

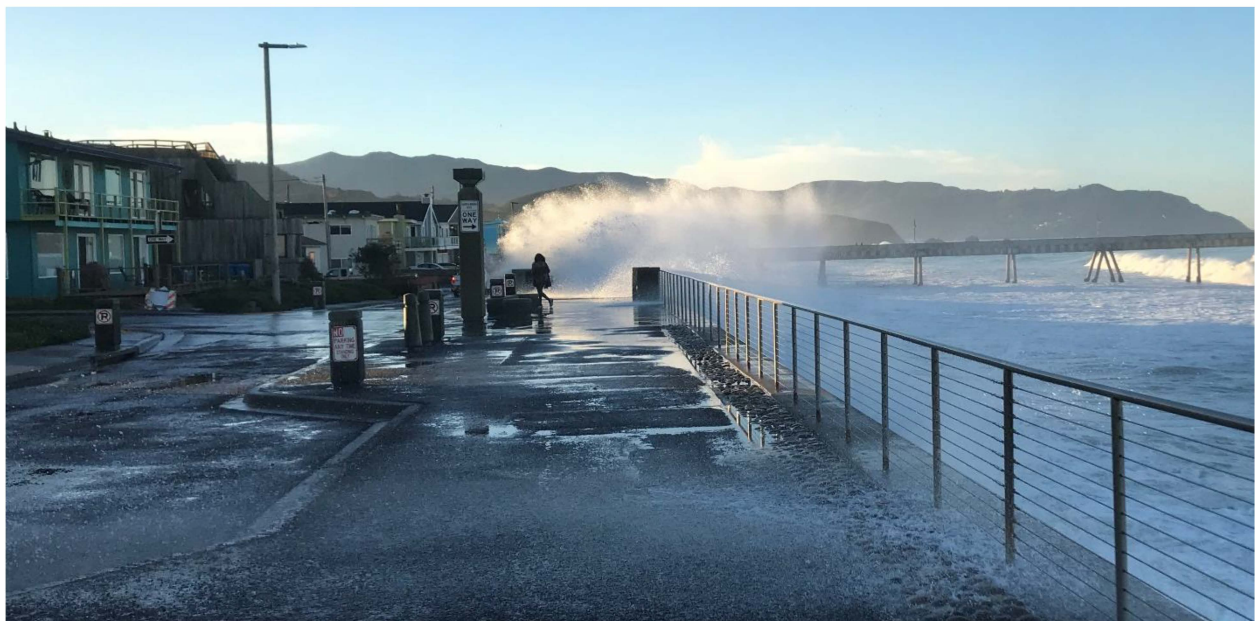
Final Draft

# LOCAL COASTAL PLAN POLICIES RELATING TO SEA-LEVEL RISE ADAPTATION

Pacifica, CA

Prepared for  
City of Pacifica

December 2018



Near-king tides and high surf at Beach Boulevard on November 30, 2017 (J. Jackson)



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**Final Draft**

# **LOCAL COASTAL PLAN POLICIES RELATING TO SEA-LEVEL RISE ADAPTATION**

Pacifica, CA

Prepared for  
City of Pacifica

December 2018

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- Hazard Policy 18** (Transfer of Development Credits: ongoing).
- Hazard Policy 19** (Shoreline Structures: 0-1 foot SLR or 220-foot offset from bluff toe to infrastructure or development).

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- Hazard Policy 20** (Beach Nourishment: 0-1 foot SLR or 220-foot offset from bluff toe to infrastructure or development)
- Hazard Policy 21** (Shoreline Structures: 0-1 feet SLR or 70-foot offset from bluff toe to development or infrastructure).
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**Appendix A:** Final Sea-Level Rise Adaptation Plan  
**Appendix B:** Response to Comments on Draft Sea-Level Rise Policies

## List of Definitions

**Best Available Science.** Best available science shall mean the most recent peer-reviewed science reasonably validated by qualified experts in the scientific community, and as may be recommended by the State of California or other authoritative coastal management entity (e.g. NOAA).

**Hazard Zone.** “Hazard zones” shall mean the areas shown on the City’s maps prepared for the Pacifica SLR Vulnerability Assessment (1/12/2018), incorporated herein, and as may be amended from time-to-time based on updated best available science about projected sea-level rise, erosion, flooding, and other coastal hazards.

**New Development.** “New Development” shall mean development, as defined in Section 30106 of the California Coastal Act, where no existing development occurs. New Development does not include the remodeling or improvement of an existing development.

**Shoreline.** “Shoreline” shall mean the intersection of the ocean or sea with land.

## Summary

This memo presents recommended Local Coastal Program (LCP) policies to address projected sea level rise and its potential impact on coastal development and resources within the City of Pacifica. The following policy update is consistent with the recommended adaptation strategies from the Final Draft Adaptation Plan, City Council goals, and community input. These policies recognize that sea level rise projections are continually evolving and the effectiveness of hybrid adaptation strategies is not well known. *Therefore, consistent with the City Council’s goals, particularly to preserve existing neighborhoods and promote environmental justice and local economic vitality, the policies focus on protection and armoring of the shoreline and reassessment of the adaptation plan in the future.* With Council’s directions, the adaptation policies will be incorporated into a Draft LCP. The entire Draft LCP will be returned to the Planning Commission and City Council for consideration and approval to send to the Coastal Commission for certification. Only when the LCP is certified by the Coastal Commission and then adopted by the City Council will these policies become effective.

The City has grappled with the impacts of shoreline erosion and coastal flooding for decades, especially in north Pacifica, generally north of Mori Point, but also Rockaway, Linda Mar and Pedro Point. Most of the city’s shoreline development pre-dates Proposition 20 and the Coastal

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Act, making it eligible for shoreline protection under state law. Since the early 1970s many of the properties north of the Pacifica pier have been armored with rock revetments and seawalls. At the same time, the high, sandy bluffs of Pacifica present difficult engineering challenges. Since the late 1990s a dozen homes and three apartment buildings along Esplanade Ave could not be saved and have been removed. Several reinforced concrete seawalls and rock revetments have failed and been repaired to varying degrees. Coastal storms are also already extremely hazardous along Beach Boulevard; and homes in the Sharp Park and Linda Mar neighborhoods are subject to flooding from the sea, stream and storm runoff, and rising groundwater. Coastal access is limited north of the pier where shore erosion has met the armoring, causing ephemerally narrow to non-existent beaches. While Rockaway Beach is also mostly armored, the main beach at Linda Mar continues to be an important recreational resource. The recent damages and loss of coastal resources indicates an existing problem that will become progressively worse regardless of the amount of sea-level rise.

## LCP Background

Pacifica's LCP guides development and protects coastal resources within the Coastal Zone. LCPs must be consistent with the California Coastal Act of 1976, as amended. Pacifica's LCP is made up of two parts: the Land Use Plan (LUP; a compilation of goals, policies, and recommended programs) and the Implementation Plan (regulations and zoning district maps that implement the provisions of the Land Use Plan) (City of Pacifica, 1980; 1994 as amended) The Implementation Plan has been codified into Pacifica's municipal code as individual sections (Chapter 4, Articles 43 and 44) in Title 9 Planning and Zoning (City of Pacifica, 1994 as amended).

The California Coastal Act aims to protect coastal resources, including to ensure that public access to and along the shoreline is provided and maintained; that water quality, marine life, and environmentally sensitive habitat areas are protected; and that coastal visual resources and special communities are preserved. The Coastal Act also calls for certain land uses within the Coastal Zone to have priority over other uses: recreation and visitor-serving uses, fishing, boating, and other coastal-dependent uses, and public works needed to support priority uses.

Pacifica's current Land Use Plan was certified in 1980. The Land Use Plan includes the following main sections:

- The California Coastal Act policies in effect at the time the Land Use Plan was adopted
- Land use designation maps organized by neighborhood, and land use designation definitions
- Neighborhood map of six coastal neighborhoods
- A detailed description of existing conditions, development criteria, and coastal access policies for each coastal neighborhood
- A detailed description of each existing or proposed beach access point
- Policies addressing a range of topics, including habitat protection, geotechnical hazards, coastal views and viewsheds, housing, etc.



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Pacifica’s current Implementation Plan was adopted in 1994 (and has been amended as recently as 2017) and establishes regulations that address permit requirements and procedures for development in the coastal zone. It also creates a Coastal Zone Combining District that serves as an overlay to the underlying zoning districts, to protect sensitive coastal resources, ensure public shoreline access, protect environmentally sensitive habitats, address geotechnical suitability, grading and drainage, and shoreline protection, and maintain coastal view corridors and neighborhood commercial districts.

In 2009, the City of Pacifica initiated a comprehensive update to its General Plan and LCP. A draft LCP Land Use Plan was prepared that includes background information and policies for the following themes: land use and development, public access and recreation, environmental and scenic resources, and natural hazards (City of Pacifica, 2014). However, no enacting decision was made on the draft LCP.

Subsequently, California Senate Bill 379 was passed and required all cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans upon the next revision beginning January 1, 2017. The Governor’s Executive Order No B-30-15 also directed state agencies to factor climate change into planning decisions. This order has been promulgated by the Coastal Commission to be included in Local Coastal Plan updates. The City Council will determine the most appropriate policies for Pacifica, then the LCP Update will be forwarded to the Coastal Commission for certification.

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# PROPOSED UPDATED LAND USE PLAN COASTAL HAZARDS POLICIES

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## General Policies

### **Hazard Policy 1 (Key Coastal Act Policies).**

*The City of Pacifica adopts the following key policies derived from the Coastal Act to address coastal hazards:*

***PRC 30235.** Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply.*

***PRC 30253.** New development shall: (1) minimize risks to life and property in areas of high geologic, flood, and fire hazard; and (2) assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs; and,*

*The updated LCP and sub-area adaptation policies adopted herein are intended to achieve and are consistent with these key policies, subject to periodic updating as resource and development monitoring and program implementation may dictate.*

### **Hazard Policy 2 (Sea-level Rise and Best Available Science).**

*Planning and development reviews in the City of Pacifica shall use, as applicable, the best available science about projected sea-level rise and other climate-change related environmental changes when addressing coastal erosion, bluff failure, flooding and other coastal hazards.*

### **Hazard Policy 3 (Hazard Identification and Mapping).**

*The City's coastal hazard zones shall be mapped based on the best available science about projected sea-level rise, erosion, flooding, and other coastal hazards. Mapping shall be updated as necessary to guide implementation of the LCP's hazard policies. Notwithstanding the coastal hazard zone maps, site-specific hazard mapping and assessment may be required as part of the individual development review process.*

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# Coastal Hazards and Sub-area Adaptation Policies

## **Hazard Policy 4 (Sea-Level Rise Adaptation Plan).**

*The City shall implement its Sea-level Rise Adaptation Plan (Appendix A) as expressed in the LCP's general and sub-area coastal hazard adaptation policies. Adaptation alternatives evaluated in the Adaptation Plan that are not specifically expressed in these sea level rise hazard policies shall not be implemented without an amendment to the LCP, public notice, and opportunity for public input. The City shall monitor implementation and, consistent with Hazard Policy 6, update the Sea-level Rise Adaptation Plan to strengthen public safety, preserve existing neighborhoods, assure local economic vitality, respond to climate change, promote environmental justice, implement the Coastal Act and protect the public trust.*

*Development in coastal hazard zones may be approved consistent with the sub-area policies (16– 43) if the following findings can be made:*

- a. The proposed development is sited and designed to minimize coastal hazards and impacts to coastal resources to the extent feasible, consistent with the Adaptation Plan;*
- b. All project impacts are mitigated to the maximum extent feasible through the City's Shoreline Mitigation Program (Hazard Policy 7) or consistent with Hazard Policy 60.*
- c. The project does not pose unacceptable risks to life or property or otherwise create a nuisance; and*
- d. The project will not encroach on public trust lands.*

## **Hazard Policy 5 (Monitoring Shoreline Change).**

*The City shall implement a monitoring program for sea-level rise, beach width, bluff offset, flooding and storm damage, and other potential measures or triggers for guiding implementation of the LCP's sea-level rise adaptation policies. The monitoring program shall include yearly (minimum) shoreline and bluff edge surveys and also establish thresholds for reassessing the City's Adaptation Plan.*

## **Hazard Policy 6 (Sea-level Rise Adaptation Plan Update)**

*The City shall reassess its Sea-level Rise Adaptation Plan as expressed in the LCP general and sub-area coastal hazard adaptation policies every five years or sooner as required by the shoreline monitoring program (Hazard Policy 5). The reassessment shall consider the following:*

- Efficacy of Adaptation Plan and implemented measures*
- Updated sea level rise projections and risks.*
- Potential need to revise adaptation measures or implement new measures, including review of emerging engineering, science, and technologies.*
- Funding needs and potential funding sources.*

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**Hazard Policy 7 (Shoreline Mitigation Program).**

*Within three years of certification of the LCP Land Use Plan update, the City shall adopt a Shoreline Mitigation Program to address the coastal resource impacts of existing and future shoreline protection projects in the City. Special emphasis shall be placed on maintaining beaches and public access to and along the shoreline. The program will update the public access inventory of the LCP as necessary, include a coastal resource inventory and identify priority improvements for maintaining and enhancing coastal shoreline resources, particularly public access and recreation. The program will include enforceable measures to achieve proportional mitigation of resource impacts identified in shoreline protection projects. The program will identify potential funding sources for implementation of identified improvements. The program will include provisions for monitoring implementation and program updates as necessary.*

**Hazard Policy 8 (Adaptation Funding).**

*The City will research and evaluate feasible grant funding sources or new funding mechanisms, such as the formation of Geologic Hazard Abatement Districts (GHADs), or securing FEMA and other federal or state adaptation and hazard mitigation funds, to finance adaptation strategies for public infrastructure.*

**Hazard Policy 9 (Transfer of Development Rights).**

*Use the City's transfer of development rights (TDR) ordinance to relocate development rights from coastal hazard zones (sending sites) to receiving sites outside of hazard zones. Identify areas where densities and heights may be increased using TDR credits, including to facilitate affordable housing.*

**Hazard Policy 10 (Critical Transportation Infrastructure).**

*The City will pursue opportunities to preserve and protect critical local transportation infrastructure to mitigate against isolation, economic loss and ensure public safety.*

**Hazard Policy 11 (Hazard Prone Infrastructure).**

*The City will preserve, protect, or relocate hazard prone infrastructure to maintain critical services and maintain the environment.*

**Hazard Policy 12 (Business Outreach).**

*The City's Economic Development Department shall provide assistance (non-financial) to businesses in evaluating options to promote business resiliency.*

**Hazard Policy 13 (High Water Program).**

*The City will research and evaluate feasible new funding mechanisms to implement a program to record high water marks where feasible following high-water events.*

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**Hazard Policy 14 (Flood Ordinance Consistency).**

*Review and amend as necessary the City's flood damage prevention ordinance to assure consistency with the updated policies and ordinances of the LCP.*

**Hazard Policy 15 (LHMP Alignment).**

*Coordinate City departments and programs to align the Local Hazard Mitigation Plan (LHMP) with the LCP to ensure proactive, coordinated and streamlined adaptation efforts and response to future coastal hazards. Leverage FEMA funding opportunities for hazard mitigation and other related funding mechanisms to implement the Sea-Level Rise Adaptation Plan as expressed in the LCP's general and sub-area coastal hazard adaptation policies.*

## Sub-Area Policies and Programs

The following policies and programs implement the near-term sea-level rise adaptation priorities for each sub-area in Pacifica, and identify mid- and longer-term measures, subject to feasibility and monitoring concerns. These priorities were developed based on existing conditions and existing/near term vulnerabilities for each sub-area, as well as the City's adopted goals for the project that include protecting existing development as well as preserving and enhancing coastal access along Pacifica.

As required in Hazard Policy 5, the City shall monitor erosion, flooding, and sea-level rise amount into the future to identify triggers for future adaptation measures beyond initial actions required due to existing conditions. Where applicable, specific triggers are clarified in the policies.

Generally, for all lands within the 2050 Pacific Institute erosion hazard zone, utilities, roadways and other public infrastructure should be floodproofed unless other adaptation alternatives are implemented and performing well. The City should incentivize risk reduction (floodproofing etc.) that property owners can invest in, with grant funding or code updates. In addition, the City should consider floodproofing infrastructure that may be currently exposed to coastal erosion and flooding to reduce the consequences of under-performance of protection measures (construction and maintenance of shoreline structures).

Managed retreat is not included in any of the near-term policies. Managed retreat would be reconsidered in the mid- to long-term if feasibility and monitoring warranted, as detailed in Hazard Policy 5 and Hazard Policy 6.

## Fairmont West

The roadway and utilities in Fairmont West are at risk after one to two feet of sea-level rise. Some beach width may exist for access and other coastal resources, but given the high bluffs here, there is not adequate vertical access to the beach. Due to the undeveloped conditions of the

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bluffs in this sub-area, armoring is not required immediately. Beach nourishment, while a lower priority for this sub-area compared to other more developed sub-areas in the City, could take place at a later date with a larger volume of sand. Coarse sand and/or gravel sources are also preferable and would be more cost effective than finer sands due to sediment transport regimes in this sub-area. By constructing sand retention structures along north Pacifica, the efficacy of beach nourishments can be increased.

**Hazard Policy 16 (Shoreline Structures: 0-1 foot SLR or 260-foot offset from bluff toe to infrastructure).**

*Shoreline structures shall be avoided except that the existing shoreline structures may be maintained and expanded to protect existing development in danger from erosion if found to be the least environmentally-damaging alternative, impacts are fully mitigated consistent with Hazard Policy 4, and any prior permit conditions or legal obligations pursuant to the California Coastal Act are addressed. Allow shoreline structures for the public road and sewer line if necessary. Any new blufftop development shall comply with all LCP setback policies.*

**Hazard Policy 17 (Beach Nourishment: 2 feet SLR or 260-foot offset from bluff toe to infrastructure)**

*Evaluate the feasibility of using beach nourishment, in conjunction with sand retention structures (see artificial headlands concept in the Adaptation Plan), to reduce shoreline structure maintenance requirements and maintain beaches of at least 100 feet in width on average. If feasible and approved through a coastal development permit, secure funding and implement as soon as possible. Repeat as necessary. Mitigate all adverse impacts and monitor effectiveness over time.*

**Hazard Policy 18 (Transfer of Development Credits: ongoing).**

*Provide an option to private landowners to voluntarily transfer development potential as supported by Hazard Policy 9.*

## **West Edgemar and Pacific Manor**

Built assets and property are at risk from bluff erosion where un-armored now. Much of the armored areas may be overwhelmed by waves with as little as one foot of sea-level rise, due to scour and structure sloughing, increased wave loads and overtopping of the structure. Beaches tend to exist in pockets, with armoring impeding lateral access from the degraded vertical access ways. Beach access is limited in West Edgemar and Pacific Manor.

**Hazard Policy 19 (Shoreline Structures: 0-1 foot SLR or 220-foot offset from bluff toe to infrastructure or development).**

*Maintain and expand shoreline structures to protect existing public infrastructure, including between Bill Drake Way and Manor Drive. Allow private property owners to maintain existing or construct new shoreline structures, consistent with prior permit conditions or legal obligations pursuant to the California Coastal Act. Limit authorization of all new shoreline structures to twenty years or 2040, whichever is sooner, and require mitigation of beach,*

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*public access and recreation and other resource impacts, consistent with Hazard Policy 7 or Hazard Policy 60 as necessary. Consider reauthorization subject to beach monitoring and implementation of beach nourishment and other strategies to maintain beaches.*

**Hazard Policy 20 (Beach Nourishment: 0-1 foot SLR or 220-foot offset from bluff toe to infrastructure or development)**

*Evaluate the feasibility of using beach nourishment, in conjunction with sand retention structures (artificial headlands concept), to reduce shoreline structure maintenance requirements and maintain beaches of at least 100 feet in width on average. If feasible and approved through a coastal development permit, secure funding and implement as soon as possible. Mitigate all adverse impacts and monitor effectiveness over time.*

## **Northwest Sharp Park**

The backshore of Northwest Sharp Park is armored but may be overwhelmed by waves with as little as one foot of sea-level rise, due to scour and shoreline structure sloughing, increased wave loads and overtopping of the shoreline structure. Beaches tend to exist ephemerally in pockets, with armoring impeding lateral access from the degraded vertical access ways. Existing property and infrastructure are at risk from coastal erosion so actions should be taken soon. A public access improvement plan should be provided, consistent with the City's Shoreline Mitigation Program (Hazard Policy 7). Due to the potential lead time of establishing a sand source, beach nourishment planning should begin immediately. Coarse sand and/or gravel sources are also preferable and would be more cost effective than finer sands due to sediment transport regimes in this sub-area. By constructing sand retention structures along north Pacifica, the efficacy of beach nourishments can be increased. The effectiveness of beach nourishment will need to be monitored and, if/when erosion continues to threaten existing development or infrastructure, new adaptation measures will need to be assessed.

**Hazard Policy 21 (Shoreline Structures: 0-1 feet SLR or 70-foot offset from bluff toe to development or infrastructure).**

*Private land owners may maintain and expand shoreline structures to protect existing development in danger from erosion, consistent with Hazard Policy 4 and any prior permit conditions or legal obligations pursuant to the California Coastal Act.*

**Hazard Policy 22 (Beach Nourishment: 0-2 feet SLR or 70-foot offset from bluff toe to development or infrastructure)**

*Evaluate the feasibility of using beach nourishment, in conjunction with sand retention structures (artificial headlands concept), to reduce shoreline structure maintenance requirements and maintain beaches of at least 100 feet in width on average. If feasible and approved through a coastal development permit, secure funding and implement as soon as possible. Repeat as necessary. Mitigate all adverse impacts and monitor effectiveness over time.*

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**Hazard Policy 23 (Flood Protection: 1 feet SLR).**

*Enable property owners to modify development structures to manage impacts of wave run-up and overtopping of bluff face.*

## **Sharp Park, West Fairway Park and Mori Point**

Most of this area is armored. The northern section between the pier and Paloma is subject to frequent wave overtopping and damage to homes has occurred. Beaches are narrow and ephemeral, with armoring impeding lateral access from the degraded vertical access ways. South of the pier, the beach tends to be more persistent and wider, and there is usually an accessible beach in the vicinity of the end of Clarendon, with reliable vertical and lateral beach access. South of Clarendon to Mori Point, the beach persists although wave run-up can reach the levee and there is some armoring. This sub-area is exposed to flooding due to rainfall runoff which cannot flow directly to the ocean. The Clarendon area is exposed to flooding now, and certain parts of the West Fairway development may be exposed to flooding if sea-level and ground water levels rise over 3 feet. Due to the potential lead time of establishing a sand source, beach nourishment planning should begin immediately. Coarse sand and/or gravel sources are also preferable and would be more cost effective than finer sands due to sediment transport regimes in this sub-area. By constructing sand retention structures along north Pacifica, the efficacy of beach nourishments can be increased.

Flood protection is already needed for homes and businesses along Clarendon Avenue during rain events and will need to be improved around the SPGC to manage flooding of Laguna Salada regardless of the condition of the SPGC berm. San Francisco is expected to maintain the SPGC berm which protects the Sharp Park neighborhood from the coastal flooding source, but existing pumping facilities in SPGC are not designed to mitigate flooding in and around the course during significant rainfall events (i.e., a portable pump station is currently used to manage rainfall-runoff flooding along Clarendon Avenue). The priority recommendations for flood protection surrounding SPGC are therefore based on the rainfall (fluvial) flood source, but would also be effective during a major coastal storm if the SPGC berm is overtopped or breached. Flooding due to wave run-up landward of Beach Boulevard seawalls is already an issue. Monitoring of the existing seawalls against the higher sea-levels will be necessary (Hazard Policy 5). Results of the monitoring will be considered during the Sea-Level Rise Adaptation Plan Update to determine if additional flood protection adaptation measures are necessary.

**Hazard Policy 24 (Sharp Park Golf Course).**

*Encourage the City of San Francisco to maintain the Sharp Park Golf Course berm and armoring, consistent with coastal development permit 2-17-0702; support adaptation planning for the course, and protect public access.*

**Hazard Policy 25 (Shoreline Structures: 0 feet SLR).**

*Maintain and expand shoreline structures to protect public infrastructure. Extend the Beach Boulevard seawall to the Sharp Park Golf Course berm.*



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**Hazard Policy 26 (Structure Elevation: 0-2 feet SLR).**

*Upgrade existing shoreline structures to limit wave overtopping unless beach nourishment strategies are effective in reducing wave run-up on the backshore. Elevate development structures as necessary to mitigate flood damage, consistent with existing height limitations. Elevations of wave run-up and associated development thresholds shall be determined via a site specific study.*

**Hazard Policy 27 (Beach Nourishment: 0-1 feet SLR).**

*Pursue beach nourishment and sand retention structures to reduce shoreline protection maintenance requirements and provide beach resources. Encourage the City of San Francisco to nourish the beach fronting the Sharp Park Golf Course berm to maintain beach widths.*

**Hazard Policy 28 (Flood Protection: 0 foot SLR).**

*Evaluate and construct appropriate flood protection measures, which may include a Clarendon Avenue stormwater basin, pump station, and/or interior SPGC levee, to protect homes and businesses from existing fluvial storm flood hazard zone.*

**Hazard Policy 29 (Flood Protection: 3 feet SLR).**

*Evaluate the future need to construct a West Fairway Park stormwater basin, pump station, and interior SPGC levee to protect western homes from future coastal/fluvial flood hazard zone.*

## **Rockaway Beach, Quarry and Headlands**

The armoring near the end of Rockaway Blvd is overtopped by waves under present conditions, with occasional damages. Hence, this area has very little capacity and will have a noticeably degraded condition with as little as one foot of sea-level rise. There is no beach in this area, with waves crashing directly into the armor structures. The shore becomes more accessible with distance northward but will also be more limited with as little as 1 foot of sea-level rise. The south end of rockaway is unarmored, has a persistent beach and the backshore is estimated to be impacted with about 2 feet of sea-level rise.

Due to the cove configuration of Rockaway Beach, it is a great candidate for beach nourishment. Policies recommend that Rockaway be used as a pilot project for beach nourishment in Pacifica. In the pilot project, the City will go through the overall process for beach nourishment and identify available sources in the region and corresponding sediment characteristics and costs, evaluate the performance of the nourishment and enable the City to reevaluate nourishment along northern Pacifica and perform a more thorough assessment for a larger scale nourishment project.

**Hazard Policy 30 (Shoreline Structures: 0 feet SLR).**

*Existing public shoreline structures along the north cove shall be upgraded for public safety and hazard reduction.*

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**Hazard Policy 31 (Shoreline Protection: 2-3 feet SLR, or when backshore toe is 100 feet from Highway 1).**

*Coordinate with Caltrans to evaluate the need for a revetment or other appropriate shoreline protection for the Highway 1 embankment.*

**Hazard Policy 32 (Public Access: 0 feet SLR).**

*Plan and provide for enhanced public access, consistent with the City's Shoreline Mitigation Program (Hazard Policy 7).*

**Hazard Policy 33 (Beach Nourishment/Public Access: 0 feet SLR).**

*Plan and implement beach nourishment for Rockaway Beach. Monitor and measure performance and any reduction of shoreline structure maintenance needs. Establish mechanisms through the City's Shoreline Mitigation Program (Hazard Policy 7) to receive and use beach impact mitigation monies from other sub-areas of the City.*

**Hazard Policy 34 (Development Setbacks: ongoing).**

*Implement new development shoreline setbacks consistent with Hazard Policy 45.*

**Hazard Policy 35 (Transfer of Development: ongoing).**

*Evaluate and implement as feasible a transfer of development credit program for private property at the Headlands as supported by Hazard Policy 9.*

## **Pacifica State Beach & West Linda Mar**

Adaptation policies for Pacifica State Beach and West Linda Mar are presented together because actions taken at Pacifica State Beach influence coastal hazard exposure to West Linda Mar. Much of the Pacifica State Beach sub-area has a persistent, relatively wide beach with bulkheads in the south transitioning to dune fields in the north. Hence, this shore and roadway can likely withstand at least 2 feet of sea-level rise. However, the West Linda Mar sub-area east of Highway 1 has a low elevation and is subject to flooding from high creek flows and rising groundwater associated with sea-level rise. Due to the existing beach widths at Pacifica State Beach and existing coastal armoring, armoring actions are not a near term priority. However, conditions of existing armoring at the Anza pump station should be monitored to ensure protection in the near term. Nourishment of Pacifica State Beach should be initiated using the shoreline-backshore offset for the main parking lot. Beach nourishment projects should include dune restoration to maintain ecology, protect the sewer force main that is buried in existing dune field north of the main parking lot/Anza pump station as well as provide flooding protection of Highway 1 and West Linda Mar. Pump stations at Pacifica State Beach are vulnerable to wave run-up and require floodproofing in place. West Linda Mar neighborhood is also vulnerable to flooding from San Pedro Creek based on existing FEMA hazard maps and will become more vulnerable as SLR increases the flood levels in the creek via its ocean boundary condition. The West Linda Mar neighborhood was constructed in a former lagoon and experiences groundwater issues in the lowest areas, which is evident by existing wetlands around the skate park and homes furthest west. Groundwater in low

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areas near the ocean are directly influenced by the sea-level, and thus groundwater issues will increase with SLR.

**Hazard Policy 36 (Shoreline Protection: 2 ft SLR or 100 foot offset from shoreline to infrastructure).**

*Evaluate beach conditions and consider future shoreline protection to protect parking and the Linda Mar pump station as necessary.*

**Hazard Policy 37 (Highway One Protection).**

*Coordinate with Caltrans to evaluate options for protecting Highway 1, if necessary.*

**Hazard Policy 38 (Beach Nourishment: 2 ft SLR or 100 foot offset from shoreline to infrastructure).**

*Evaluate beach conditions and implement beach nourishment as necessary to maintain 100-foot buffer seaward of the sewer force main and/or Highway 1. Repeat nourishments as needed.*

**Hazard Policy 39 (Flood Protection: 0 feet SLR).**

*Analyze need for floodwall along commercial property to manage flooding from San Pedro Creek under existing conditions with SLR allowance. Future flood studies that include climate-driven changes in precipitation should inform any floodwall design. Floodproof Anza pump station (stormwater) to mitigate existing coastal storm flooding vulnerabilities to wave run-up.*

**Hazard Policy 40 (Flood Protection: 2 feet SLR or 100-foot offset from shoreline to infrastructure).**

*Floodproof the Linda Mar pump stations (sewer and stormwater) to mitigate future coastal storm flooding vulnerabilities to wave run-up as necessary.*

**Hazard Policy 41 (Groundwater Management: 0-2 feet SLR).**

*Begin groundwater monitoring to determine needs for dewatering wells in the lowest portions of the West Linda Mar neighborhood.*

## **Pedro Point and Shelter Cove**

Potential bluff erosion may reach the most seaward bluff top homes at Pedro Point by about 2050 with 1 to 2 feet of sea-level rise. Private property is mostly armored along the water (boat docks/homes) but require upgrades by property owners, while bluff top properties have limited ability to prevent bluff toe erosion due to parcel limits. Private property is vulnerable to bluff erosion, but implementing bluff toe armoring would be complicated due to land ownership

**Hazard Policy 42 (Shoreline Structure Upgrades).**

*Allow replacement and upgrades of existing shoreline structures to reduce hazards and resource impacts. Mitigate impacts consistent with the City's*

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*Shoreline Mitigation Program (Hazard Policy 7) or Hazard Policy 60 as necessary.*

**Hazard Policy 43 (Flood Protection: 0-1 feet SLR).**

*Allow private property owners to raise homes and other development structures above wave run-up hazard, consistent with height limitations.*

## Standard Policies for New Shoreline Development

**Hazard Policy 44 (Technical Reports).**

*Development proposed on the shoreline shall include coastal engineering, geomorphology and other relevant technical reports unless on-site hazards already identified in a recent hazard map or assessment are adequate for evaluating and ensuring compliance with the LCP, including through use of permit conditions to address any uncertainty. Reports shall be prepared by a licensed civil engineer or other suitably qualified professional; use the best available science; consider the impacts from the med-high projection (CalNRA & OPC 2018) of sea-level rise for the anticipated duration of the proposed development; demonstrate that the development will avoid or minimize impacts from coastal hazards; and evaluate the foreseeable effects that the development will have on coastal resources over time. Reports may be waived for temporary events, temporary development structures or other minor, short-term development where it is clear there will be no significant hazard risks over the project's life.*

**Hazard Policy 45 (Siting and Design).**

*New development on vacant shoreline property shall be sited and designed to be safe from erosion, bluff failure, wave runup, flooding and other coastal hazards for at least 100 years without new shoreline protection, considering projected sea-level rise and other climate change effects to be determined from best available science and current guidance at the time of proposed development. Permit approvals shall prohibit shoreline protection for the authorized development, require the property owner to record an acknowledgement that the development does not qualify as a development structure entitled to shoreline protection under Coastal Act Section 30235 and a waiver of any rights to such protection, and where necessary require a removal and restoration plan, including bonding for large projects, to avoid future shoreline protection or project failure.*

**Hazard Policy 46 (Assumption of Risk by Private Landowners).**

*Permit approvals of development on the shoreline shall require the applicant to record a deed restriction requiring the owner to indemnify and hold the City harmless and make other acknowledgments relating to the risks relating to the property.*

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#### **Hazard Policy 47 (MHTL and Avoidance of Public Trust Lands).**

*Applications for low-lying development adjacent to coastal waters shall include a Mean High Tide Line (MHTL) survey of the development site prepared by a licensed professional land surveyor based on field data collected within 12 months of the application submittal (may be based on City monitoring survey data if collected by a licensed professional land surveyor). The survey shall be conducted in consultation with and approved by the California State Lands Commission (CSLC) staff. Development shall be sited to avoid public trust lands for the approved duration, unless otherwise authorized by the California State Lands Commission and Coastal Commission. New MHTL surveys shall be submitted every ten years or within one year of a new tidal datum epoch (an epoch is a 19-year tidal cycle used to calculate datums), seismic event in the project area greater than 5.5, or significant relative rise in annual local mean sea-level records.*

#### **Hazard Policy 48 (Bluff Face Development).**

*Shoreline structures, grading, and landform alteration on bluff faces are prohibited, except for the following: public access structures where no feasible alternative means of public access exists, and shoreline protective devices if otherwise allowed by the LCP and the public access and recreation policies of the Coastal Act. Such shoreline structures shall be designed and constructed to be visually compatible with the surrounding area to the maximum extent feasible and to minimize effects on erosion of the bluff face.*

#### **Hazard Policy 49 (Minor Development in Shoreline Areas).**

*Minor and/or ancillary development, including public trails, benches, gazebos, patios, etc., may be located seaward of a bluff or shoreline setback line provided that development is otherwise consistent with the LCP, does not create a hazard, and does not use a foundation that can serve as a bluff retaining device, such as caissons, or that requires landform alteration, and that the development is removed or relocated by the landowner when threatened or in the event that portions of the development fall to the bluffs, beach or ocean.*

#### **Hazard Policy 50 (Non-conforming Structures in Shoreline Areas).**

*When the expansion or redevelopment of an existing development structure that is legally non-conforming with an LCP standard, including bluff setbacks or other hazard criteria, is proposed, the new construction shall be made to conform with the LCP and, if applicable, the Coastal Act. The degree of non-conformity shall not be increased.*

#### **Hazard Policy 51 (Protection of Private Property in Hazardous Areas).**

*Where full adherence with all LCP policies, including for setbacks and other hazard avoidance measures, would preclude a reasonable economic use of the property as a whole, the City may allow the minimum economic use and/or development of the property necessary to avoid an unconstitutional taking of private property without just compensation. There is no taking that needs to be avoided if the proposed development constitutes a nuisance or is otherwise prohibited pursuant to other background principles of property law (e.g., public*

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*trust doctrine). If development is allowed pursuant to this policy, it must be consistent with all LCP policies to the maximum extent feasible.*

**Hazard Policy 52 (Habitat Sea-level Rise Migration Buffers).**

*A sea-level rise buffer area shall be added to required new development habitat buffers if necessary to allow for the migration of wetlands and other shoreline habitats caused by sea-level rise over the anticipated duration (economic life) of the development. Habitats include all wetlands, riparian, intertidal/shoreline and terrestrial ESHAs as defined by the Coastal Act. The sea-level rise projection considered shall be determined for the type of development from CalNRA and OPC (2018) guidance or the latest update. Except for temporary uses, as described below, uses and development within sea-level rise buffer areas shall be limited to minor passive recreational uses, with fencing, de-siltation or erosion control facilities, or other improvements deemed necessary to protect the habitat, to be located in the upper (upland) half of the buffer area. Water quality features such as drainage swales required to support new development shall not be constructed in wetland buffers. Temporary uses may also be placed in the sea-level rise buffer area until such time as sea-level rise causes the wetlands or other shoreline habitat to migrate to within 100 feet of the temporary uses, at which time, they shall be removed. All permanent habitat and buffers identified shall be permanently conserved or protected through a deed restriction, open space easement or other suitable device.*

**Hazard Policy 53 (Stormwater and Dry Weather Flows).**

*New development shall provide adequate drainage and erosion control facilities that convey site drainage in a non-erosive manner to minimize hazards resulting from increased runoff and erosion. Runoff shall be directed inland to the storm drain system or to an existing outfall, when feasible. If no storm drain system or existing outfall is present, blufftop runoff shall not be channelized or directed to the beach or the ocean.*

**Hazard Policy 54 (Reduction of Greenhouse Gases).**

*New development shall include solar panels and, as appropriate, other energy reducing techniques to minimize greenhouse gas emissions, consistent with community character, coastal views and protection of biological resources.*

## Standard Policies for Shoreline Structures

**Hazard Policy 55 (Soft Shoreline Protection).**

*Encourage the use of soft or natural shoreline protection methods, such as dune restoration and beach/sand nourishment as alternatives to hard shoreline protective devices, such as revetments or sea walls. Soft shoreline protection devices shall be fully evaluated for coastal resource impacts, and shall only be approved if found consistent with the LCP policies related to shoreline protection. Consider combining beach replenishment with groin construction to maintain beaches and protect development (see subarea policies).*

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### **Hazard Policy 56 (Beach Nourishment).**

*In coordination with the Coastal Commission and other permitting agencies (e.g., State Lands Commission, U.S. Army Corps of Engineers), the City shall develop and implement a beach nourishment program in conjunction with sand retention structures to assist in maintaining beach width and elevations, consistent with subarea policies. The beach nourishment program will include measures to protect water quality and to minimize and mitigate potential adverse biological resource impacts from deposition of material, including measures such as sand compatibility specifications, restrictions on volume of deposition, timing or seasonal restrictions, and identification of environmentally preferred locations for deposits. The City will also consider developing an opportunistic sand program and evaluate how replenishment options may need to change over time with sea-level rise.*

### **Hazard Policy 57 (Existing Shoreline Structures).**

*Except as may be otherwise provided in the LCP subarea policies, legally permitted shoreline protection structures may be repaired and maintained until the development they are protecting is removed at which time the shoreline protection shall be reevaluated for consistency with the LCP. Repair and maintenance activities shall not result in any enlargement or extension of the shoreline structure, or any seaward encroachment or impairment of public trust resources, and shall provide mitigation for any new coastal resource impacts not previously or otherwise mitigated through the City's Shoreline Mitigation Program (Hazard Policy 7). Expansion, augmentation or replacement of 50 percent or more of the shoreline structure (by volume, linear (height or length) or areal extent) constitutes a new shoreline structure and shall comply with all policies of the LCP.*

### **Hazard Policy 58 (New Shoreline Structures).**

*Unless a waiver of rights to shoreline protection applies on the property, shoreline protection structures, including revetments, breakwaters, groins, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted consistent with the LCP's sub-area policies when required to serve coastal-dependent uses or protect existing principal development structures or public beaches in danger from erosion, when designed to eliminate or mitigate adverse impacts on local shoreline sand supply, and when there is no less environmentally damaging feasible alternative such as beach nourishment, non-structural drainage and native landscape improvements, or other similar non-structural options. For purposes of this policy "existing principal structures" means principal structures that were legally authorized prior to January 1, 1977.*

### **Hazard Policy 59 (Authorization Limits of New Shoreline Structures, 30235; Coastal Act).**

*Unless otherwise directed in a subarea policy, shoreline protection structures shall only be authorized until the time when the existing principal development structure or adjacent development structures that are protected by such a device: 1) is no longer present or 2) no longer requires armoring.*

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### **Hazard Policy 60 (Mitigating Impacts of New Shoreline Structures).**

*Necessary shoreline structures shall be sited and designed to avoid sensitive resources to the maximum extent feasible. Adverse coastal resource impacts shall be fully mitigated, including impacts on sand supply, beach area, public access (vertical access to the shore and horizontal access along the shore and blufftop) and recreational use (surfing, fishing, hiking, etc.), public trust lands and values, ecological function, water quality, shoreline aesthetics, and cultural resources. At a minimum, new shoreline structures shall: blend with the natural environment; avoid significant habitat areas; minimize encroachment/footprint; protect, and where feasible, provide public access; and control erosion from surface and groundwater flows. Mitigation options shall include consideration of providing equivalent new public access, recreation, habitat or other coastal resource in the vicinity of the project, or if such options are not feasible, proportional in-lieu fees that consider and reflect, to the maximum extent practicable, the full value of lost resources for the approved lifetime of the project. Any fees shall be deposited in an interest-bearing account held by the City of Pacifica for use within the city limits for mitigation of the specific impact identified in the project approval. This policy may be met through compliance with the City's Shoreline Mitigation Program (Hazard Policy 7)*

### **Hazard Policy 61 (Monitoring Plan for New Shoreline Structures).**

*Proposals for new, replacement or repaired shoreline protection structures shall include a monitoring plan that evaluates the condition of the shoreline structure, conditions at the site and surrounding area, and whether the shoreline protection structure is still needed for protection. The plan shall require an inspection at least every five years to identify: any structural damage and need for repair; environmental impacts, including excessive scour, impacts to shoreline processes and beach width (at the project site and the broader area and/or littoral cell as feasible), and impacts to public access and the availability of public trust lands for public use; and the status of the development structure being protected. At least every 15 years the landowner shall submit a new Mean High Tide Line (MHTL) survey of the Subject property based on field data collected within 12 months of the date submitted. Surveys shall comply with Hazard Policy 47.*

## **Standard Policies for Coastal Flooding and other Hazards**

### **Hazard Policy 62 (Flooding).**

*New development in flood hazard zones shall comply with the City's Flood Damage Prevention Ordinance.*

### **Hazard Policy 63 (Flood Risk Reduction).**

*The City shall evaluate and pursue floodproofing of infrastructure and other development in danger from projected flooding by 2050. Allow and facilitate if feasible private owners to floodproof development structures, consistent with other LCP policies.*



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**Hazard Policy 64 (Steep Slopes and Landslides).**

*New development shall minimize siting on steep slopes and in areas prone to land sliding. Development on slopes over 35% is prohibited unless detailed site investigations ensure that risks can be reduced to acceptable levels and that the structure will be protected for its design life.*

**Hazard Policy 65 (Seismic Hazards).**

*New development shall be sited and designed to minimize risks from seismic events. Buildings for human occupancy shall avoid surface traces of active faults, consistent with the Alquist-Priolo Act and other relevant state law.*

**Hazard Policy 66 (Tsunami Hazards).**

*New development shall consider and minimize risks from in identified tsunami run-up zones. Measures may include signage and education, evacuation plans, warning systems and other mitigations of tsunami risks.*

**Hazard Policy 67 (Bluff Drainage and Erosion).**

*The City will evaluate and research feasible new funding mechanisms to investigate areas that may be significantly contributing to groundwater flows to the bluffs and determine whether improving drainage and/or reducing irrigation could reduce bluff erosion. Measures to improve drainage and reduce over-watering shall be communicated to the public and property owners as part of existing water conservation outreach programs, and included as conditions on new development where applicable.*

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