with native vegetation, increase flood buffering by reconnecting historic floodplains. They reduce flood velocity and stages while restoring habitat and improving ecosystem resilience.



Living shorelines

Natural shoreline stabilization using plants, sand, and shell to reduce erosion, absorb wave energy, and provide habitat. Living shorelines adapt dynamically to rising seas while enhancing coastal water quality.



Constructed habitats

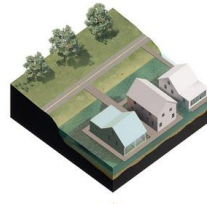
Engineered habitats like oyster reefs and marsh platforms built to restore ecological function and reduce flood risks by attenuating wave energy and providing natural flood storage.



Tidal Park/ levee system

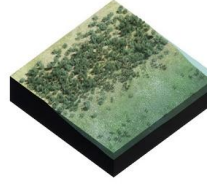
A multifunctional levee combined with tidal wetlands and public park space that buffers flooding while offering recreational benefits, supporting wildlife, and adapting flexibly to sea level changes.

Live with Water



Floating structures

Homes and facilities designed or upgraded to float on pontoons, rising and falling with tides and floods. They maintain function during high water levels and reduce flood damage by adapting to changing water elevations.



Salt marsh development

Creating and enhancing marshlands that buffer storm surges, absorb floodwaters, and provide critical habitat. Salt marshes improve shoreline stability and water quality while adapting naturally to rising seas.



Wetland restoration

Rebuilding degraded wetlands to increase flood storage and reduce wave energy. Restored wetlands support biodiversity, improve water filtration, and enhance coastal resilience to flooding and sea-level rise.



Reforestation

Planting coastal forests or buffer trees that stabilize soils, reduce erosion, and absorb stormwater runoff. Coastal reforestation contributes to long-term flood mitigation and ecosystem health.

Adaptation Approaches – 4 Zones



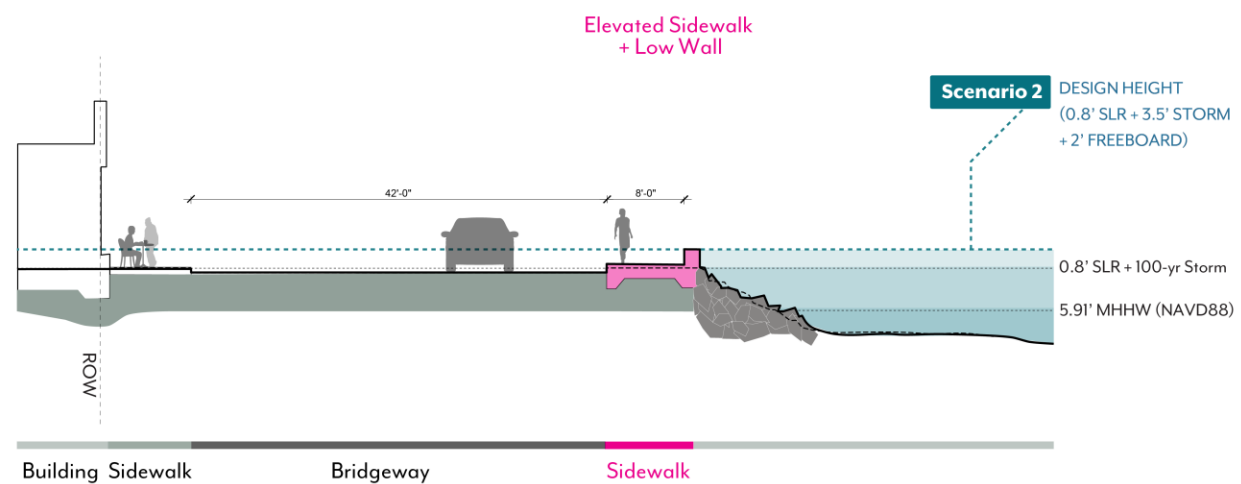
Adaptation Approaches Overview

- Offer choices for locating the resilient edge and protecting assets
- Show concepts not final recommendations
- Explore living with water
- Integrate nature-based solutions
- Encourage near term organizing, partnerships, planning, technical studies
- Combine individual and collective actions
- All are expensive
- All require more work



Southern Waterfront & Bridgeway Promenade

Near Term Highlights



HARDEN THE EDGE

- Bulkheads / Seawall
- Berms / coarse beaches
- Temporary barriers
- Drainage improvements

REDUCE IMPACT

- Vegetated levee
- Living shorelines
- Tidal parks / bioretention
- Wetland / Ecosystem restoration
- Living Breakwaters

RAISE INFRASTRUCTURE

- Elevated Roadway
- Raised Land
- Raised / Floodproofed buildings
- Adaptive Piers

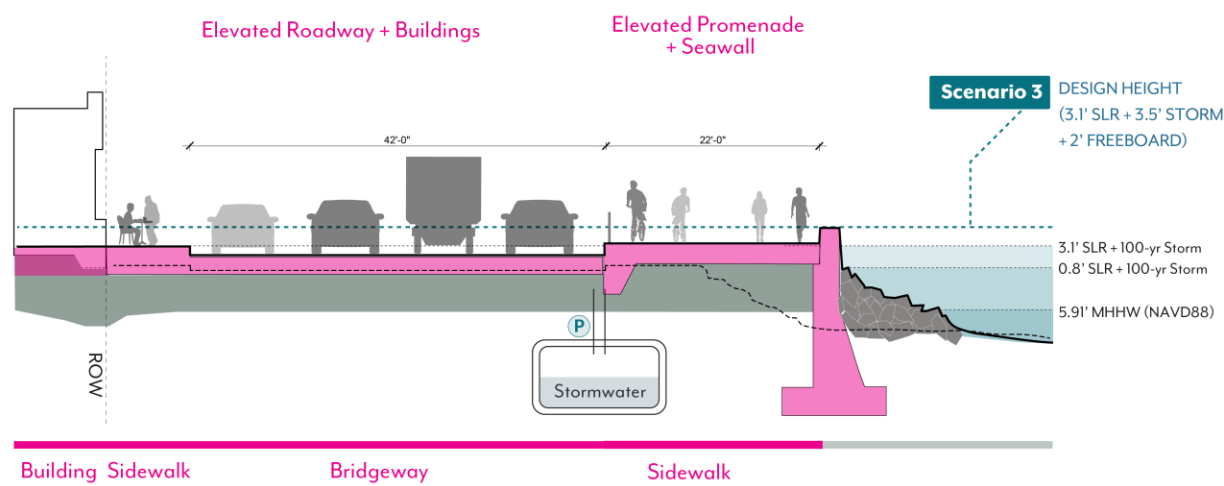
LIVE WITH WATER

- Floating structures
- Planning Study / Reprogramming
- Scale up floating approach



Southern Waterfront & Bridgeway Promenade

Long Term Alternative 1 Highlights



HARDEN THE EDGE

- Bulkheads / Seawall
- Berms / coarse beaches
- Temporary barriers
- Drainage improvements

REDUCE IMPACT

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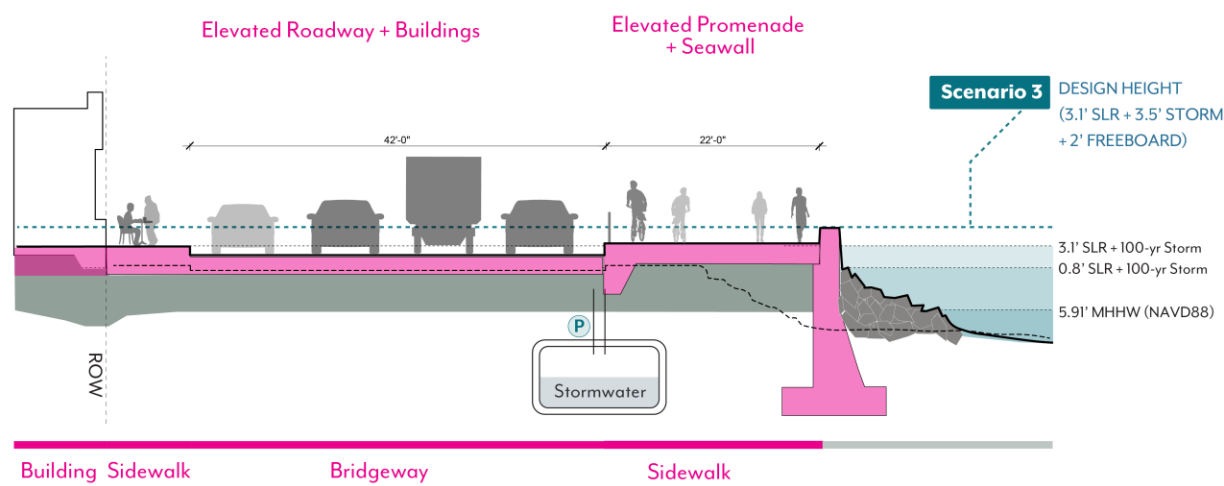
LIVE WITH WATER

- Floating structures
- Planning Study / Reprogramming
- Scale up floating approach



Southern Waterfront & Bridgeway Promenade

Long Term Alternative 2 Highlights



HARDEN THE EDGE

- Bulkheads / Seawall
- Berms / coarse beaches
- Temporary barriers
- Drainage improvements

REDUCE IMPACT

- Vegetated levee
- Living shorelines
- Tidal parks / bioretention
- Wetland / Ecosystem restoration
- Living Breakwaters

RAISE INFRASTRUCTURE

- Elevated Roadway
- Raised Land
- Raised / Floodproofed buildings
- Adaptive Piers

LIVE WITH WATER

- Floating structures
- Planning Study / Reprogramming
- Scale up floating approach



New Town

Near-term



Long-term Alternative 1



Long-term Alternative 2



HARDEN THE EDGE

- Bulkheads / Seawall
- Berms / coarse beaches
- Temporary barriers
- Drainage improvements

REDUCE IMPACT

- Vegetated levee
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- Living Breakwaters

RAISE INFRASTRUCTURE

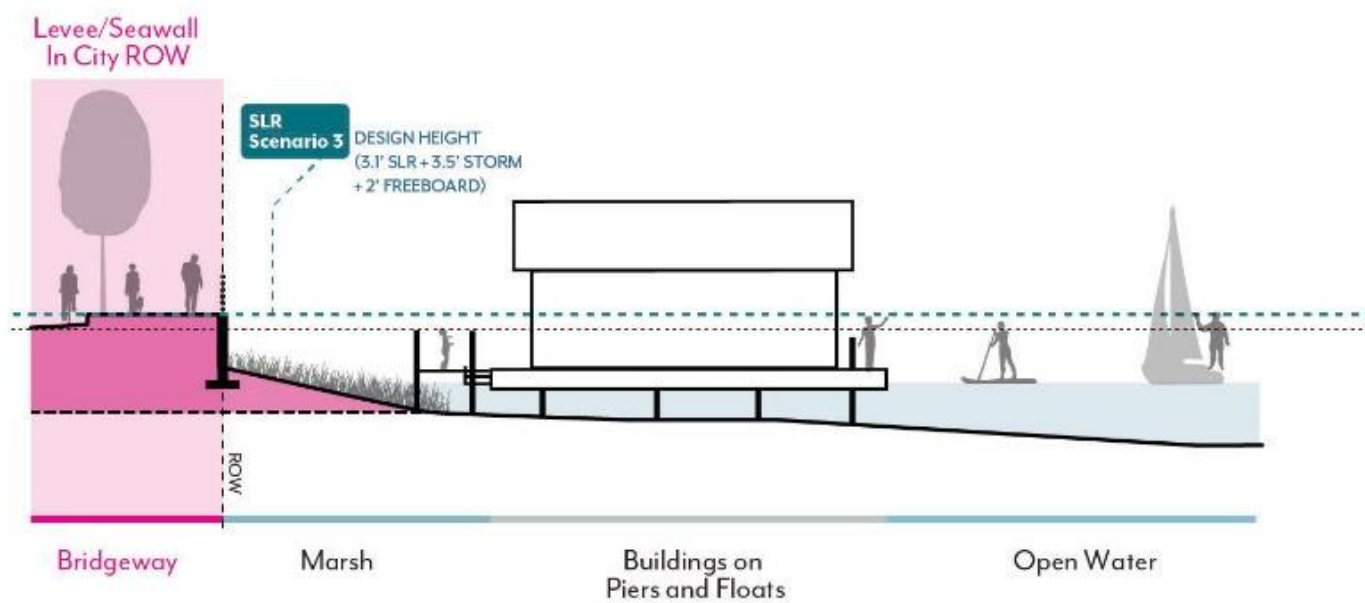
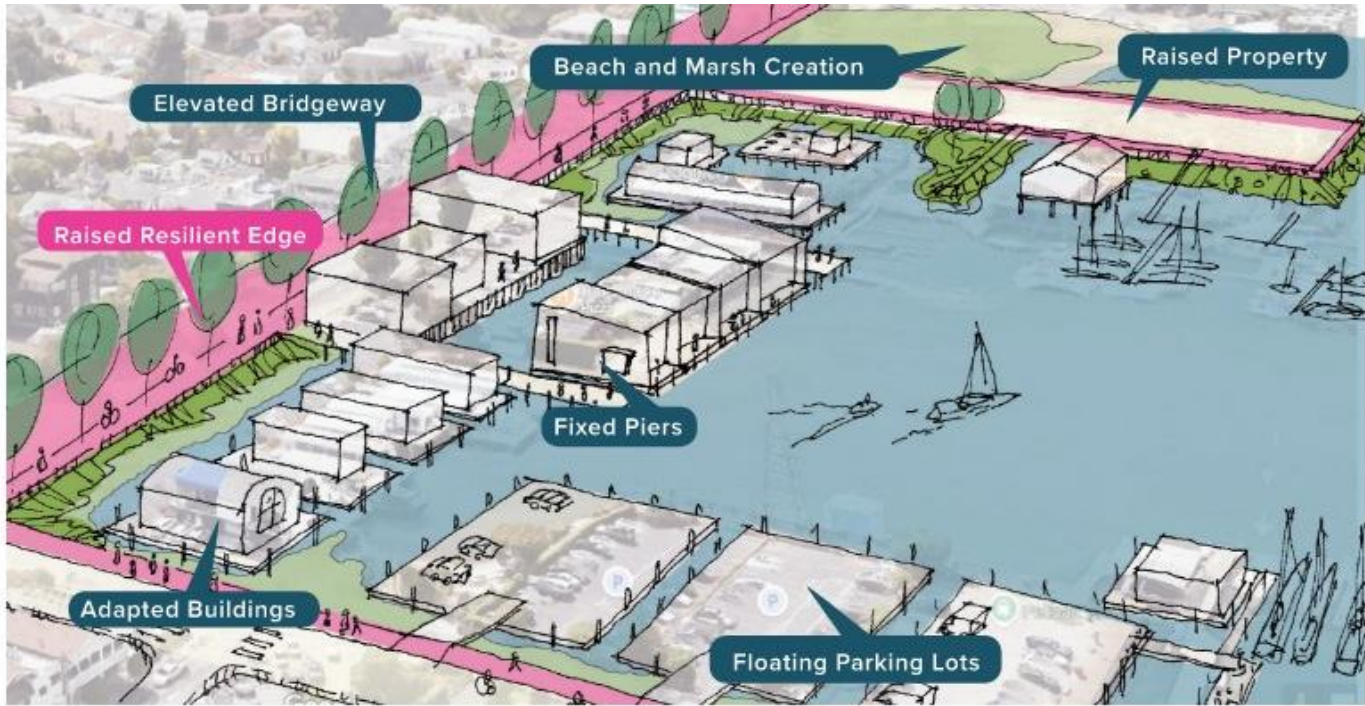
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- Adaptive Piers

LIVE WITH WATER

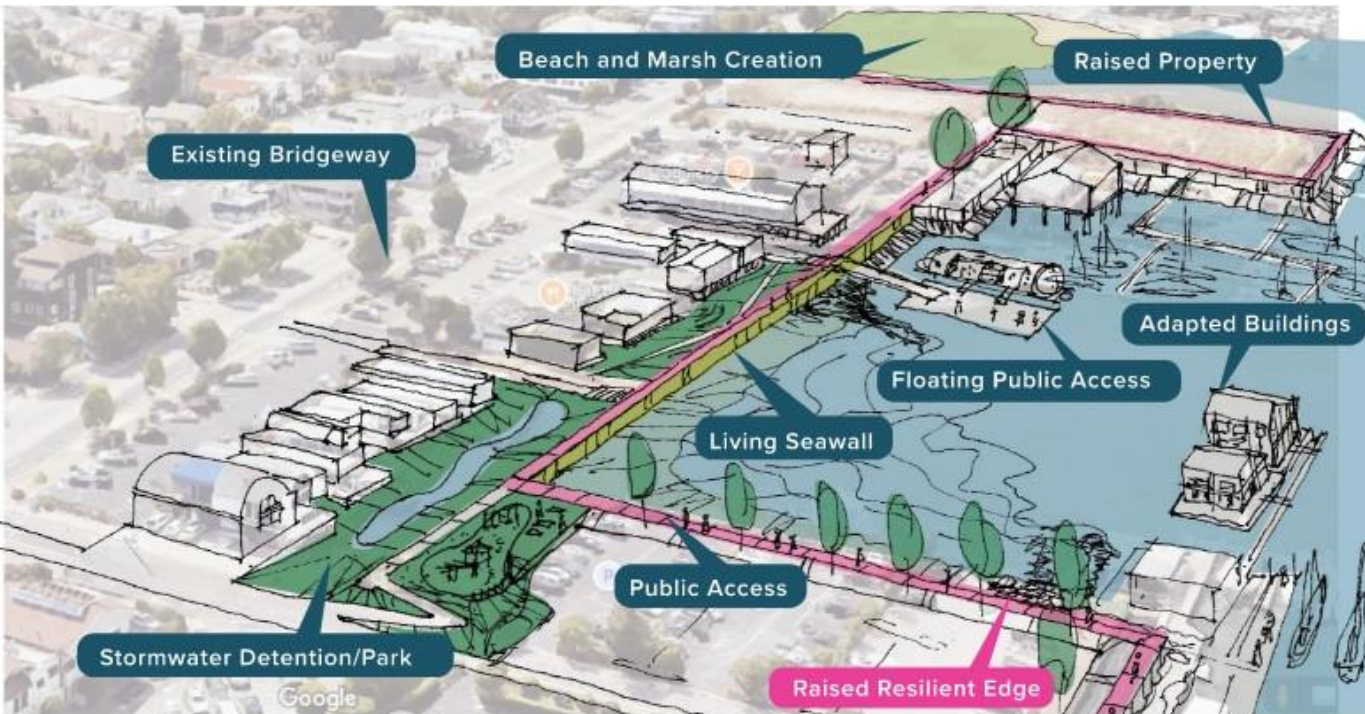
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New Town

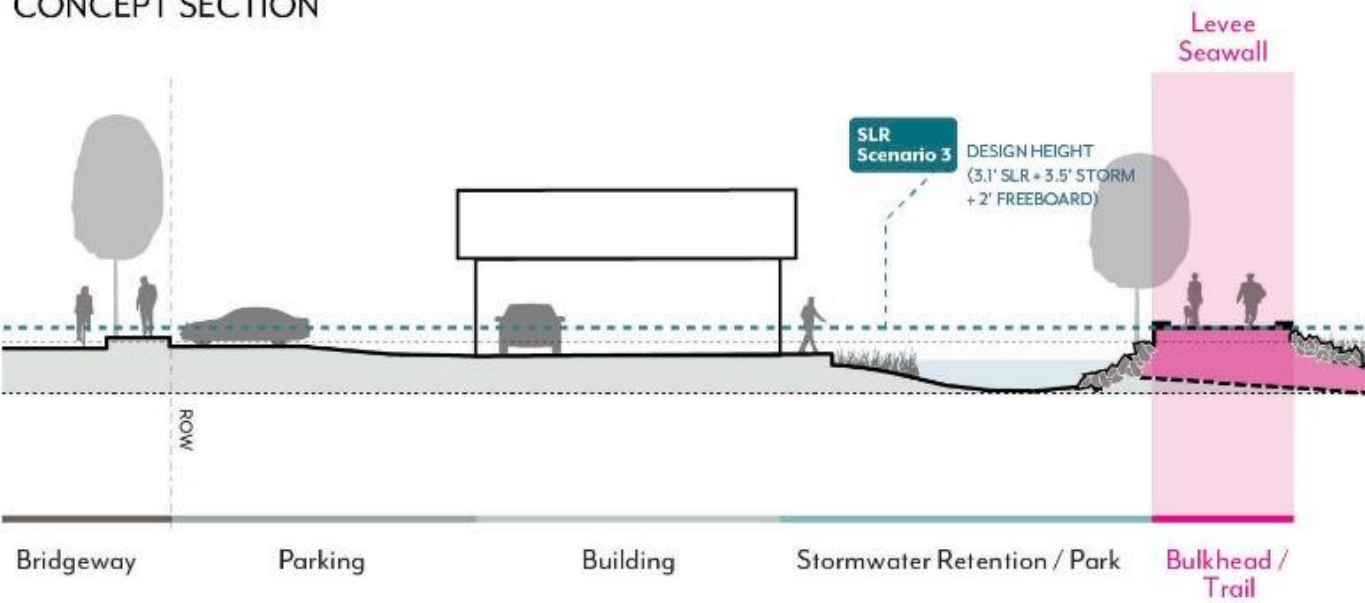
Long-term Alternative 1



Long-term Alternative 2



CONCEPT SECTION



Marinship

Near-term



HARDEN THE EDGE

- Bulkheads / Seawall
- Berms / coarse beaches
- Temporary barriers
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RAISE INFRASTRUCTURE

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LIVE WITH WATER

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Long-term Alternative 1

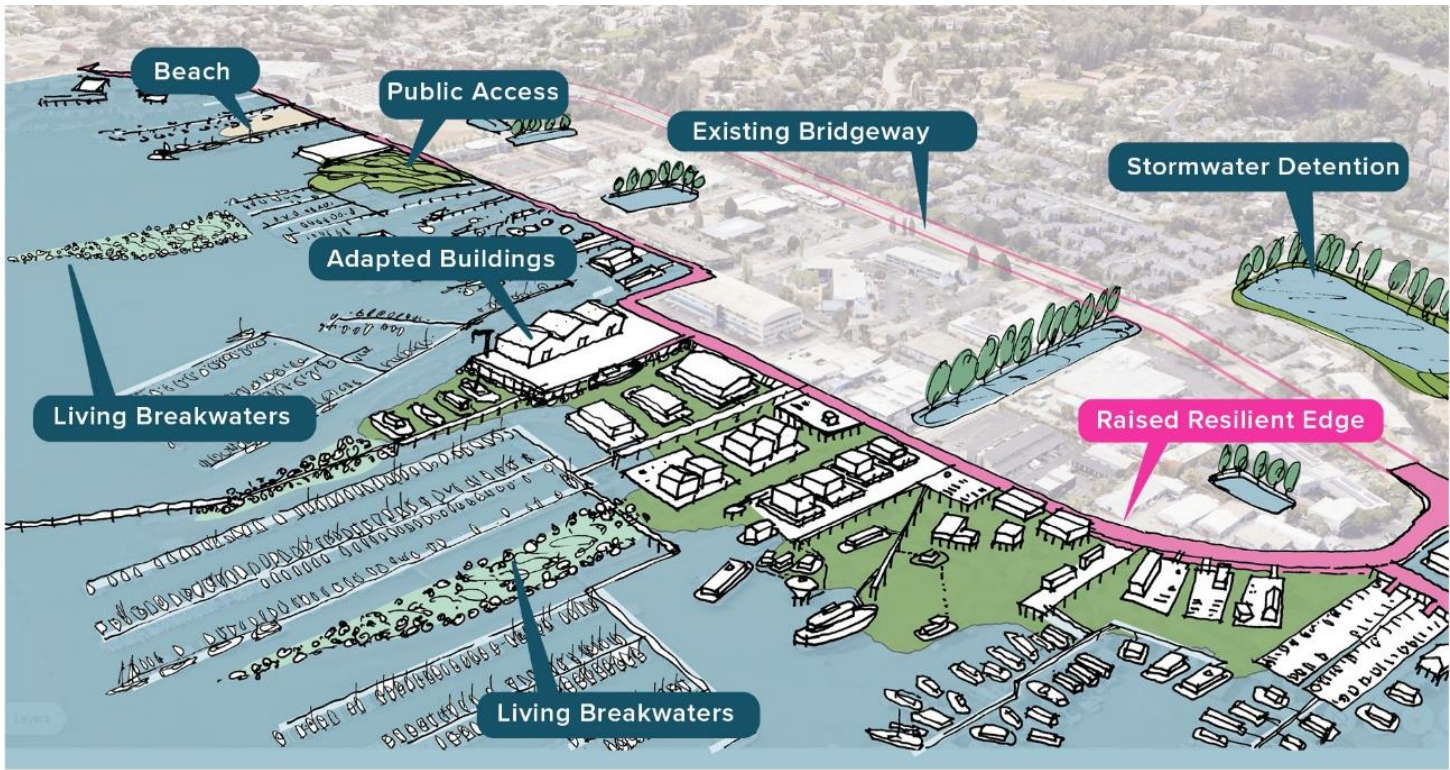


Long-term Alternative 2

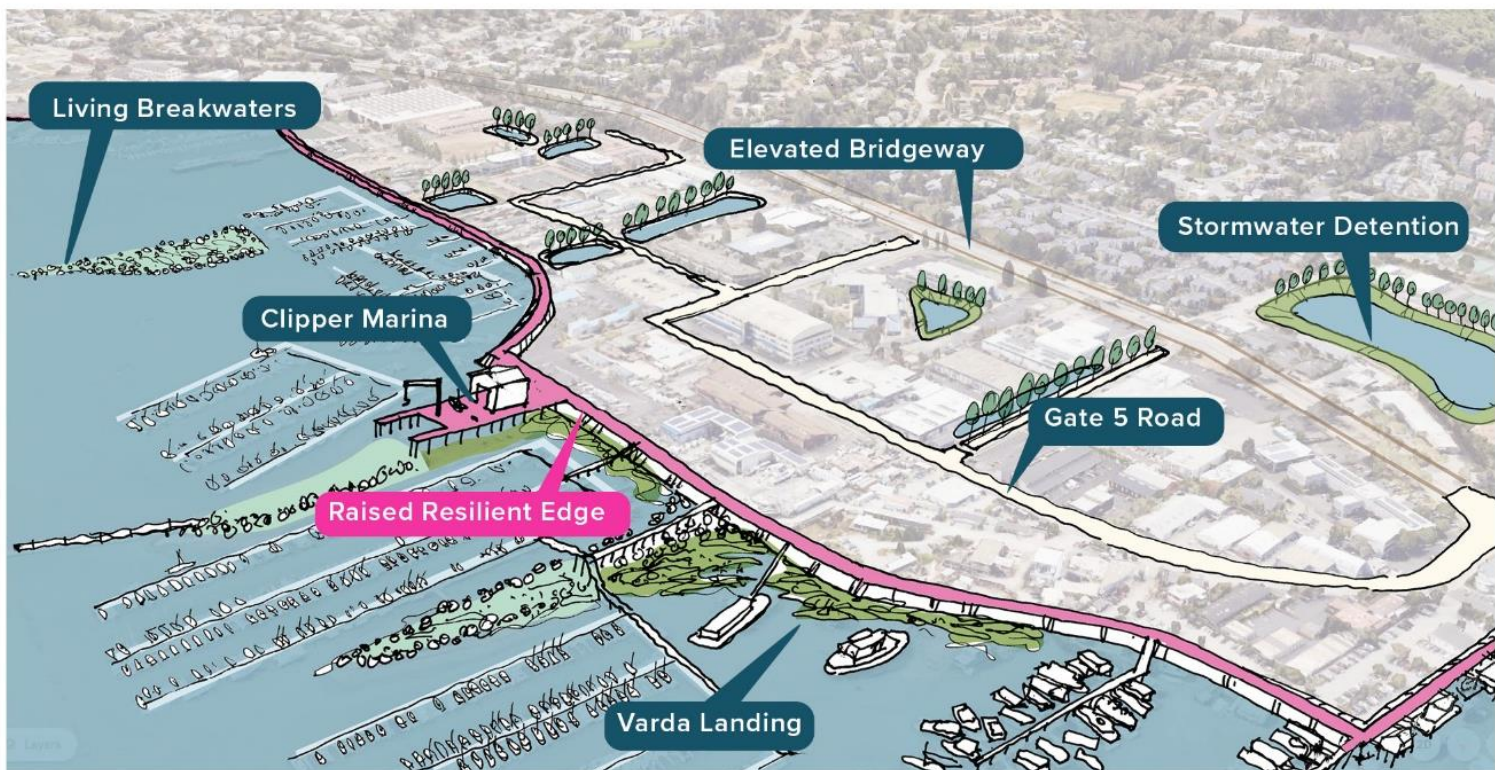


Marinship

Long-term Alternative 1

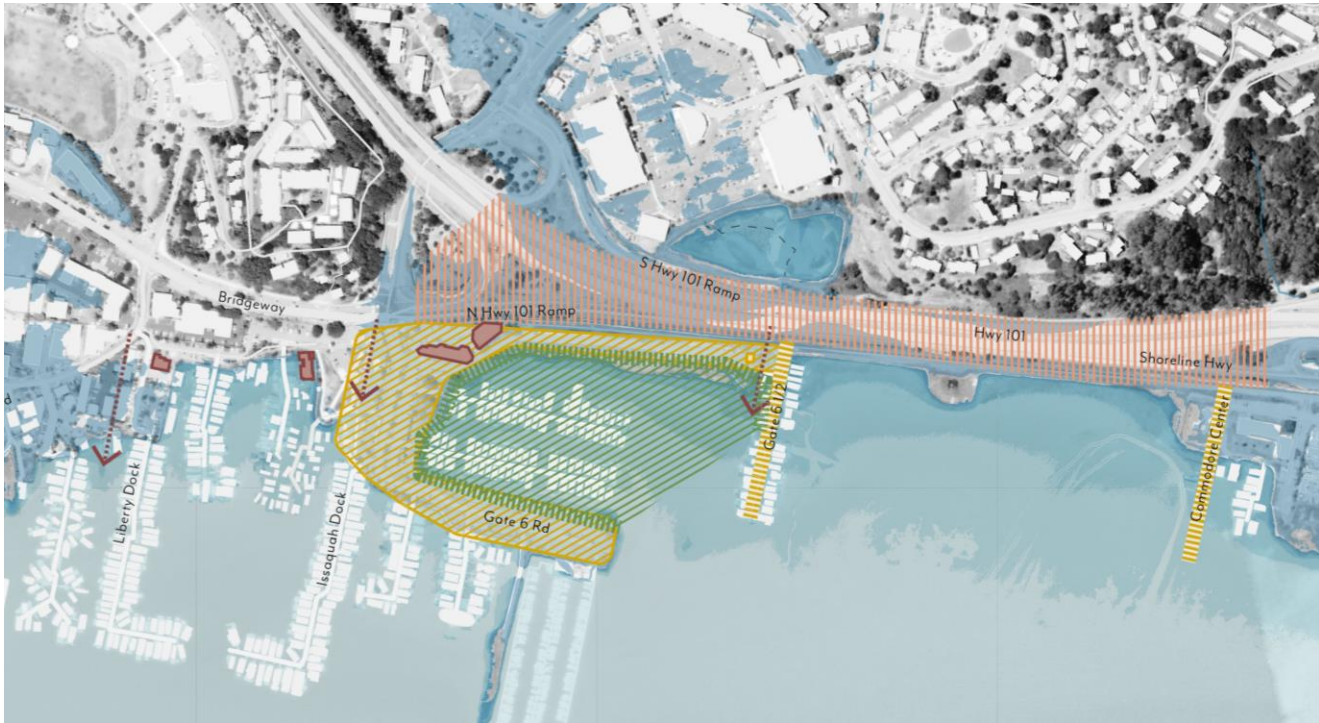


Long-term Alternative 2



Floating Homes

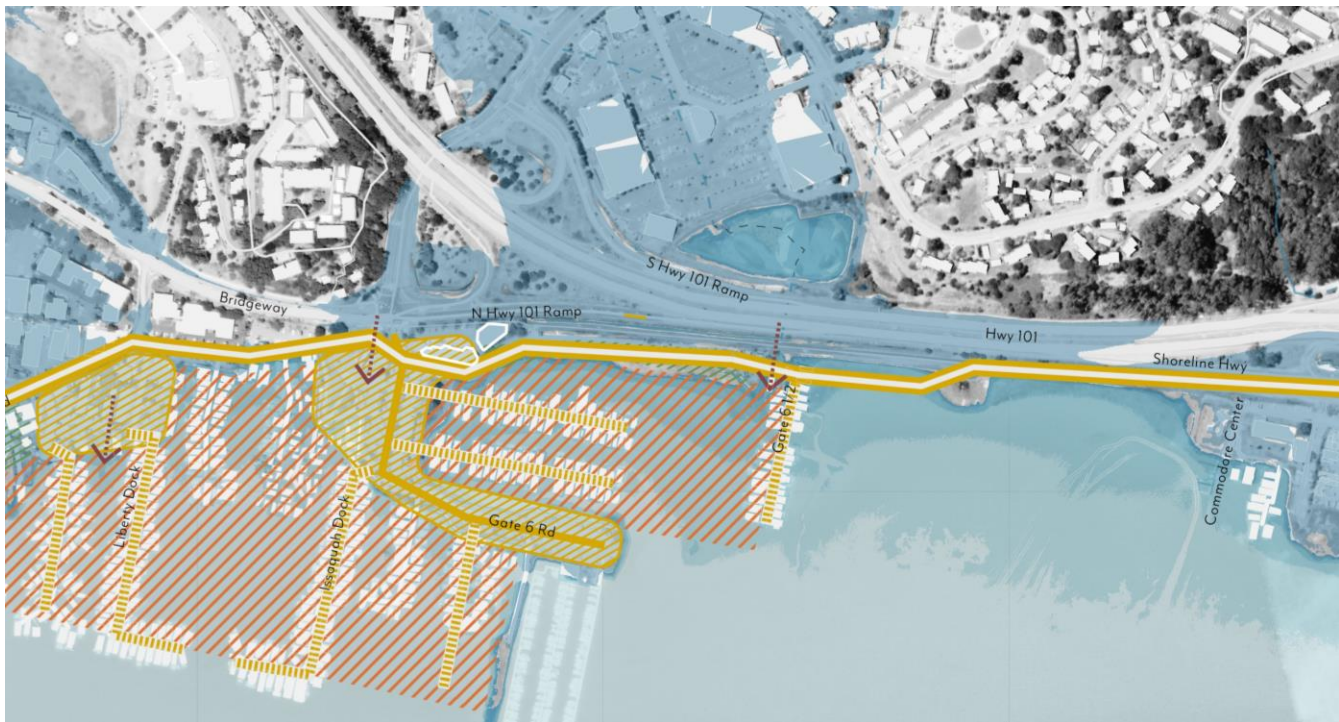
Near-term



Long-term Alternative 1



Long-term Alternative 2



HARDEN THE EDGE

- Bulkheads / Seawall
- Berms / coarse beaches
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REDUCE IMPACT

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RAISE INFRASTRUCTURE

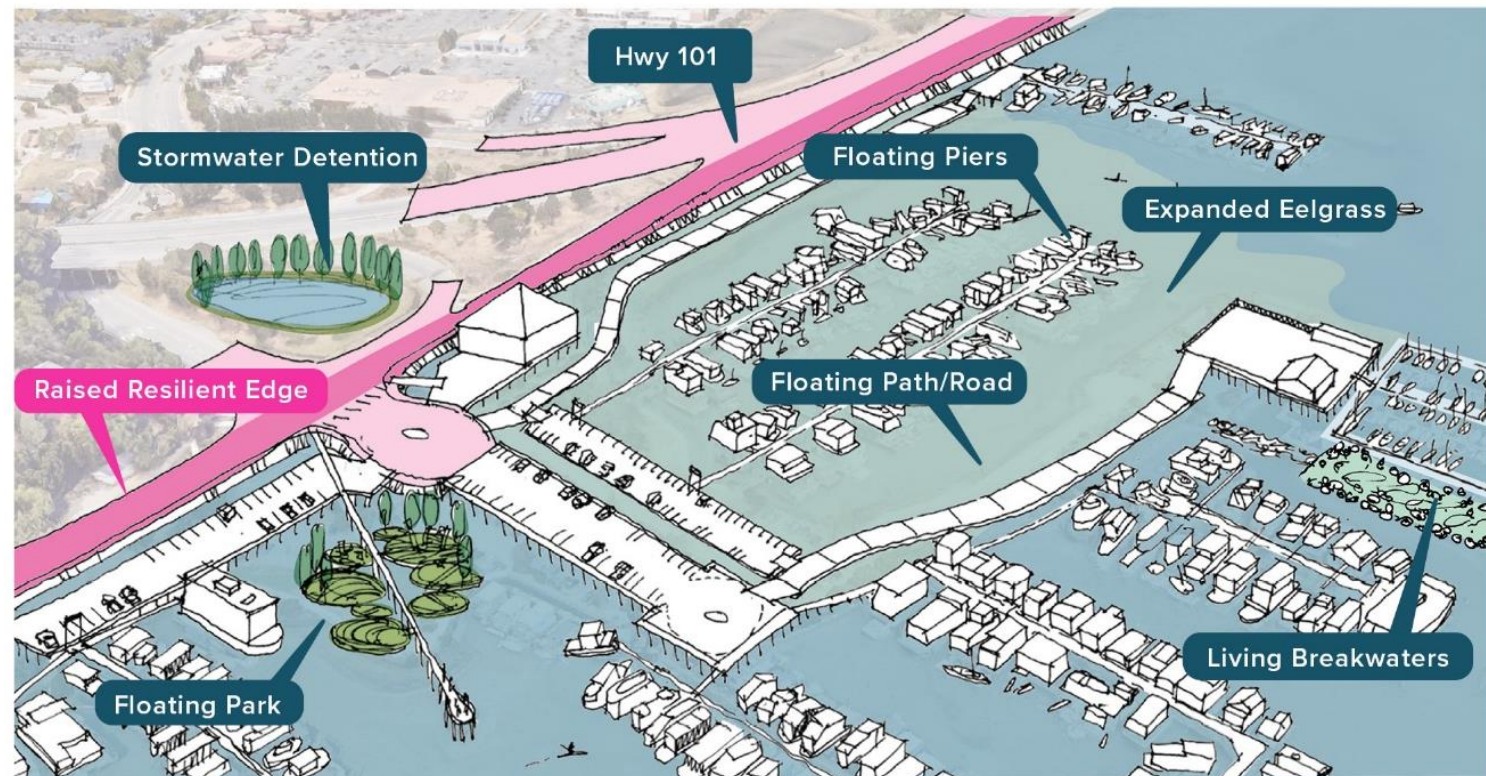
- Elevated Roadway
- Raised Land
- Raised / Floodproved buildings
- Adaptive Piers

LIVE WITH WATER

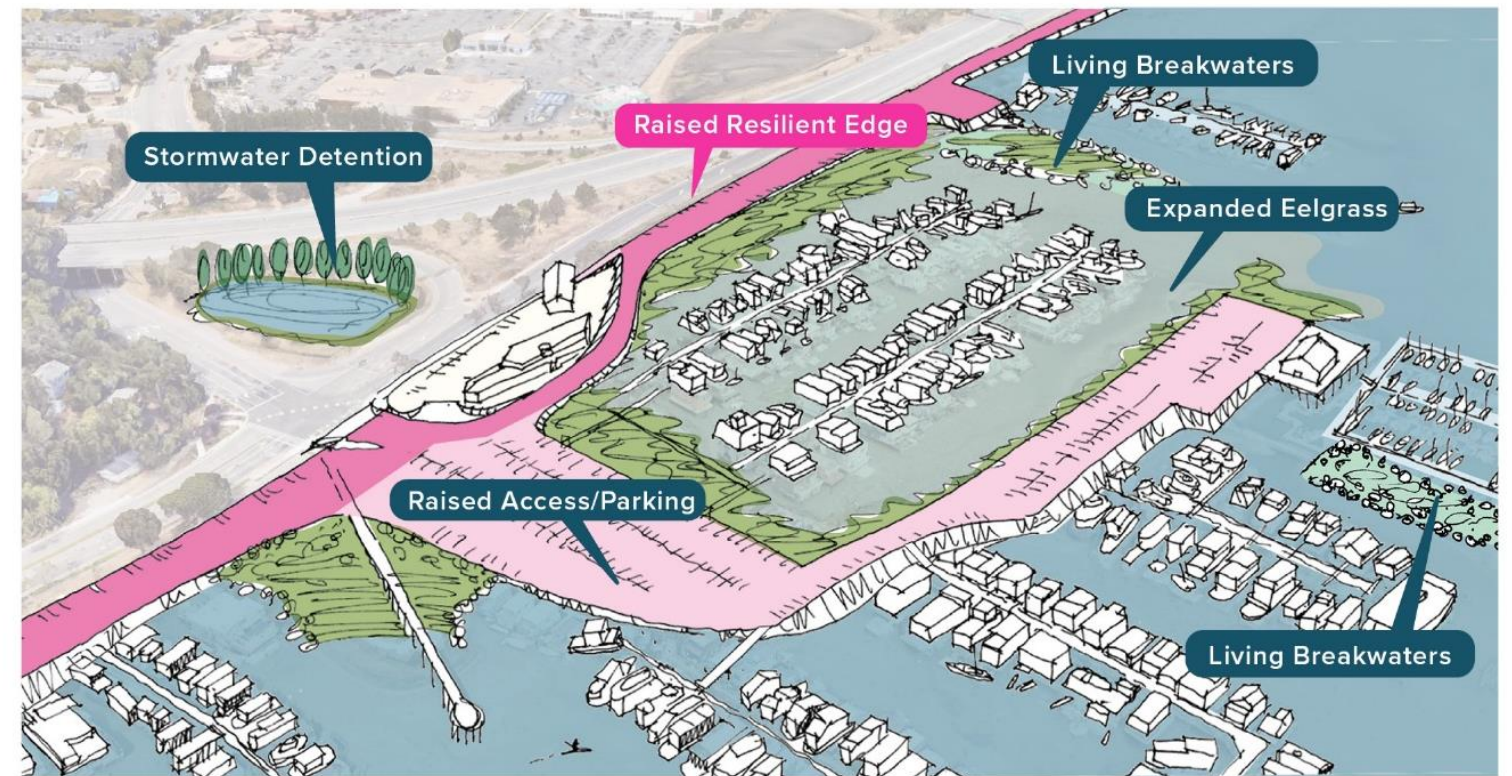
- Floating structures
- Planning Study / Reprogramming
- Scale up floating approach

Floating Homes

Long-term Alternative 1



Long-term Alternative 2



Next Steps for Adaptation Planning & Implementation in Sausalito

How the plan recommendations will be used to inform planning:

- Inform City's near-term planning studies, such as:
 - Gate 5 Area Drainage Management Study*
 - Parking Lot 1 Reconstruction*
 - Facility Vulnerability Assessment*
- Galilee Harbor Wave Attenuator Feasibility Study
- Development of Subregional Shoreline Adaptation Plan
- Future General Plan Updates

Feedback & Next Steps

*We want to **HEAR FROM YOU!***

Give your Feedback on the Sausalito Shoreline Adaptation Plan

City of Sausalito is accepting public comments through October 7th. Please use the link to the Public Feedback Form to provide your comments.



PROJECT OVERVIEW:

The city is developing a **COMMUNITY-INFORMED SHORELINE ADAPTATION PLAN** to meet present and future challenges related to Sea Level Rise.

HARD COPIES of the plan for review are available at City Hall Administration Desk and Library. Hard copies of the Public Feedback Forms are also available upon request.

SAUSALITO
SHORELINE ADAPTATION



with ARUP,
ONE ARCHITECTURE, ESA,
SCHAFF & WHEELER

Scan to learn more and register:
www.sausalito.gov/shorelineplan



- Draft Shoreline Adaptation Plan open for public comment through Oct. 7th
- City Council Presentation - November 18 (TBD)

Q&A

SAUSALITO SHORELINE ADAPTATION Community Meeting 3



SEPTEMBER 2025

WRT with ONE Architecture & Urbanism / Arup / ESA



